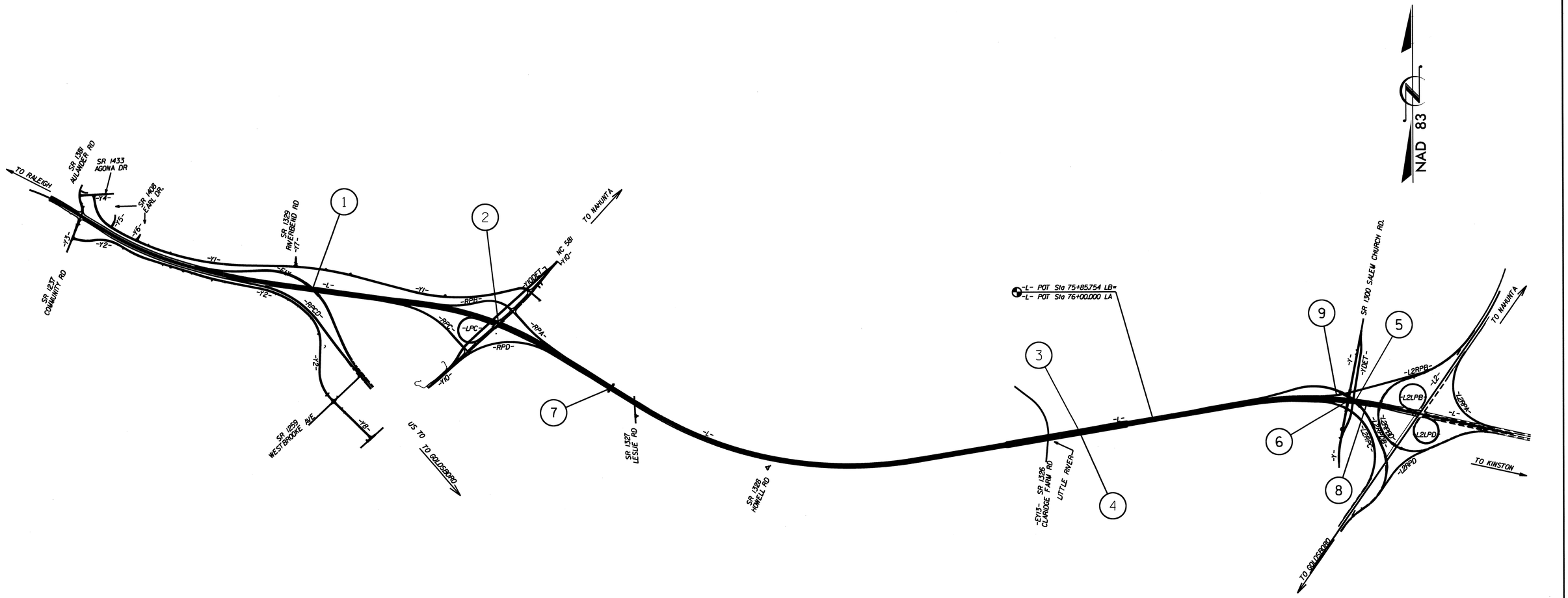

PART 2 OF 2

	INDEX			
	STR. NO.	STATION	DESCRIPTION	SHEETS
PART 1	1	19+40.684 -L-	FLYOVER BRIDGE OVER GOLDSBORO BYPASS BETWEEN SR 1237 & NC 581	S-1 THRU S-43
	2	31+55.609 -L-	BRIDGE OVER GOLDSBORO BYPASS ON NC 581 BETWEEN US 70 AND SR 1329	S-44 THRU S-71
	3	70+24.000 -L-	LEFT LANE BRIDGE OVER LITTLE RIVER ON GOLDSBORO BYPASS BETWEEN NC 581 AND SR 1300	S-72 THRU S-131
	4	70+24.000 -L-	RIGHT LANE BRIDGE OVER LITTLE RIVER ON GOLDSBORO BYPASS BETWEEN NC 581 AND SR 1300	S-132 THRU S-191
PART 2	5	89+04.195 -L-	BRIDGE OVER GOLDSBORO BYPASS ON RAMP DB BETWEEN US 117 BYPASS AND US 70	S-192 THRU S-242
	6	88+58.525 -L-	BRIDGE OVER GOLDSBORO BYPASS ON SR 1300 BETWEEN US 117 BYPASS AND SR 1313	S-243 THRU S-276
	7	39+85.600 -L-	DOUBLE 2.100m x 2.100m RCBC	C-1 THRU C-3
	8	10+03.224 -L2RPDB-	MSE RETAINING WALL #1 @ STR. #5 (END BENT #1)	W-1 THRU W-4
	9	10+03.224 -L2RPDB-	MSE RETAINING WALL #2 @ STR. #5 (END BENT #2)	W-1 THRU W-4

PROJECT NO. R-2554A
WAYNE COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX

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

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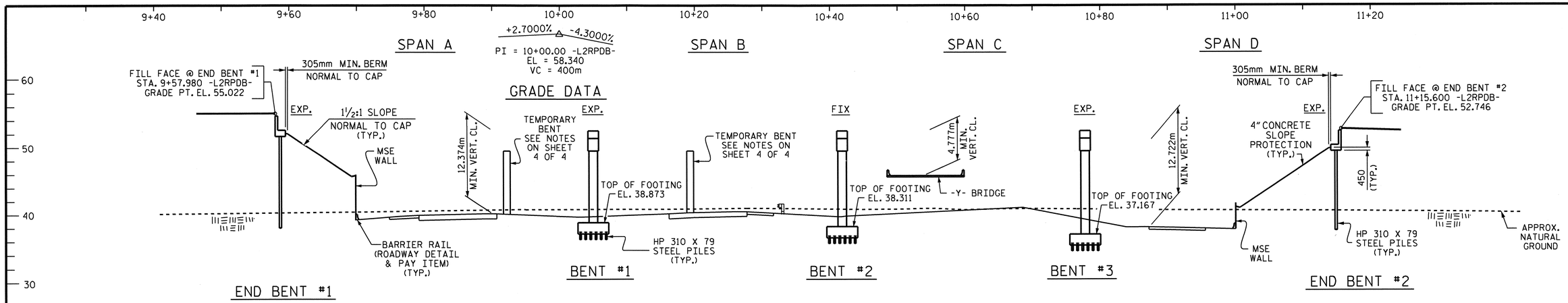


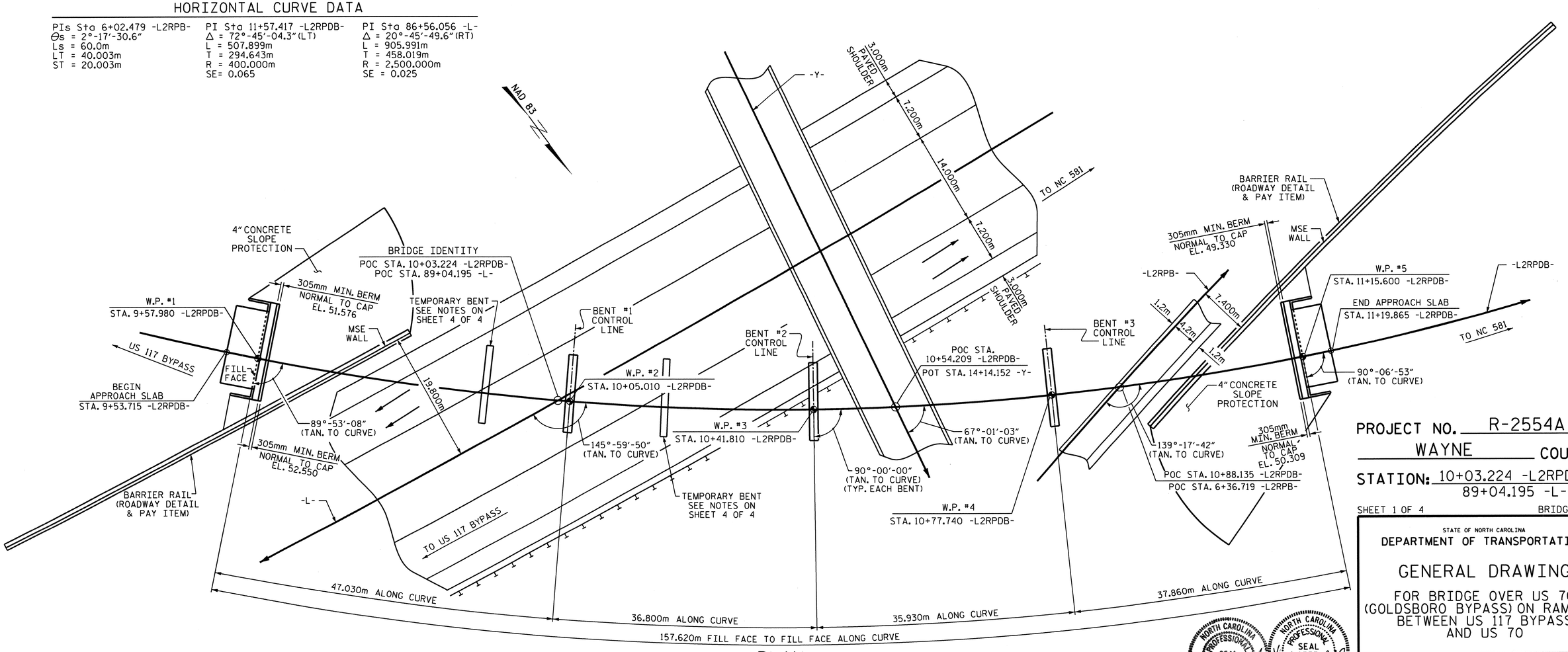
SECTION ALONG -L2RPDB-

HORIZONTAL CURVE DATA

PIs Sta 6+02.479 -L2RPB-
Θs = 2°-17'-30.6"
Ls = 60.0m
LT = 40.003m
ST = 20.003m

PI Sta 11+57.417 -L2RPDB-
Δ = 72°-45'-04.3"(LT)
L = 507.899m
T = 294.643m
R = 400.000m
SE= 0.065

PI Sta 86+56.056 -L-
Δ = 20°-45'-49.6"(RT)
L = 905.991m
T = 458.019m
R = 2,500.000m
SE = 0.025



PLAN

PILES & FOOTINGS ARE NOT SHOWN IN PLAN VIEW

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-
89+04.195 -L-

SHEET 1 OF 4 BRIDGE #377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

GENERAL DRAWING

FOR BRIDGE OVER US 70 (GOLDSBORO BYPASS) ON RAMP DB BETWEEN US 117 BYPASS AND US 70

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-192
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 040091 ENGINEER BUCKY CHARLES HINES 3/20/12

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL 3/20/12

DRAWN BY : J.P. ADAMS DATE : 11/14/11
CHECKED BY : H.A. LOCKLEAR DATE : 11/30/11

20-MAR-2012 12:12
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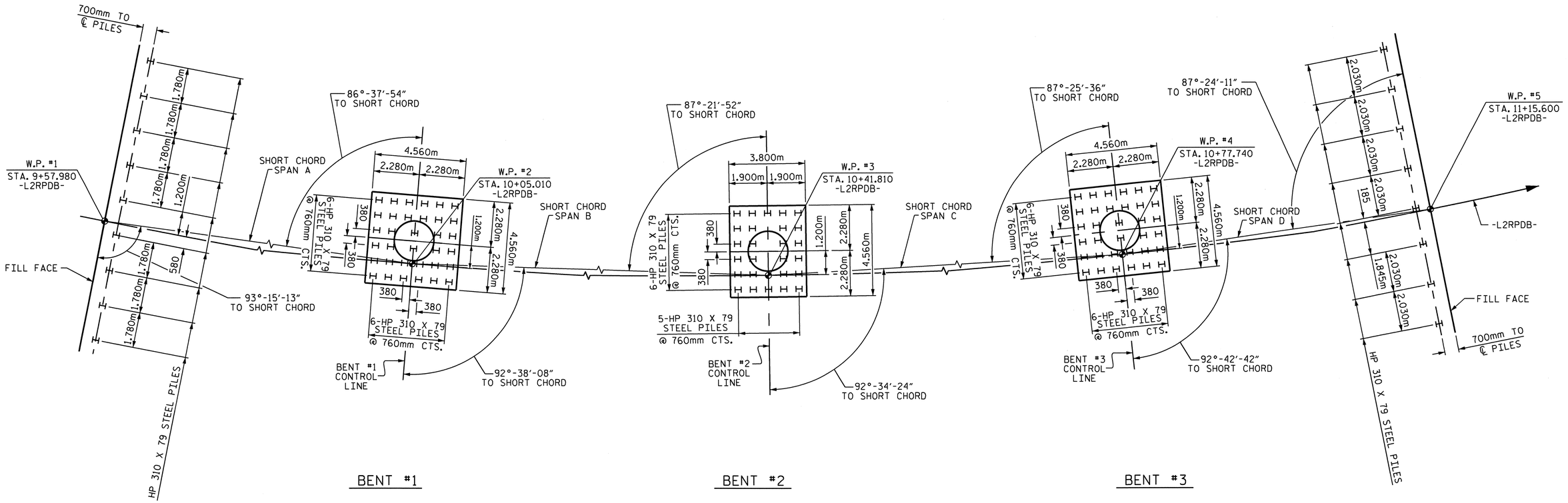
STR. #5



END BENT #1

END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO. 1, BENT NO. 1, BENT NO. 2, BENT NO. 3 AND END BENT NO. 2 IS 670kN PER PILE.

DRIVE PILES AT BENT NO. 1, BENT NO. 2 AND BENT NO. 3 TO A REQUIRED BEARING CAPACITY OF 1340 kN PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 1870 AND 1710 kN PER PILE, RESPECTIVELY. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWNDRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

INSTALL PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 21.5m.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SPECIAL PROVISIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 70-120 kN-M PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

APPLY FRICTION REDUCING COATING FROM BOTTOM OF CAP ELEVATION TO ELEVATION 26.1m AND 27.7m FOR PILES AT END BENT NO. 1 AND END BENT NO. 2, RESPECTIVELY. FOR FRICTION REDUCING COATING, SEE SPECIAL PROVISIONS.

DRIVE END BENT PILES BEFORE CONSTRUCTING THE MSE WALLS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING CONSTRUCTION OF THE END BENT CAP. FOR WAITING PERIODS TO CONSTRUCT MSE RETAINING WALL NO. 1 AND NO. 2, SEE "MSE RETAINING WALL NO. 1 AND NO. 2 NOTES AND DETAILS" SHEET.

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL
3/20/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1300 (SALEM CHURCH RD.) OVER US 70 (GOLDSBORO BYPASS) BETWEEN US 117 BYPASS AND SR 1313

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-193
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 11/21/11
CHECKED BY : H.A. LOCKLEAR DATE : 11/30/11

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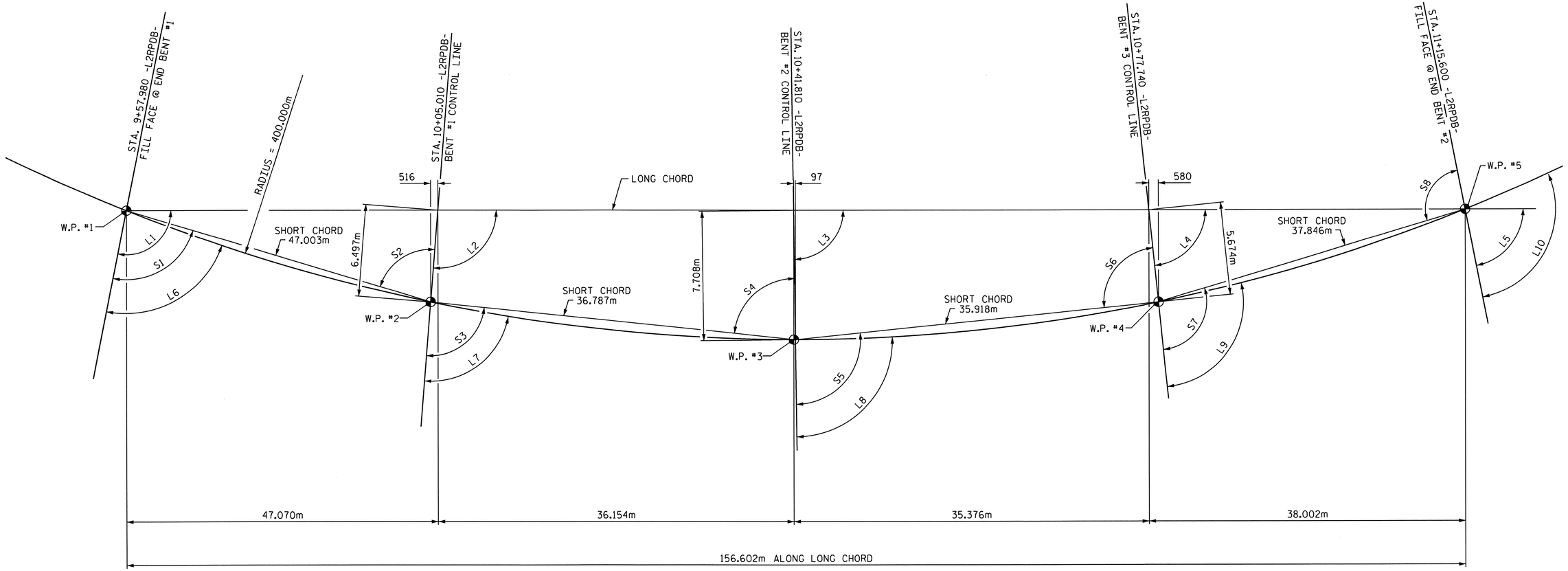

LOND CHORD LAYOUT

ANGLES					
LONG CHORD		SHORT CHORD			
L1	101°-10′-27″	S1	93°-15′-13″	S5	92°-34′-24″
L2	94°-33′-08″	S2	86°-37′-54″	S6	87°-25′-36″
L3	89°-16′-51″	S3	92°-38′-08″	S7	92°-42′-42″
L4	84°-08′-04″	S4	87°-21′-52″	S8	87°-24′-11″
L5	78°-49′-33″				
L6	89°-53′-08″(TANGENT TO CURVE)				
L7	90°-00′-00″(TANGENT TO CURVE)				
L8	90°-00′-00″(TANGENT TO CURVE)				
L9	90°-00′-00″(TANGENT TO CURVE)				
L10	90°-06′-53″(TANGENT TO CURVE)				

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL
2/14/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1300 (SALEM CHURCH RD.) OVER US 70 (GOLDSBORO BYPASS) BETWEEN US 117 BYPASS AND SR 1313

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-194
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 11/21/11
CHECKED BY : H.A. LOCKLEAR DATE : 11/30/11

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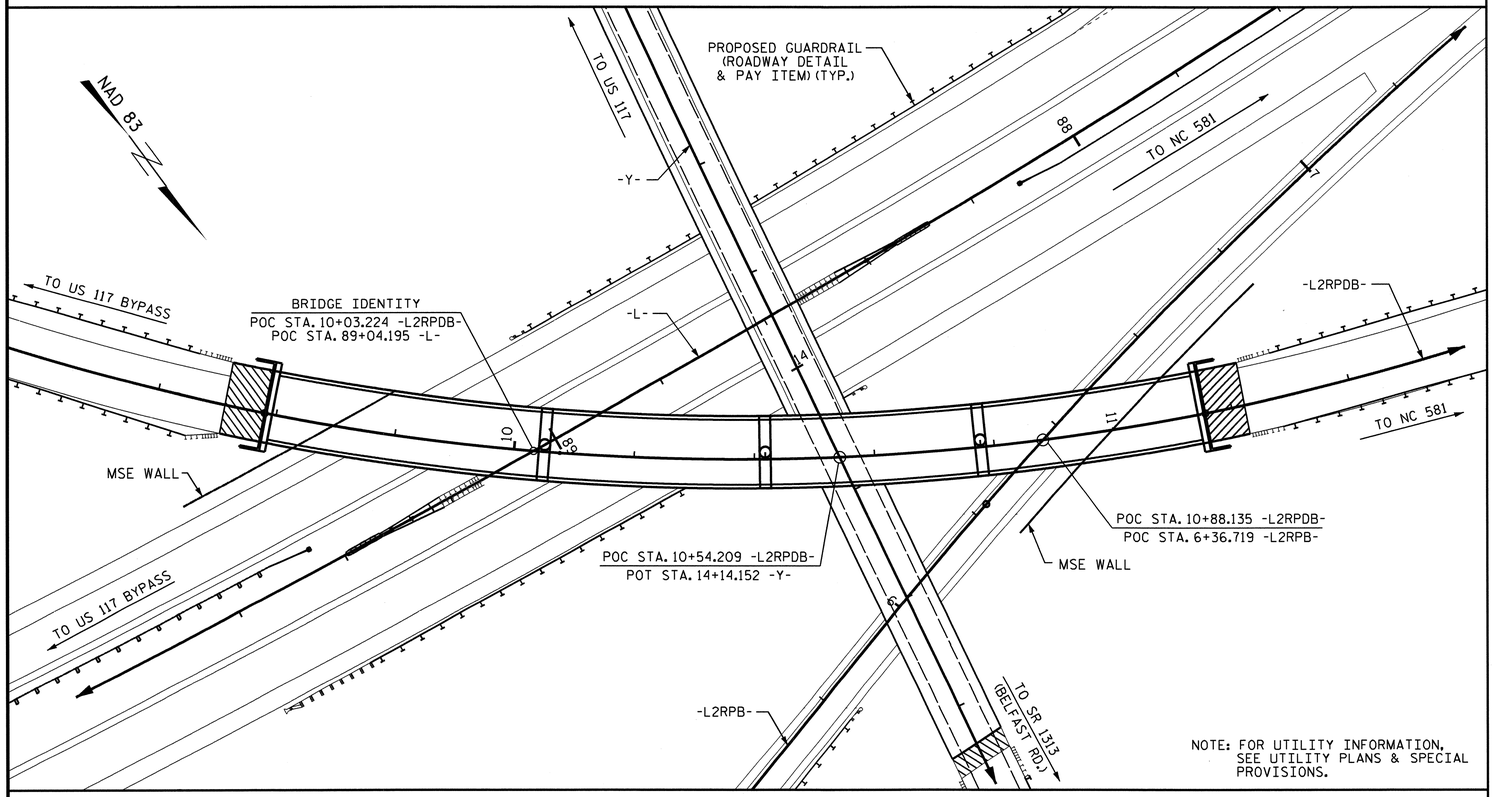
BM. #1 RR SPIKE IN BASE OF 18" PINE 77.0 LEFT OF STA. 91+67 -L-, EL. 40.614



LOCATION SKETCH

NOTES

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SNSM.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR PLACING LOADS ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SHIPPING STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.

FOR METRIC STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

ASSUMED LIVE LOAD = MS 18 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR MS 22.5.

GIRDER ERECTION SEQUENCE

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION. ONE EXTERIOR GIRDER AND ITS ADJACENT INTERIOR GIRDER SHALL BE ERECTED WITH ALL DIAPHRAGMS AND LATERAL BRACING BETWEEN THE GIRDERS IN PLACE AND ALL BOLTS TIGHTENED PRIOR TO RELEASE OF THE GIRDERS. THE REMAINING GIRDERS SHALL THEN BE ERECTED WITH DIAPHRAGMS CONNECTING THE GIRDER TO THE ADJACENT ERECTED GIRDER AND ALL BOLTS TIGHTENED BEFORE RELEASING THE GIRDER.

A MINIMUM OF TWO TEMPORARY BENTS SHALL BE USED.

TEMPORARY BENTS SHALL REMAIN IN PLACE UNTIL ALL CROSSFRAMES AND LATERAL BRACING ARE IN PLACE AND HIGH STRENGTH BOLTS TIGHTENED.

TEMPORARY BENTS SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS.

FOR TEMPORARY BENT, SEE SPECIAL PROVISIONS.

PLANS FOR TEMPORARY BENTS, ERECTION SEQUENCE AND TEMPORARY BENT REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

TEMPORARY BENTS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY ERECTION BENTS AND MAINTAIN PLUMBNESS OF THE GIRDER WEBS.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY APPLY THE STRUCTURAL STEEL WEIGHT TO THE BRIDGE CROSSFRAMES.

THE CONTRACTOR MAY SUBMIT ALTERNATE ERECTION METHODS. PLANS FOR SUCH ERECTION METHODS SHALL BE APPROVED BY THE ENGINEER.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION	PDA TESTING	PDA ASSISTANCE	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL REINFORCING STEEL	STRUCTURAL STEEL (APPROX.)	HP 310 X 79 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	100mm SLOPE PROTECTION	EXPANSION JOINT SEALS	DISC BEARINGS	FRICTION REDUCING COATING
	LUMP SUM	EA.	EA.	SQ. METERS	SQ. METERS	CU. METERS	LUMP SUM	KGS.	KGS.	KGS	EA.	METERS	EA.	METERS	SQ. METERS	LUMP SUM	LUMP SUM	SQ. METERS
SUPERSTRUCTURE				2039.0	1822.9					441621				324.965				
END BENT #1						32.5		2604			9	330	6		515			410
BENT #1	LUMP SUM					131.9		16279	786		34	932	16					
BENT #2	LUMP SUM					122.3		12374	803		26	713	13					
BENT #3	LUMP SUM					131.8		15868	835		34	952	16					
END BENT #2						32.3		2599			8	268	6		610			310
TOTAL	LUMP SUM	1	1	2039.0	1822.9	450.8	LUMP SUM	49724	2424	441621	111	3195	57	324.965	1125	LUMP SUM	LUMP SUM	720

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER US 70 (GOLDSBORO BYPASS) ON RAMP DB BETWEEN US 117 BYPASS AND US 70

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER HITUL A. PATEL
3/20/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-195
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 11/14/11
CHECKED BY : H.A. LOCKLEAR DATE : 11/30/11

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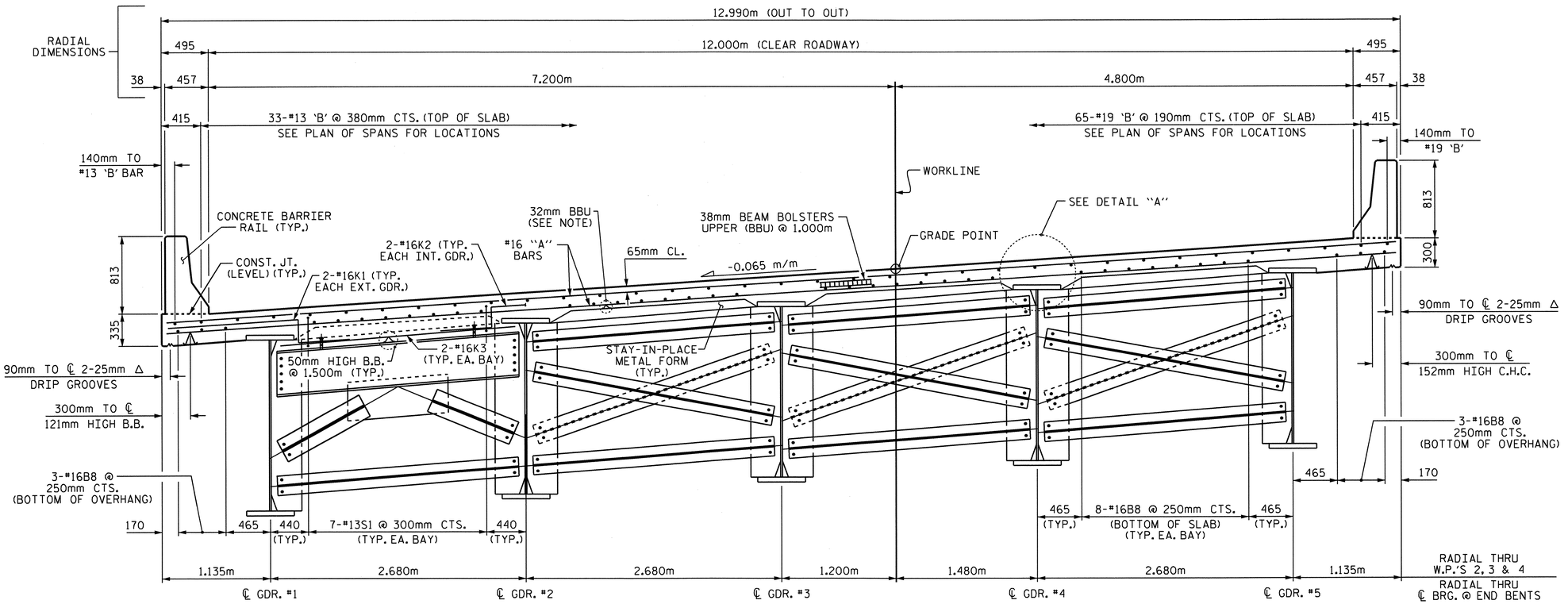
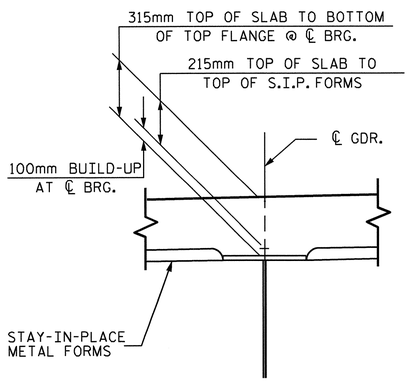
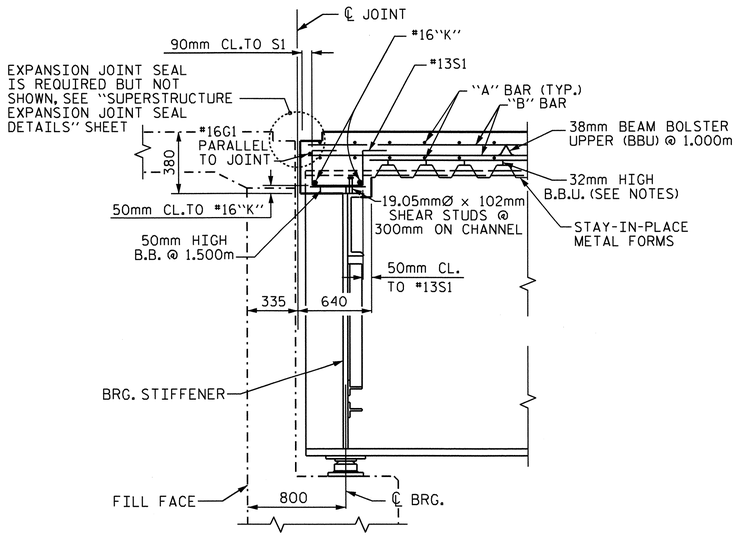


TYPICAL END BENT DIAPHRAGM TYPICAL INTERMEDIATE DIAPHRAGM TYPICAL BENT DIAPHRAGM

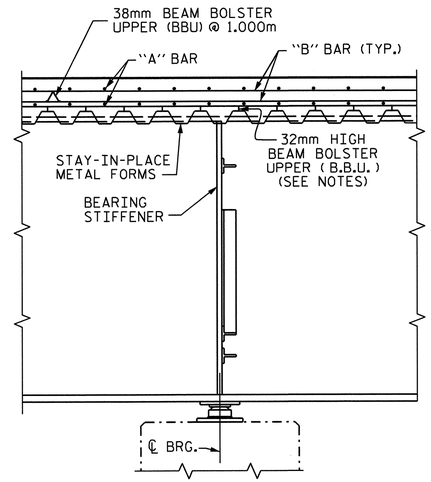
TYPICAL SECTION



DETAIL "A"



SECTION AT END BENT



SECTION AT BENT

NOTES

PROVIDE 32mm HIGH BEAM BOLSTERS UPPER AT 1.200m CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 1.200m CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 65mm ABOVE THE TOP OF THE REMOVABLE FORM.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

#16G1 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENER OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN- PLACE FORM WORKING DRAWINGS.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSABLE VARIATION IN DISC BEARING DEPTH OF 13mm, SEE SPECIAL PROVISION FOR DISC BEARINGS.

DRAWN BY : J.P. ADAMS DATE : 6/6/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

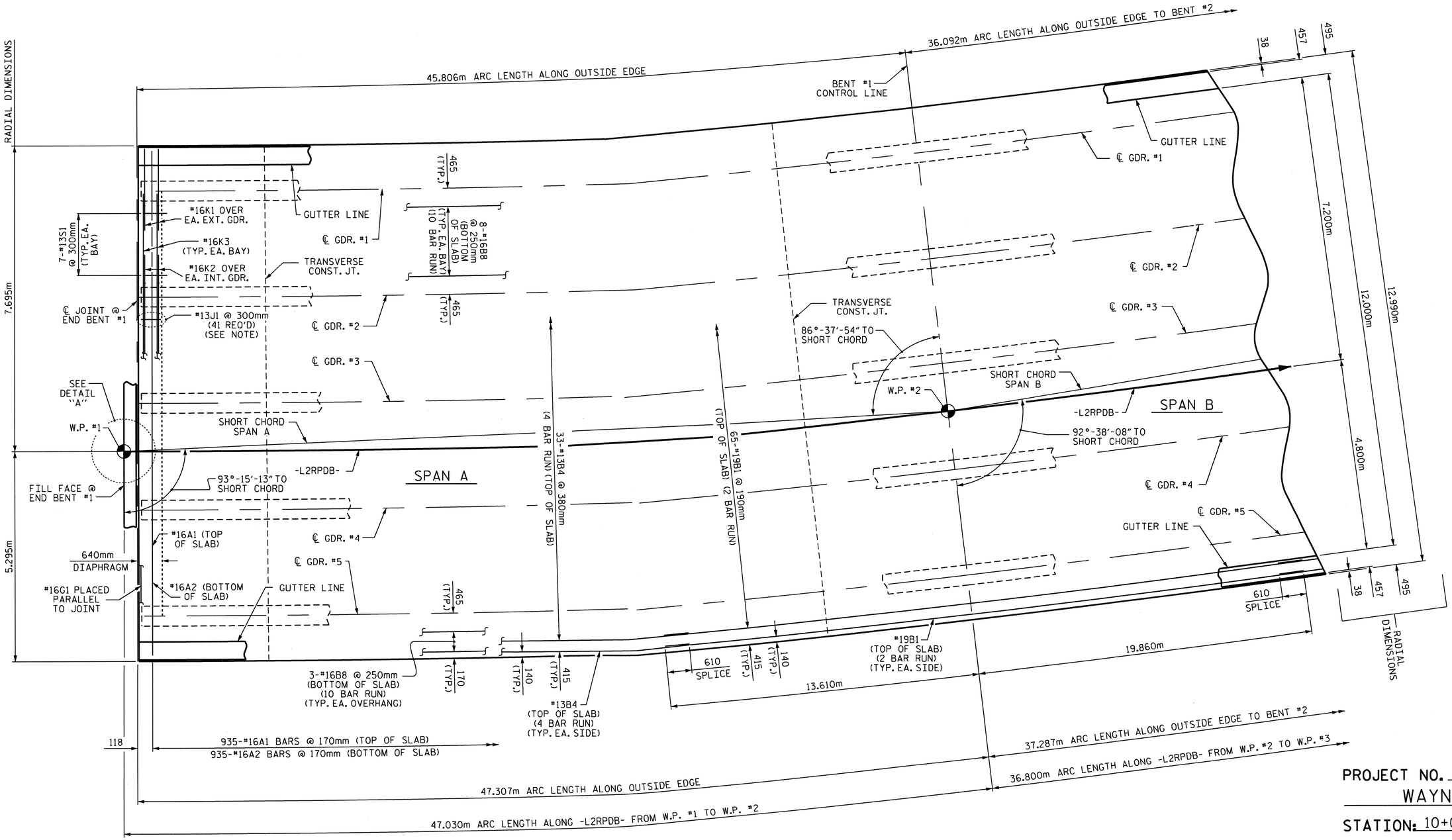
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-196
1			3			TOTAL SHEETS
2			4			276

STR. #5



NOTES

FOR BARRIER RAIL REINFORCING STEEL. SEE "CONCRETE BARRIER RAIL" SHEETS.

#16 "A" BARS ARE TO BE PLACED @ 170mm MAX. CTS. RADIALLY ALONG OUTSIDE RIGHT EDGE OF SUPERSTRUCTURE.

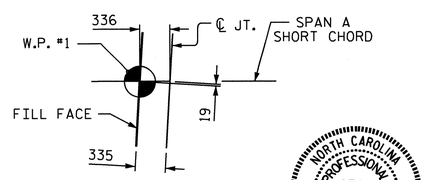
A TRANSVERSE CONSTRUCTION JOINT IS REQUIRED, FOR LOCATIONS AND DETAILS SEE SUPERSTRUCTURE BILL OF MATERIAL SHEET.

#16A1 MAY BE SHIFTED AS NECESSARY TO CLEAR EXPANSION JOINT SEAL.

THE #13J1 BARS ARE TO BE PLACED AS SPECIFIED ON THE "EXPANSION JOINT SEAL DETAILS" SHEET.

FOR EXPANSION JOINT SEAL DETAILS, SEE "EXPANSION JOINT SEAL DETAILS" SHEETS.

PARTIAL PLAN OF SPAN A-B



DETAIL "A"

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-197
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/26/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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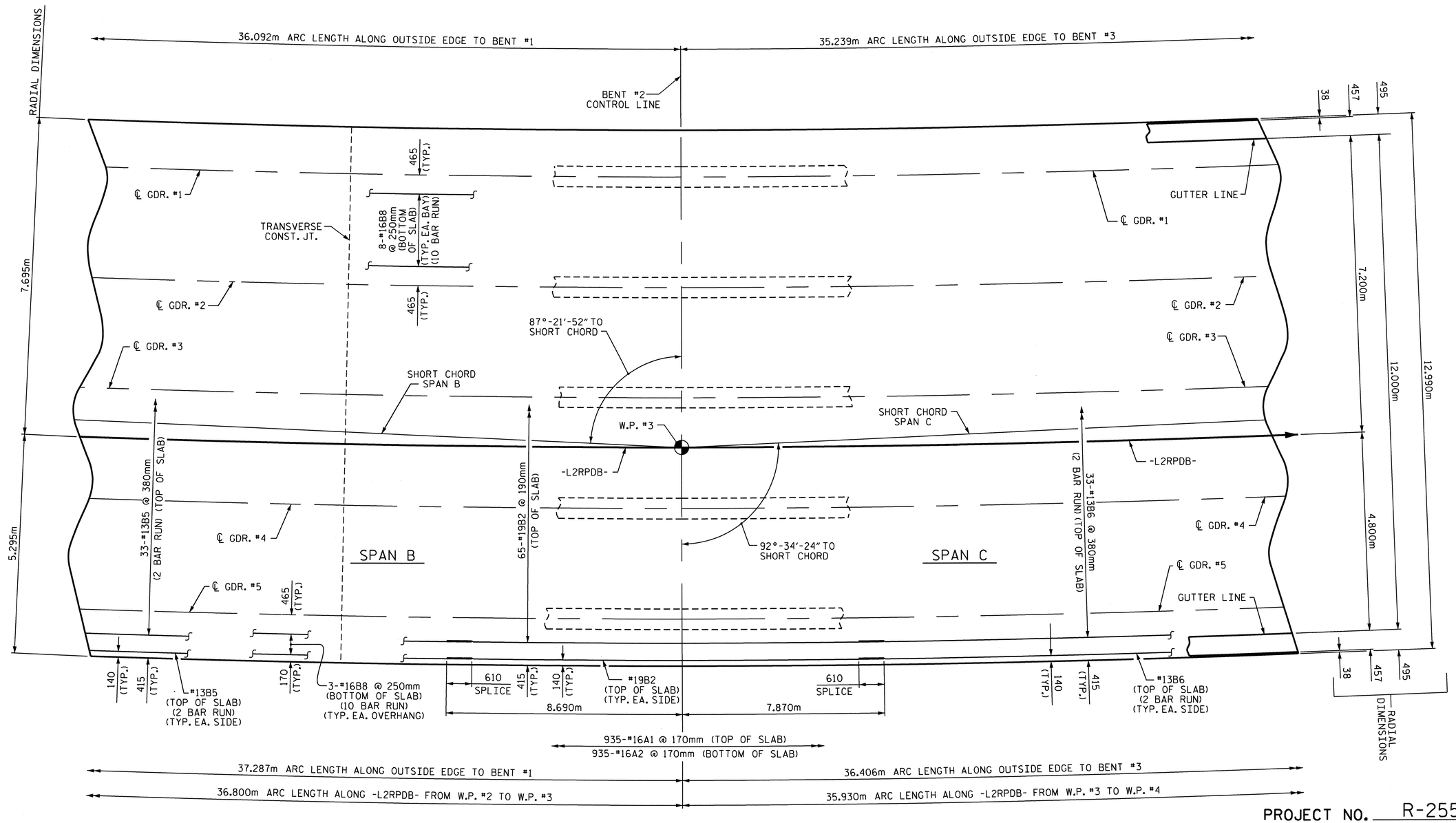

NOTES

FOR BARRIER RAIL REINFORCING STEEL. SEE "CONCRETE BARRIER RAIL" SHEETS.

#16 "A" BARS ARE TO BE PLACED @ 170mm MAX. CTS. RADIALLY ALONG OUTSIDE RIGHT EDGE OF SUPERSTRUCTURE.

A TRANSVERSE CONSTRUCTION JOINT IS REQUIRED. FOR LOCATIONS AND DETAILS SEE SUPERSTRUCTURE BILL OF MATERIAL SHEET.

PARTIAL PLAN OF SPAN B-C

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
4/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-198
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 7/26/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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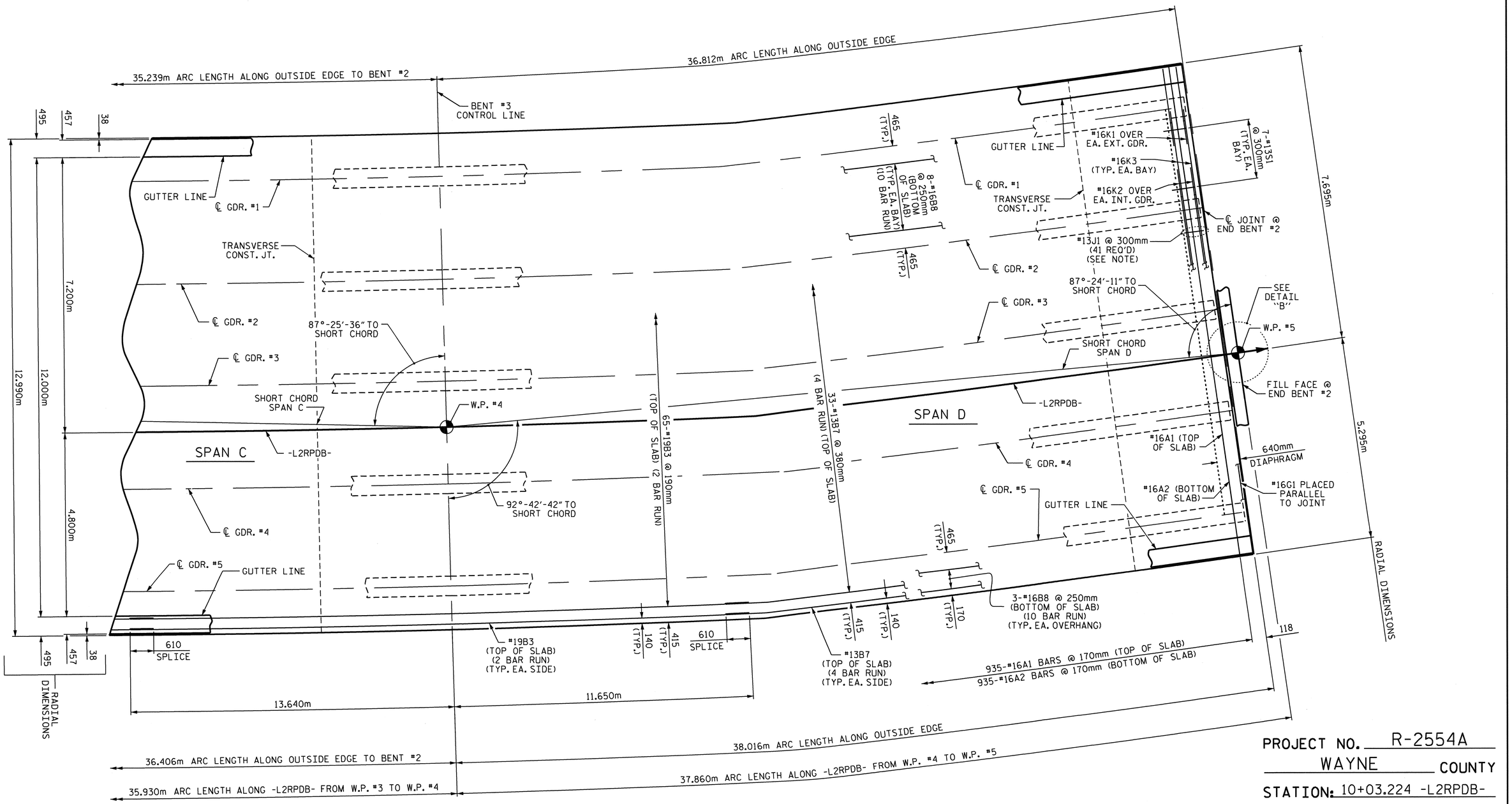


NOTES

FOR BARRIER RAIL REINFORCING STEEL. SEE "CONCRETE BARRIER RAIL" SHEETS.

#16 "A" BARS ARE TO BE PLACED @ 170mm MAX. CTS. RADIALLY ALONG OUTSIDE RIGHT EDGE OF SUPERSTRUCTURE.

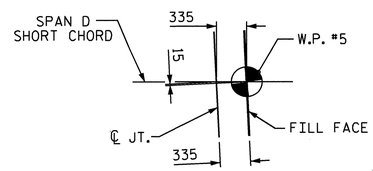
A TRANSVERSE CONSTRUCTION JOINT IS REQUIRED, FOR LOCATIONS AND DETAILS SEE SUPERSTRUCTURE BILL OF MATERIAL SHEET.

#16A1 MAY BE SHIFTED AS NECESSARY TO CLEAR EXPANSION JOINT SEAL.

THE #13J1 BARS ARE TO BE PLACED AS SPECIFIED ON THE "EXPANSION JOINT SEAL DETAILS" SHEET.

FOR EXPANSION JOINT SEAL DETAILS, SEE "EXPANSION JOINT SEAL DETAILS" SHEETS.

PARTIAL PLAN OF SPAN C-D



DETAIL "B"

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

DRAWN BY : J.P. ADAMS DATE : 7/26/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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jpadams

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 3

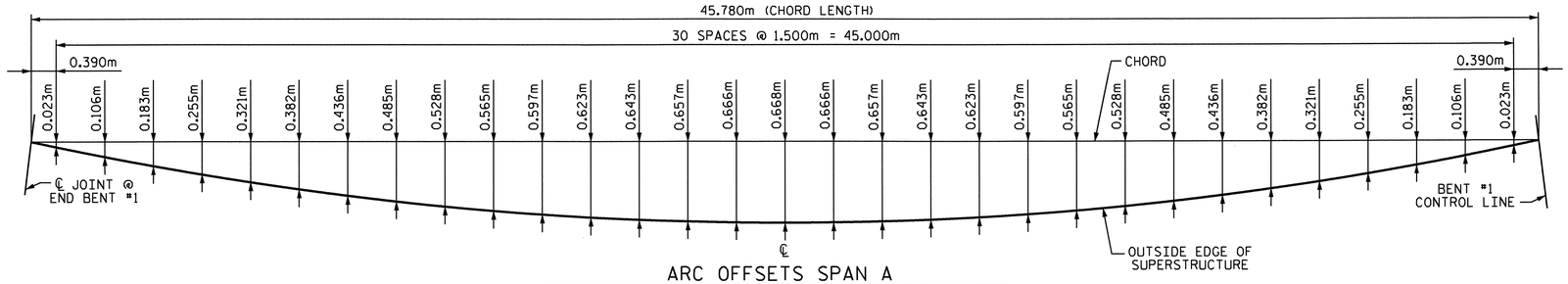
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

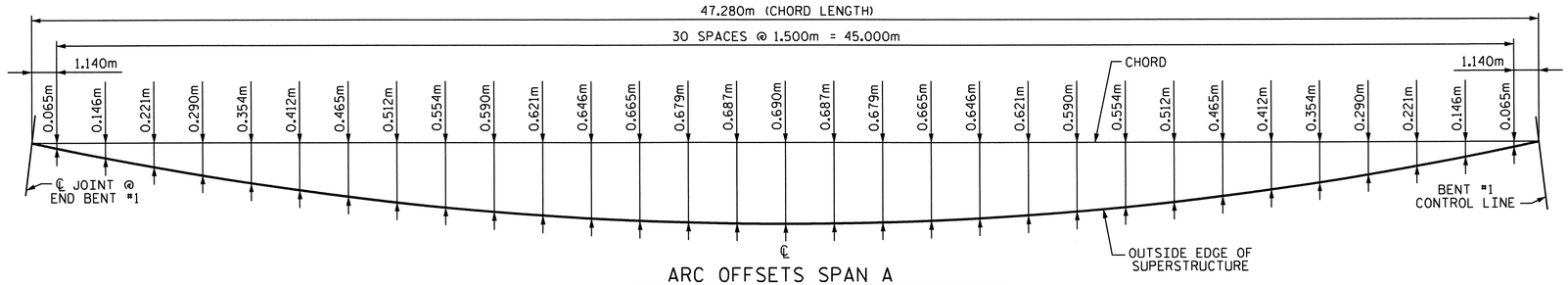
PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-199
1			3			TOTAL SHEETS
2			4			276

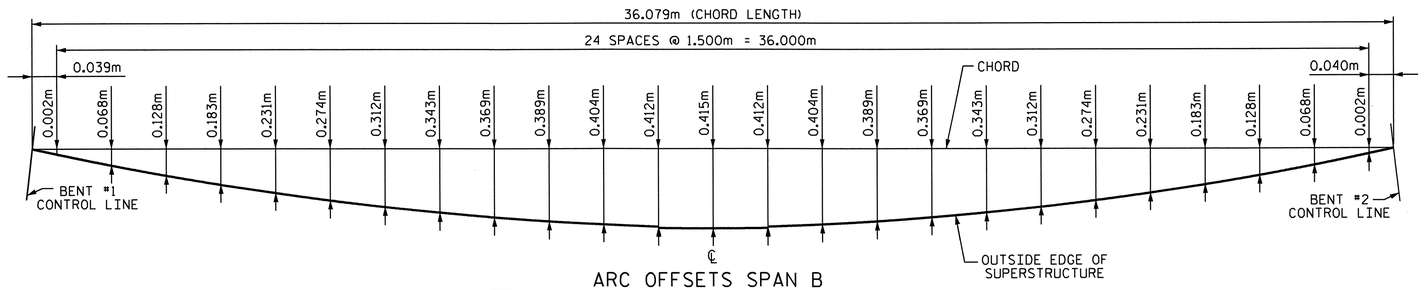
STR. #5



ARC OFFSETS SPAN A
LEFT OUTSIDE EDGE OF SUPERSTRUCTURE



ARC OFFSETS SPAN A
RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE



ARC OFFSETS SPAN B
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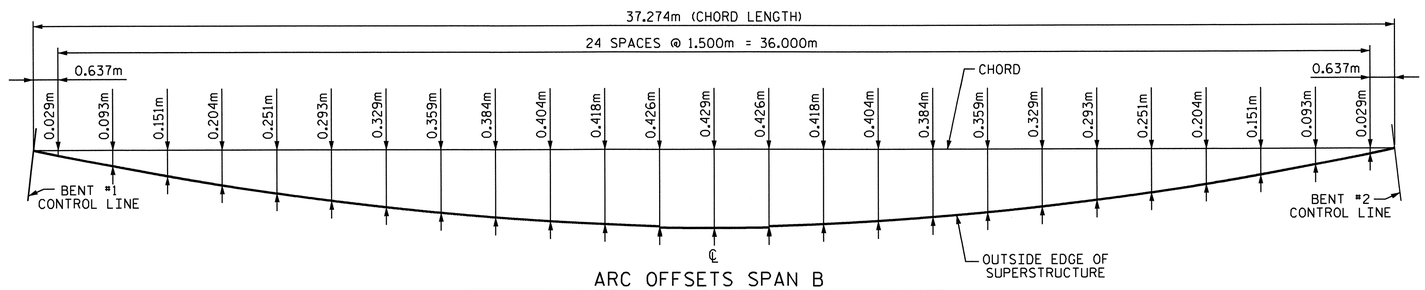

ARC OFFSETS SPAN B
RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-200
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/6/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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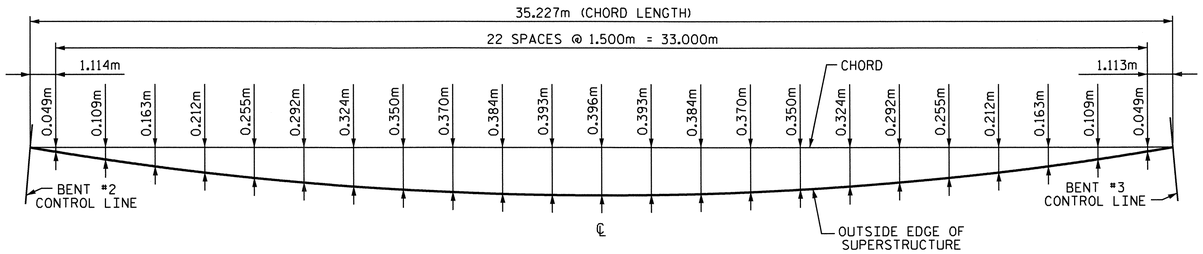
jpadams



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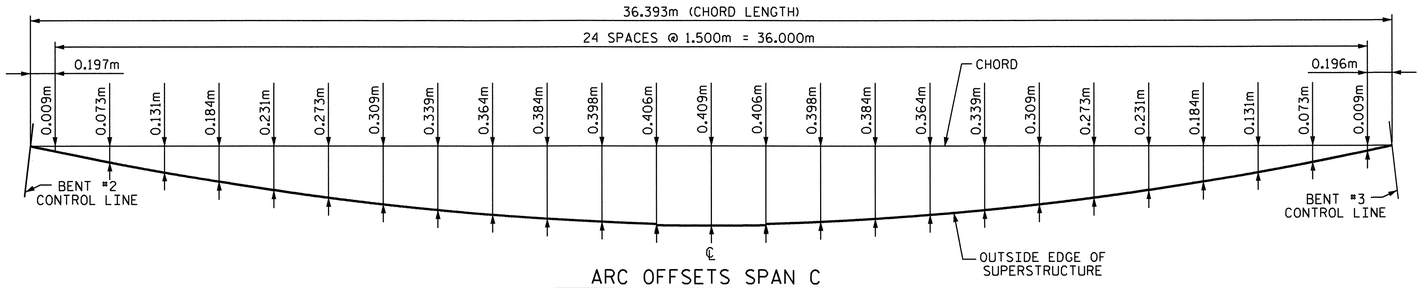
LEFT OUTSIDE EDGE OF SUPERSTRUCTURE



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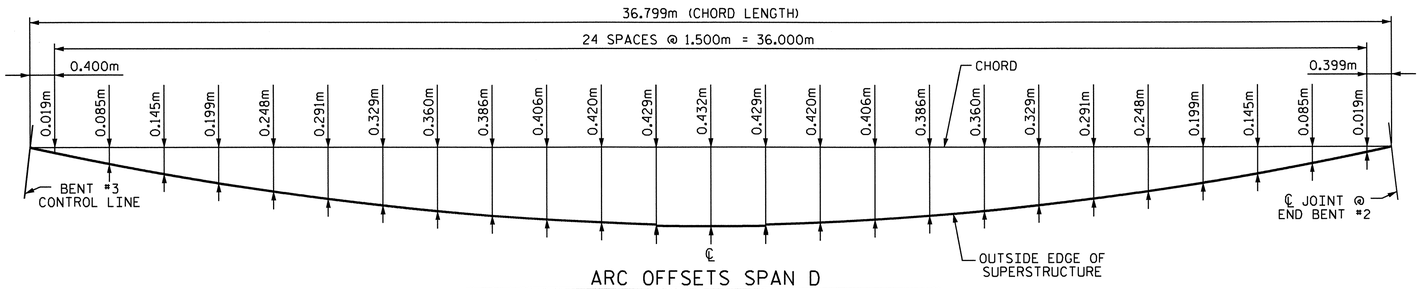
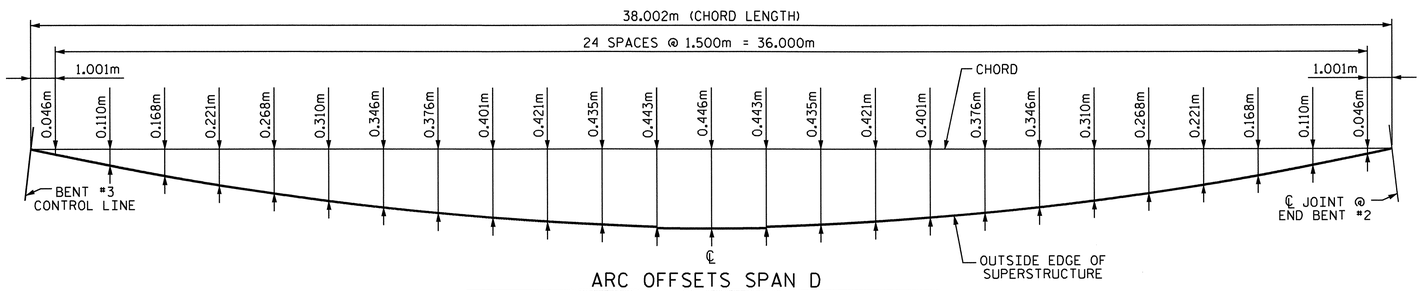
RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE



ARC OFFSETS SPAN D
LEFT OUTSIDE EDGE OF SUPERSTRUCTURE



ARC OFFSETS SPAN D
RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ARC OFFSETS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-201
1			3			TOTAL SHEETS
2			4			276

STR. #5

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CHECKED BY : K.D. LAYNE DATE : 9/11

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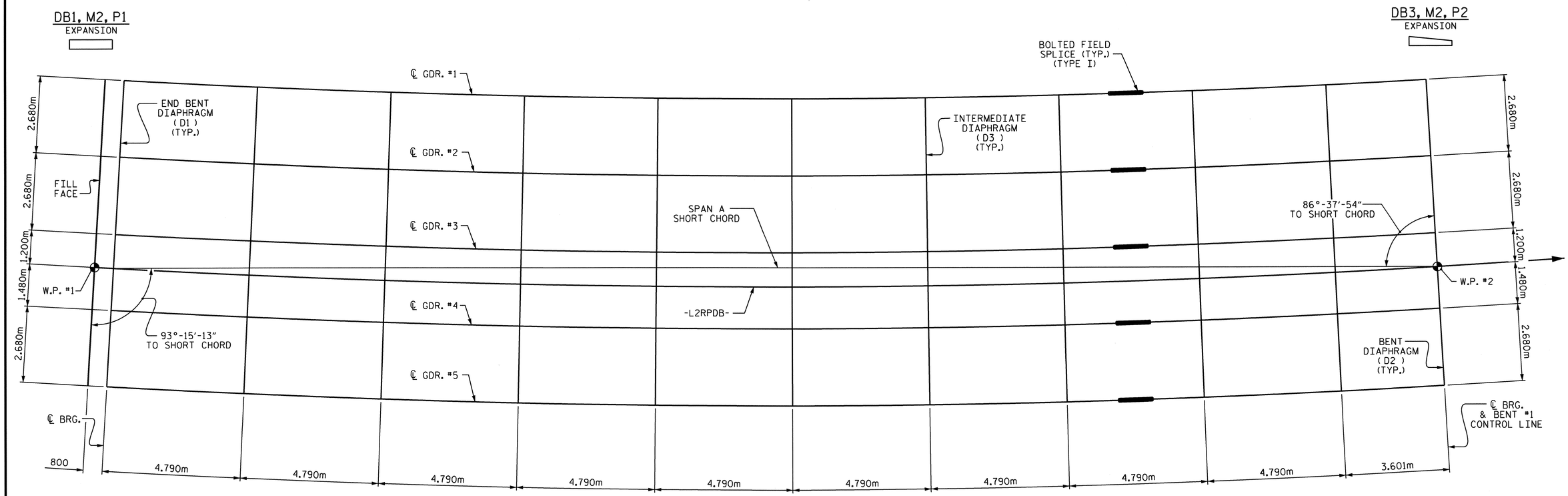
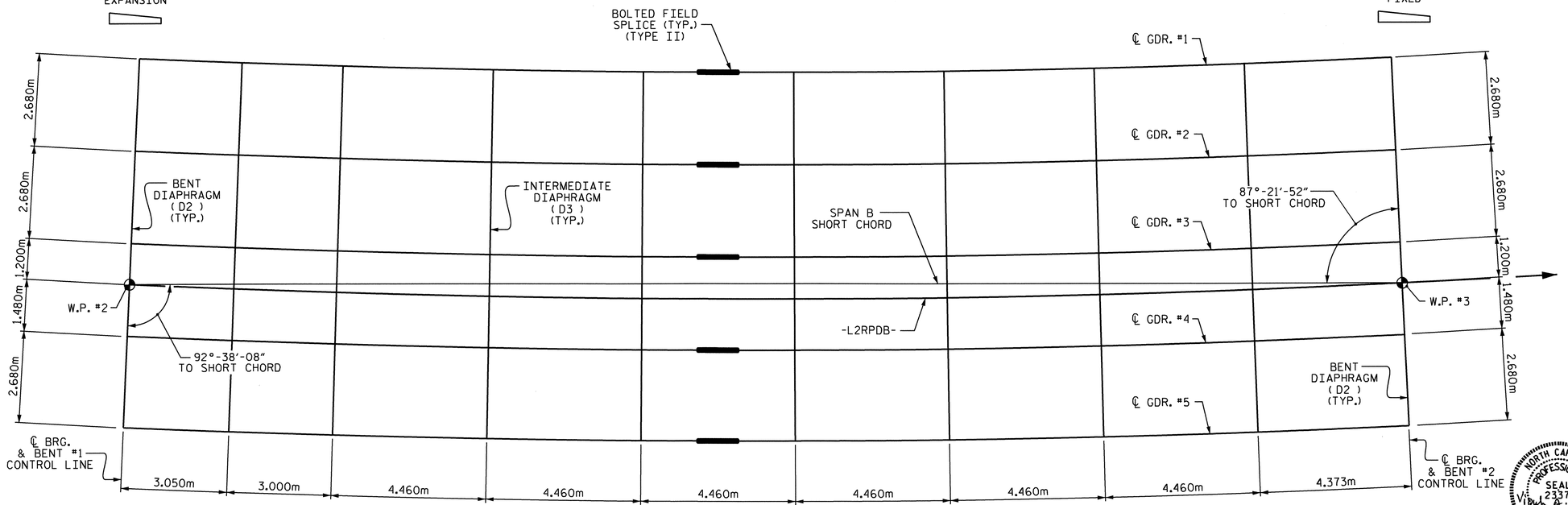


SPAN A



SPAN B

NOTE: ALL DIAPHRAGMS TO BE PLACED RADIALLY TO ℄ GIRDER #5

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-202
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/18/2011
CHECKED BY : K.D. LAYNE DATE : 9/11

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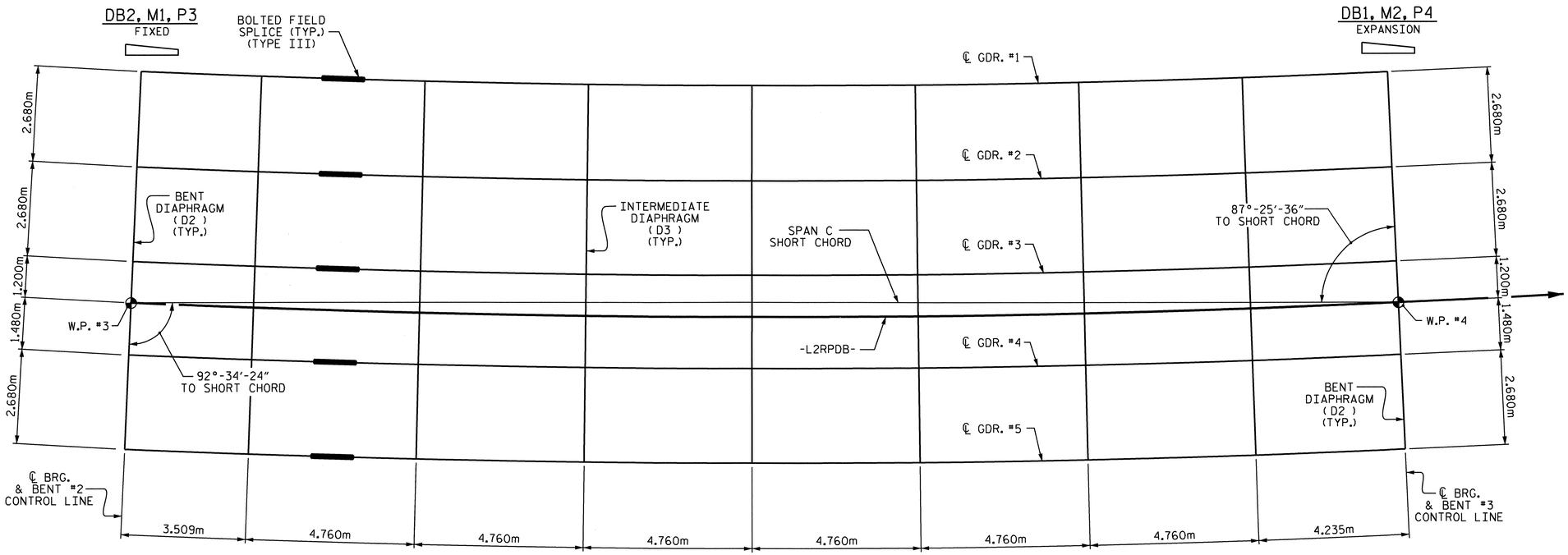
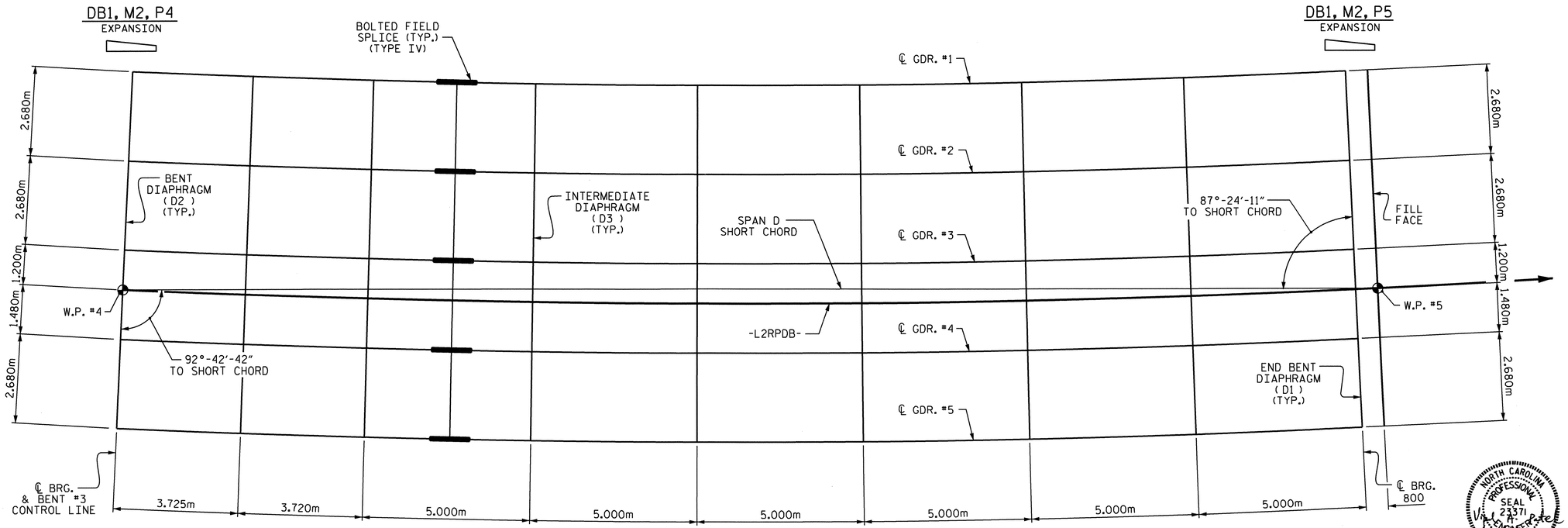


SPAN C

NOTE: ALL DIAPHRAGMS TO BE PLACED RADIALLY TO ℄ GIRDER #5



SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER M. A. PATEL
2/14/12

DRAWN BY : J.P. ADAMS DATE : 7/18/2011
CHECKED BY : K.D. LAYNE DATE : 9/11

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PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 2

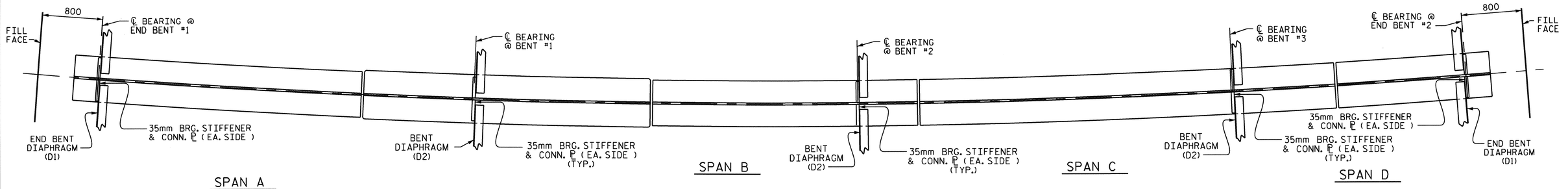
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

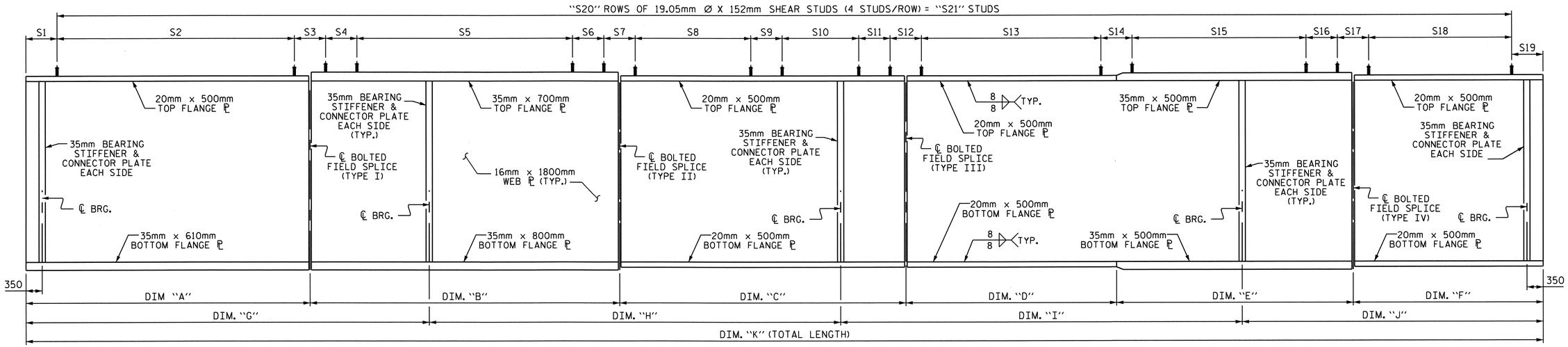
FRAMING PLAN

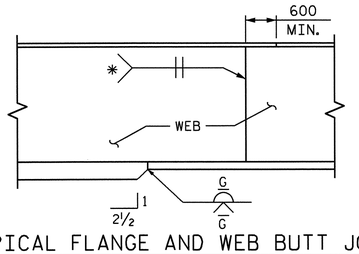
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-203
1			3			TOTAL SHEETS
2			4			276

STR. #5



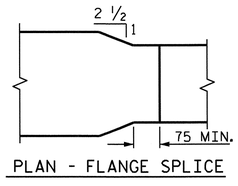
CURVED GIRDER BOTTOM FLANGE DETAIL





TYPICAL FLANGE AND WEB BUTT JOINT

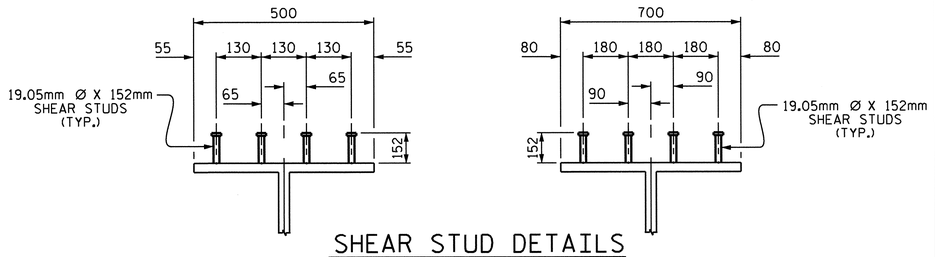
* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS



PLAN - FLANGE SPLICE

CURVED GIRDER ELEVATION

FOR BOLTED FIELD SPLICE DETAILS AND ADDITIONAL SHEAR STUDS. SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS" SHEETS 4-7.



