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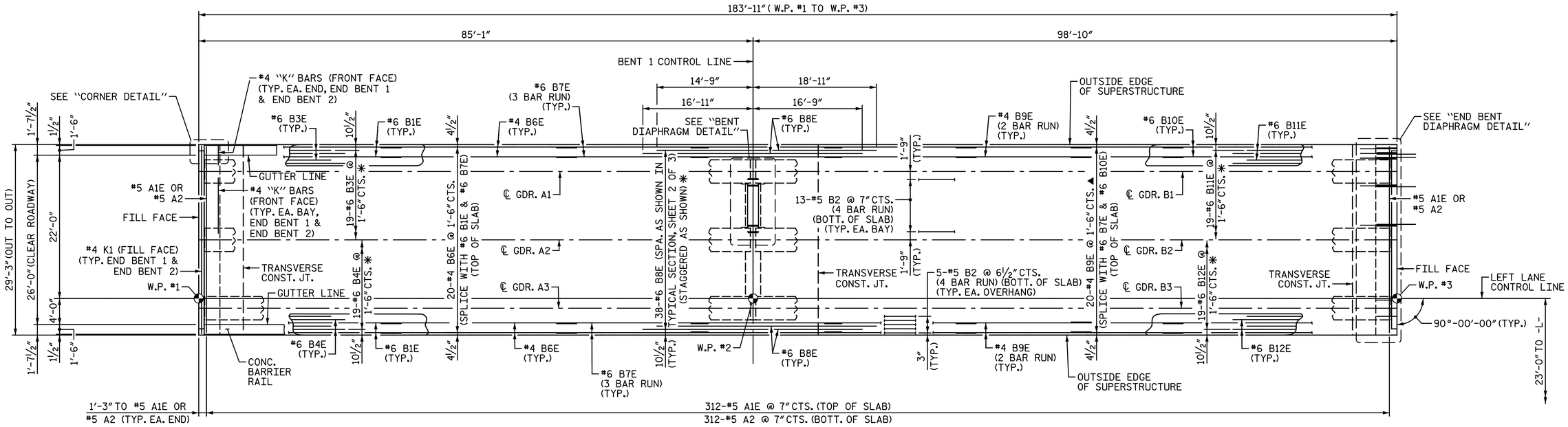
NOTES:

FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

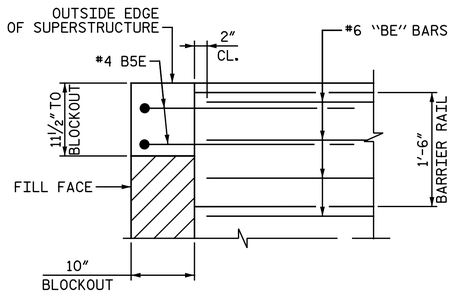
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.



SPAN A SPAN B

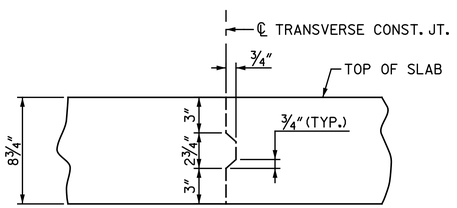
PLAN OF SPAN

* TOP OF SLAB
▲ 2 BAR RUN



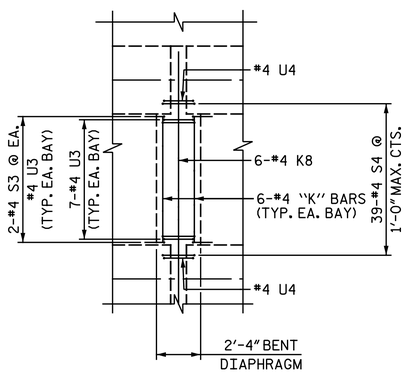
CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.

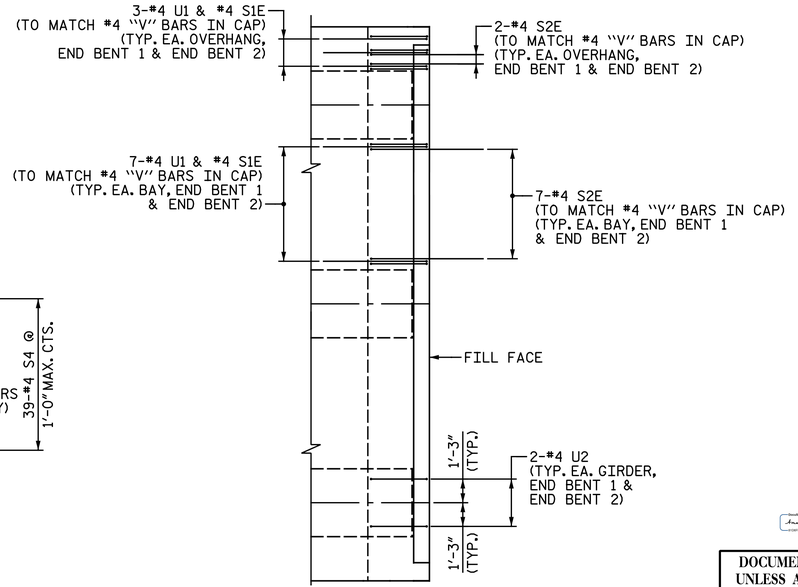


TRANSVERSE CONST. JT. DETAIL

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



BENT DIAPHRAGM DETAIL



END BENT DIAPHRAGM DETAIL

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-0"	2'-7"

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

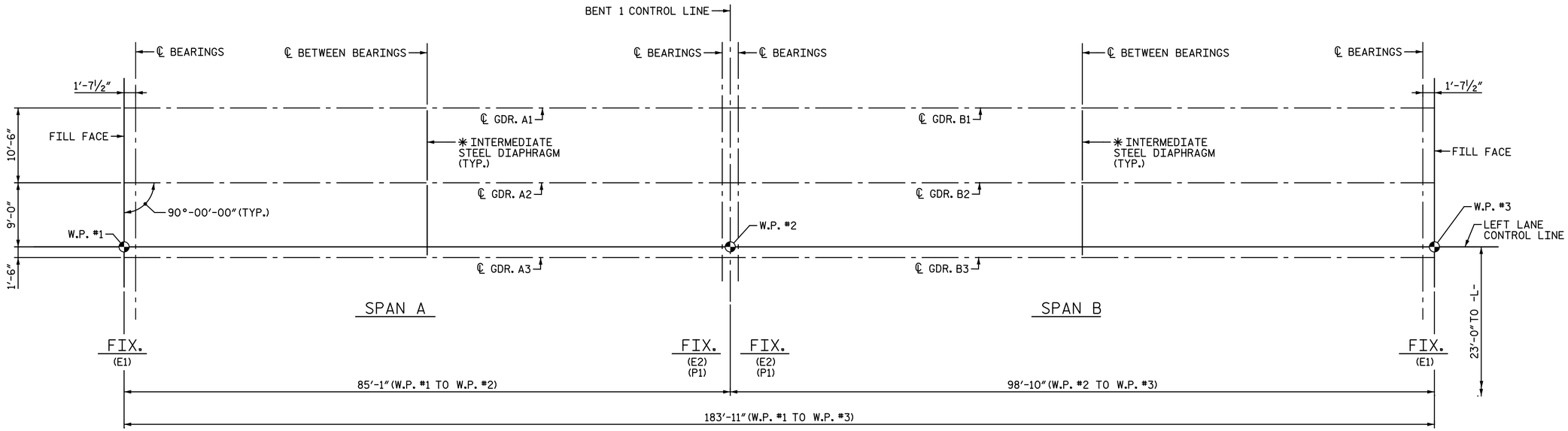
PLAN OF SPAN

LEFT LANE

DRAWN BY : D.A.L / M.D.M. DATE : 4-26-17
CHECKED BY : A. H. SHARPE DATE : 5-8-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-8
1			3			TOTAL SHEETS
2			4			29



GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63″MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

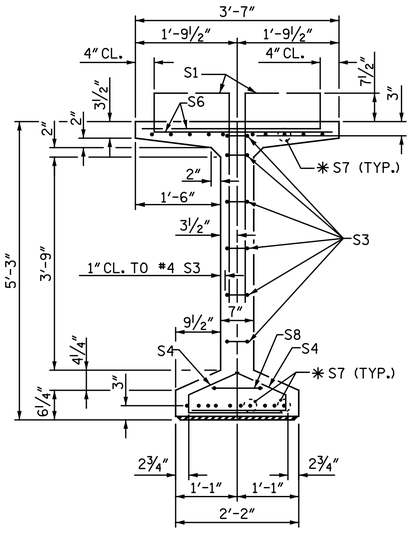
GIRDER LAYOUT

LEFT LANE

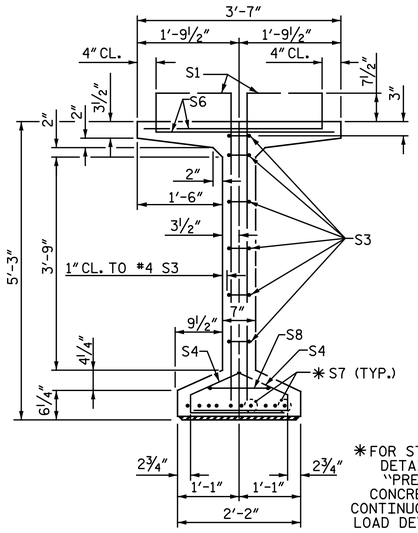
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-9
1			3			TOTAL SHEETS
2			4			29

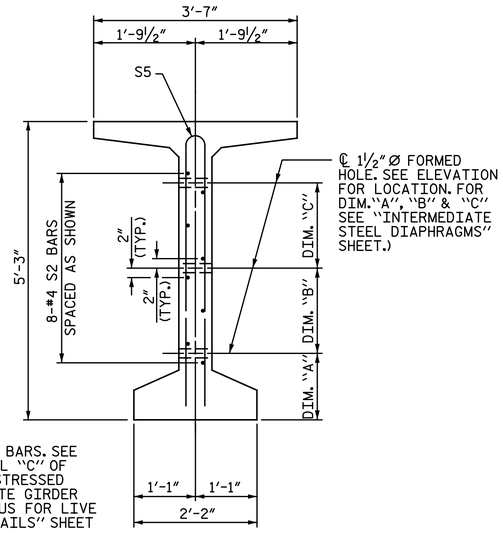
DRAWN BY : D. A. LAMAY DATE : 3-8-17
CHECKED BY : A. H. SHARPE DATE : 4-17-17



SECTION A-A



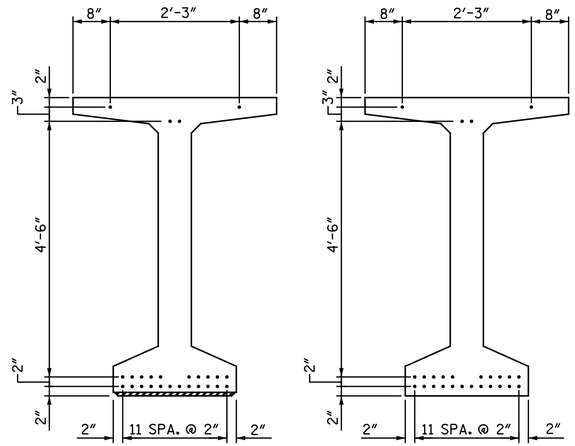
SECTION B-B



SECTION C-C

✱FOR S7 BARS. SEE DETAIL "C" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET

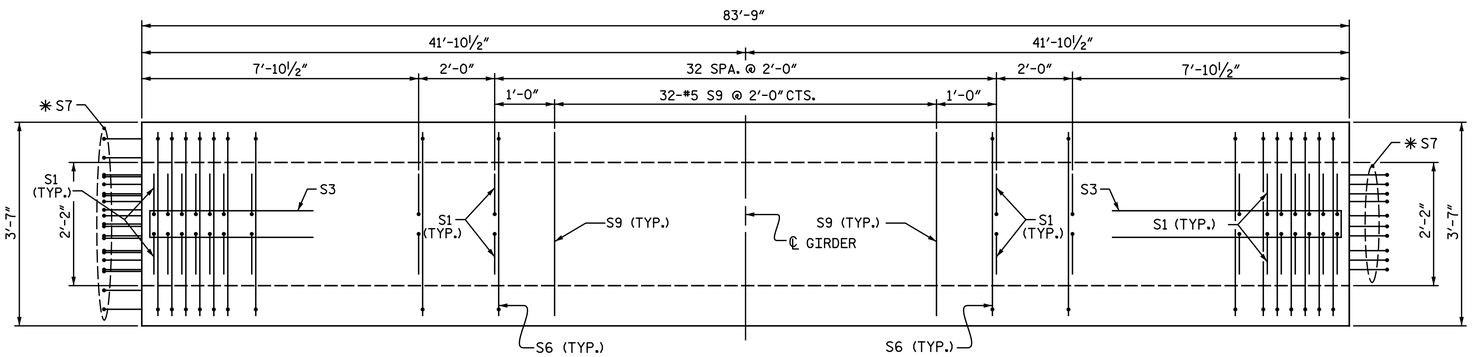
(S1, S6 AND S9 BARS NOT SHOWN)



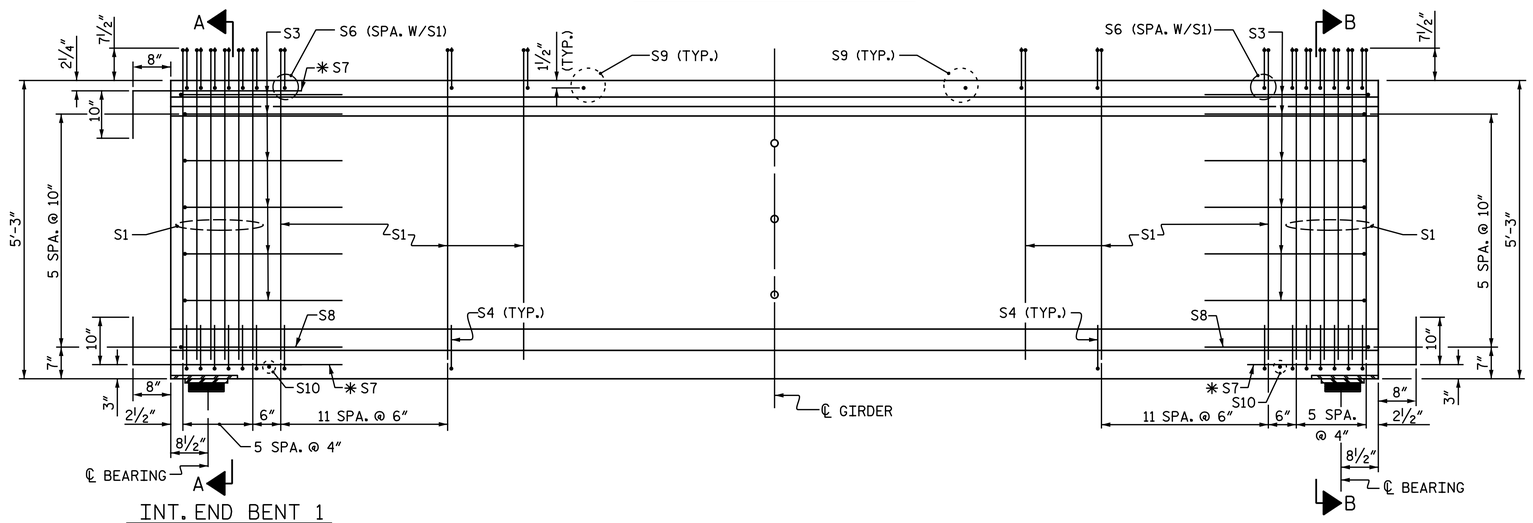
AT END OF GIRDER AT ℄ OF GIRDER

0.6"Ø LOW RELAXATION STRAND LAYOUT

(ALL STRANDS FULLY BONDED)



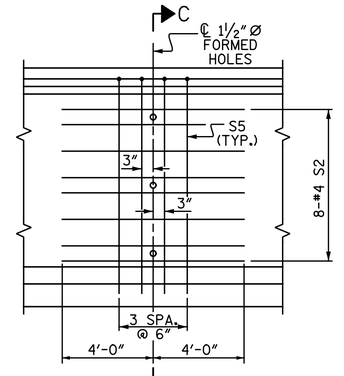
PLAN OF GIRDER



INT. END BENT 1

FIX

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 3

0.6"Ø L. R. GRADE 270 STRANDS

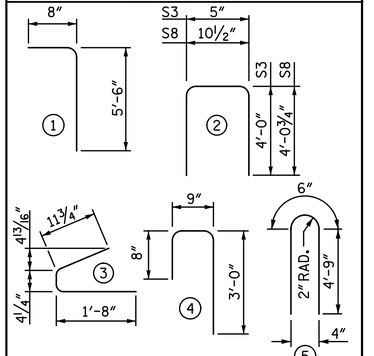
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	138	#5	1	6'-2"	888
S2	8	#4	STR	8'-0"	43
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	4	#5	5	10'-0"	42
S6	138	#5	4	4'-5"	636
✱S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	32	#5	STR	3'-3"	108
S10	2	#3	STR	1'-10"	1

✱NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
	2,063	16.6	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
3	83.8	251.3

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-12-17		
CHECKED BY : A. H. SHARPE	DATE : 5-3-17		
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM	
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM	
	REV. 1/15	MAA/TMG	

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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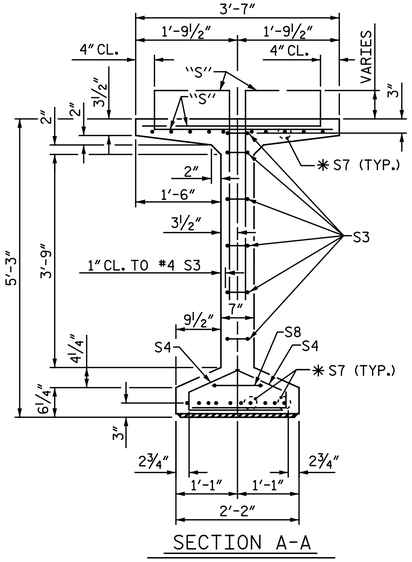
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

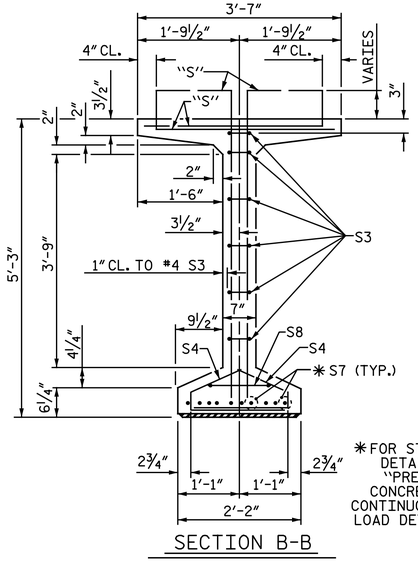
STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN A
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-10
1			3			TOTAL SHEETS
2			4			29

STD. NO. PCG7

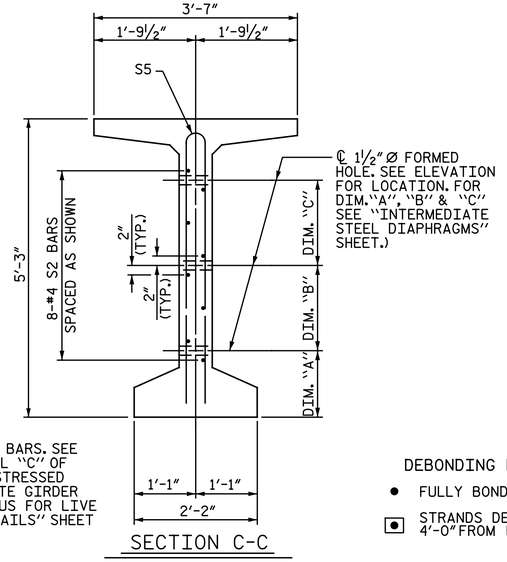


SECTION A-A



SECTION B-B

✱FOR S7 BARS, SEE DETAIL "C" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET

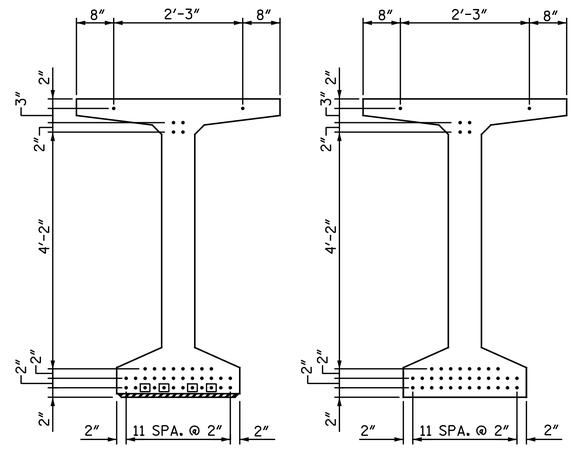


SECTION C-C

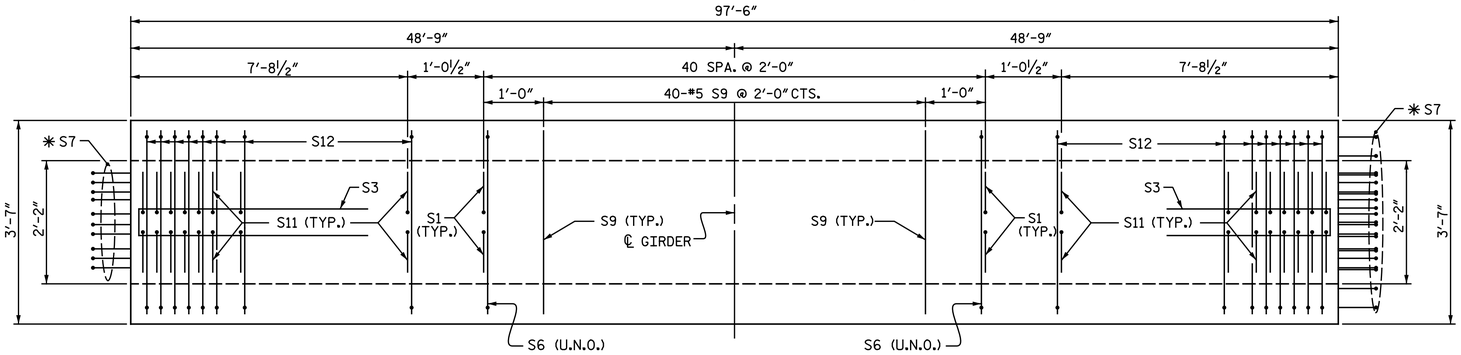
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

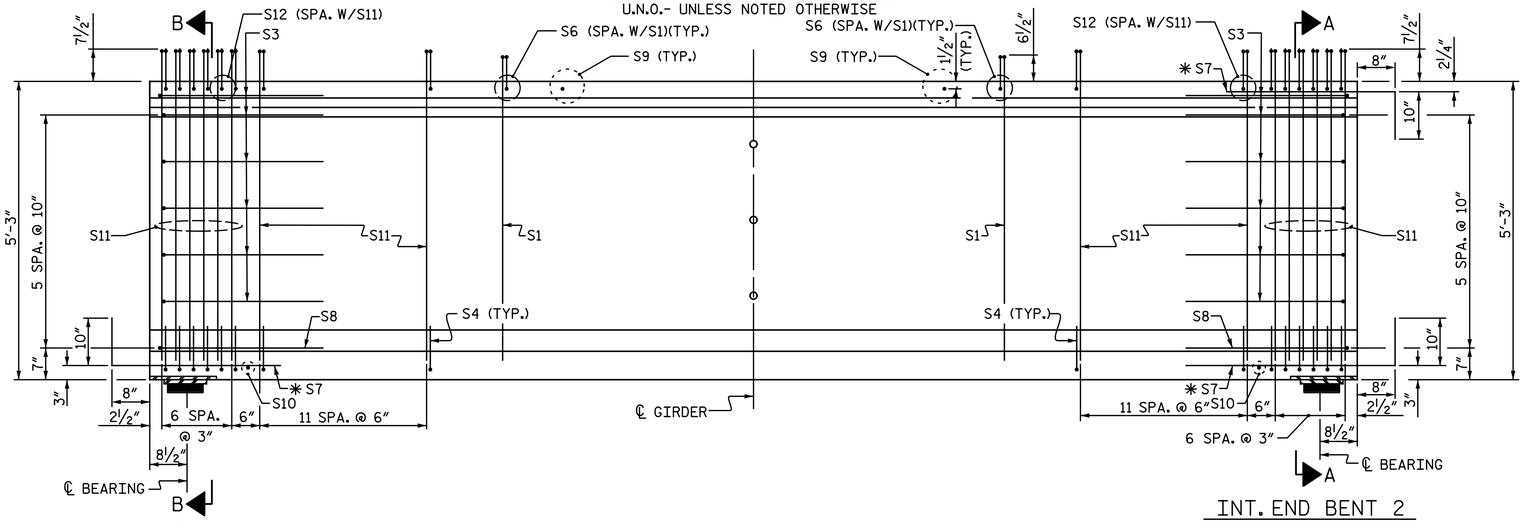


0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

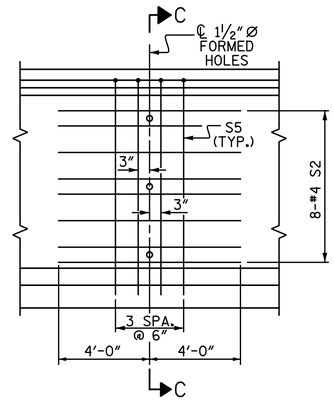
U.N.O.- UNLESS NOTED OTHERWISE



FIX

INT. END BENT 2

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 3

0.6" Ø L. R. GRADE 270 STRANDS

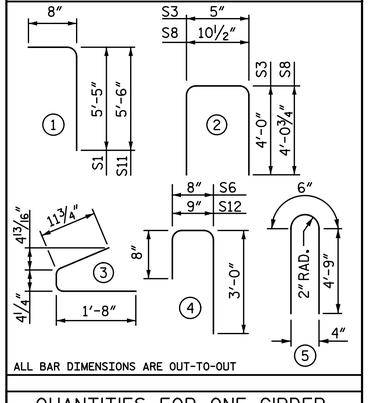
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#5	1	6'-1"	520
S2	8	#4	STR	8'-0"	43
S3	12	#4	2	8'-5"	67
S4	76	#4	3	3'-0"	152
S5	4	#5	5	10'-0"	42
S6	82	#5	4	4'-4"	371
✱S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	40	#5	STR	3'-3"	136
S10	2	#3	STR	1'-10"	1
S11	76	#5	1	6'-2"	489
S12	76	#5	4	4'-5"	350

✱NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2,305	19.3	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
3	97.5	292.5

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN B
LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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Michael Baker INTERNATIONAL

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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-11
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : N. B. SPEAKS		DATE : 4-12-17
CHECKED BY : A. H. SHARPE		DATE : 5-3-17
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG7

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6″Ø LOW RELAXATION	GIRDERS 1 & 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.019	0.038	0.052	0.061	0.065	0.061	0.052	0.038	0.019	0.000
FINAL CAMBER ↑	0″	3/16″	3/8″	1/2″	9/16″	5/8″	9/16″	1/2″	3/8″	3/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 2										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.020	0.039	0.054	0.064	0.067	0.064	0.054	0.039	0.020	0.000
FINAL CAMBER ↑	0″	3/16″	3/8″	1/2″	9/16″	9/16″	9/16″	1/2″	3/8″	3/16″	0″

* INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXECPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR SPAN B

0.6″Ø LOW RELAXATION	GIRDERS 1 & 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.066	0.125	0.171	0.201	0.211	0.201	0.171	0.125	0.066	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.036	0.070	0.097	0.114	0.120	0.114	0.097	0.070	0.036	0.000
FINAL CAMBER ↑	0″	5/16″	5/8″	7/8″	1″	1 1/16″	1″	7/8″	5/8″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 2										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.066	0.125	0.171	0.201	0.211	0.201	0.171	0.125	0.066	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.037	0.072	0.100	0.118	0.124	0.118	0.100	0.072	0.037	0.000
FINAL CAMBER ↑	0″	5/16″	5/8″	13/16″	15/16″	1″	15/16″	13/16″	5/8″	5/16″	0″

* INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXECPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2″ BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI.

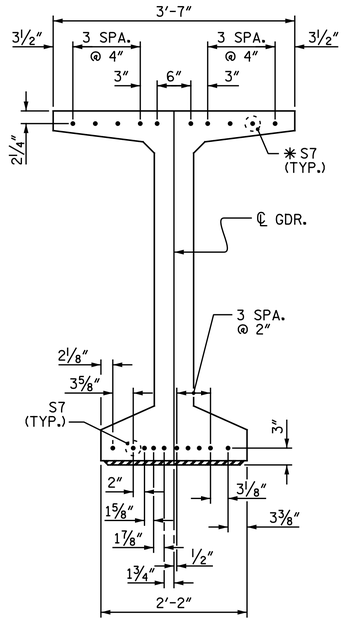
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4″, SHALL BE RAKED TO A DEPTH OF 1/4″.

A 2″ × 2″ CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63″ AND 72″ MODIFIED BULB TEES ONLY.

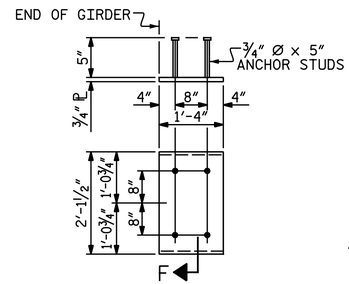
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

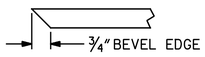
FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



DETAIL "C"

* S7 BARS IN TOP OF GIRDER ARE ONLY APPLICABLE AT INTEGRAL END BENT LOCATIONS





SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS
(2 REQUIRED PER GIRDER)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

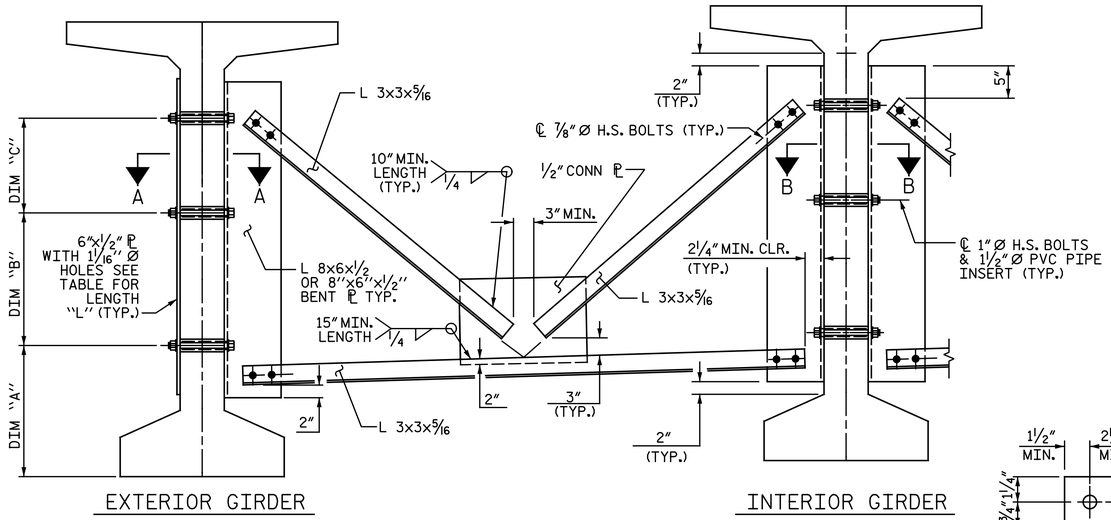
PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

LEFT LANE

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-12
1			3			TOTAL SHEETS
2			4			29

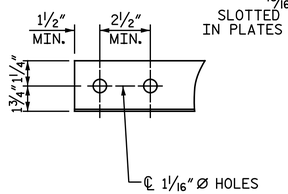
DRAWN BY : N. B. SPEAKS DATE : 4-11-17
CHECKED BY : A. H. SHARPE DATE : 5-1-17



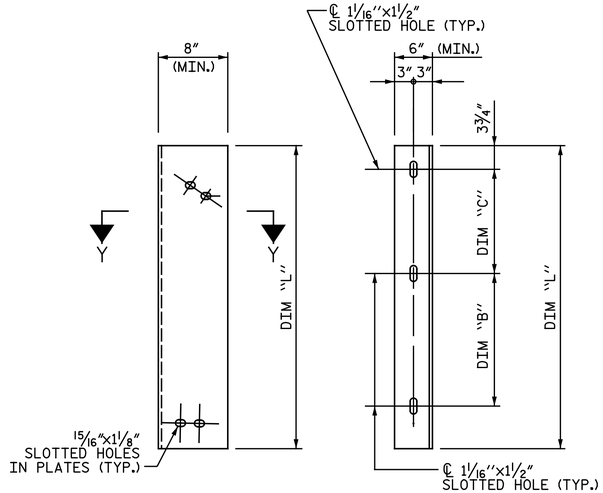
EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