SHEAR STUD DETAILS

SHEAR STUD SPACINGS

GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
1	550mm	61 SPA. @ 560mm	1111mm	3 SPA. @ 290mm	70 SPA. @ 350mm	3 SPA. @ 290mm	1060mm	35 SPA. @ 350mm	3 SPA. @ 290mm	29 SPA. @ 350mm	3 SPA. @ 290mm	1061mm	52 SPA. @ 350mm	3 SPA. @ 290mm	52 SPA. @ 350mm
2	350mm	62 SPA. @ 560mm	1083mm	3 SPA. @ 290mm	70 SPA. @ 350mm	3 SPA. @ 290mm	1063mm	35 SPA. @ 350mm	3 SPA. @ 290mm	30 SPA. @ 350mm	3 SPA. @ 290mm	932mm	52 SPA. @ 350mm	3 SPA. @ 290mm	53 SPA. @ 350mm
3	510mm	62 SPA. @ 560mm	1078mm	3 SPA. @ 290mm	71 SPA. @ 350mm	3 SPA. @ 290mm	1066mm	35 SPA. @ 350mm	3 SPA. @ 290mm	30 SPA. @ 350mm	3 SPA. @ 290mm	977mm	52 SPA. @ 350mm	3 SPA. @ 290mm	54 SPA. @ 350mm
4	620mm	62 SPA. @ 560mm	1300mm	3 SPA. @ 290mm	71 SPA. @ 350mm	3 SPA. @ 290mm	1244mm	36 SPA. @ 350mm	3 SPA. @ 290mm	29 SPA. @ 350mm	3 SPA. @ 290mm	1021mm	52 SPA. @ 350mm	3 SPA. @ 290mm	55 SPA. @ 350mm
5	465mm	63 SPA. @ 560mm	1050mm	3 SPA. @ 290mm	72 SPA. @ 350mm	3 SPA. @ 290mm	1075mm	36 SPA. @ 350mm	3 SPA. @ 290mm	30 SPA. @ 350mm	3 SPA. @ 290mm	890mm	52 SPA. @ 350mm	3 SPA. @ 290mm	56 SPA. @ 350mm

SHEAR STUD SPACINGS

GIRDER	S16	S17	S18	S19	S20	S21
1	3 SPA. @ 290mm	1150mm	58 SPA. @ 450mm	450mm	380	1520
2	3 SPA. @ 290mm	1210mm	58 SPA. @ 450mm	530mm	383	1532
3	3 SPA. @ 290mm	1081mm	59 SPA. @ 450mm	350mm	386	1544
4	3 SPA. @ 290mm	1082mm	59 SPA. @ 450mm	490mm	387	1548
5	3 SPA. @ 290mm	1133mm	59 SPA. @ 450mm	580mm	391	1564

GIRDER DIMENSIONS

GIRDER	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	DIM. "F"	DIM. "G"	DIM. "H"	DIM. "I"	DIM. "J"	DIM. "K"	RADIUS
1	35.327m	27.229m	25.195m	18.536m	20.822m	27.053m	45.822m	36.197m	35.341m	36.802m	154.162m	393.440m
2	35.566m	27.414m	25.367m	18.662m	20.964m	27.235m	46.132m	36.443m	35.582m	37.051m	155.208m	396.120m
3	35.804m	27.599m	25.538m	18.788m	21.107m	27.416m	46.441m	36.690m	35.822m	37.299m	156.252m	398.800m
4	36.042m	27.785m	25.709m	18.915m	21.248m	27.598m	46.751m	36.936m	36.063m	37.547m	157.297m	401.480m
5	36.280m	27.971m	25.882m	19.040m	21.390m	27.780m	47.061m	37.183m	36.304m	37.795m	158.343m	404.160m

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/24/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 10+03.224 -L2RPDB-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-204
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 8/1/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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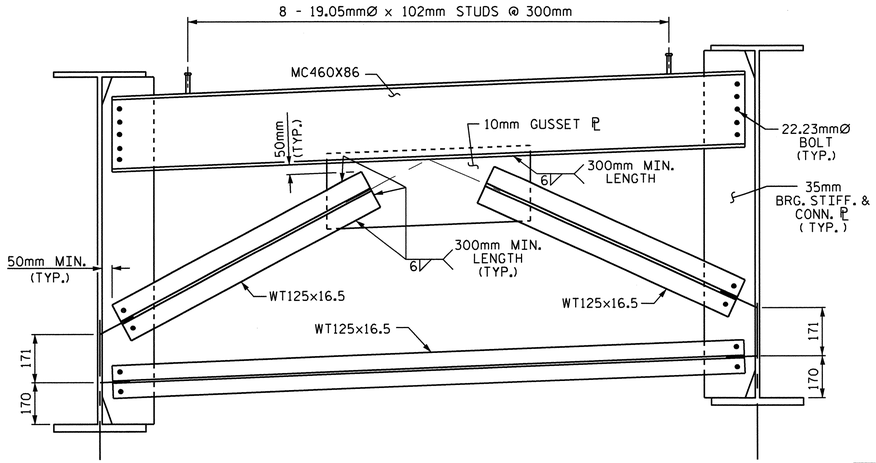
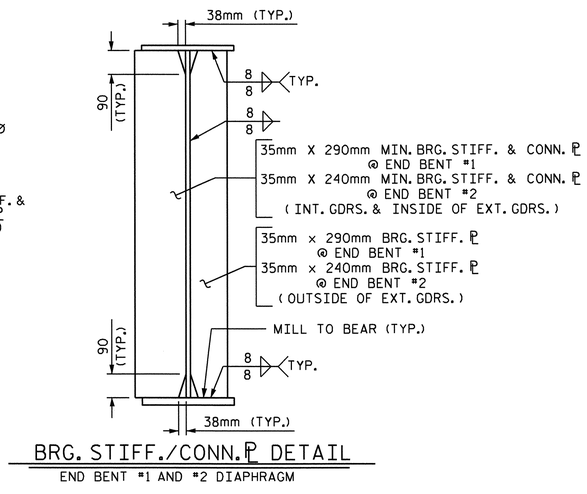
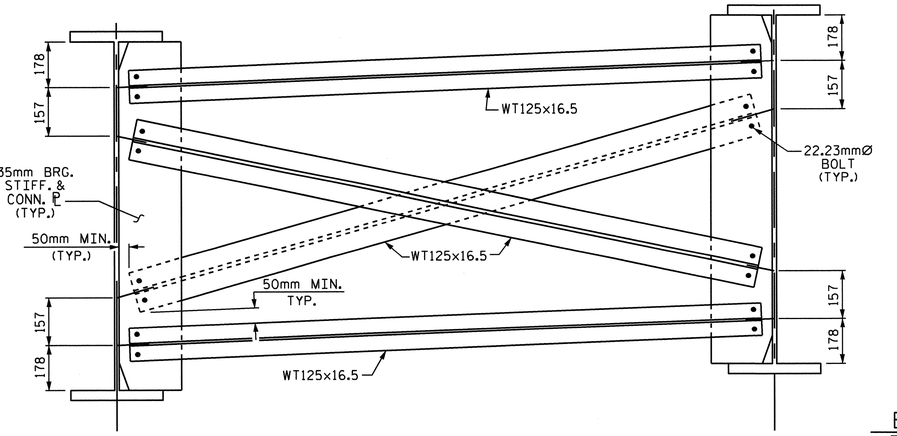


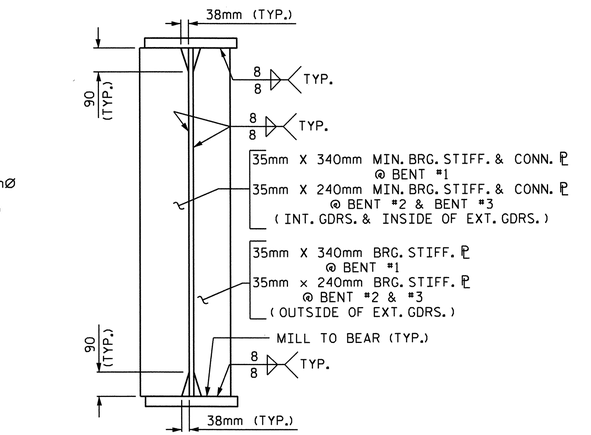
END BENT DIAPHRAGM
(D1)



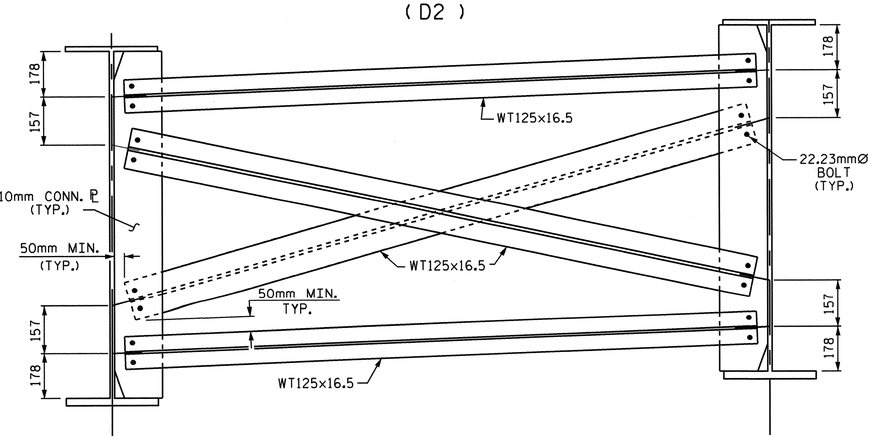
BRG. STIFF./CONN. PL DETAIL
END BENT #1 AND #2 DIAPHRAGM



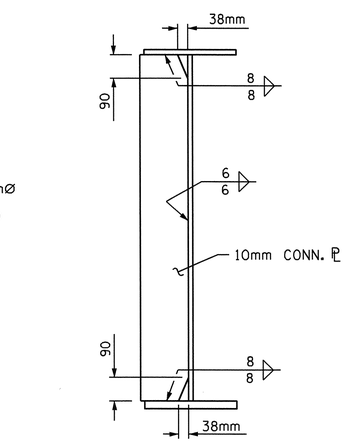
BENT DIAPHRAGM
(D2)



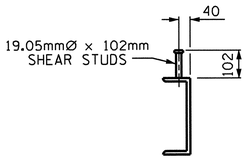
BRG. STIFF./CONN. PL DETAIL
BENT #1 THRU #3 DIAPHRAGM



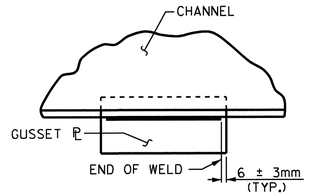
INTERMEDIATE DIAPHRAGM
(D3)



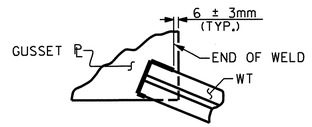
CONNECTOR PL DETAIL
INTERMEDIATE DIAPHRAGM



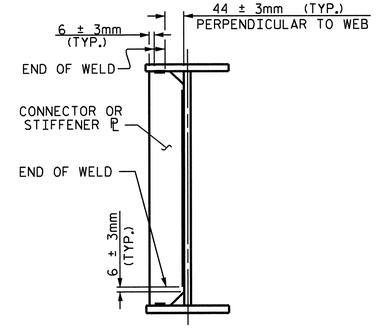
SHEAR STUD DETAILS



TYPICAL GUSSET PLATE CONNECTION



TYPICAL "TEE" TO GUSSET PLATE CONNECTIONS



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 10+03.224 -L2RPDB-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-205
1			3			TOTAL SHEETS
2			4			276

STR. #5

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
3/20/12

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

20-MAR-2012 12:10
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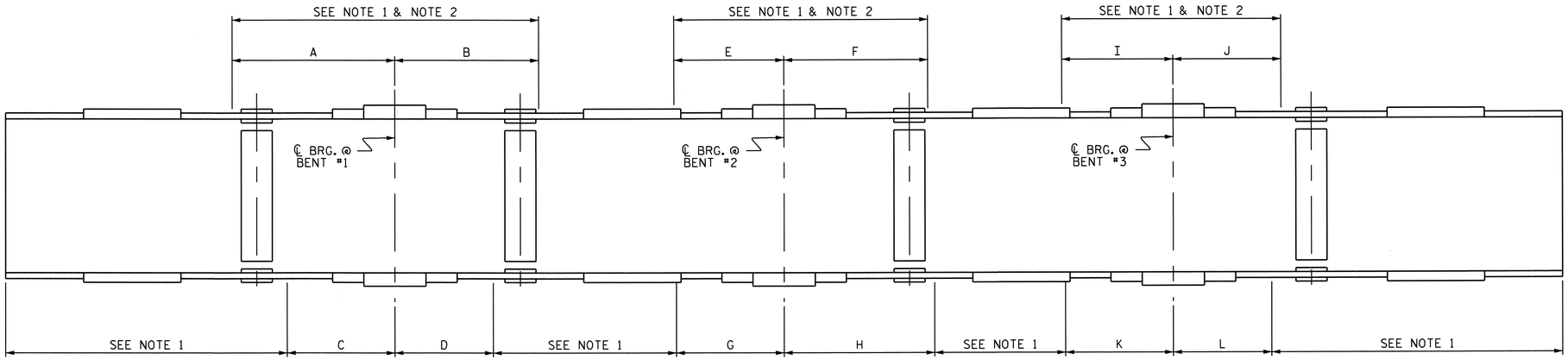
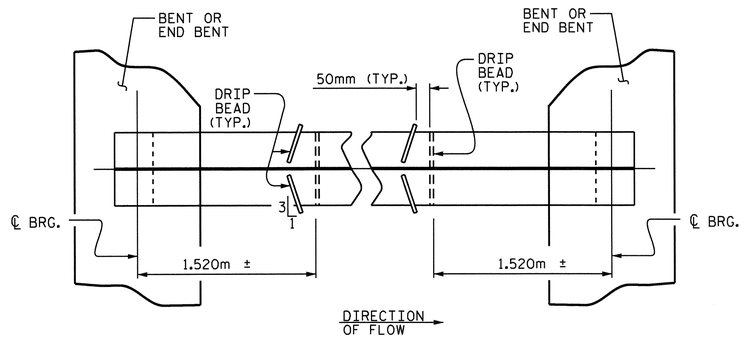
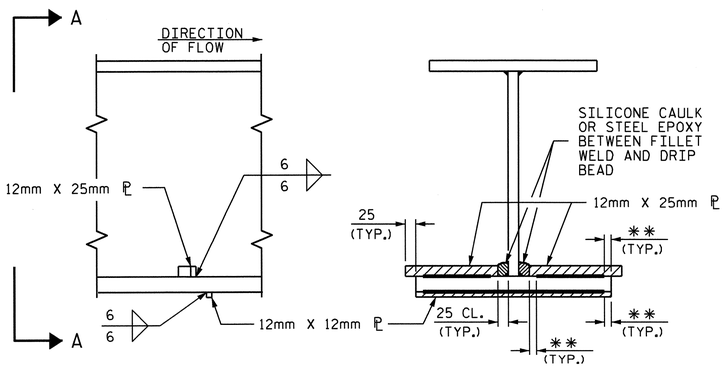
jpadams



DIMENSIONS												
GIRDERS	A	B	C	D	E	F	G	H	I	J	K	L
1	11.330m	15.680m	9.140m	12.430m	7.680m	7.010m	5.490m	4.860m	12.200m	8.940m	9.550m	8.090m
2	11.260m	15.810m	9.190m	12.640m	7.660m	6.920m	5.470m	4.830m	12.160m	8.990m	9.600m	8.120m
3	11.340m	18.070m	9.250m	12.830m	7.740m	6.950m	5.510m	4.840m	12.090m	9.060m	9.690m	8.180m
4	11.420m	18.330m	9.320m	13.040m	7.810m	6.950m	5.550m	4.830m	12.470m	9.120m	9.790m	8.250m
5	11.680m	21.790m	9.430m	13.180m	10.740m	7.110m	5.630m	4.900m	12.730m	9.240m	9.920m	8.350m



PART PLAN - BOTTOM FLANGE



SECTION

VIEW A-A

**SEE "WELD TERMINATION DETAILS", SHEET 2 OF 7.

DRIP BEAD DETAILS

CHARPY V-NOTCH TEST FOR GIRDERS

NOTE 1: CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALLS WITHIN THESE LIMITS, INCLUDING ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

NOTE 2: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 22.23mm DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 4.5 METERS OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 4.5 METERS OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 600mm MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 150mm MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 25mm IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

END OF BEAMS AND GIRDERS SHALL BE PLUMB.

FOR SHIPPING STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-206
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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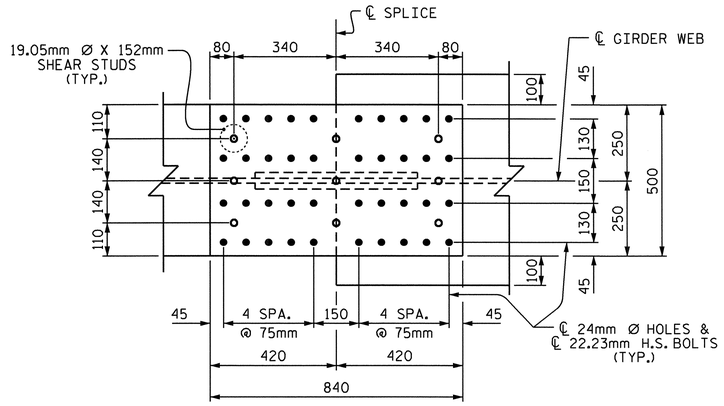
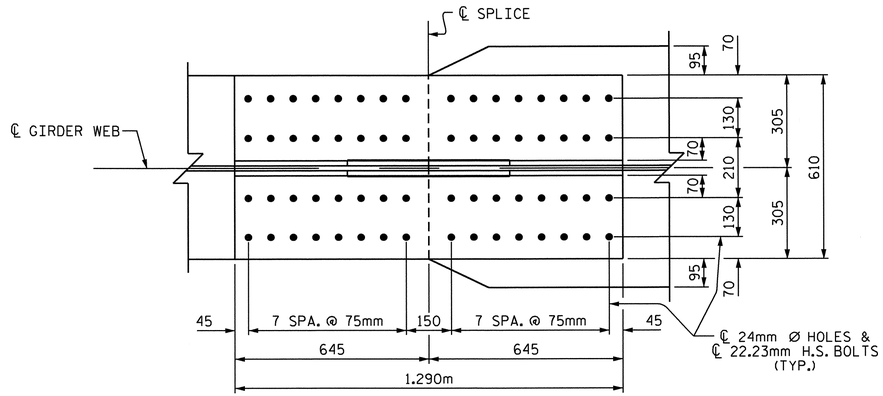
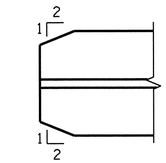


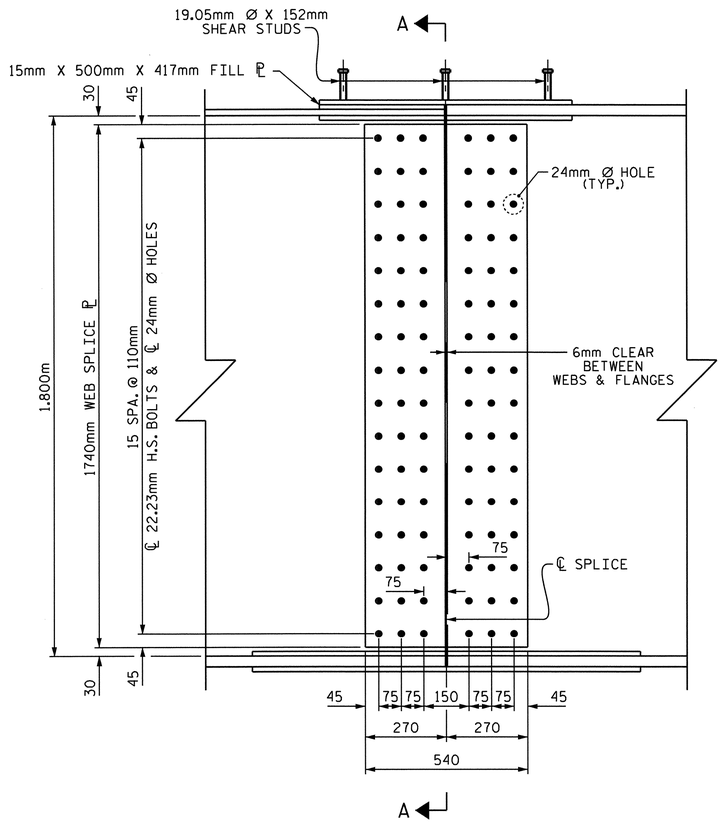
PLAN
TOP OF TOP FLANGE



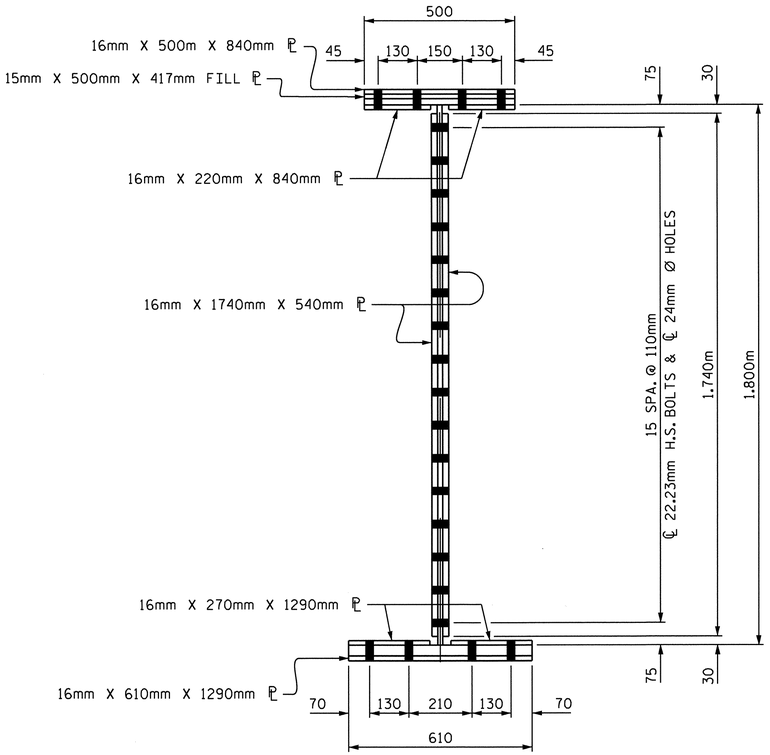
PLAN
TOP OF BOTTOM FLANGE



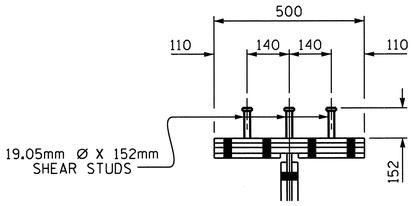
BOTTOM FLANGE CLIP DETAIL



ELEVATION



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS - TYPE I

FOR BOLTED FIELD SPLICE IN SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-207
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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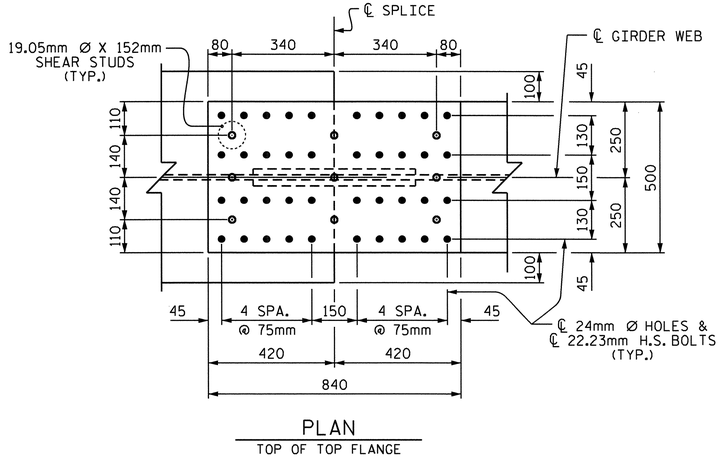
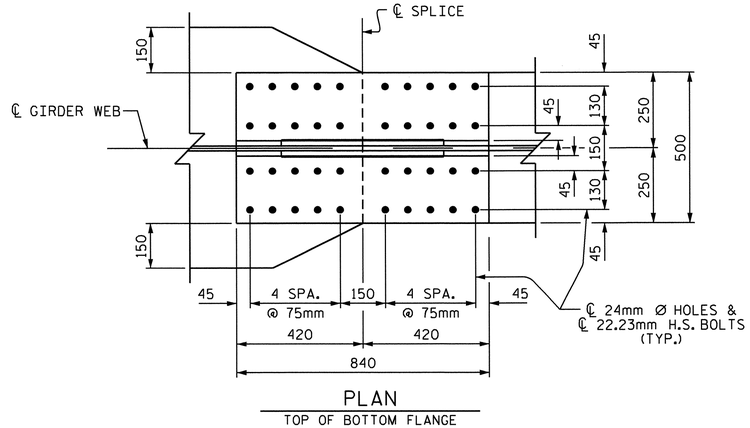
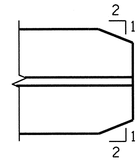


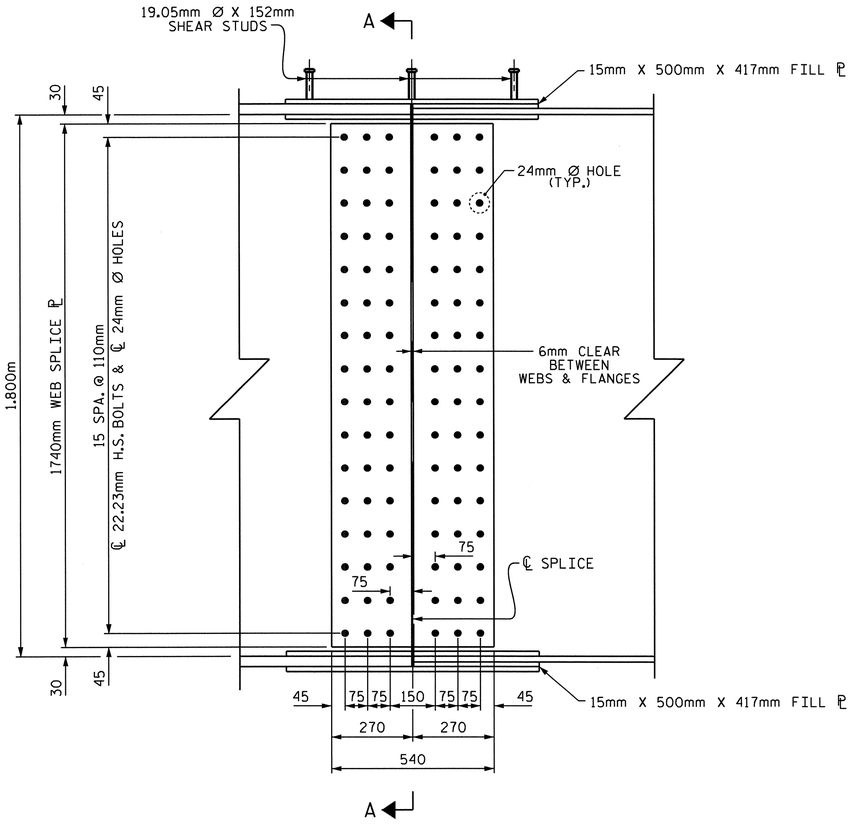
PLAN
TOP OF TOP FLANGE



PLAN
TOP OF BOTTOM FLANGE



BOTTOM FLANGE CLIP DETAIL



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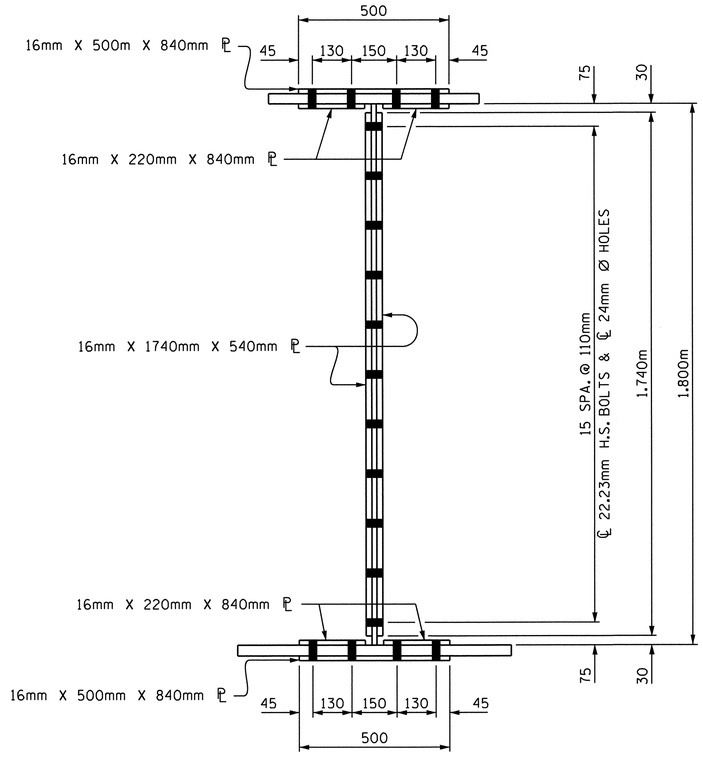
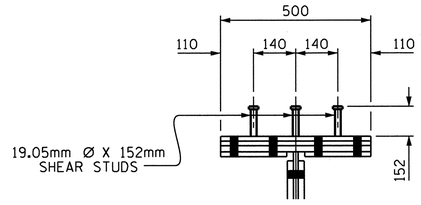


SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS - TYPE II

FOR BOLTED FIELD SPLICE IN SPAN B

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 5 OF 7

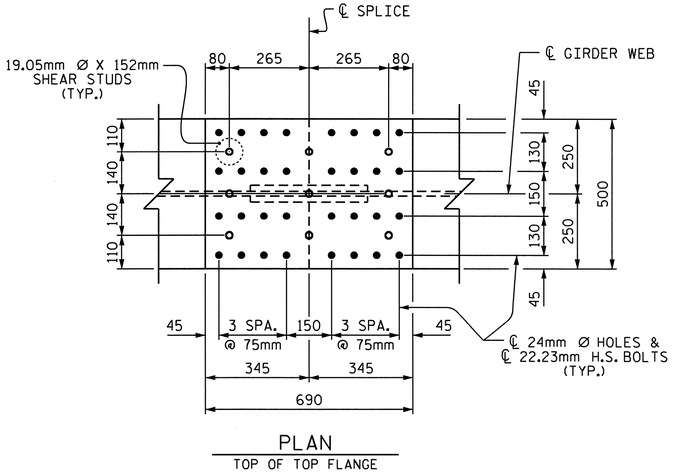
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

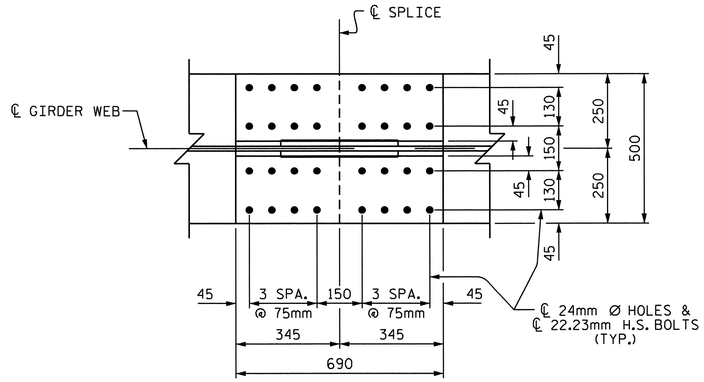
STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-208
1			3			TOTAL SHEETS
2			4			276

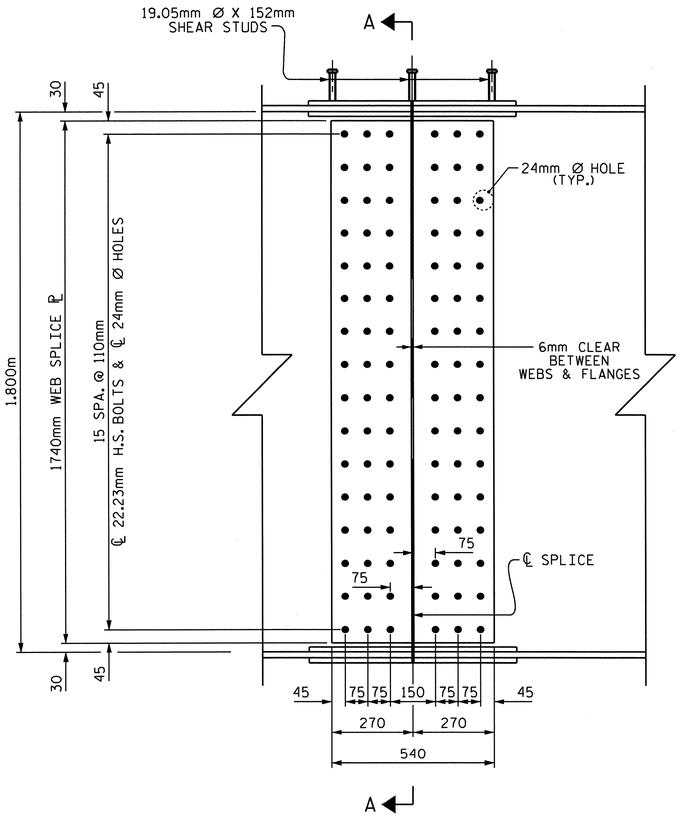
STR. #5



PLAN
TOP OF TOP FLANGE



PLAN
TOP OF BOTTOM FLANGE



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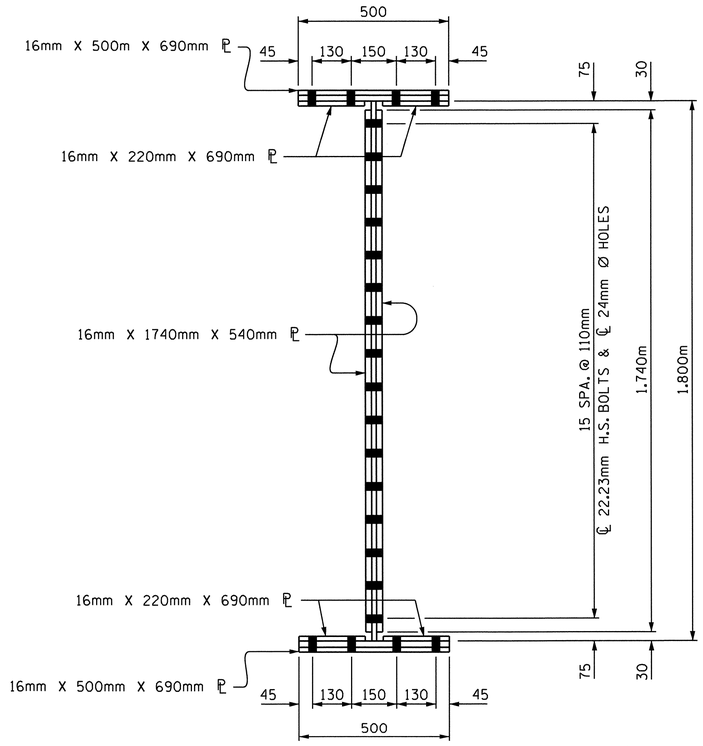
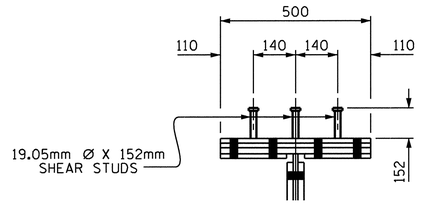


SECTION A-A



SHEAR STUD DETAIL FOR
TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS - TYPE III

FOR BOLTED FIELD SPLICE IN SPAN C

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

14-FEB-2012 07:32
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jpadams

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 6 OF 7

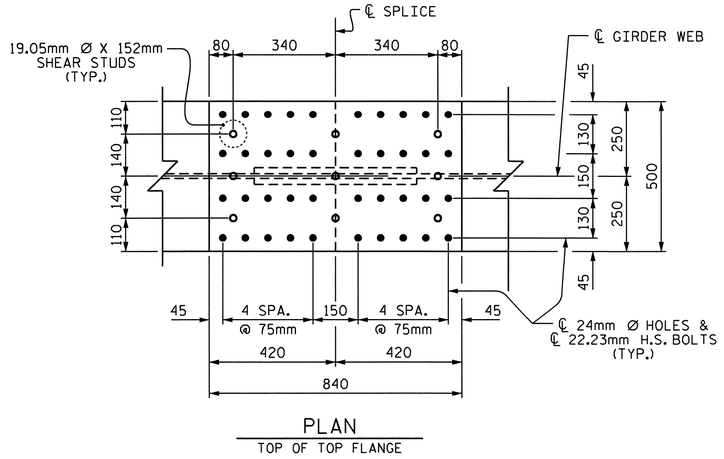
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

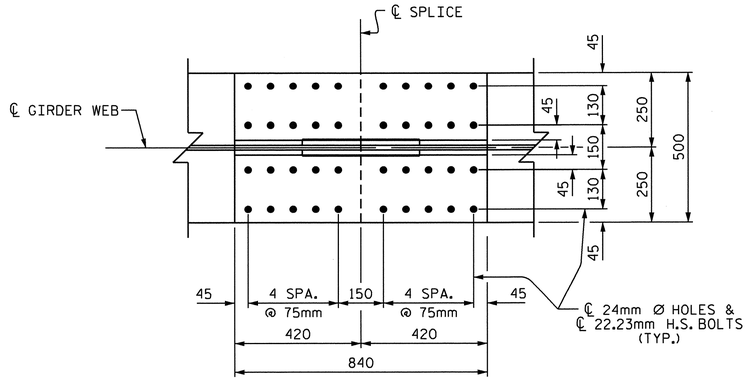
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-209
1			3			TOTAL SHEETS
2			4			276

STR. #5



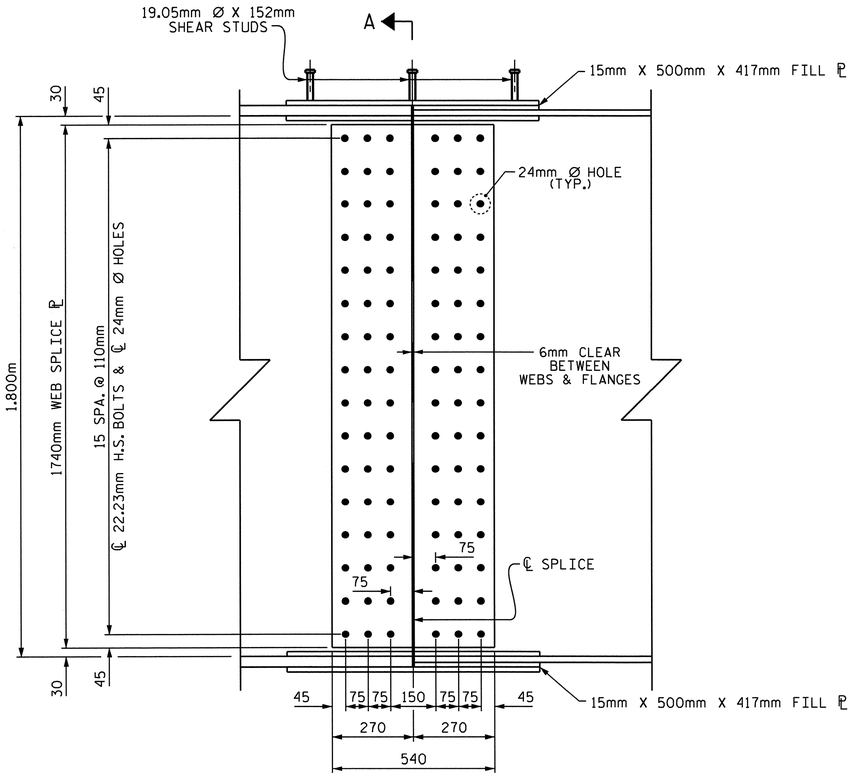
PLAN

TOP OF TOP FLANGE



PLAN

TOP OF BOTTOM FLANGE



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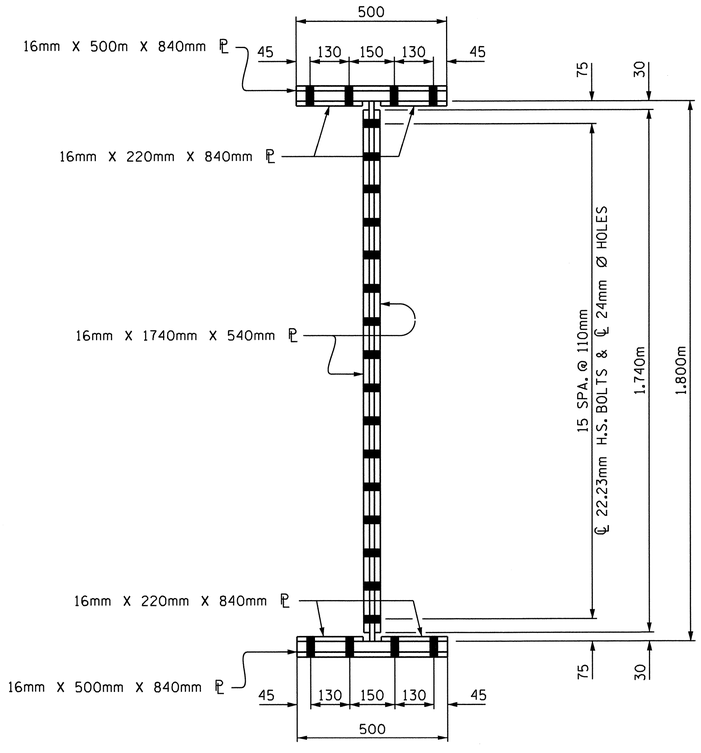
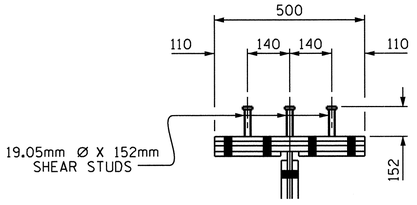


SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS - TYPE IV

FOR BOLTED FIELD SPLICE IN SPAN D

DRAWN BY : J.P. ADAMS DATE : 6/28/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-210
1			3			TOTAL SHEETS
2			4			276

STR. #5

DEAD LOAD DEFLECTION TABLE FOR GIRDER #1

	SPAN A																					SPAN B																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.004	-0.007	-0.011	-0.014	-0.016	-0.018	-0.020	-0.020	-0.021	-0.020	-0.019	-0.018	-0.016	-0.014	-0.011	-0.008	-0.006	-0.004	-0.002	0	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0
✱ DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.012	-0.023	-0.033	-0.042	-0.050	-0.056	-0.060	-0.063	-0.063	-0.062	-0.059	-0.054	-0.048	-0.041	-0.034	-0.026	-0.018	-0.011	-0.005	0	0.002	0.004	0.005	0.005	0.004	0.004	0.003	0.002	0.001	0	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001	0	0	0	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.005	-0.005	-0.005	-0.004	-0.003	-0.003	-0.002	-0.001	-0.001	0	0	0	0	0	0	0	0	0	0	0	-0.001	-0.001	-0.001	0	0	0	0	0	0	0
✱✱ TOTAL DEAD LOAD DEFLECTION	0	-0.017	-0.032	-0.047	-0.060	-0.070	-0.079	-0.085	-0.089	-0.090	-0.088	-0.083	-0.077	-0.069	-0.059	-0.048	-0.037	-0.026	-0.016	-0.008	0	0.003	0.005	0.006	0.006	0.005	0.005	0.004	0.002	0.001	0	-0.003	-0.004	-0.004	-0.003	-0.003	-0.001	0	0	0	0
VERTICAL CURVE ORDINATE	0	0.009	0.017	0.024	0.030	0.035	0.039	0.043	0.045	0.046	0.047	0.046	0.045	0.043	0.039	0.035	0.030	0.024	0.017	0.009	0	0.006	0.011	0.015	0.019	0.022	0.025	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.025	0.022	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	26	49	71	90	105	118	128	134	136	135	129	122	112	98	83	67	50	33	17	0	3	6	9	13	17	20	23	26	28	30	32	32	31	28	25	20	15	11	6	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #1

	SPAN C																					SPAN D																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	-0.001	0	0	0	0	-0.001	-0.001	-0.002	-0.003	-0.004	-0.005	-0.007	-0.007	-0.008	-0.008	-0.009	-0.009	-0.008	-0.008	-0.007	-0.006	-0.005	-0.003	-0.002	0
✱ DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.001	-0.003	-0.004	-0.006	-0.007	-0.009	-0.010	-0.010	-0.010	-0.010	-0.009	-0.008	-0.006	-0.005	-0.003	-0.001	0	0.001	0.001	0	-0.002	-0.005	-0.008	-0.012	-0.016	-0.020	-0.024	-0.027	-0.030	-0.032	-0.032	-0.032	-0.031	-0.029	-0.026	-0.022	-0.018	-0.012	-0.006	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0	0	0	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.001	-0.001	0
✱✱ TOTAL DEAD LOAD DEFLECTION	0	-0.001	-0.004	-0.005	-0.009	-0.010	-0.012	-0.014	-0.014	-0.014	-0.014	-0.013	-0.011	-0.009	-0.007	-0.004	-0.002	0	0.001	0.001	0	-0.003	-0.007	-0.011	-0.016	-0.022	-0.027	-0.033	-0.037	-0.041	-0.043	-0.044	-0.044	-0.042	-0.040	-0.035	-0.030	-0.025	-0.016	-0.009	0
VERTICAL CURVE ORDINATE	0	0.005	0.010	0.014	0.018	0.021	0.024	0.026	0.027	0.028	0.028	0.028	0.027	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0	0.006	0.011	0.015	0.019	0.023	0.025	0.027	0.029	0.030	0.030	0.030	0.029	0.027	0.025	0.023	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	6	14	19	27	31	36	40	41	42	42	41	38	35	31	25	20	14	9	4	0	9	18	26	35	45	52	60	66	71	73	74	73	69	65	58	49	40	27	15	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #2

	SPAN A																					SPAN B																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.004	-0.008	-0.012	-0.015	-0.018	-0.020	-0.022	-0.022	-0.023	-0.022	-0.021	-0.019	-0.017	-0.015	-0.012	-0.009	-0.007	-0.004	-0.002	0	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0	0	0	-0.001	-0.001	-0.001	0	0	0	0	0	0
✱ DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.013	-0.025	-0.037	-0.046	-0.055	-0.061	-0.066	-0.069	-0.069	-0.068	-0.064	-0.059	-0.053	-0.045	-0.037	-0.028	-0.020	-0.012	-0.005	0	0.003	0.005	0.006	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006	-0.006	-0.005	-0.005	-0.004	-0.004	-0.003	-0.002	-0.001	-0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
✱✱ TOTAL DEAD LOAD DEFLECTION	0	-0.018	-0.035	-0.052	-0.065	-0.078	-0.086	-0.094	-0.097	-0.098	-0.096	-0.091	-0.083	-0.075	-0.064	-0.053	-0.040	-0.029	-0.017	-0.008	0	0.004	0.006	0.008	0.008	0.007	0.006	0.005	0.004	0.002	0.001	0	-0.002	-0.002	-0.002	-0.001	-0.001	0	0	0	0
VERTICAL CURVE ORDINATE	0	0.009	0.017	0.024	0.030	0.035	0.039	0.043	0.045	0.046	0.047	0.046	0.045	0.043	0.039	0.035	0.030	0.024	0.017	0.009	0	0.006	0.011	0.015	0.019	0.022	0.025	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.025	0.022	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	27	52	76	95	113	125	137	142	144	143	137	128	118	103	88	70	53	34	17	0	2	5	7	11	15	19	22	24	27	29	29	30	29	27	23	20	15	11	6	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #2

	SPAN C																					SPAN D																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0	0	0	0	0	-0.001	-0.001	-0.002	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.009	-0.009	-0.009	-0.009	-0.009	-0.008	-0.007	-0.006	-0.005	-0.003	-0.002	0
✱ DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.001	-0.003	-0.004	-0.006	-0.008	-0.009	-0.010	-0.011	-0.011	-0.010	-0.009	-0.008	-0.006	-0.005	-0.003	-0.001	0	0.001	0.001	0	-0.002	-0.005	-0.009	-0.013	-0.017	-0.022	-0.026	-0.029	-0.032	-0.034	-0.035	-0.035	-0.034	-0.031	-0.028	-0.024	-0.019	-0.013	-0.007	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0	0	0	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0
✱✱ TOTAL DEAD LOAD DEFLECTION	0	-0.001	-0.004	-0.006	-0.009	-0.011	-0.013	-0.014	-0.015	-0.015	-0.014	-0.013	-0.011	-0.009	-0.007	-0.004	-0.001	0	0.001	0.001	0	-0.003	-0.007	-0.012	-0.018	-0.024	-0.030	-0.036	-0.040	-0.044	-0.046	-0.047	-0.047	-0.046	-0.042	-0.038	-0.032	-0.026	-0.017	-0.010	0
VERTICAL CURVE ORDINATE	0	0.005	0.010	0.014	0.018	0.021	0.024	0.026	0.027	0.028	0.028	0.028	0.027	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0	0.006	0.011	0.015	0.019	0.023	0.025	0.027	0.029	0.030	0.030	0.030	0.029	0.027	0.025	0.023	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	6	14	20	27	32	37	40	42	43	42	41	38	35	31	25	19	14	9	4	0	9	18	27	37	47	55	63	69	74	76	77	76	73	67	61	51	41	28	16	0

✱ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN METERS, EXCEPT " REQUIRED CAMBER ", WHICH IS GIVEN IN MILLIMETERS.

SIGN CONVENTION FOR DEAD LOAD DEFLECTION + 0 -

✱✱ MODIFIED TO ACCOUNT FOR CAMBER LOSS DUE TO HEAT-CURVING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 10+03.224 -L2RPDB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

NORTH CAROLINA PROFESSIONAL SEAL 23871 ENGINEER VIMAL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-211
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/18/11
CHECKED BY : K.D. LAYNE DATE : 9/11

14-FEB-2012 07:32
R:\Structures\chunt\STR #5 -L2 RPDB-\plans\R-2554A_SD_S*.dgn
jpadams

DEAD LOAD DEFLECTION TABLE FOR GIRDER #3

	SPAN A																				SPAN B																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.005	-0.009	-0.013	-0.016	-0.019	-0.022	-0.023	-0.024	-0.025	-0.024	-0.023	-0.021	-0.019	-0.016	-0.013	-0.010	-0.007	-0.004	-0.002	0	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0	0	0	0	0	0	0	0	0	0	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.014	-0.027	-0.040	-0.050	-0.060	-0.067	-0.072	-0.075	-0.075	-0.074	-0.070	-0.065	-0.058	-0.049	-0.040	-0.031	-0.022	-0.013	-0.006	0	0.003	0.005	0.006	0.007	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0	0	-0.001	0	0	0	0.001	0	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.006	-0.007	-0.007	-0.007	-0.006	-0.006	-0.005	-0.005	-0.004	-0.003	-0.002	-0.001	-0.001	0	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.020	-0.038	-0.056	-0.070	-0.084	-0.095	-0.101	-0.106	-0.107	-0.105	-0.099	-0.092	-0.082	-0.070	-0.057	-0.044	-0.031	-0.018	-0.009	0	0.004	0.007	0.009	0.009	0.009	0.008	0.006	0.005	0.004	0.002	0.001	0	0	-0.001	0	0	0	0.001	0	0
VERTICAL CURVE ORDINATE	0	0.009	0.017	0.024	0.030	0.035	0.039	0.043	0.045	0.046	0.047	0.046	0.045	0.043	0.039	0.035	0.030	0.024	0.017	0.009	0	0.006	0.011	0.015	0.019	0.022	0.025	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.025	0.022	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	29	55	80	100	119	134	144	151	153	152	145	137	125	109	92	74	55	35	18	0	2	4	6	10	13	17	21	23	25	28	28	28	27	26	22	19	15	10	6	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #3

	SPAN C																				SPAN D																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0	0	0	0	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.010	-0.010	-0.010	-0.009	-0.008	-0.007	-0.005	-0.004	-0.002	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.001	-0.003	-0.005	-0.007	-0.009	-0.010	-0.011	-0.011	-0.011	-0.011	-0.010	-0.008	-0.007	-0.005	-0.003	-0.001	0	0.001	0.001	0	-0.002	-0.005	-0.010	-0.014	-0.018	-0.023	-0.027	-0.031	-0.034	-0.036	-0.037	-0.037	-0.036	-0.033	-0.030	-0.025	-0.020	-0.014	-0.007	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0	0	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.001	-0.004	-0.007	-0.010	-0.012	-0.014	-0.015	-0.015	-0.015	-0.015	-0.014	-0.011	-0.010	-0.007	-0.005	-0.001	0	0.001	0.001	0	-0.003	-0.008	-0.014	-0.019	-0.025	-0.031	-0.037	-0.042	-0.046	-0.049	-0.050	-0.050	-0.049	-0.045	-0.041	-0.034	-0.027	-0.019	-0.010	0
VERTICAL CURVE ORDINATE	0	0.005	0.010	0.014	0.018	0.021	0.024	0.026	0.027	0.028	0.028	0.028	0.027	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0	0.006	0.011	0.015	0.019	0.023	0.025	0.027	0.029	0.030	0.030	0.030	0.029	0.027	0.025	0.023	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	6	14	21	28	33	38	41	42	43	43	42	38	36	31	26	19	14	9	4	0	9	19	29	38	48	56	64	71	76	79	80	79	76	70	64	53	42	30	16	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #4

	SPAN A																				SPAN B																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.005	-0.010	-0.014	-0.018	-0.021	-0.024	-0.025	-0.026	-0.027	-0.026	-0.025	-0.023	-0.020	-0.017	-0.014	-0.011	-0.008	-0.005	-0.002	0	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0	0	0	0	0	0	0	0	0	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.015	-0.029	-0.043	-0.055	-0.065	-0.072	-0.078	-0.081	-0.082	-0.080	-0.076	-0.070	-0.062	-0.053	-0.044	-0.033	-0.024	-0.015	-0.006	0	0.003	0.006	0.007	0.008	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0	0	0	0.001	0.001	0.001	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.003	-0.004	-0.005	-0.006	-0.006	-0.007	-0.007	-0.007	-0.007	-0.007	-0.006	-0.006	-0.005	-0.004	-0.003	-0.002	-0.001	-0.001	0	0	0.001	0.001	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.021	-0.042	-0.061	-0.078	-0.092	-0.102	-0.110	-0.114	-0.116	-0.113	-0.108	-0.099	-0.088	-0.075	-0.062	-0.047	-0.034	-0.021	-0.009	0	0.004	0.009	0.010	0.011	0.010	0.009	0.008	0.006	0.005	0.004	0.002	0.001	0.001	0	0	0	0.001	0.001	0.001	0
VERTICAL CURVE ORDINATE	0	0.009	0.017	0.024	0.030	0.035	0.039	0.043	0.045	0.046	0.047	0.046	0.045	0.043	0.039	0.035	0.030	0.024	0.017	0.009	0	0.006	0.011	0.015	0.019	0.022	0.025	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.025	0.022	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	30	59	85	108	127	141	153	159	162	160	154	144	131	114	97	77	58	38	18	0	2	2	5	8	12	16	19	22	24	26	27	27	26	25	22	19	14	10	5	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #4

	SPAN C																				SPAN D																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0	0	0	0	0	-0.001	-0.002	-0.003	-0.004	-0.005	-0.007	-0.008	-0.009	-0.010	-0.010	-0.010	-0.010	-0.010	-0.009	-0.008	-0.007	-0.006	-0.004	-0.002	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.001	-0.003	-0.005	-0.007	-0.009	-0.010	-0.011	-0.012	-0.012	-0.011	-0.010	-0.009	-0.007	-0.005	-0.003	-0.001	0	0.001	0.001	0	-0.003	-0.006	-0.010	-0.015	-0.020	-0.024	-0.029	-0.033	-0.036	-0.038	-0.039	-0.039	-0.038	-0.035	-0.032	-0.027	-0.021	-0.015	-0.008	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0	0	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.001	-0.004	-0.007	-0.010	-0.012	-0.014	-0.015	-0.016	-0.016	-0.015	-0.014	-0.012	-0.010	-0.007	-0.005	-0.001	0	0.001	0.001	0	-0.004	-0.009	-0.014	-0.021	-0.027	-0.033	-0.040	-0.045	-0.049	-0.052	-0.053	-0.053	-0.052	-0.047	-0.043	-0.036	-0.029	-0.020	-0.011	0
VERTICAL CURVE ORDINATE	0	0.005	0.010	0.014	0.018	0.021	0.024	0.026	0.027	0.028	0.028	0.028	0.027	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0	0.006	0.011	0.015	0.019	0.023	0.025	0.027	0.029	0.030	0.030	0.030	0.029	0.027	0.025	0.023	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	6	14	21	28	33	38	41	43	44	43	42	39	36	31	26	19	14	9	4	0	10	20	29	40	50	58	67	74	79	82	83	82	79	72	66	55	44	31	17	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN METERS, EXCEPT " REQUIRED CAMBER ", WHICH IS GIVEN IN MILLIMETERS.

SIGN CONVENTION FOR DEAD LOAD DEFLECTION + / 0 / -

** MODIFIED TO ACCOUNT FOR CAMBER LOSS DUE TO HEAT-CURVING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 10+03.224 -L2RPDB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-212
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 7/18/11
CHECKED BY : K.D. LAYNE DATE : 9/11

14-FEB-2012 07:32
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jpadams

STR. #5

DEAD LOAD DEFLECTION TABLE FOR GIRDER #5

	SPAN A																				SPAN B																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.005	-0.010	-0.015	-0.019	-0.023	-0.025	-0.027	-0.028	-0.029	-0.028	-0.027	-0.025	-0.022	-0.019	-0.015	-0.012	-0.008	-0.005	-0.002	0	0.001	0.002	0.002	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0	0	0	0	0	0	0	0	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.017	-0.032	-0.046	-0.059	-0.070	-0.078	-0.084	-0.087	-0.088	-0.086	-0.082	-0.075	-0.067	-0.057	-0.047	-0.036	-0.025	-0.016	-0.007	0	0.004	0.006	0.008	0.009	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.008	-0.008	-0.008	-0.008	-0.007	-0.006	-0.005	-0.005	-0.004	-0.003	-0.002	-0.001	0	0	0.001	0.001	0.001	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.023	-0.045	-0.065	-0.083	-0.099	-0.110	-0.119	-0.123	-0.125	-0.122	-0.117	-0.107	-0.095	-0.081	-0.067	-0.052	-0.036	-0.023	-0.010	0	0.005	0.009	0.011	0.013	0.013	0.010	0.009	0.008	0.006	0.005	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0
VERTICAL CURVE ORDINATE	0	0.009	0.017	0.024	0.030	0.035	0.039	0.043	0.045	0.046	0.047	0.046	0.045	0.043	0.039	0.035	0.030	0.024	0.017	0.009	0	0.006	0.011	0.015	0.019	0.022	0.025	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.025	0.022	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	32	62	89	113	134	149	162	168	171	169	163	152	138	120	102	82	60	40	19	0	1	2	4	6	9	15	18	20	23	25	25	26	26	24	21	18	14	10	5	0

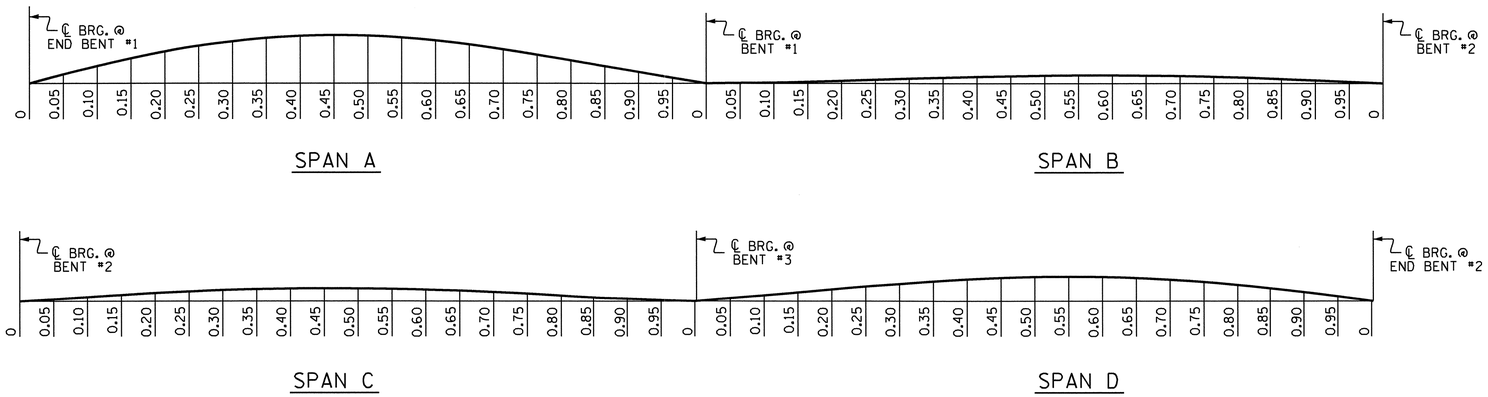
DEAD LOAD DEFLECTION TABLE FOR GIRDER #5

	SPAN C																				SPAN D																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	0	0	0	0	0	-0.001	-0.002	-0.003	-0.004	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.011	-0.011	-0.011	-0.010	-0.009	-0.008	-0.006	-0.004	-0.002	0
* DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.002	-0.003	-0.005	-0.008	-0.010	-0.011	-0.012	-0.012	-0.012	-0.012	-0.011	-0.009	-0.007	-0.005	-0.003	-0.001	0	0.001	0.001	0	-0.003	-0.006	-0.011	-0.016	-0.021	-0.026	-0.031	-0.035	-0.038	-0.040	-0.042	-0.042	-0.040	-0.038	-0.034	-0.029	-0.022	-0.016	-0.008	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0	0	0	0	0	0	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.002	-0.001	-0.001	0
** TOTAL DEAD LOAD DEFLECTION	0	-0.002	-0.004	-0.008	-0.011	-0.014	-0.015	-0.016	-0.016	-0.016	-0.016	-0.015	-0.013	-0.010	-0.008	-0.005	-0.001	0	0.001	0.001	0	-0.004	-0.009	-0.015	-0.022	-0.029	-0.036	-0.042	-0.047	-0.052	-0.055	-0.057	-0.057	-0.055	-0.052	-0.046	-0.040	-0.030	-0.021	-0.011	0
VERTICAL CURVE ORDINATE	0	0.005	0.010	0.014	0.018	0.021	0.024	0.026	0.027	0.028	0.028	0.028	0.027	0.026	0.024	0.021	0.018	0.014	0.010	0.005	0	0.006	0.011	0.015	0.019	0.023	0.025	0.027	0.029	0.030	0.030	0.030	0.029	0.027	0.025	0.023	0.019	0.015	0.011	0.006	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	7	14	22	29	35	39	42	43	44	44	43	40	36	32	26	19	14	9	4	0	10	20	30	41	52	61	69	76	82	85	87	86	82	77	69	59	45	32	17	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN METERS, EXCEPT " REQUIRED CAMBER ", WHICH IS GIVEN IN MILLIMETERS.

SIGN CONVENTION FOR DEAD LOAD DEFLECTION —+0-

** MODIFIED TO ACCOUNT FOR CAMBER LOSS DUE TO HEAT-CURVING



SCHEMATIC CAMBER ORDINATES

SLOPE FOR THE ZERO CAMBER BASE LINE VARIES

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 10+03.224 -L2RPDB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-213
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/18/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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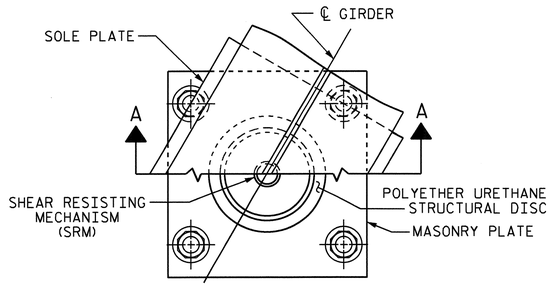
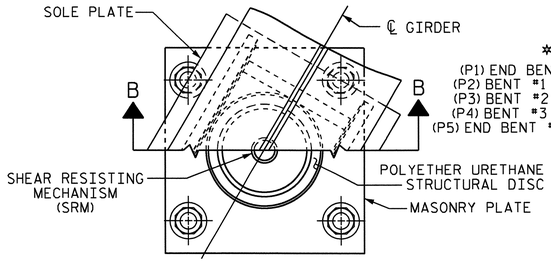


CUT-AWAY PLAN



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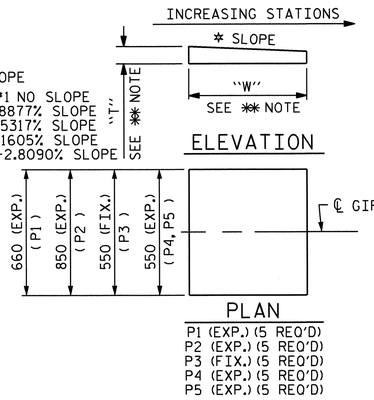


✻ SLOPE
(P1) END BENT #1 NO SLOPE
(P2) BENT #1 -0.8877% SLOPE
(P3) BENT #2 -1.5317% SLOPE
(P4) BENT #3 -2.1605% SLOPE
(P5) END BENT #2 -2.8090% SLOPE

ELEVATION

PLAN

P1 (EXP.) (5 REQ'D)
P2 (EXP.) (5 REQ'D)
P3 (FIX.) (5 REQ'D)
P4 (EXP.) (5 REQ'D)
P5 (EXP.) (5 REQ'D)

✻✻ NOTE:
DIMENSIONS ''W'' AND ''T'' ARE TO BE DETERMINED BY THE MANUFACTURER.

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F TEMPERATURES ABOVE THIS MAY DAMAGE THE PTFE OR ELASTOMER.

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED. THEY SHALL BE GROUTED IN PLACE AS SHOWN.

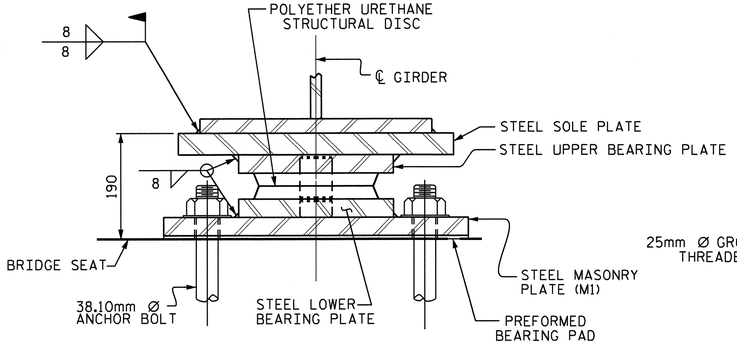
THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO BEAM FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

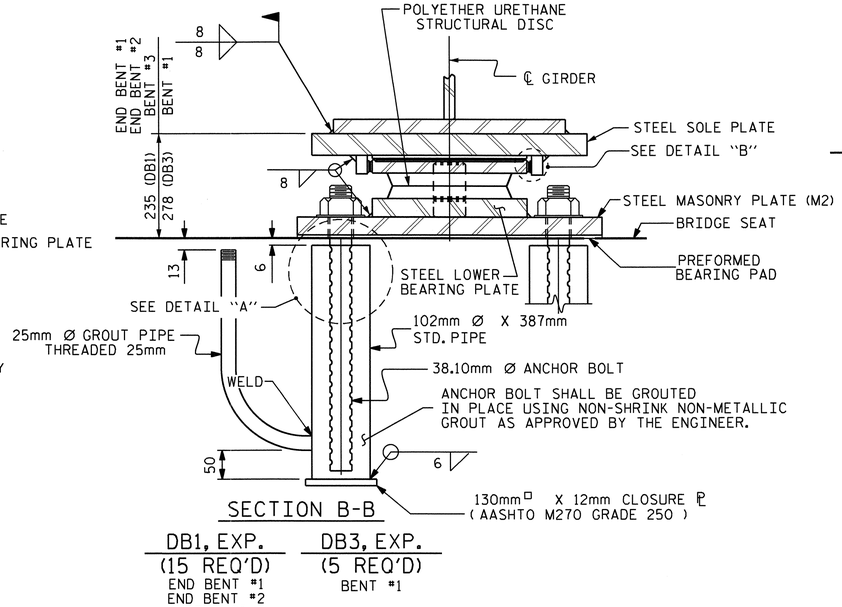
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIANS.