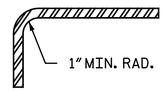


ANGLE END
(L 3 X 3 X 5/16)



DIAPHRAGM FACE

WEB FACE



SECTION Y-Y

CONNECTOR PLATE DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

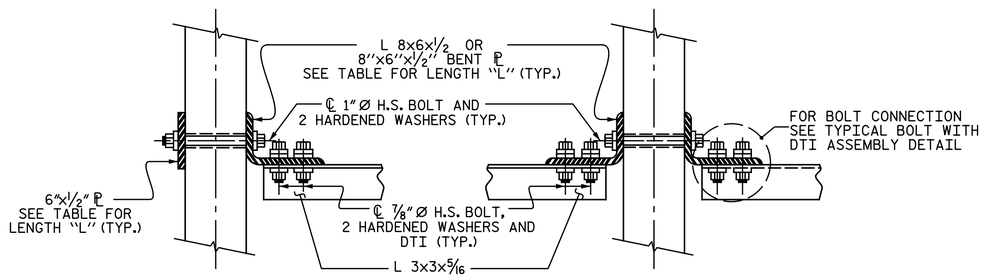
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

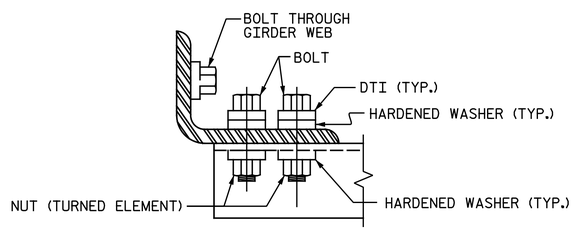
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-5 3/4"	1'-4"	1'-4"	3'-5"



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS LEFT LANE

ASSEMBLED BY : D. A. LAMAY	DATE : 3-8-17
CHECKED BY : A. H. SHARPE	DATE : 4-17-17
DRAWN BY : RWW 11/09	ADDED 11/23/09R
CHECKED BY : GM 11/09	REV. 10/1/11 MAA/GM

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REVISIONS					
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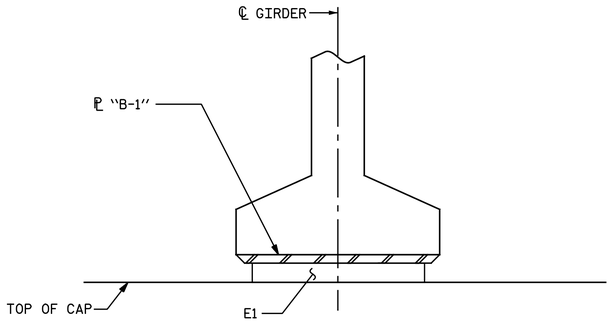
2			4		

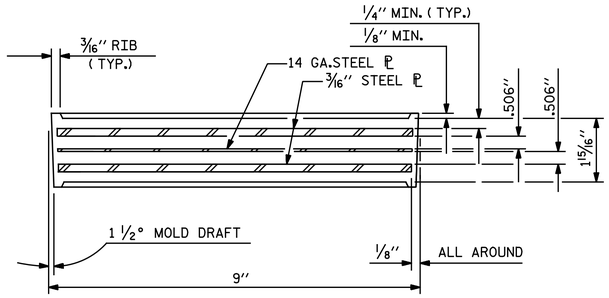
SHEET NO. S13-13

TOTAL SHEETS 29

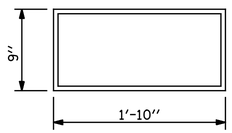
STD. NO. PCG11



SECTION
(AT INTEGRAL END BENTS)



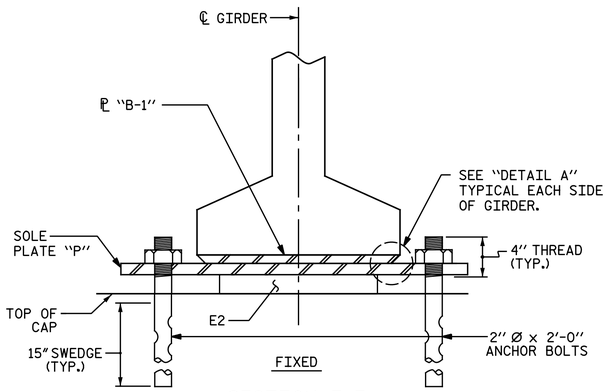
TYPICAL SECTION OF ELASTOMERIC BEARINGS



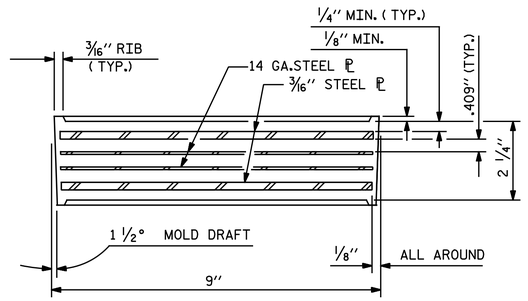
E1 (6 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

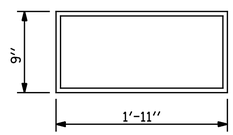
TYPE IV



SECTION E-E
(AT BENT)



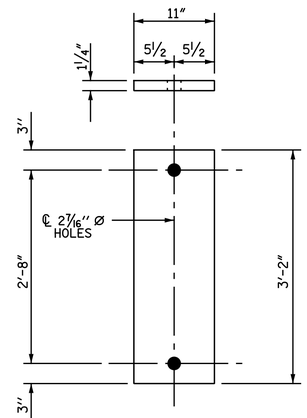
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E2 (6 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

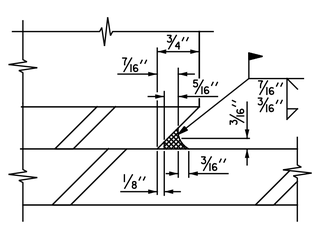
TYPE V



P1
(FIXED)

P1 (6 REQ'D)

SOLE PLATE DETAILS ("P")



DETAIL A

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

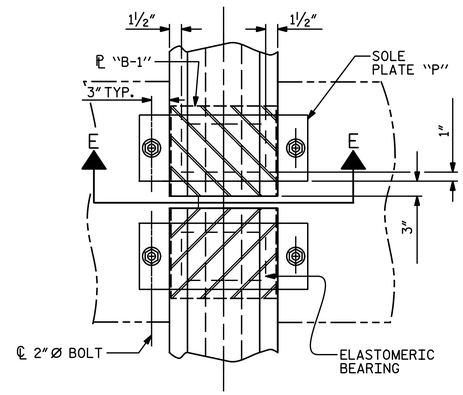
SOLE PLATE "P", BOLTS, AND NUTS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, AND NUTS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



TYPICAL PLAN

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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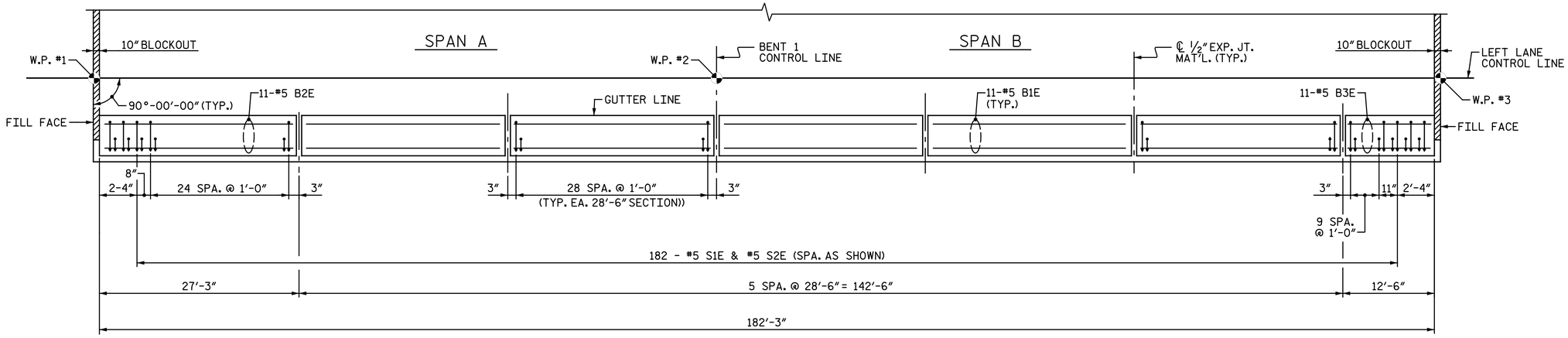
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-14
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : N. B. SPEAKS		DATE : 4-13-17
CHECKED BY : A. H. SHARPE		DATE : 5-2-17
DRAWN BY : EEM 2/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/97	REV. 6/13	AAC/MAA
	REV. 1/15	MAA/TMG

STD. NO. EB4



PLAN OF BARRIER RAIL

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

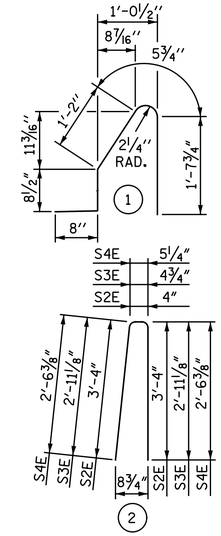
NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" 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 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES

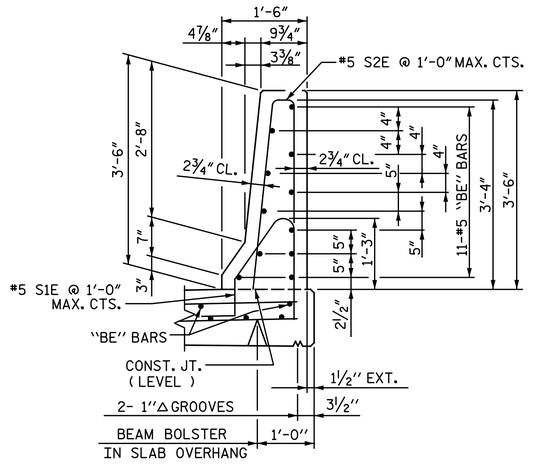


ALL BAR DIMENSIONS ARE OUT TO OUT

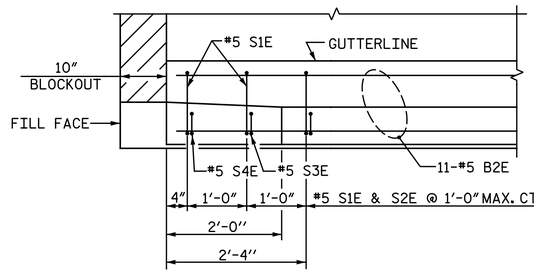
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	110	#5	STR.	28' - 0"	3,212
B2E	22	#5	STR.	26' - 9"	614
B3E	22	#5	STR.	12' - 0"	275
S1E	372	#5	1	4' - 8"	1,811
S2E	364	#5	2	7' - 0"	2,658
S3E	4	#5	2	6' - 3"	26
S4E	4	#5	2	5' - 6"	23
EPOXY COATED REINFORCING STEEL				LBS.	8,619
CLASS AA CONCRETE				C.Y.	49.5
CONCRETE BARRIER RAIL				L.F.	364.5



SECTION THRU RAIL



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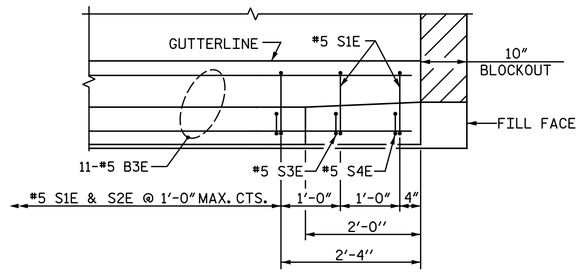
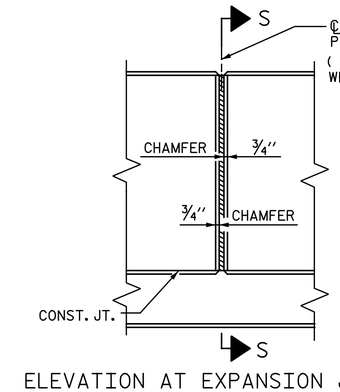


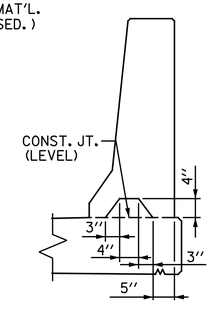
END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

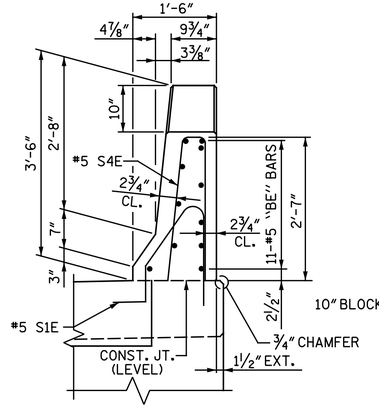


ELEVATION AT EXPANSION JOINTS

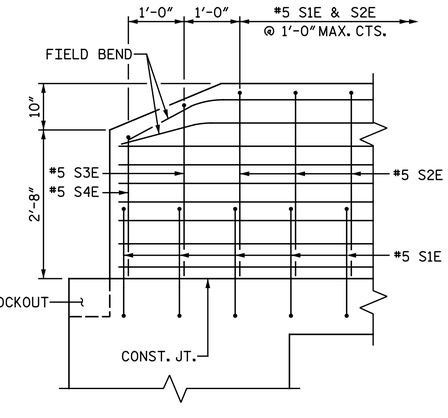


SECTION S-S

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



END VIEW



SIDE VIEW

END OF RAIL DETAILS

BARRIER RAIL DETAILS

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17	
CHECKED BY : A. H. SHARPE	DATE : 9-12-17	
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe
9/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
NC License No. : F-1084

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

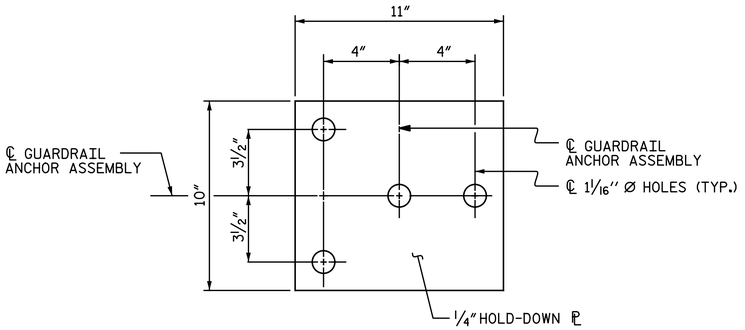
STANDARD

CONCRETE BARRIER RAIL

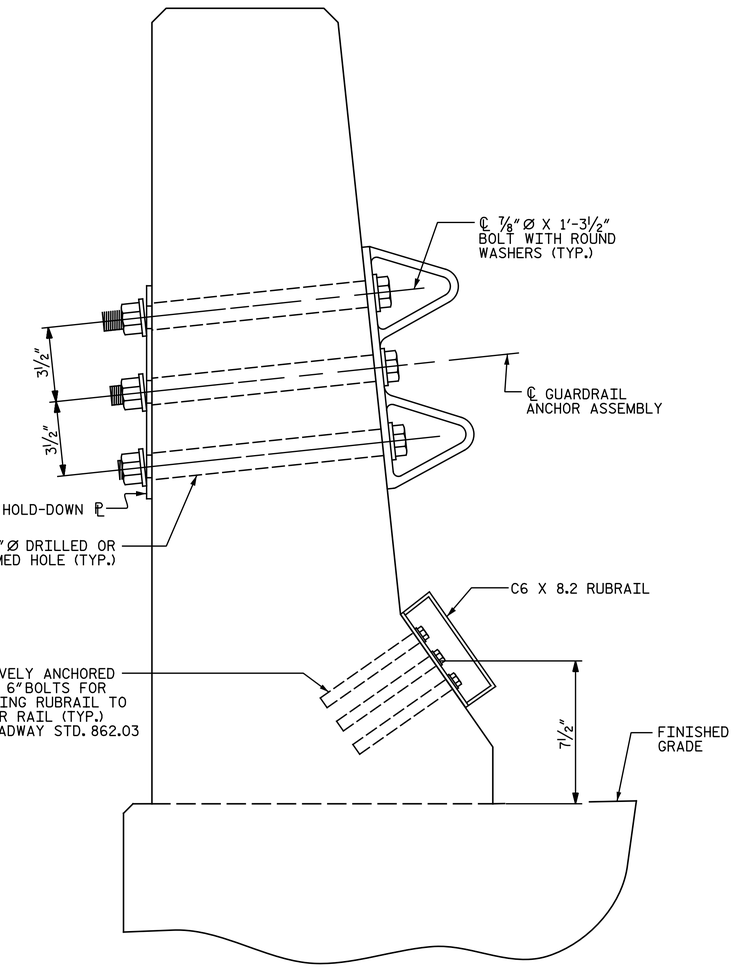
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-15
1			3			TOTAL SHEETS
2			4			29