SECTION A-A

DB2, FIXED
(5 REQ'D)

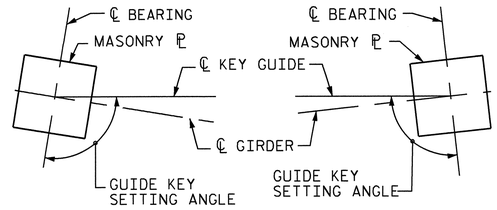


SECTION B-B

DB1, EXP.
(15 REQ'D)
END BENT #1
END BENT #2
BENT #3

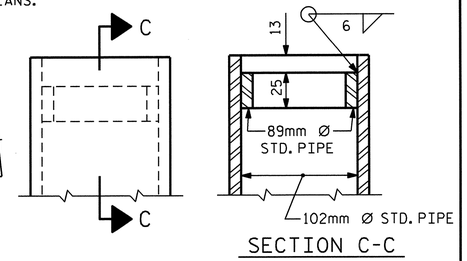
DB3, EXP.
(5 REQ'D)
BENT #1

SOLE PLATE DETAILS



@ END BENT #1 & BENT #1

@ BENT #3 & END BENT #2

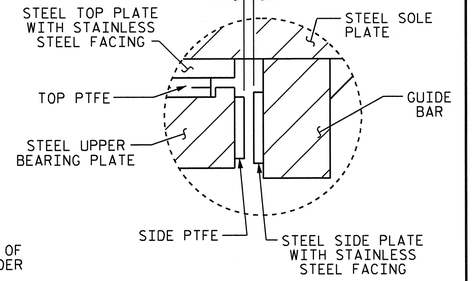


SECTION C-C

DETAIL ''A''

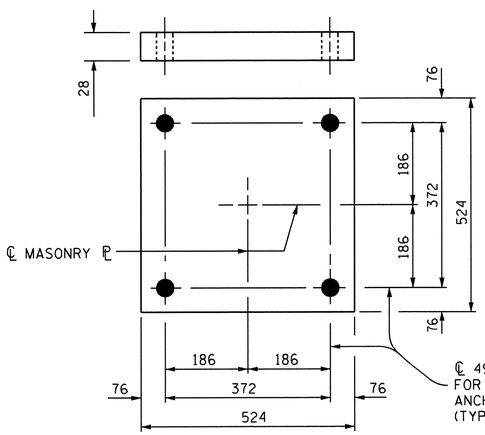
GUIDE KEY SETTING ANGLES

END BENT #1	95°-56'-48"
BENT #1	92°-38'-08"
BENT #3	87°-25'-36"
END BENT #2	84°-46'-21"

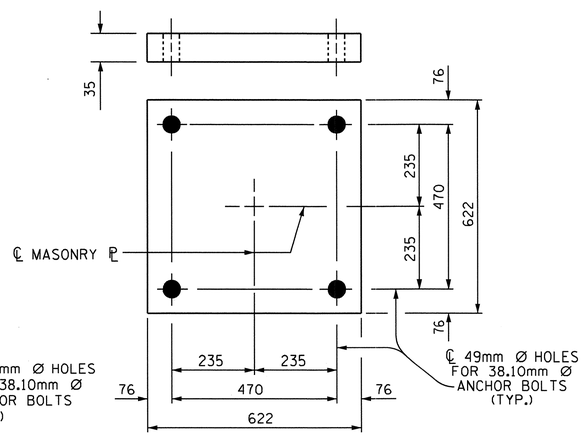


DETAIL ''B''

DISC BEARING DETAILS



PLAN
M1 (5 REQ'D)
BENT #2



PLAN
M2 (20 REQ'D)
END BENT #1
END BENT #2
BENT #1
BENT #3

MASONRY PLATE DETAILS

TABLE FOR PLATE SETTING DATA

(EXPANSION DISC BEARINGS)

TEMPERATURE AT TIME OF SETTING	0° C	16° C	32° C	✻
@ END BENT #1	-21	0	21	-12
@ BENT #1	-9	0	9	-1
@ BENT #3	-9	0	9	-2
@ END BENT #2	-18	0	18	-7

✻ CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

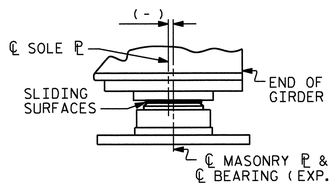


TABLE FOR UNFACTORED LOADS AND MOVEMENT

BEARING	LOCATION	VERTICAL LOAD (kN)			LATERAL LOAD (kN)	TOTAL MOVEMENT (mm)
		DEAD	LIVE	TOTAL		
DB1 (EXP.)	END BENT #1	628.7	375.3	1004.0	125.74	71
DB3 (EXP.)	BENT #1	1696.7	659.9	2356.6	339.34	31
DB2 (FIXED)	BENT #2	887.9	550.0	1437.9	177.58	0
DB1 (EXP.)	BENT #3	1380.2	593.0	1973.2	276.04	30
DB1 (EXP.)	END BENT #2	439.9	367.6	807.5	87.98	62

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER KAMAL A. PATEL
3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DISC BEARING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-214
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 6/27/11
CHECKED BY : K.D. LAYNE DATE : 9/11

20-MAR-2012 12:09
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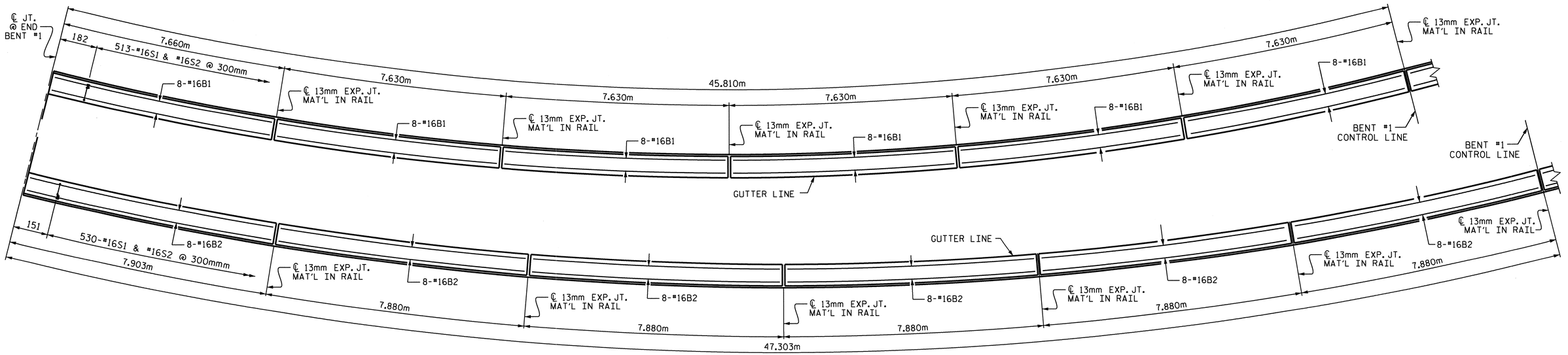
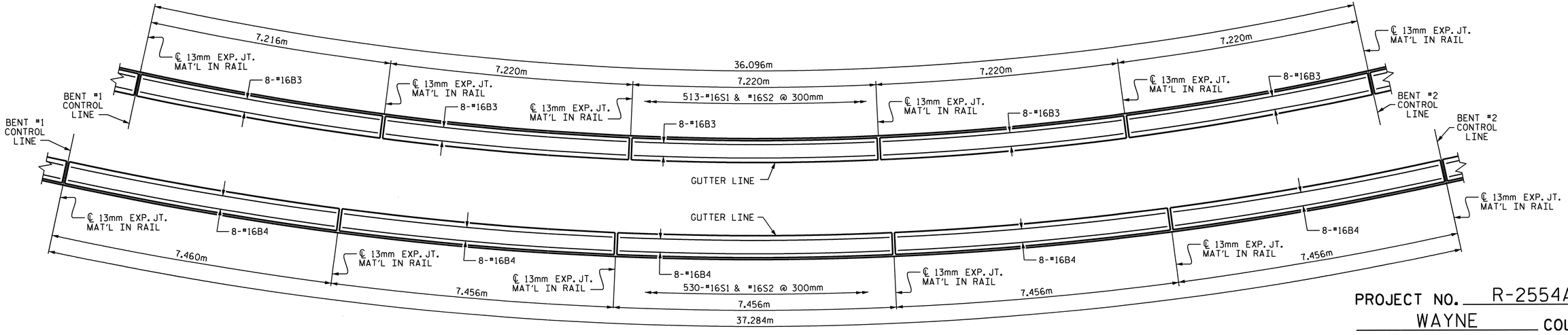


SPAN A



SPAN B

NOTE: DIMENSIONS ARE MEASURED ALONG OUTSIDE EDGE OF BARRIER RAIL.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-215
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/18/11
CHECKED BY : K.D. LAYNE DATE : 9/11

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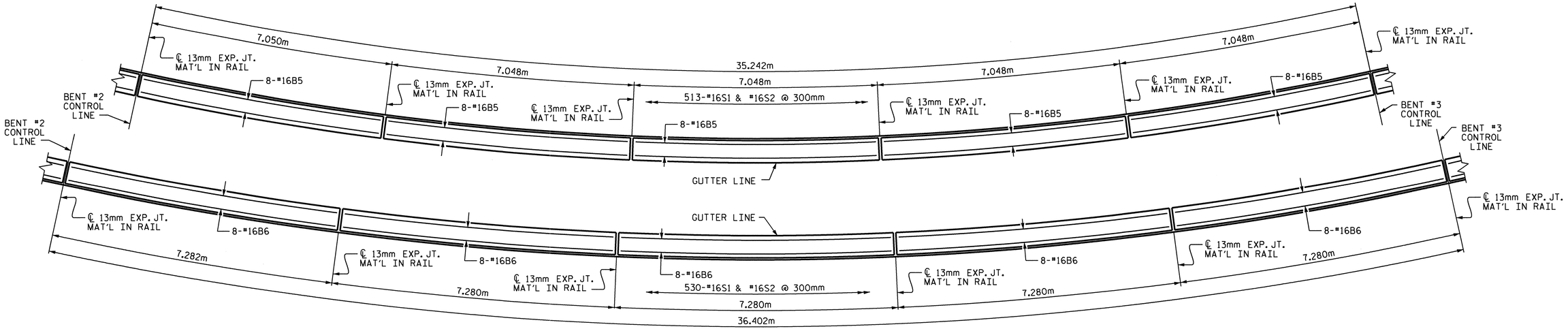
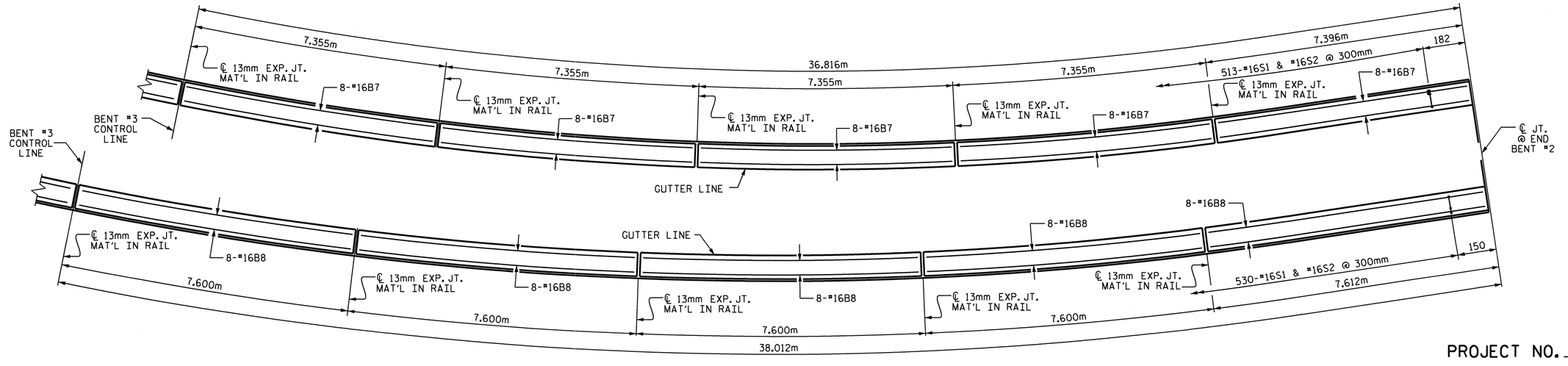


SPAN C



SPAN D

NOTE: DIMENSIONS ARE MEASURED ALONG OUTSIDE EDGE OF BARRIER RAIL.

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-216
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/18/11
CHECKED BY : K.D. LAYNE DATE : 9/11

14-FEB-2012 07:31
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jpadams

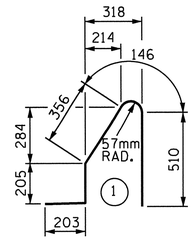
NOTES

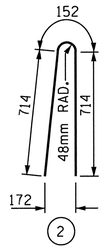
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 12mm 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. THE 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 6.1m IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 3.5m IN LENGTH.

BAR TYPES





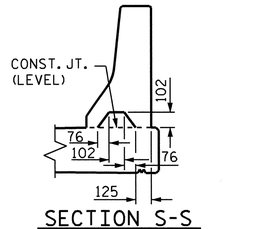
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

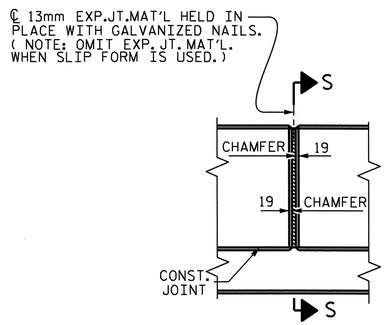
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	48	#16	STR	7500	559
* B2	48	#16	STR	7760	578
* B3	40	#16	STR	7100	441
* B4	40	#16	STR	7340	456
* B5	40	#16	STR	6920	430
* B6	40	#16	STR	7160	444
* B7	40	#16	STR	7240	449
* B8	40	#16	STR	7460	463
* S1	1043	#16	1	1420	2299
* S2	1043	#16	2	1580	2558

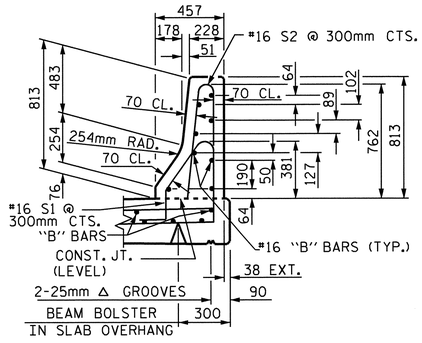
* EPOXY COATED REINFORCING STEEL	8677 kg
CLASS AA CONCRETE	78.43 CU. METER
CONCRETE BARRIER RAIL	312.965 METERS



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



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL

BARRIER RAIL DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-217
1			3			TOTAL SHEETS
2			4			276

STR. #5

STD. No. CBR1SM

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

ASSEMBLED BY : J.P. ADAMS	DATE : 7/18/11	
CHECKED BY : K.D. LAYNE	DATE : 9/11	
DRAWN BY : ARB 5/87	REV. 5/7/03R	RWW/JTE
CHECKED BY : SJD 9/87	REV. 5/1/06	TLA/GM
	REV. 10/1/11	MAA/GM

14-FEB-2012 07:31
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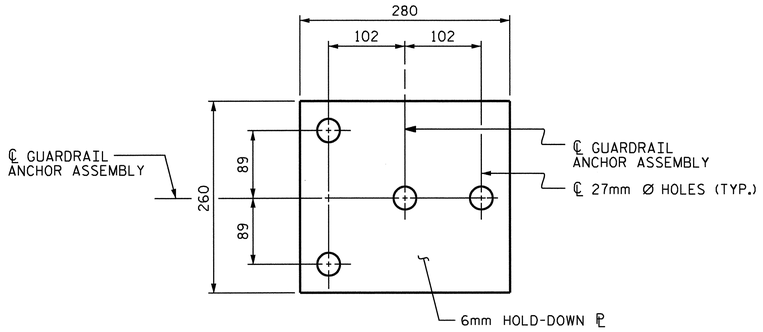
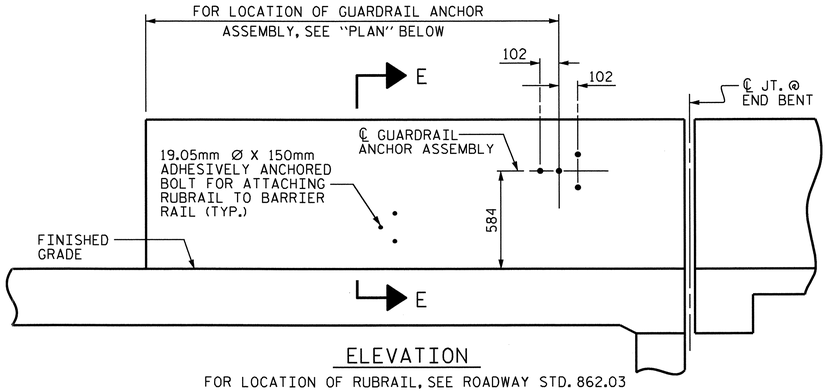
jpadams

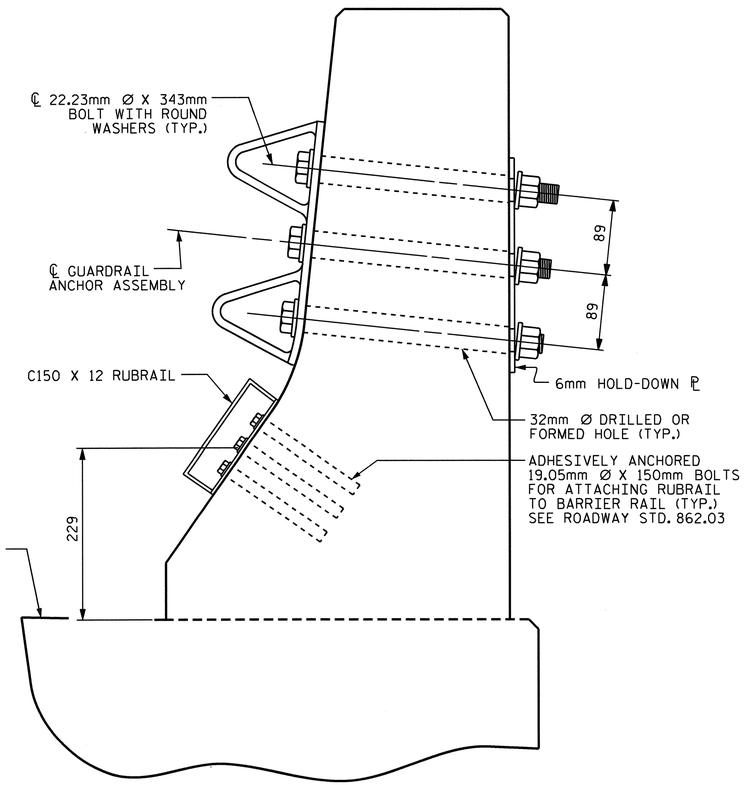


PLAN



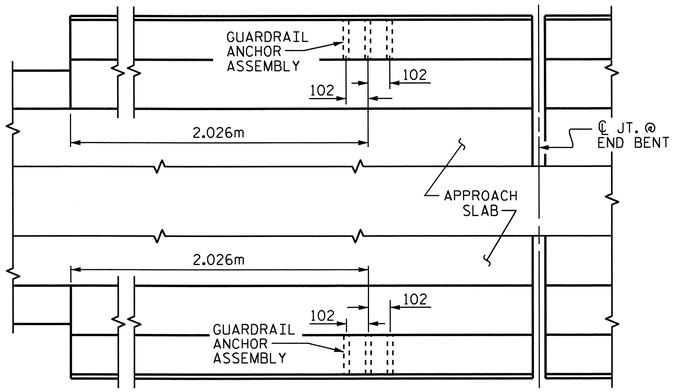
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 6mm HOLD DOWN PLATE AND 4 - 22.23mm 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 22.23mm 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.)

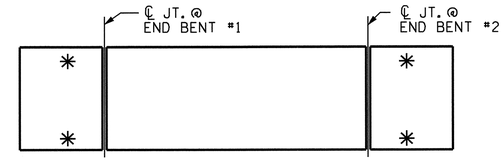
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 32mm 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 C150 X 12 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 19.05mm Ø X 150mm BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 19.05mm Ø BOLTS IS 53.4kN. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-218
1			3			TOTAL SHEETS
2			4			276

STR. #5 STD. NO. GRA2

ASSEMBLED BY : J.P. ADAMS	DATE : 7/18/11
CHECKED BY : K.D. LAYNE	DATE : 9/11
DRAWN BY : TLA 5/06	ADDED 5/1/06RR KMM/GM
CHECKED BY : GM 5/06	REV. 10/1/11 MAA/GM

14-FEB-2012 07:31
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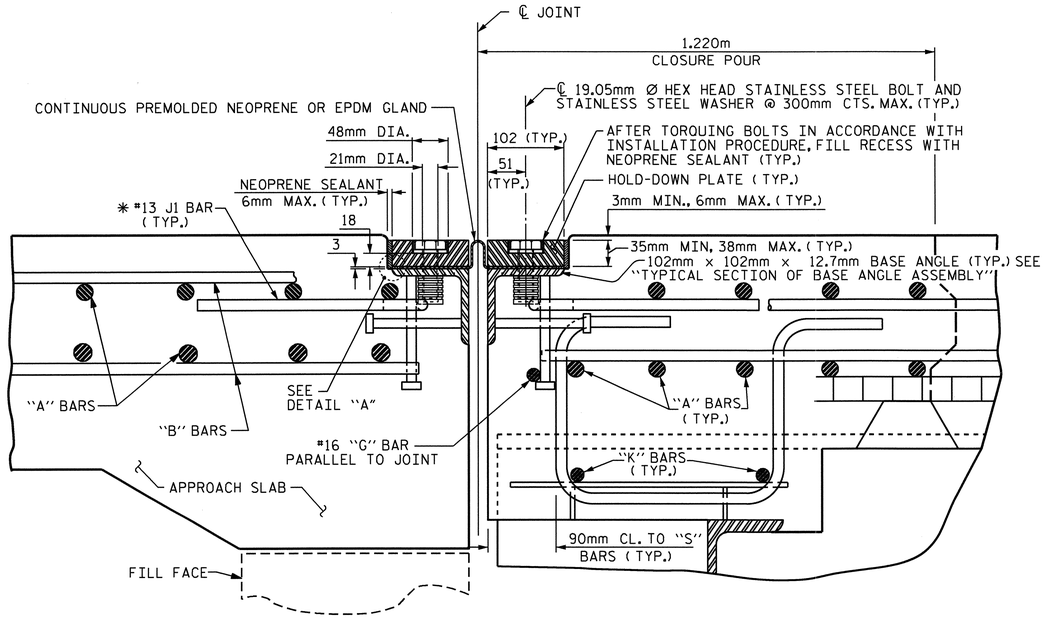
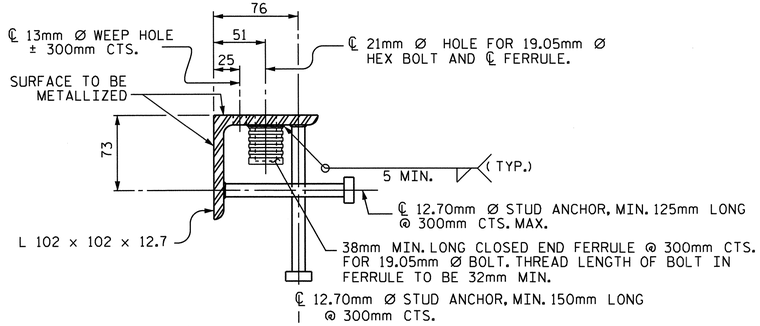
jpadams



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- STEEL SUPERSTRUCTURE
END BENT #1 SHOWN, END BENT #2 SIMILAR

* THE QUANTITY OF #13 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 300mm CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHOR BOLTS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

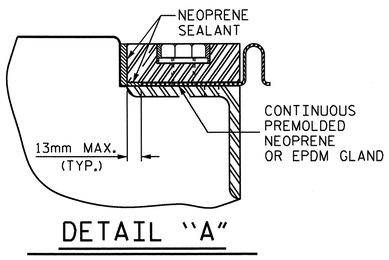
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 7° C	PERPENDICULAR JOINT OPENING AT 16° C	PERPENDICULAR JOINT OPENING AT 32° C
END BENT #1	89°-53'-08"	64mm	67mm	56mm	38mm
END BENT #2	90°-06'-53"	64mm	67mm	56mm	38mm

INSTALLATION PROCEDURE

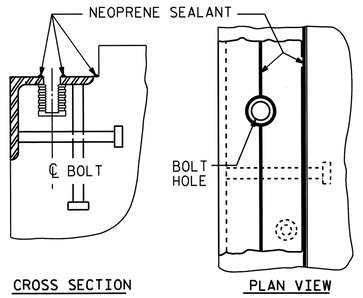
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 105mm TO 108mm WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 19.05mm Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 25mm Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 102mm X 102mm X 12.7mm BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 0.100mm (DRY) OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 22mm IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 119.3 N-m WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 119.3 N-m. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 108.5 N-m AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

GENERAL NOTES

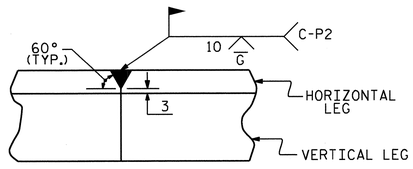
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 250 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL. WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 13.3 kN MIN.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD DOWN PLATE AND BASE ANGLE ASSEMBLY AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
7. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 0.100mm (DRY) OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 6.1m LENGTHS UNLESS APPROVED BY THE ENGINEER.
9. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
10. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 19.05mm DIA. BOLT IS 44.5 kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



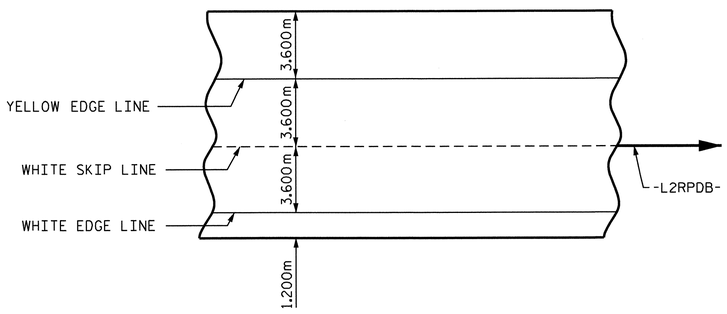
DETAIL "A"



INSTALLATION SKETCH



DETAIL- FIELD WELD SPLICE OF BASE ANGLE



PAVEMENT MARKING ALIGNMENT

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-219
1			3			TOTAL SHEETS
2			4			276

STR. #5
STD. NO. EJS1SM

ASSEMBLED BY : J.P. ADAMS		DATE : 8/1/11
CHECKED BY : K.D. LAYNE		DATE : 9/11
DRAWN BY : REK 9/87	REV. 5/7/03R	RWW/JTE
CHECKED BY : CRK 10/87	REV. 5/1/06R	TLA/GM
	REV. 10/1/11	MAA/GM

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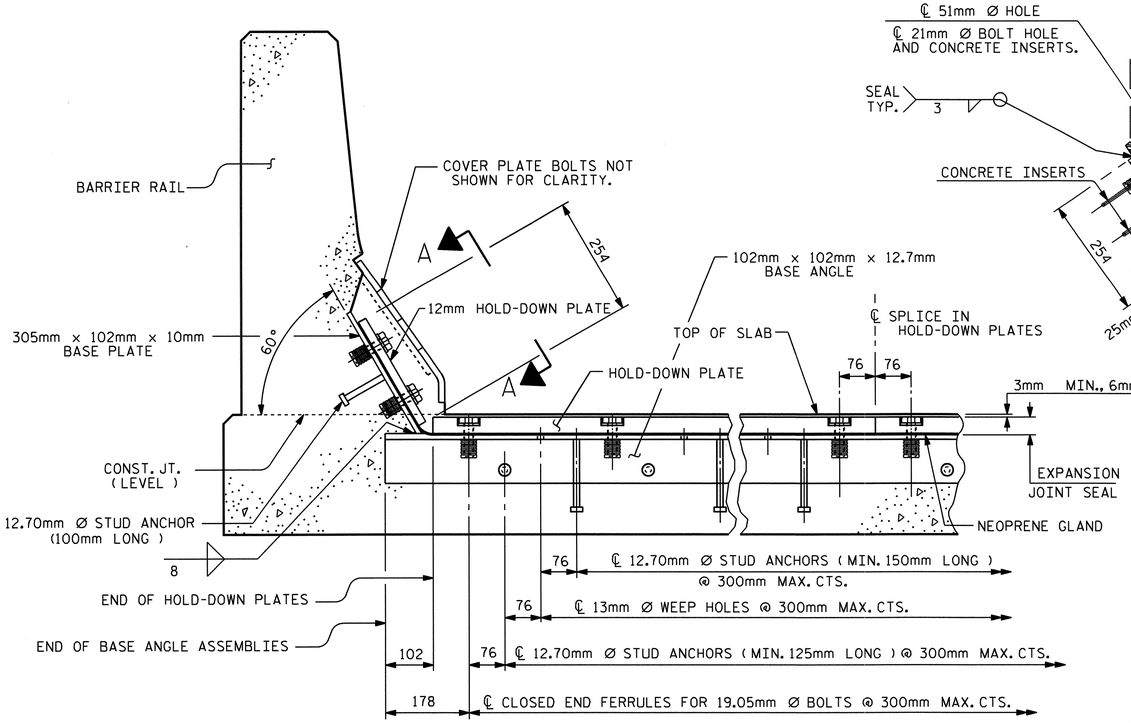
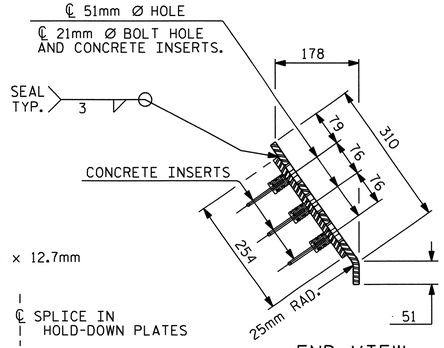
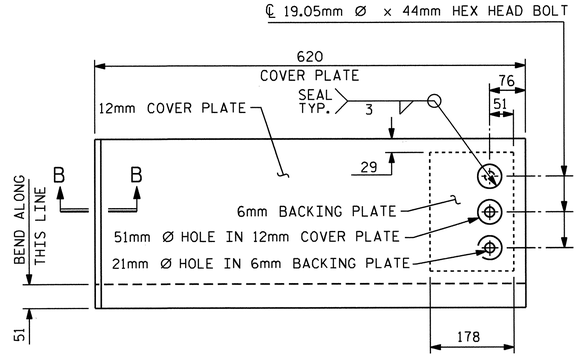
jpadams



SECTION THRU RAIL NORMAL TO JOINT

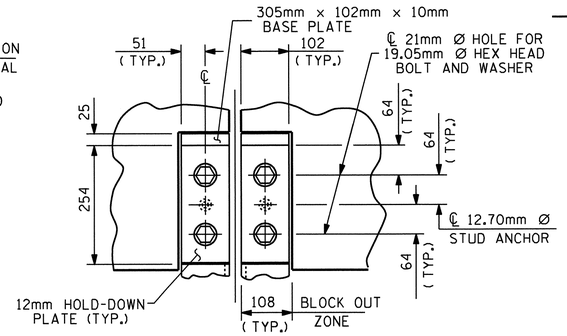


END VIEW

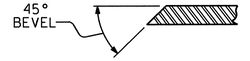


TYPE II - ELEVATION VIEW

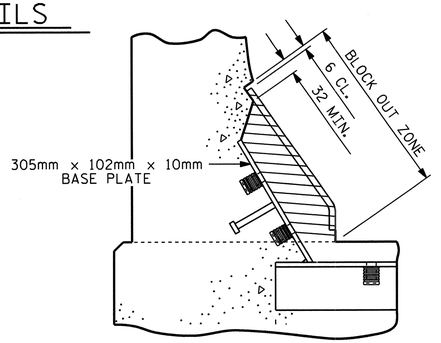
COVER PLATE DETAILS



SECTION A-A

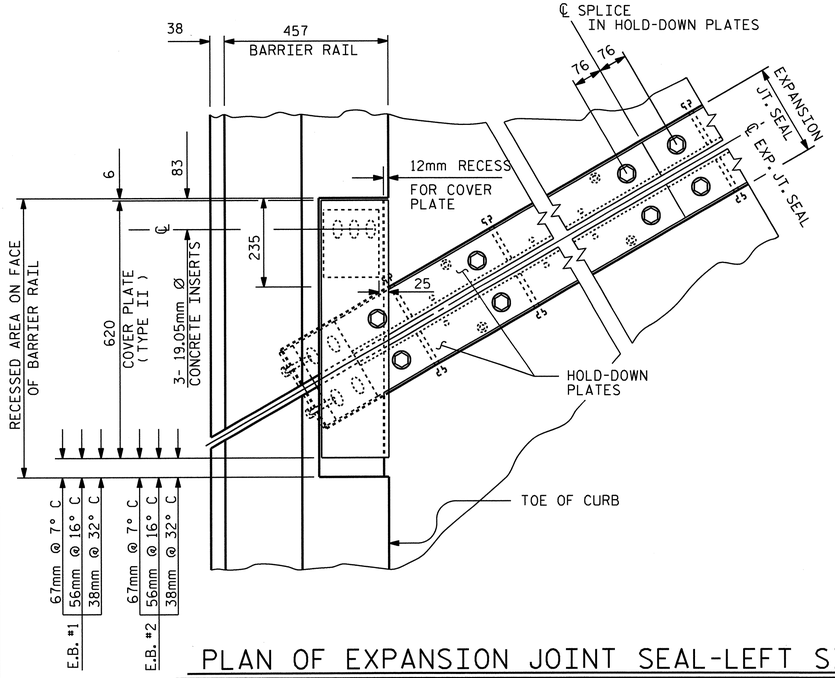


SECTION B-B



BLOCK OUT DETAIL

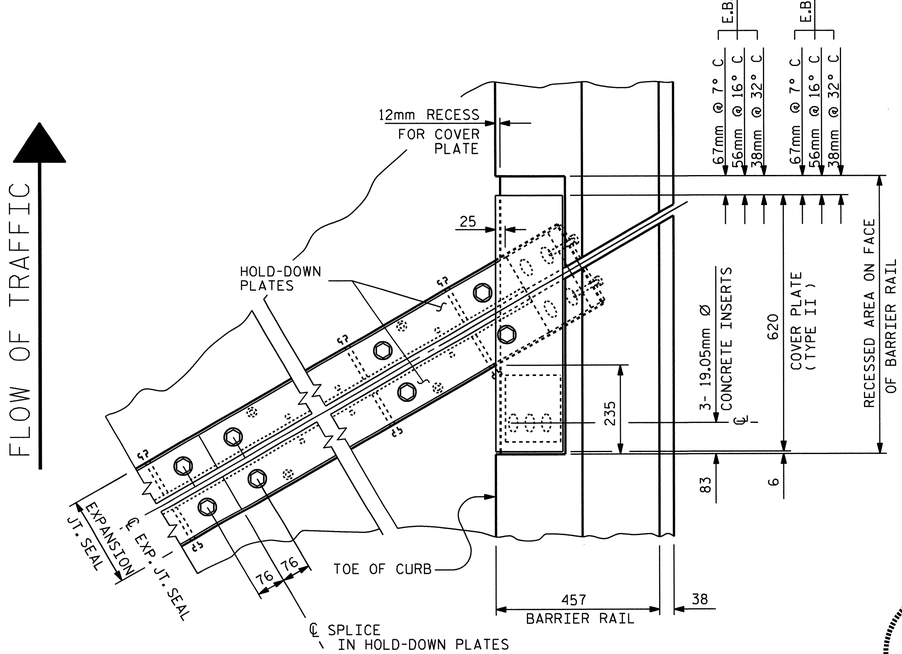
SEE "SECTION A-A" FOR OTHER DETAILS



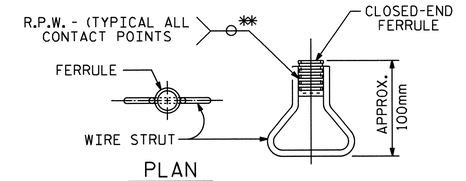
PLAN OF EXPANSION JOINT SEAL-LEFT SIDE

FLOW OF TRAFFIC

FLOW OF TRAFFIC



PLAN OF EXPANSION JOINT SEAL-RIGHT SIDE



PLAN ELEVATION

CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

ASSEMBLED BY : J.P. ADAMS DATE : 8/1/11
CHECKED BY : K.D. LAYNE DATE : 9/11

DRAWN BY : REK 9/87
CHECKED BY : CRK 10/87

REV.		
REV. 10/17/00	RWW/LES
REV. 5/1/06	TLA/GM
REV. 10/1/11	MAA/GM

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+.03.224 -L2RPDB-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-220
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

STR. #5

STD. NO. EJS2SM

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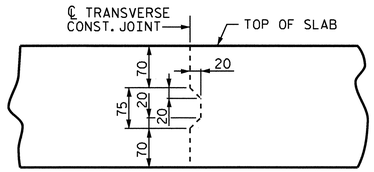
jpadams



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#13	610	540	610	540	840
#16	770	660	770	660	1050
#19	920	790	1190	790	1330
#22	1580	1060			
#25	2080	1390			

GROOVING BRIDGE FLOORS

BRIDGE DECK	1729.6 m^2
APPROACH SLABS	93.3 m^2
TOTAL	1822.9 m^2

CLASS AA CONCRETE (m3)

POUR #1 =	104.5
POUR #2 =	123.2
POUR #3 =	123.2
POUR #4 =	173.5
POUR #5 =	9.6
TOTAL =	534.0

REINFORCING BAR SCHEDULE

SPAN A-D

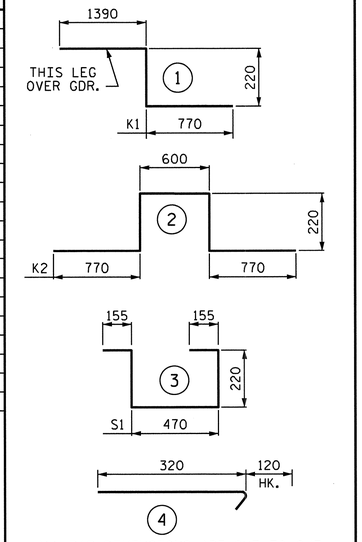
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	935	16	STR.	12880	18690
A2	935	16	STR.	12880	18690
✳B1	134	19	STR.	17200	5151
✳B2	67	19	STR.	16560	2480
✳B3	134	19	STR.	13120	3929
✳B4	140	13	STR.	9000	1252
✳B5	70	13	STR.	5300	369
✳B6	70	13	STR.	8380	583
✳B7	140	13	STR.	7240	1008
B8	380	16	STR.	16480	9719
✳G1	2	16	STR.	12880	40
✳J1	82	13	4	440	36
✳K1	8	16	1	2380	30
✳K2	12	16	2	2580	48
✳K3	16	16	STR.	2560	64
✳S1	56	13	3	1220	68

REINFORCING STEEL (Kgs) = 28409

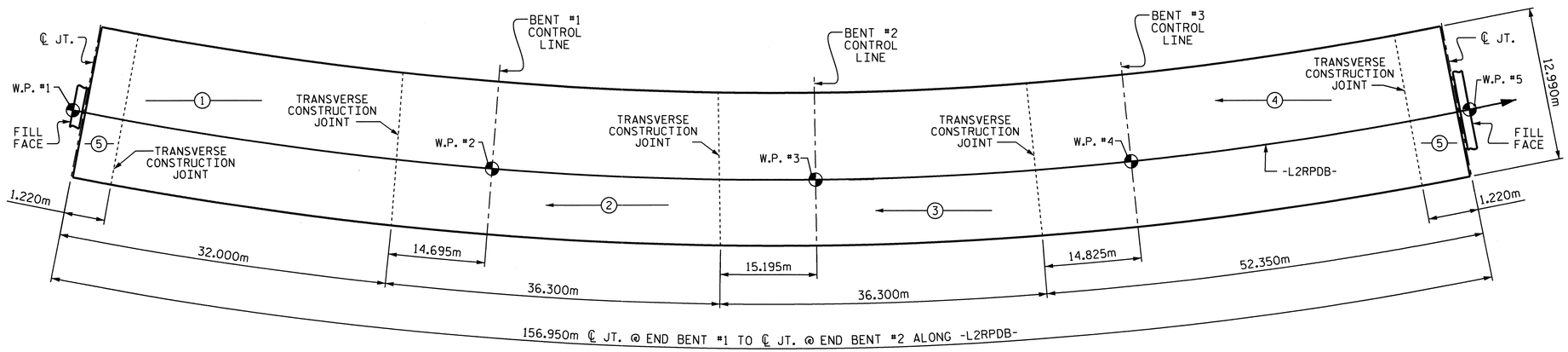
✳EPOXY COATED
REINFORCING STEEL (Kgs) = 33748

QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB & POURING SEQUENCE OF REINFORCED CONCRETE DECK SLAB

AREA CONCRETE DECK SLAB = 2039.0 m^2

SHOWS DIRECTION OF POUR

PROJECT NO. R-2554A
WAYNE COUNTY
STATION 10+03.224 -L2RPDB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
Virul A. Patel 2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-221
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 7/20/11
CHECKED BY : K.D. LAYNE DATE : 9/11

14-FEB-2012 07:31
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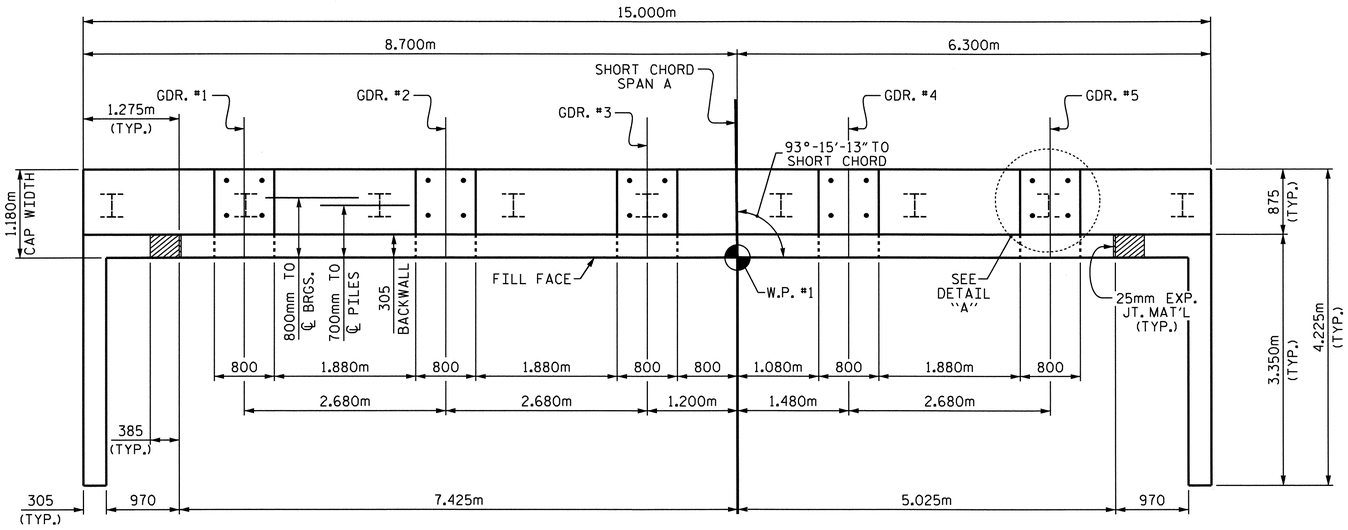
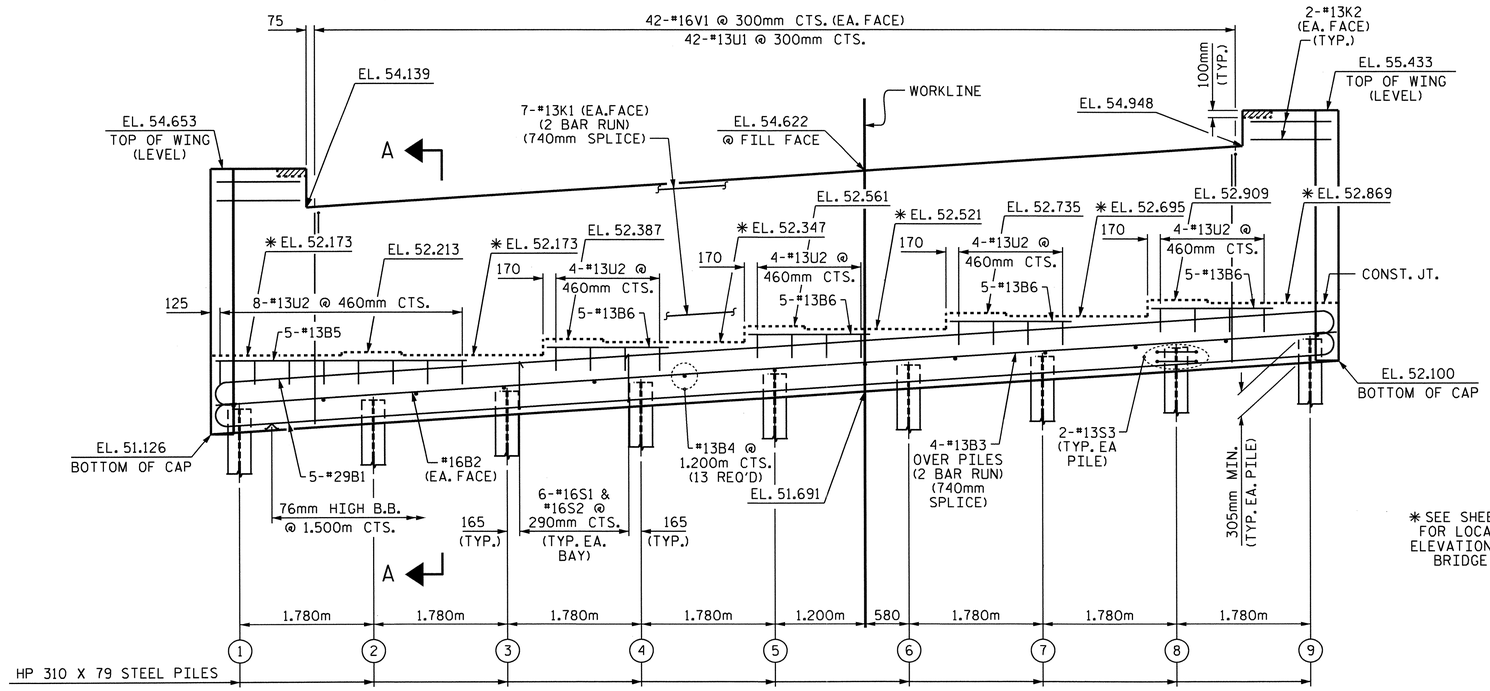
jpadams



PLAN



ELEVATION

* SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

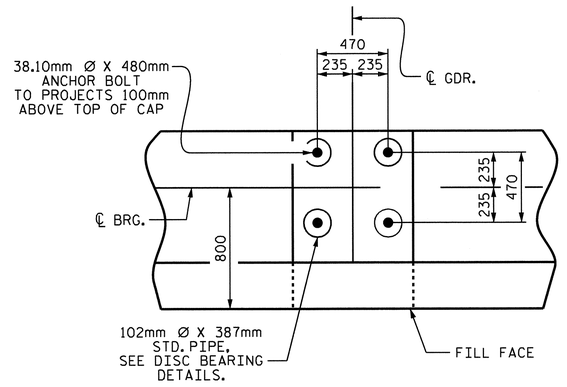
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2 %.

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

FOR GALVANIZED REINFORCING STRAPS, SEE "MECHANICALLY STABILIZED EARTH RETAINING WALL" SPECIAL PROVISION AND PLANS.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

TOP OF PILE ELEVATIONS	
1	EL. 51.466
2	EL. 51.581
3	EL. 51.697
4	EL. 51.812
5	EL. 51.928
6	EL. 52.044
7	EL. 52.159
8	EL. 52.275
9	EL. 52.390

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-2.22
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 8/18/11
CHECKED BY : R.L. CHESSON DATE : 9/11

14-FEB-2012 07:31
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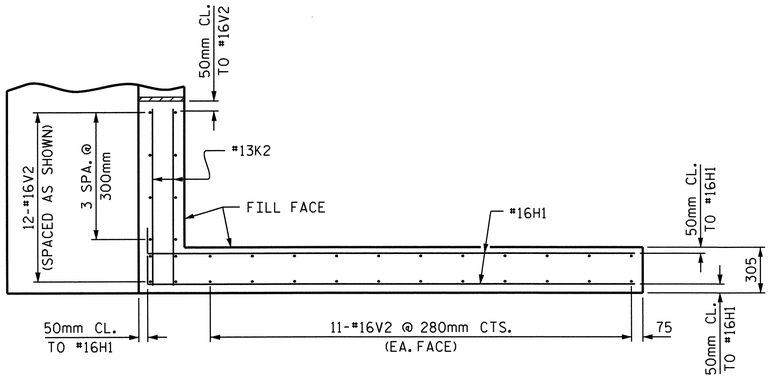
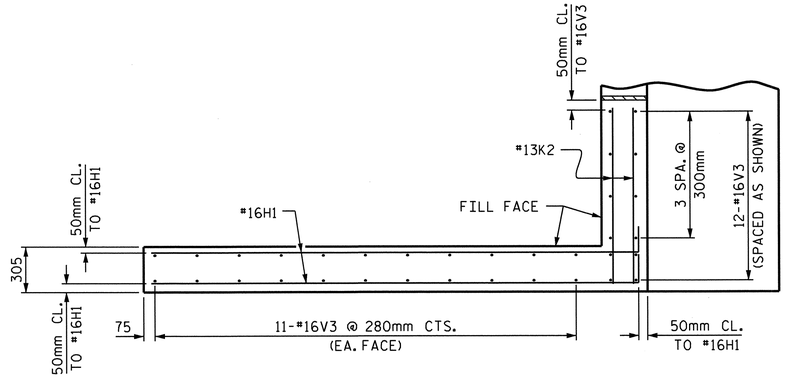
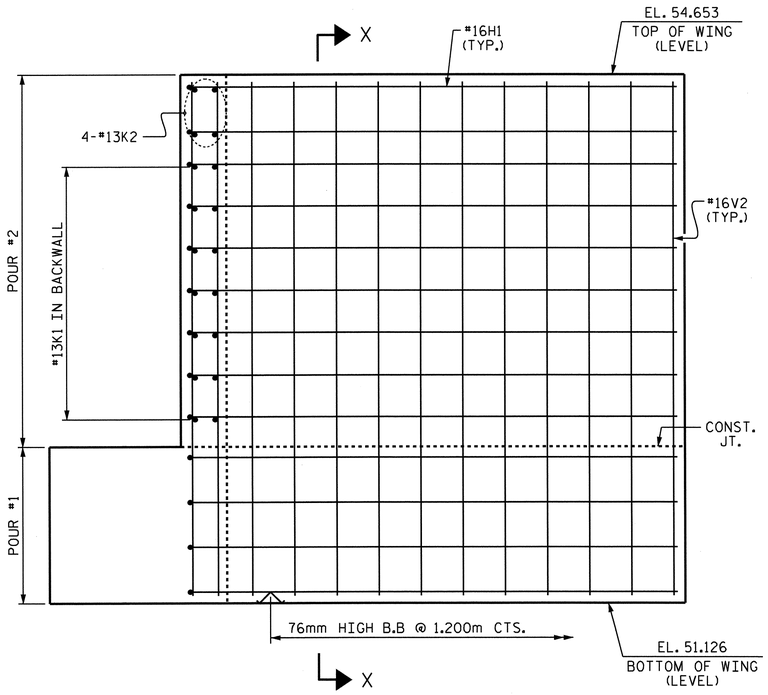
jpadams



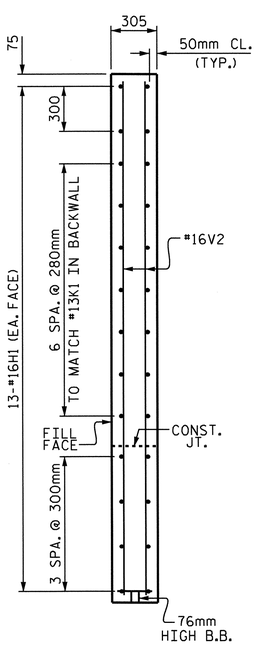
PLAN OF LEFT WING



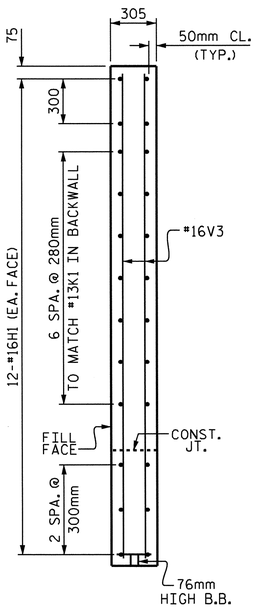
PLAN OF RIGHT WING



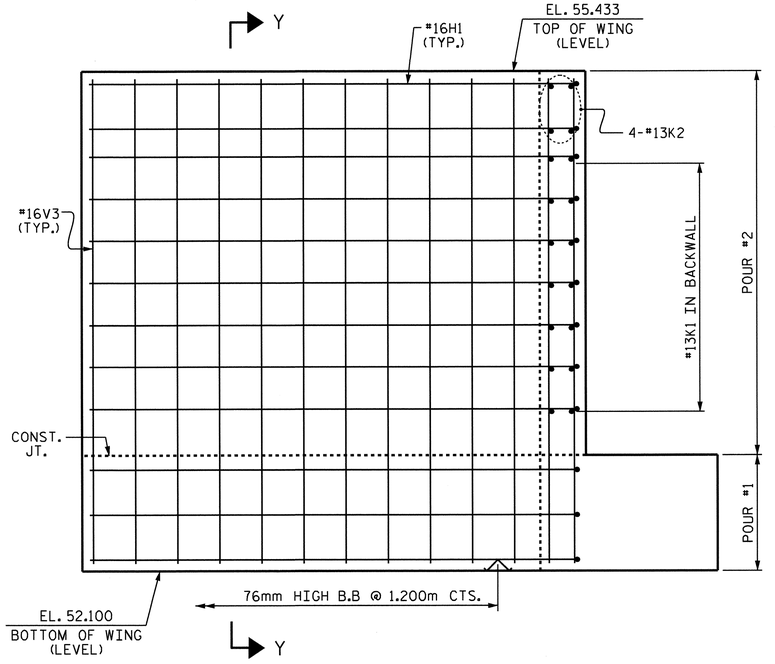
ELEVATION OF LEFT WING



SECTION X-X



SECTION Y-Y



ELEVATION OF RIGHT WING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER RAJIL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-223
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 8/25/11
CHECKED BY : R.L. CHESSON DATE : 9/11

14-FEB-2012 07:31
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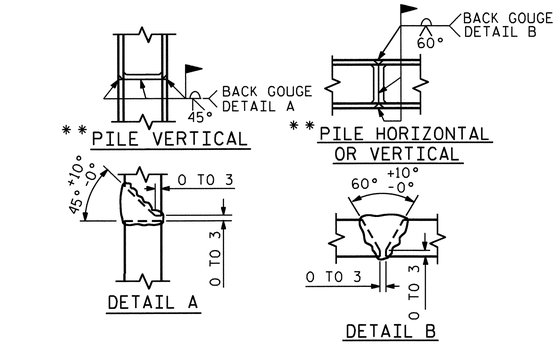
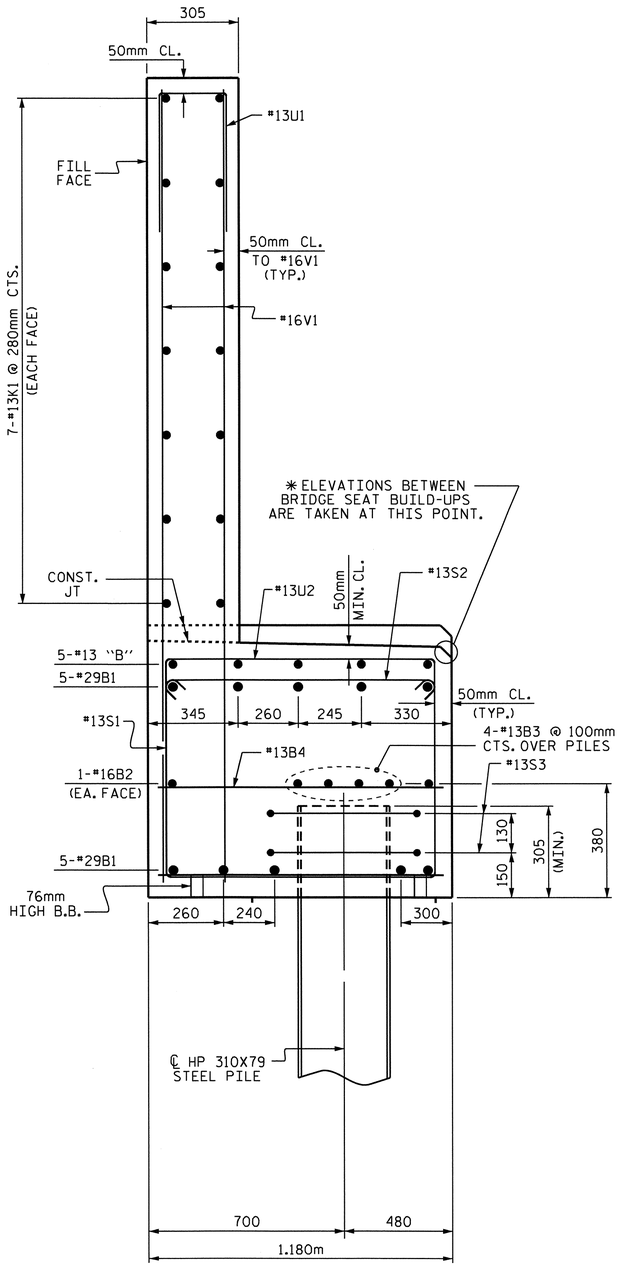
jpadams

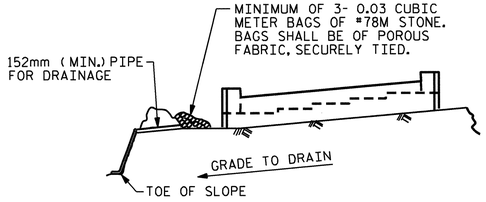


** POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A



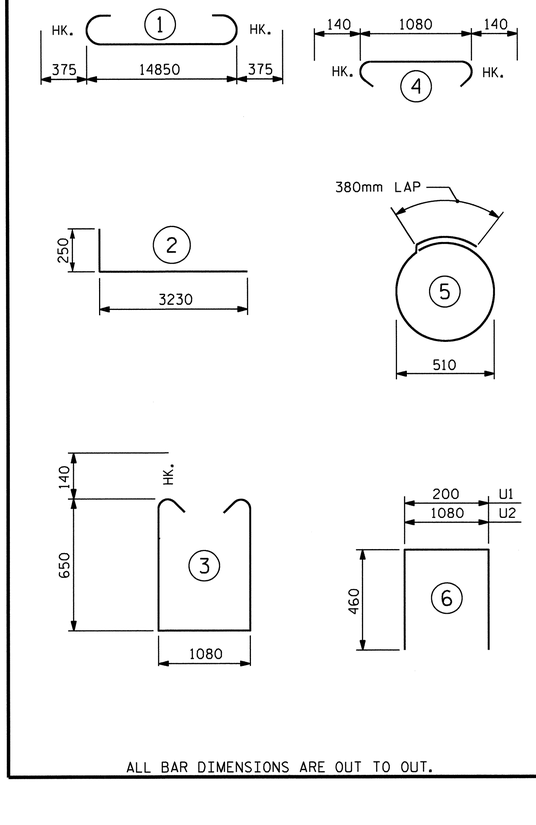
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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 BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#29	1	15600	789
B2	2	#16	STR	14900	46
B3	8	#13	STR	7820	62
B4	13	#13	STR	1080	14
B5	5	#13	STR	3340	17
B6	20	#13	STR	1620	32
H1	50	#16	2	3480	270
K1	28	#13	STR	7820	218
K2	8	#13	STR	1160	9
S1	48	#16	3	2660	198
S2	48	#16	4	1360	101
S3	18	#13	5	1980	35
U1	42	#13	6	1120	47
U2	24	#13	6	2000	48
V1	84	#16	STR	2820	368
V2	34	#16	STR	3420	180
V3	34	#16	STR	3220	170

TOTAL REINFORCING STEEL KGS. 2604

CLASS A CONCRETE (CU. METERS)

POUR #1	CAP & LOWER PART OF WINGS	18.3
POUR #2	BACKWALL & UPPER PART OF WINGS	14.2
	TOTAL (CU. METERS)	32.5

HP 310x79 STEEL PILES
No. 9 METERS 330

PILE REDRIVES 6 EA.

FRICTION REDUCING COATING FOR HP 310X79 PILES 410m²

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-224
1			3			TOTAL SHEETS
2			4			276

STR #5

DRAWN BY : J.P. ADAMS DATE : 8/22/11
CHECKED BY : R.L. CHESSON DATE : 9/11

14-FEB-2012 07:31
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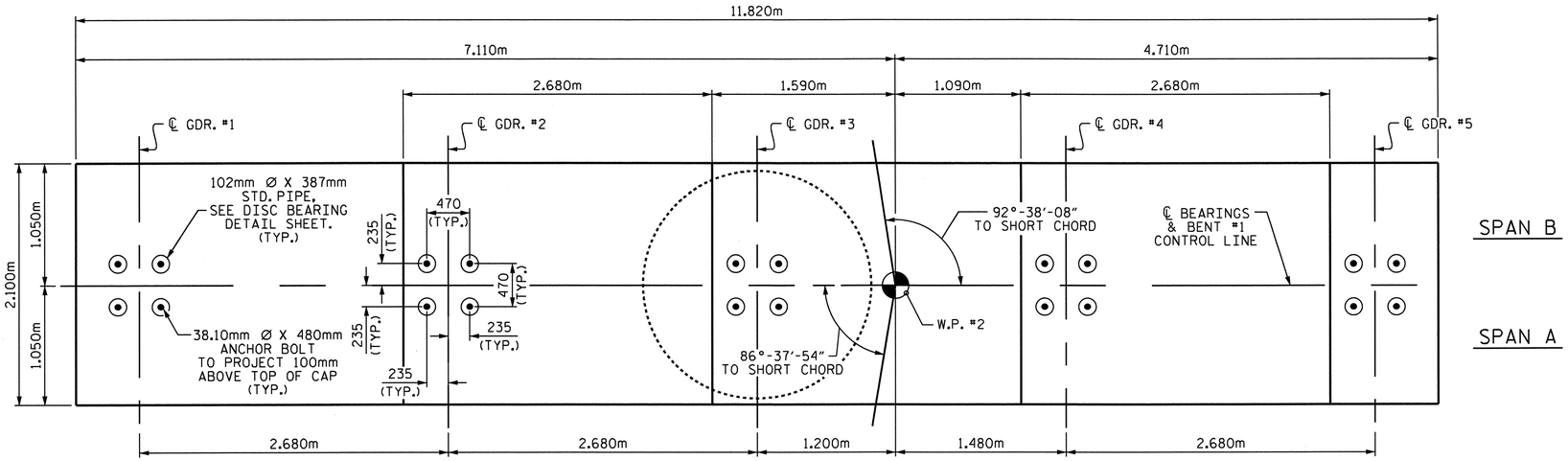
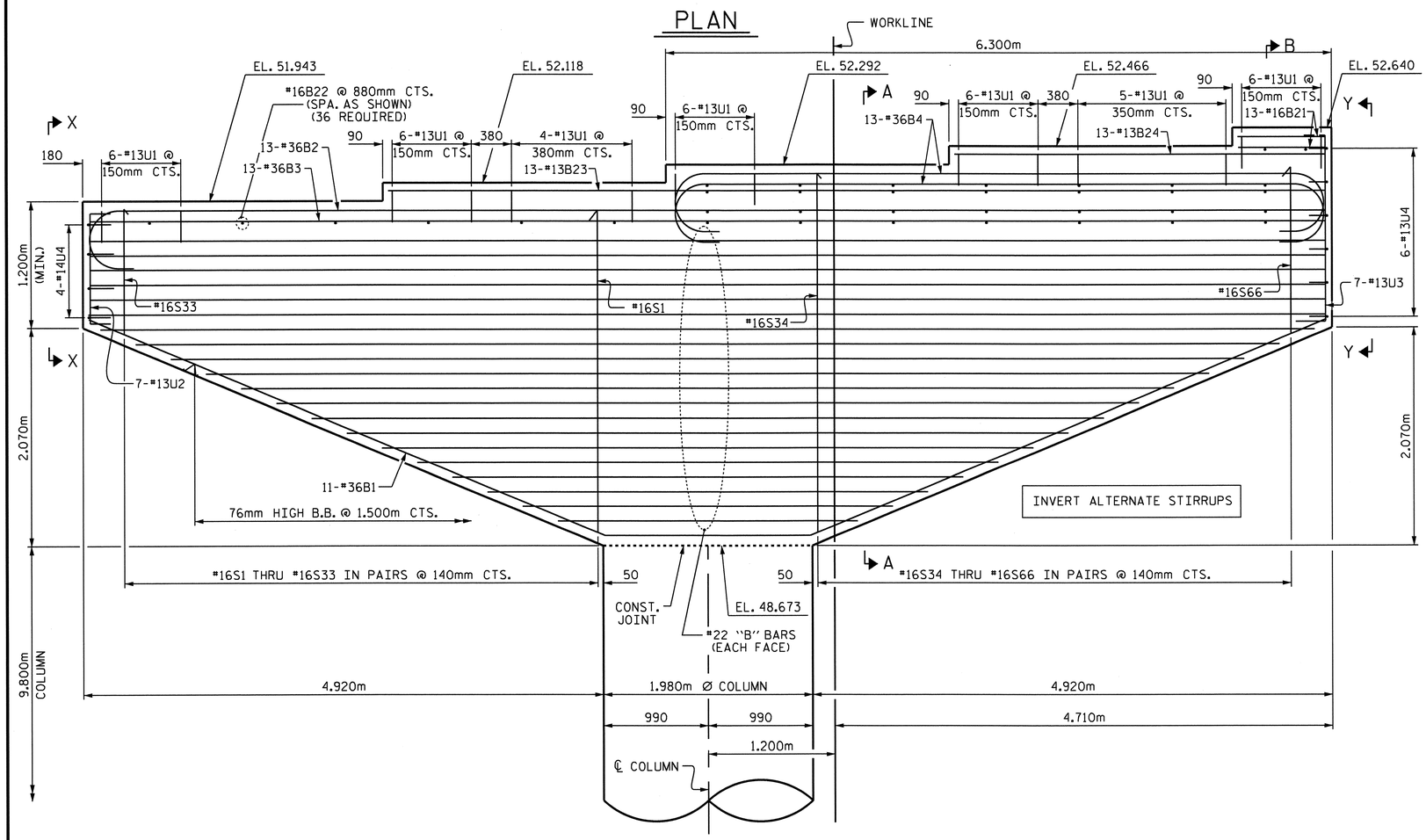


PLAN



ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

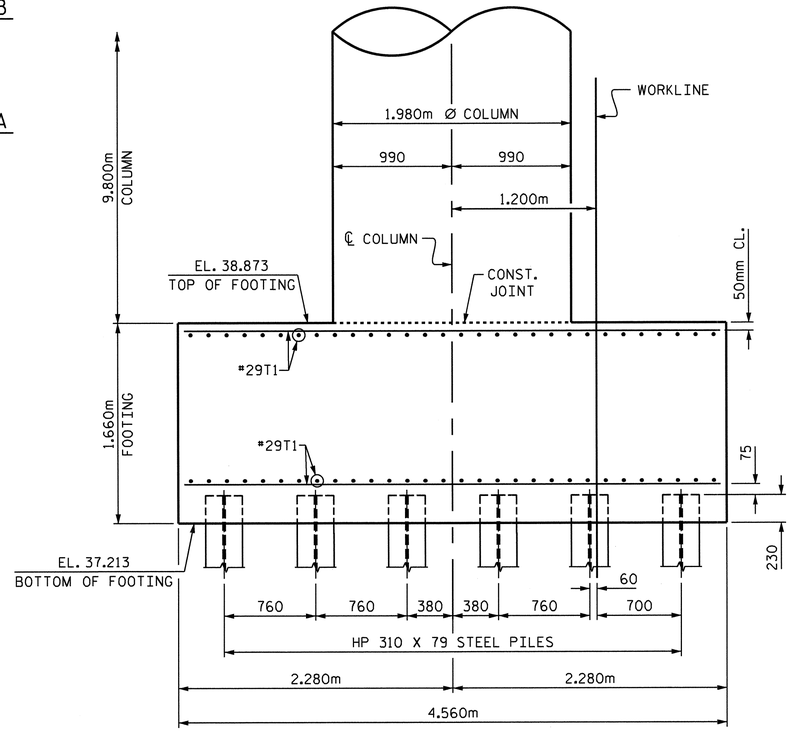
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS OF "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED, SEE SHEET SNSM.