STD. NO. CBR1

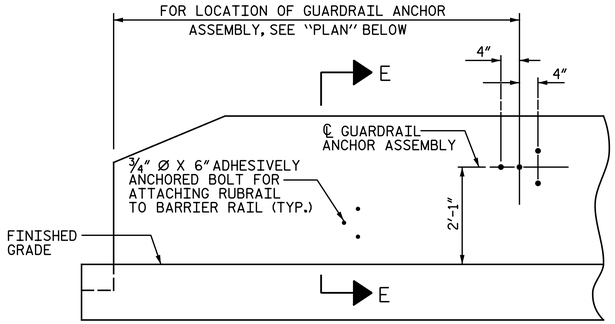


PLAN

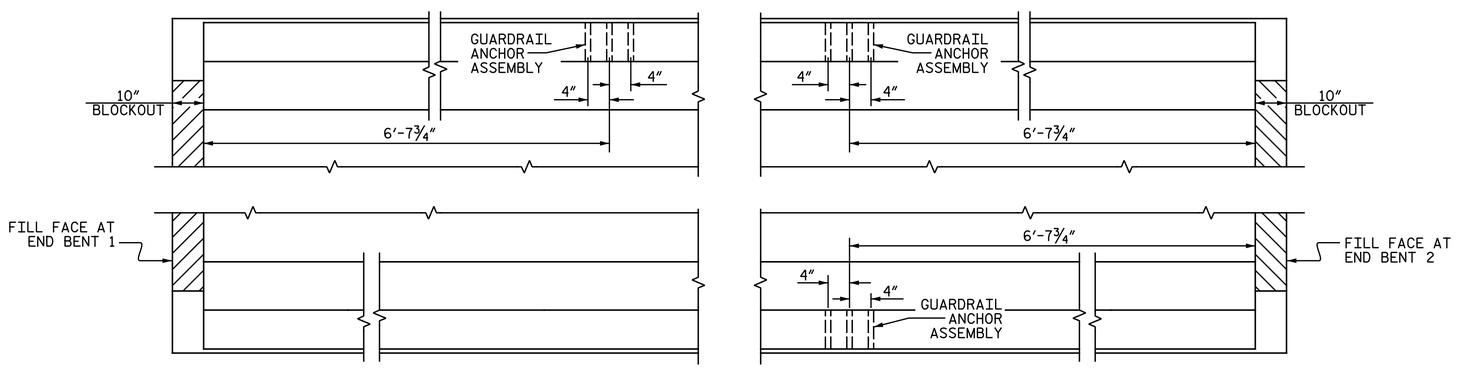


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

NOTES

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

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

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

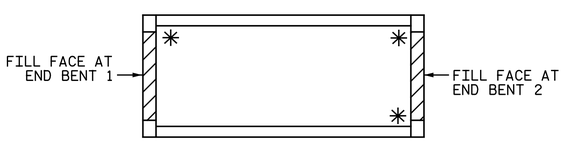
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4″Ø X 6″BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4″Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE 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-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

LEFT LANE

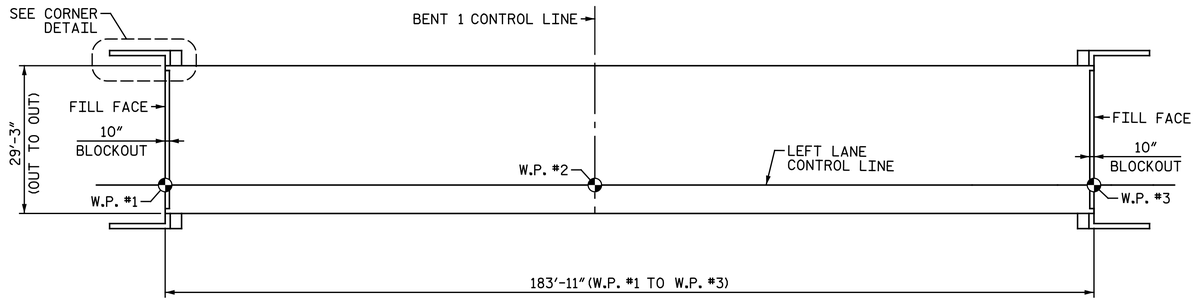
ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : A. H. SHARPE	DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

Michael Baker INTERNATIONAL

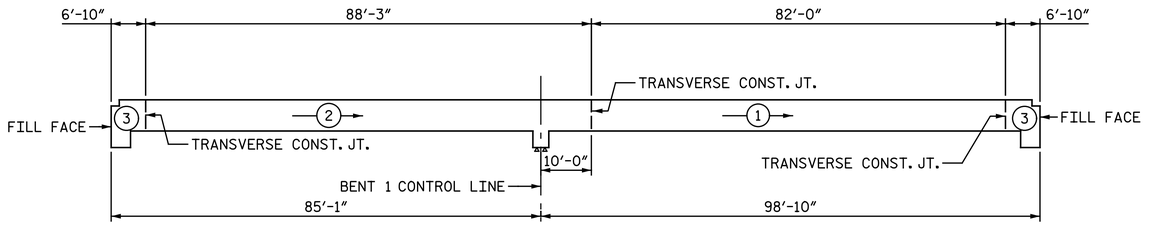
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-16
1			3			TOTAL SHEETS
2			4			29

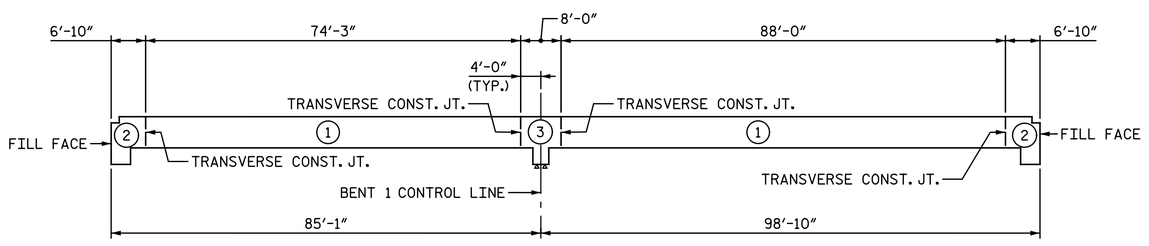
STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 5,380)

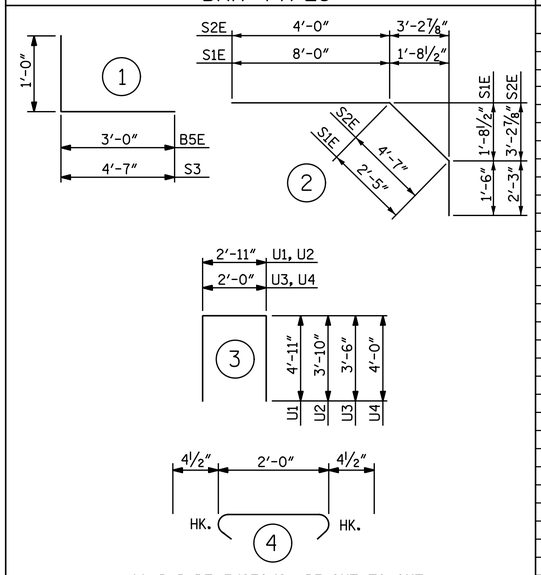


POURING SEQUENCE
(#) DENOTES POUR NUMBER AND DIRECTION



OPTIONAL POURING SEQUENCE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A&B		18,071	19,360
POUR 1	78.6		
POUR 2	98.1		
POUR 3	54.9		
TOTALS *	231.6	18,071	19,360

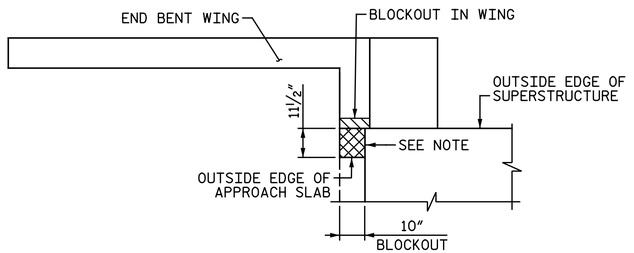
* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

REINFORCING BAR SCHEDULE
SPANS A & B

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	312	#5	STR.	28′ - 11″	9,410
A2	312	#5	STR.	28′ - 11″	9,410
B1E	20	#6	STR.	30′ - 0″	901
B2	144	#5	STR.	47′ - 2″	7,084
B3E	19	#6	STR.	19′ - 3″	549
B4E	19	#6	STR.	21′ - 5″	611
B5E	8	#4	1	4′ - 0″	21
B6E	20	#4	STR.	30′ - 0″	401
B7E	60	#6	STR.	23′ - 5″	2,110
B8E	38	#6	STR.	33′ - 8″	1,922
B9E	40	#4	STR.	18′ - 5″	492
B10E	20	#6	STR.	34′ - 10″	1,046
B11E	19	#6	STR.	22′ - 0″	628
B12E	19	#6	STR.	24′ - 2″	690
H1	24	#5	STR.	2′ - 11″	73
K1	12	#4	STR.	28′ - 11″	232
K2	4	#4	STR.	6′ - 7″	18
K3	16	#4	STR.	9′ - 7″	102
K4	4	#4	STR.	8′ - 0″	21
K5	4	#4	STR.	2′ - 0″	5
K6	16	#4	STR.	3′ - 6″	37
K7	4	#4	STR.	2′ - 8″	7
K8	6	#4	STR.	21′ - 3″	85
K9	4	#4	STR.	6′ - 7″	18
K10	16	#4	STR.	9′ - 7″	102
K11	4	#4	STR.	6′ - 10″	18
S1E	40	#4	2	11′ - 11″	318
S2E	36	#4	2	10′ - 10″	261
S3	28	#4	1	5′ - 7″	104
S4	78	#4	4	2′ - 9″	143
U1	40	#4	3	12′ - 9″	341
U2	12	#4	3	10′ - 7″	85
U3	14	#4	3	9′ - 0″	84
U4	4	#4	3	10′ - 0″	27
V1	12	#5	STR.	6′ - 0″	75

REINFORCING STEEL	LBS.	18,071
EPOXY COATED REINF. STEEL	LBS.	19,360

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL.



CORNER DETAIL

CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND SHEET 1 OF "INTEGRAL END BENT 2" SHEETS.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,112	SQ.FT.
BRIDGE DECK	4,184	SQ.FT.
TOTAL	5,296	SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

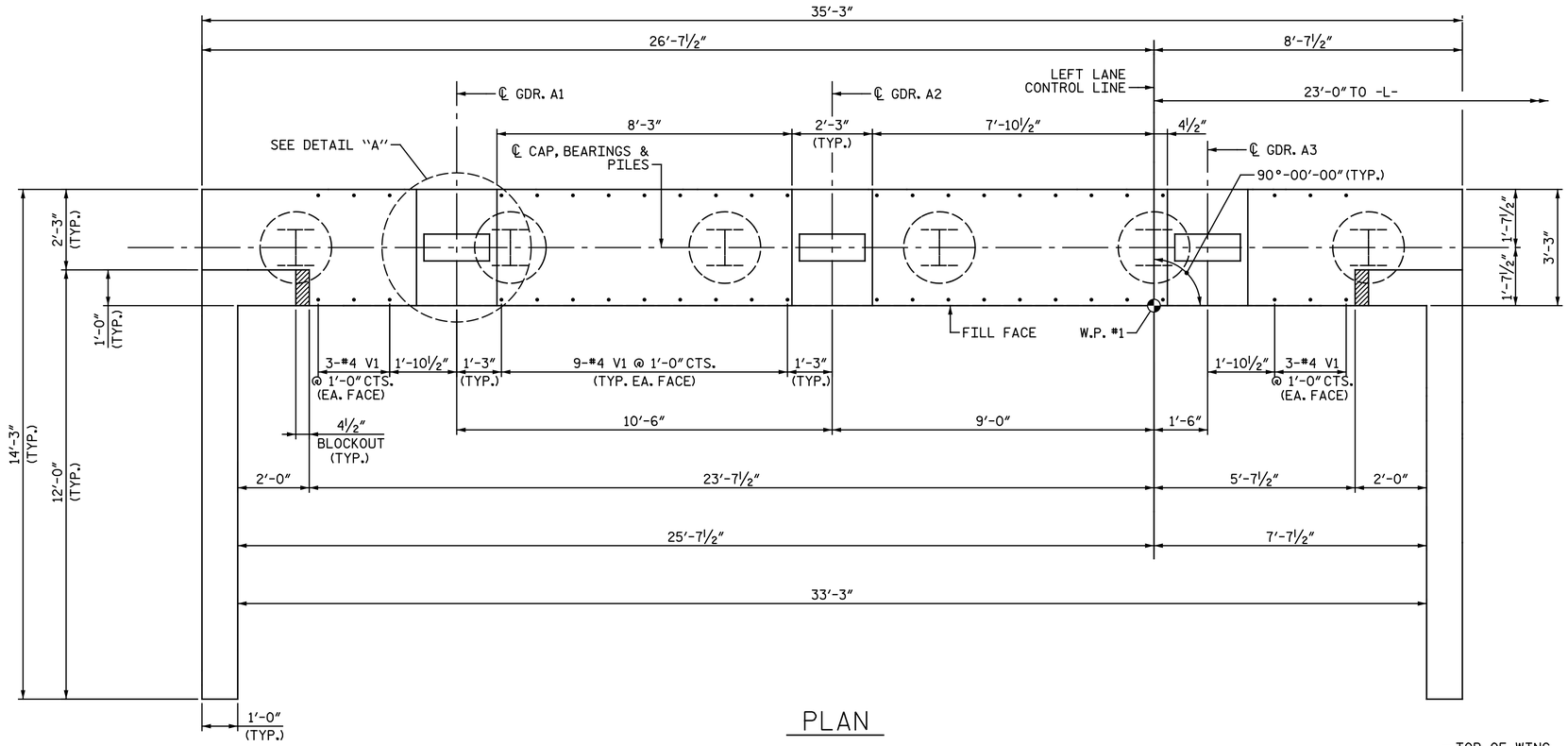
SUPERSTRUCTURE

BILL OF MATERIAL

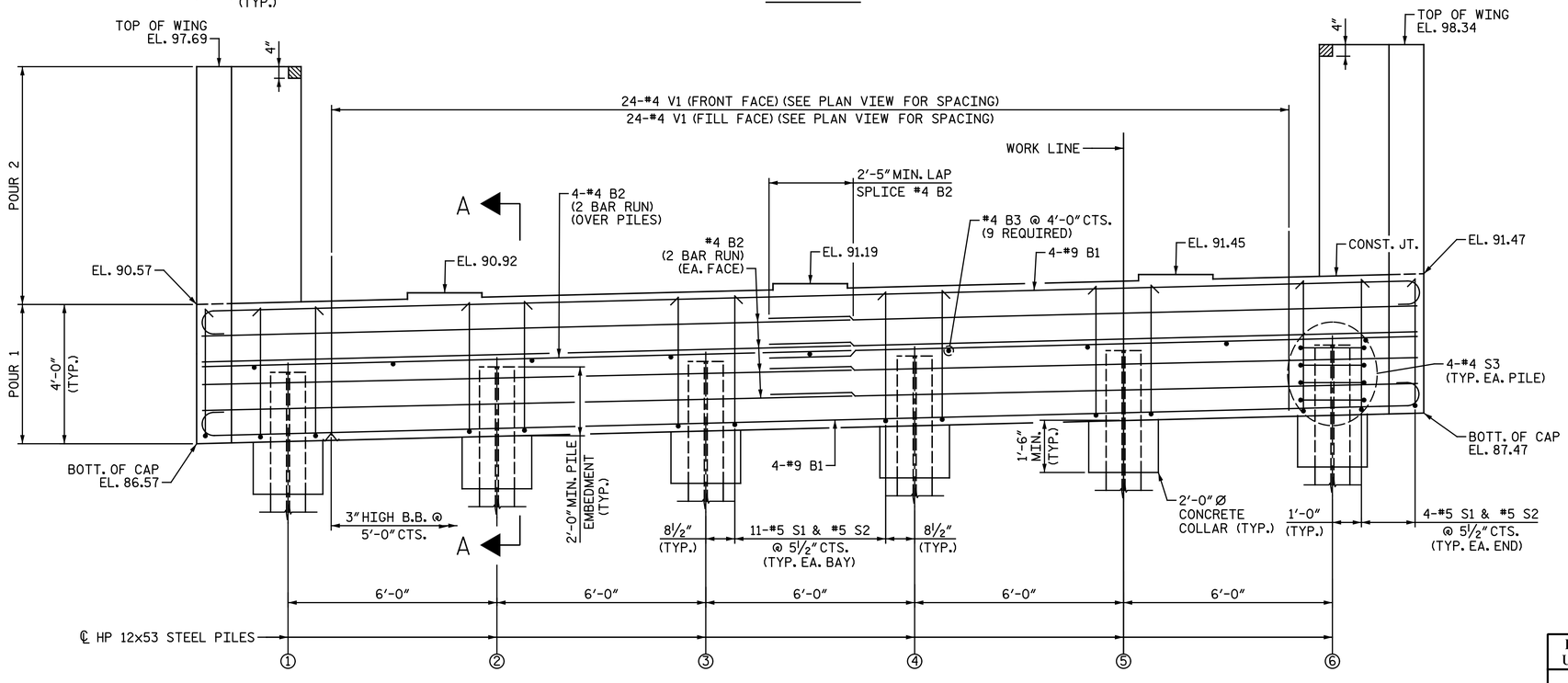
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-17
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. A. LAMAY DATE : 3-14-17
CHECKED BY : A. H. SHARPE DATE : 4-18-17