THE FOOTING, COLUMN AND CAP ARE CONSIDERED MASS CONCRETE. FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL

3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-225
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:09
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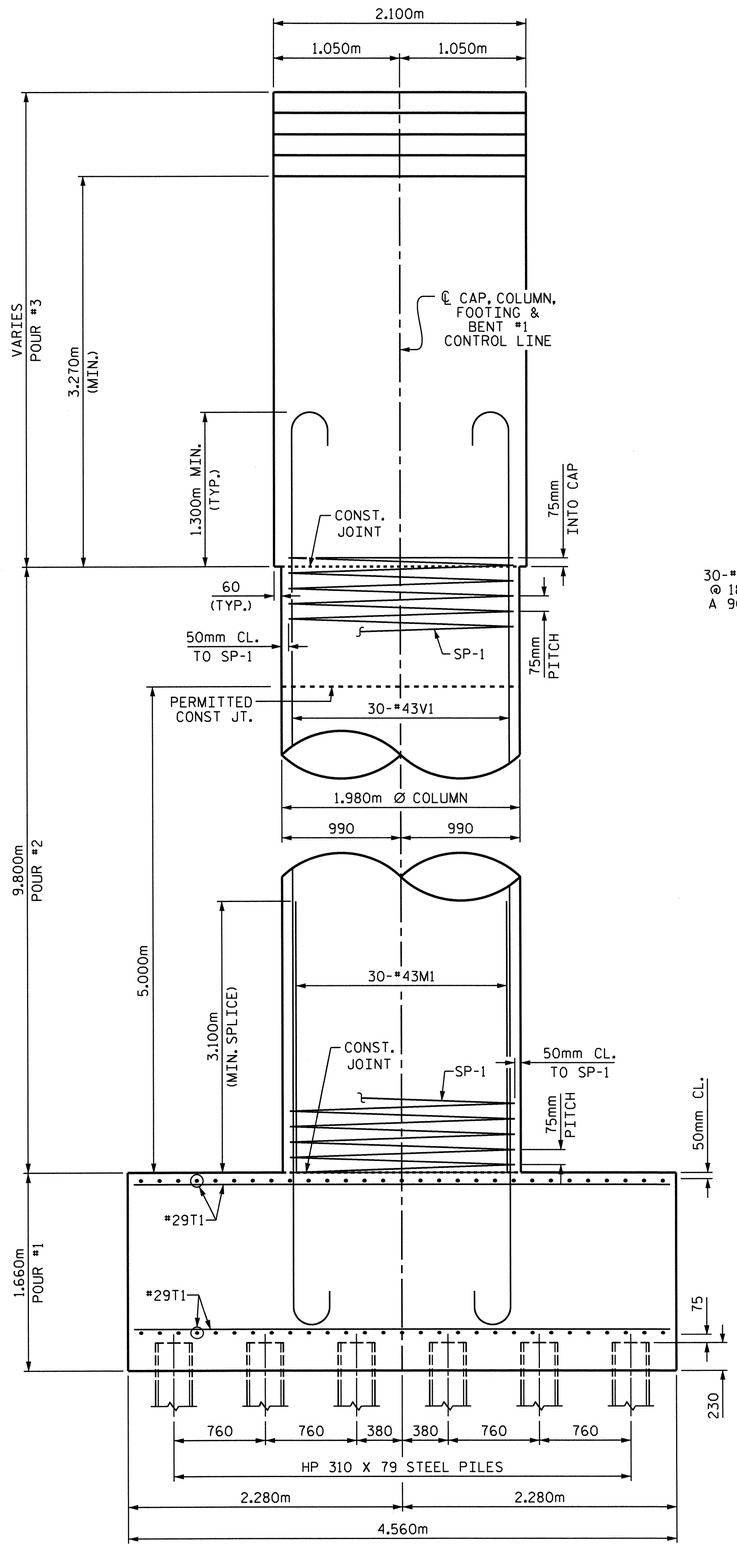
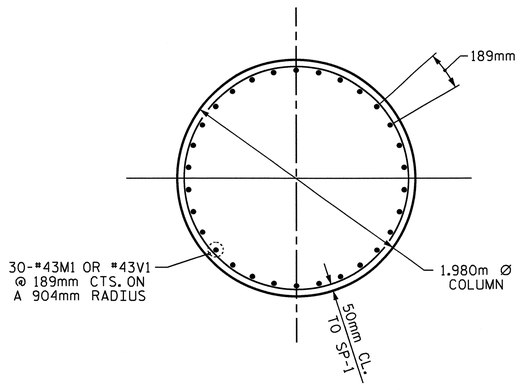
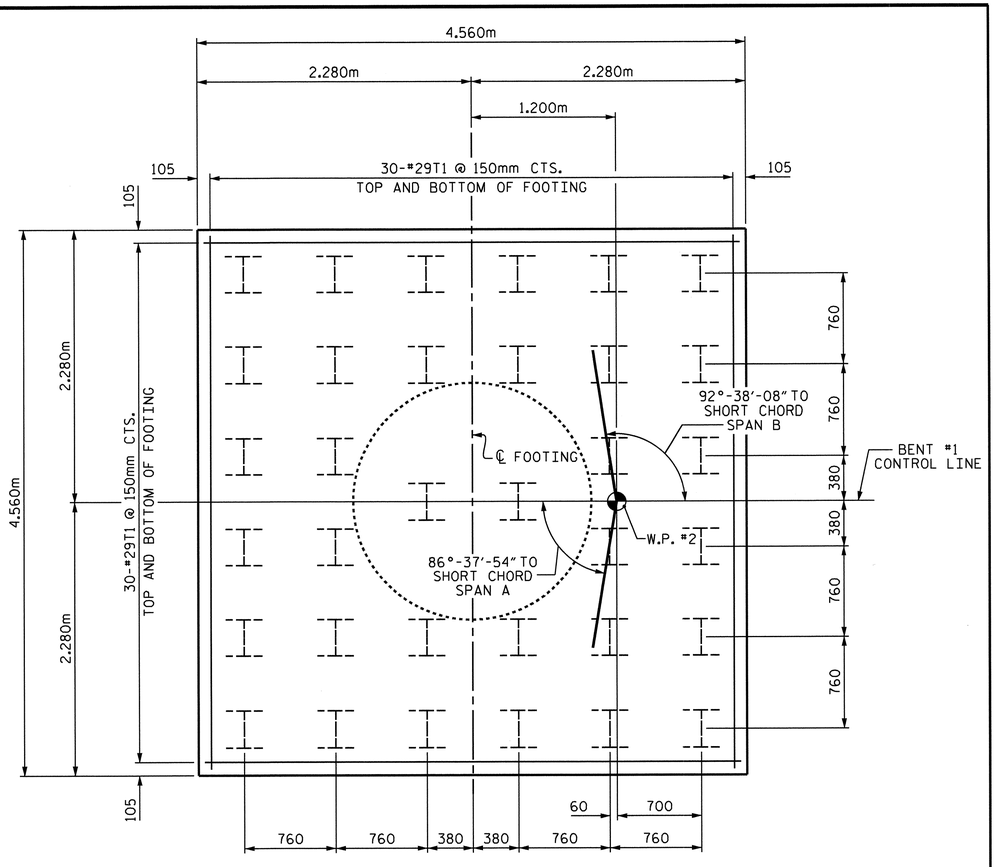


END ELEVATION VIEW



PLAN OF COLUMN



PLAN OF FOOTING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-226
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 14:36
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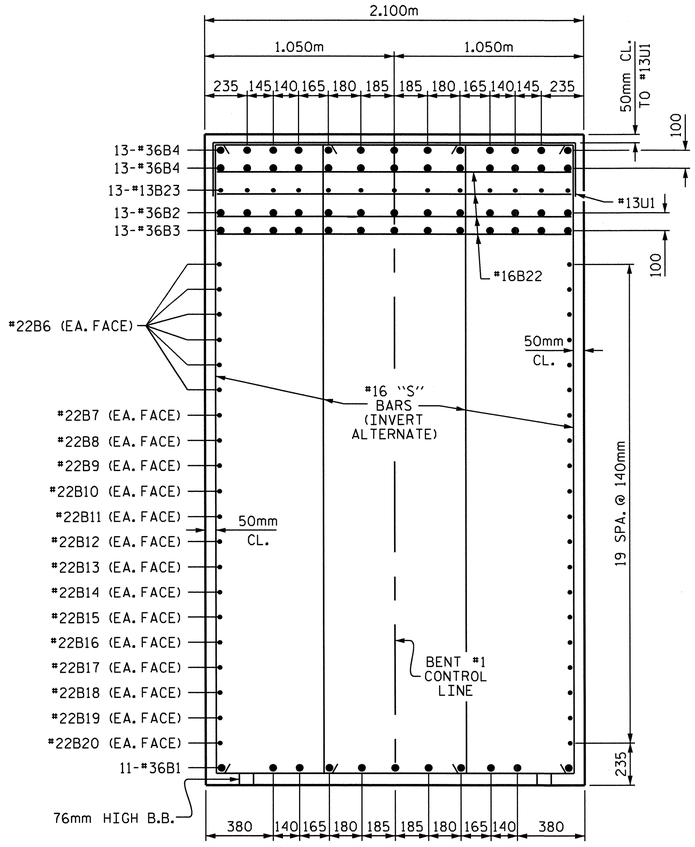
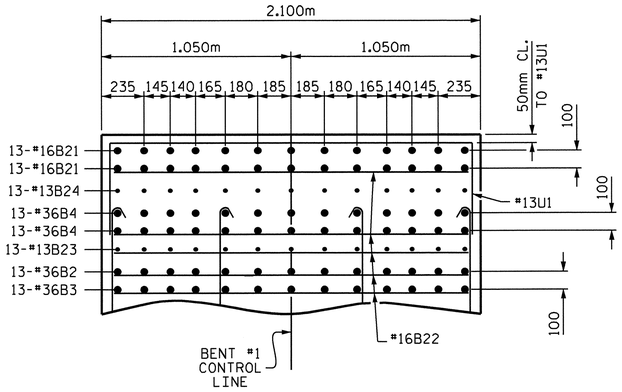
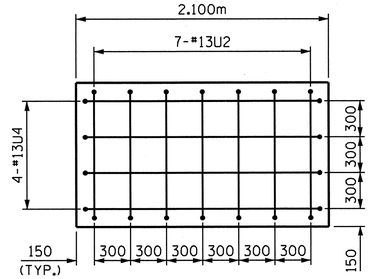


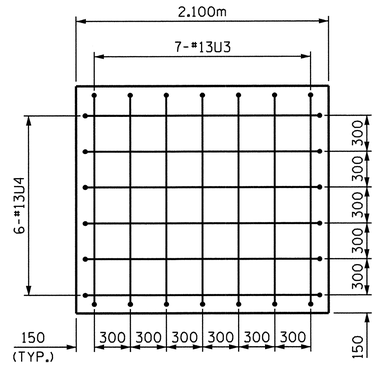
SECTION A-A



PARTIAL SECTION B



VIEW X-X



VIEW Y-Y

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-227
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:09
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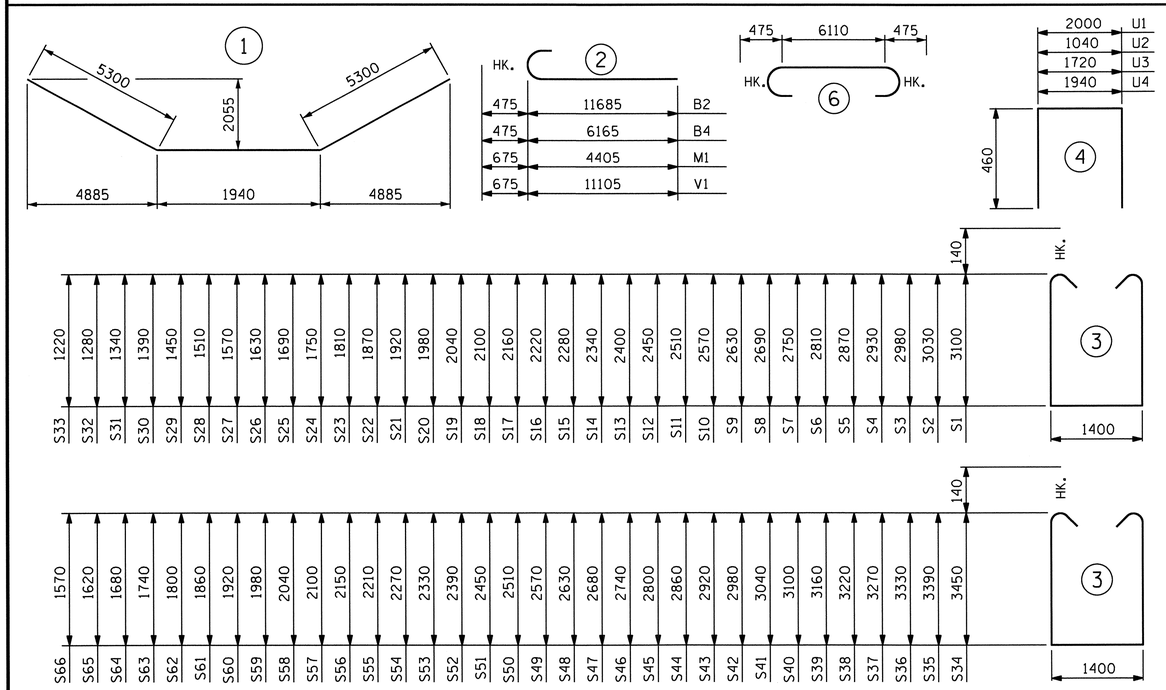
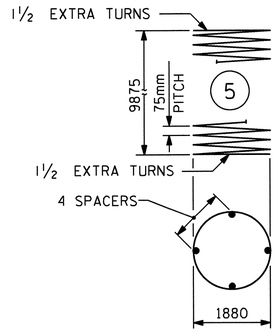
jpadams

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#36	1	12540	1091
B2	13	#36	2	12160	1250
B3	13	#36	STR	11720	1205
B4	26	#36	6	7060	1451
B6	12	#22	STR	11720	428
B7	2	#22	STR	11480	70
B8	2	#22	STR	10820	66
B9	2	#22	STR	10160	62
B10	2	#22	STR	9480	58
B11	2	#22	STR	8820	54
B12	2	#22	STR	8160	50
B13	2	#22	STR	7480	46
M1	30	#43	2	5080	1734
S1	2	#16	3	7880	24
S2	2	#16	3	7740	24
S3	2	#16	3	7640	24
S4	2	#16	3	7540	23
S5	2	#16	3	7420	23
S6	2	#16	3	7300	23
S7	2	#16	3	7180	22
S8	2	#16	3	7060	22
S9	2	#16	3	6940	22
S10	2	#16	3	6820	21
S11	2	#16	3	6700	21
S12	2	#16	3	6580	20
S13	2	#16	3	6480	20
S14	2	#16	3	6360	20
S15	2	#16	3	6240	19
S16	2	#16	3	6120	19
S17	2	#16	3	6000	19
S18	2	#16	3	5880	18
S19	2	#16	3	5760	18
S20	2	#16	3	5640	18
S21	2	#16	3	5520	17
S22	2	#16	3	5420	17
S23	2	#16	3	5300	16
S24	2	#16	3	5180	16
S25	2	#16	3	5060	16
S26	2	#16	3	4940	15
S27	2	#16	3	4820	15
S28	2	#16	3	4700	15
S29	2	#16	3	4580	14
S30	2	#16	3	4460	14
S31	2	#16	3	4360	14
S32	2	#16	3	4240	13
S33	2	#16	3	4120	13
S34	2	#16	3	8580	27
S35	2	#16	3	8460	26
S36	2	#16	3	8340	26
S37	2	#16	3	8220	26
S38	2	#16	3	8120	25
S39	2	#16	3	8000	25
S40	2	#16	3	7880	24
S41	2	#16	3	7760	24
S42	2	#16	3	7640	24
S43	2	#16	3	7520	23
S44	2	#16	3	7400	23
S45	2	#16	3	7280	23
S46	2	#16	3	7160	22
S47	2	#16	3	7040	22
S48	2	#16	3	6940	22
S49	2	#16	3	6820	21
S50	2	#16	3	6700	21
S51	2	#16	3	6580	20
S52	2	#16	3	6460	20
S53	2	#16	3	6340	20
S54	2	#16	3	6220	19
S55	2	#16	3	6100	19
S56	2	#16	3	5980	19
S57	2	#16	3	5880	18
S58	2	#16	3	5760	18
S59	2	#16	3	5640	18
S60	2	#16	3	5520	17
S61	2	#16	3	5400	17
S62	2	#16	3	5280	16
S63	2	#16	3	5160	16
S64	2	#16	3	5040	16
S65	2	#16	3	4920	15
S66	2	#16	3	4820	15
T1	120	#29	STR	4460	2708
U1	39	#13	4	2920	113
U2	7	#13	4	1960	14
U3	7	#13	4	2640	18
U4	10	#13	4	2860	28
V1	30	#43	2	11780	4022

TOTAL REINFORCING STEEL KGS. 16279

SP-1	1	*	5	790560	786

TOTAL SPIRAL COLUMN REINFORCING STEEL KGS. 786

CLASS A CONCRETE (CU. METERS)

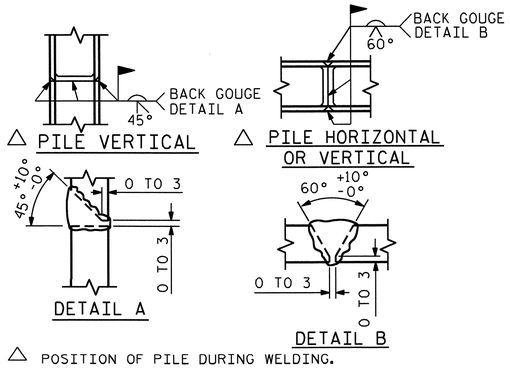
POUR #1 CAP	67.1
POUR #2 COLUMN	30.2
POUR #3 FOOTING	34.6
TOTAL (CU. METERS)	131.9

HP 310 x 79 STEEL PILES
No. 34 METERS 932

FOUNDATION EXCAVATION LUMP SUM

PILES REDRIVES 16 EA.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-228
1			3			TOTAL SHEETS
2			4			276

STR #5

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
3/20/12

DRAWN BY : J.P. ADAMS DATE : 8/22/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:09
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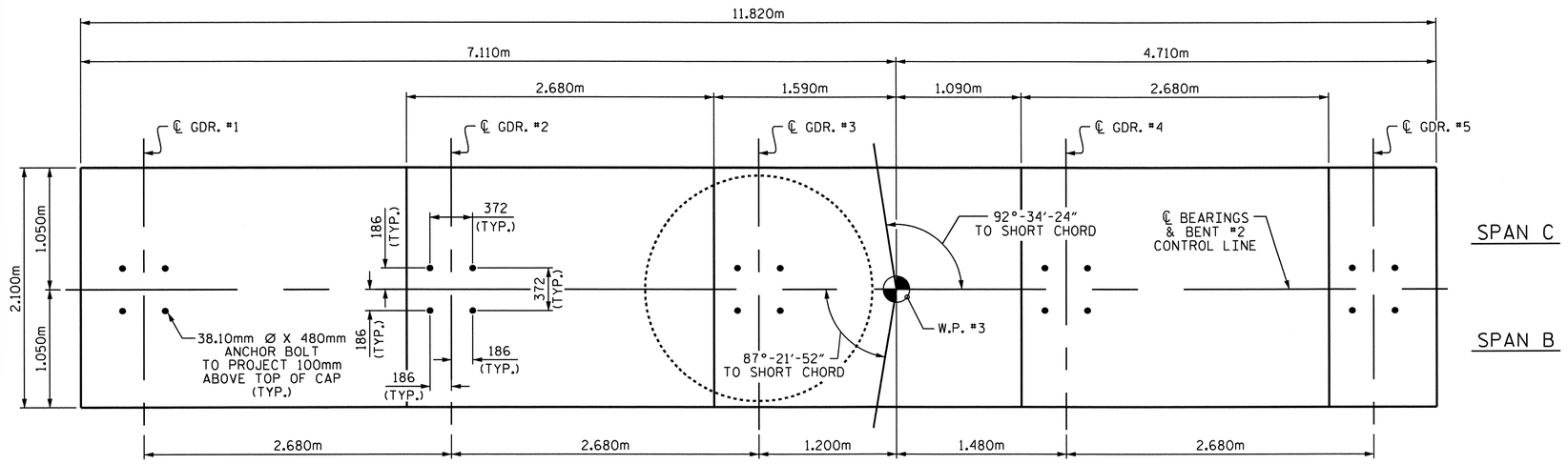
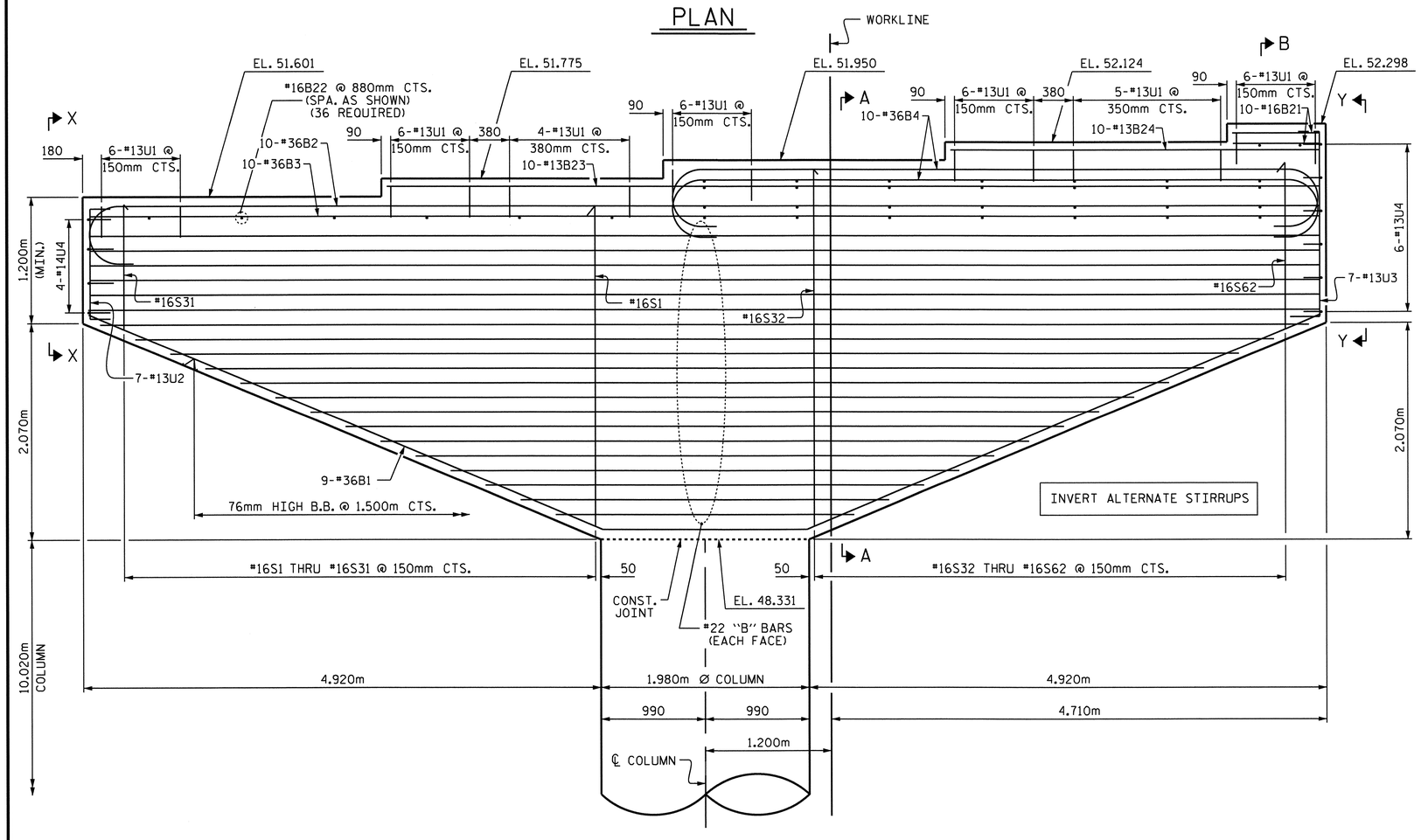
jpadams





ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

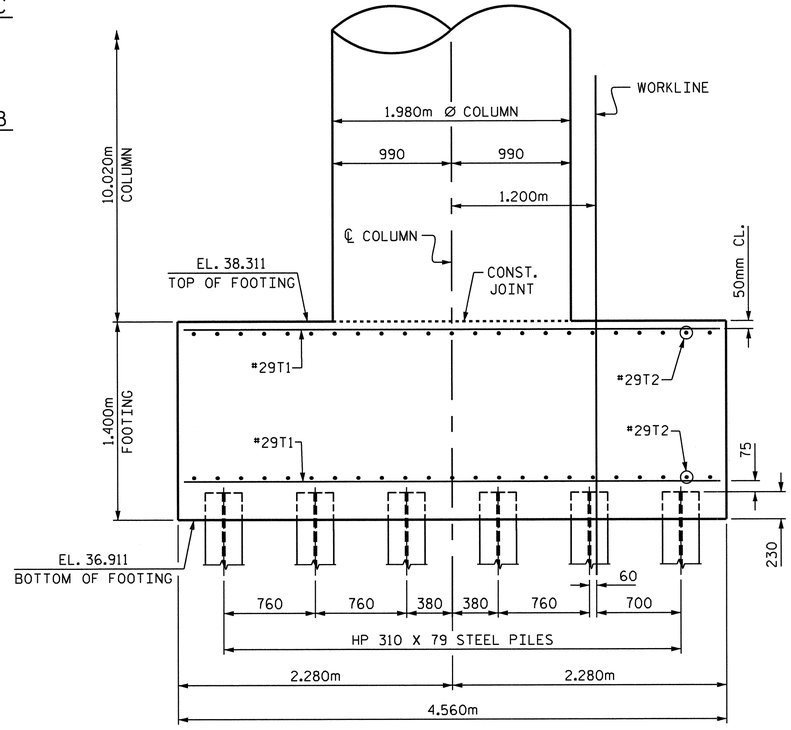
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS OF "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED, SEE SHEET SNSM.

THE FOOTING, COLUMN AND CAP ARE CONSIDERED MASS CONCRETE. FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL 3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-229
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:09
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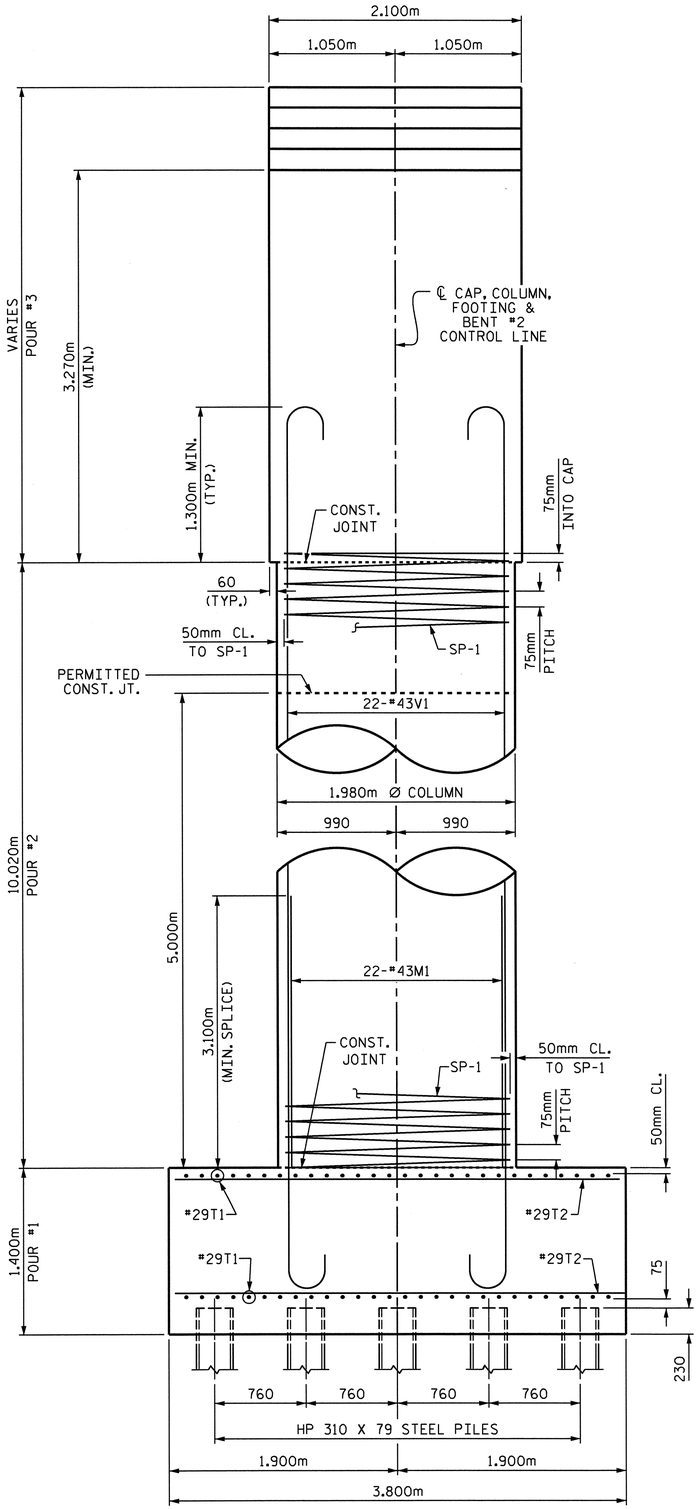
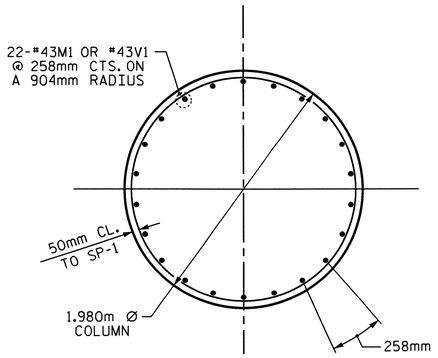
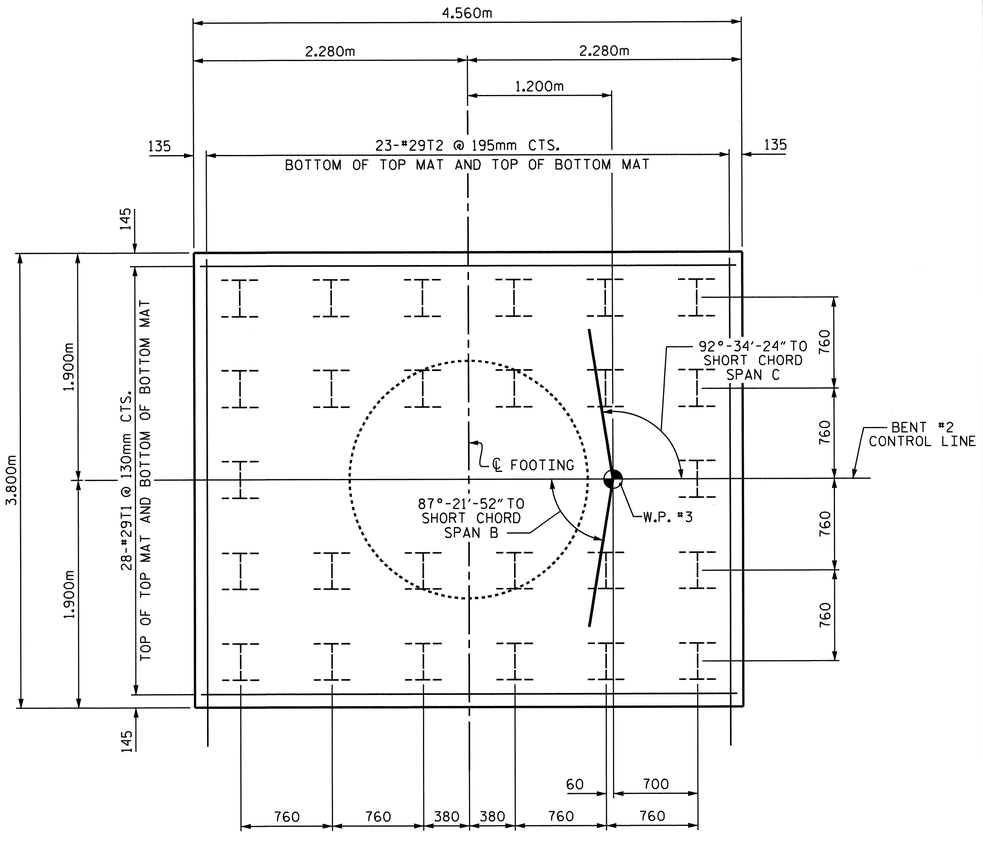


END ELEVATION VIEW



PLAN OF COLUMN



PLAN OF FOOTING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-230
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 14:36
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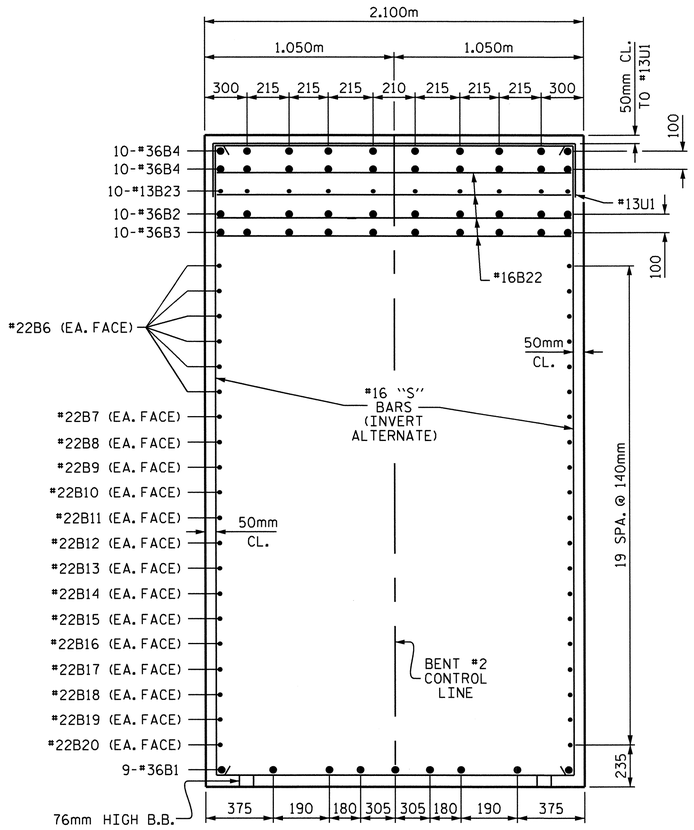
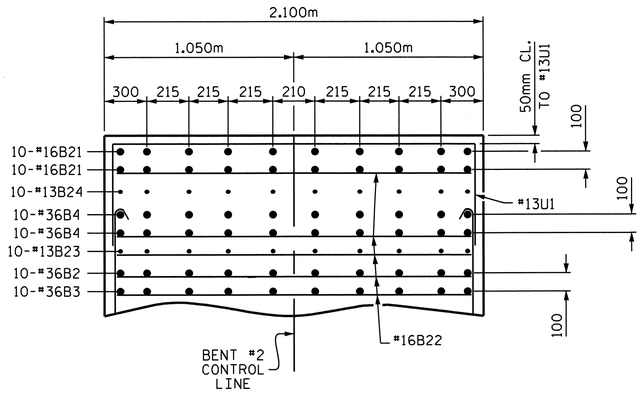
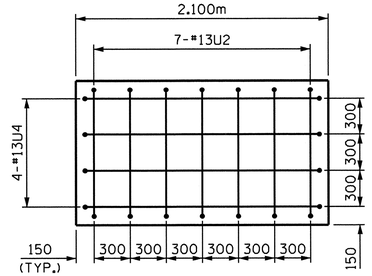


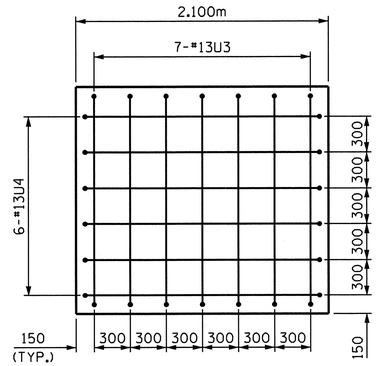
SECTION A-A



PARTIAL SECTION B



VIEW X-X



VIEW Y-Y

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL

3/20/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-231
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:08
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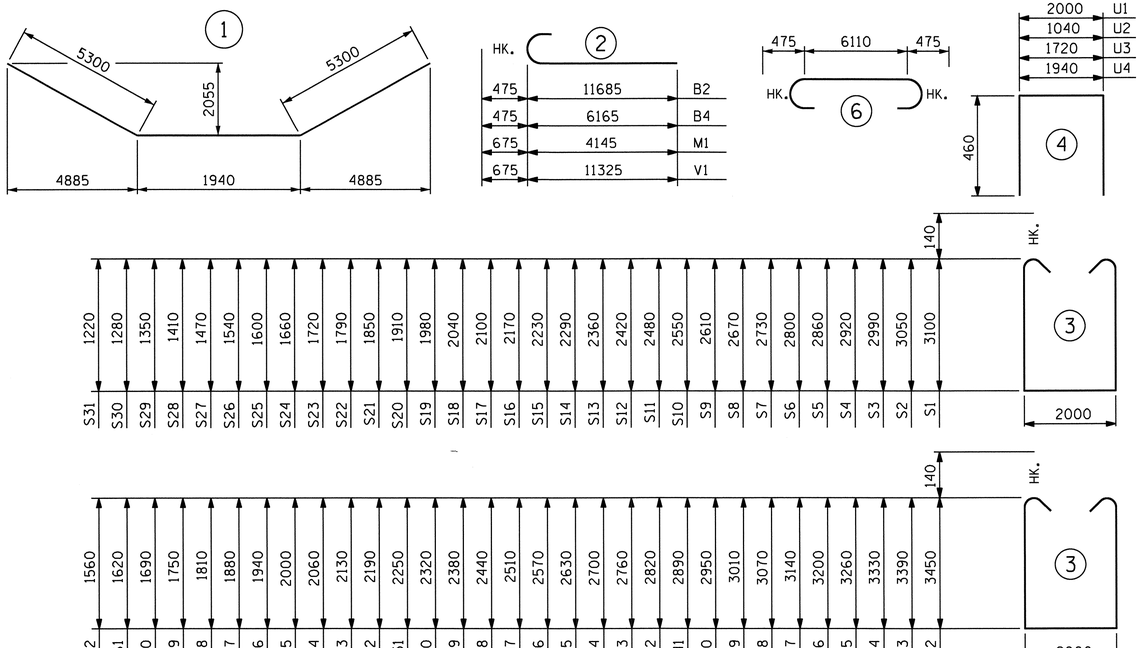
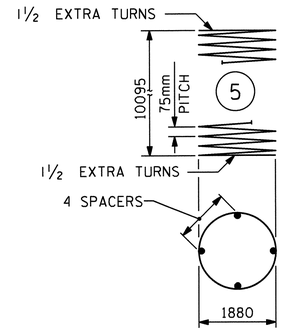
jpadams

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#36	1	12540	892
B2	10	#36	2	12160	961
B3	10	#36	STR	11720	927
B4	20	#36	6	7060	1116
B6	12	#22	STR	11720	428
B7	2	#22	STR	11480	70
B8	2	#22	STR	10820	66
B9	2	#22	STR	10160	62
B10	2	#22	STR	9480	58
B11	2	#22	STR	8820	54
B12	2	#22	STR	8160	50
B13	2	#22	STR	7480	46

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B14	2	#22	STR	6820	41
B15	2	#22	STR	6160	37
B16	2	#22	STR	5500	33
B17	2	#22	STR	4820	29
B18	2	#22	STR	4160	25
B19	2	#22	STR	3500	21
B20	2	#22	STR	2820	17
B21	20	#16	STR	840	26
B22	36	#16	STR	2000	112
B23	10	#13	STR	8880	88
B24	10	#13	STR	3520	35
M1	22	#43	2	4820	1207
S1	1	#16	3	8480	13
S2	1	#16	3	8380	13
S3	1	#16	3	8260	13
S4	1	#16	3	8120	13
S5	1	#16	3	8000	12
S6	1	#16	3	7880	12
S7	1	#16	3	7740	12
S8	1	#16	3	7620	12
S9	1	#16	3	7500	12
S10	1	#16	3	7440	12
S11	1	#16	3	7240	11
S12	1	#16	3	7120	11
S13	1	#16	3	7000	11
S14	1	#16	3	6860	11
S15	1	#16	3	6740	10
S16	1	#16	3	6680	10
S17	1	#16	3	6480	10
S18	1	#16	3	6360	10
S19	1	#16	3	6240	10
S20	1	#16	3	6100	9
S21	1	#16	3	5980	9
S22	1	#16	3	5860	9
S23	1	#16	3	5720	9
S24	1	#16	3	5600	9
S25	1	#16	3	5480	9
S26	1	#16	3	5360	8
S27	1	#16	3	4560	8
S28	1	#16	3	5100	8
S29	1	#16	3	4980	8
S30	1	#16	3	4840	8
S31	1	#16	3	4720	7
S32	1	#16	3	9180	14
S33	1	#16	3	9060	14
S34	1	#16	3	8940	14
S35	1	#16	3	8800	14
S36	1	#16	3	8680	13
S37	1	#16	3	8560	13
S38	1	#16	3	8420	13

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S39	1	#16	3	8300	13
S40	1	#16	3	8180	13
S41	1	#16	3	8060	13
S42	1	#16	3	7900	12
S43	1	#16	3	7800	12
S44	1	#16	3	7680	12
S45	1	#16	3	7540	12
S46	1	#16	3	7420	12
S47	1	#16	3	7300	11
S48	1	#16	3	7160	11
S49	1	#16	3	7040	11
S50	1	#16	3	6920	11
S51	1	#16	3	6780	11
S52	1	#16	3	6660	10
S53	1	#16	3	6540	10
S54	1	#16	3	6400	10
S55	1	#16	3	6280	10
S56	1	#16	3	6160	10
S57	1	#16	3	6040	9
S58	1	#16	3	5900	9
S59	1	#16	3	5780	9
S60	1	#16	3	5660	9
S61	1	#16	3	5520	9
S62	1	#16	3	5400	8
T1	56	#29	STR	4460	1264
T2	46	#29	STR	3700	861
U1	39	#13	4	2920	113
U2	7	#13	4	1960	14
U3	7	#13	4	2640	18
U4	10	#13	4	2860	28
V1	22	#43	2	12000	3004

TOTAL REINFORCING STEEL KGS. 12374

SP-1	1	*	5	808160	803

TOTAL SPIRAL COLUMN REINFORCING STEEL KGS. 803

CLASS A CONCRETE (CU. METERS)

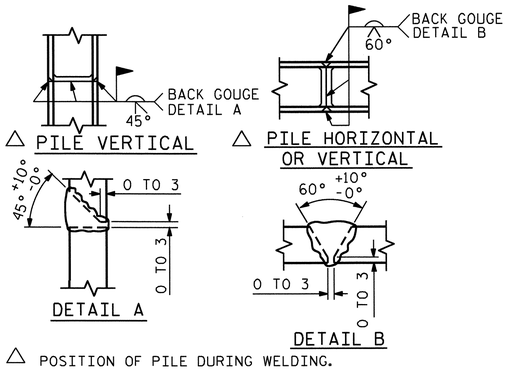
POUR #1 CAP	67.1
POUR #2 COLUMN	30.9
POUR #3 FOOTING	24.3
TOTAL (CU. METERS)	122.3

HP 310 x 79 STEEL PILES
No. 26 METERS 713

FOUNDATION EXCAVATION LUMP SUM

PILES REDRIVES 13 EA.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2

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

SHEET NO. S-232
TOTAL SHEETS 276

STR #5

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
3/12/12

DRAWN BY : J.P. ADAMS DATE : 8/22/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:08
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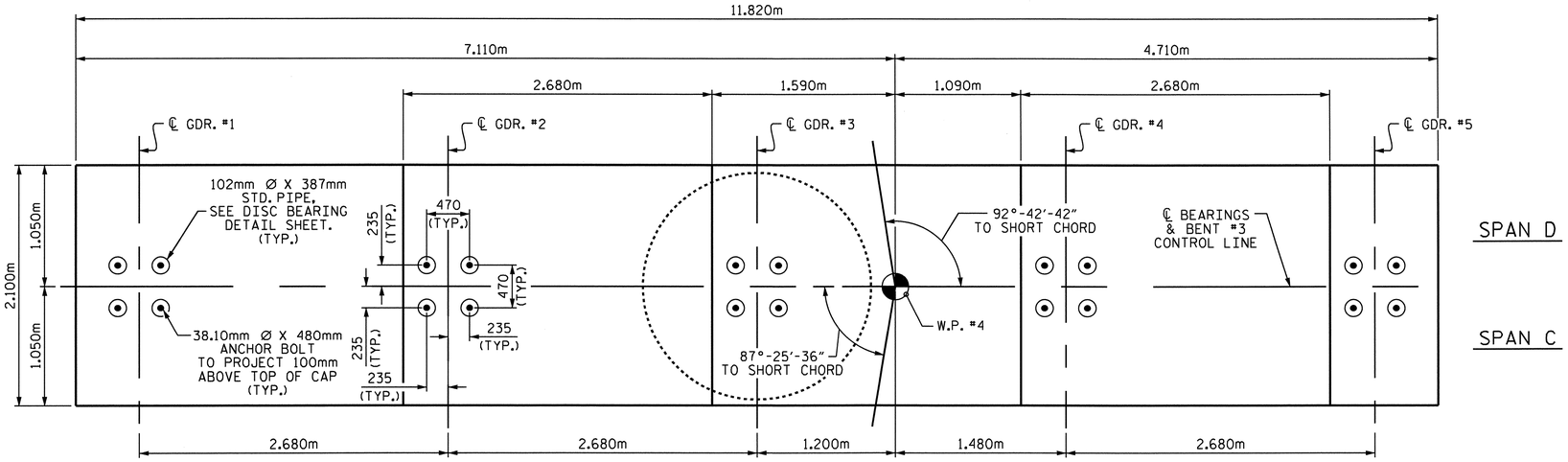
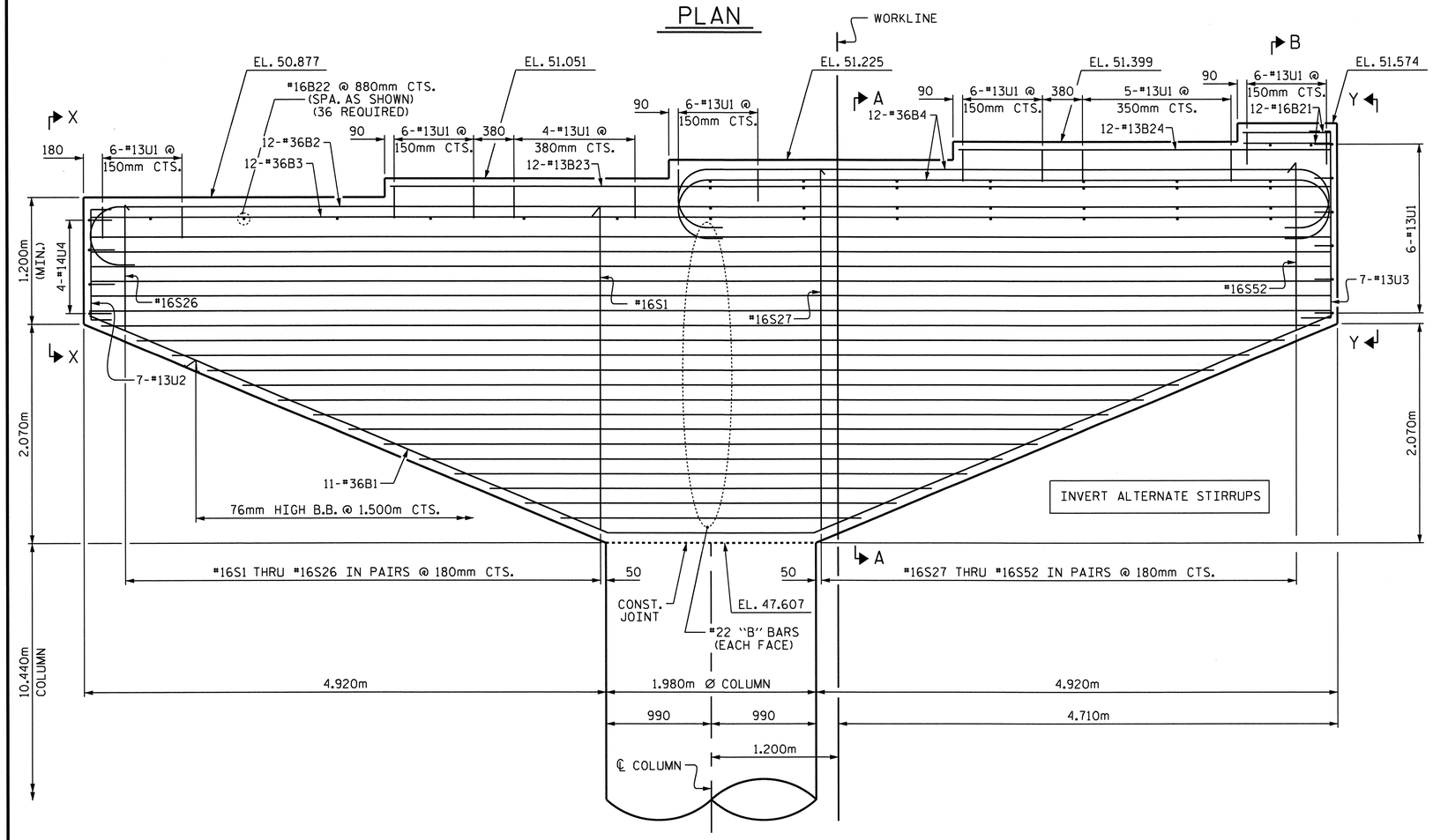
jpadams



PLAN



ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

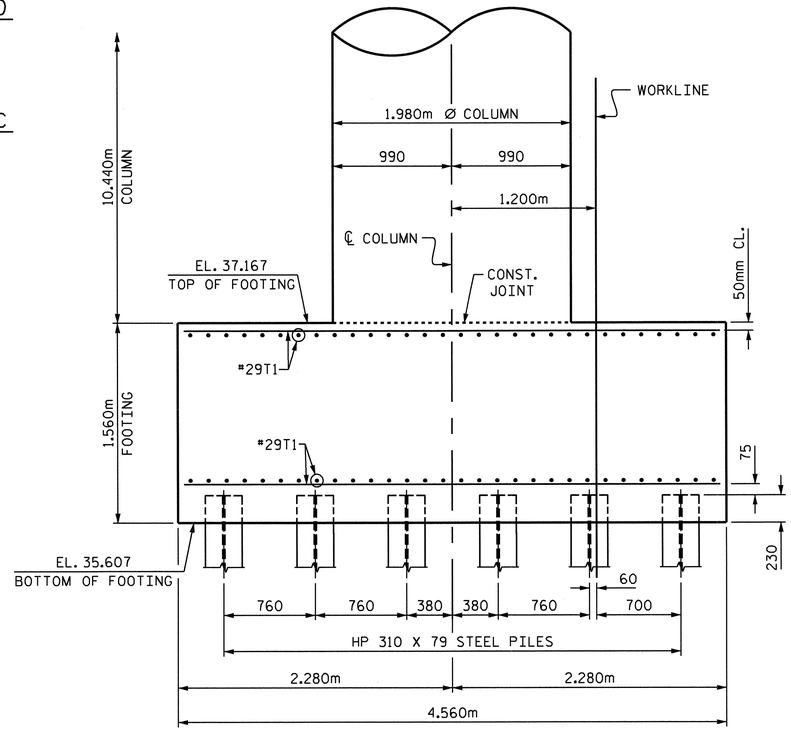
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS OF "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED, SEE SHEET SNSM.

THE FOOTING, COLUMN AND CAP ARE CONSIDERED MASS CONCRETE. FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



ELEVATION

FOR REINFORCING STEEL IN COLUMN, SEE END ELEVATION VIEW.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL

3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-233
1			3			TOTAL SHEETS
2			4			2.76

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:08
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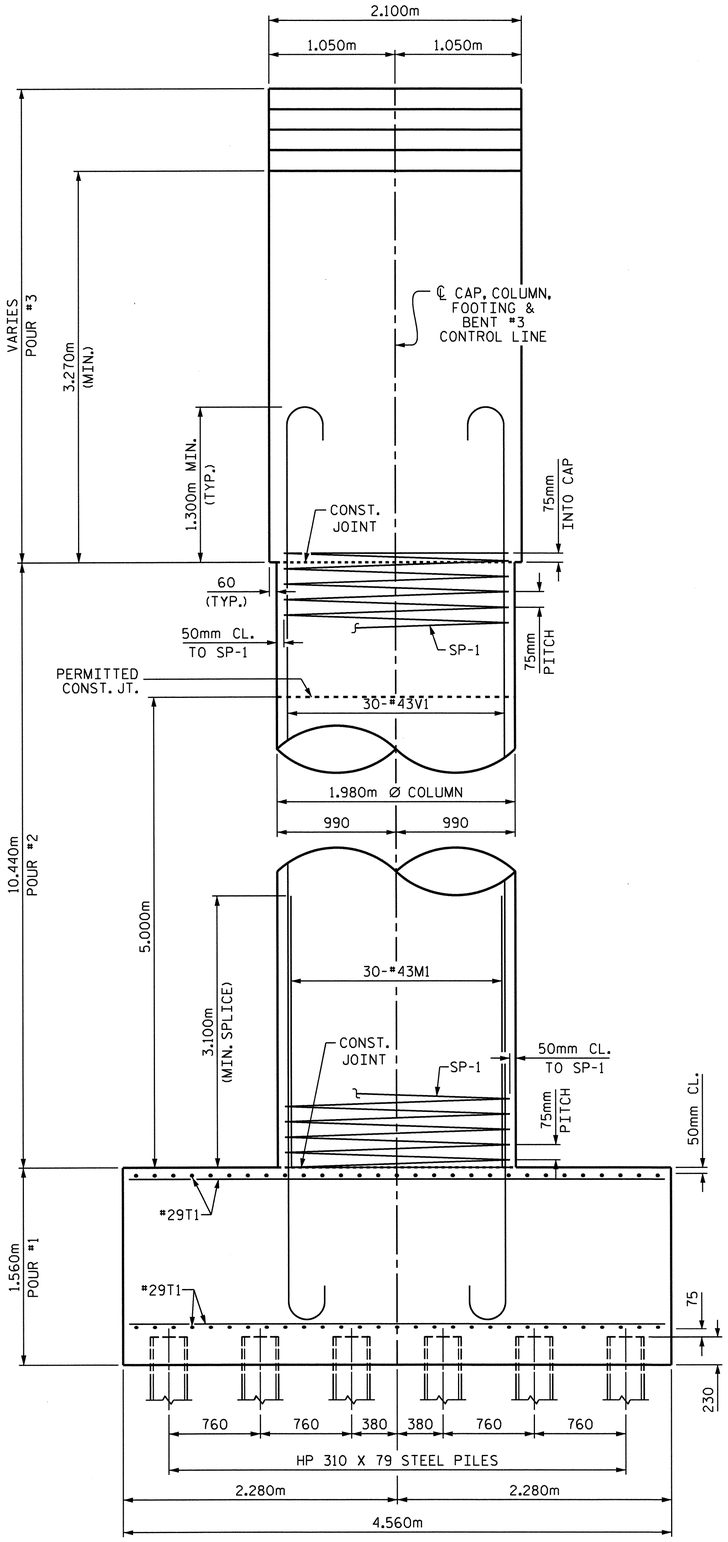
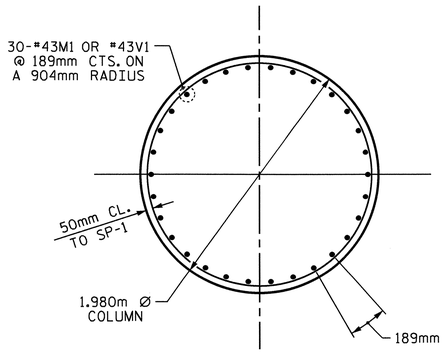
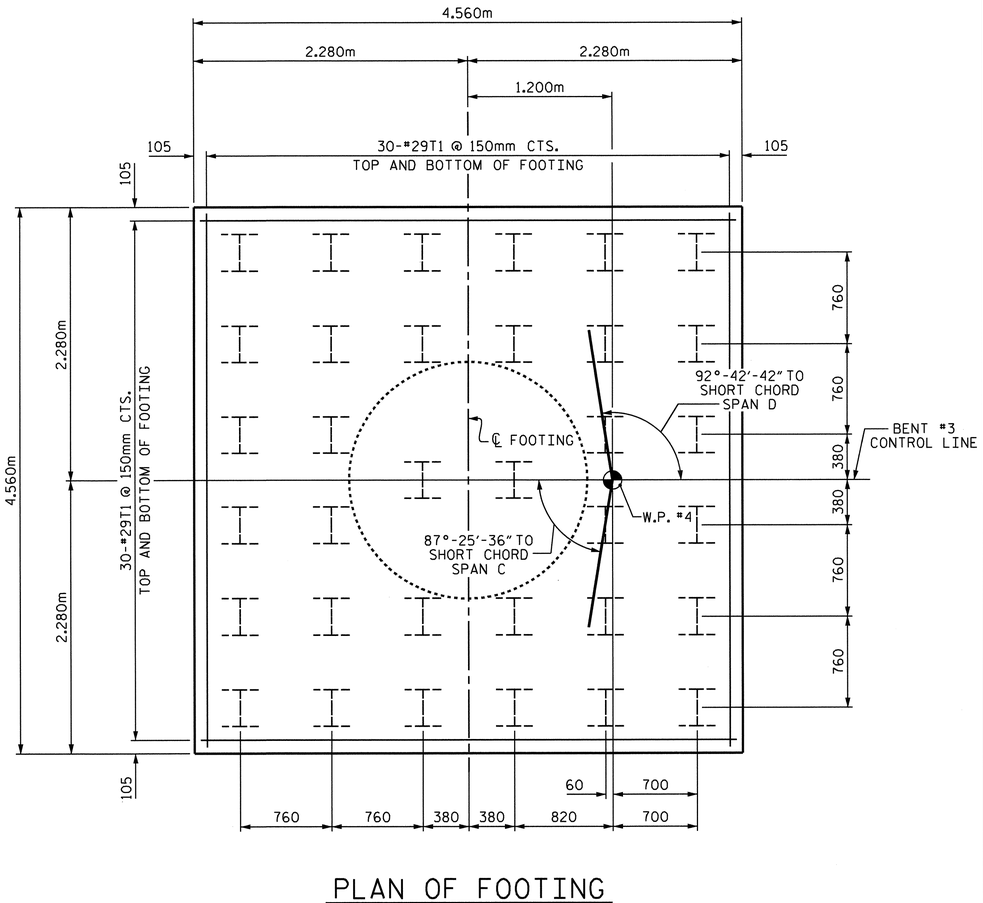


END ELEVATION VIEW



PLAN OF COLUMN



PLAN OF FOOTING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL

3/12/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2334
1			3			TOTAL SHEETS
2			4			276

STR. #5

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CHECKED BY : J. KHARVA DATE : 11/15/11

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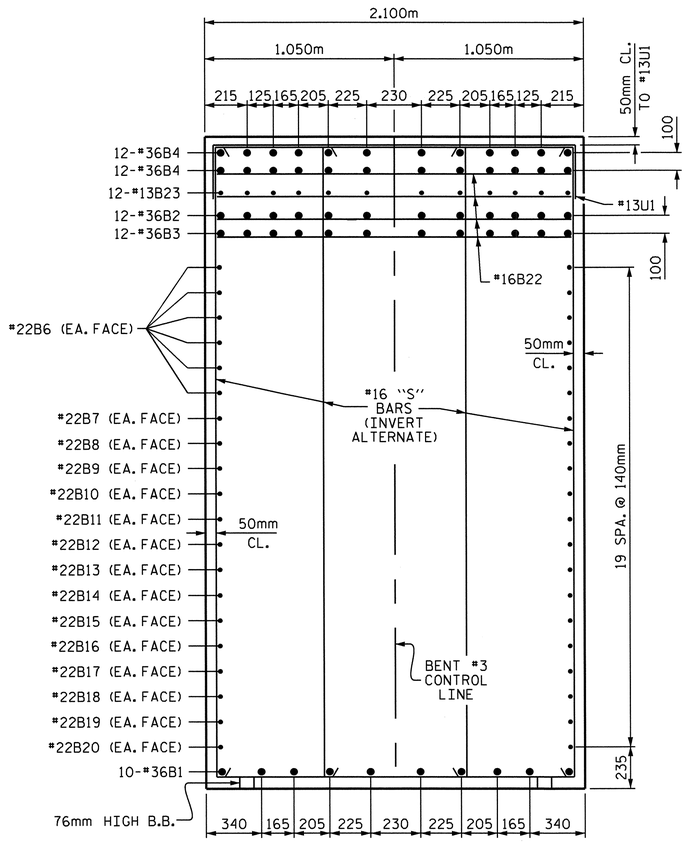
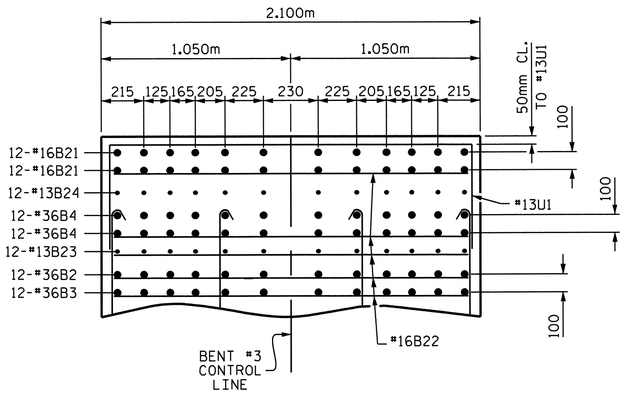
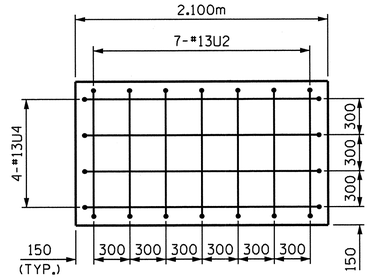


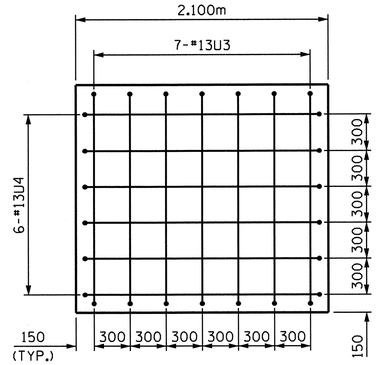
SECTION A-A



PARTIAL SECTION B



VIEW X-X



VIEW Y-Y

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL

3/20/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-235
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 10/13/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:08
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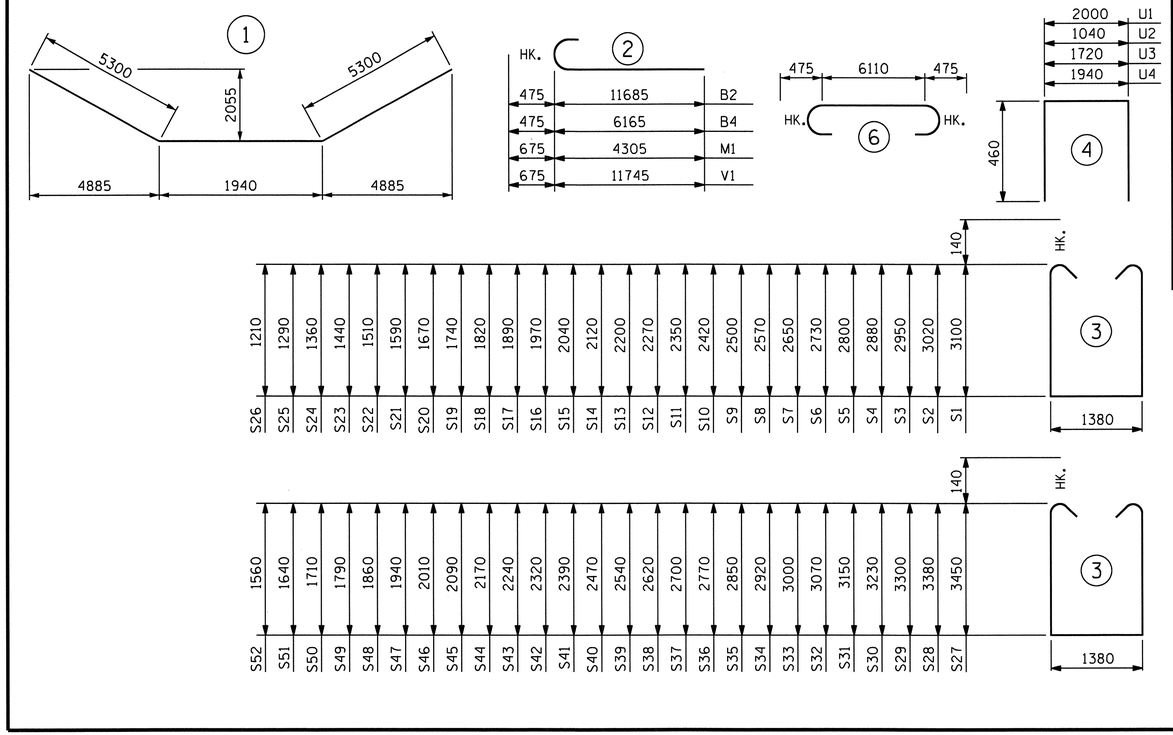
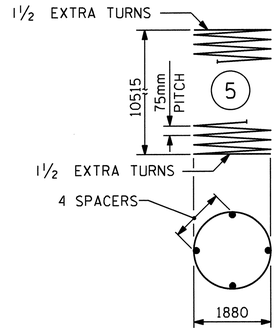
jpadams

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#36	1	12540	1091
B2	12	#36	2	12160	1154
B3	12	#36	STR	11720	1112
B4	24	#36	6	7060	1340
B6	12	#22	STR	11720	428
B7	2	#22	STR	11480	70
B8	2	#22	STR	10820	66
B9	2	#22	STR	10160	62
B10	2	#22	STR	9480	58
B11	2	#22	STR	8820	54
B12	2	#22	STR	8160	50
B13	2	#22	STR	7480	46

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B14	2	#22	STR	6820	41
B15	2	#22	STR	6160	37
B16	2	#22	STR	5500	33
B17	2	#22	STR	4820	29
B18	2	#22	STR	4160	25
B19	2	#22	STR	3500	21
B20	2	#22	STR	2820	17
B21	24	#16	STR	840	31
B22	36	#16	STR	2000	112
B23	12	#13	STR	8880	106
B24	12	#13	STR	3520	42
M1	30	#43	2	4980	1700
S1	2	#16	3	7860	24
S2	2	#16	3	7700	24
S3	2	#16	3	7560	23
S4	2	#16	3	7420	23
S5	2	#16	3	7260	23
S6	2	#16	3	7120	22
S7	2	#16	3	6960	22
S8	2	#16	3	6800	21
S9	2	#16	3	6660	21
S10	2	#16	3	6500	20
S11	2	#16	3	6360	20
S12	2	#16	3	6200	19
S13	2	#16	3	6060	19
S14	2	#16	3	5900	18
S15	2	#16	3	5740	18
S16	2	#16	3	5600	17
S17	2	#16	3	5440	17
S18	2	#16	3	5300	16
S19	2	#16	3	5140	16
S20	2	#16	3	5000	16
S21	2	#16	3	4840	15
S22	2	#16	3	4680	15
S23	2	#16	3	4540	14
S24	2	#16	3	4380	14

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S25	2	#16	3	4240	13
S26	2	#16	3	4080	13
S27	2	#16	3	8560	27
S28	2	#16	3	8420	26
S29	2	#16	3	8260	26
S30	2	#16	3	8120	25
S31	2	#16	3	7960	25
S32	2	#16	3	7800	24
S33	2	#16	3	7660	24
S34	2	#16	3	7500	23
S35	2	#16	3	7360	23
S36	2	#16	3	7200	22
S37	2	#16	3	7060	22
S38	2	#16	3	6900	21
S39	2	#16	3	6740	21
S40	2	#16	3	6600	20
S41	2	#16	3	6440	20
S42	2	#16	3	6300	20
S43	2	#16	3	6140	19
S44	2	#16	3	6000	19
S45	2	#16	3	5840	18
S46	2	#16	3	5680	18
S47	2	#16	3	5540	17
S48	2	#16	3	5380	17
S49	2	#16	3	5240	16
S50	2	#16	3	5080	16
S51	2	#16	3	4940	15
S52	2	#16	3	4780	15
T1	120	#29	STR	4460	2708
U1	39	#13	4	2920	113
U2	7	#13	4	1960	14
U3	7	#13	4	2640	18
U4	10	#13	4	2860	28
V1	30	#43	2	12420	4240

TOTAL REINFORCING STEEL KGS. 15868

SP-1	1	*	5	840420	835

TOTAL SPIRAL COLUMN REINFORCING STEEL KGS. 835

CLASS A CONCRETE (CU. METERS)

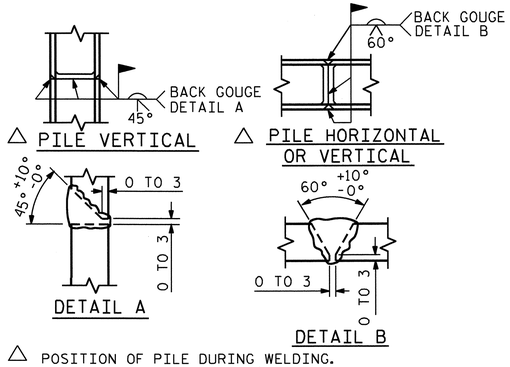
POUR #1 CAP	67.1
POUR #2 COLUMN	32.2
POUR #3 FOOTING	32.5
TOTAL (CU. METERS)	131.8

HP 310 x 79 STEEL PILES
No. 34 METERS 952

FOUNDATION EXCAVATION LUMP SUM

PILES REDRIVES 16 EA.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-236
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
3/20/12

STR #5

DRAWN BY : J.P. ADAMS DATE : 8/22/11
CHECKED BY : J. KHARVA DATE : 11/15/11

20-MAR-2012 12:08
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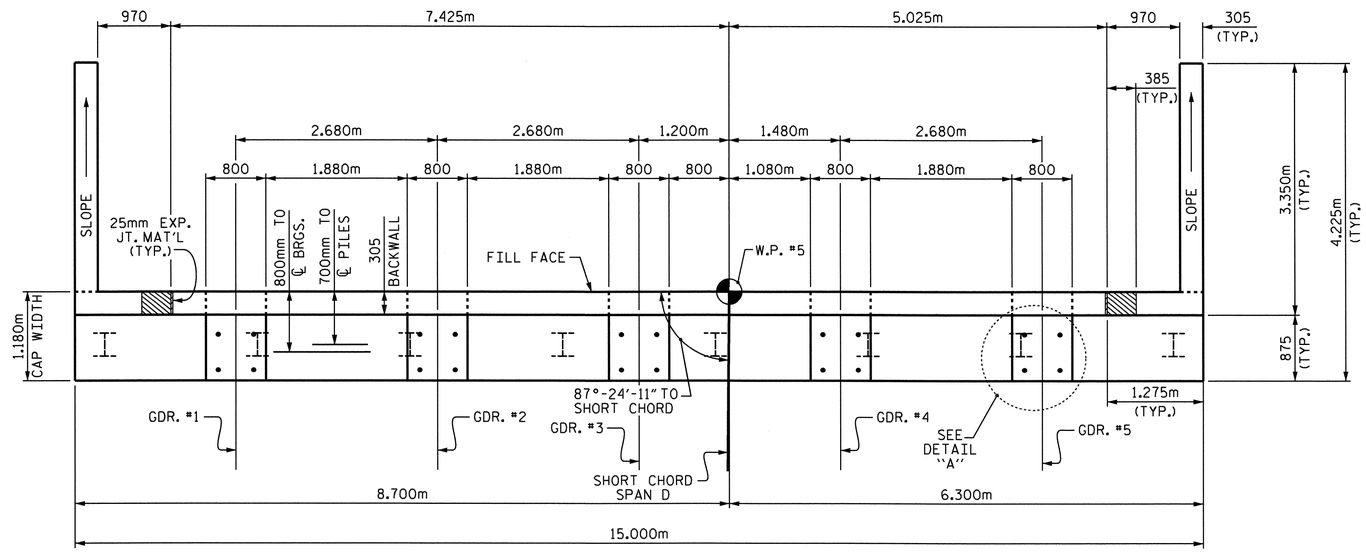
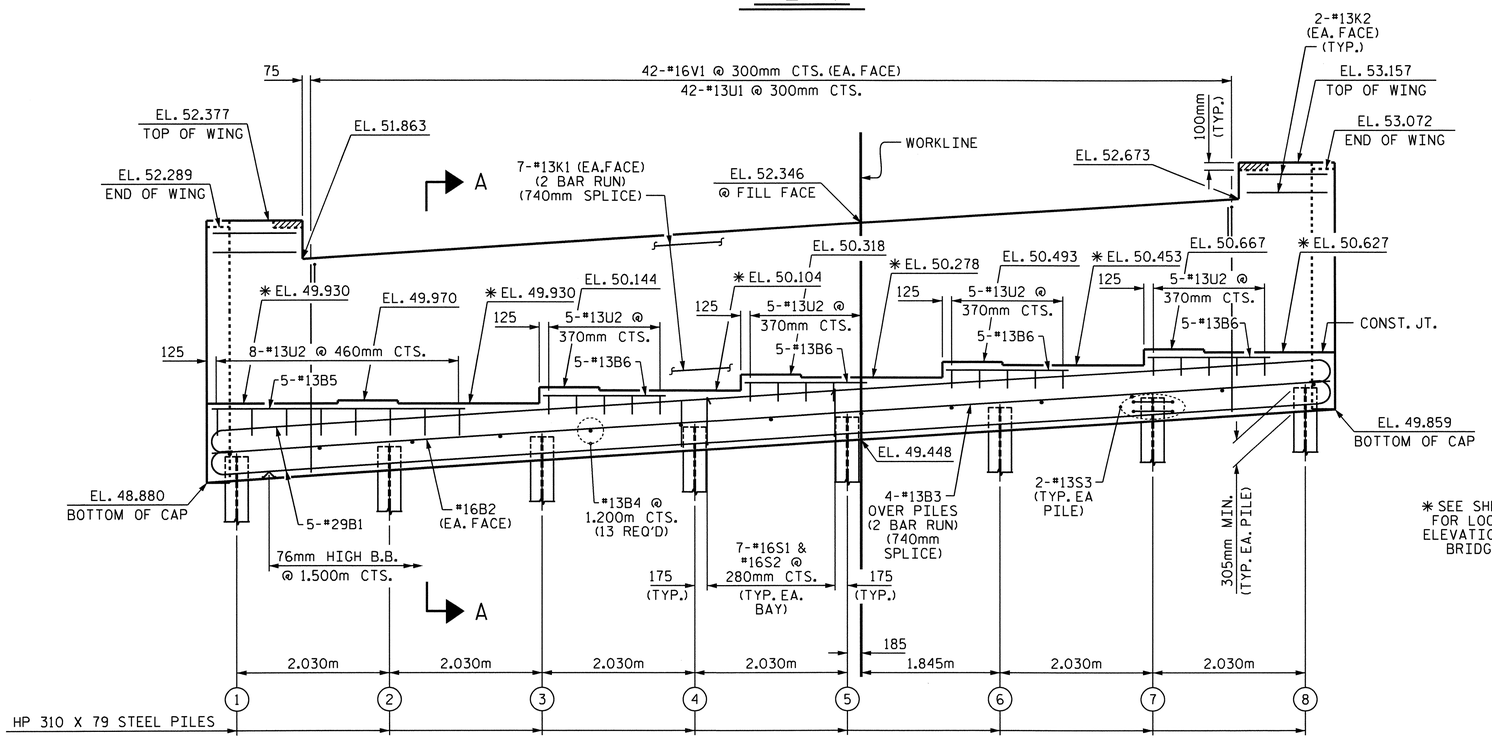
jpadams



PLAN



ELEVATION

✱ SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

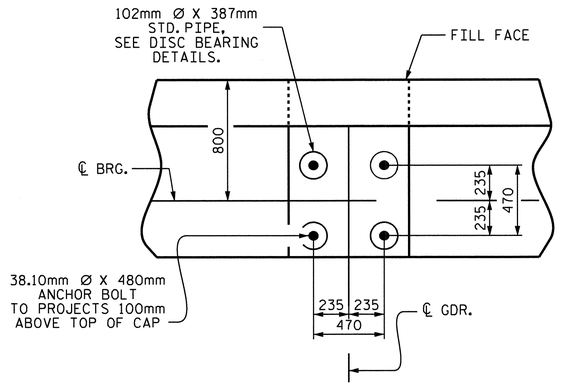
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2 %.

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

FOR GALVANIZED REINFORCING STRAPS, SEE "MECHANICALLY STABILIZED EARTH RETAINING WALL" SPECIAL PROVISION AND PLANS.



DETAIL "A"

(TYP. EA. BRIDGE SEAT)

TOP OF PILE ELEVATIONS	
1	EL. 49.221
2	EL. 49.353
3	EL. 49.486
4	EL. 49.618
5	EL. 49.751
6	EL. 49.883
7	EL. 50.016
8	EL. 50.148

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-237
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 8/18/11
CHECKED BY : R.L. CHESSON DATE : 9/11

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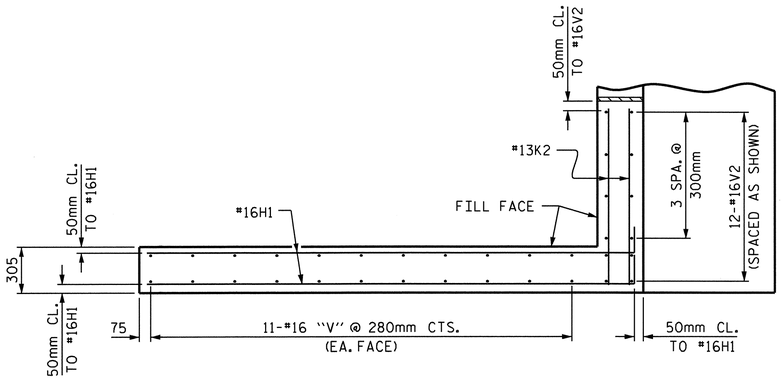
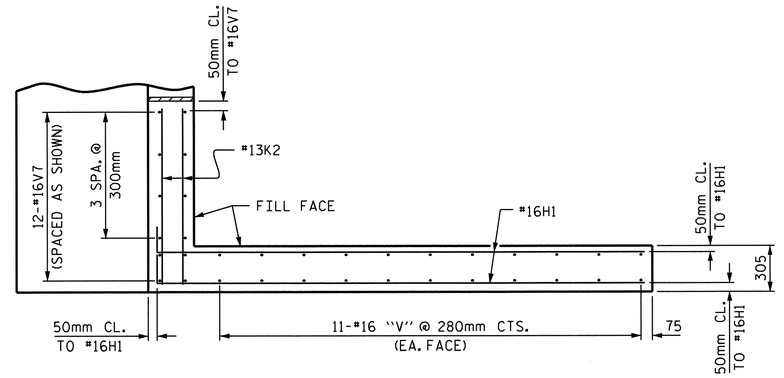
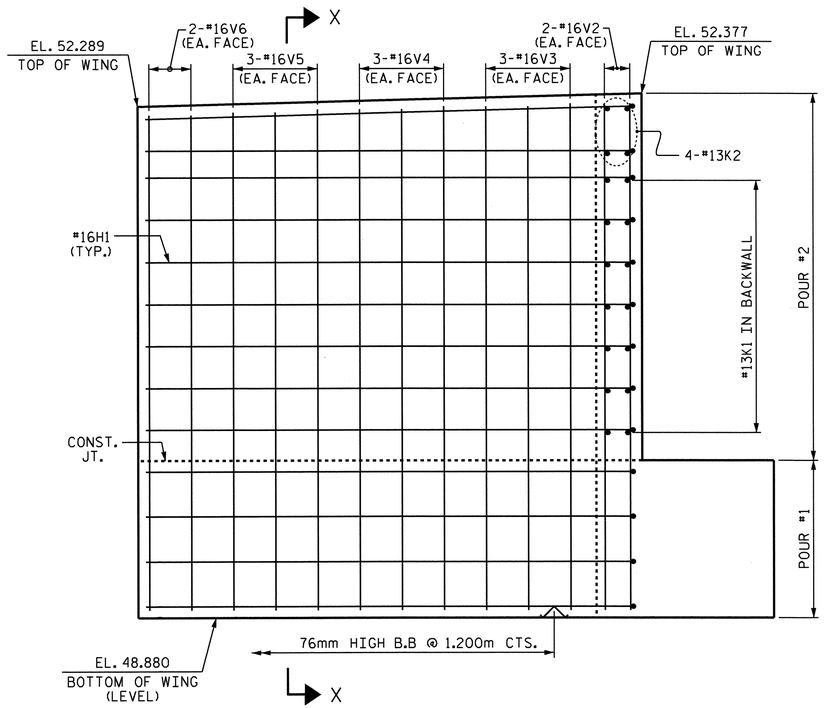


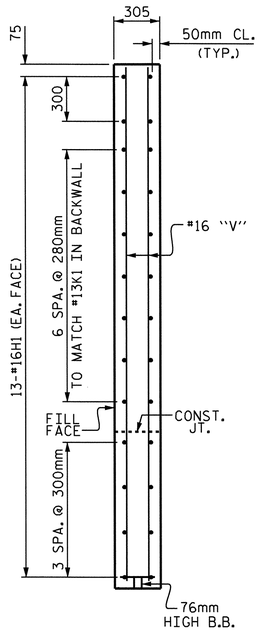
PLAN OF LEFT WING



PLAN OF RIGHT WING



ELEVATION OF LEFT WING



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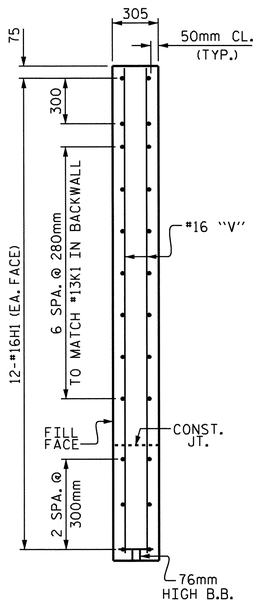

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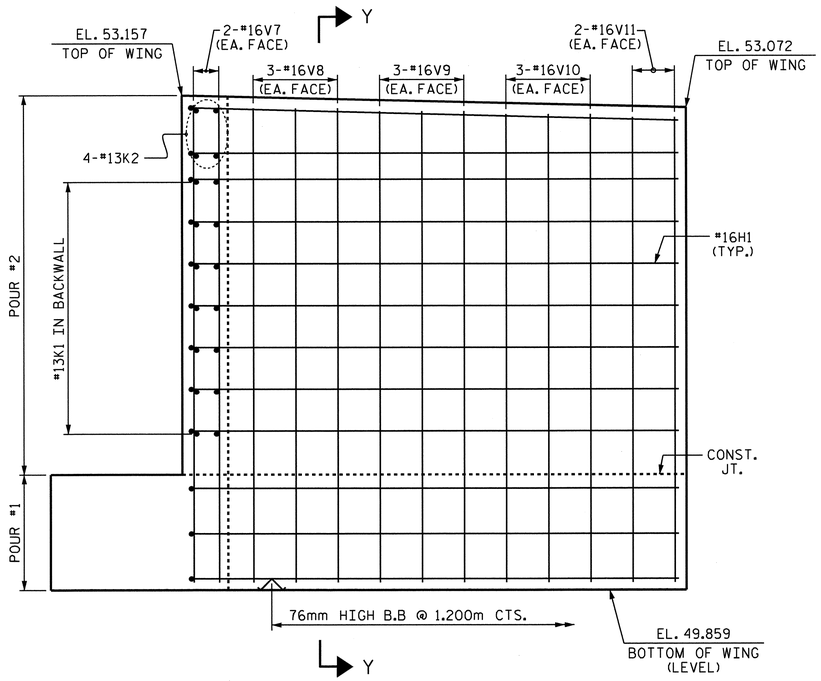

ELEVATION OF RIGHT WING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-238
1			3			TOTAL SHEETS
2			4			276

STR. #5

DRAWN BY : J.P. ADAMS DATE : 8/25/11
CHECKED BY : R.L. CHESSON DATE : 9/11

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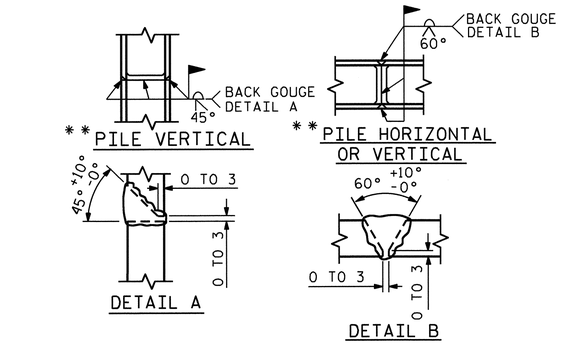
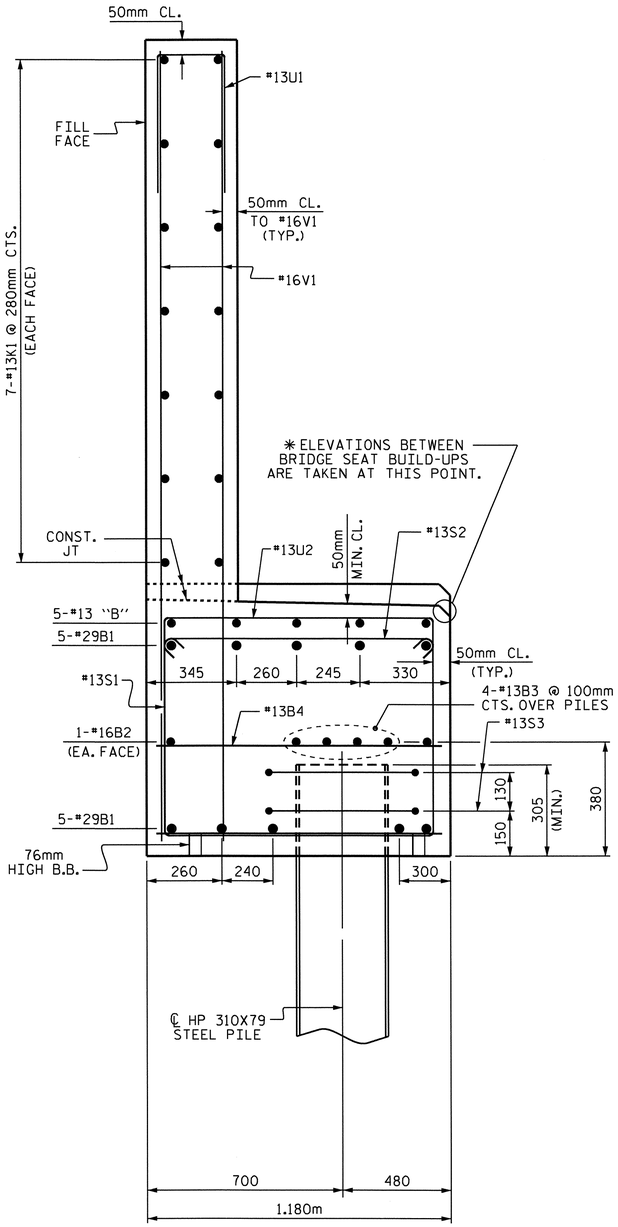
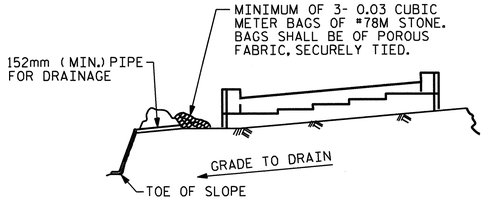


** POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A



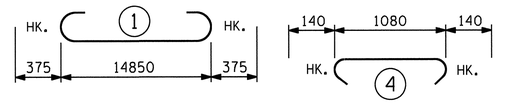
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

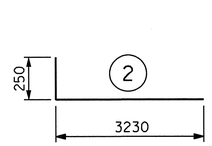
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

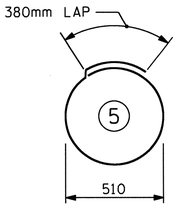
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

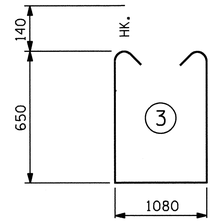
TEMPORARY DRAINAGE AT END BENT

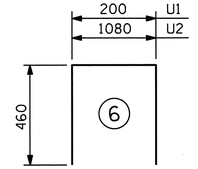
BAR TYPES











ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#29	1	15600	789
B2	2	#16	STR	14900	46
B3	8	#13	STR	7820	62
B4	13	#13	STR	1080	14
B5	5	#13	STR	3340	17
B6	20	#13	STR	1620	32
H1	50	#16	2	3480	270
K1	28	#13	STR	7820	218
K2	8	#13	STR	1160	9
S1	49	#16	3	2660	202
S2	49	#16	4	1360	103
S3	16	#13	5	1980	31
U1	42	#13	6	1120	47
U2	28	#13	6	2000	56
V1	84	#16	STR	2780	362
V2	12	#16	STR	3380	63
V3	6	#16	STR	3360	31
V4	6	#16	STR	3340	31
V5	6	#16	STR	3320	31
V6	4	#16	STR	3300	20
V7	12	#16	STR	3180	59
V8	6	#16	STR	3160	29
V9	6	#16	STR	3140	29
V10	6	#16	STR	3120	29
V11	4	#16	STR	3100	19

TOTAL REINFORCING STEEL KGS. 2599

CLASS A CONCRETE (CU. METERS)

POUR #1	CAP & LOWER PART OF WINGS	18.4
POUR #2	BACKWALL & UPPER PART OF WINGS	13.9
	TOTAL (CU. METERS)	32.3

HP 310x79 STEEL PILES No. 8	METERS 268
PILE REDRIVES	6 EA.
FRICTION REDUCING COATING FOR HP 310X79 PILES	310m²

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-239
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 8/22/11
CHECKED BY : R.L. CHESSON DATE : 9/11

14-FEB-2012 07:31
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jpadams

STR #5

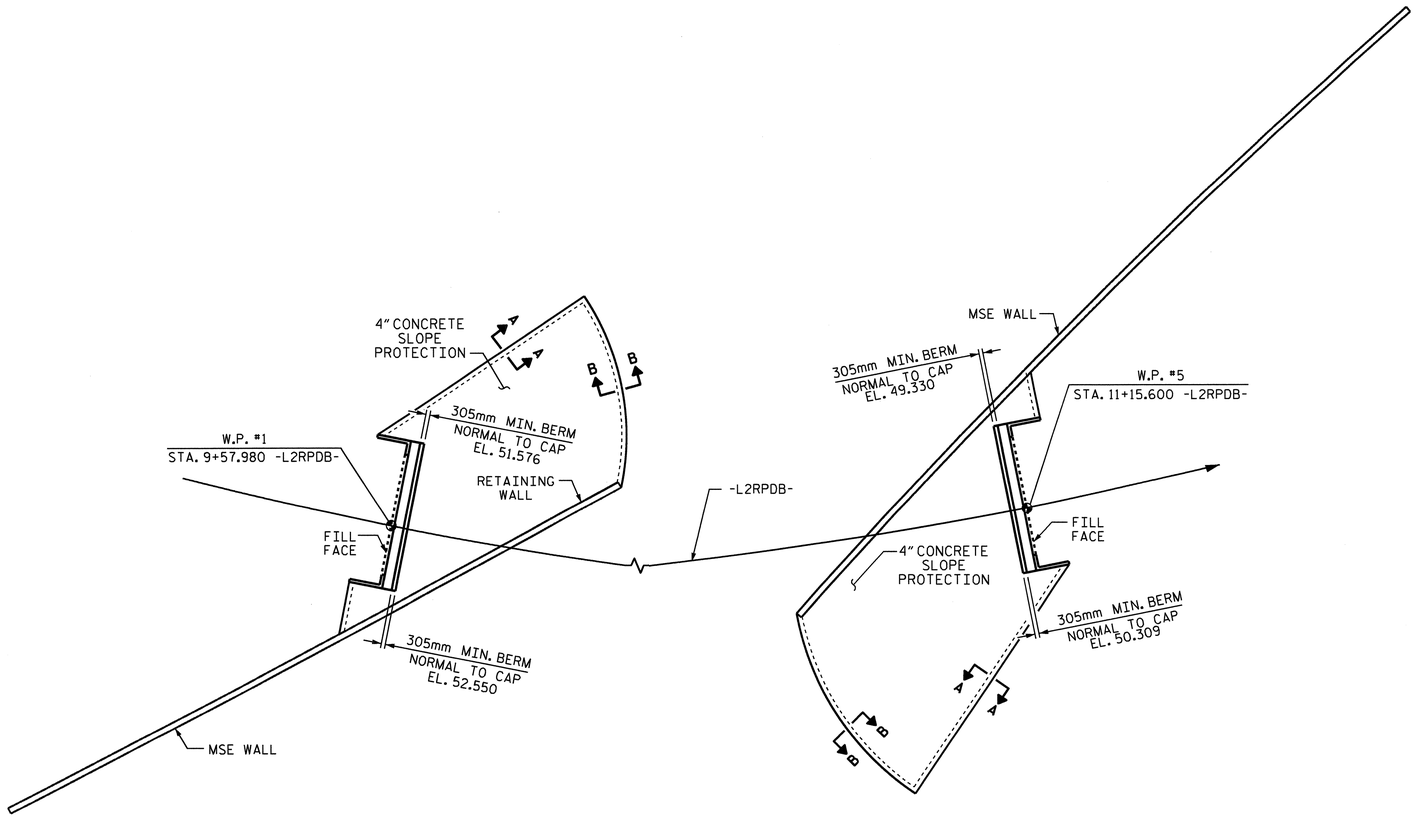
NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

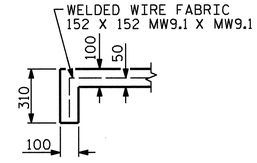
SLOPE PROTECTION SHALL CONSIST OF 100mm POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 152 X 152 - W9.1 X W9.1, 1520mm WIDE. SLOPE PROTECTION SHALL BE POURED IN 1520mm STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 600mm LONG #13 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 450mm MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 1220mm AND 1520mm STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 152mm. THE COST OF THE WELDED WIRE FABRIC AND #13 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE METER FOR SLOPE PROTECTION.

BRIDGE @ STA. 10+03.224 -L2RPDB-	100mm SLOPE PROTECTION	* WELDED WIRE FABRIC 1520mm WIDE
	SQUARE METERS	APPROX. METERS
END BENT #1	515	375
END BENT #2	610	445

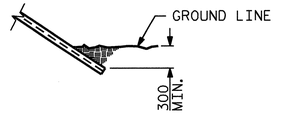
* QUANTITY SHOWN IS BASED ON 1520mm POURS.



PLAN OF SLOPE PROTECTION



SECTION A-A



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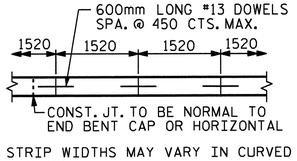
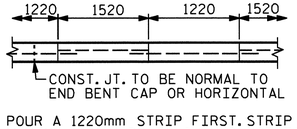


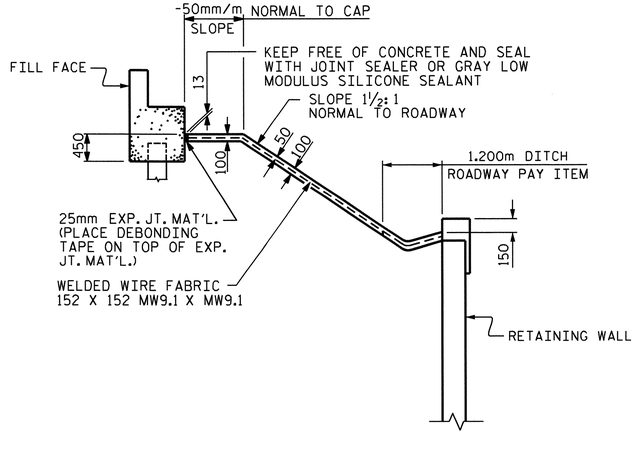
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



POUR A 1220mm STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



SECTION ALONG ℄ ROADWAY

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SLOPE PROTECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2.40
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 11/17/11
CHECKED BY : H.A. LOCKLEAR DATE : 11/28/11

20-MAR-2012 12:08
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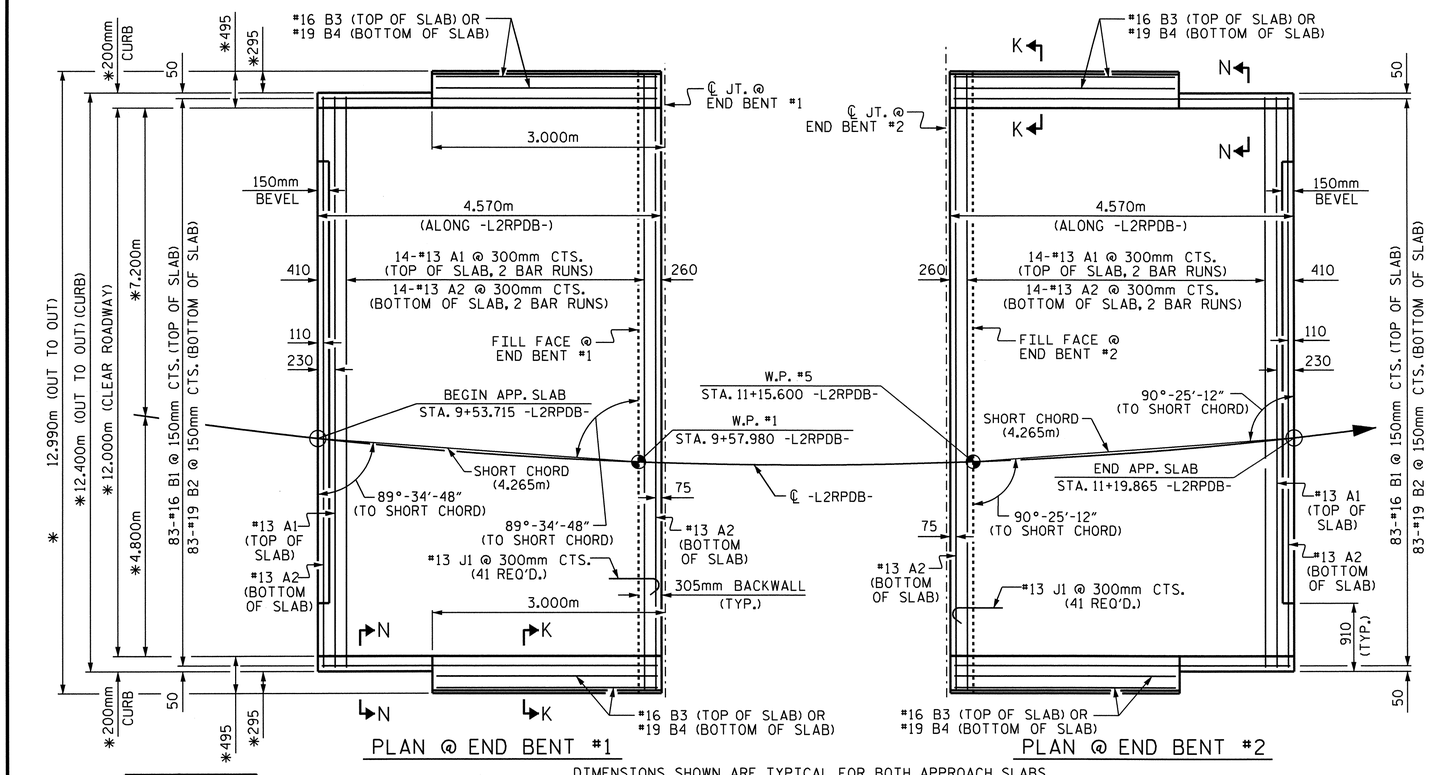
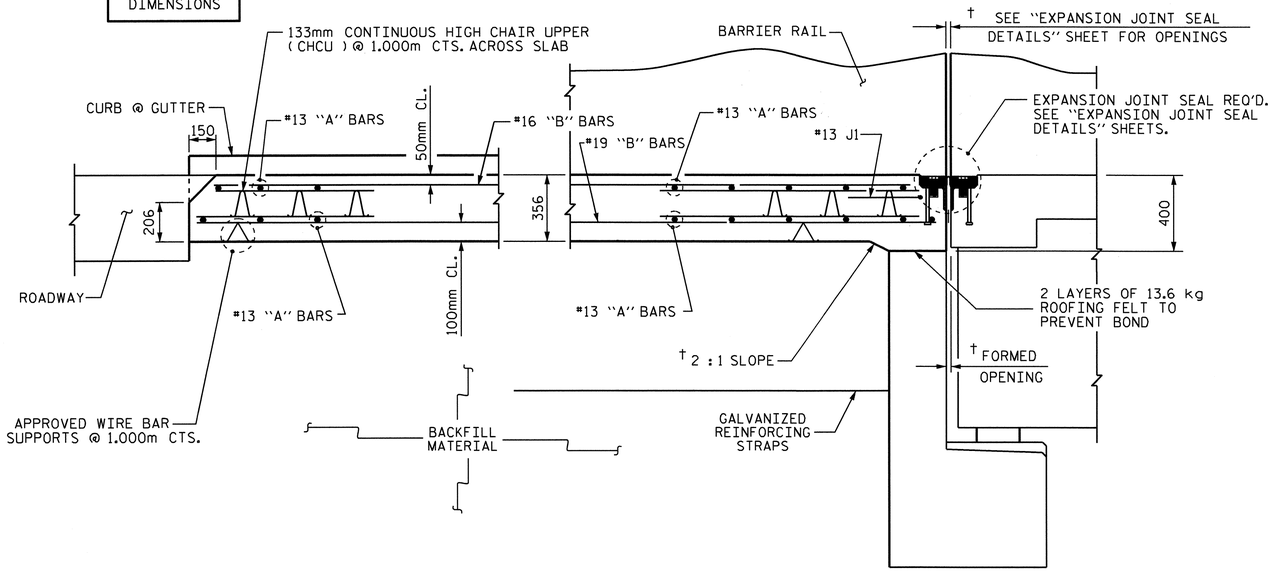
jpadams

STR. #5



DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

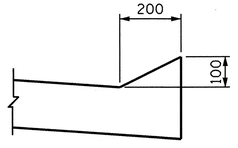
* RADIAL DIMENSIONS



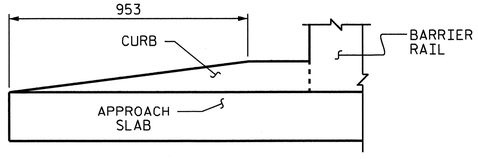
† NORMAL TO END BENT

SECTION THRU SLAB

SECTION K-K



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

ARC OFFSETS ARE NEGLIGIBLE THEREFORE NOT SHOWN.

FOR GALVANIZED REINFORCING STRAPS, SEE "MECHANICALLY STABILIZED EARTH RETAINING WALL" SPECIAL PROVISION AND PLANS.

BILL OF MATERIAL

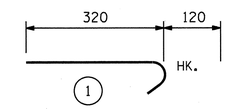
APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#13	STR	6760	202
A2	32	#13	STR	6720	214
* B1	83	#16	STR	4200	541
B2	83	#19	STR	4460	827
* B3	4	#16	STR	2800	17
B4	4	#19	STR	2900	26
* J1	41	#13	1	440	18
REINFORCING STEEL				kg.	1067
* EPOXY COATED REINFORCING STEEL				kg.	778
CLASS AA CONCRETE				C. M.	20.9

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	30	#13	STR	6760	202
A2	32	#13	STR	6720	214
* B1	83	#16	STR	4200	541
B2	83	#19	STR	4460	827
* B3	4	#16	STR	2800	17
B4	4	#19	STR	2900	26
* J1	41	#13	1	440	18
REINFORCING STEEL				kg.	1067
* EPOXY COATED REINFORCING STEEL				kg.	778
CLASS AA CONCRETE				C. M.	20.9

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SPLICE CHART

#13 A1	610
#13 A2	540

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL 2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-241
1			3			TOTAL SHEETS
2			4			276

STR. #5 STD. NO. BAS2SM

ASSEMBLED BY :	B. L. GREEN	DATE : 10/14/11
CHECKED BY :	J. G. KHARVA	DATE : 11/7/11
DRAWN BY : RH 5/99	REV. 5/7/03R	RWW/JTE
CHECKED BY : RDR 5/99	REV. 5/1/06RR	KMM/GM
	REV. 10/1/11	MAA/GM

14-FEB-2012 07:31
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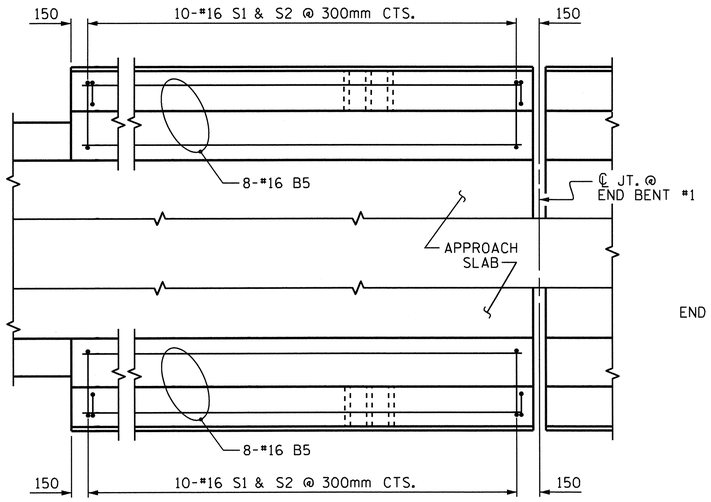
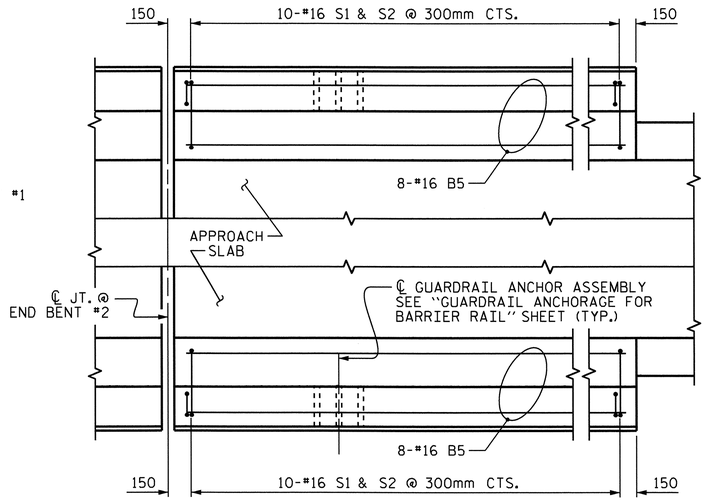
jpadams



END BENT #1



END BENT #2

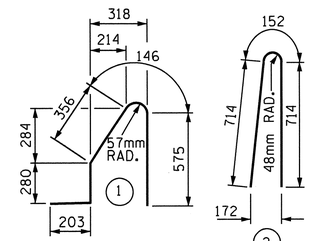
NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

BAR TYPES



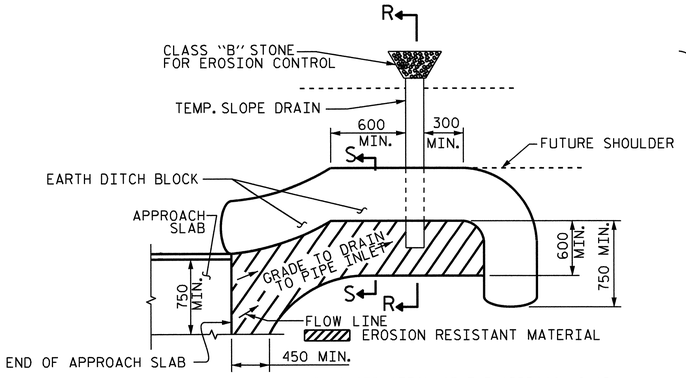
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY

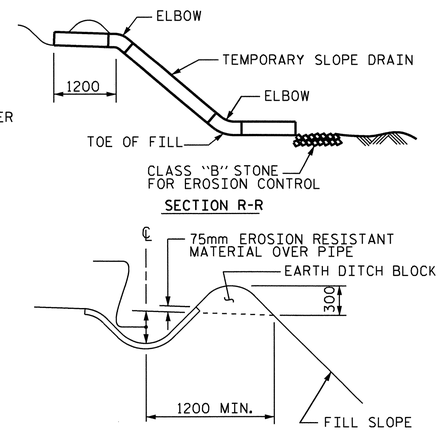
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B5	32	#16	STR	2900	144
✱S1	40	#16	1	1560	97
✱S2	40	#16	2	1580	98
✱EPOXY COATED REINFORCING STEEL					339 kg.
CLASS AA CONCRETE					3.0 CU. METER
CONCRETE BARRIER RAIL					12.000 METERS

PLAN OF BARRIER RAIL

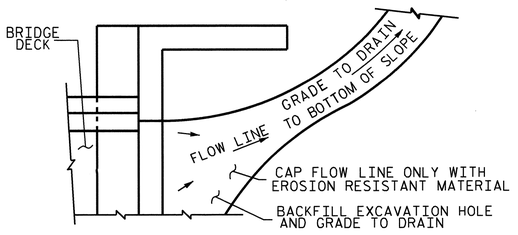


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 50mm 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, 305mm IN DIAMETER.

PLAN VIEW



SECTION S-S

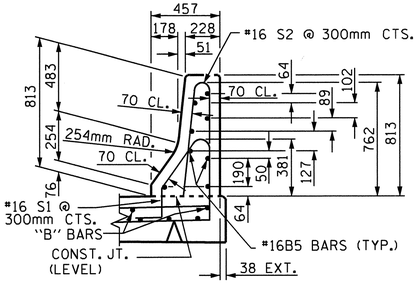


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU RAIL

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-242
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIJAY A. PATEL
2/14/12

STR. #5 STD. NO. BAS4SM

ASSEMBLED BY : B. L. GREEN DATE : 10/14/11	
CHECKED BY : J. G. KHARVA DATE : 11/7/11	
DRAWN BY : FCJ 11/88	REV. 5/7/03 RWW/JTE
CHECKED BY : ARB 11/88	REV. 5/1/06RRR MAA/KMM
	REV. 10/1/11 MAA/GM

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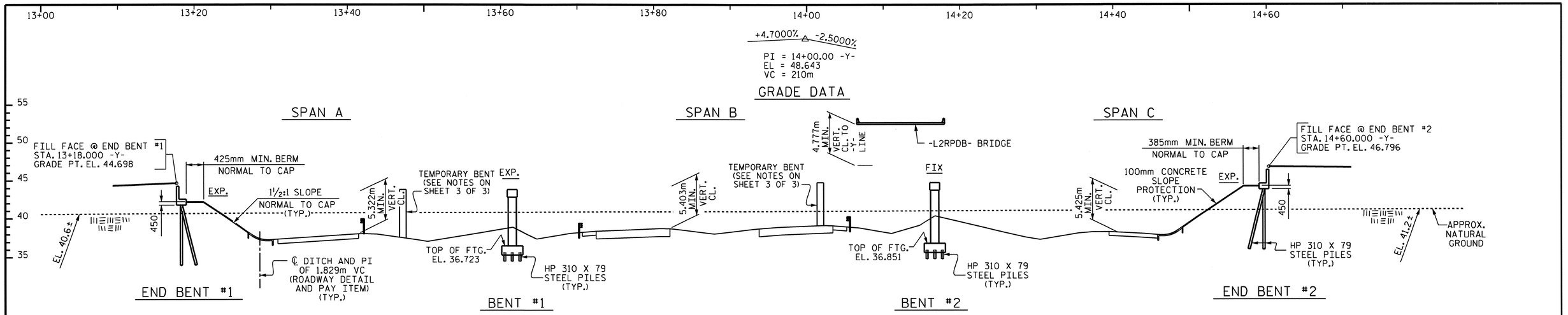
jpadams



SECTION ALONG -Y-

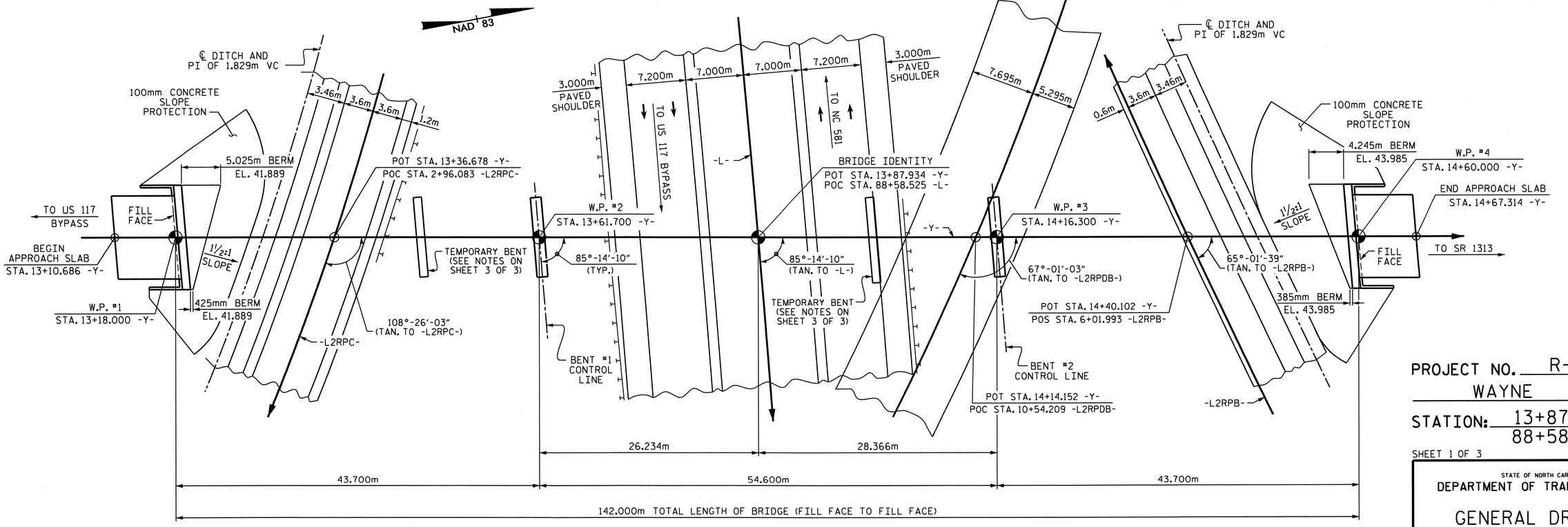
SECTION AT END BENTS & BENTS TAKEN AT RIGHT ANGLES

HORIZONTAL CURVE DATA

PI Sta 6+93.669 -L2RPC-
Δ = 113°-01'-36.3" (RT)
L = 700.305m
T = 536.619m
R = 355.000m
SE = 0.070

PI Sta 6+02.479 -L2RPB-
Θs = 2°-17'-30.6"
Ls = 60.000m
Lt = 40.003m
St = 20.003m

PI Sta 86+56.056 -L-
Δ = 20°-45'-49.6" (RT)
L = 905.991m
T = 458.019m
R = 2,500.000m
SE = 0.025



PLAN

PILES & FOOTINGS ARE NOT SHOWN FOR CLARITY

NORTH CAROLINA PROFESSIONAL SEAL 24094 ENGINEER BUCH CHARLES HUNT
3/20/12

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-
88+58.525 -L-

SHEET 1 OF 3 BRIDGE #378

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

GENERAL DRAWING

FOR BRIDGE ON SR 1300 (SALEM CHURCH RD.) OVER US 70 (GOLDSBORO BYPASS) BETWEEN US 117 BYPASS AND SR 1313

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-243
1			3			TOTAL SHEETS
2			4			276

STR. #6

DRAWN BY : J.P. ADAMS DATE : 11/17/11
CHECKED BY : V.A. PATEL DATE : 12/5/11

20-MAR-2012 09:39
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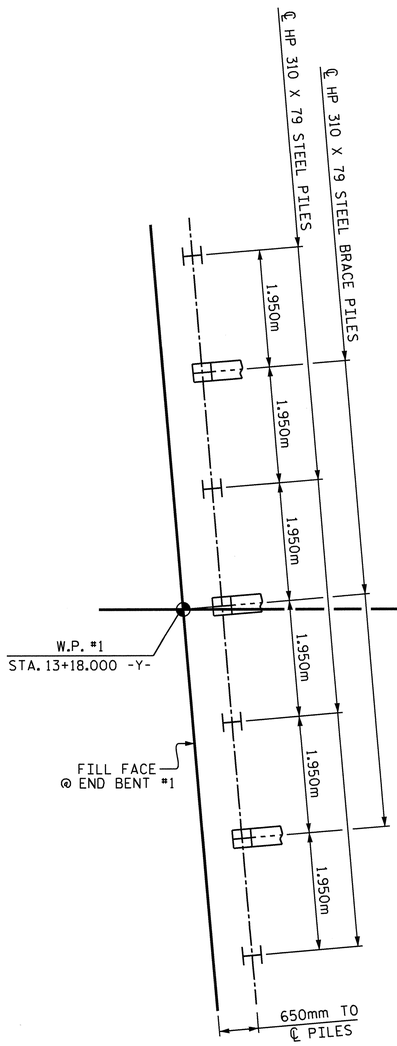
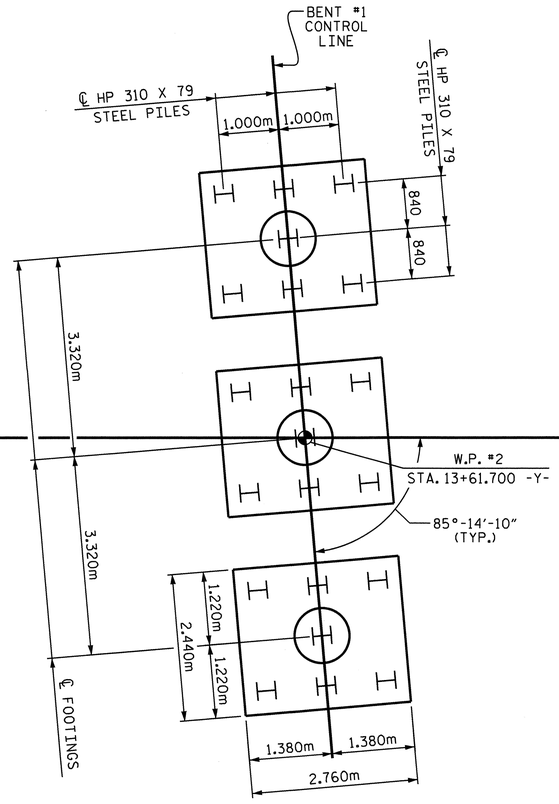
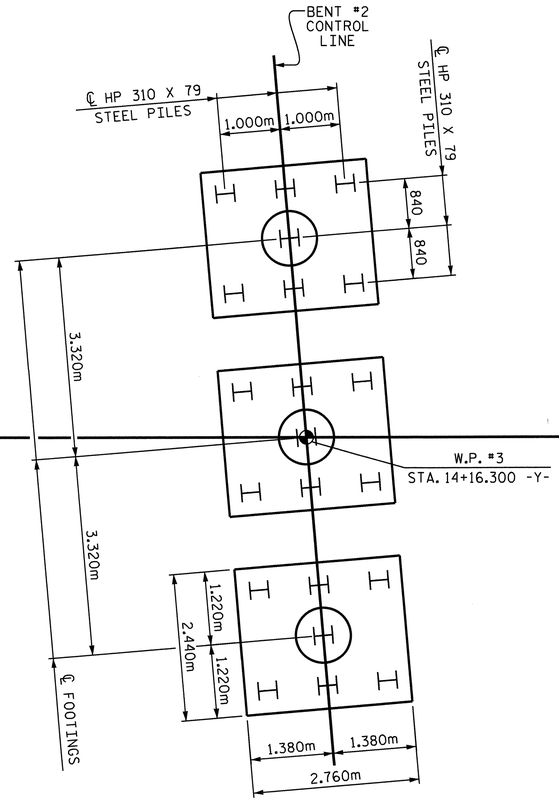


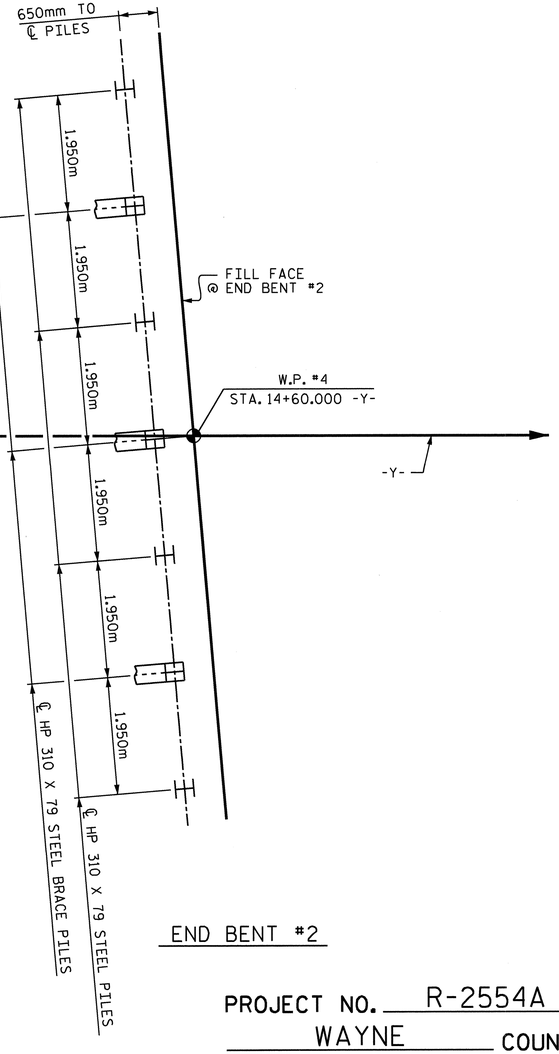
END BENT #1



BENT #1



BENT #2



END BENT #2

FOUNDATION NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 1340 kN PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO. 1 AND END BENT NO. 2 IS 670kN PER PILE.

DRIVE PILES AT BENT NO. 1 AND BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 1424 kN PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT NO. 1 AND BENT NO. 2 IS 712 kN PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE HE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SPECIAL PROVISIONS.

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
HP 310 X 79 PILES ARE BATTERED 250 TO 1000 @ END BENTS
& 125 TO 1000 @ BENTS.
FOOTING DIMENSIONS ARE TYPICAL FOR EACH FOOTING @ BENT #1 & BENT #2.

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIKRANT A. PATEL
3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1300 (SALEM CHURCH RD.) OVER US 70 (GOLDSBORO BYPASS) BETWEEN US 117 BYPASS AND SR 1313

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-244
1			3			TOTAL SHEETS
2			4			276

STR. #6

DRAWN BY : J.P. ADAMS DATE : 11/21/11
CHECKED BY : V.A. PATEL DATE : 12/5/11

20-MAR-2012 09:40
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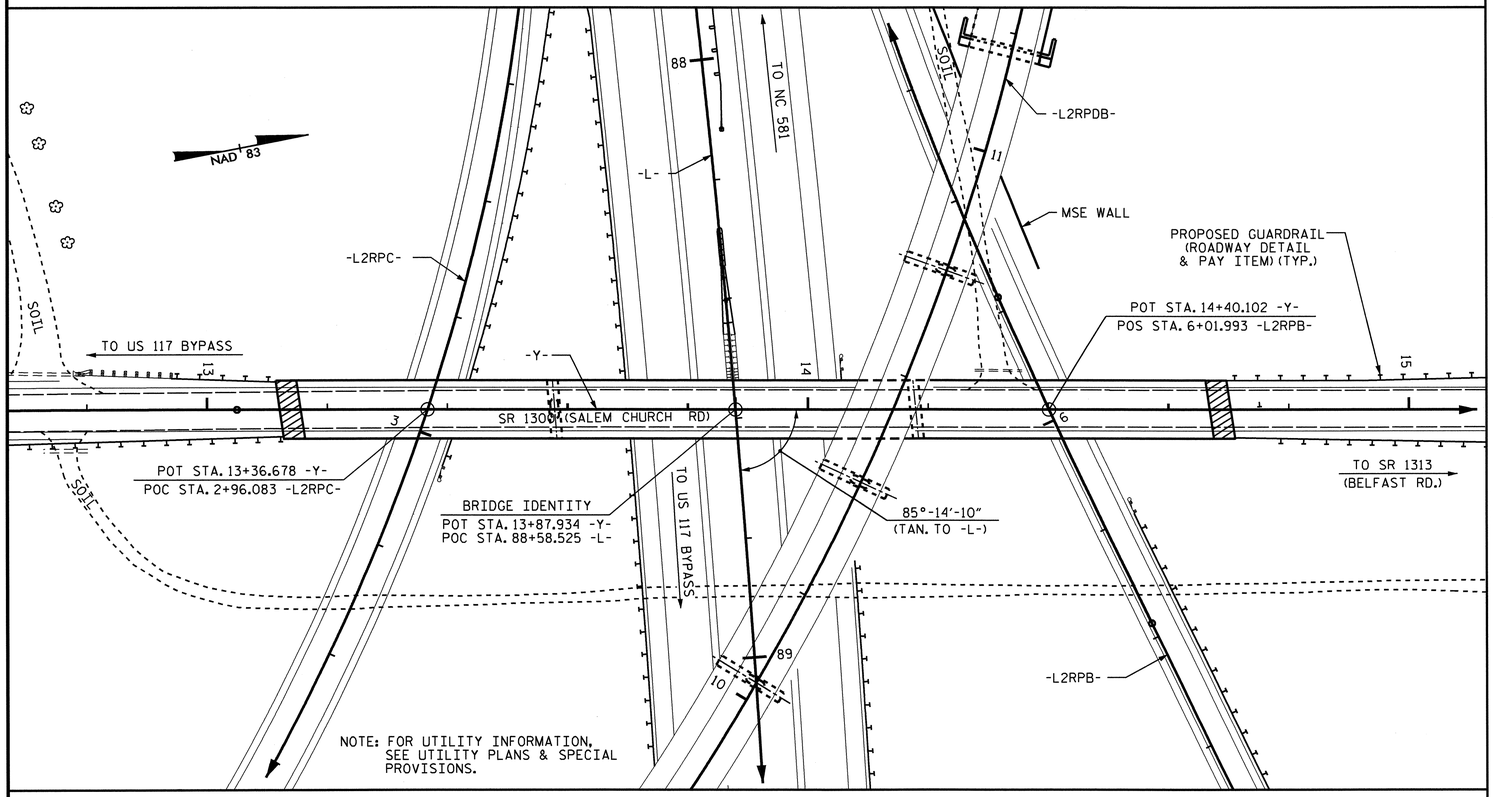

LOCATION SKETCH

NOTES

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SNSM.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SHIPPING STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.

FOR METRIC STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

ASSUMED LIVE LOAD = MS 18 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR MS 22.5.

GIRDER ERECTION SEQUENCE

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION. ONE EXTERIOR GIRDER AND ITS ADJACENT INTERIOR GIRDER SHALL BE ERECTED WITH ALL DIAPHRAGMS AND LATERAL BRACING BETWEEN THE GIRDERS IN PLACE AND ALL BOLTS TIGHTENED PRIOR TO RELEASE OF THE GIRDERS. THE REMAINING GIRDERS SHALL THEN BE ERECTED WITH DIAPHRAGMS CONNECTING THE GIRDER TO THE ADJACENT ERECTED GIRDER AND ALL BOLTS TIGHTENED BEFORE RELEASING THE GIRDER.

A MINIMUM OF TWO TEMPORARY BENTS SHALL BE USED.

TEMPORARY BENTS SHALL REMAIN IN PLACE UNTIL ALL CROSSFRAMES AND LATERAL BRACING ARE IN PLACE AND HIGH STRENGTH BOLTS TIGHTENED.

TEMPORARY BENTS SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS.

FOR TEMPORARY BENT, SEE SPECIAL PROVISIONS.

PLANS FOR TEMPORARY BENTS, ERECTION SEQUENCE AND TEMPORARY BENT REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

TEMPORARY BENTS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY ERECTION BENTS AND MAINTAIN PLUMBNESS OF THE GIRDER WEBS.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY APPLY THE STRUCTURAL STEEL WEIGHT TO THE BRIDGE CROSSFRAMES.

THE CONTRACTOR MAY SUBMIT ALTERNATE ERECTION METHODS. PLANS FOR SUCH ERECTION METHODS SHALL BE APPROVED BY THE ENGINEER.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION	PDA TESTING	PDA ASSISTANCE	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL REINFORCING STEEL	STRUCTURAL STEEL (APPROX.)	HP 310 X 79 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	100mm SLOPE PROTECTION	EXPANSION JOINT SEALS	DISC BEARINGS
	LUMP SUM	EA.	EA.	SQ. METERS	SQ. METERS	CU. METERS	LUMP SUM	KGS.	KGS.	KGS	EA.	METERS	EA.	METERS	SQ. METERS	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				1497.0	1350.4					365148				294.68			
END BENT #1						26.3		1979			7	214	4		260		
BENT #1	LUMP SUM					49.4		4030	576		21	737	9				
BENT #2	LUMP SUM					50.8		4169	648		21	737	9				
END BENT #2						26.3		1986			7	192	4		330		
TOTAL	LUMP SUM	1	1	1497.0	1350.4	152.8	LUMP SUM	12164	1224	365148	56	1880	26	294.68	590	LUMP SUM	LUMP SUM

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1300 (SALEM CHURCH RD.) OVER US 70 (GOLDSBORO BYPASS) BETWEEN US 117 BYPASS AND SR 1313

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-245
1			3			TOTAL SHEETS
2			4			276

STR. #6

DRAWN BY : J.P. ADAMS DATE : 11/17/11
CHECKED BY : V.A. PATEL DATE : 12/5/11

20-MAR-2012 09:40
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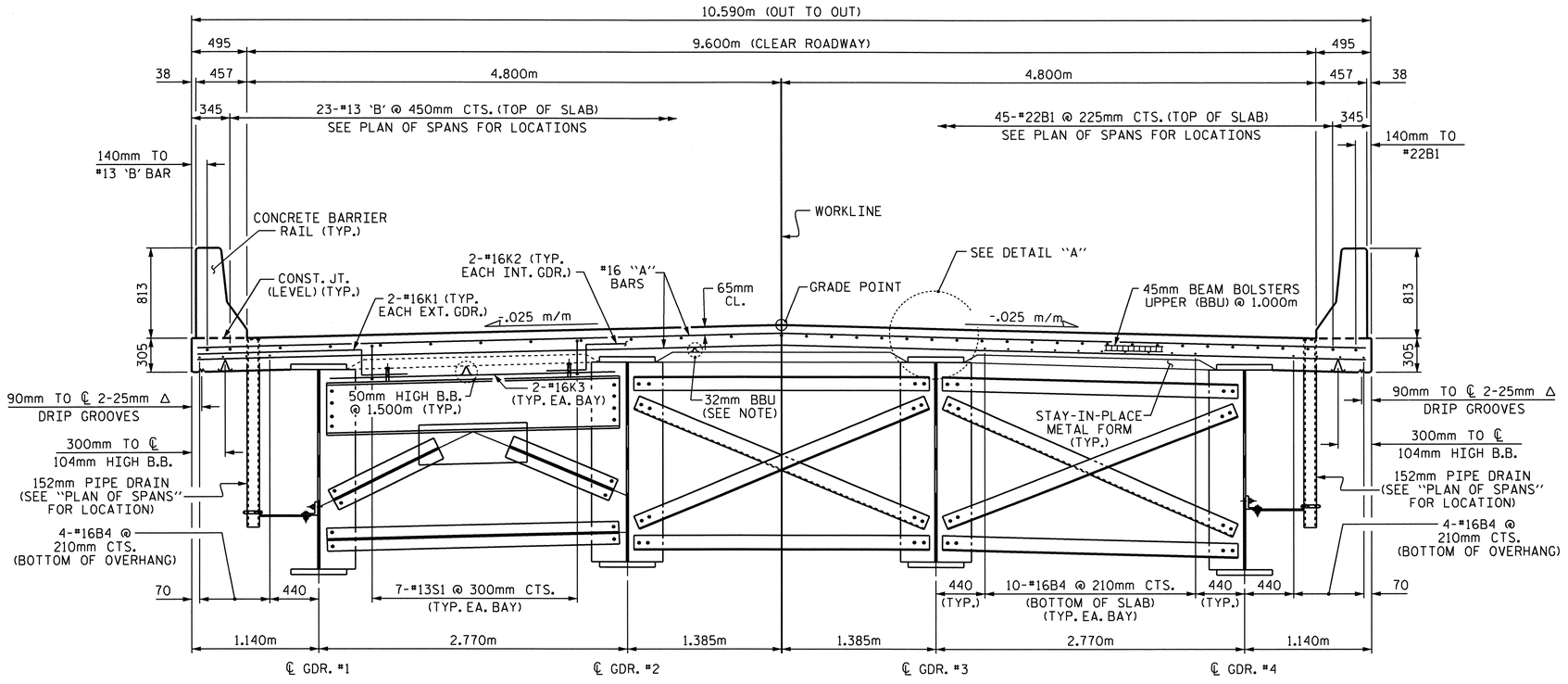
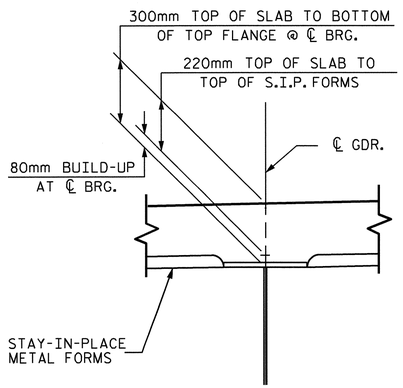
vpatel

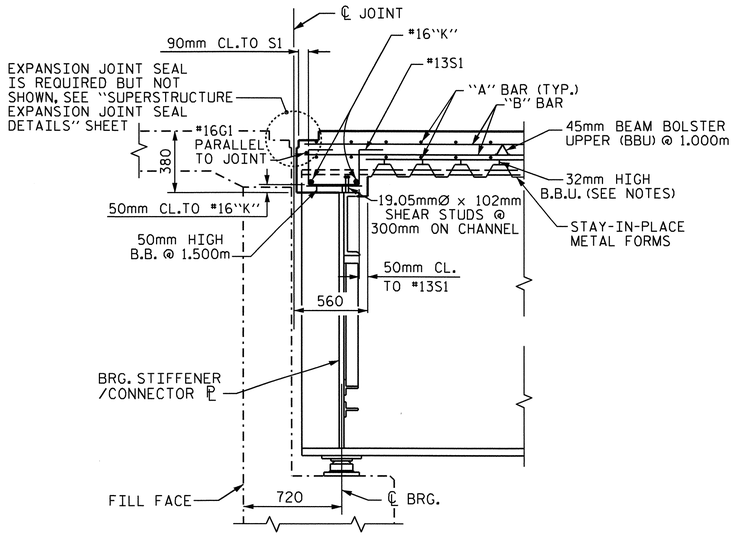


TYPICAL END BENT DIAPHRAGM TYPICAL INTERMEDIATE DIAPHRAGM TYPICAL BENT DIAPHRAGM

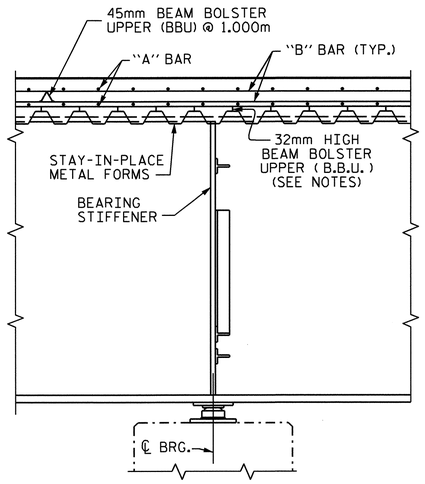
TYPICAL SECTION



DETAIL "A"



SECTION AT END BENT



SECTION AT BENT

NOTES

PROVIDE 32mm HIGH BEAM BOLSTERS UPPER AT 1.200m CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 1.200m CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 65mm ABOVE THE TOP OF THE REMOVABLE FORM.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 21 MPa BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

#16G1 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENER OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN- PLACE FORM WORKING DRAWINGS.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSABLE VARIATION IN DISC BEARING DEPTH OF 13mm, SEE SPECIAL PROVISION FOR DISC BEARINGS.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-246
1			3			TOTAL SHEETS
2			4			276

STR. #6

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER Vipul A. Patel
2/14/12

DRAWN BY : J.P. ADAMS DATE : 8/2/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

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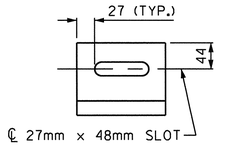
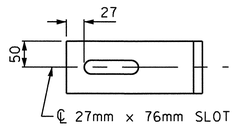


SECTION Y-Y



SECTION X-X

COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.

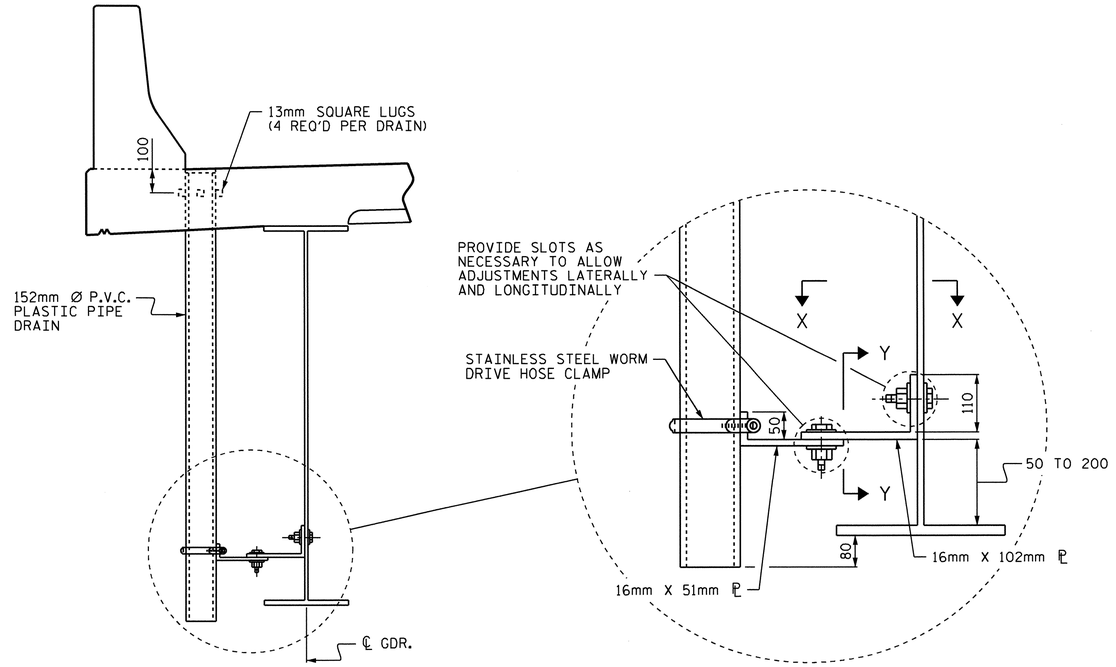
4-13mm SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 100mm FROM THE TOP OF THE PIPE.

BOLT SIZE TO BE SAME AS DIAPHRAGM AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM HOSE CLAMP SHALL BE COMMERCIAL QUALITY.

THE 152mm Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

TOP OF FLOOR DRAINS TO BE SET 10mm BELOW SURFACE OF SLAB.

PVC DECK DRAINS SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-12 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 0.050mm THICK. DECK DRAINS SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC DECK DRAINS AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REINFORCED CONCRETE DECK SLAB.



DRAIN CONNECTOR DETAILS

(18 REQ'D)

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER HARIL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-247
1			3			TOTAL SHEETS
2			4			276

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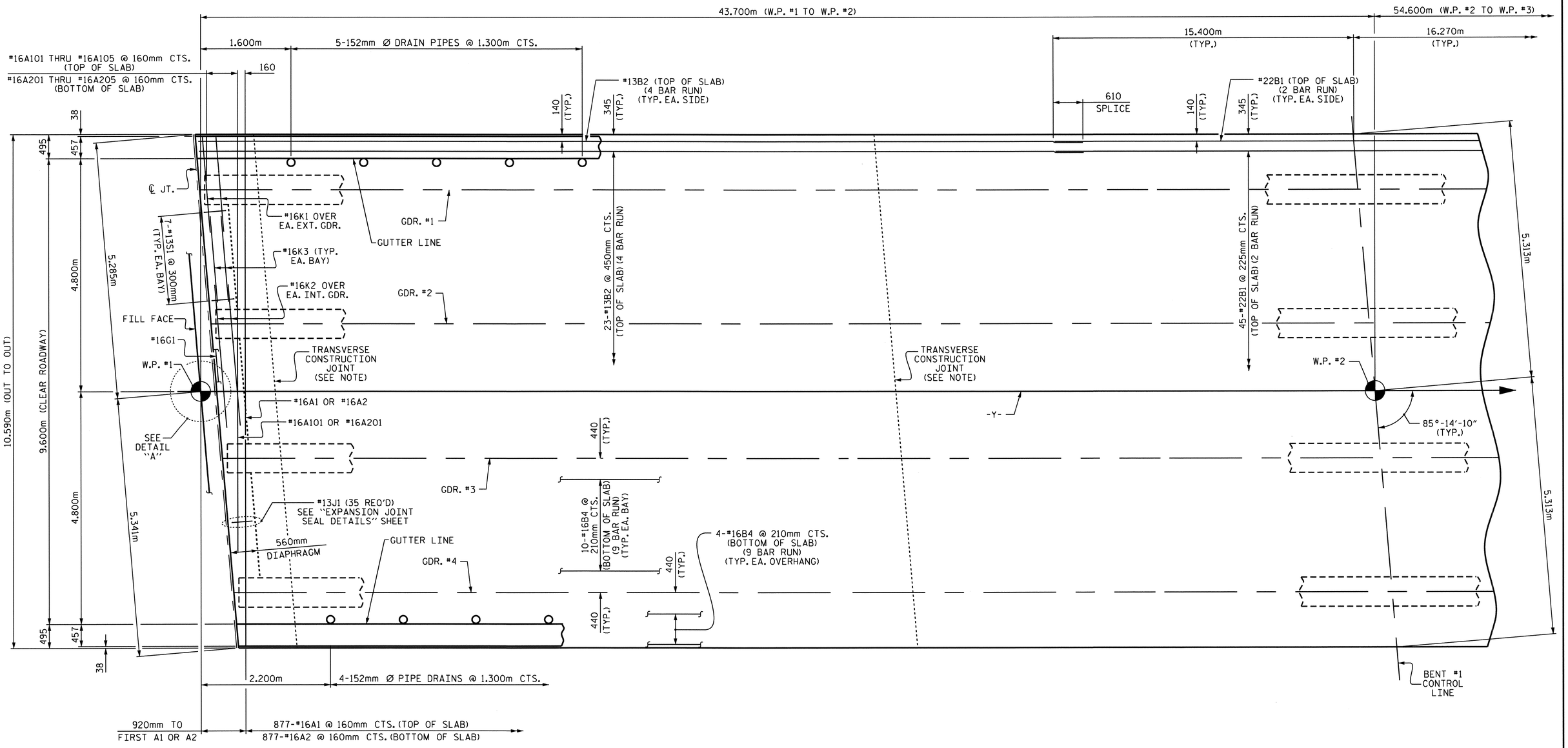

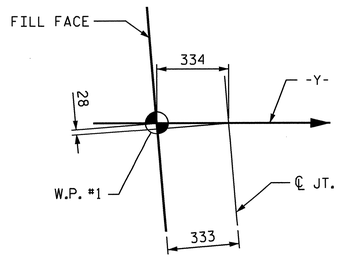

DETAIL "A"

PLAN OF SPAN A

NOTES

FOR TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAILS SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

FOR BARRIER RAIL REINFORCING STEEL AND DETAILS SEE "CONCRETE BARRIER RAIL" SHEETS.

FOR EXPANSION JOINT SEAL DETAILS, SEE "EXPANSION JOINT SEAL DETAILS" SHEETS.

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VISHUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-248
1			3			TOTAL SHEETS
2			4			276

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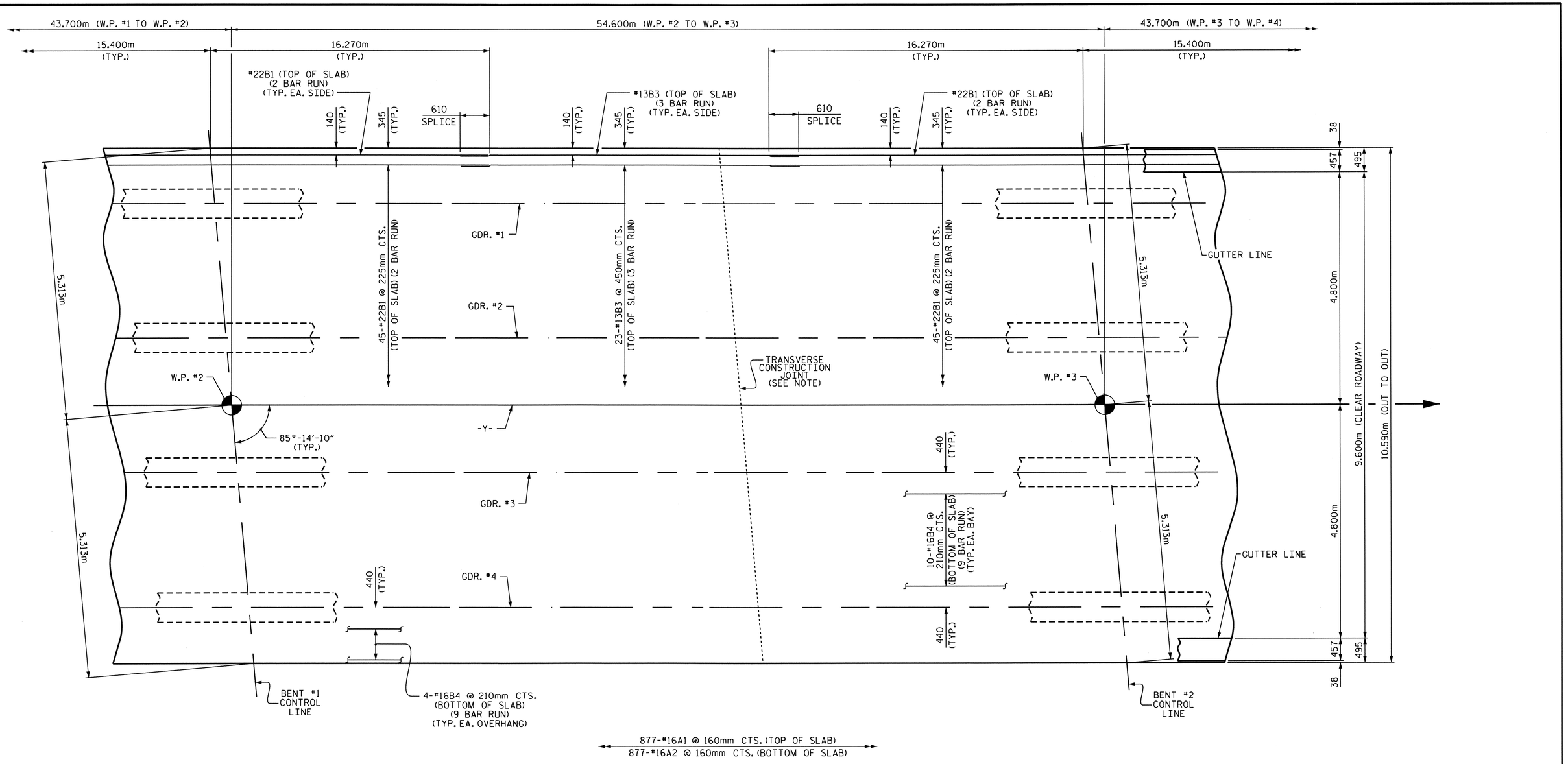

PLAN OF SPAN B

NOTES

FOR TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAILS SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

FOR BARRIER RAIL REINFORCING STEEL AND DETAILS SEE "CONCRETE BARRIER RAIL" SHEETS.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-249
1			3			TOTAL SHEETS
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NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

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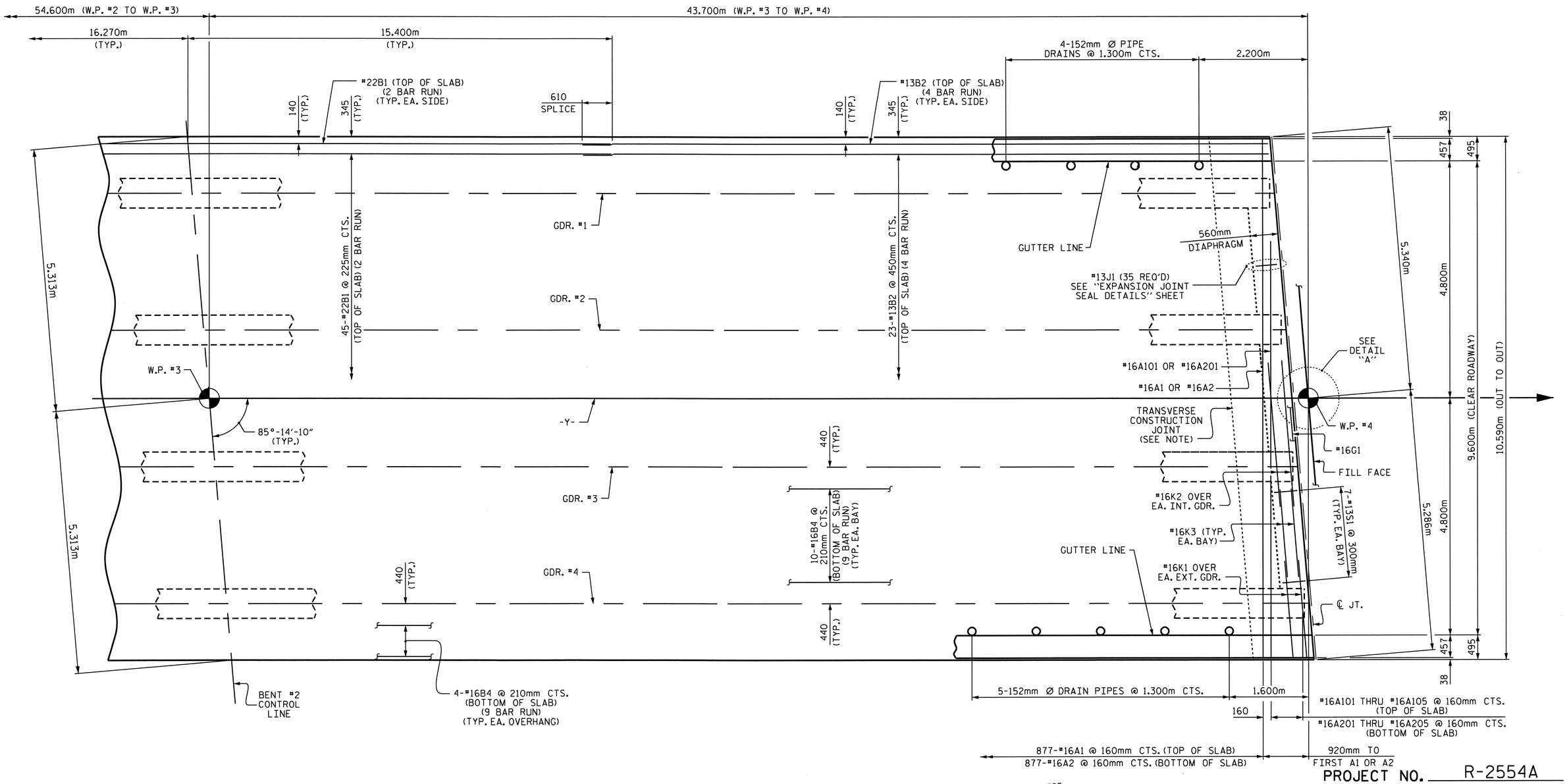
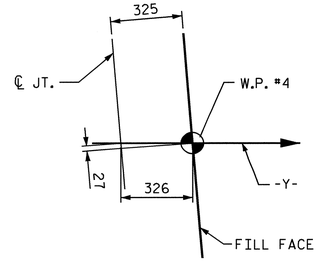


PLAN OF SPAN C



DETAIL "A"

NOTES

FOR TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAILS SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

FOR BARRIER RAIL REINFORCING STEEL AND DETAILS SEE "CONCRETE BARRIER RAIL" SHEETS.