PLAN



ELEVATION

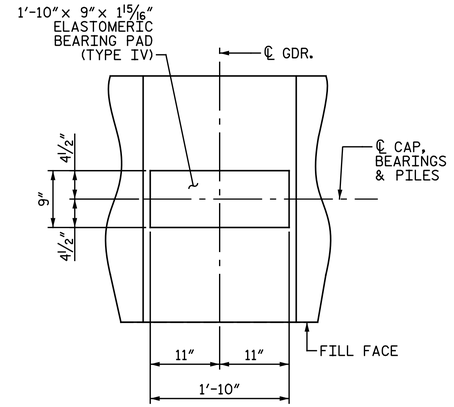
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	88.65
②	88.80
③	88.96
④	89.11
⑤	89.26
⑥	89.42

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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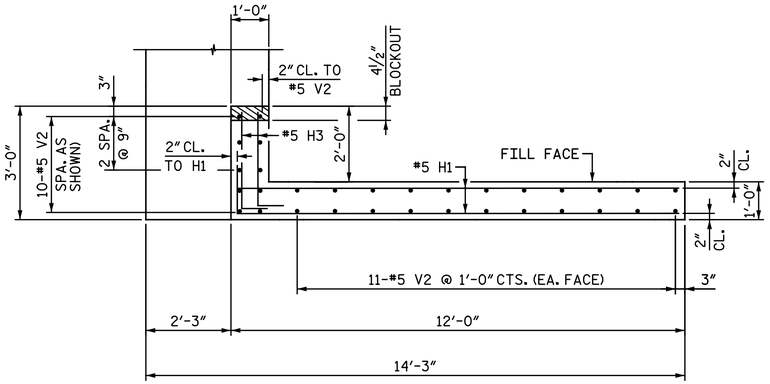
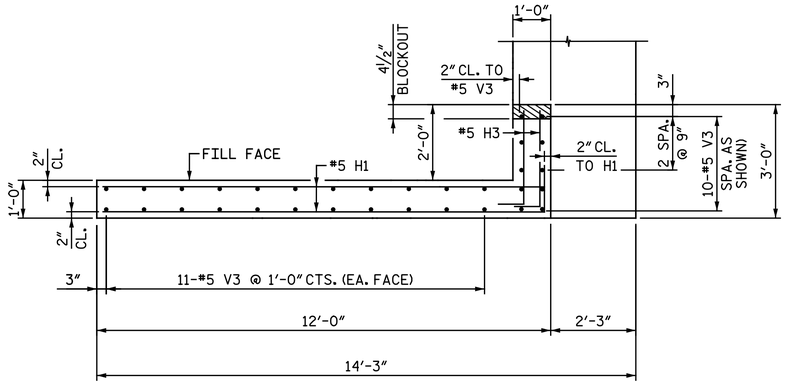
2			4			29

DRAWN BY : D. A. LAMAY DATE : 3-23-17
CHECKED BY : A. H. SHARPE DATE : 5-3-17



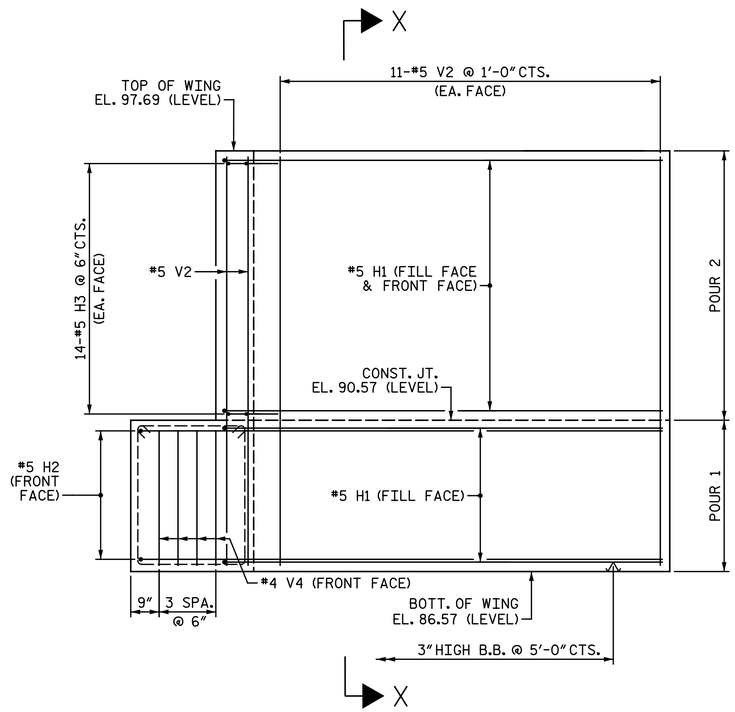
PLAN OF LEFT WING

(H2 BARS NOT SHOWN FOR CLARITY)

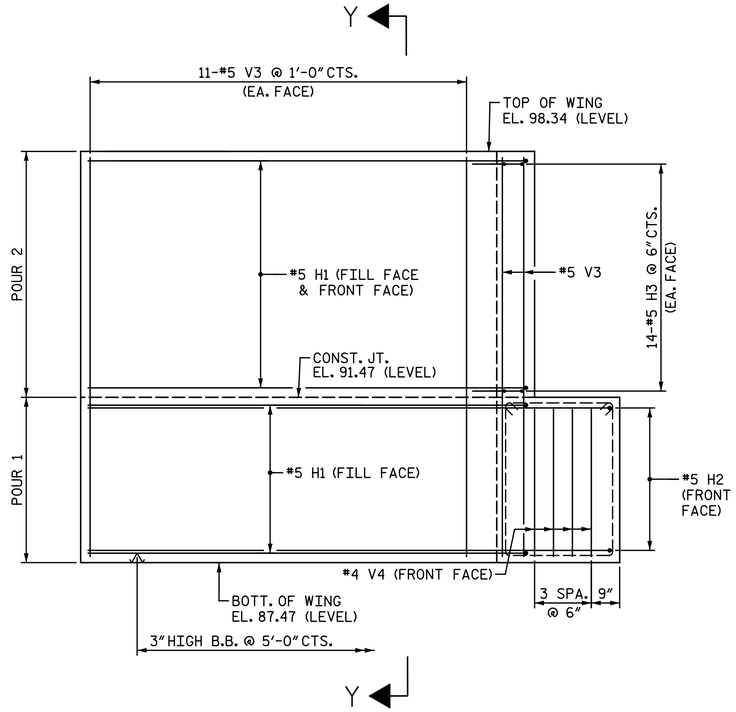


PLAN OF RIGHT WING

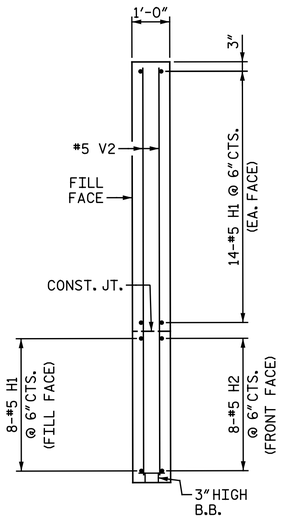
(H2 BARS NOT SHOWN FOR CLARITY)



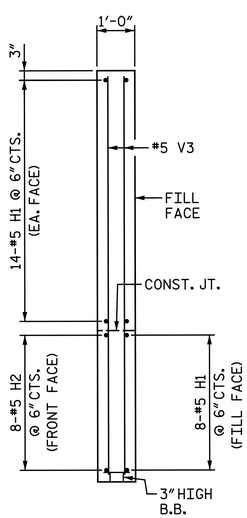
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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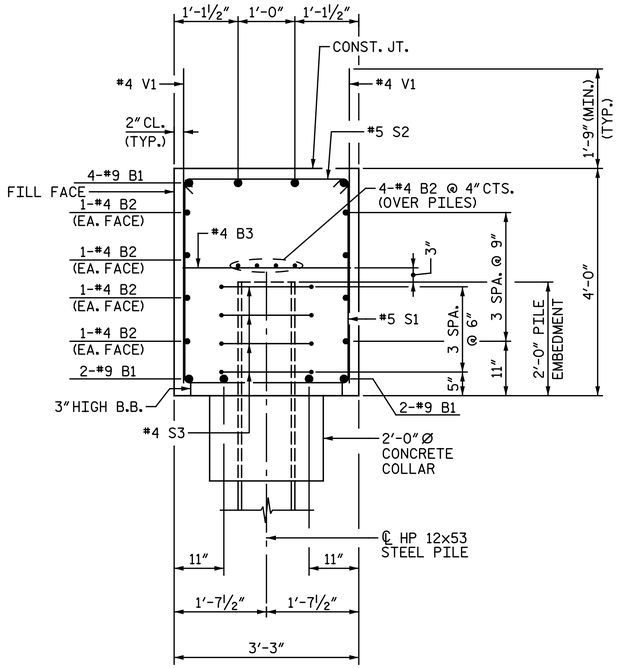
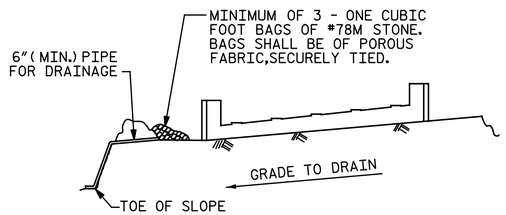
2			4			29

DRAWN BY : D. A. LAMAY DATE : 3-23-17
CHECKED BY : A. H. SHARPE DATE : 5-3-17



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL
INTEGRAL END BENT 1

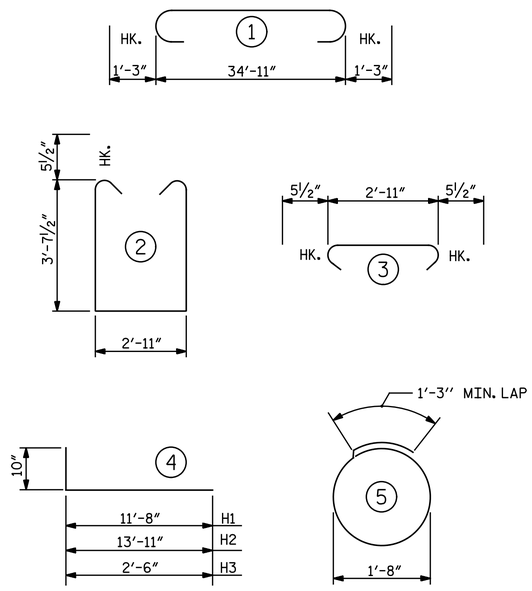
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37' - 5"	1018
B2	24	#4	STR.	18' - 8"	299
B3	9	#4	STR.	2' - 11"	18
H1	72	#5	4	12' - 6"	939
H2	16	#5	4	14' - 9"	246
H3	56	#5	4	3' - 4"	195
S1	63	#5	2	11' - 1"	728
S2	63	#5	3	3' - 10"	252
S3	24	#4	5	6' - 6"	104
V1	48	#4	STR.	5' - 6"	176
V2	32	#5	STR.	10' - 8"	356
V3	32	#5	STR.	10' - 5"	348
V4	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	4,698
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	21.4
POUR 2 -		
UPPER PART OF WINGS	C.Y.	7.3
TOTAL	C.Y.	28.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	6
HP 12x53 STEEL PILES NO. 6	L.F.	312
STEEL PILE POINTS	EA.	6
PILE REDRIVES	EA.	5

NOTES:

FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

LEFT LANE

DRAWN BY : D. A. LAMAY DATE : 3-23-17
CHECKED BY : A. H. SHARPE DATE : 4-19-17

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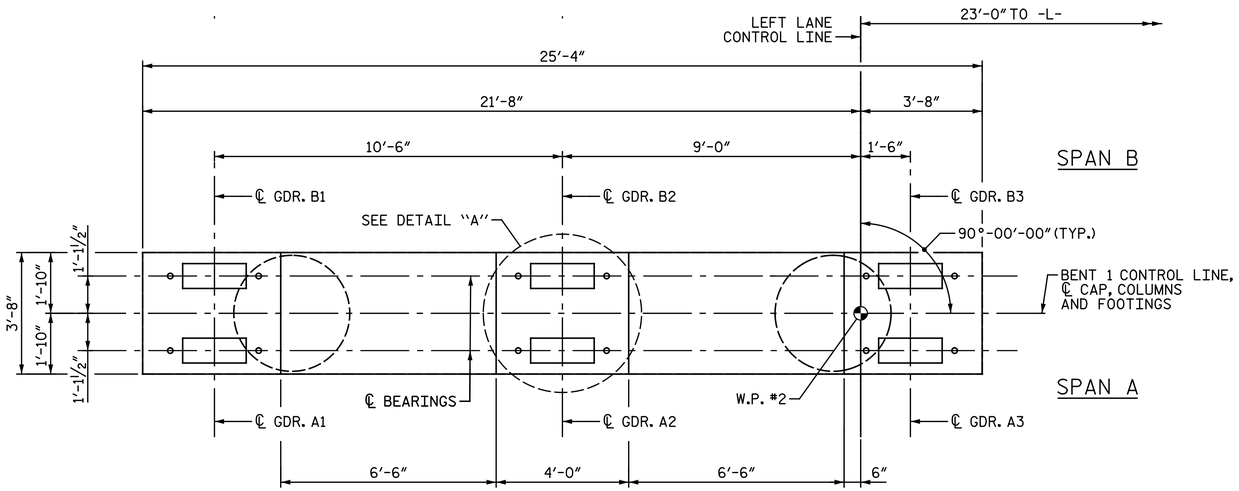
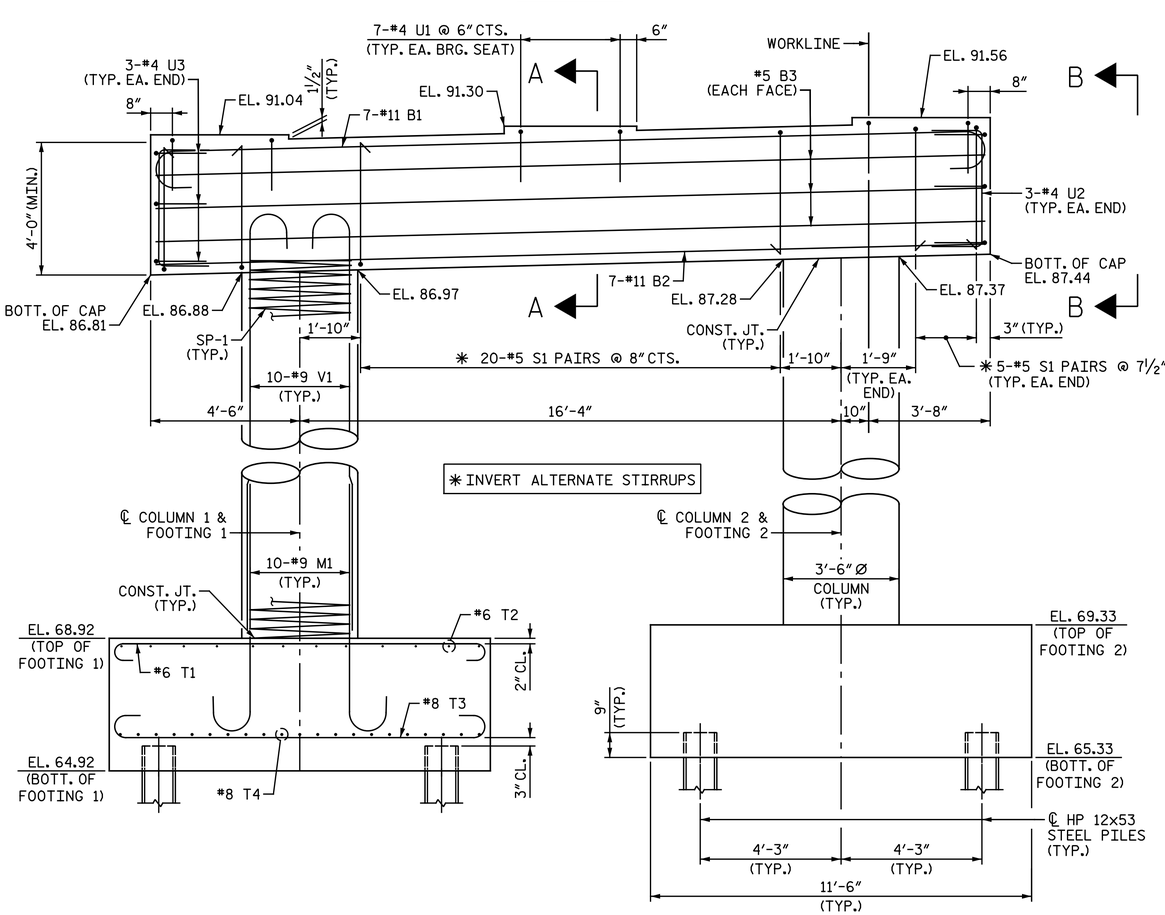
1			3			TOTAL SHEETS
2			4			29

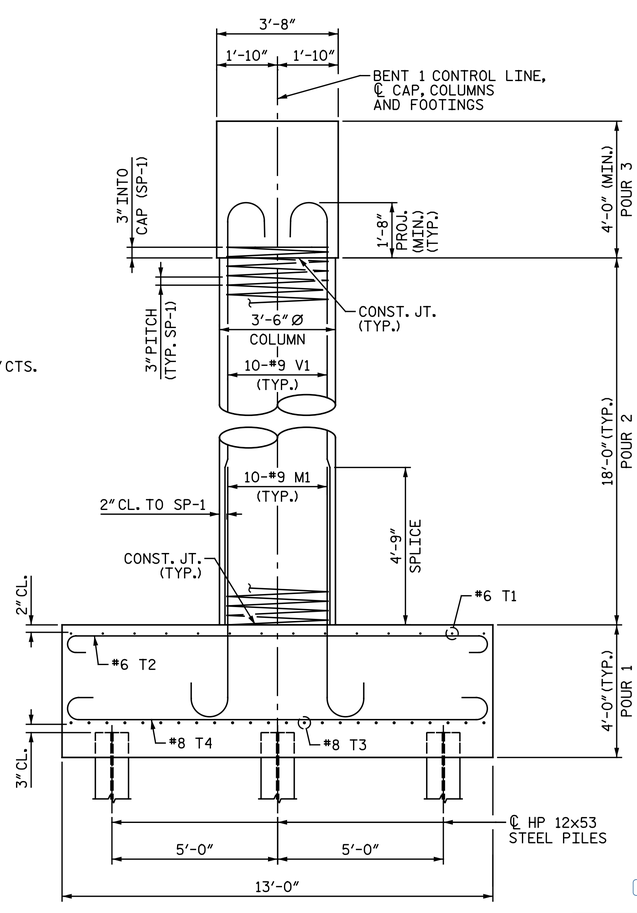


PLAN



ELEVATION

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



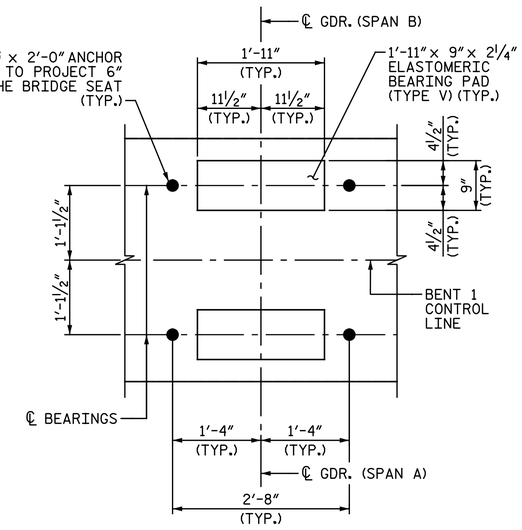
END ELEVATION

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

FOR SECTION A-A AND SECTION B-B , SEE "BENT 1 DETAILS" SHEET.



DETAIL "A"

ALL DIMENSIONS & DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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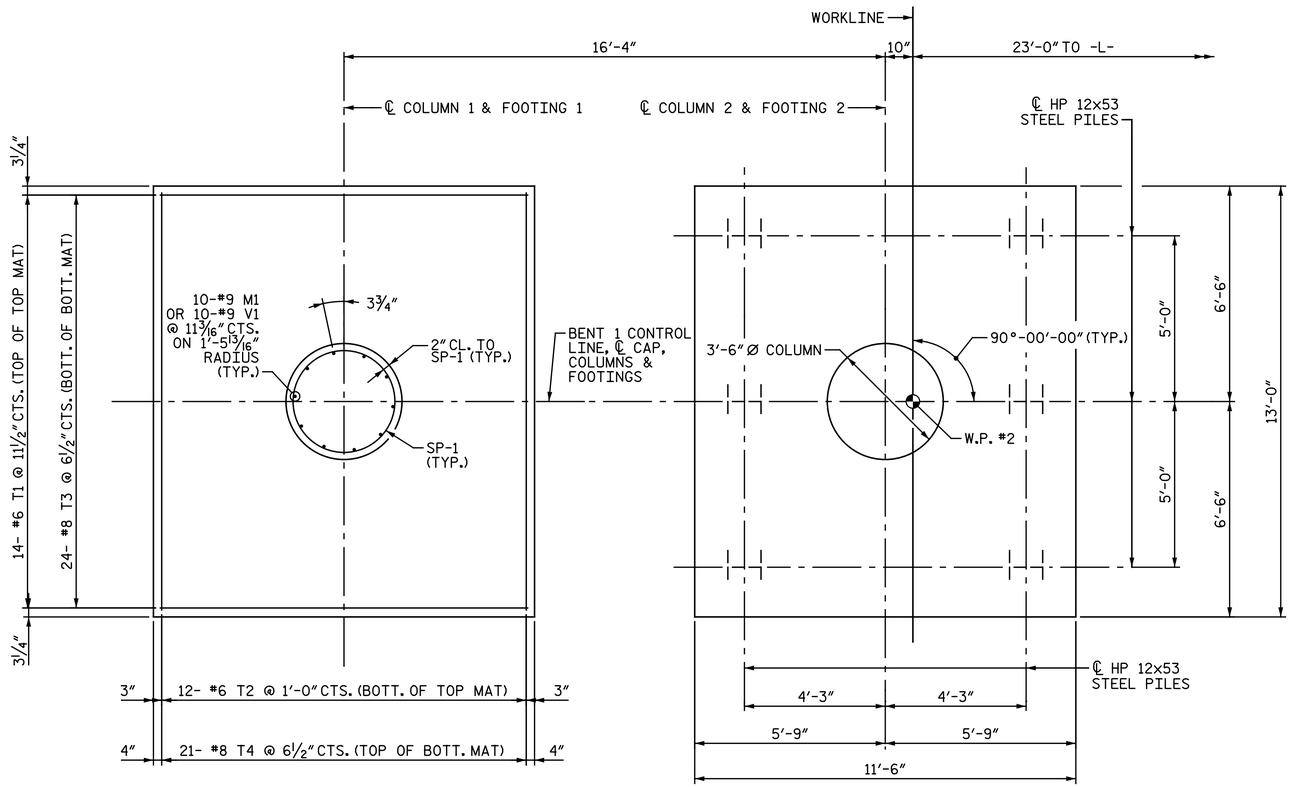
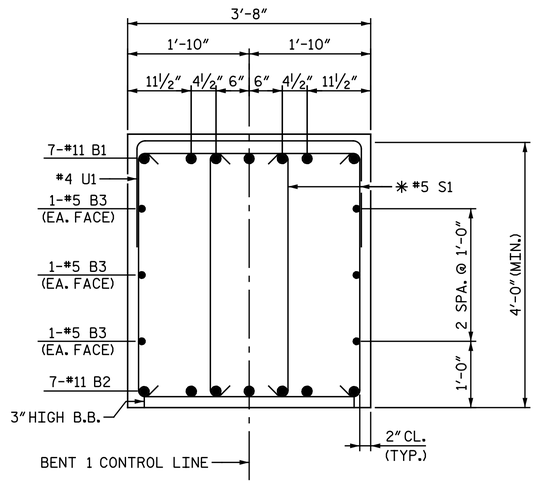
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. A. LAMAY DATE : 4-17-17
CHECKED BY : A. H. SHARPE DATE : 4-21-17



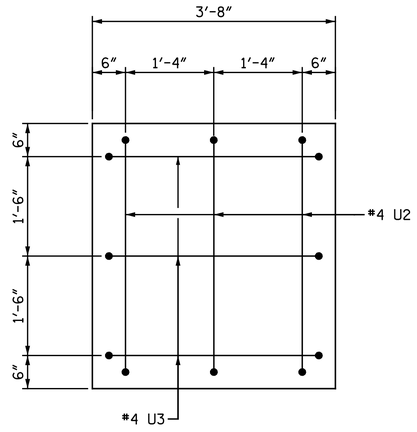
PLAN OF COLUMNS & FOOTINGS

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



SECTION A-A

✳INVERT ALTERNATE STIRRUPS



VIEW B-B

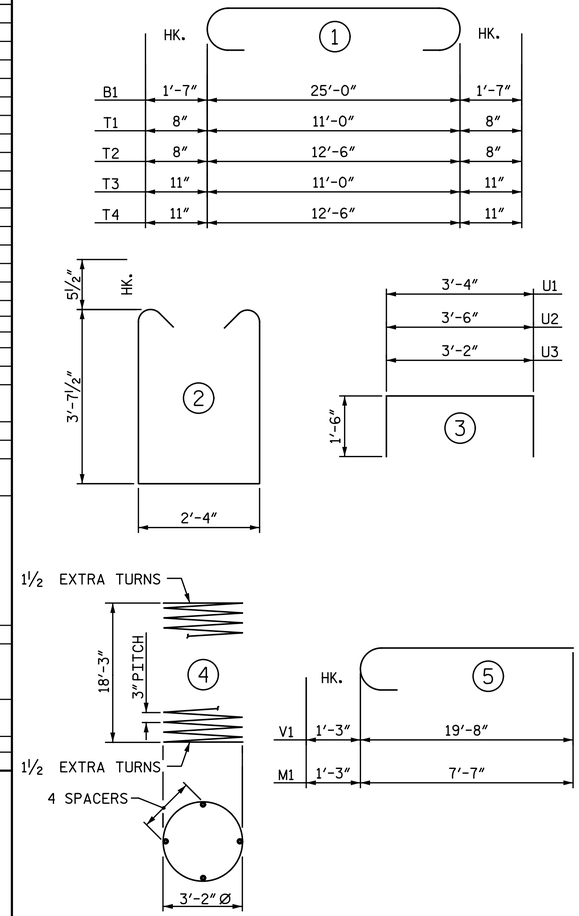
BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	28′ - 2″	1,048
B2	7	#11	STR.	25′ - 0″	930
B3	6	#5	STR.	25′ - 0″	156
M1	20	#9	5	8′ - 10″	601
S1	60	#5	2	10′ - 6″	657
T1	28	#6	1	12′ - 4″	519
T2	24	#6	1	13′ - 10″	499
T3	48	#8	1	12′ - 10″	1,645
T4	42	#8	1	14′ - 4″	1,607
U1	21	#4	3	6′ - 4″	89
U2	6	#4	3	6′ - 6″	26
U3	6	#4	3	6′ - 2″	25
V1	20	#9	5	21′ - 0″	1,428
REINFORCING STEEL				LBS.	9,230
SP-1	2	✳✳	4	749′ - 8″	1,002
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,002

CLASS A CONCRETE		
POUR 1 - FOOTINGS	C.Y.	44.3
POUR 2 - COLUMNS	C.Y.	12.8
POUR 3 - CAP	C.Y.	14.1
TOTAL CLASS A CONCRETE	C.Y.	71.2
FOUNDATION EXCAVATION	LUMP SUM	
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	12
HP 12x53 STEEL PILES NO. 12	L.F.	249
STEEL PILE POINTS	EA.	12
PILE REDRIVES	EA.	6

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

✳✳THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D20 COLD DRAWNN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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Michael Baker INTERNATIONAL

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NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