FOR EXPANSION JOINT SEAL DETAILS, SEE "EXPANSION JOINT SEAL DETAILS" SHEETS.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-250
1			3			TOTAL SHEETS
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NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
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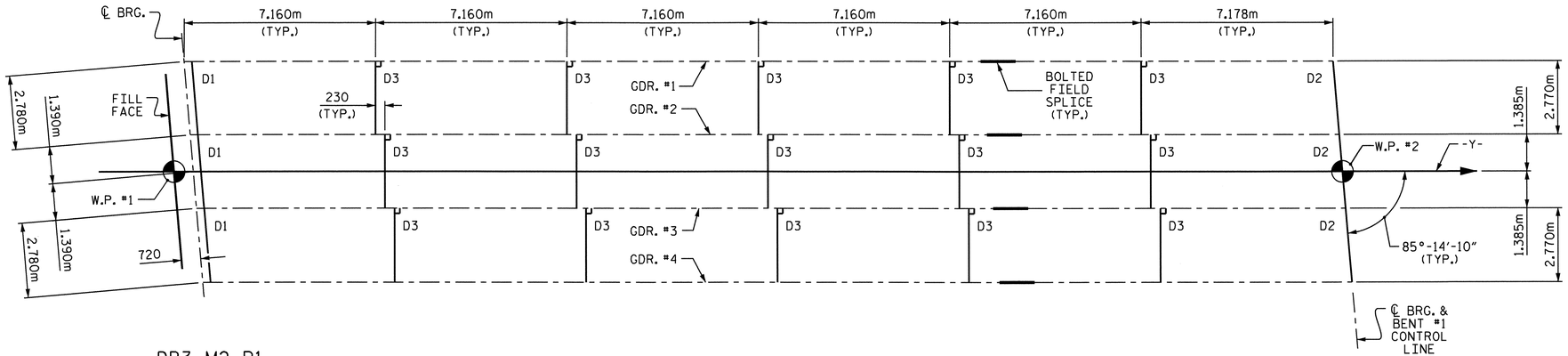
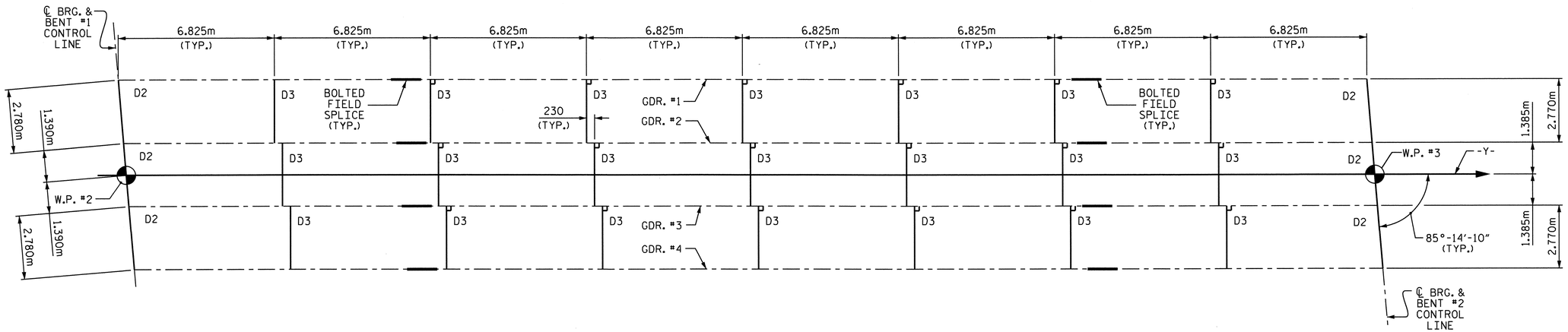


DB3, M2, P1
EXPANSION

DB2, M1, P2
EXPANSION

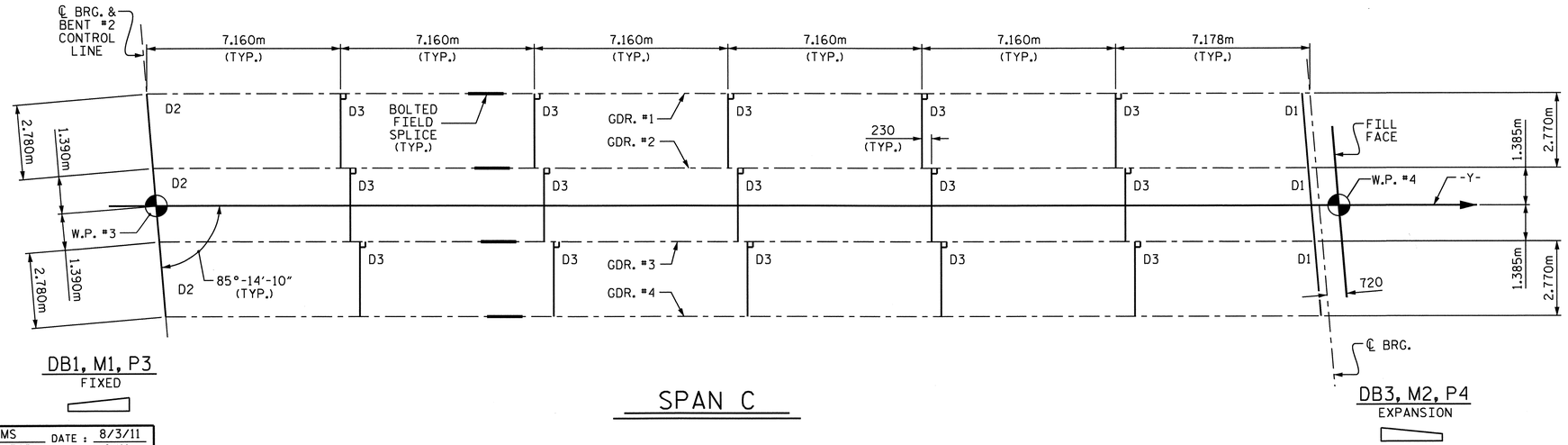
SPAN A



DB2, M1, P2
EXPANSION

DB1, M1, P3
FIXED

SPAN B



DB1, M1, P3
FIXED

DB3, M2, P4
EXPANSION

SPAN C

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-251
1			3			TOTAL SHEETS
2			4			276

STR. #6

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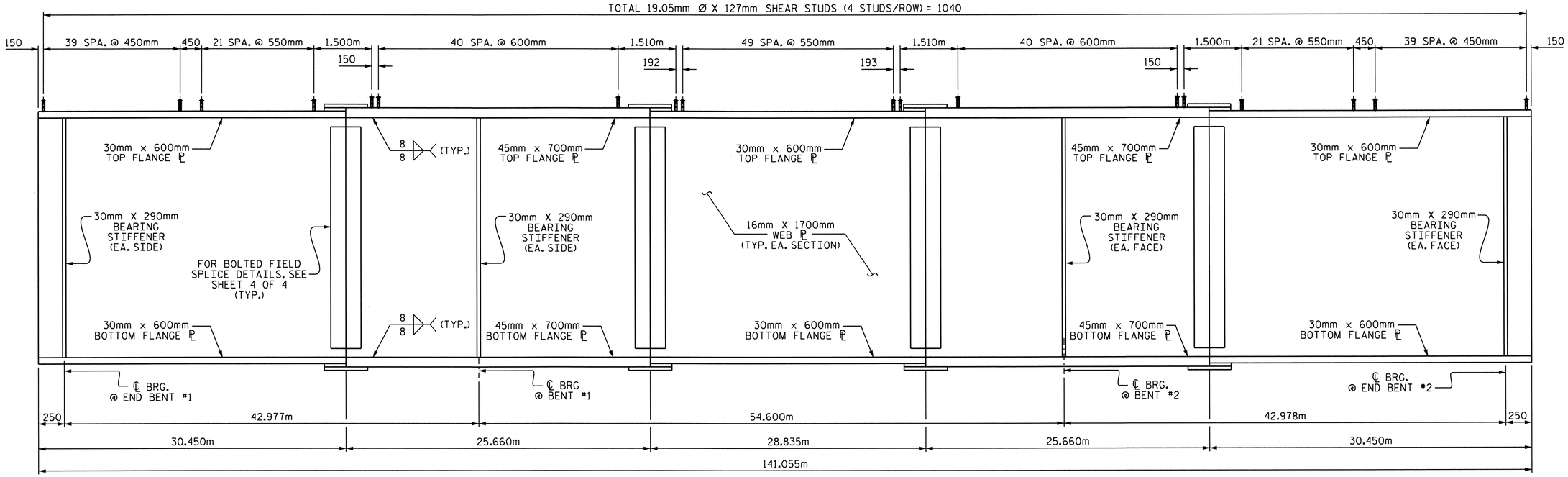
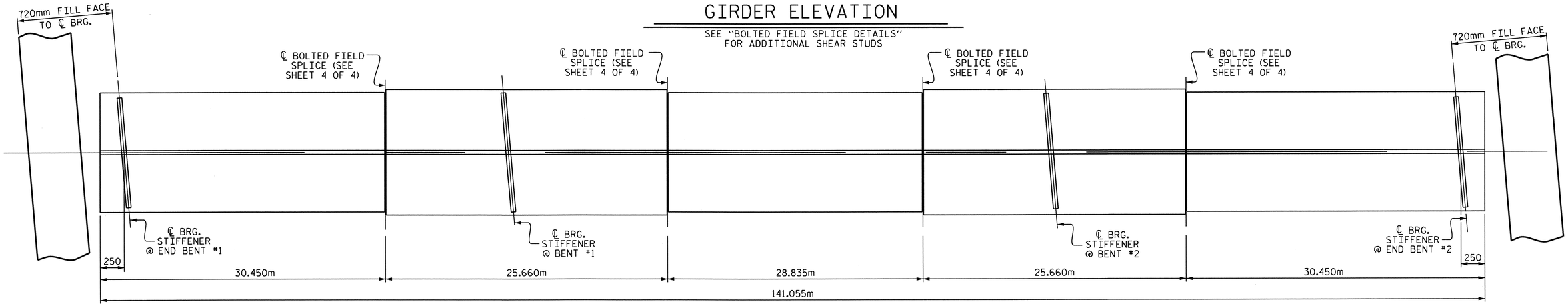
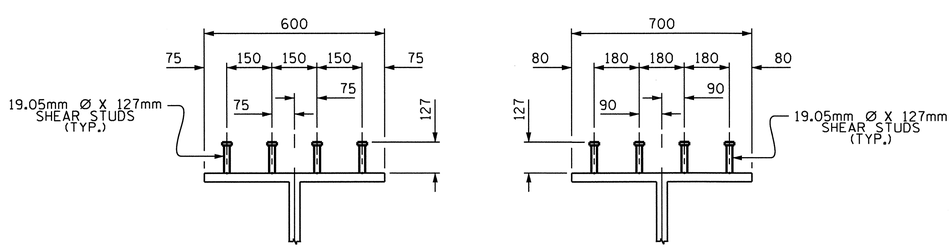


GIRDER ELEVATION

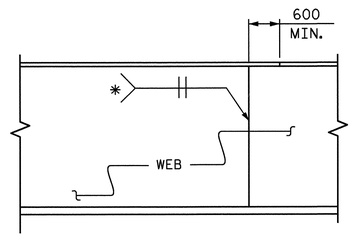
SEE "BOLTED FIELD SPLICE DETAILS" FOR ADDITIONAL SHEAR STUDS



BOTTOM FLANGE DETAILS



SHEAR STUD DETAILS



TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-252
1			3			TOTAL SHEETS
2			4			276

STR. #6

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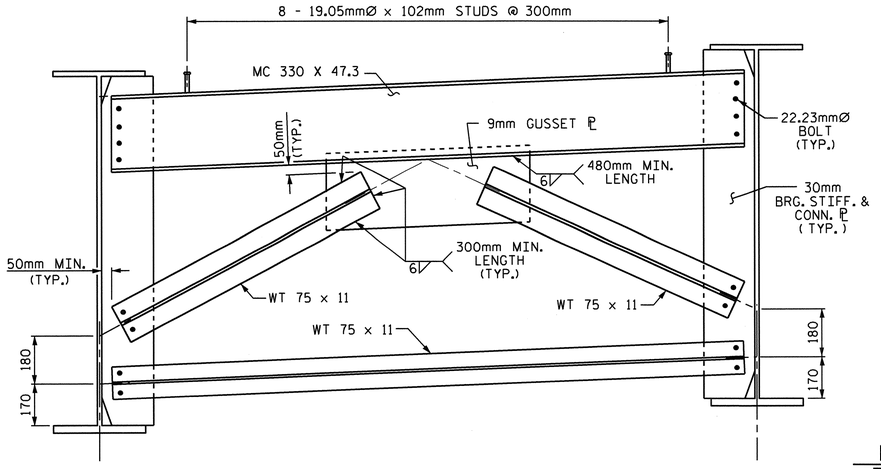
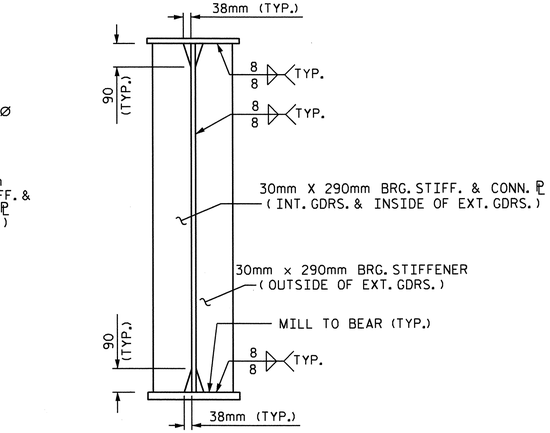
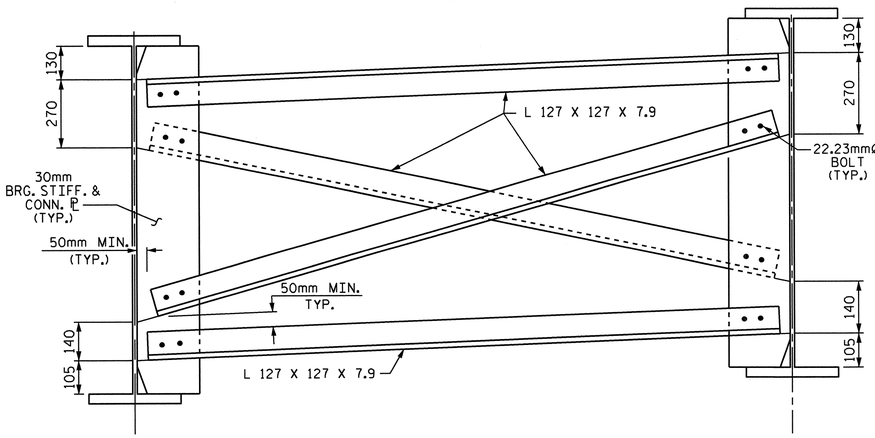


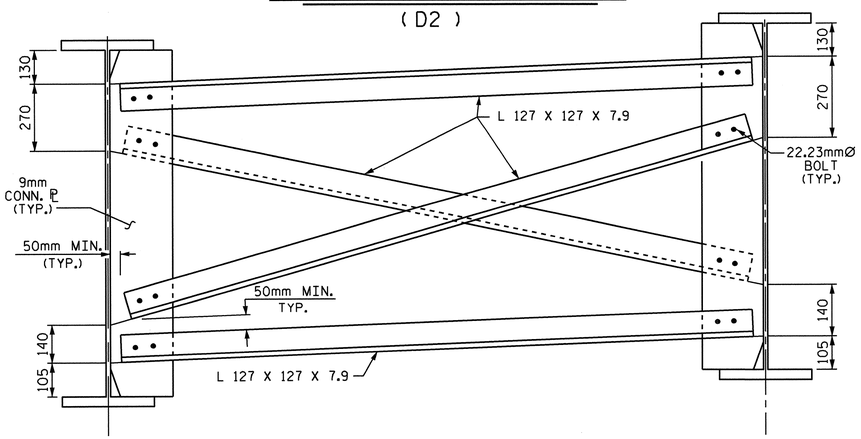
END BENT DIAPHRAGM
(D1)



BRG. STIFF./CONN. PL DETAIL
END BENT & BENT DIAPHRAGMS



BENT DIAPHRAGM
(D2)



INTERMEDIATE DIAPHRAGM
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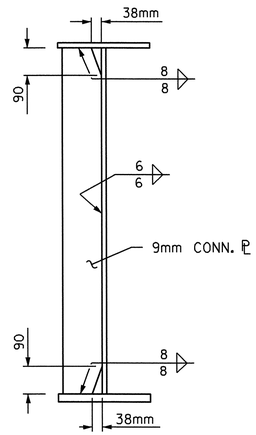
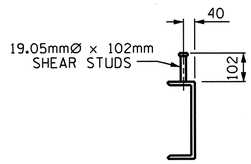
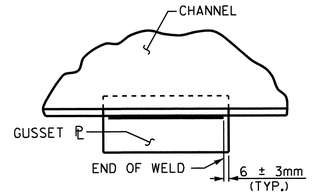


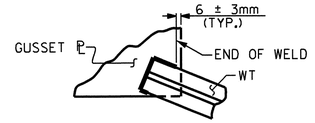
CONNECTOR PL DETAIL
INTERMEDIATE DIAPHRAGM



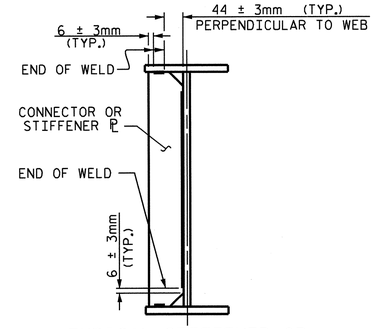
SHEAR STUD DETAILS



TYPICAL GUSSET PLATE CONNECTION



TYPICAL "TEE" TO GUSSET PLATE CONNECTIONS



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION 13+87.934 -Y-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIKUL A. PATEL
3/20/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-253
1			3			TOTAL SHEETS
2			4			276

STR. #6

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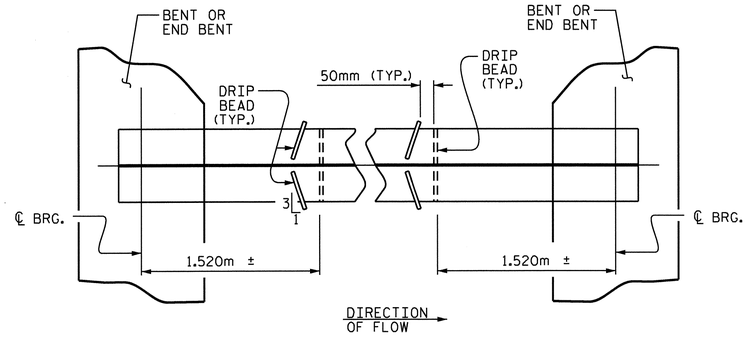
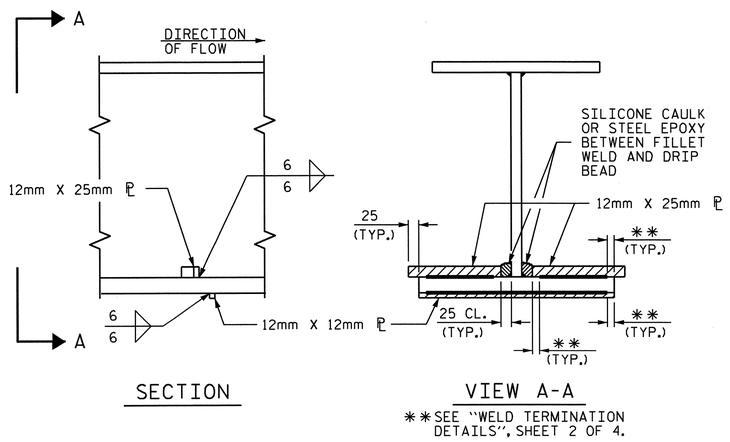


PART PLAN - BOTTOM FLANGE

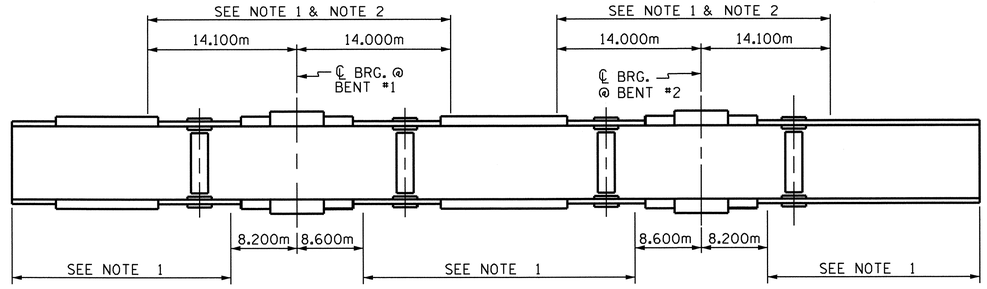


SECTION

VIEW A-A

**SEE "WELD TERMINATION DETAILS", SHEET 2 OF 4.

DRIP BEAD DETAILS



CHARPY V-NOTCH TEST FOR GIRDERS

NOTE 1: CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALLS WITHIN THESE LIMITS, INCLUDING ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

NOTE 2: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 345W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 22.23mm DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 4.5 METERS OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 4.5 METERS OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 600mm MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 150mm MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

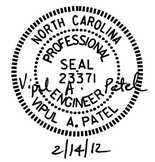
STUDS ON GIRDERS MAY BE SHIFTED UP TO 25mm IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

END OF BEAMS AND GIRDERS SHALL BE PLUMB.

BEARING STIFFENER ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

FOR SHIPPING STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.



PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-254
1			3			TOTAL SHEETS
2			4			276

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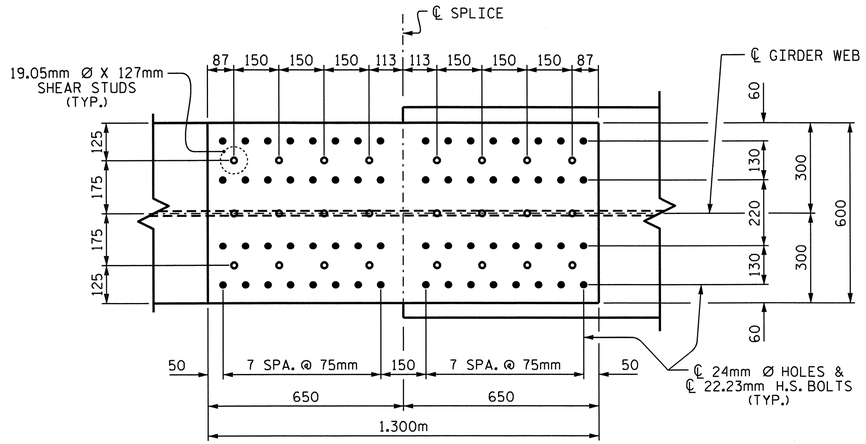
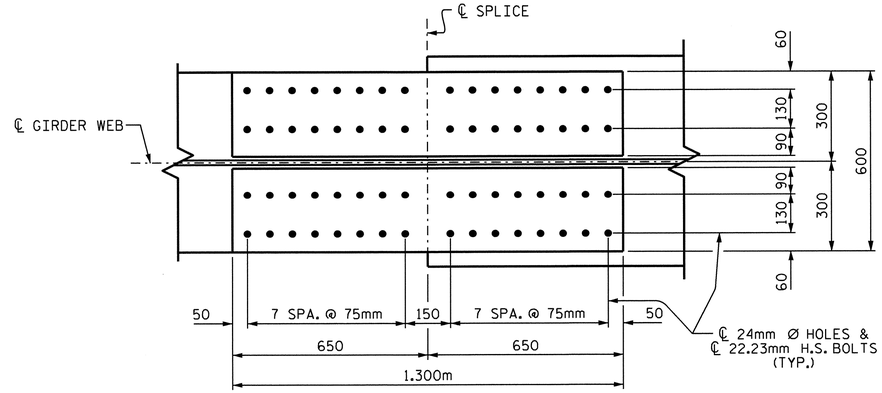
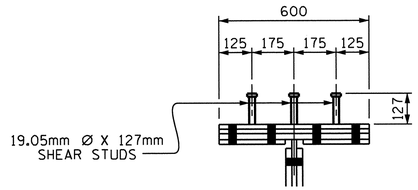


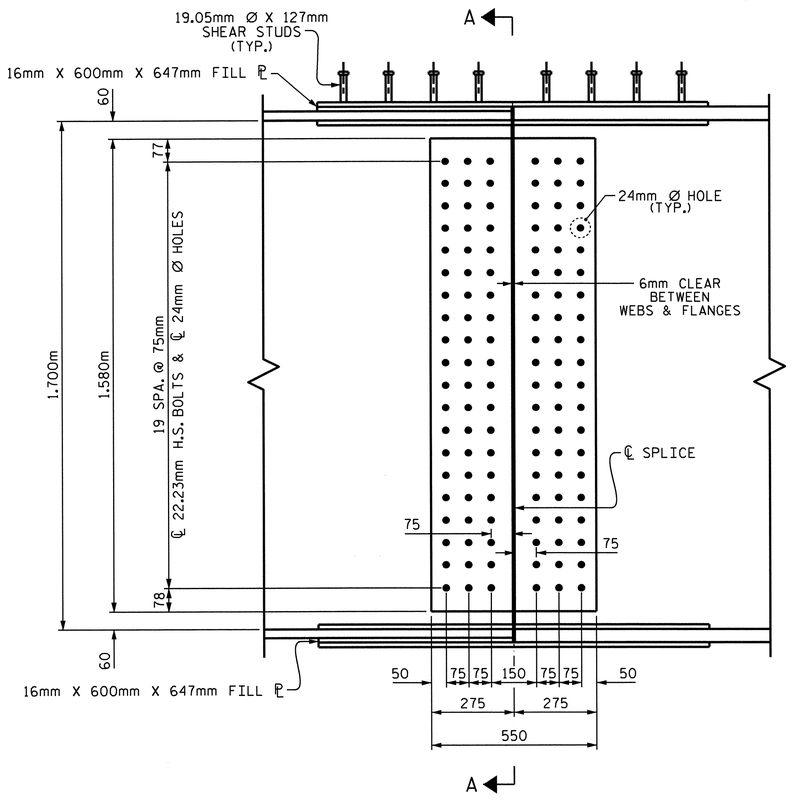
PLAN
TOP OF TOP FLANGE



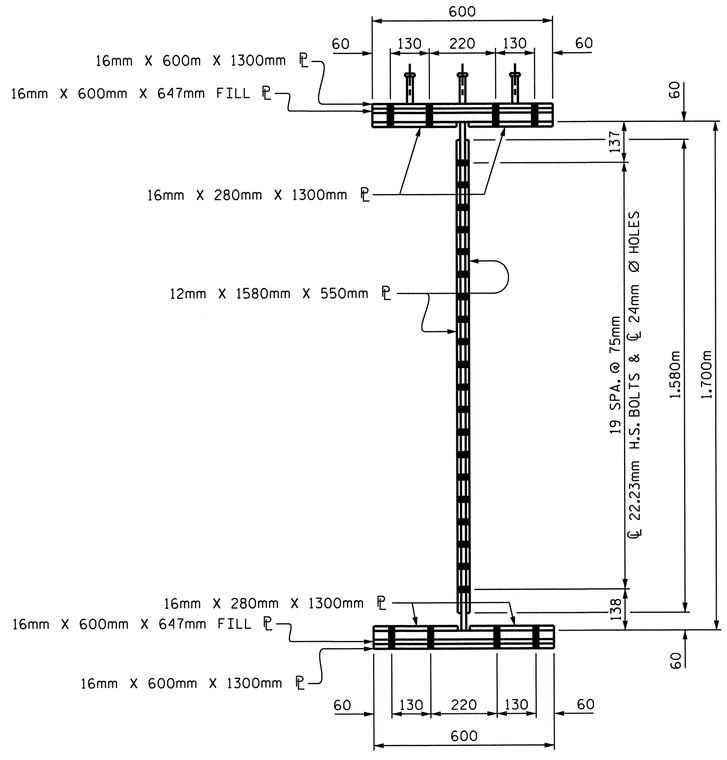
PLAN
TOP OF BOTTOM FLANGE



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE



ELEVATION



SECTION A-A

BOLTED FIELD SPLICE DETAILS

DRAWN BY : J.P. ADAMS DATE : 8/3/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

20-MAR-2012 11:47
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vpatel

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-255
1			3			TOTAL SHEETS
2			4			276

STR. #6

DEAD LOAD DEFLECTION TABLE FOR GIRDER #1 THRU GIRDER #4

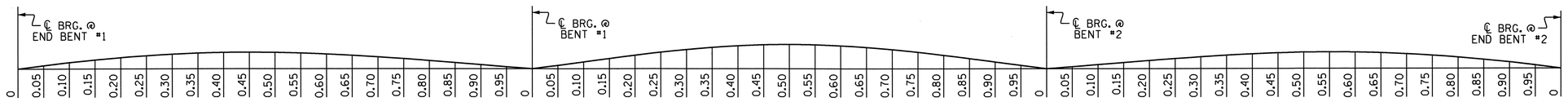
	SPAN A																					SPAN B																							
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	-0.003	-0.006	-0.008	-0.010	-0.012	-0.013	-0.013	-0.014	-0.013	-0.013	-0.012	-0.010	-0.008	-0.007	-0.005	-0.004	-0.002	-0.001	0	0	-0.001	-0.003	-0.006	-0.008	-0.011	-0.014	-0.017	-0.018	-0.020	-0.020	-0.020	-0.018	-0.017	-0.014	-0.011	-0.008	-0.006	-0.003	-0.001	0
✱DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.008	-0.015	-0.022	-0.028	-0.033	-0.036	-0.039	-0.040	-0.039	-0.037	-0.034	-0.031	-0.026	-0.021	-0.016	-0.011	-0.006	-0.003	-0.001	0	-0.002	-0.006	-0.011	-0.018	-0.024	-0.031	-0.037	-0.042	-0.045	-0.045	-0.045	-0.042	-0.037	-0.031	-0.024	-0.018	-0.011	-0.005	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.002	-0.002	-0.001	-0.001	0	0	0	0	0	-0.001	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.004	-0.004	-0.004	-0.004	-0.003	-0.002	-0.001	-0.001	0	0
TOTAL DEAD LOAD DEFLECTION	0	-0.012	-0.023	-0.032	-0.041	-0.048	-0.053	-0.056	-0.058	-0.056	-0.054	-0.050	-0.044	-0.037	-0.030	-0.023	-0.016	-0.009	-0.004	-0.001	0	-0.003	-0.009	-0.018	-0.028	-0.038	-0.049	-0.058	-0.064	-0.069	-0.070	-0.069	-0.064	-0.058	-0.049	-0.038	-0.028	-0.018	-0.009	-0.003	0
VERTICAL CURVE ORDINATE	0	0.015	0.029	0.040	0.051	0.059	0.066	0.072	0.076	0.078	0.079	0.078	0.076	0.072	0.066	0.059	0.051	0.040	0.029	0.015	0	0.024	0.046	0.065	0.082	0.096	0.107	0.116	0.123	0.126	0.128	0.126	0.123	0.116	0.107	0.096	0.082	0.065	0.046	0.024	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	27	52	72	92	107	119	128	134	134	133	128	120	109	96	82	67	49	33	16	0	27	55	83	110	134	156	174	187	195	198	195	187	174	156	134	110	83	55	27	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER #1 THRU GIRDER #4

	SPAN C																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0	-0.001	-0.002	-0.004	-0.005	-0.007	-0.008	-0.010	-0.012	-0.013	-0.013	-0.014	-0.013	-0.013	-0.012	-0.010	-0.008	-0.006	-0.003	0
✱DEFLECTION DUE TO WEIGHT OF SLAB	0	-0.001	-0.003	-0.006	-0.011	-0.016	-0.021	-0.026	-0.031	-0.034	-0.037	-0.039	-0.040	-0.039	-0.036	-0.033	-0.028	-0.022	-0.015	-0.008	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0	0	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.002	-0.002	-0.001	0
TOTAL DEAD LOAD DEFLECTION	0	-0.001	-0.004	-0.009	-0.016	-0.023	-0.030	-0.037	-0.044	-0.050	-0.054	-0.056	-0.058	-0.056	-0.053	-0.048	-0.041	-0.032	-0.023	-0.012	0
VERTICAL CURVE ORDINATE	0	0.015	0.029	0.040	0.051	0.059	0.066	0.072	0.076	0.078	0.079	0.078	0.076	0.072	0.066	0.059	0.051	0.040	0.029	0.015	0
ORDINATE DUE TO SUPERELEVATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REQUIRED CAMBER	0	16	33	49	67	82	96	109	120	128	133	134	134	128	119	107	92	72	52	27	0

✱ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN METERS, EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN MILLIMETERS.

SIGN CONVENTION FOR DEAD LOAD DEFLECTION + 0 -



SCHEMATIC CAMBER ORDINATES

SLOPE FOR THE ZERO CAMBER BASE LINE VARIES

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER HITUL A. PATEL
2/14/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-256
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : J.P. ADAMS DATE : 8/11/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

14-FEB-2012 07:34
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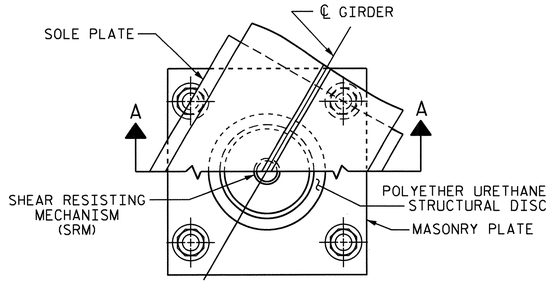
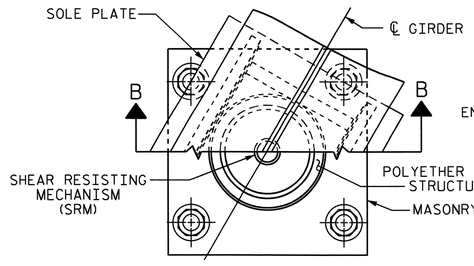
jpadams

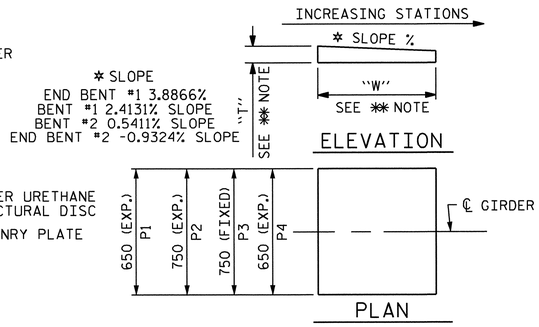
STR. #6



CUT-AWAY PLAN



CUT-AWAY PLAN



** NOTE:
DIMENSIONS "W" AND "T" ARE TO BE DETERMINED BY THE MANUFACTURER.

SOLE PLATE DETAILS

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F TEMPERATURES ABOVE THIS MAY DAMAGE THE PTFE OR ELASTOMER.

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED. THEY SHALL BE GROUTED IN PLACE AS SHOWN.

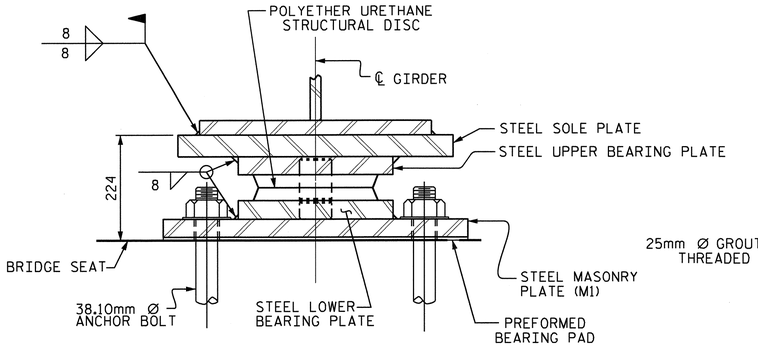
THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO BEAM FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

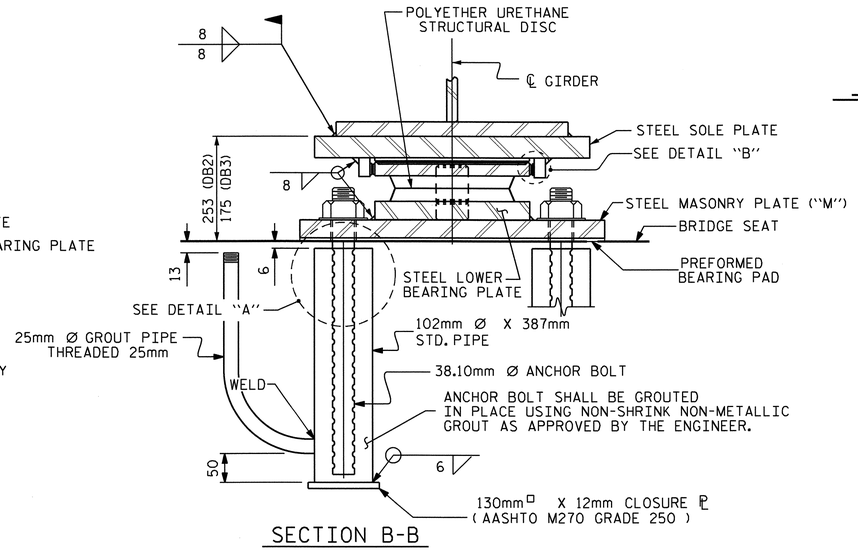
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIANS.



SECTION A-A

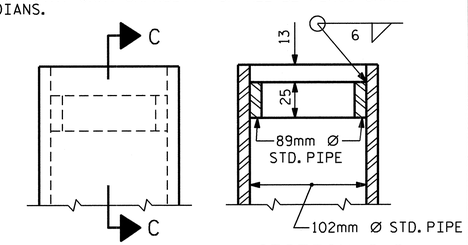
DB1, FIXED (BENT #2)
(4 REQ'D)



SECTION B-B

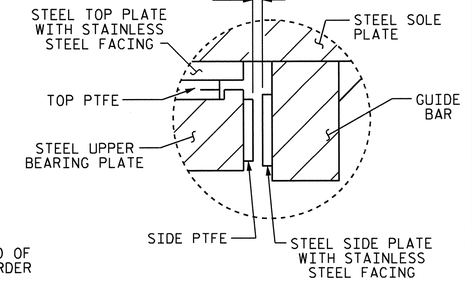
DB2, EXP. (4 REQ'D) (BENT #1)
DB3, EXP. (8 REQ'D) (END BENT #1 & #2)

DISC BEARING DETAILS



SECTION C-C

DETAIL "A"



DETAIL "B"

GUIDE KEY SETTING ANGLES

END BENT #1	85°-14'-10"
BENT #1	85°-14'-10"
END BENT #2	85°-14'-10"

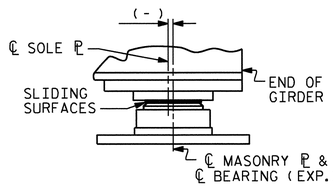
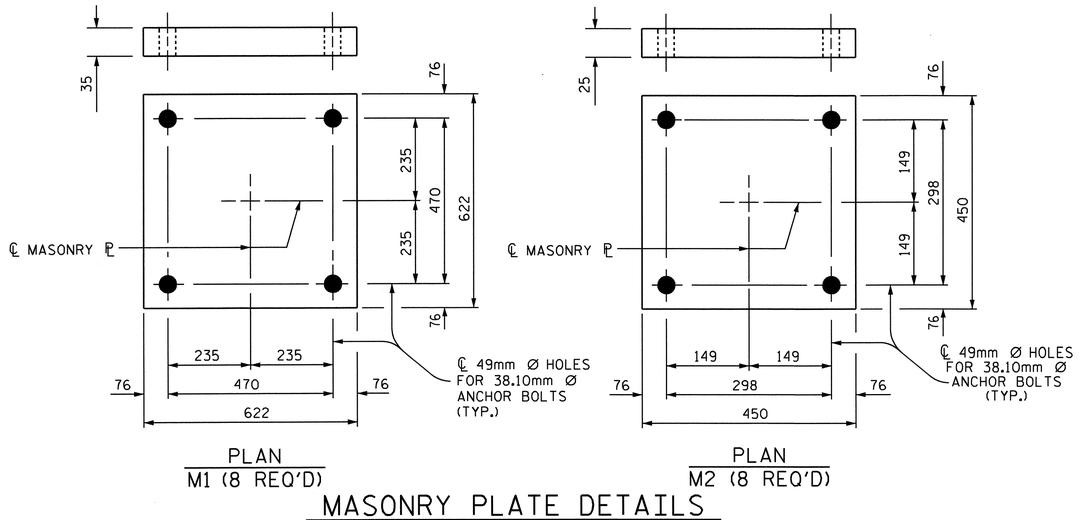


TABLE FOR PLATE SETTING DATA
(EXPANSION DISC BEARINGS)

TEMPERATURE AT TIME OF SETTING	0° C	16° C	32° C	*
@ END BENT #1	-25	0	25	-6
@ BENT #1	-14	0	14	-6
@ END BENT #2	-11	0	11	-6

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL



MASONRY PLATE DETAILS

TABLE FOR UNFACTORED LOADS AND MOVEMENT

BEARING	LOCATION	VERTICAL LOAD (kN)			LATERAL LOAD (kN)	TOTAL MOVEMENT (mm)
		DEAD	LL + I	TOTAL		
DB3 (EXP.)	END BENT #1	444.89	394.53	839.42	88.98	63
DB2 (EXP.)	BENT #1	1626.76	824.28	2451.04	325.35	0
DB1 (FIXED)	BENT #2	1626.76	824.28	2451.04	325.35	0
DB3 (EXP.)	END BENT #2	444.89	394.53	839.42	88.98	28

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DISC BEARING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-257
1			3			TOTAL SHEETS
2			4			276

STR. #6

DRAWN BY : J.P. ADAMS DATE : 8/1/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

14-FEB-2012 07:33
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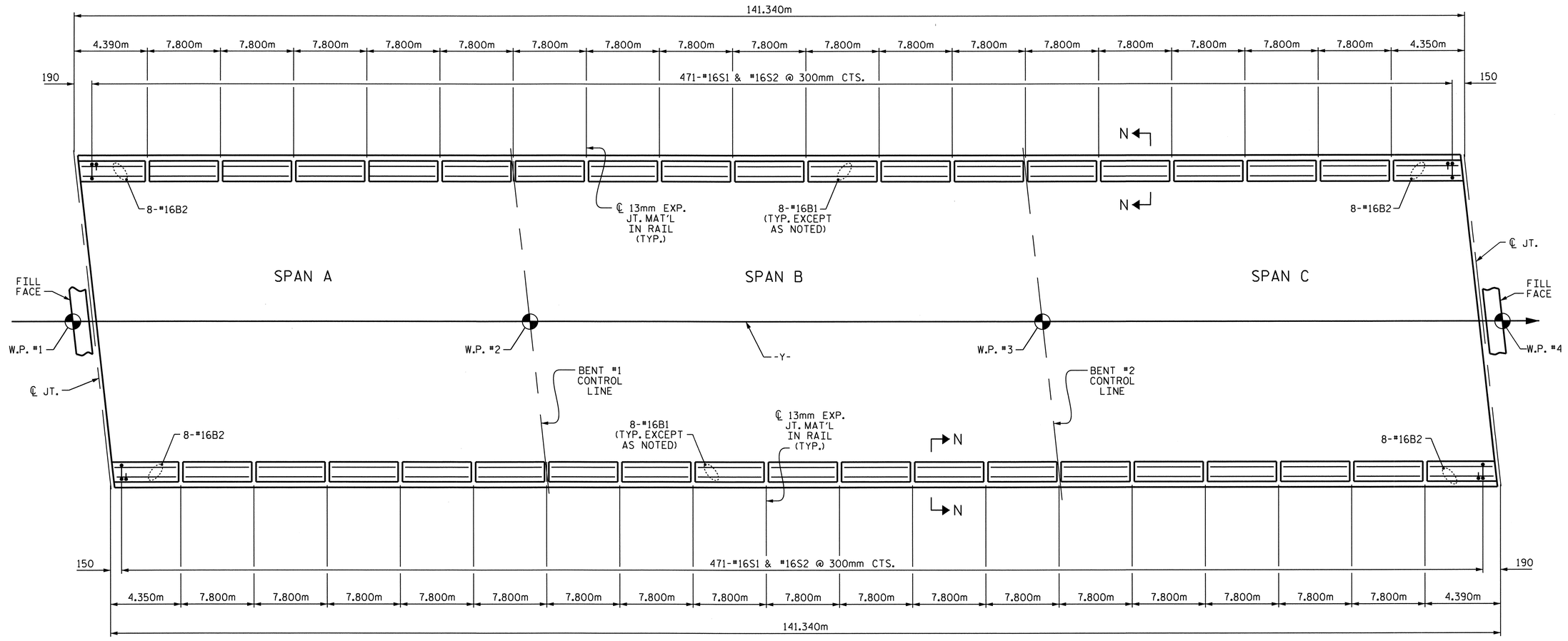
jpadams



PLAN

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-258
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
2/14/12

DRAWN BY : J.P. ADAMS DATE : 8/2/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

14-FEB-2012 07:33
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jpadams

STR. #6

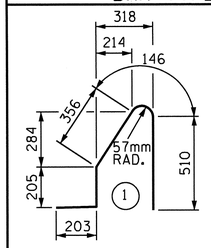
NOTES

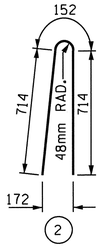
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

VERTICAL GROOVED CONTRACTION JOINTS, 12mm 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. THE 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 6.100m IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 3.500m IN LENGTH.

BAR TYPES





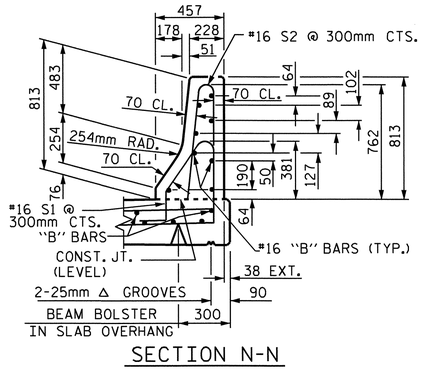
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

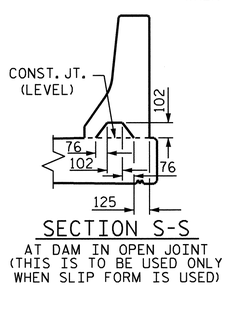
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	272	#16	STR	7680	3242
* B2	32	#16	STR	4220	210
* S1	942	#16	1	1420	2076
* S2	942	#16	2	1580	2310

* EPOXY COATED REINFORCING STEEL	7838 kg
CLASS AA CONCRETE	70.82 CU. METER
CONCRETE BARRIER RAIL	282.68 METERS

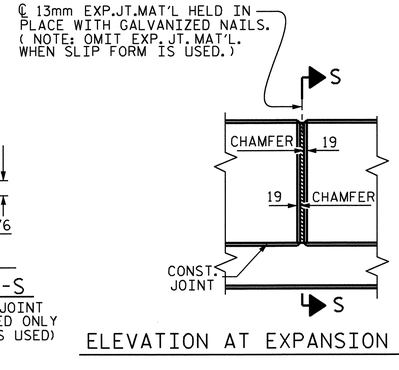


SECTION N-N



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-259
1			3			TOTAL SHEETS
2			4			276

STR. #6

STD. No. CBR1SM

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

ASSEMBLED BY : J.P. ADAMS	DATE : 8/1/11
CHECKED BY : H.A. LOCKLEAR	DATE : 9/11
DRAWN BY : ARB 5/87	REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

14-FEB-2012 07:33
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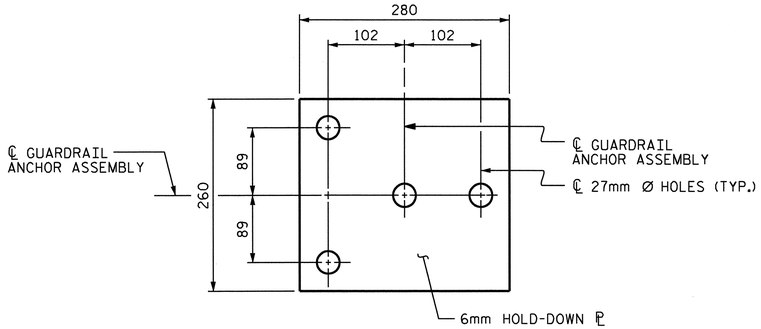
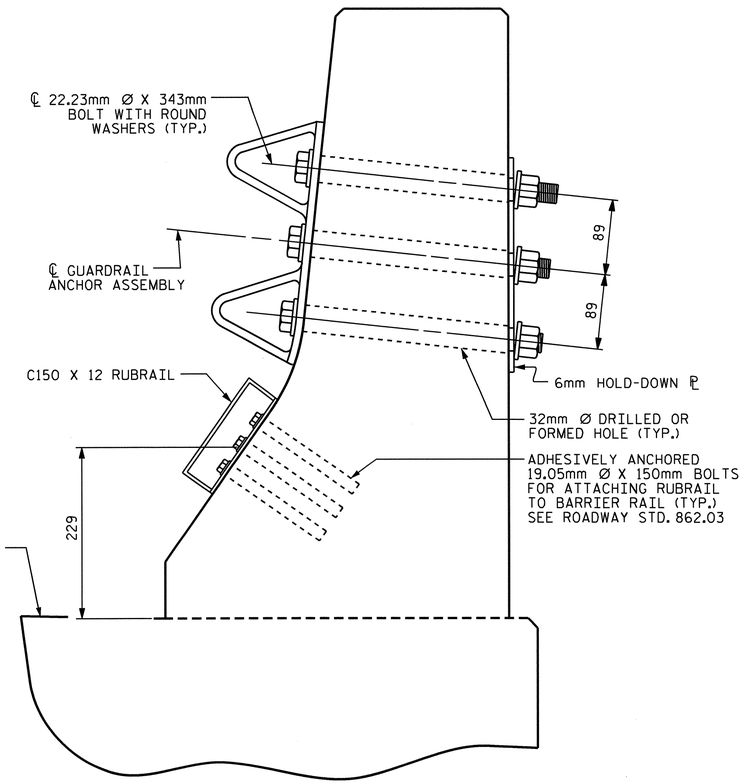
jpadams

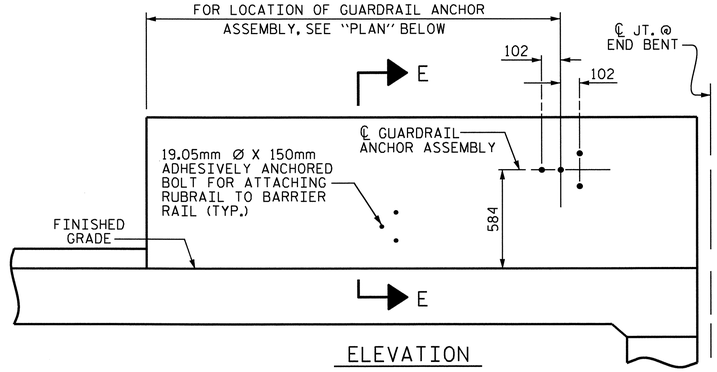


PLAN



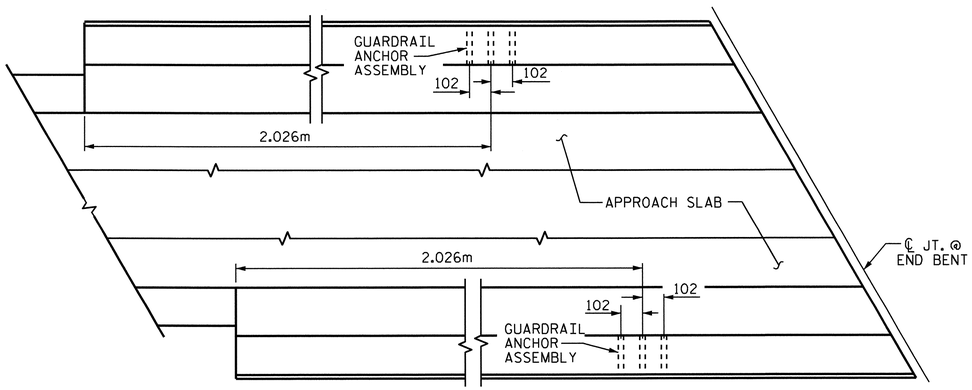
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 6mm HOLD DOWN PLATE AND 4 - 22.23mm 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 22.23mm 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.)

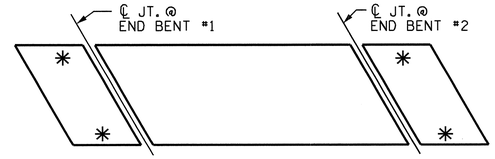
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 32mm 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 C150 X 12 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 19.05mm Ø X 150mm BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 19.05mm Ø BOLTS IS 53.4kN. 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. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL

2/14/12

ASSEMBLED BY : J.P. ADAMS	DATE : 8/1/11
CHECKED BY : H.A. LOCKLEAR	DATE : 9/11
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-260
1			3			TOTAL SHEETS
2			4			276

STR. #6

STD. NO. GRA2

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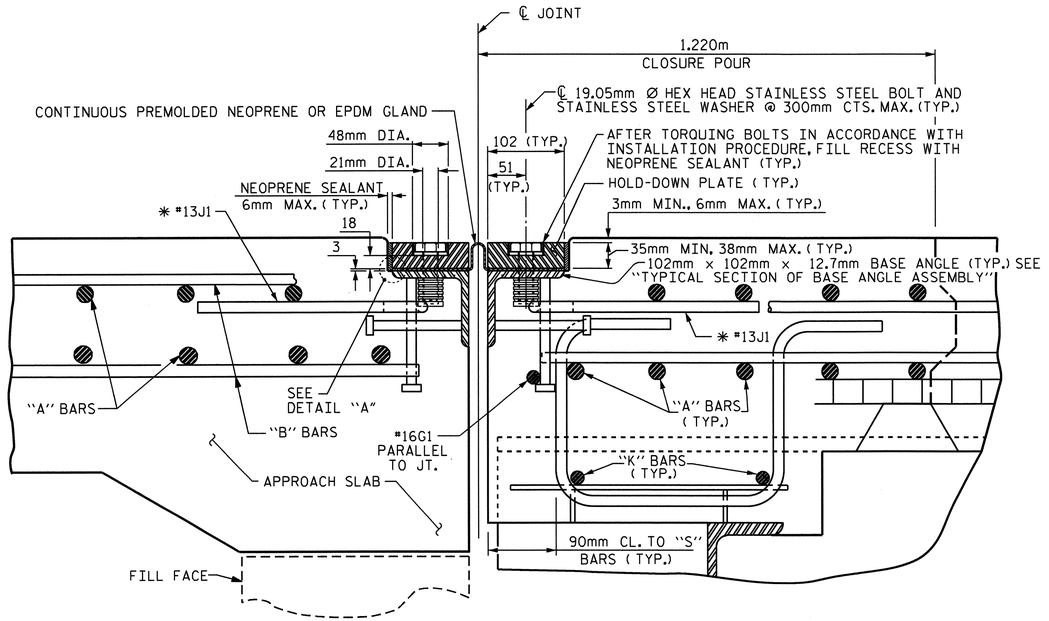
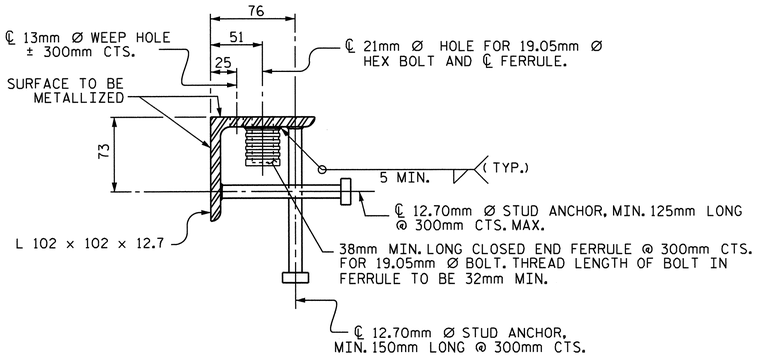
jpadams



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT
END BENT #1 SHOWN, END BENT #2 SIMILAR

* THE QUANTITY OF #13 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 300mm CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHOR BOLTS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

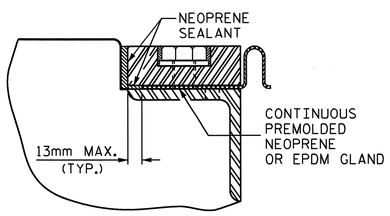
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 7° C	PERPENDICULAR JOINT OPENING AT 16° C	PERPENDICULAR JOINT OPENING AT 32° C
END BENT #1	85°-14'-10"	63mm	66mm	56mm	38mm
END BENT #2	85°-14'-10"	28mm	43mm	39mm	31mm

INSTALLATION PROCEDURE

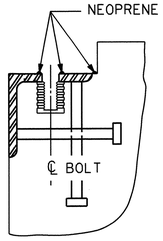
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 105mm TO 108mm WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 19.05mm Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 25mm Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 102mm X 102mm X 12.7mm BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 0.100mm (DRY) OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 22mm IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 119.3 N-m WITH A TORQUE WRENCH. THE TORQUE WRENCH SHALL BE CALIBRATED IN ACCORDANCE WITH SECTION 440-10 (D) OF THE STANDARD SPECIFICATIONS. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 119.3 N-m. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 108.5 N-m AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

GENERAL NOTES

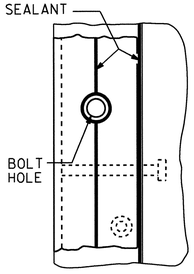
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 250 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL. WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 13.3 kN MIN.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130° . FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130° , ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD DOWN PLATE AND BASE ANGLE ASSEMBLY AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
7. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 0.100mm (DRY) OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 6.1m LENGTHS UNLESS APPROVED BY THE ENGINEER.
9. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
10. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 19.05mm DIA. BOLT IS 44.5 kN. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



DETAIL "A"

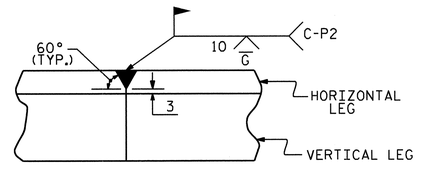


CROSS SECTION

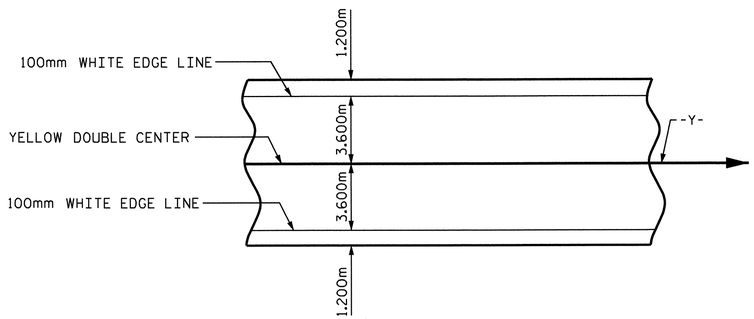


PLAN VIEW

INSTALLATION SKETCH



DETAIL - FIELD WELD SPLICE OF BASE ANGLE



PAVEMENT MARKING ALIGNMENT

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-261
1			3			TOTAL SHEETS
2			4			276

STR. #6

STD. NO. EJS1SM

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

ASSEMBLED BY : J.P. ADAMS	DATE : 8/1/11	
CHECKED BY : H.A. LOCKLEAR	DATE : 9/11	
DRAWN BY : REK 9/87	REV. 10/17/00	RWW/LES
CHECKED BY : CRK 10/87	REV. 5/7/03R	RWW/JTE
	REV. 5/1/06	TLA/GM

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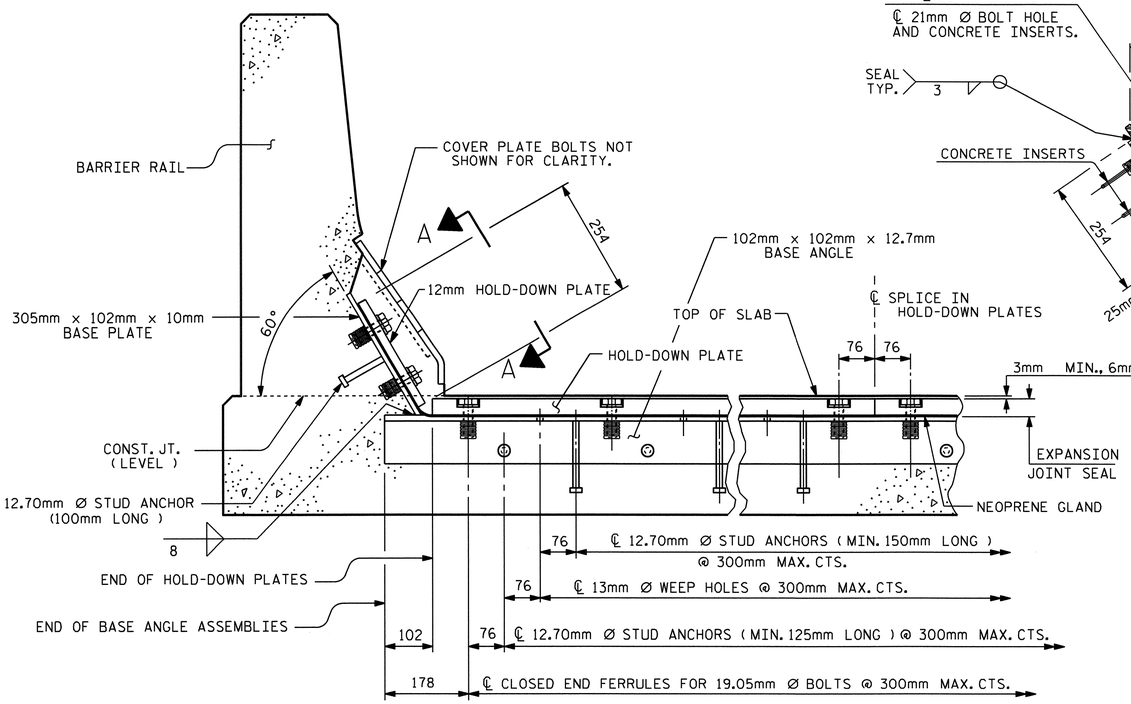
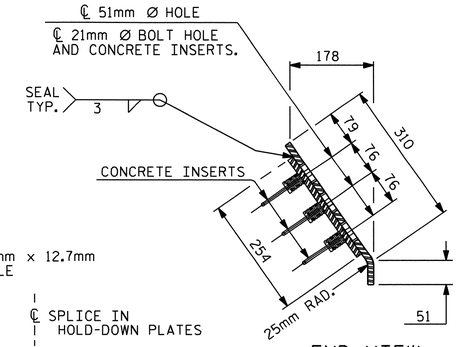
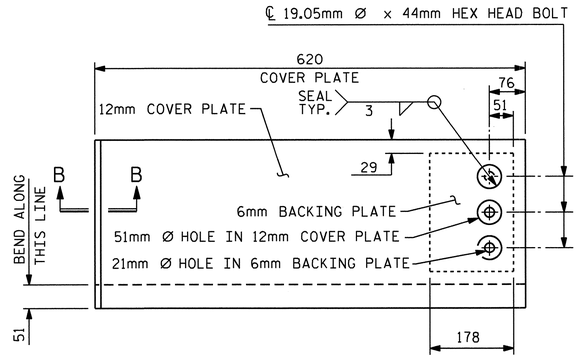


SECTION THRU RAIL NORMAL TO JOINT

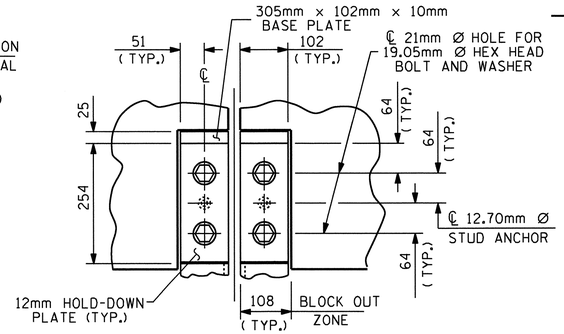


END VIEW

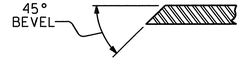


TYPE II - ELEVATION VIEW

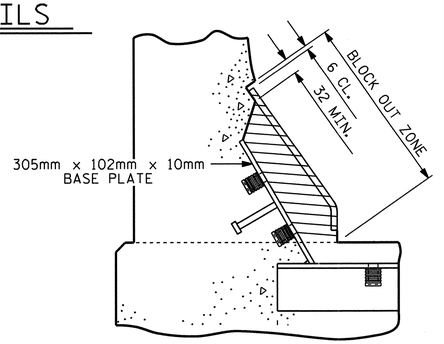
COVER PLATE DETAILS



SECTION A-A

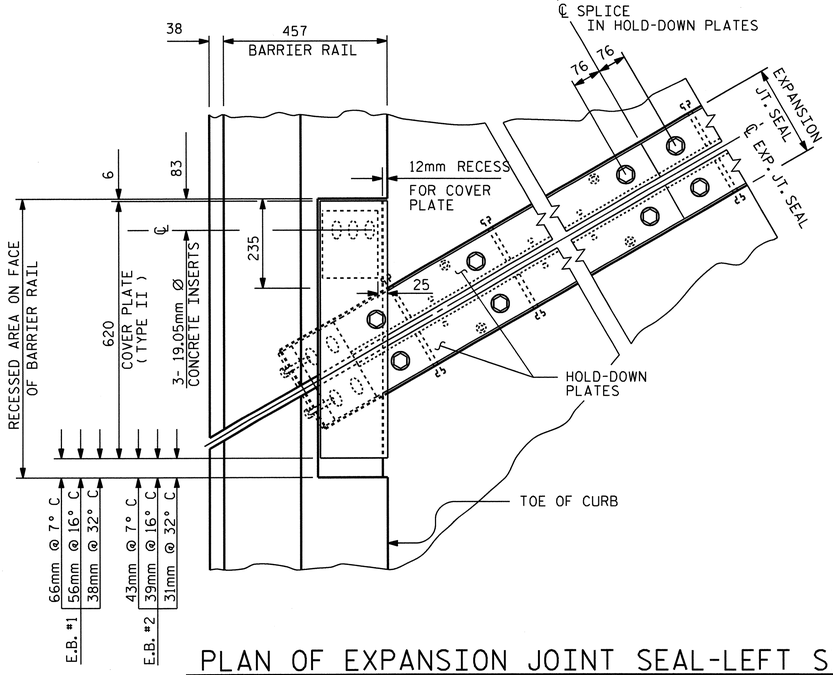


SECTION B-B



BLOCK OUT DETAIL

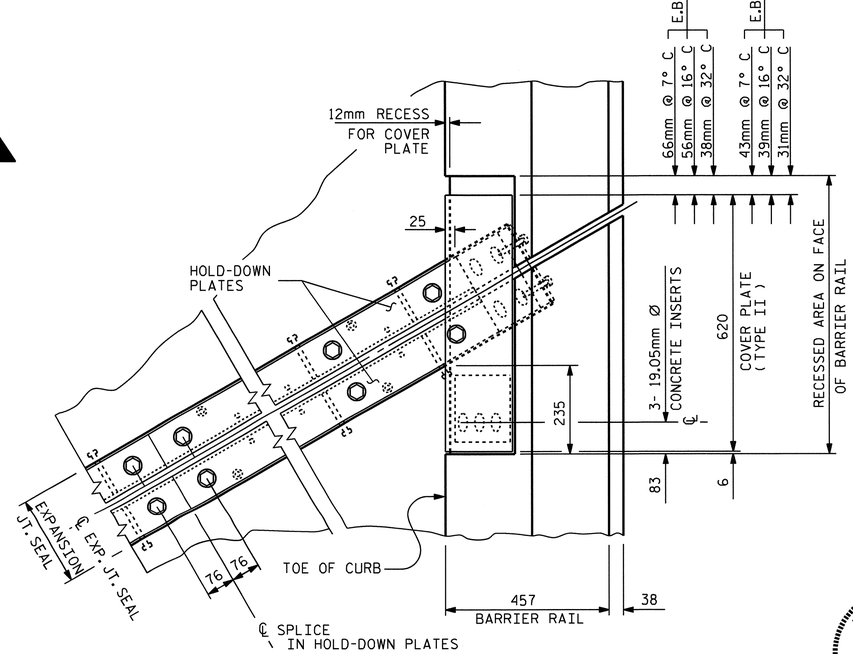
SEE "SECTION A-A" FOR OTHER DETAILS



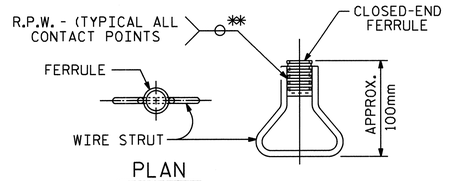
PLAN OF EXPANSION JOINT SEAL-LEFT SIDE

FLOW OF TRAFFIC

FLOW OF TRAFFIC



PLAN OF EXPANSION JOINT SEAL-RIGHT SIDE



PLAN

ELEVATION

CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-262
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL
2/14/12

ASSEMBLED BY : J.P. ADAMS	DATE : 8/1/11	
CHECKED BY : H.A. LOCKLEAR	DATE : 9/11	
DRAWN BY : REK 9/87	REV. 7/17/98	RWW/LES
CHECKED BY : CRK 10/87	REV. 10/17/00	RWW/LES
	REV. 5/1/06	TLA/GM

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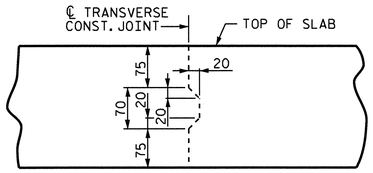


TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#13	610	540	610	540	840
#16	770	660	770	660	1050
#19	920	790	1190	790	1330
#22	1580	1060			
#25	2080	1390			

GROOVING BRIDGE FLOORS	
BRIDGE DECK	1224.2 m^2
APPROACH SLABS	126.2 m^2
TOTAL	1350.4 m^2

CLASS AA CONCRETE (m^3)	
POUR #1 =	64.0
POUR #2 =	156.6
POUR #3 =	165.0
POUR #4 =	7.6
TOTAL =	393.2

REINFORCING BAR SCHEDULE

SPAN A-C

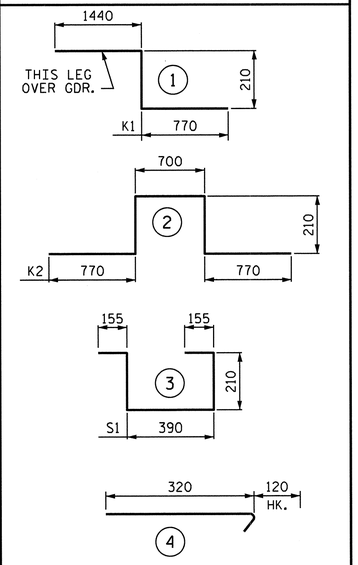
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	877	16	STR.	10480	14264
✱A101	2	16	STR.	8580	27
✱A102	2	16	STR.	6660	21
✱A103	2	16	STR.	4740	15
✱A104	2	16	STR.	2820	9
✱A105	2	16	STR.	900	3
A2	877	16	STR.	10480	14264
A201	2	16	STR.	8580	27
A202	2	16	STR.	6660	21
A203	2	16	STR.	4740	15
A204	2	16	STR.	2820	9
A205	2	16	STR.	900	3
✱B1	188	22	STR.	16640	9516
✱B2	200	13	STR.	7600	1511
✱B3	75	13	STR.	8180	610
B4	342	16	STR.	16300	8652
✱G1	2	16	STR.	10520	33
✱J1	70	13	4	440	31
✱K1	8	16	1	2420	30
✱K2	8	16	2	2660	33
✱K3	12	16	STR.	2660	50
✱S1	42	13	3	1120	47

REINFORCING STEEL (Kgs) = 22991

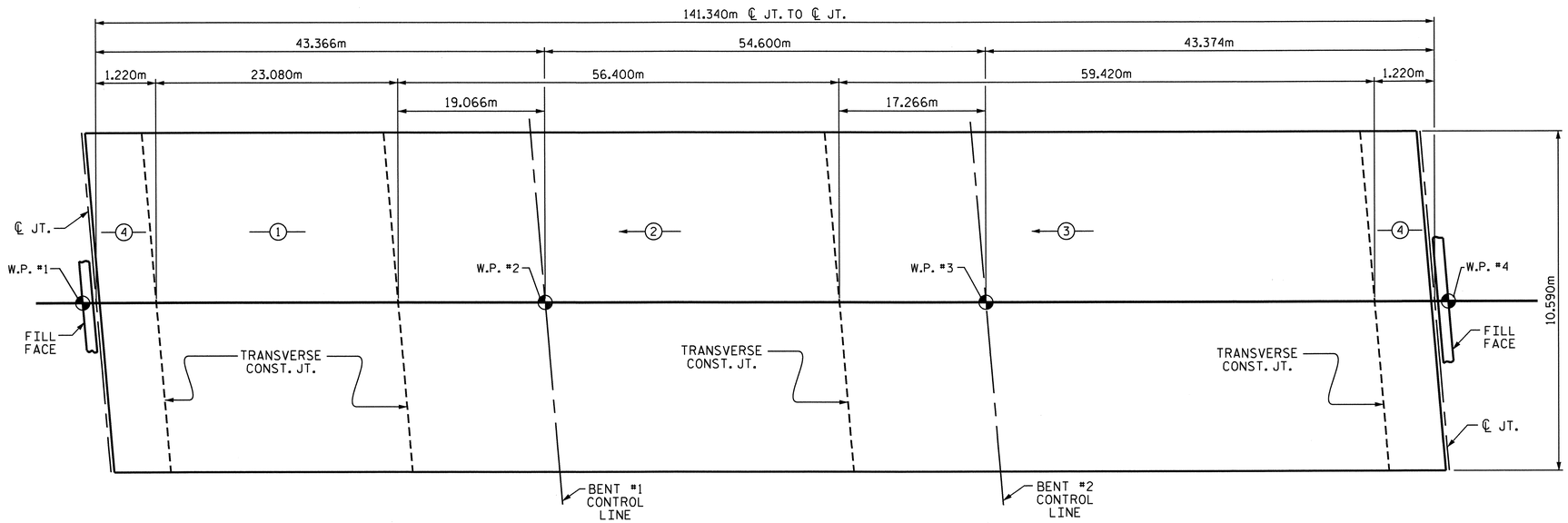
✱EPOXY COATED
REINFORCING STEEL (Kgs) = 26200

QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB & POURING SEQUENCE OF REINFORCED CONCRETE DECK SLAB

AREA CONCRETE DECK SLAB = 1497.0 m^2

SHOWS DIRECTION OF POUR

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL 3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-263
1			3			TOTAL SHEETS
2			4			276

STR. #6

DRAWN BY : J.P. ADAMS DATE : 8/2/11
CHECKED BY : H.A. LOCKLEAR DATE : 9/11

20-MAR-2012 09:37
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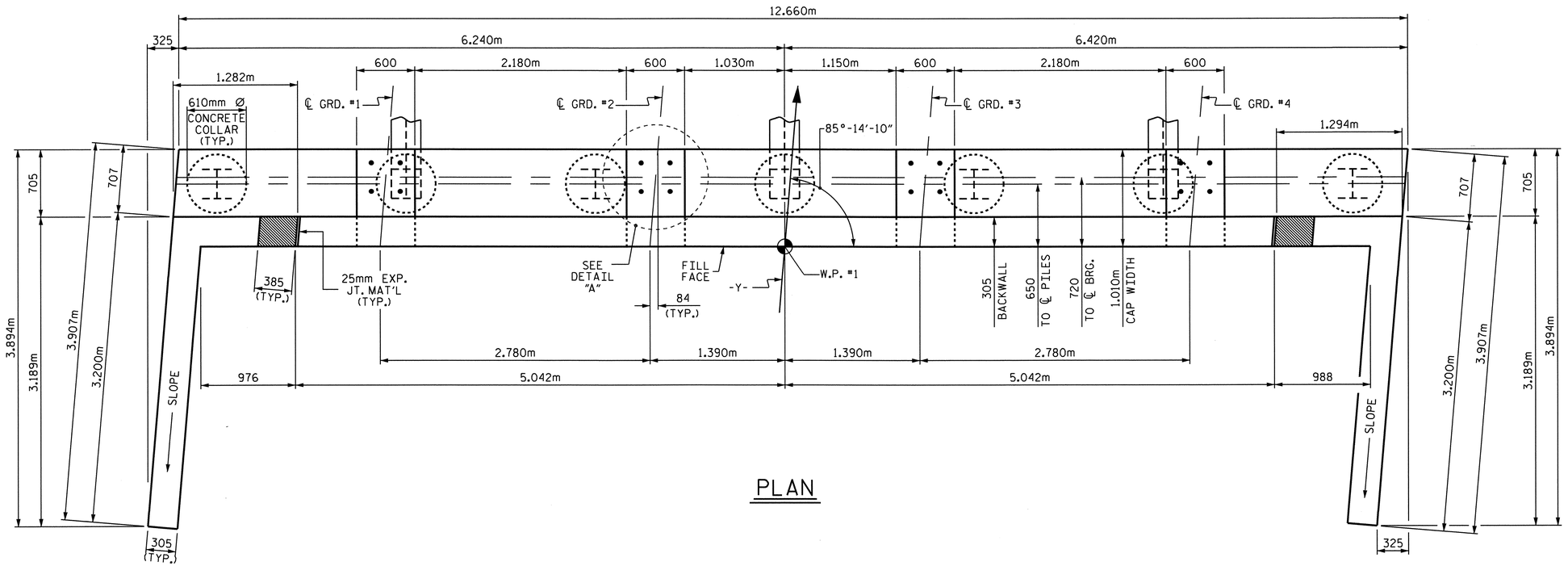
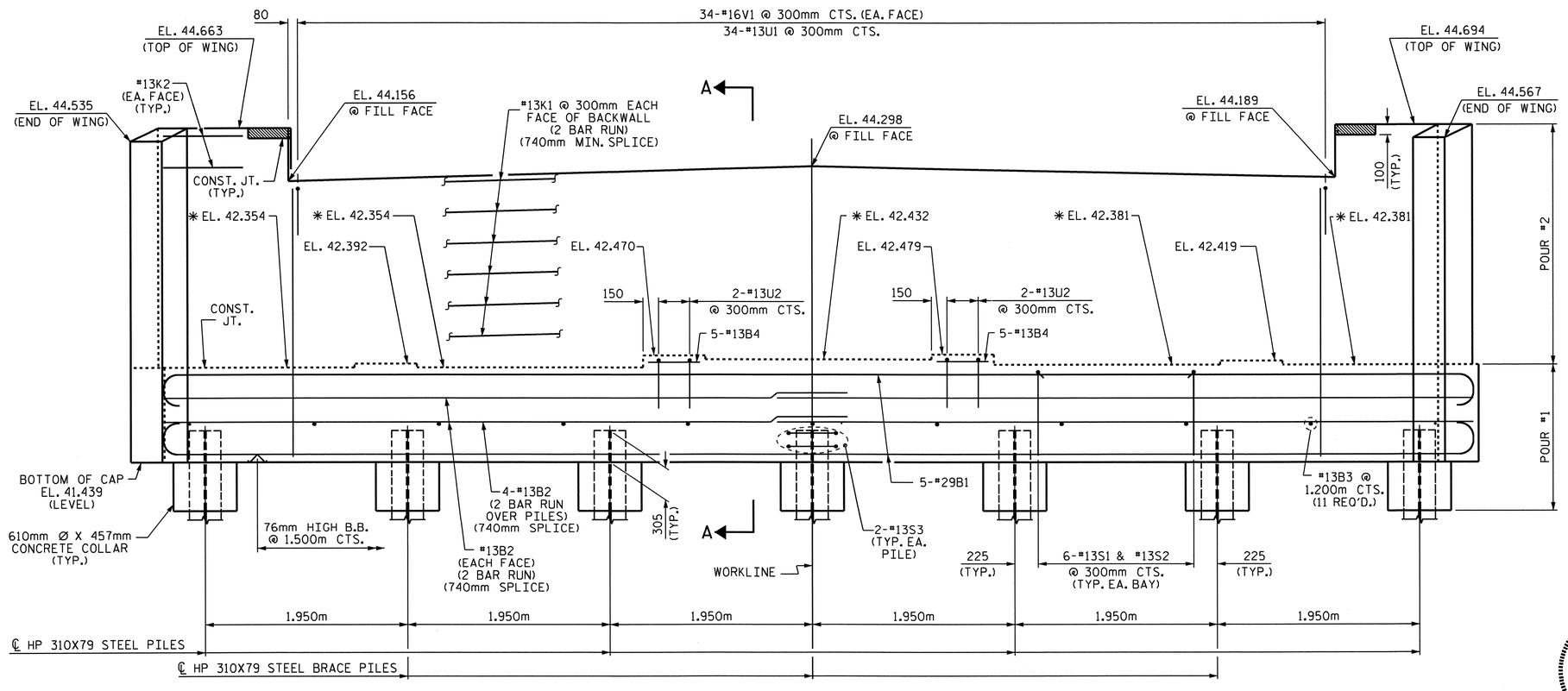
vpatel



PLAN



ELEVATION

NOTES

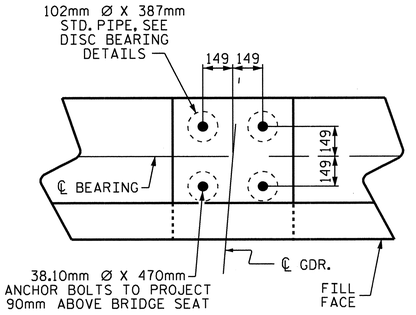
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2 %.

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



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

✳ SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS.

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-264
1			3			TOTAL SHEETS
2			4			276

STR #6

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

DRAWN BY : H.T. DIEU DATE : 8/17/11
CHECKED BY : J.P. ADAMS DATE : 8/17/11

14-FEB-2012 07:33
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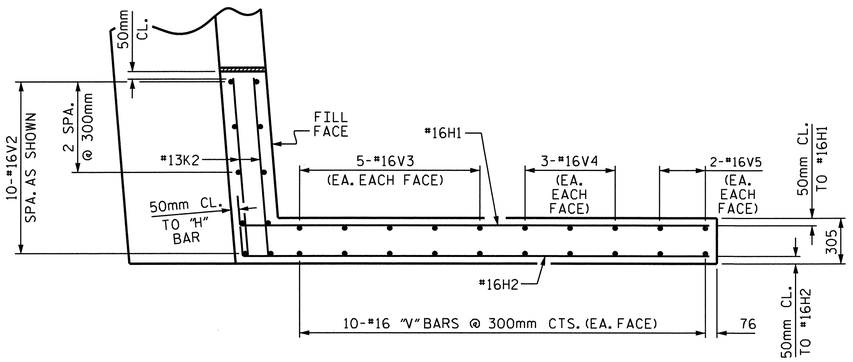
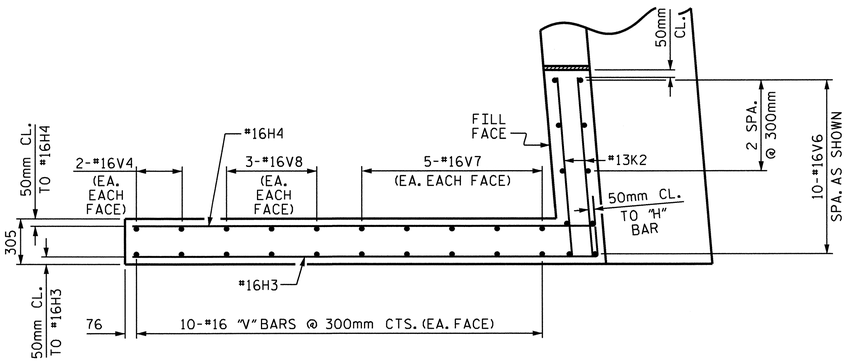
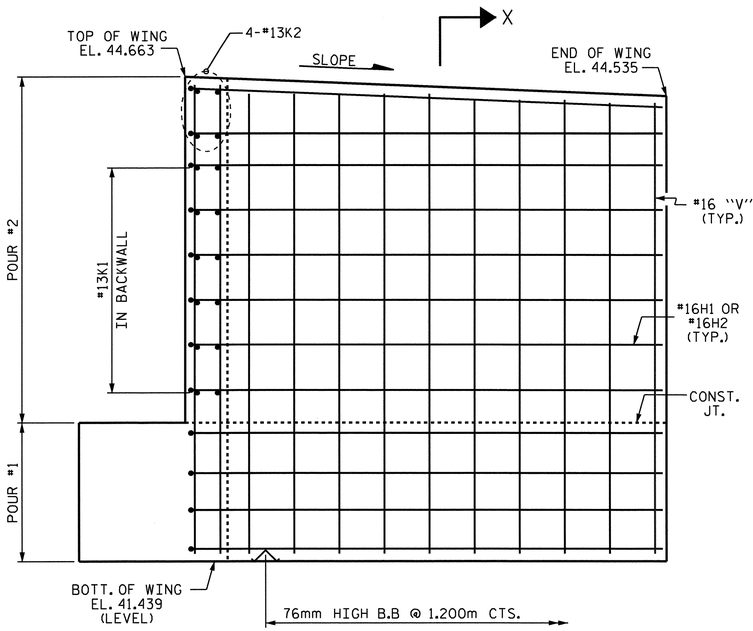
jpadams



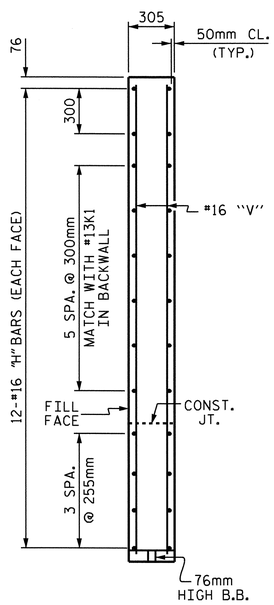
PLAN OF LEFT WING



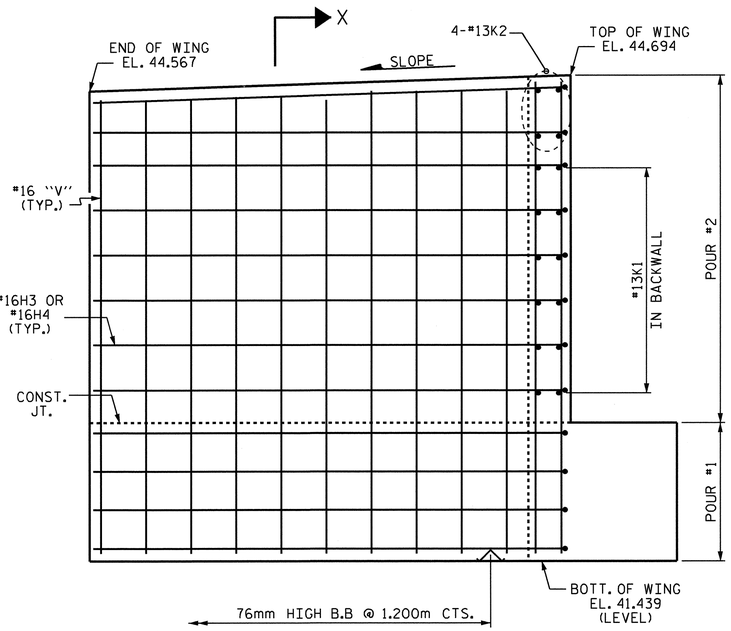
PLAN OF RIGHT WING



ELEVATION OF LEFT WING



SECTION X-X



ELEVATION OF RIGHT WING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-265
1			3			TOTAL SHEETS
2			4			276

STR #6

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL

2/14/12

DRAWN BY : H.T. DIEU DATE : 8/17/11
CHECKED BY : J.P. ADAMS DATE : 8/17/11

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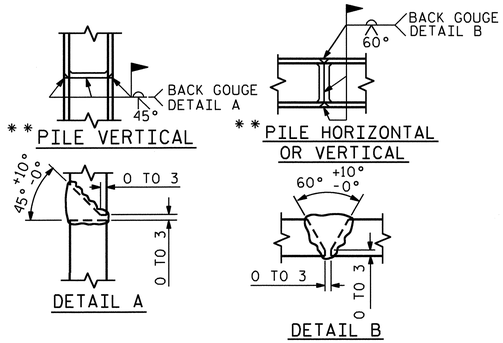
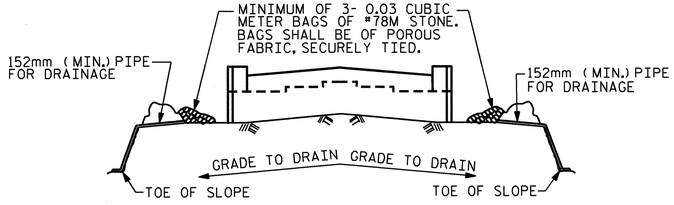
jpadams



** POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

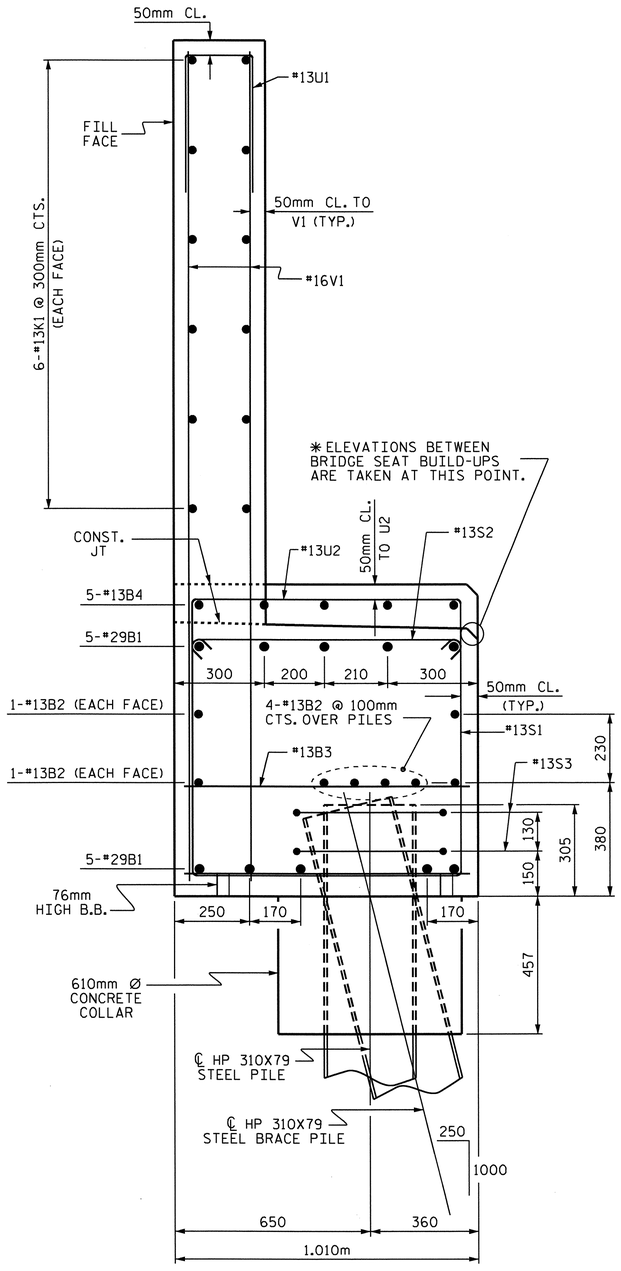


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

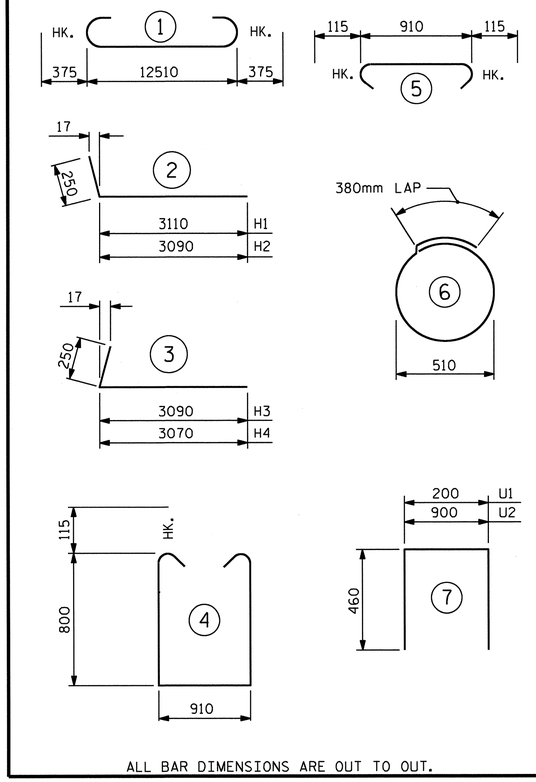
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#29	1	13260	671
B2	16	#13	STR	6660	106
B3	11	#13	STR	900	10
B4	10	#13	STR	500	5
H1	12	#16	2	3360	63
H2	12	#16	2	3340	62
H3	12	#16	3	3340	62
H4	12	#16	3	3320	62
K1	24	#13	STR	6660	159
K2	8	#13	STR	1180	9
S1	36	#13	4	2740	98
S2	36	#13	5	1140	41
S3	14	#13	6	1980	28
U1	34	#13	7	1120	38
U2	4	#13	7	1820	7
V1	68	#16	STR	2580	272
V2	10	#16	STR	3120	48
V3	10	#16	STR	3060	47
V4	10	#16	STR	3020	47
V5	4	#16	STR	3000	19
V6	10	#16	STR	3140	49
V7	10	#16	STR	3080	48
V8	6	#16	STR	3040	28

TOTAL REINFORCING STEEL KGS. 1979

CLASS A CONCRETE (CU. METERS)

POUR #1 CAP, COLLARS, & LOWER PART OF WINGS 14.8

POUR #2 BACKWALL & UPPER PART OF WINGS 11.5

TOTAL (CU. METERS) 26.3

HP 310x79 STEEL PILES
No. 7 METERS 214

PILE REDRIVES EACH 4

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-266
1			3			TOTAL SHEETS
2			4			276

DRAWN BY : H.T. DIEU DATE : 8/17/11
CHECKED BY : J.P. ADAMS DATE : 8/17/11

14-FEB-2012 07:33
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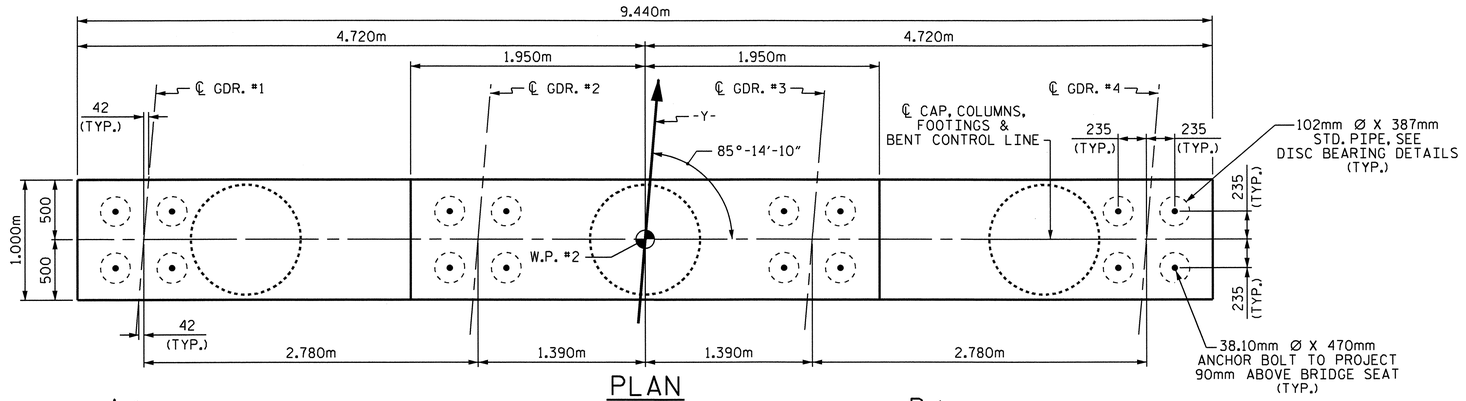
jpadams

STR #6

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

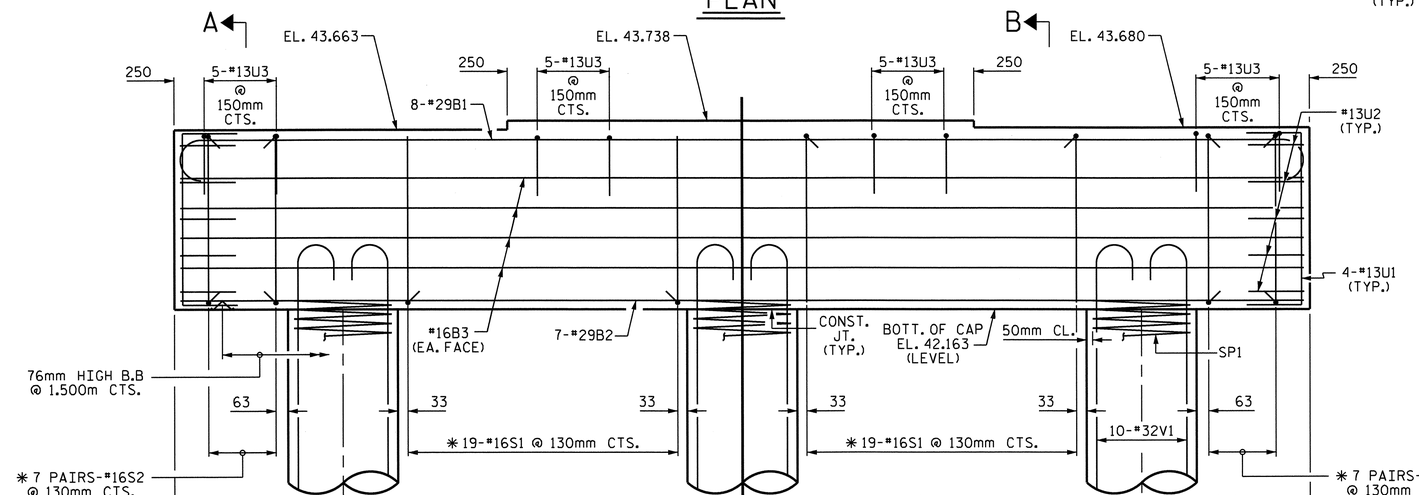
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

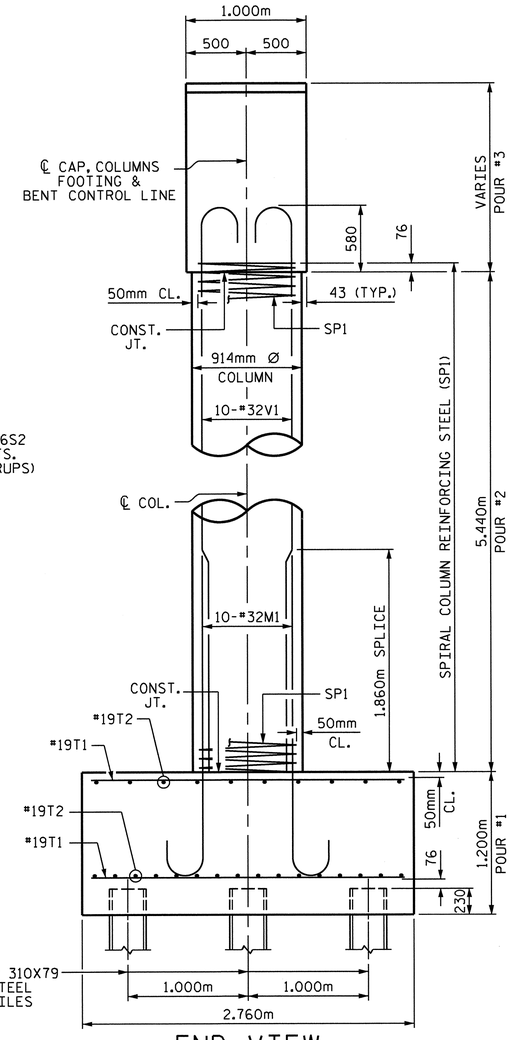


SPAN B

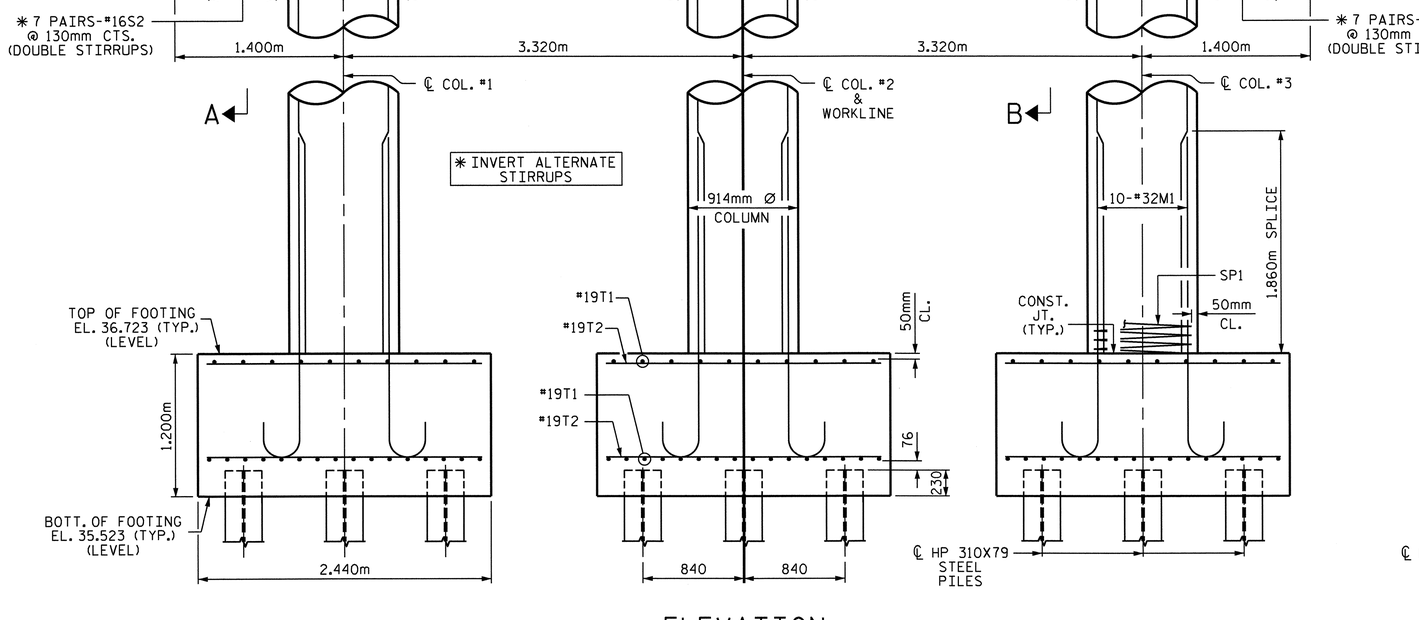
SPAN A

PLAN





END VIEW



ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING UNLESS OTHERWISE NOTED.

✱ INVERT ALTERNATE STIRRUPS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIMAL A. PATEL
3/20/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-267
1			3			TOTAL SHEETS
2			4			276

STR #6

DRAWN BY : H.T. DIEU DATE : 8/10/11
CHECKED BY : J.P. ADAMS DATE : 8/15/11

20-MAR-2012 10:02
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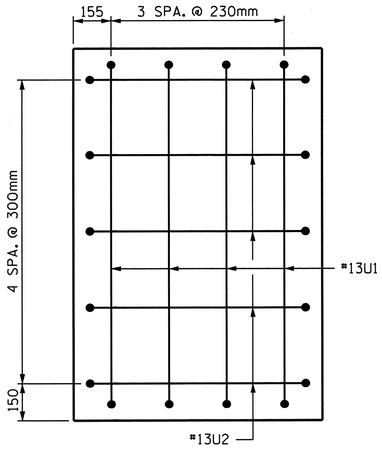
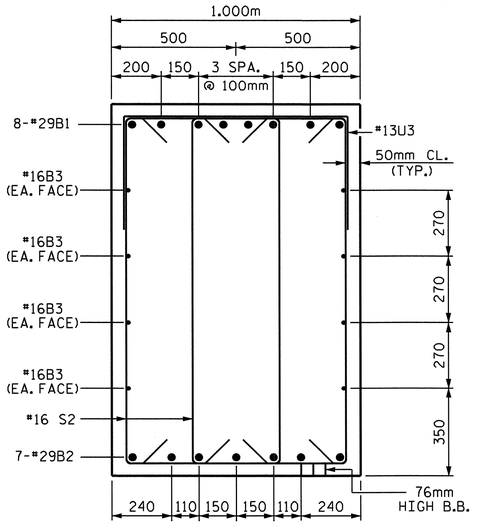
vpatel

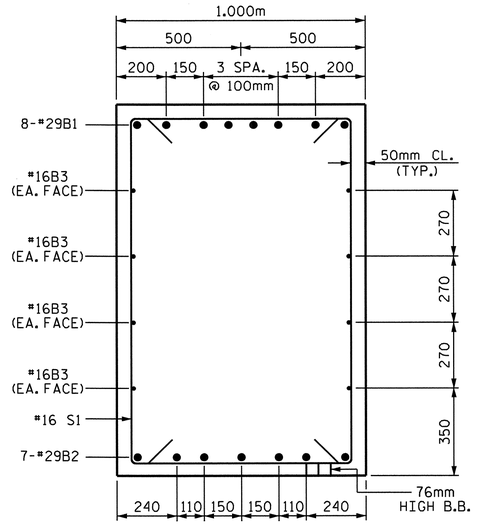


END VIEW



SECTION A-A

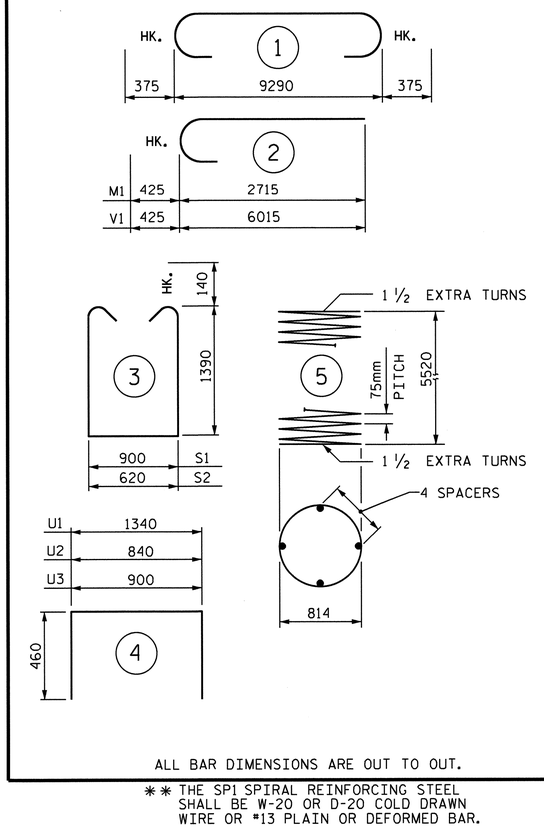
INVERT ALTERNATE STIRRUPS



SECTION B-B

INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

** THE SP1 SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#29	1	10040	406
B2	7	#29	STR	9340	331
B3	8	#16	STR	9340	116
M1	30	#32	2	3140	603
S1	38	#16	3	3960	234
S2	28	#16	3	3680	160
T1	78	#19	STR	2660	464
T2	78	#19	STR	2340	408
U1	8	#13	4	2260	18
U2	10	#13	4	1760	17
U3	20	#13	4	1820	36
V1	30	#32	2	6440	1237
REINFORCING STEEL					4030 kgs
SP1	3	**	5	193300	576 kgs

SPIRAL COLUMN REINFORCING STEEL (SP1) = 576 kgs

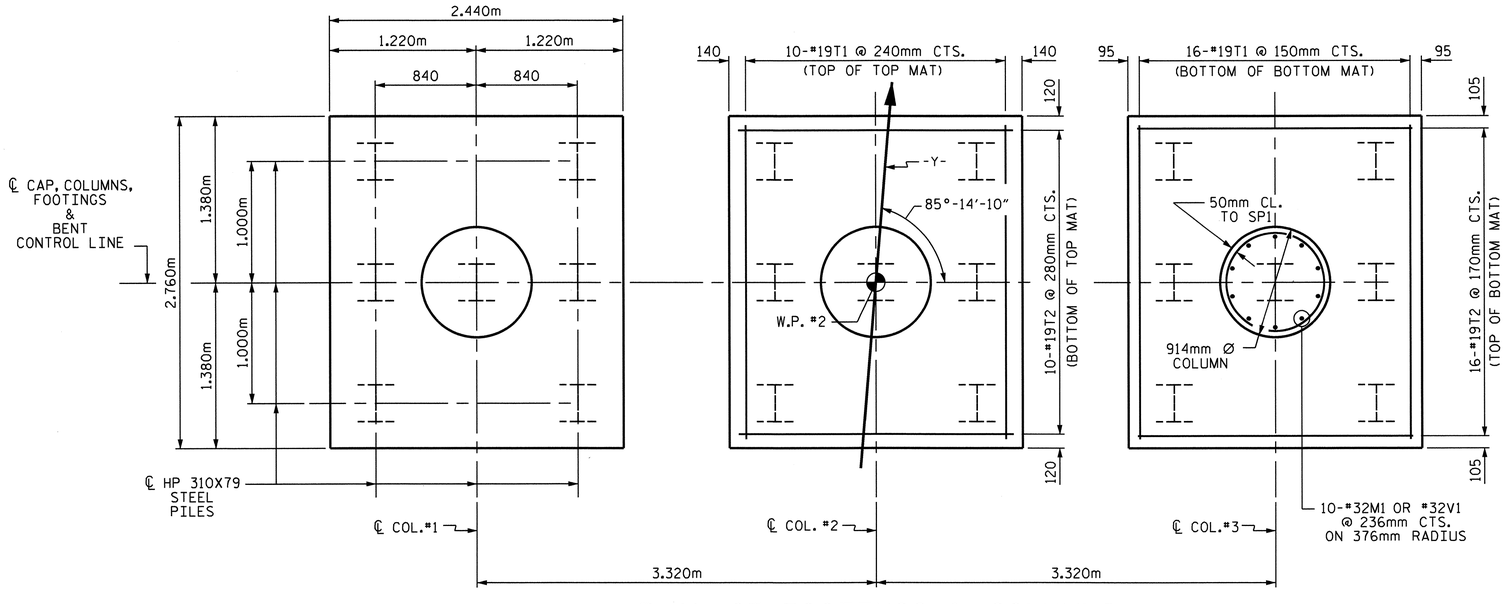
CLASS A CONCRETE BREAKDOWN:

POUR #1 (FOOTINGS)	24.2 C.M.
POUR #2 (COLUMNS)	10.7 C.M.
POUR #3 (CAP)	14.5 C.M.
TOTAL CLASS A CONCRETE	49.4 C.M.

HP 310X79 STEEL PILES
No. 21 737 m

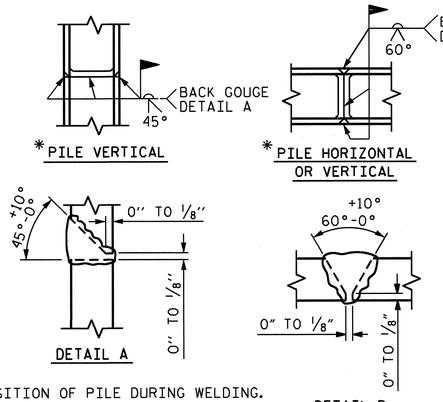
FOUNDATION EXCAVATION LUMP SUM

PILE REDRIVES EA. 9



PLAN OF FOOTINGS & COLUMNS

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING UNLESS OTHERWISE NOTED.



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
3/20/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-268
1			3			TOTAL SHEETS
2			4			276

STR #6

DRAWN BY : H.T. DIEU DATE : 8/10/11
CHECKED BY : J.P. ADAMS DATE : 8/15/11

20-MAR-2012 09:35
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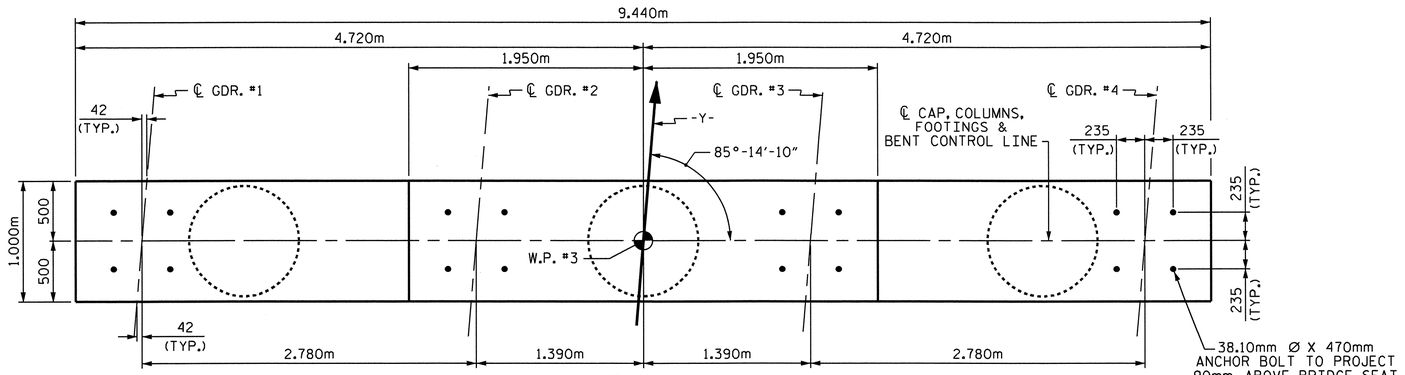
vpatel

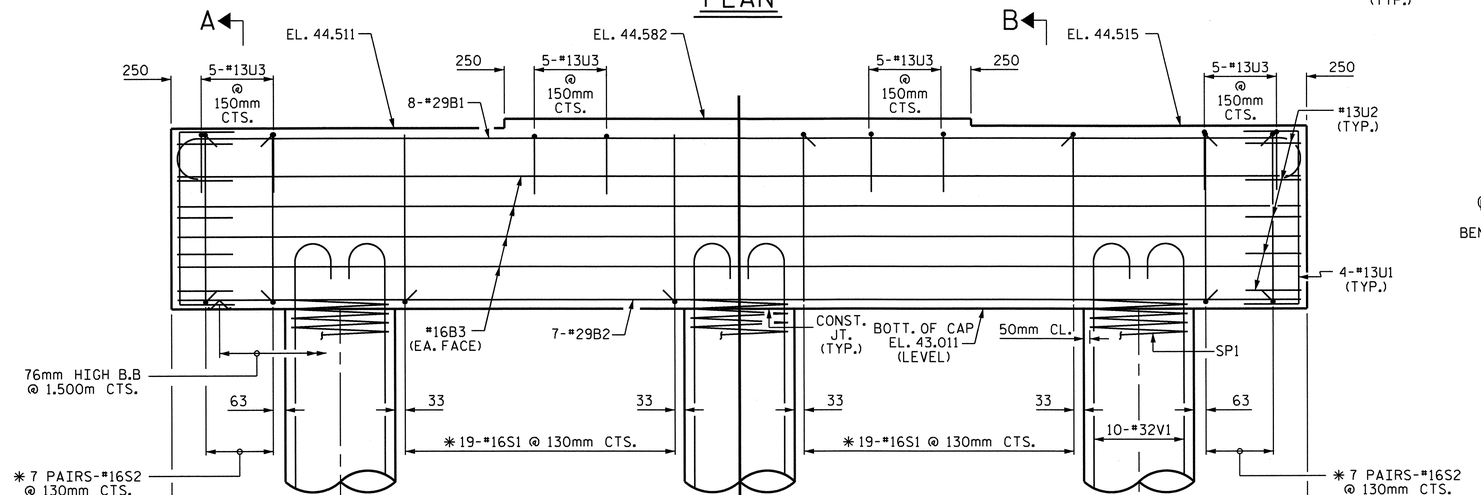
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

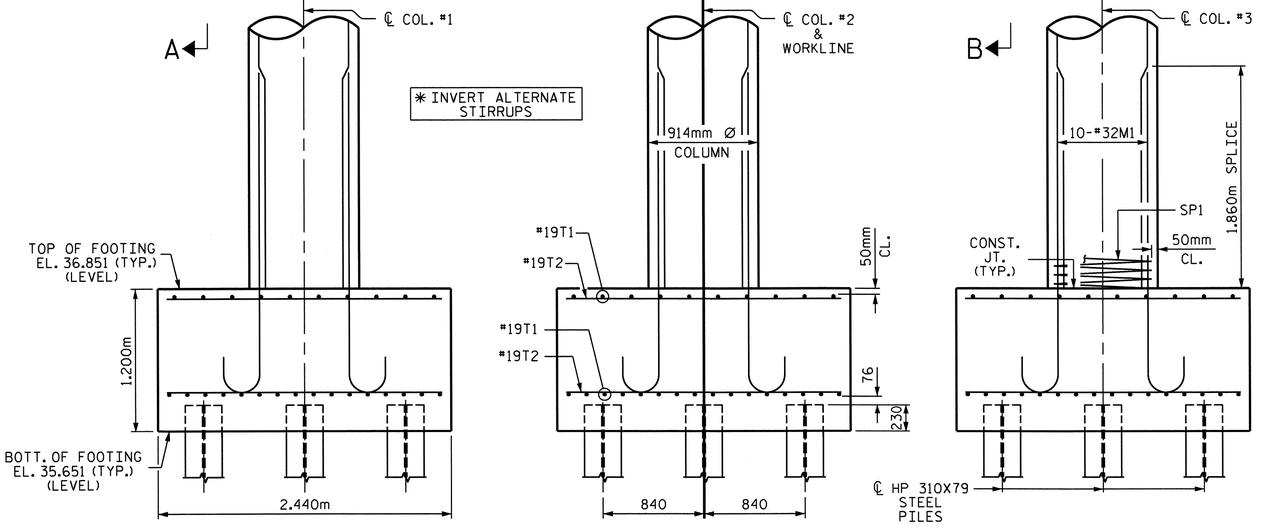
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.



PLAN



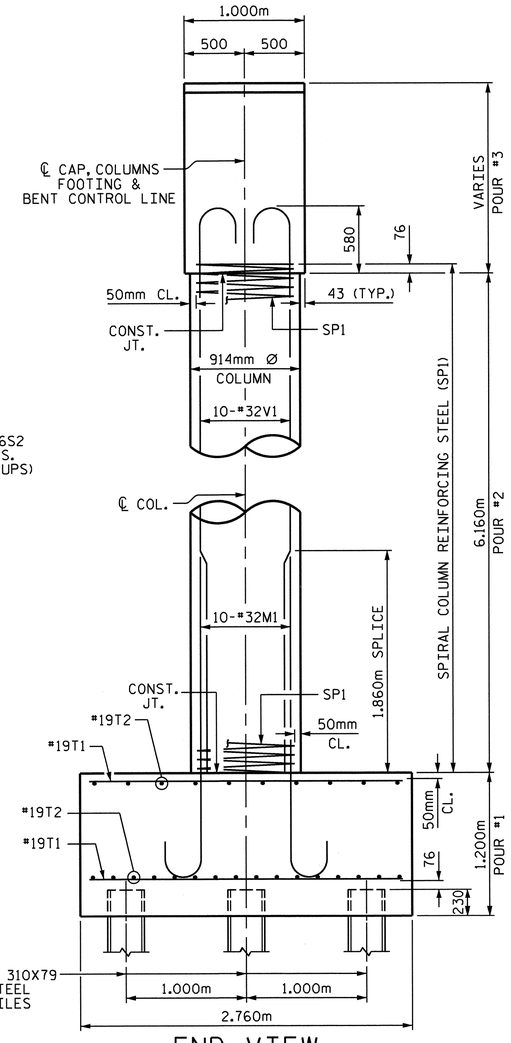
ELEVATION



REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING UNLESS OTHERWISE NOTED.

SPAN C

SPAN B



END VIEW

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-269
1			3			TOTAL SHEETS
2			4			276

STR #6

DRAWN BY : H.T. DIEU DATE : 8/17/11
CHECKED BY : J.P. ADAMS DATE : 8/24/11

20-MAR-2012 10:03
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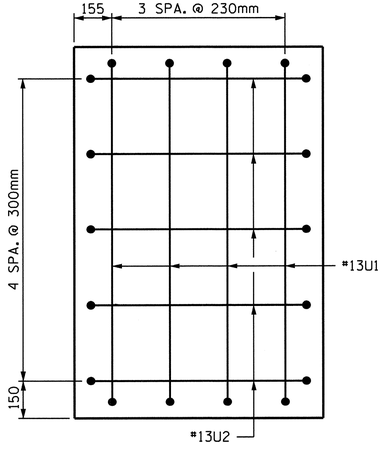
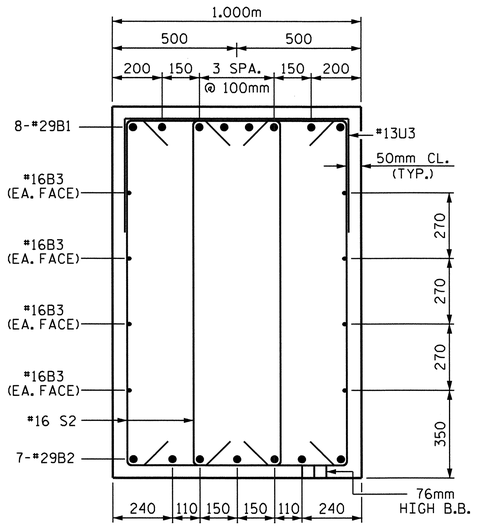
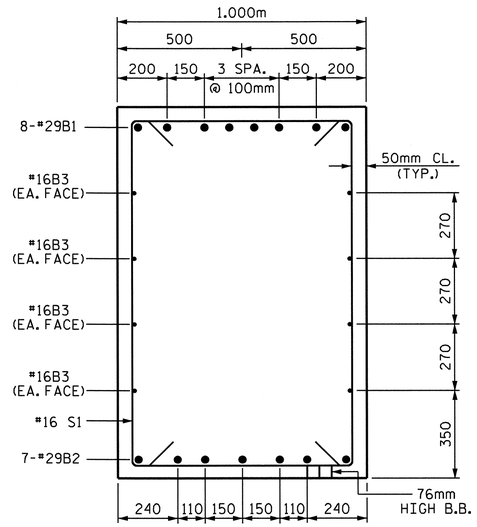
vpatel



END VIEW

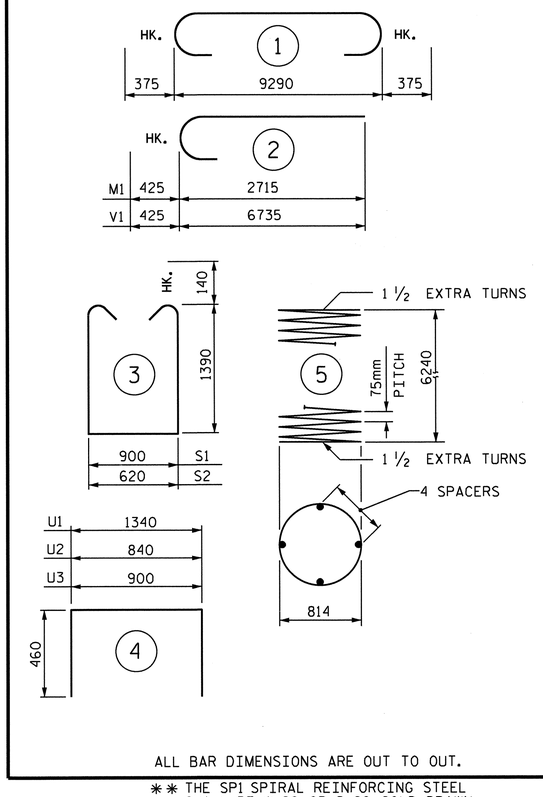


SECTION A-A
INVERT ALTERNATE STIRRUPS



SECTION B-B
INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

** THE SP1 SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #13 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#29	1	10040	406
B2	7	#29	STR	9340	331
B3	8	#16	STR	9340	116
M1	30	#32	2	3140	603
S1	38	#16	3	3960	234
S2	28	#16	3	3680	160
T1	78	#19	STR	2660	464
T2	78	#19	STR	2340	408
U1	8	#13	4	2260	18
U2	10	#13	4	1760	17
U3	20	#13	4	1820	36
V1	30	#32	2	7160	1376
REINFORCING STEEL					4169 kgs
SP1	3	**	5	217220	648 kgs

SPIRAL COLUMN REINFORCING STEEL (SP1) = 648 kgs

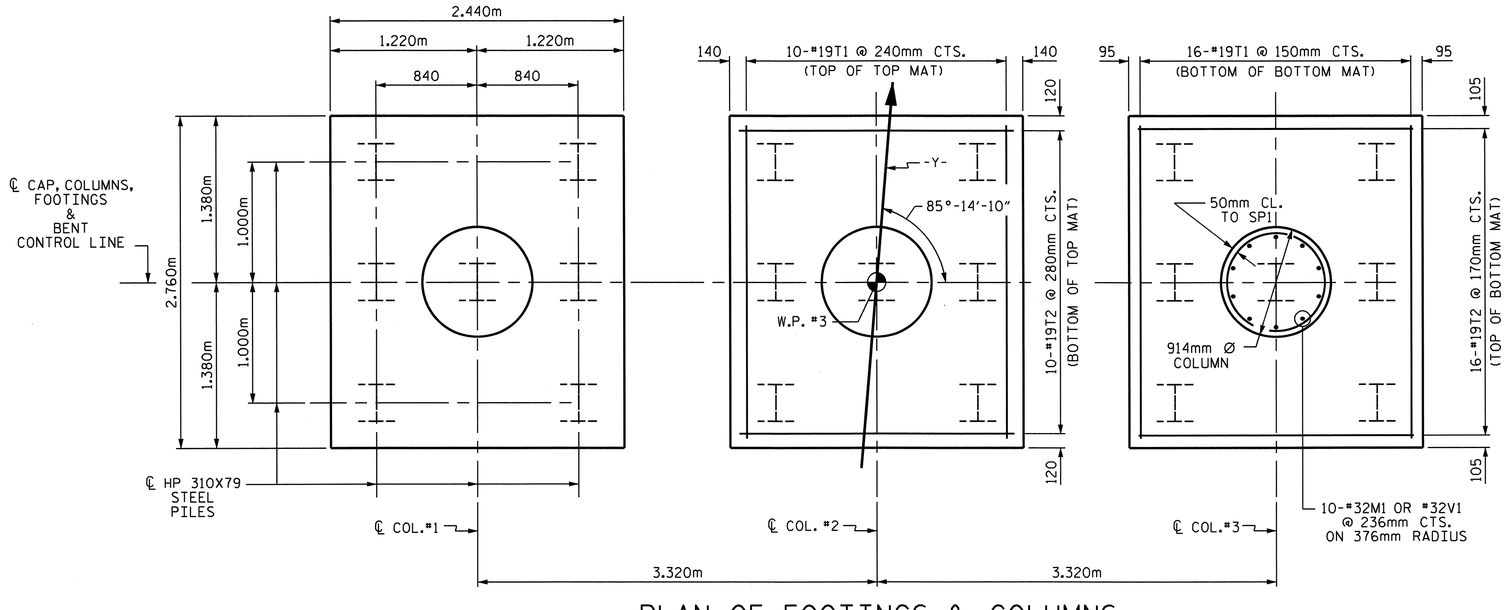
CLASS A CONCRETE BREAKDOWN:

POUR #1 (FOOTINGS)	24.2 C.M.
POUR #2 (COLUMNS)	12.1 C.M.
POUR #3 (CAP)	14.5 C.M.
TOTAL CLASS A CONCRETE	50.8 C.M.

HP 310X79 STEEL PILES
No. 21 — 737 m

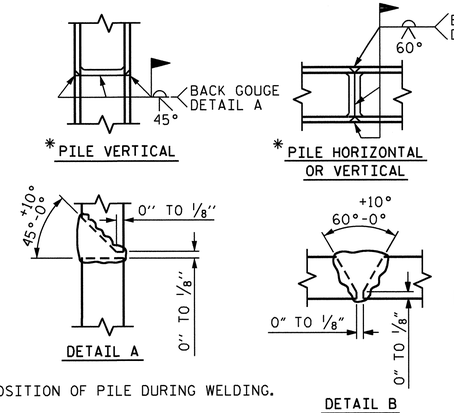
FOUNDATION EXCAVATION — LUMP SUM

PILE REDRIVES — EA. 9



PLAN OF FOOTINGS & COLUMNS

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING UNLESS OTHERWISE NOTED.



* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
3/20/12

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-270
1			3			TOTAL SHEETS
2			4			276

STR #6

DRAWN BY : H.T. DIEU DATE : 8/17/11
CHECKED BY : J.P. ADAMS DATE : 8/24/11

20-MAR-2012 09:35
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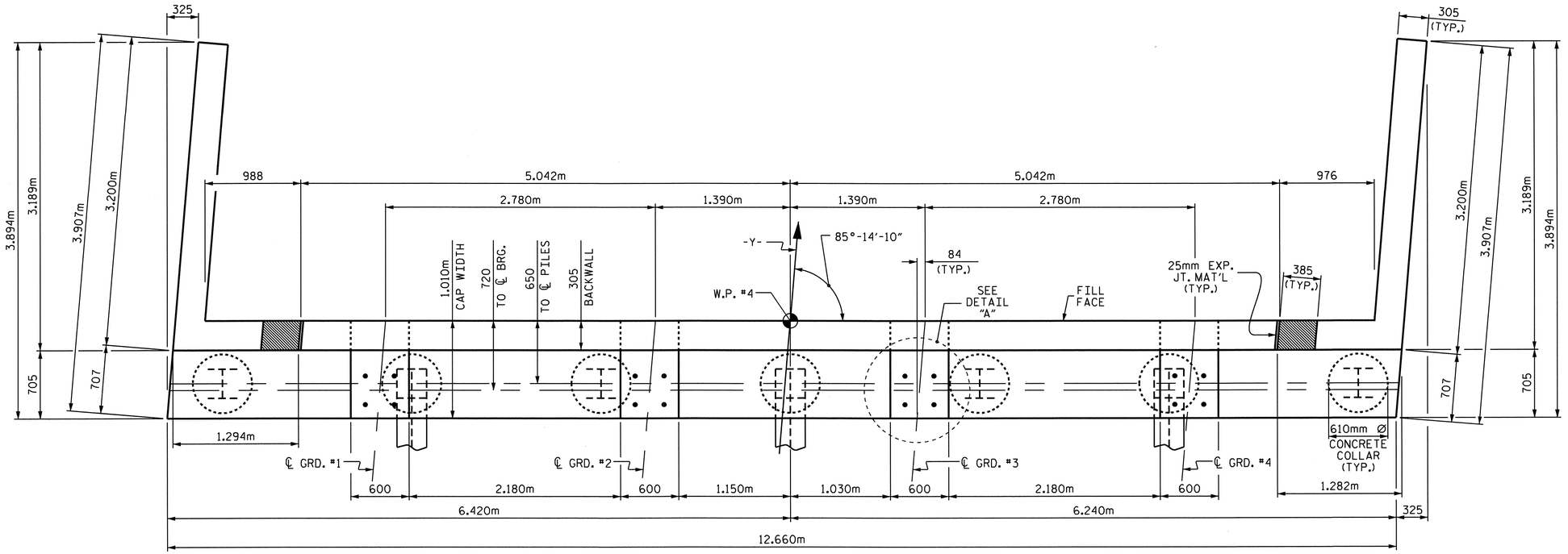
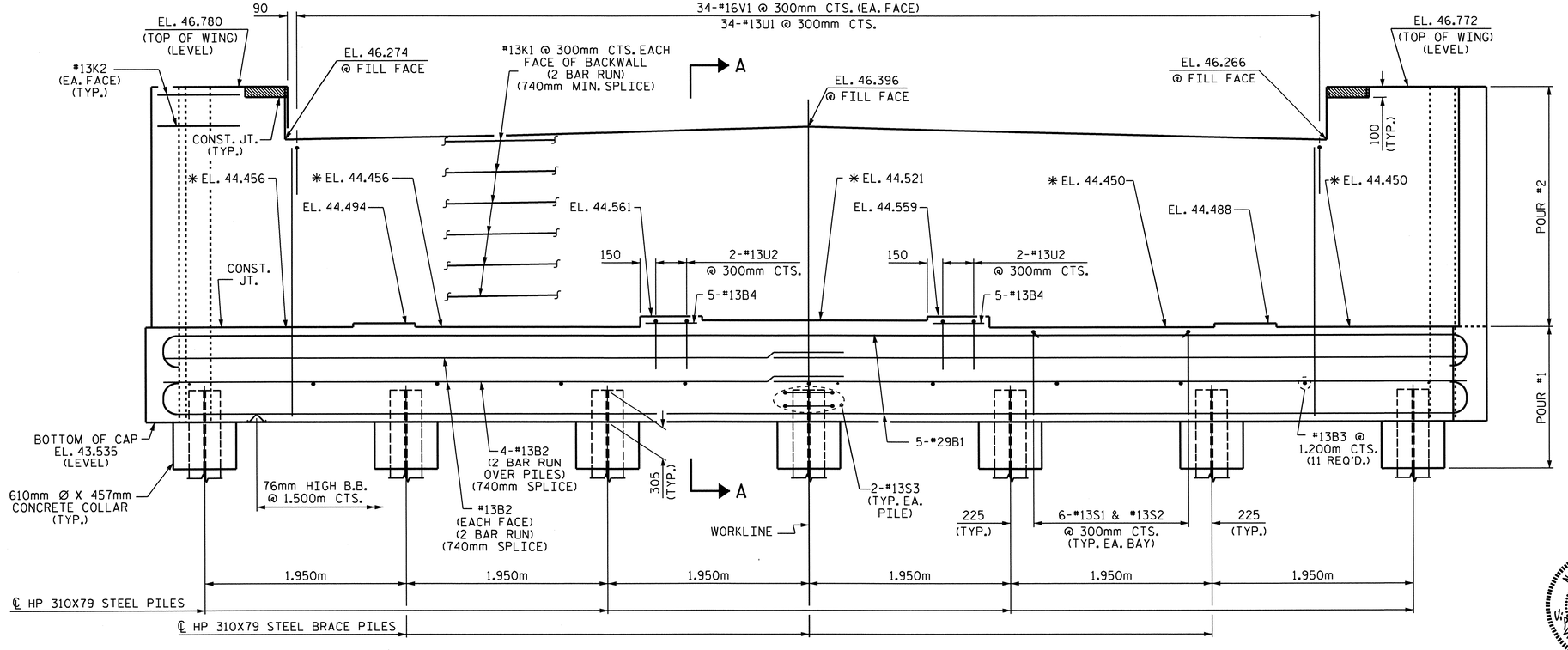


PLAN



ELEVATION

NOTES

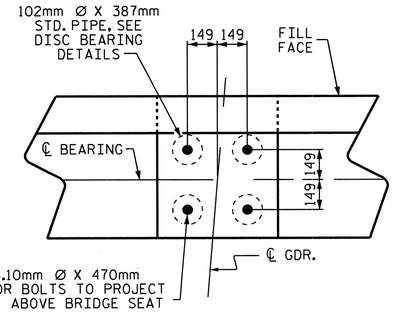
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2 %.

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



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

* SEE SHEET 3 OF 3 FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILD-UPS.

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-271
1			3			TOTAL SHEETS
2			4			276

STR #6

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

DRAWN BY : H.T. DIEU DATE : 8/23/11
CHECKED BY : J.P. ADAMS DATE : 8/24/11

14-FEB-2012 07:33
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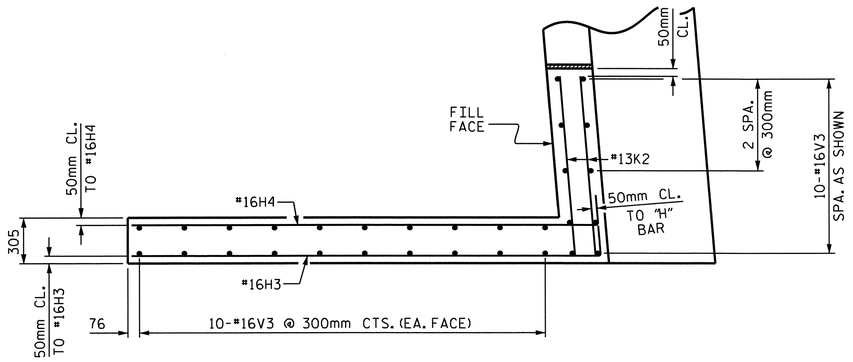
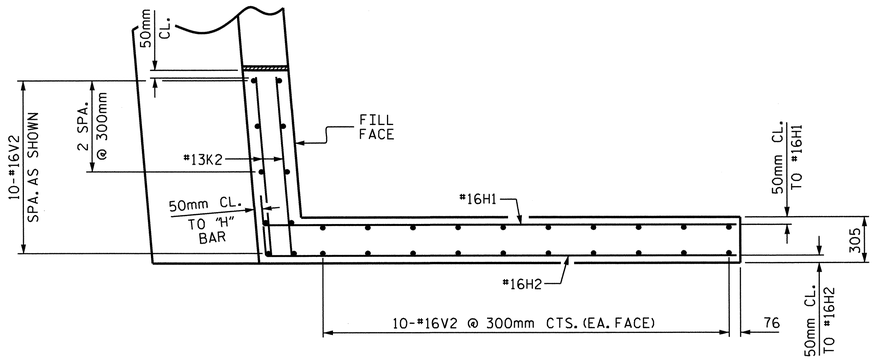
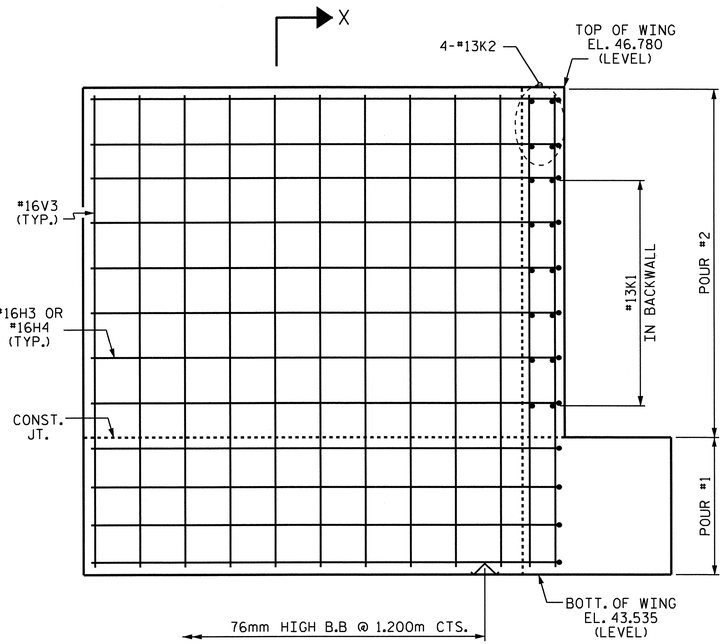
jpadams



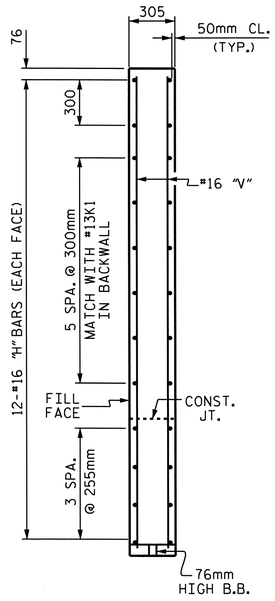
PLAN OF LEFT WING



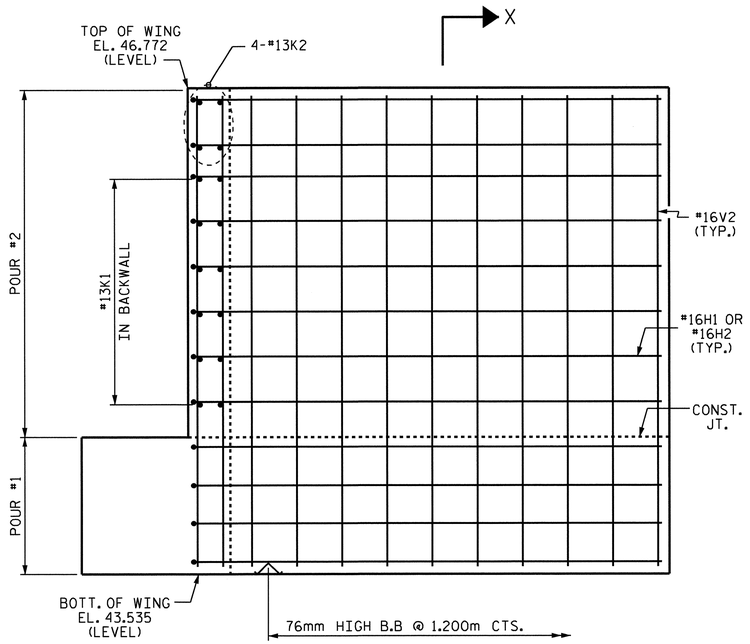
PLAN OF RIGHT WING



ELEVATION OF LEFT WING



SECTION X-X



ELEVATION OF RIGHT WING

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-272
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL

2/14/12

DRAWN BY : H.T. DIEU DATE : 8/23/11
CHECKED BY : J.P. ADAMS DATE : 8/24/11

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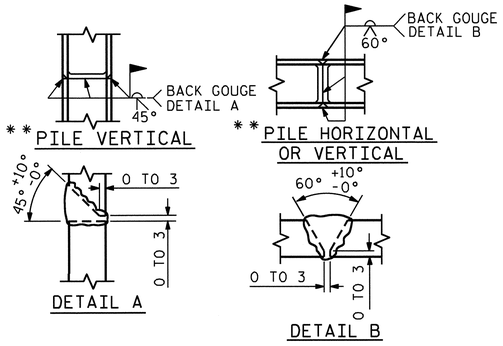
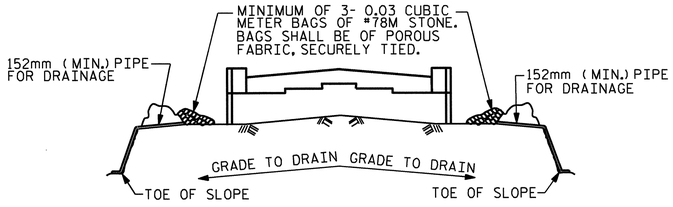
jpadams

STR #6



** POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

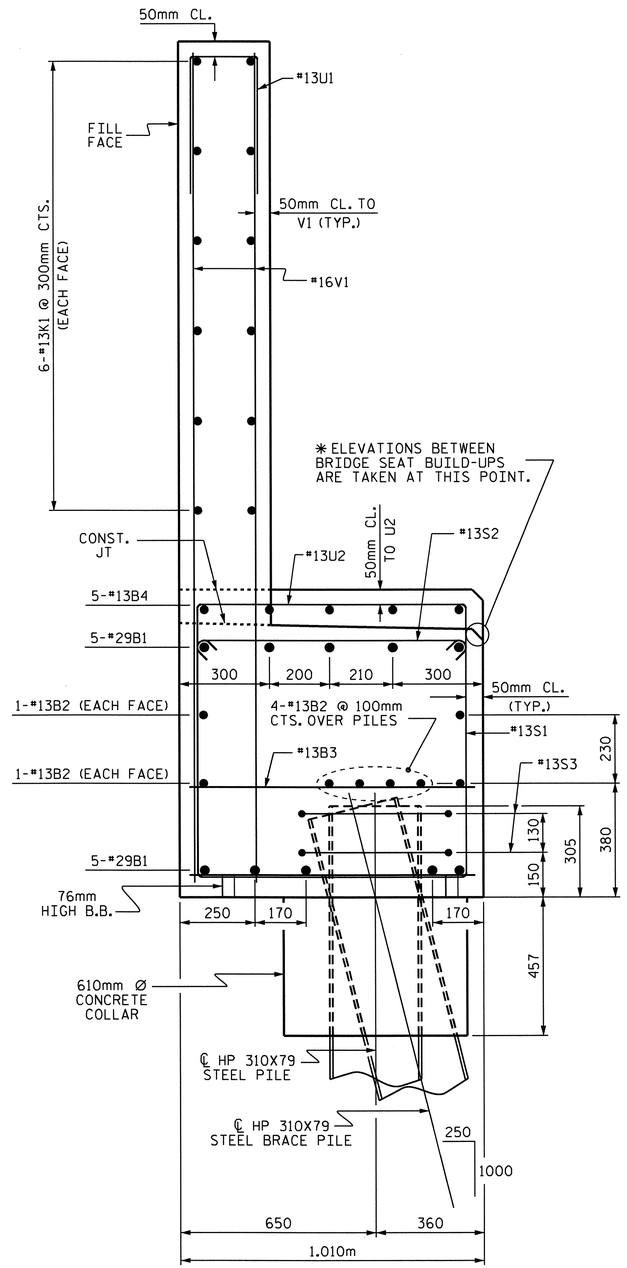


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

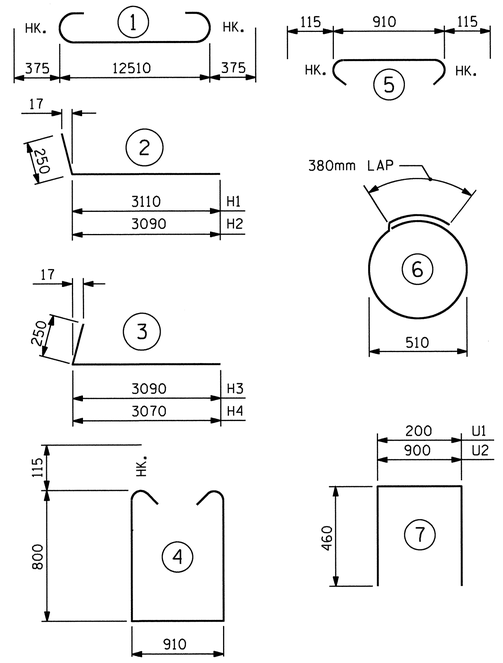
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#29	1	13260	671
B2	16	#13	STR	6660	106
B3	11	#13	STR	900	10
B4	10	#13	STR	500	5
H1	12	#16	2	3360	63
H2	12	#16	2	3340	62
H3	12	#16	3	3340	62
H4	12	#16	3	3320	62
K1	24	#13	STR	6660	159
K2	8	#13	STR	1180	9
S1	36	#13	4	2740	98
S2	36	#13	5	1140	41
S3	14	#13	6	1980	28
U1	34	#13	7	1120	38
U2	4	#13	7	1820	7
V1	68	#16	STR	2600	274
V2	30	#16	STR	3120	145
V3	30	#16	STR	3140	146

TOTAL REINFORCING STEEL KGS. 1986

CLASS A CONCRETE (CU. METERS)

POUR #1	CAP, COLLARS & LOWER PART OF WINGS	14.6
POUR #2	BACKWALL & UPPER PART OF WINGS	11.7
	TOTAL (CU. METERS)	26.3

HP 310x79 STEEL PILES
No. 7 METERS 192

PILE REDRIVES EACH 4

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 13+87.934 -Y-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-273
1			3			TOTAL SHEETS
2			4			276

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

DRAWN BY : H.T. DIEU DATE : 8/23/11
CHECKED BY : J.P. ADAMS DATE : 8/24/11

14-FEB-2012 07:33
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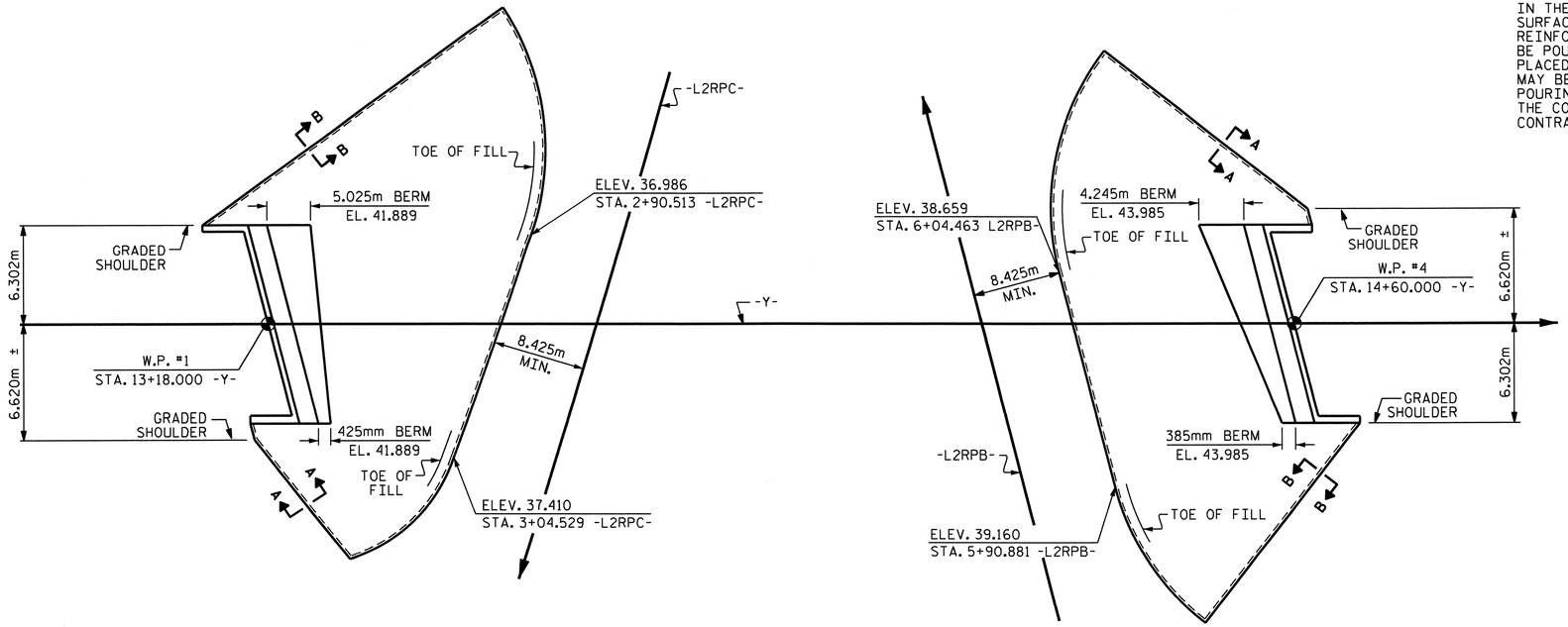
jpadams

STR #6

NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

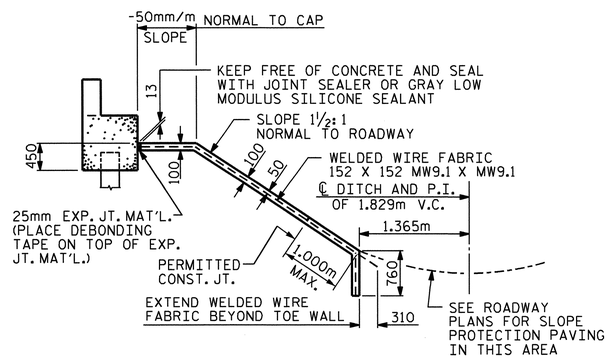
SLOPE PROTECTION SHALL CONSIST OF 100mm POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 152 X 152 - W9.1 X W9.1, 1520mm WIDE. SLOPE PROTECTION SHALL BE POURED IN 1520mm STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 600mm LONG #13 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 450mm MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 1220mm AND 1520mm STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 152mm. THE COST OF THE WELDED WIRE FABRIC AND #13 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE METER FOR SLOPE PROTECTION.



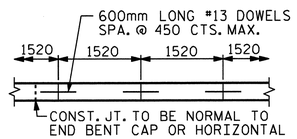
PLAN OF SLOPE PROTECTION

BRIDGE @ STA. 13+87.934 -Y-	100mm SLOPE PROTECTION	* WELDED WIRE FABRIC 1520mm WIDE
	SQUARE METERS	APPROX. METERS
END BENT #1	260	190
END BENT #2	330	240

* QUANTITY SHOWN IS BASED ON 1520mm POURS.

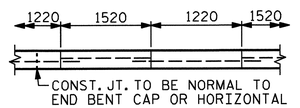


SECTION ALONG ℄ ROADWAY WHEN FILL CATCHES IN DITCH



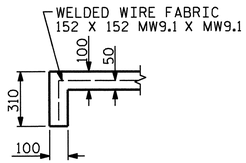
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

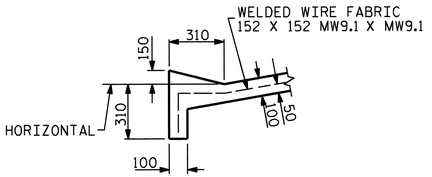


POUR A 1220mm STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



SECTION A-A



SECTION B-B

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD SLOPE PROTECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRUL A. PATEL

3/20/12

ASSEMBLED BY : J.P. ADAMS	DATE : 11/17/11
CHECKED BY : H.A. LOCKLEAR	DATE : 11/28/11

DRAWN BY : ELR 5/92	REV. 5/7/03 RWW/JTE
CHECKED BY : GRP 6/92	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-274
1			3			TOTAL SHEETS
2			4			276

STR. #6

STD. NO. SP1SM

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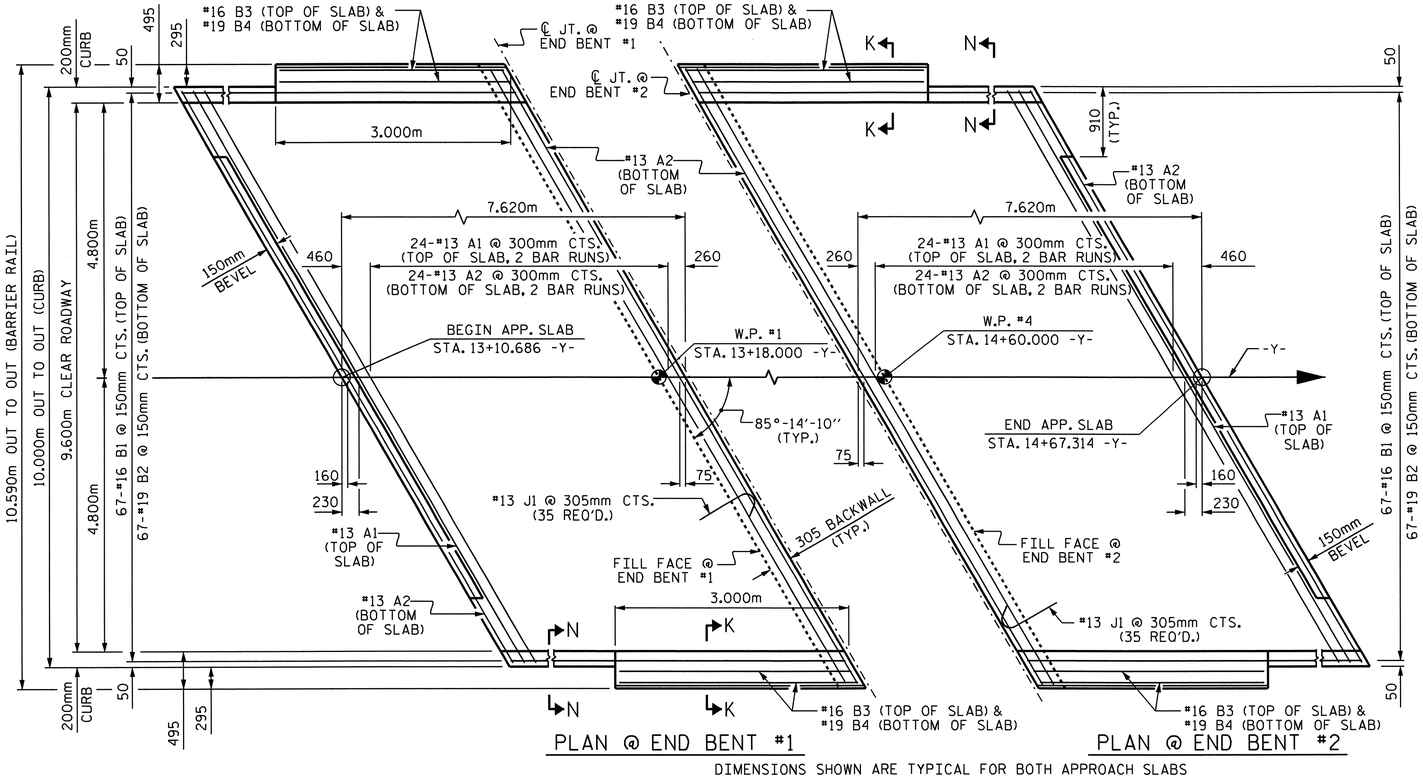


PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

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

GEOTEXTILE SHALL BE TYPE 1 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 OUTLETS, SEE ROADWAY STANDARD DRAWINGS.

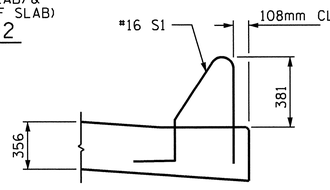
BILL OF MATERIAL

APPROACH SLAB AT EB #1

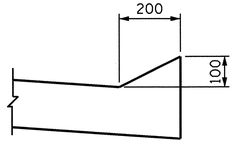
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#13	STR	5580	277
A2	52	#13	STR	5540	286
*B1	67	#16	STR	7260	755
B2	67	#19	STR	7520	1126
*B3	4	#16	STR	2920	18
B4	4	#19	STR	2920	26
*J1	35	#13	1	440	15
REINFORCING STEEL				kg.	1438
*EPOXY COATED REINFORCING STEEL				kg.	1065
CLASS AA CONCRETE				C.M.	27.8

APPROACH SLAB AT EB #2

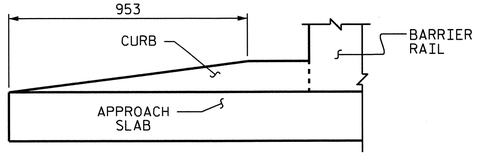
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#13	STR	5580	277
A2	52	#13	STR	5540	286
*B1	67	#16	STR	7260	755
B2	67	#19	STR	7520	1126
*B3	4	#16	STR	2920	18
B4	4	#19	STR	2920	26
*J1	35	#13	1	440	15
REINFORCING STEEL				kg.	1438
*EPOXY COATED REINFORCING STEEL				kg.	1065
CLASS AA CONCRETE				C.M.	27.8



SECTION K-K



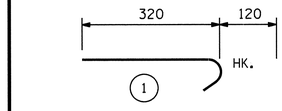
SECTION N-N



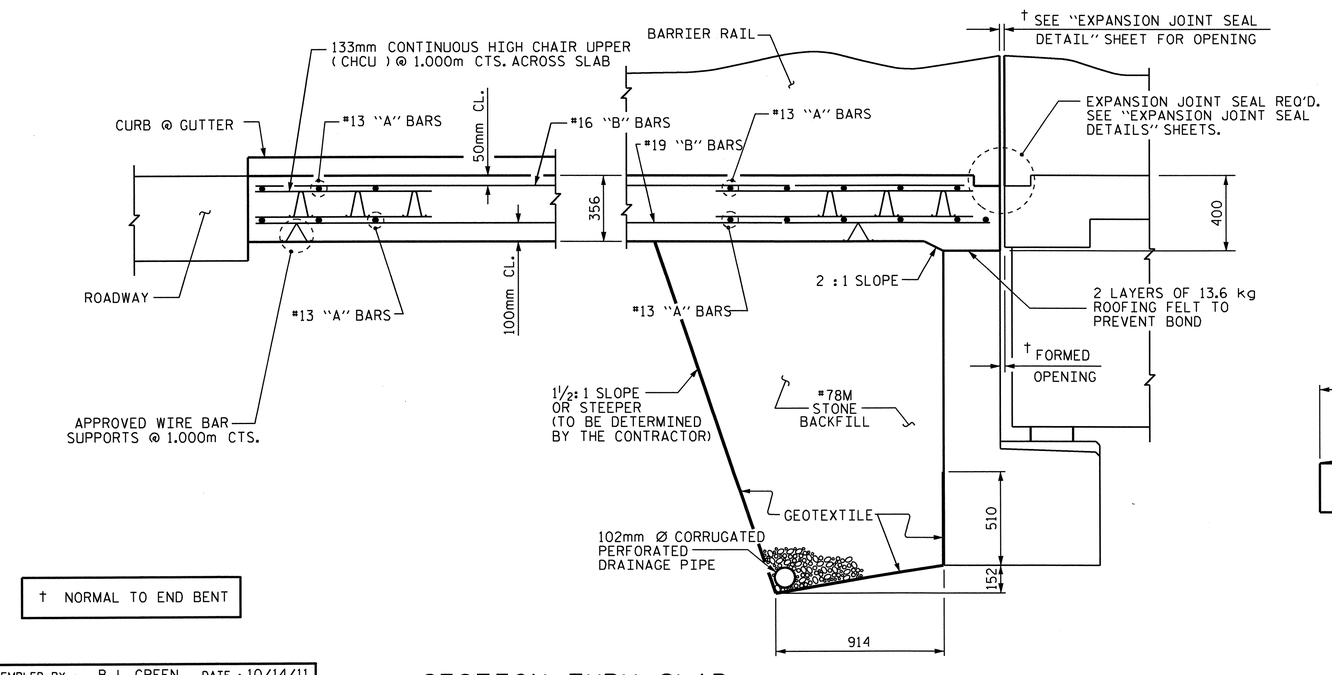
END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

SPLICE CHART	
#13 A1	610
#13 A2	540



ALL BAR DIMENSIONS ARE OUT TO OUT



† NORMAL TO END BENT

SECTION THRU SLAB

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-275
1			3			TOTAL SHEETS
2			4			276

STR. #6 STD. NO. BAS2SM

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIRAL A. PATEL
2/14/12

ASSEMBLED BY :	B. L. GREEN	DATE :	10/14/11
CHECKED BY :	R. L. CHESSON	DATE :	10/11
DRAWN BY :	RH 5/99	REV. 5/7/03R	RWW/JTE
CHECKED BY :	RDR 5/99	REV. 5/1/06RR	KMM/GM
		REV. 10/1/11	MAA/GM

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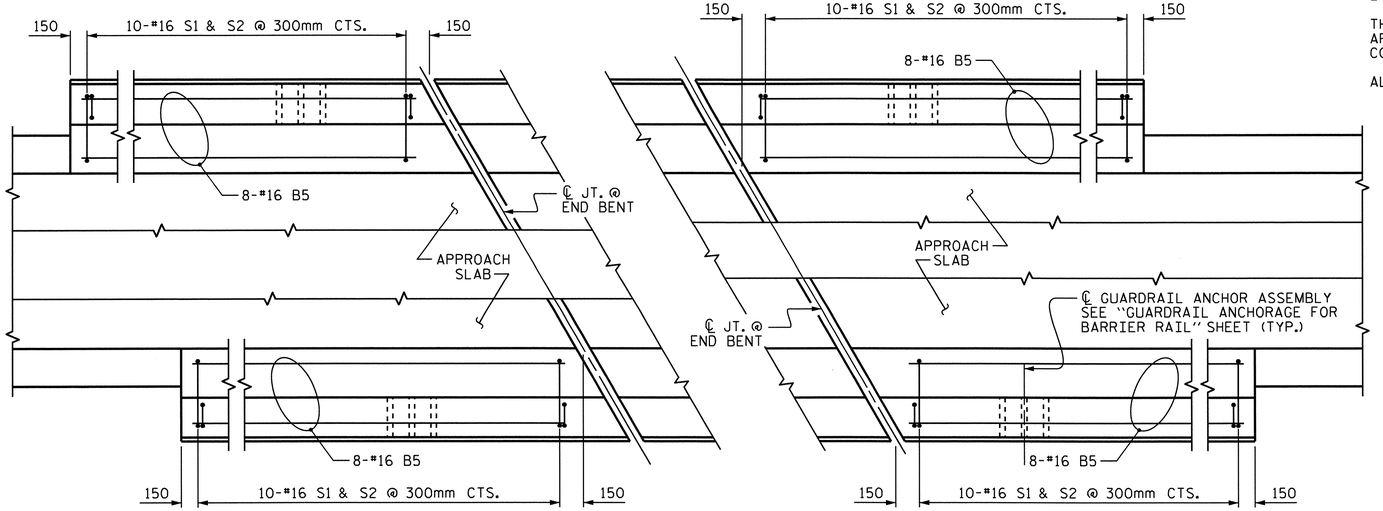


PLAN OF BARRIER RAIL

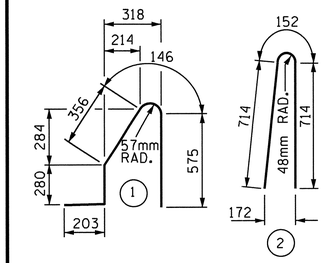
NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 20.7 MPa.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

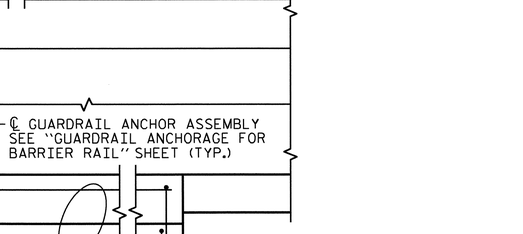
BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱B5	32	#16	STR	2900	144
✱S1	40	#16	1	1560	97
✱S2	40	#16	2	1580	98
✱EPOXY COATED REINFORCING STEEL					339 kg.
CLASS AA CONCRETE					3.0 CU. METER
CONCRETE BARRIER RAIL					12.00 METERS

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 I OR TYPE 2, MIN. 50mm 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, 305mm IN DIAMETER.

PLAN VIEW

SECTION S-S

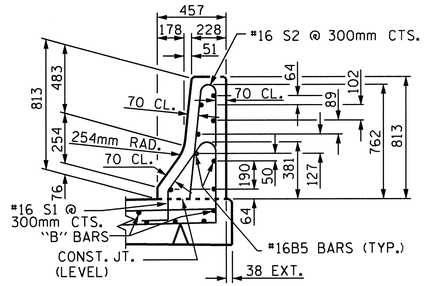


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU RAIL

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 13+87.934 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
2/14/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-276
1			3			TOTAL SHEETS
2			4			276

STR. #6 STD. NO. BAS4SM

ASSEMBLED BY : B. L. GREEN DATE : 10/14/11
CHECKED BY : R. L. CHESSON DATE : 10/11

DRAWN BY : FCJ 11/88
CHECKED BY : ARB 11/88

REV. 5/7/03 RWW/JTE
REV. 5/1/06RRR MAA/KMM
REV. 10/1/11 MAA/GM

14-FEB-2012 07:33
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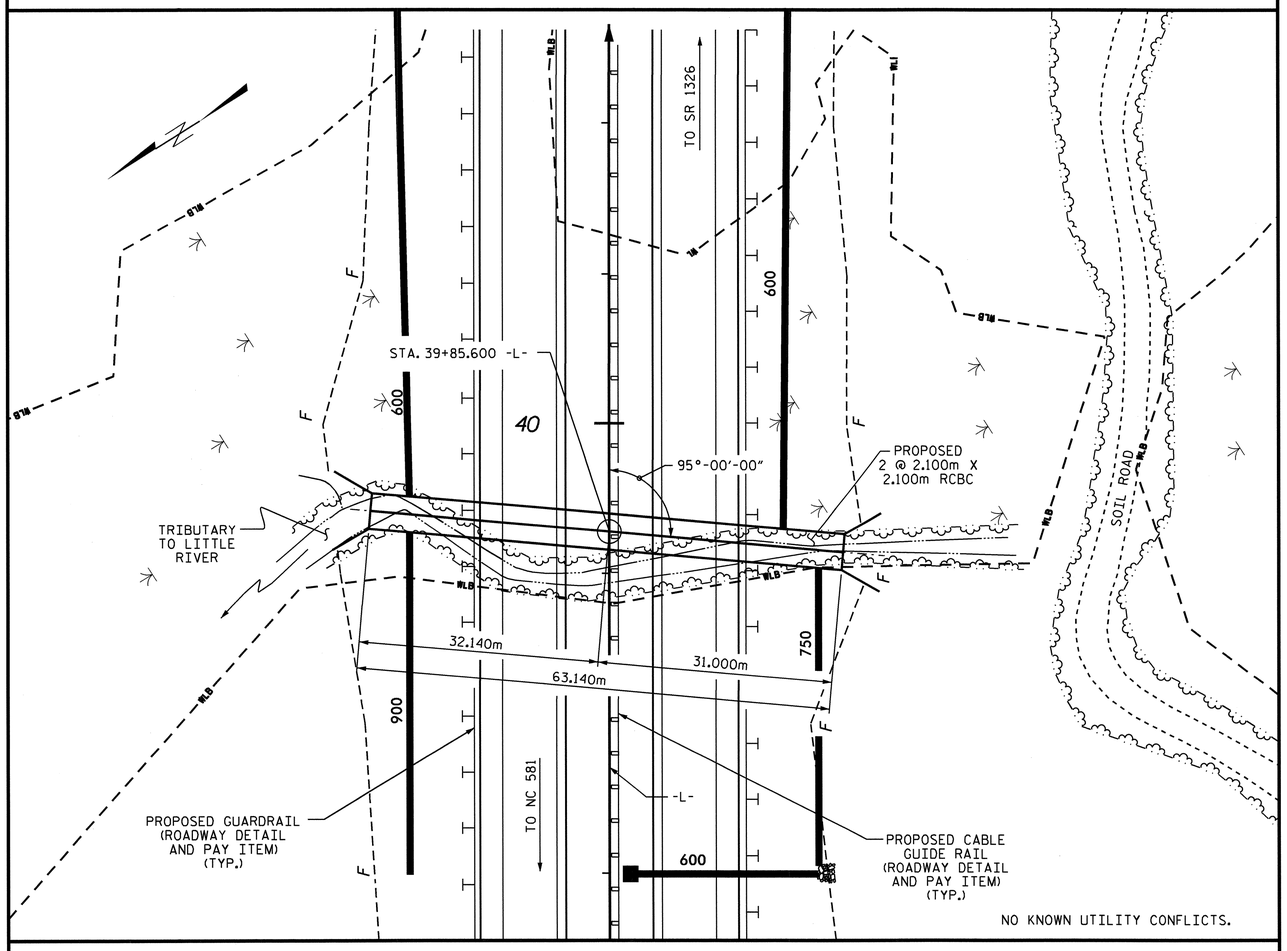
jpadams

BM #12: -L- STA. 37+60.103 (60.039m LT.) ELEV. 39.284m, NGVD 29.



LOCATION SKETCH

GRADE DATA

GRADE POINT ELEVATION @ STA. 39+85.600 -L-	=	35.976
BED ELEVATION @ STA. 39+85.600 -L-	=	29.030
ROADWAY SLOPES	=	3 : 1

HYDRAULIC DATA

DESIGN DISCHARGE	=	11.87 m3/s
FREQUENCY OF DESIGN FLOOD	=	50 YR.
DESIGN HIGH WATER ELEVATION	=	30.93
DRAINAGE AREA	=	3.26 SQ. KM
BASE DISCHARGE (Q100)	=	15.10 m3/s
BASE HIGH WATER ELEVATION	=	31.18

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	75.0 m3/s
FREQUENCY OF OVERTOPPING FLOOD	=	500 YR.+
OVERTOPPING FLOOD ELEVATION	=	35.55

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE

BARREL @ 3.95 m^3/m 249.4 m^3

WINGS ETC. 20.2 m^3

TOTAL 269.6 m^3

REINFORCING STEEL

BARREL 22349 kg

WINGS ETC. 748 kg

TOTAL 23097 kg

CULVERT EXCAVATION ---------- LUMP SUM

FOUNDATION COND. MAT'L ---- 258 METRIC TONS

NOTES

ASSUMED LIVE LOAD = MS18 OR ALTERNATE LOADING.

DESIGN FILL = 4.91m

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

76mm Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 100mm OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 21.0m. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

A 900mm STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

ALL ELEVATIONS ARE IN METERS.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

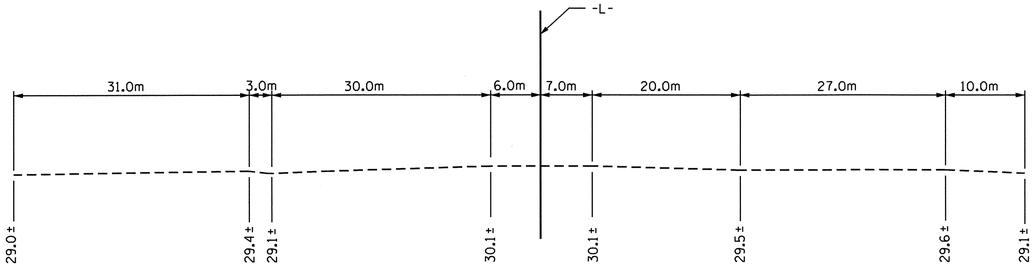
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFTEY, SEE SPECIAL PROVISIONS.

FOR GROUT, SEE SPECIAL PROVISIONS.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

THE 600mm, 750mm AND 900mm Ø PIPES THROUGH THE SIDEWALLS OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.



PROFILE ALONG ℄ CULVERT

METRIC

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 39+85.600 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 2.100m X 2.100m CONCRETE BOX CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 17271 ENGINEER OMAR R. AZIZI 3/5/12

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY A. COGGINS 03/23/12

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

DRAWN BY : PSAP/A. LEE DATE : 1-5-12

CHECKED BY : T.L. COGGINS DATE : 1-12-12

23-MAR-2012 12:12
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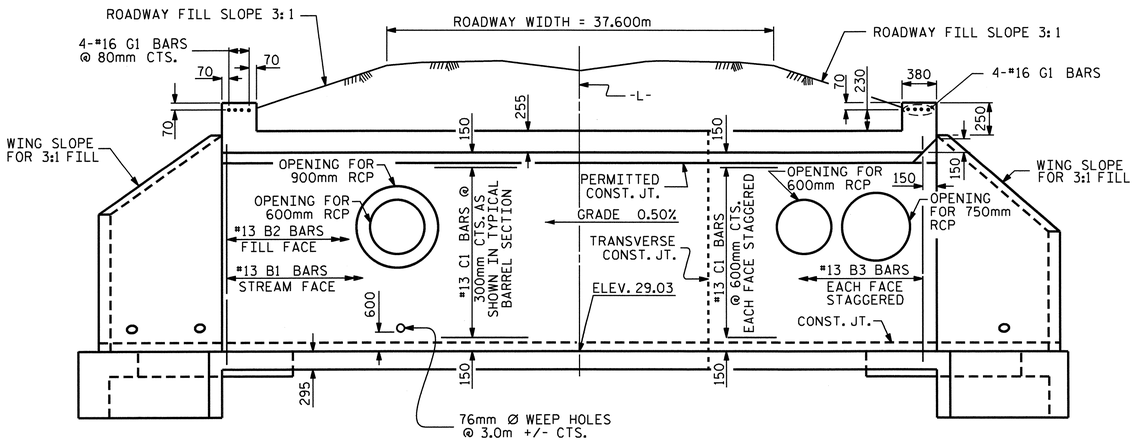
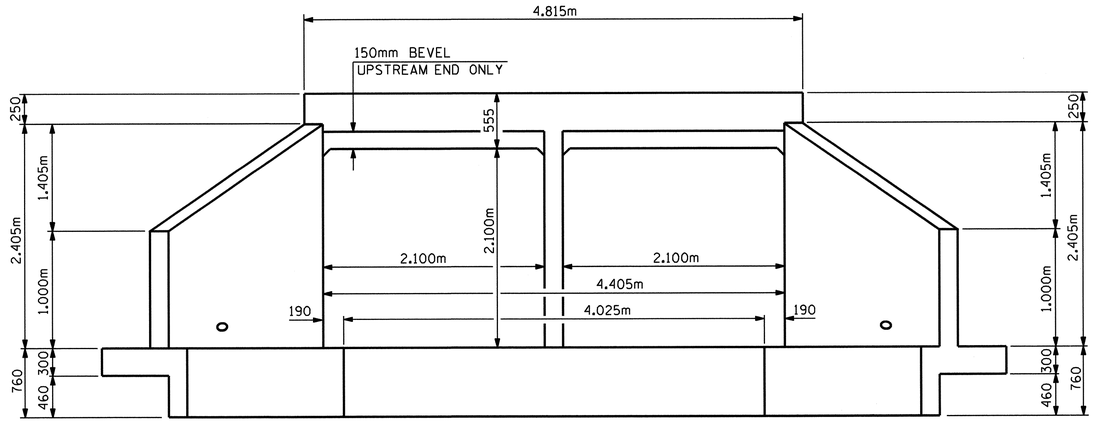
padkins

STR. #7

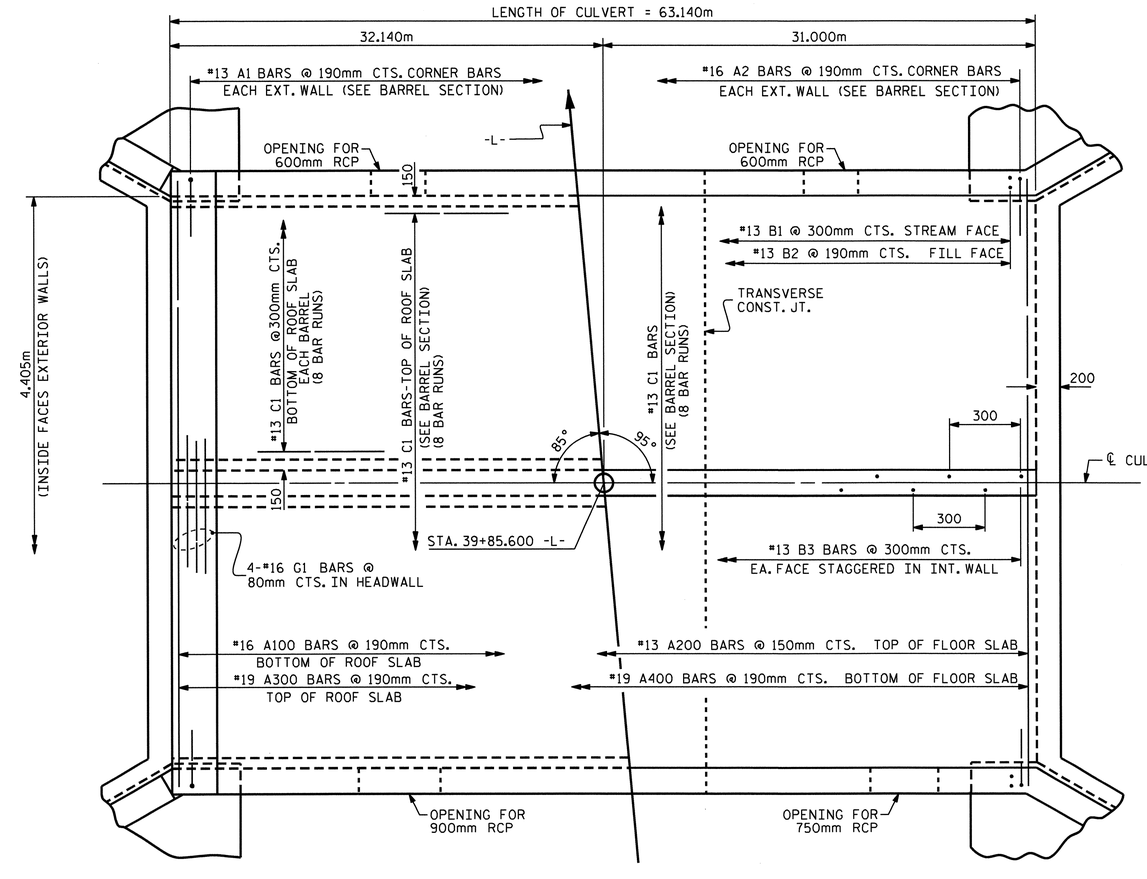


EXTERIOR WALL INTERIOR WALL

CULVERT SECTION NORMAL TO ROADWAY

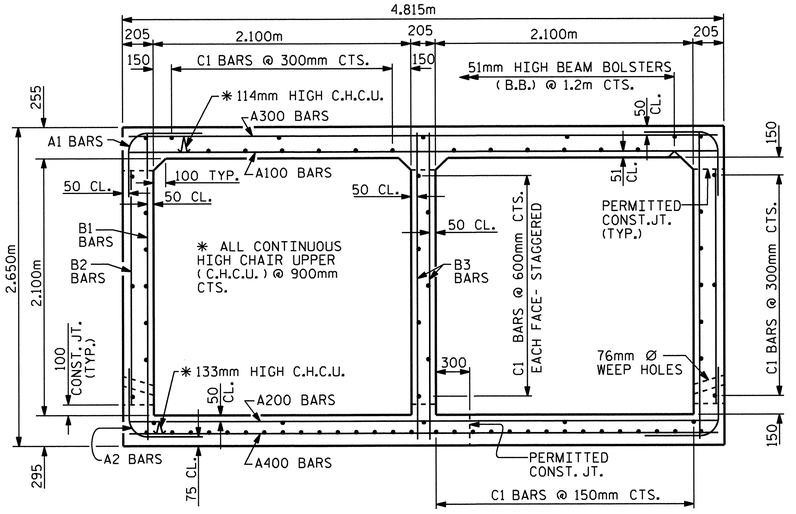


END ELEVATION - NORMAL TO SKEW



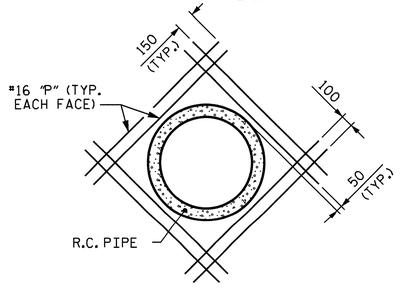
PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB



RIGHT ANGLE SECTION OF BARREL

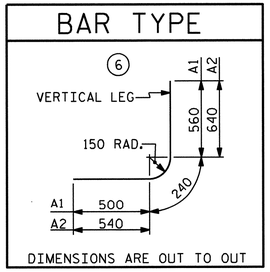
THERE ARE 77 "C" BARS IN SECTION OF BARREL



DETAIL OF REINFORCING AROUND REINFORCED CONCRETE PIPE

PIPE SIZE	#16 "P" BAR
600	P1
750	P2
900	P3

BAR TYPE



DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	666	#13	6	1300	861
A2	666	#16	6	1420	1468
A100	333	#16	STR	4680	2419
A200	421	#13	STR	4680	1958
A300	333	#19	STR	4680	3483
A400	333	#19	STR	4680	3483
B1	422	#13	STR	2480	1040
B2	666	#13	STR	1880	1245
B3	421	#13	STR	2480	1038
C1	616	#13	STR	8400	5143
G1	8	#16	STR	4680	58
P1	32	#16	STR	1400	70
P2	16	#16	STR	1580	39
P3	16	#16	STR	1760	44

REINFORCING STEEL = 22349 KG

SPLICE CHART

BAR	SIZE	LENGTH
A200	13	540
A400	19	690
B1	13	540
B3	13	540
C1	13	590

PROJECT NO. R-2554A

WAYNE COUNTY

STATION: 39+85.600 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 2.100m X 2.100m CONCRETE BOX CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
03/23/12

DRAWN BY :	PSAP/A. LEE	DATE :	1-5-12
CHECKED BY :	T.L. COGGINS	DATE :	1-12-12
DRAWN BY : EEM	6/97		
CHECKED BY : ARB	7/97		

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

STR. #7

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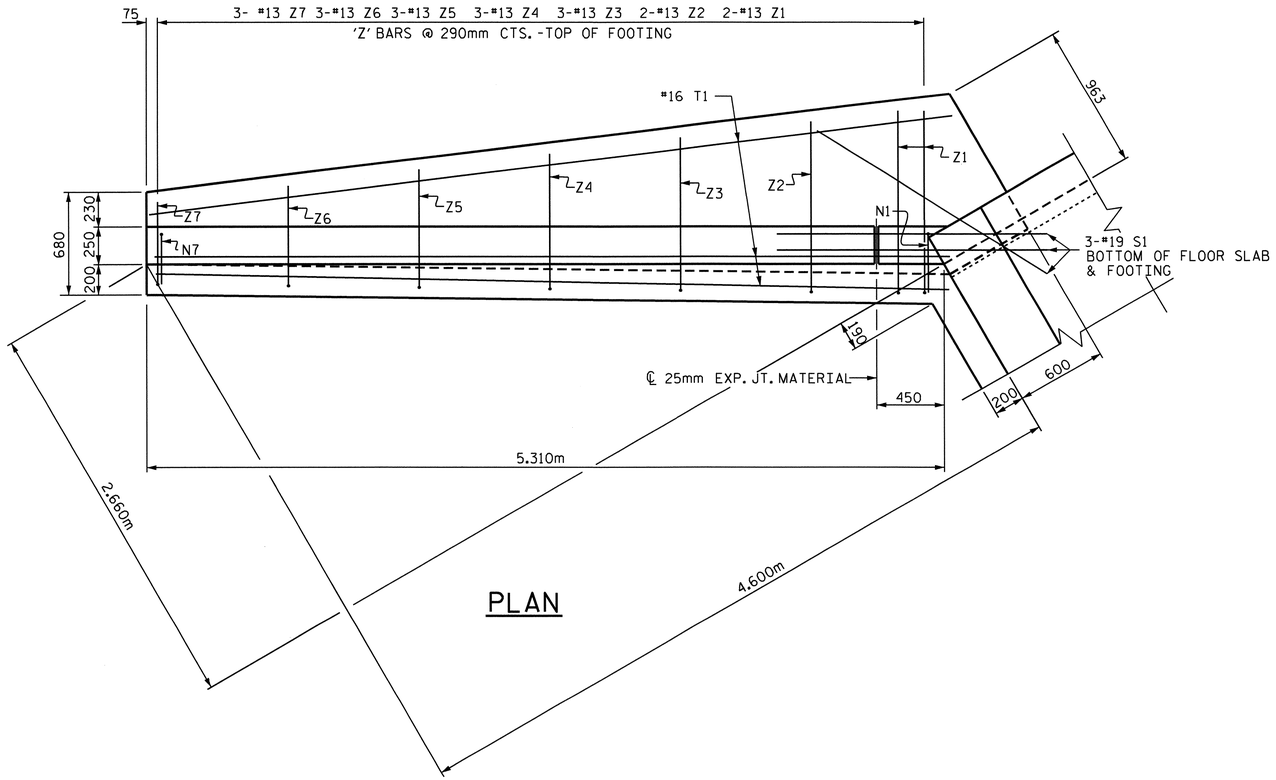
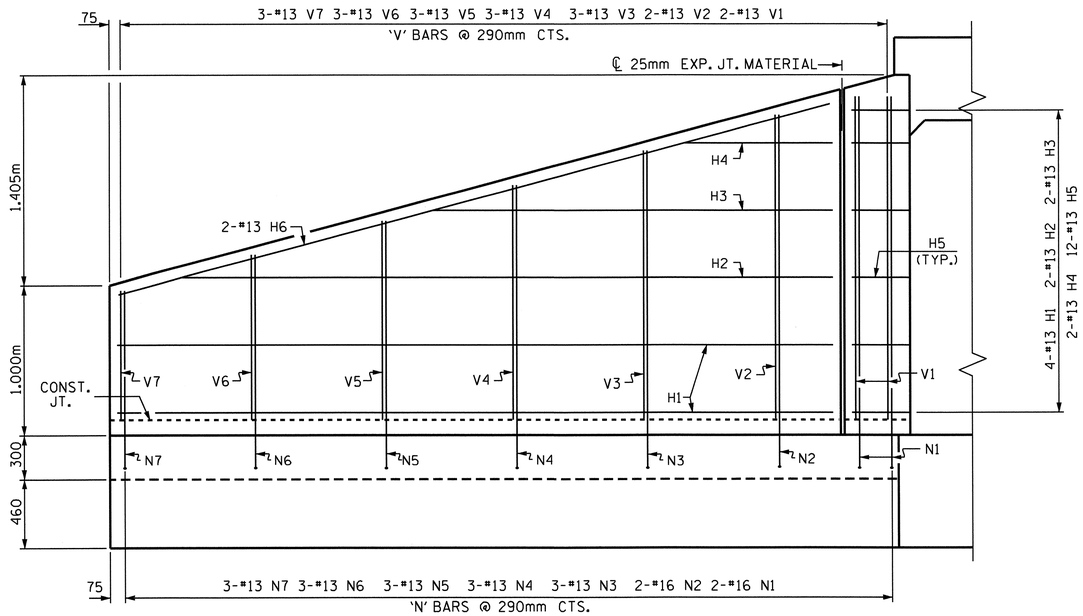
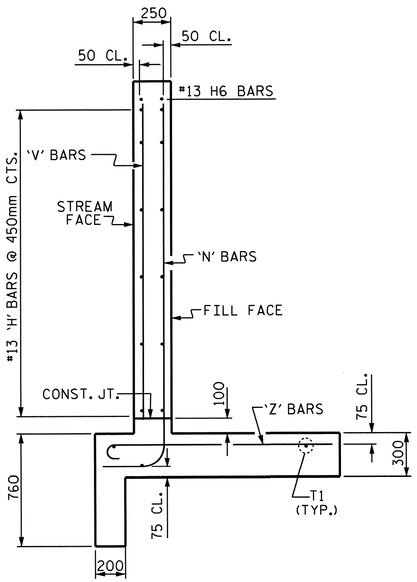


PLAN



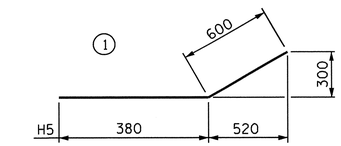
ELEVATION

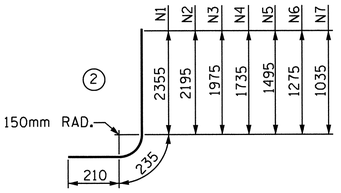


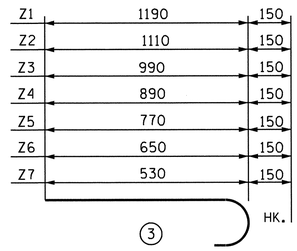
TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.







BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	13	STR	4760	76
H2	8	13	STR	4340	35
H3	8	13	STR	2740	22
H4	8	13	STR	1080	9
H5	48	13	1	980	47
H6	8	13	STR	4920	39
N1	8	16	2	2800	35
N2	8	16	2	2640	33
N3	12	13	2	2420	29
N4	12	13	2	2180	26
N5	12	13	2	1940	23
N6	12	13	2	1720	21
N7	12	13	2	1480	18
S1	12	19	STR	1800	48
T1	12	16	STR	5300	99
V1	8	13	STR	2180	17
V2	8	13	STR	2020	16
V3	12	13	STR	1800	21
V4	12	13	STR	1560	19
V5	12	13	STR	1320	16
V6	12	13	STR	1100	13
V7	12	13	STR	860	10
Z1	8	13	3	1340	11
Z2	8	13	3	1260	10
Z3	12	13	3	1140	14
Z4	12	13	3	1040	12
Z5	12	13	3	920	11
Z6	12	13	3	800	10
Z7	12	13	3	680	8

REINFORCING STEEL
FOR 4 WINGS 748 kg

CLASS A CONCRETE

4	WINGS	17.9 m^3
2	HEADWALLS	1.1 m^3
2	END CURTAIN WALLS	1.2 m^3
	TOTAL	20.2 m^3

PROJECT NO. R-2554A
WAYNE COUNTY
STATION: 39+85.600 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT H = 2.100m SLOPE = 3:1

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
03/23/12

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

STR. #7

ASSEMBLED BY : PSAP/A.LEE DATE : 1-5-12
CHECKED BY : T.L. COGGINS DATE : 1-12-12

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padkins

METRIC

GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER SHUAI ZHANG 6-7-2012	
SIGNATURE DATE	SIGNATURE DATE

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 1 AND NO. 2. THE JOINTS BETWEEN THE PANEL COLUMNS SHALL BE LINED UP VERTICALLY.

DESIGN THE WALLS WITH SLIP JOINTS TO ACCOUNT FOR DIFFERENTIAL SETTLEMENTS.

CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO. 1 AND NO. 2. DO NOT CAST THE COPING UNTIL AFTER ALL WAITING PERIODS END. ADJUST THE COPING AS NECESSARY TO ACCOUNT FOR SETTLEMENT.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 1 AND NO. 2.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1 AND NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 AND NO. 2 FOR THE FOLLOWING:
1) H = DESIGN HEIGHT + EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MINIMUM REINFORCEMENT LENGTH (L) TO WALL HEIGHT (H) RATIO = 0.8 (WALL NO. 1) AND 1.0 (WALL NO. 2) △
4) MINIMUM EMBEDMENT: PER AASHTO SPEC.
5) AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF (KN/M³)	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF (KPA)
COARSE	110 (17.3)	38	0
* SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.			

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF (KN/M³)	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF (KPA)
BACKFILL	120 (18.8)	30	5
FOUNDATION	120 (18.8)	33 (WALL NO. 1) 30 (WALL NO. 2)	0

△

DESIGN RETAINING WALL NO. 1 AND NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 9+57.980 -L2RPDB- AND END BENT NO. 2 LOCATED AT STATION 11+15.600 -L2RPDB-. MAINTAIN A CLEARANCE OF AT LEAST 7.6 CM BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1 AND NO. 2.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 9+57.980± -L2RPDB- AND END BENT NO. 2 LOCATED AT STATION 11+15.600± -L2RPDB- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1 AND NO. 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

INSTALL FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 9+57.980± -L2RPDB- AND END BENT NO. 2 LOCATED AT STATION 11+15.600± -L2RPDB- BEFORE CONSTRUCTING RETAINING WALL NO. 1 AND NO. 2, RESPECTIVELY.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 1 AND NO. 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

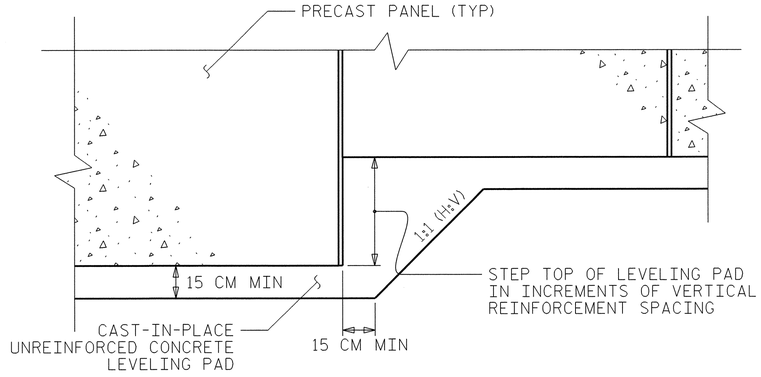
OBSERVE A TWO MONTHS WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, RETAINING WALL AND TEMPORARY EMBANKMENT (IF NEEDED) TO ELEVATION 47.0 M AT WALL NO. 1 AND ELEVATION 45.0 M AT WALL NO. 2. △

OBSERVE A TWO MONTHS WAITING PERIOD AFTER CONSTRUCTING THE REMAINING EMBANKMENT, RETAINING WALL AND TEMPORARY EMBANKMENT (IF NEEDED) TO ELEVATION 50.5 M AT WALL NO. 1 AND ELEVATION 48.0 M AT WALL NO. 2.

OBSERVE A TWO MONTHS WAITING PERIOD AFTER CONSTRUCTING THE REMAINING EMBANKMENT, RETAINING WALL AND TEMPORARY EMBANKMENT (IF NEEDED) TO ELEVATION 54.0 M AT WALL NO. 1 AND ELEVATION 51.0 M AT WALL NO. 2 BEFORE CONSTRUCTING THE REMAINING EMBANKMENT TO WITHIN 0.5 M OF FINISHED GRADE.

FOR INSTALLATION OF WALL INSTRUMENTATION/EMBANKMENT MONITORING, SEE "MSE WALL INSTRUMENTATION/EMBANKMENT MONITORING" PLANS.

FOR INSTALLATION OF FABRIC FOR EMBANKMENT STABLIZATION, SEE "FABRIC AND TEMPORARY EMBANKMENT" PLANS.



LEVELING PAD STEP DETAILS

PREPARED BY: S. ZHANG	DATE: 03/2012
REVIEWED BY: J. BATTS	DATE: 03/2012

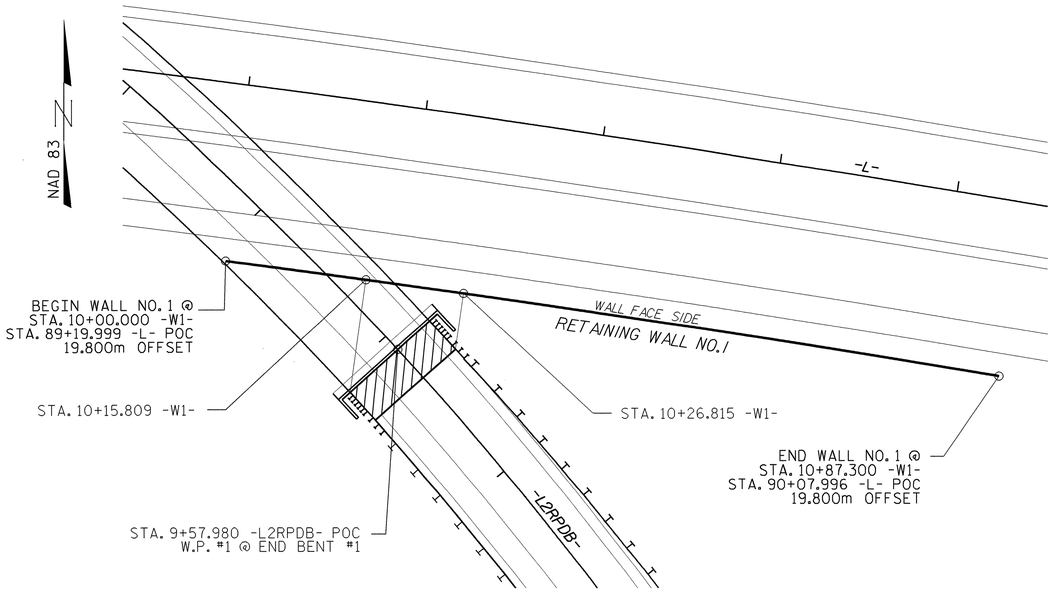
PROJECT NO.: R-2554A
WAYNE ***COUNTY***
STATION: 10+03.224 -L2RPDB-
SHEET 1 OF 4

GEOTECHNICAL ENGINEERING UNIT
☒ ***EASTERN REGIONAL OFFICE***
☐ ***WESTERN REGIONAL OFFICE***

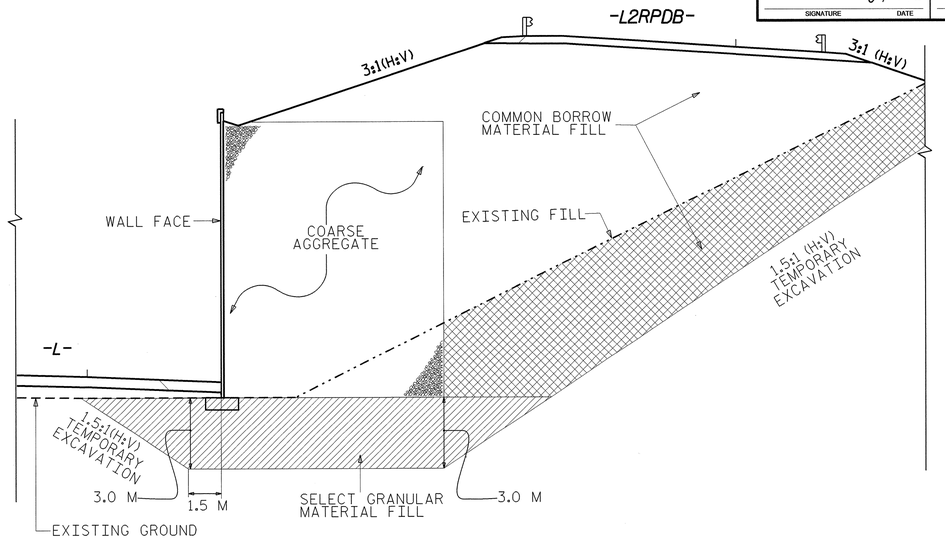
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE WALL NO. 1 & 2 NOTES AND DETAILS

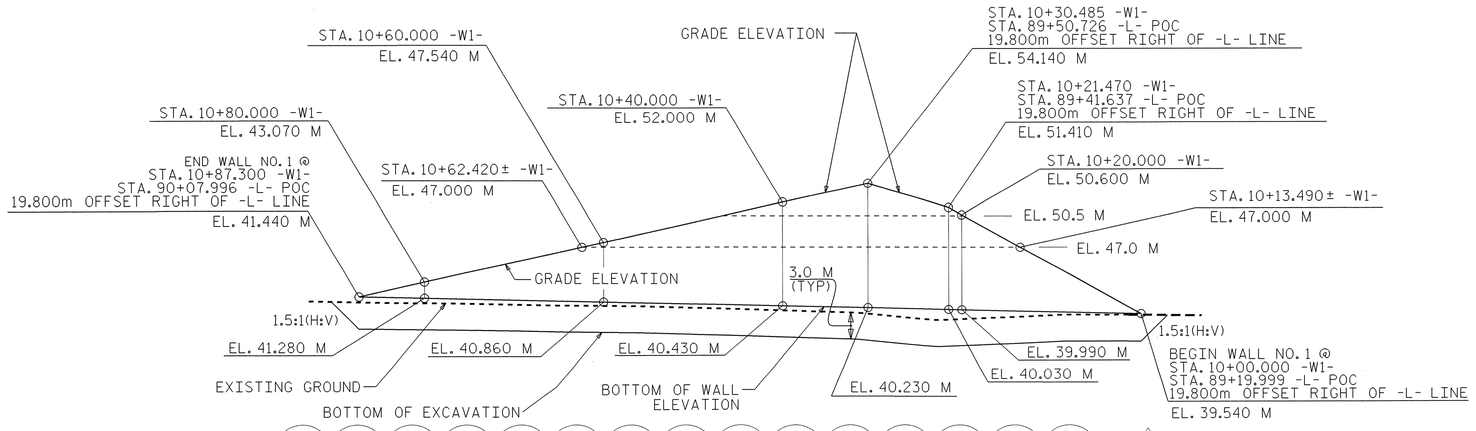
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-1
1	SZ	06/2012	3			TOTAL SHEETS
2			4			4



MSE WALL NO. 1 - PLAN VIEW (NTS)



TYPICAL SECTION - MSE WALL NO. 1 (NTS)



MSE WALL NO. 1 - EXPOSED WALL FACE ENVELOPE (NTS)

NOTES

1. EXCAVATE 3 M OF EXISTING GROUND BENEATH WALL NO. 1 AND BACKFILL WITH SELECT GRANULAR MATERIAL PRIOR TO WALL CONSTRUCTION AS SHOWN IN THE TYPICAL SECTION. PLACE AND COMPACT THE SELECT GRANULAR MATERIAL IN ACCORDANCE WITH SECTION 235 OF THE 2006 STANDARD SPECIFICATIONS.
2. EXCAVATE THE EXISTING FILL FOR WALL CONSTRUCTION AND BACKFILL WITH COMMON BORROW MATERIAL AS SHOWN IN THE TYPICAL SECTION.
3. EXCAVATION AND BACKFILLING FOR WALL NO. 1 CONSTRUCTION AS SHOWN IN THIS PLAN WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, AND SELECT GRANULAR MATERIAL IN ACCORDANCE WITH ARTICLE 225-7, 230-5, AND 265-4, RESPECTIVELY, OF THE 2006 STANDARD SPECIFICATIONS.

MSE WALL ESTIMATED QUANTITIES (SQUARE METER)	
MSE RETAINING WALLS	635 M^2

PREPARED BY: S. ZHANG	DATE: 03/2012
REVIEWED BY: J. BATTS	DATE: 03/2012

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER THUAN THANH

6-7-2012

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

PROJECT NO.: R-2554A

WAYNE ***COUNTY***

STATION: 10+03.224 -L2RPDB-

SHEET 2 OF 4

GEOTECHNICAL ENGINEERING UNIT

☒ ***EASTERN REGIONAL OFFICE***

☐ ***WESTERN REGIONAL OFFICE***

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE WALL NO. 1 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-2
1	SZ	06/2012	3			TOTAL SHEETS
2			4			4

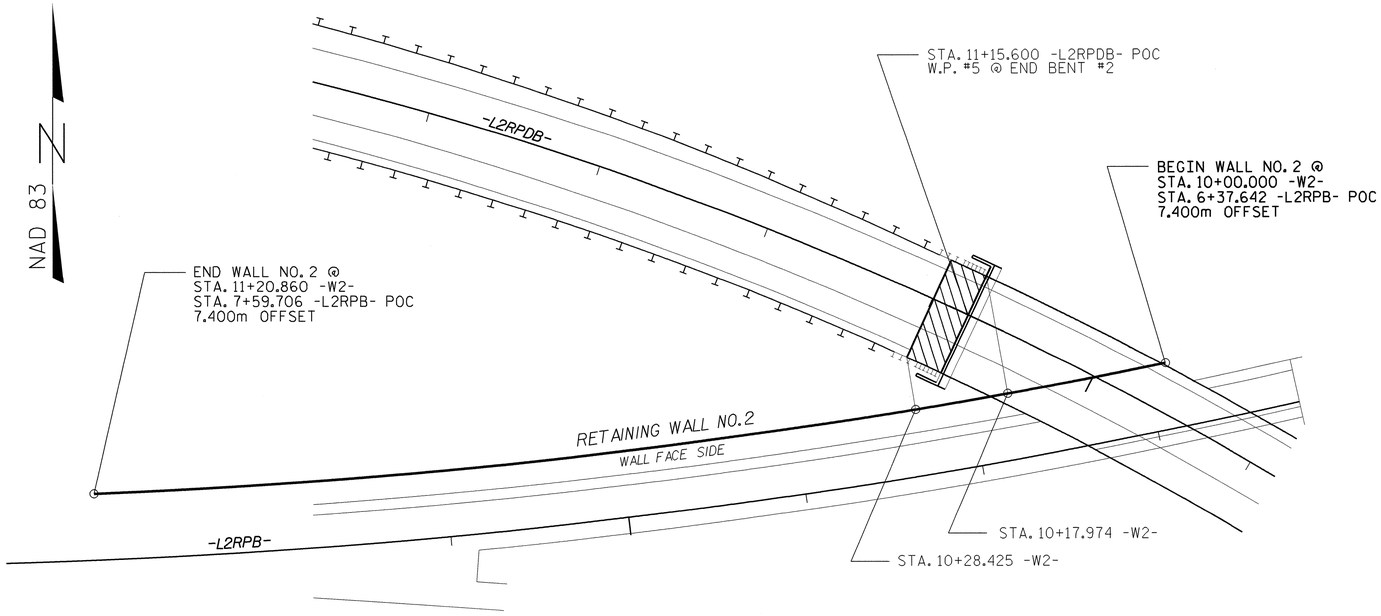
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER SHIHAI ZHANG

SIGNATURE 3-19-2012 DATE

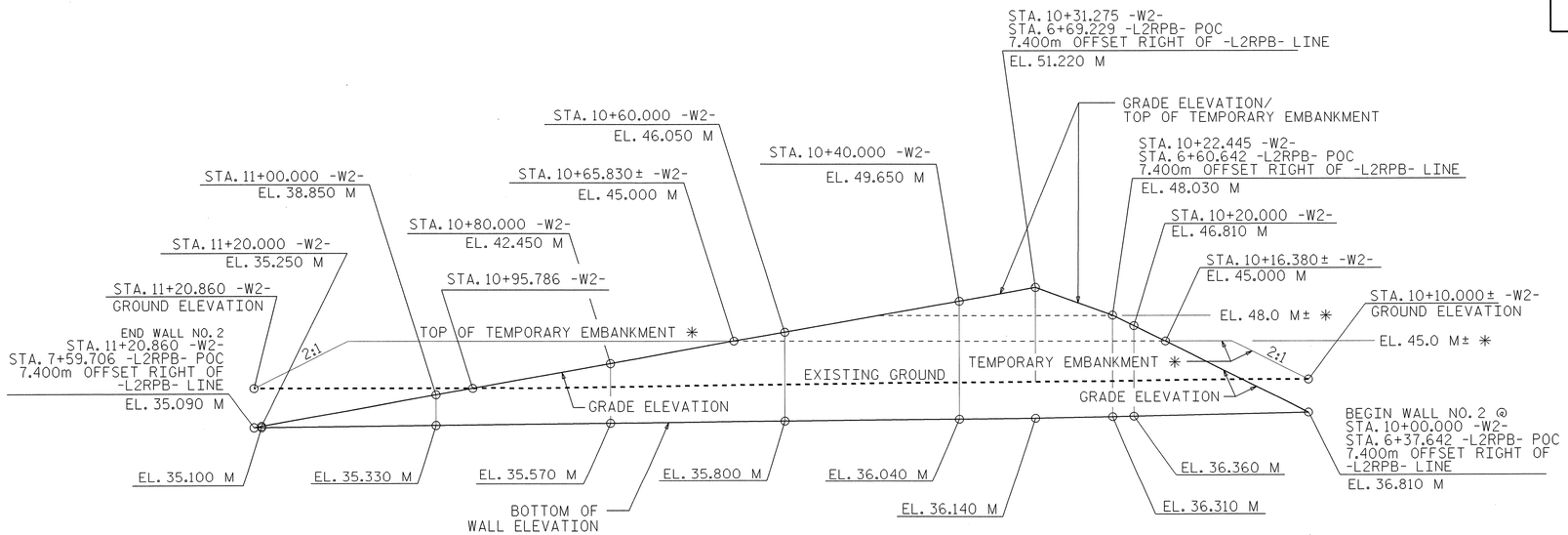
ENGINEER

SIGNATURE DATE



MSE WALL NO. 2 - PLAN VIEW (NTS)

MSE WALL ESTIMATED QUANTITIES (SQUARE METER)	
MSE RETAINING WALLS	930 M^2



MSE WALL NO. 2 - EXPOSED WALL FACE ENVELOPE (NTS)

* SEE CONSTRUCTION SEQUENCE NOTES IN FABRIC AND TEMPORARY EMBANKMENT PLANS

PREPARED BY: S. ZHANG	DATE: 03/2012
REVIEWED BY: J. BATTS	DATE: 03/2012

PROJECT NO.: R-2554A

WAYNE ***COUNTY***

STATION: 10+03.224 -L2RPDB-

SHEET 3 OF 4

GEOTECHNICAL ENGINEERING UNIT

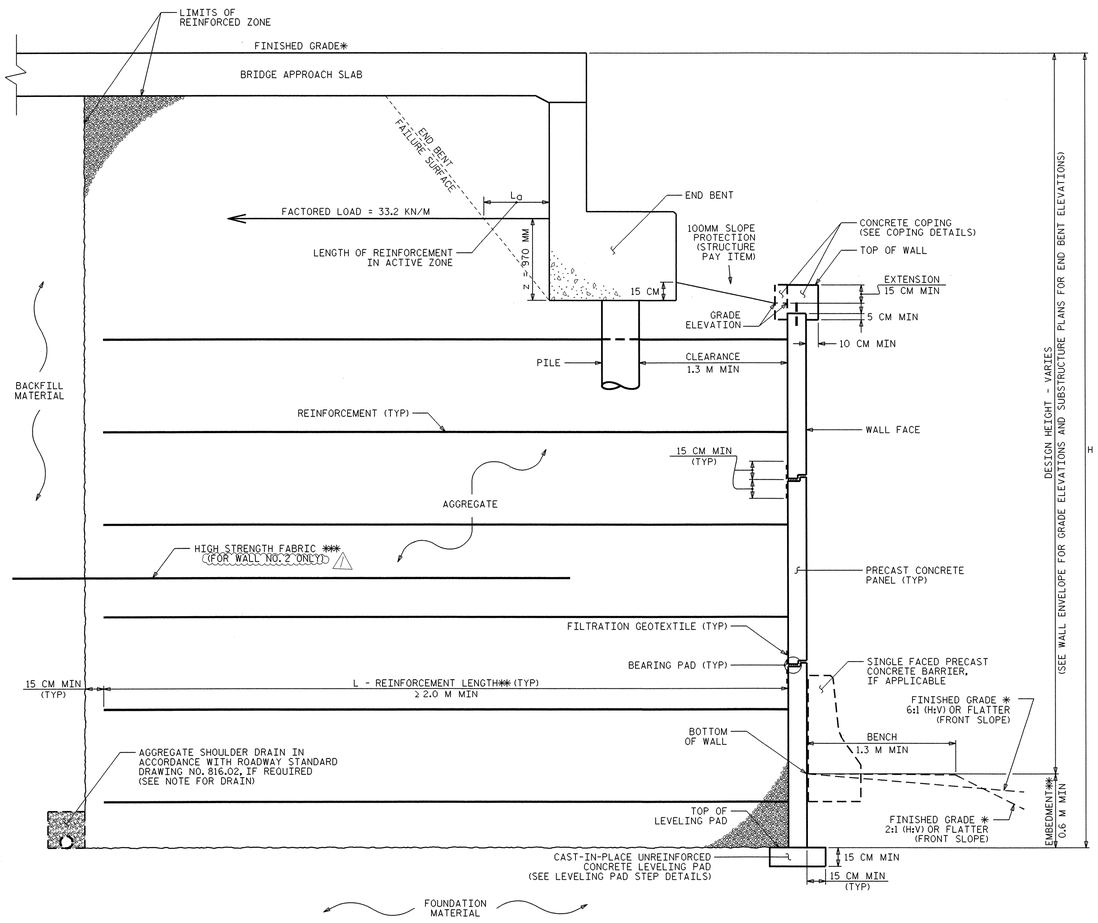
[X] ***EASTERN REGIONAL OFFICE***

[ ] ***WESTERN REGIONAL OFFICE***

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

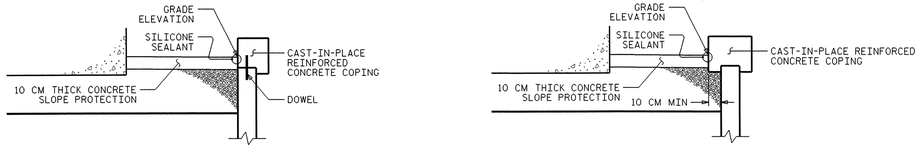
MSE WALL NO. 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-3
1			3			TOTAL SHEETS
2			4			4



MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION

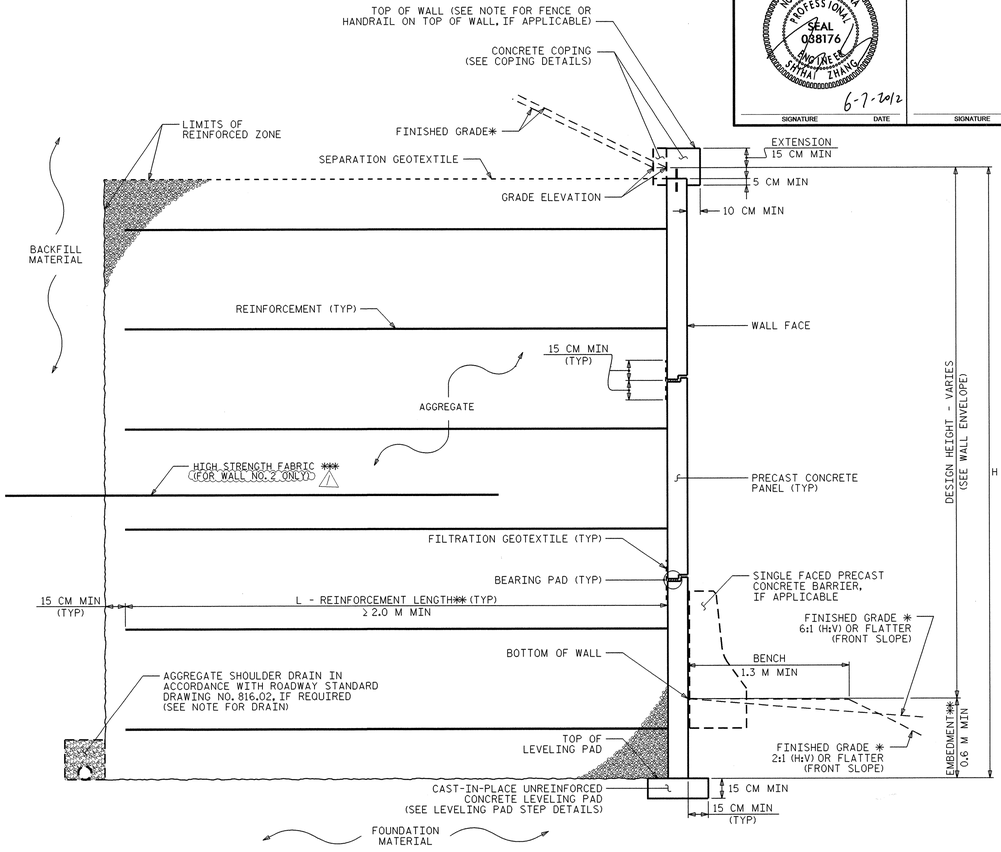
TYPICAL CROSS SECTION FOR STA. 10+15.809 -W1- TO STA.10+26.815 -W1- AND STA. 10+17.974 -W2- TO STA.10+28.425 -W2-
* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
** SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.
*** SEE FABRIC AND TEMPORARY EMBANKMENT PLANS FOR DETAILS.



COPING DETAILS

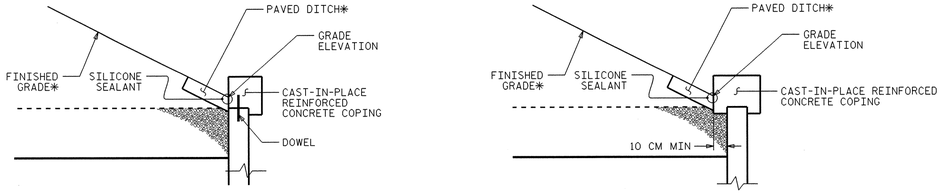
AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

PREPARED BY: S. ZHANG	DATE: 03/2012
REVIEWED BY: J. BATTS	DATE: 03/2012



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

TYPICAL CROSS SECTION FOR STA. 10+0.000 -W1- TO STA.10+15.809 -W1-, STA. 10+26.815 -W1- TO STA.10+87.300 -W1-
STA. 10+0.000 -W2- TO STA.10+17.974 -W2- AND STA. 10+28.425 -W2- TO STA.11+20.860 -W2-
* SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
** SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.
*** SEE FABRIC AND TEMPORARY EMBANKMENT PLANS FOR DETAILS.



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.
*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER SHIHAI ZHANG

6-7-2012

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

PROJECT NO.: R-2554A

WAYNE ***COUNTY***

STATION: 10+03.224 -L2RPDB-

SHEET 4 OF 4

GEOTECHNICAL ENGINEERING UNIT

[X] ***EASTERN REGIONAL OFFICE***

[ ] ***WESTERN REGIONAL OFFICE***

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE WALL NO. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-4
1	SZ	06/2012	3			TOTAL SHEETS
2			4			4

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 250	140 MPa
- AASHTO M270 GRADE 345W	190 MPa
- AASHTO M270 GRADE 345	190 MPa
REINFORCING STEEL IN TENSION	
GRADE 420	165 MPa
CONCRETE IN COMPRESSION	8.3 MPa
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	12 MPa
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	2.6 MPa
EQUIVALENT FLUID PRESSURE OF EARTH	480 kg/m^3 (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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 19mm WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 38mm RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 6mm 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 6mm 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 300mm 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 22.23mm Ø SHEAR STUDS FOR THE 19.05mm Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -22.23mm Ø STUDS FOR 4 - 19.05mm Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 22.23mm Ø STUDS ALONG THE BEAM AS SHOWN FOR 19.05mm Ø STUDS BASED ON THE RATIO OF 3 - 22.23mm Ø STUDS FOR 4 - 19.05mm Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 610mm.

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 8mm IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 50mm 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-1 1.

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 2mm 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.

METRIC

JANUARY, 1990