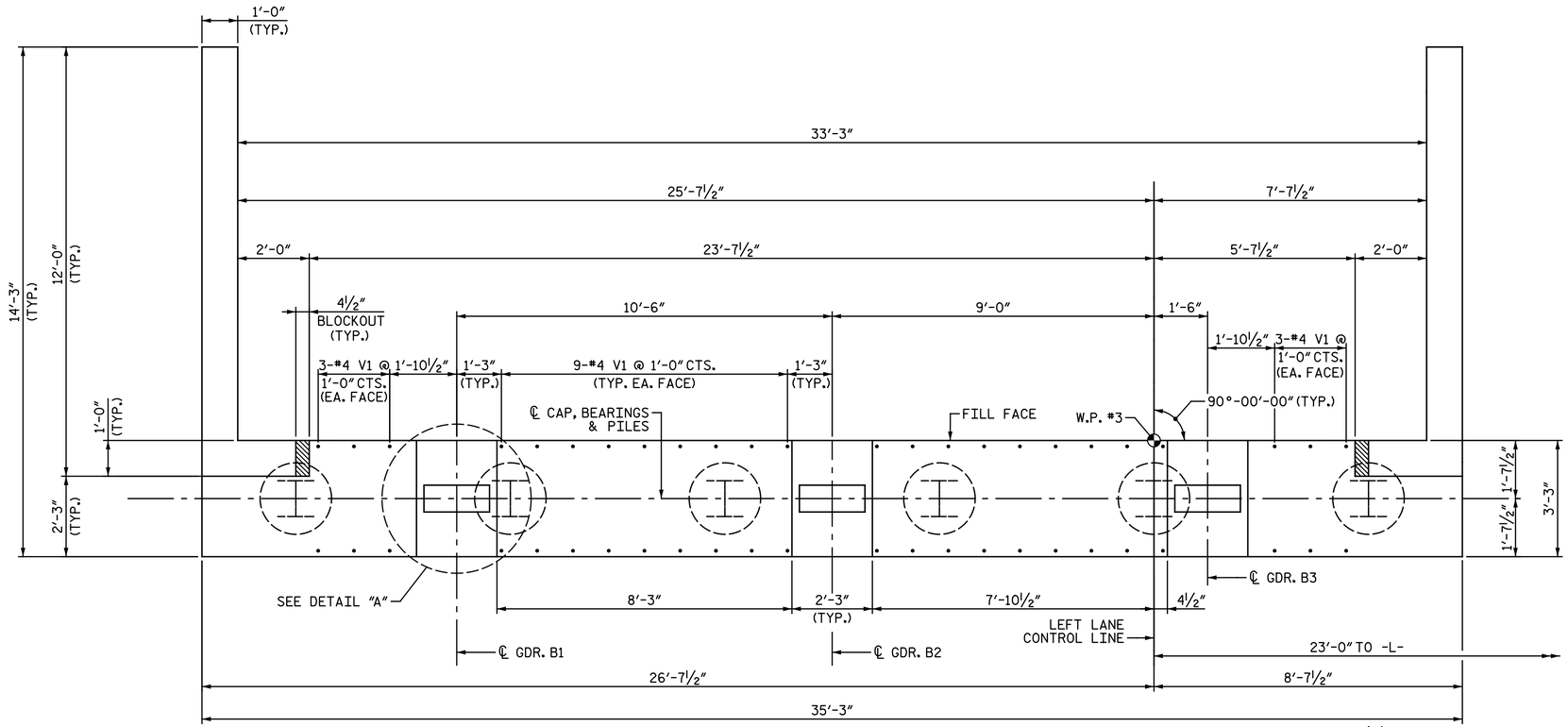
SUBSTRUCTURE

BENT 1 DETAILS

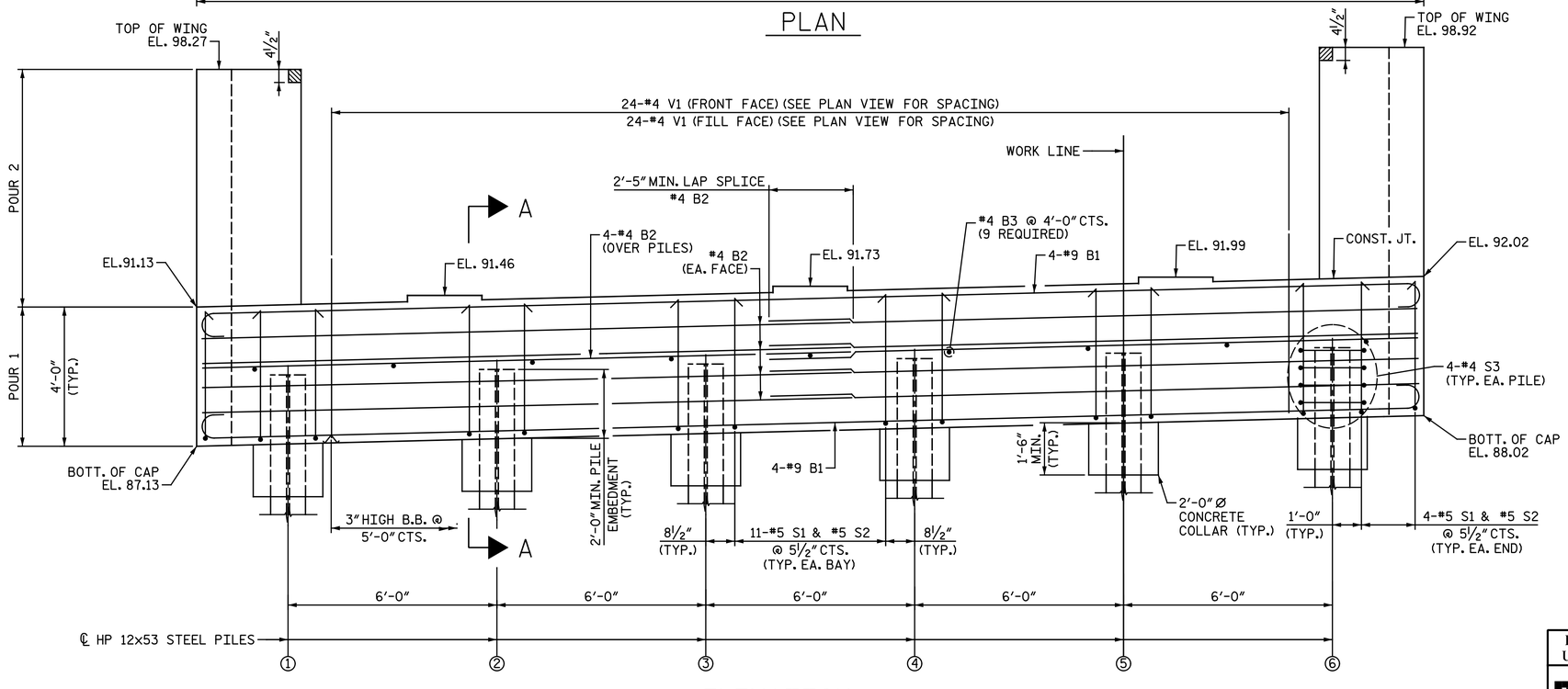
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S13-22
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D. A. LAMAY DATE : 4-18-17
CHECKED BY : A. H. SHARPE DATE : 4-21-17



PLAN



ELEVATION

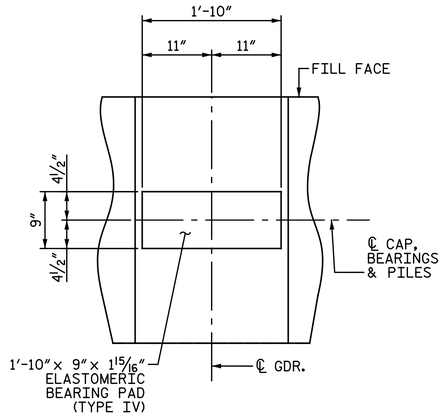
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	89.21
②	89.36
③	89.51
④	89.66
⑤	89.81
⑥	89.97

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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DRAWN BY : D. A. LAMAY DATE : 3-24-17
CHECKED BY : A. H. SHARPE DATE : 5-3-17

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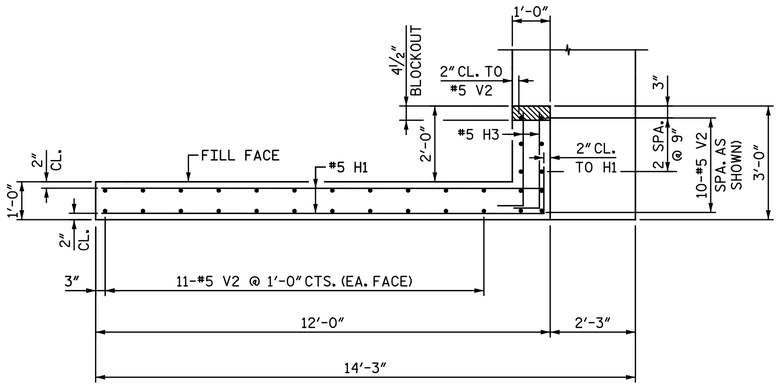
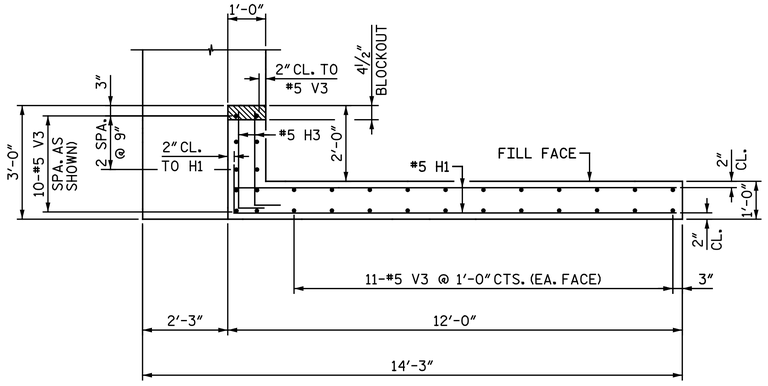
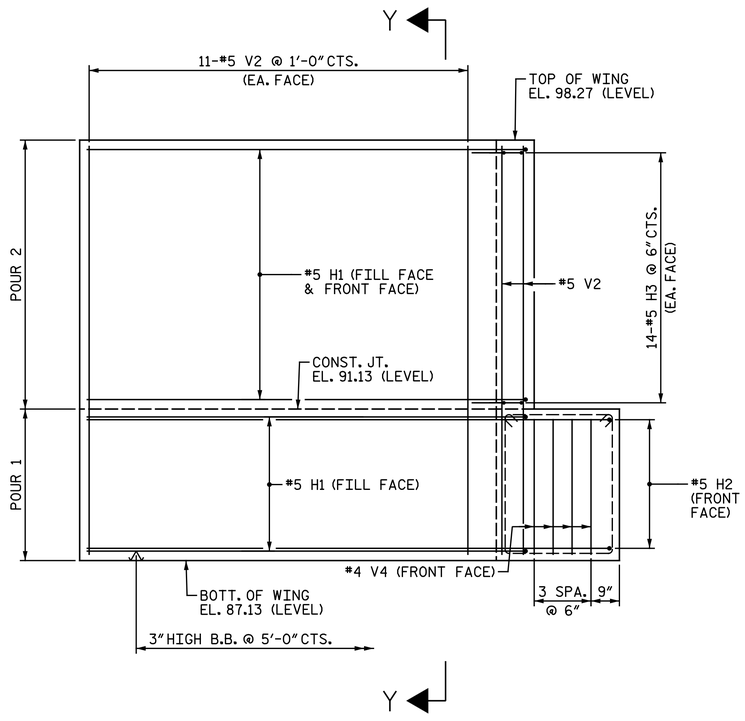


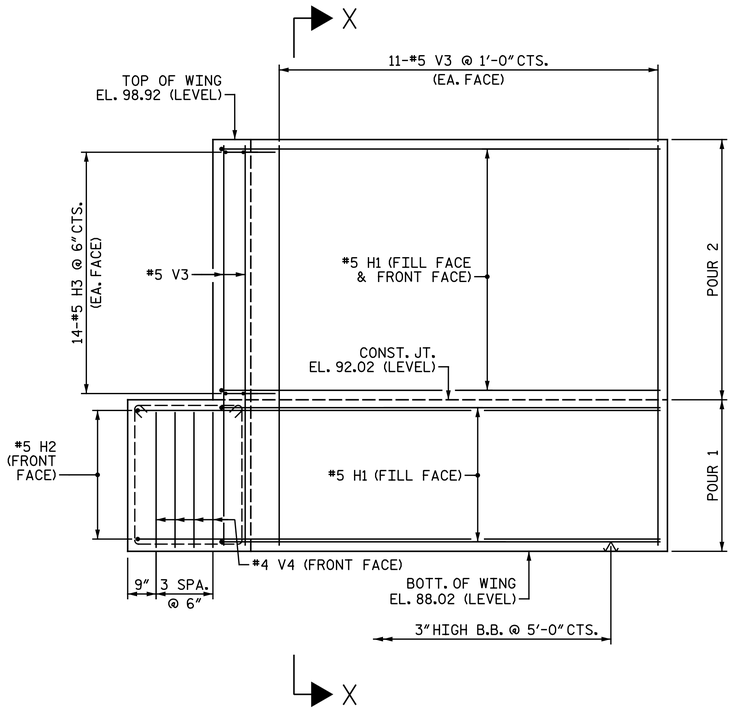
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



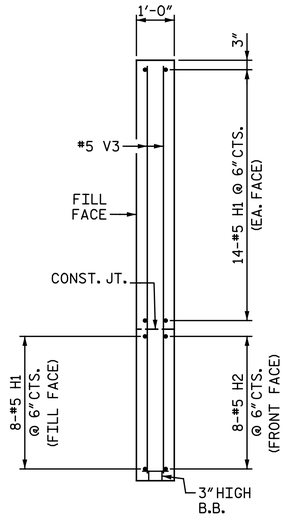
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



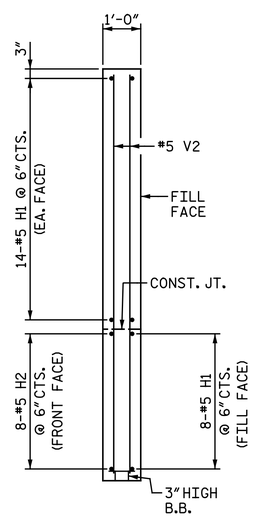
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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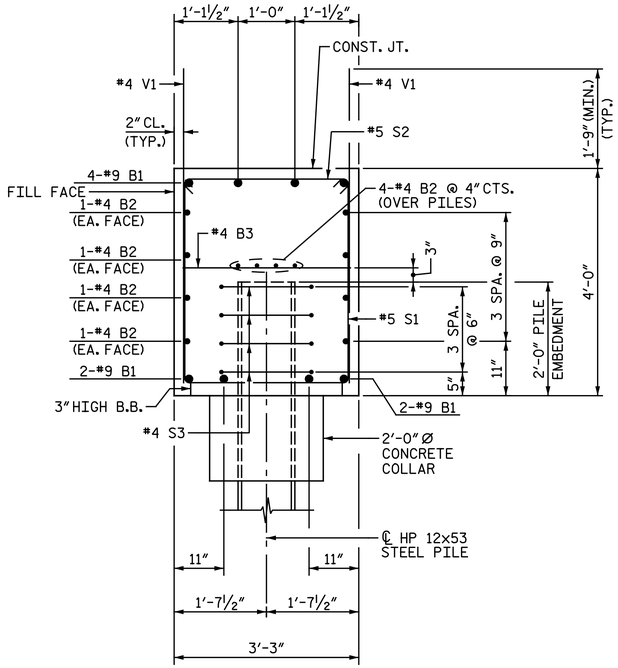
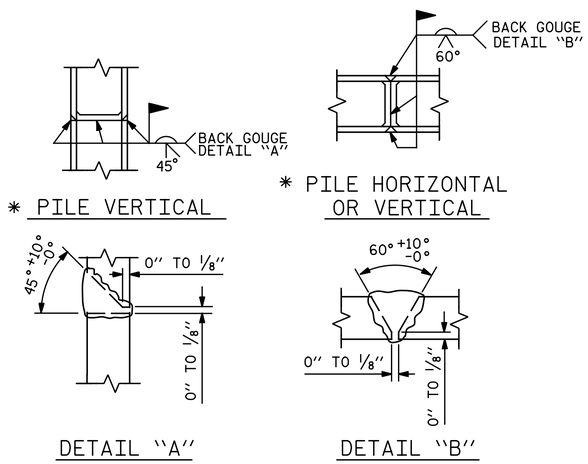
CHECKED BY : A. H. SHARPE DATE : 5-3-17



SECTION A-A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL

INTEGRAL END BENT 2

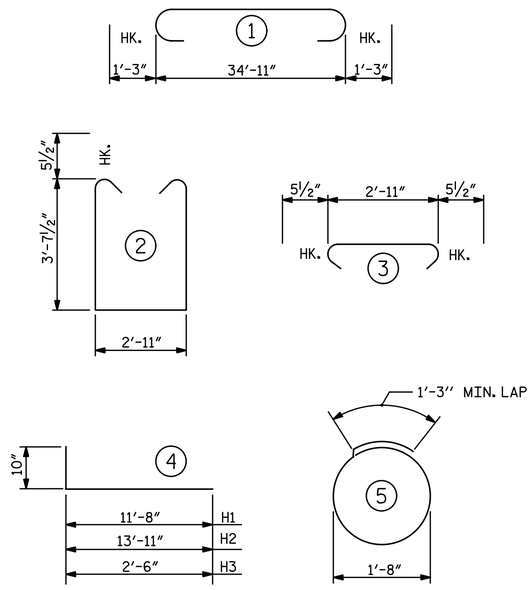
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37' - 5"	1018
B2	24	#4	STR.	18' - 8"	299
B3	9	#4	STR.	2' - 11"	18
H1	72	#5	4	12' - 6"	939
H2	16	#5	4	14' - 9"	246
H3	56	#5	4	3' - 4"	195
S1	63	#5	2	11' - 1"	728
S2	63	#5	3	3' - 10"	252
S3	24	#4	5	6' - 6"	104
V1	48	#4	STR.	5' - 6"	176
V2	32	#5	STR.	10' - 8"	356
V3	32	#5	STR.	10' - 5"	348
V4	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	4,698
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	21.4
POUR 2 -		
UPPER PART OF WINGS	C.Y.	7.3
TOTAL	C.Y.	28.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	6
HP 12x53 STEEL PILES NO. 6	L.F.	252
STEEL PILE POINTS	EA.	6
PILE REDRIVES	EA.	5

NOTES:

FOR TEMPORARY DRAINAGE AT END BENT DETAILS, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

LEFT LANE

DRAWN BY : D. A. LAMAY DATE : 3-24-17
CHECKED BY : A. H. SHARPE DATE : 5-3-17

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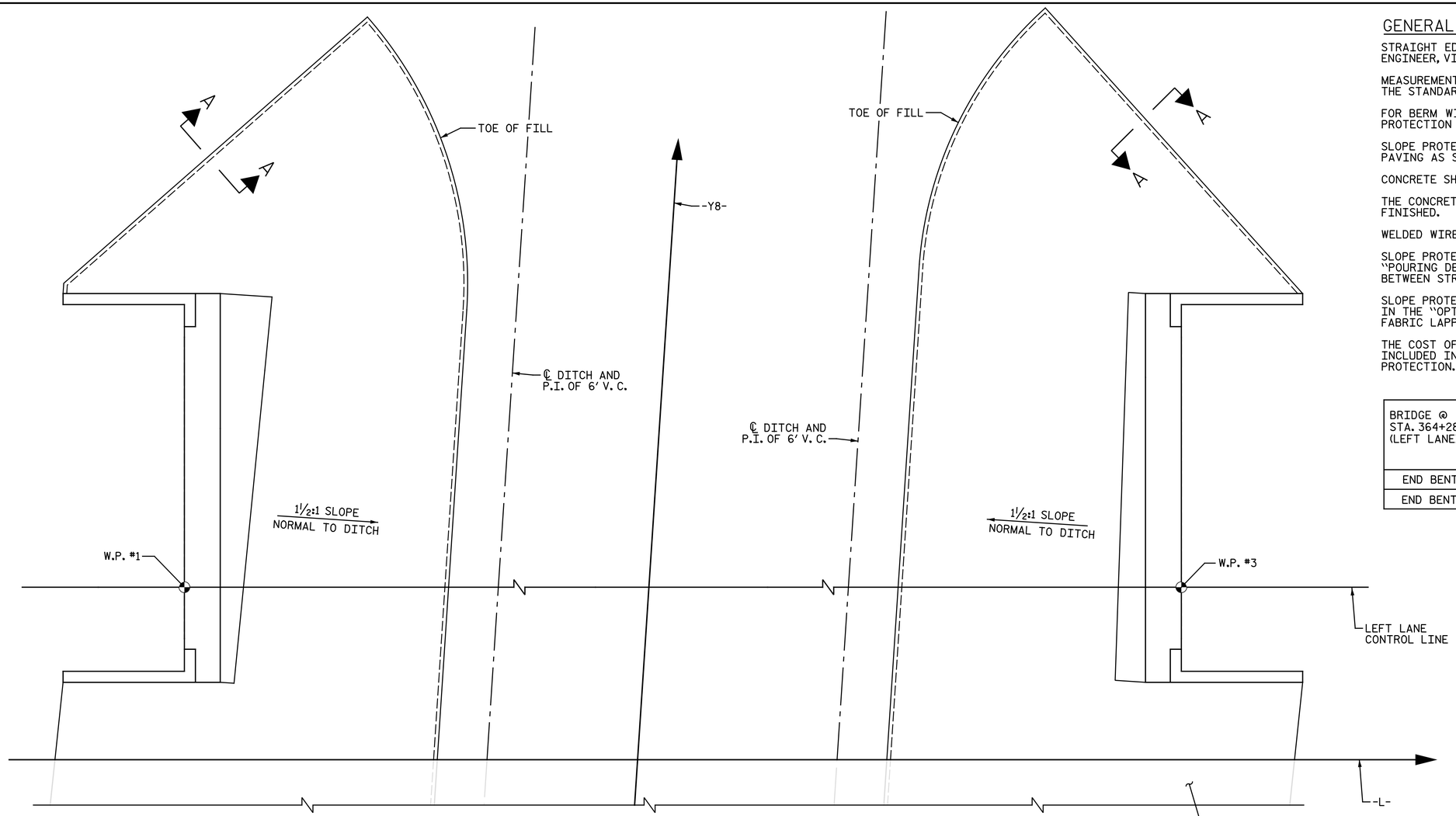


PLAN

GENERAL NOTES:

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.

MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

FOR BERM WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND ''SLOPE PROTECTION DETAILS'' SHEET 2 OF 2.

SLOPE PROTECTION SHALL CONSIST OF 4'' 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 6 X 6 - W1.4 X W1.4, 60'' WIDE.

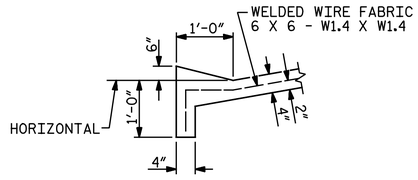
SLOPE PROTECTION SHALL BE POURED IN 5′ STRIPS AS SHOWN IN THE ''POURING DETAIL'' WITH 2′-0″ LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1′-6″ MAXIMUM SPACING.

SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4′ AND 5′ STRIPS AS SHOWN IN THE ''OPTIONAL POURING DETAIL'' WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6''.

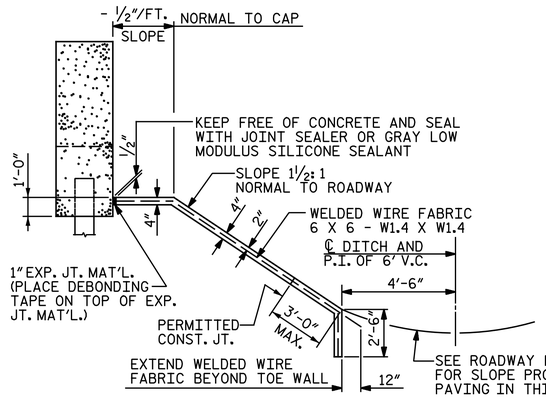
THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 364+28.98 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	290	522
END BENT 2	300	540

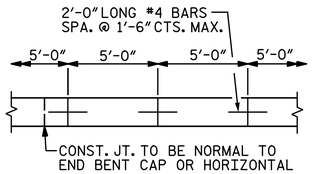
✳ QUANTITY SHOWN IS BASED ON 5′ POURS.



SECTION A-A

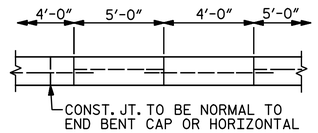


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



POUR A 4′-0'' STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

PROJECT NO. R-5703

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SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

ASSEMBLED BY : C. E. MAYHEW	DATE : 3-21-17
CHECKED BY : A. H. SHARPE	DATE : 5-10-17
DRAWN BY : ELR 5/92	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11 MAA/GM
	REV. 1/16 MAA/TMG

SLOPE PROTECTION DETAILS

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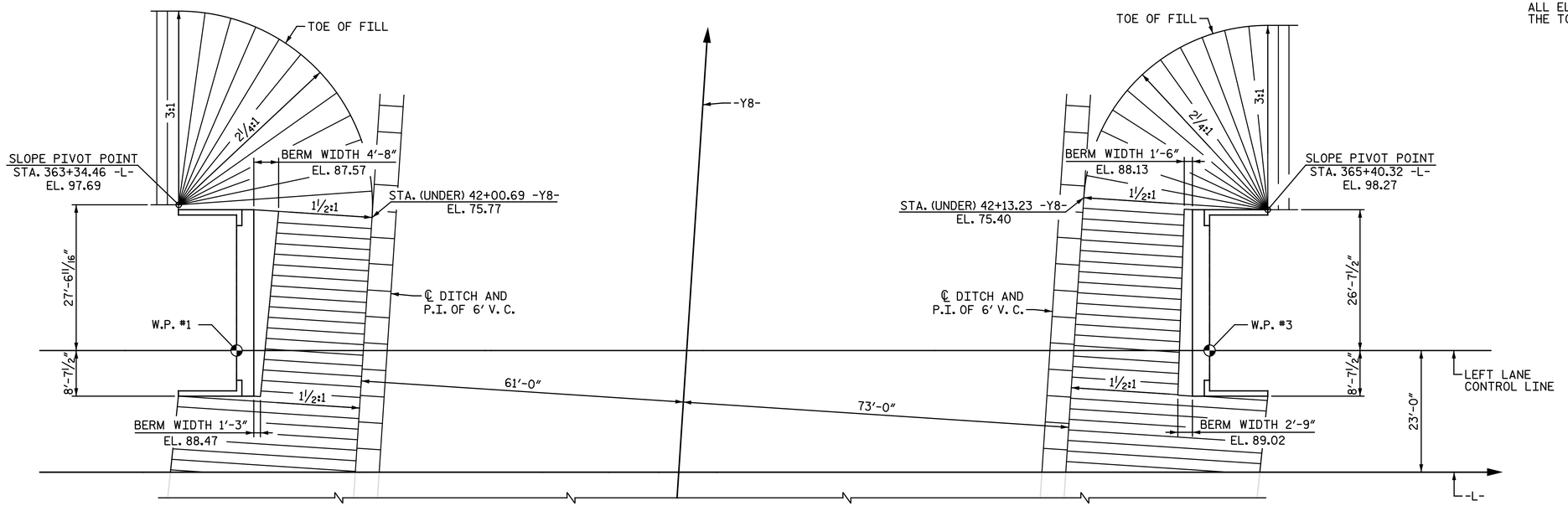
STD. NO. SP1

NOTE:

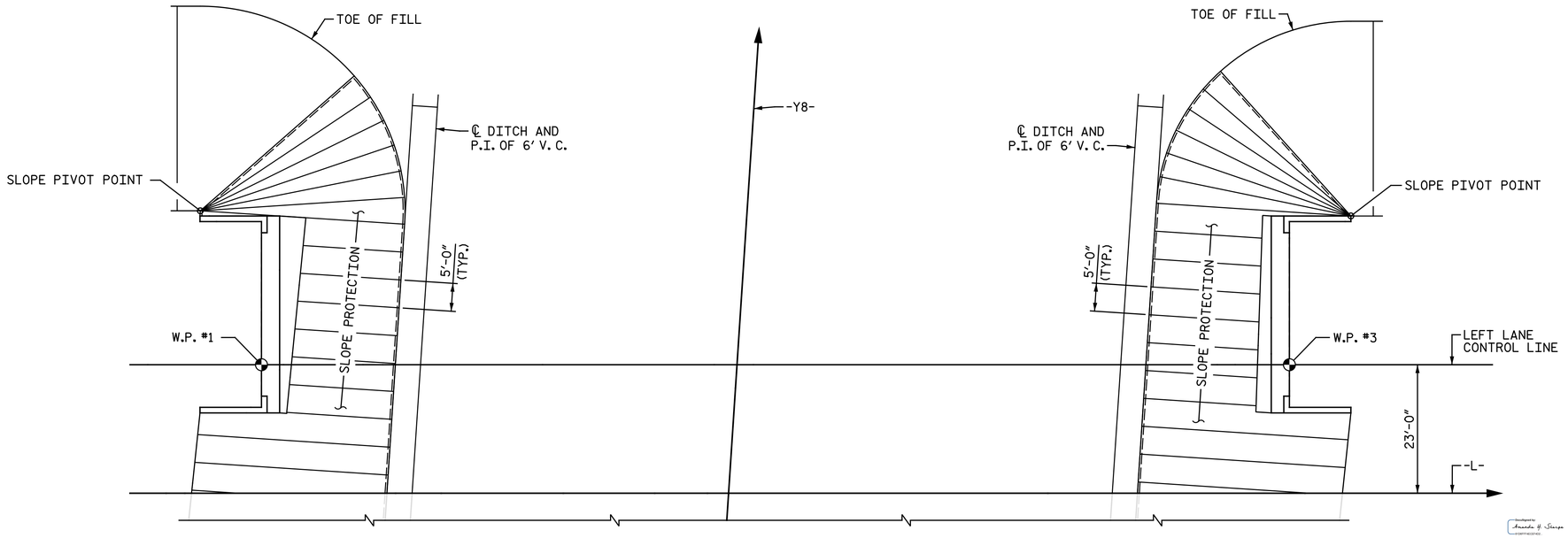
ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



END BENT 1

PLAN - GRADING

END BENT 2



END BENT 1

PLAN - CONCRETE PLACEMENT

(1½: 1 SLOPE)

END BENT 2

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

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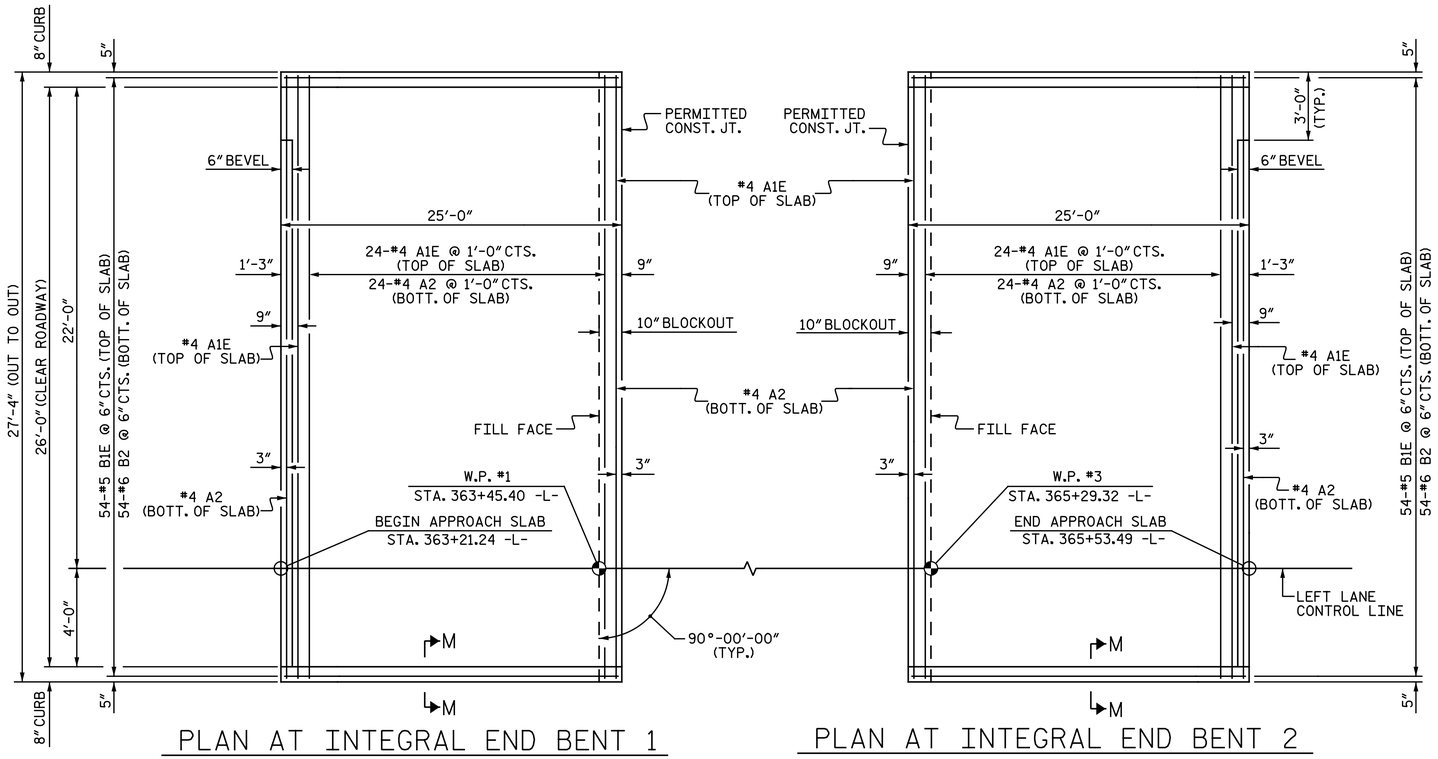
ASSEMBLED BY : C. E. MAYHEW	DATE : 4-28-17	
CHECKED BY : A. H. SHARPE	DATE : 5-10-17	
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM
	REV. 1/16	MAA/TMG

STD. NO. SP2



PLAN AT INTEGRAL END BENT 1

PLAN AT INTEGRAL END BENT 2

NOTES:

AT THE CONTRACTOR'S OPTION, THE APPROACH SLAB MAY BE CAST MONOLITHICALLY WITH THE INTEGRAL END BENT DIAPHRAGM AND THE END SECTION OF BRIDGE DECK. IF CAST WITH THE INTEGRAL DIAPHRAGM, THE LAYERS OF ROOFING FELT SHALL BE OMITTED. IF CAST SEPARATE FROM THE INTEGRAL DIAPHRAGM, 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 AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

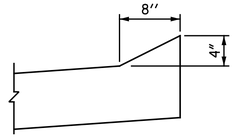
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4″Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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 OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.



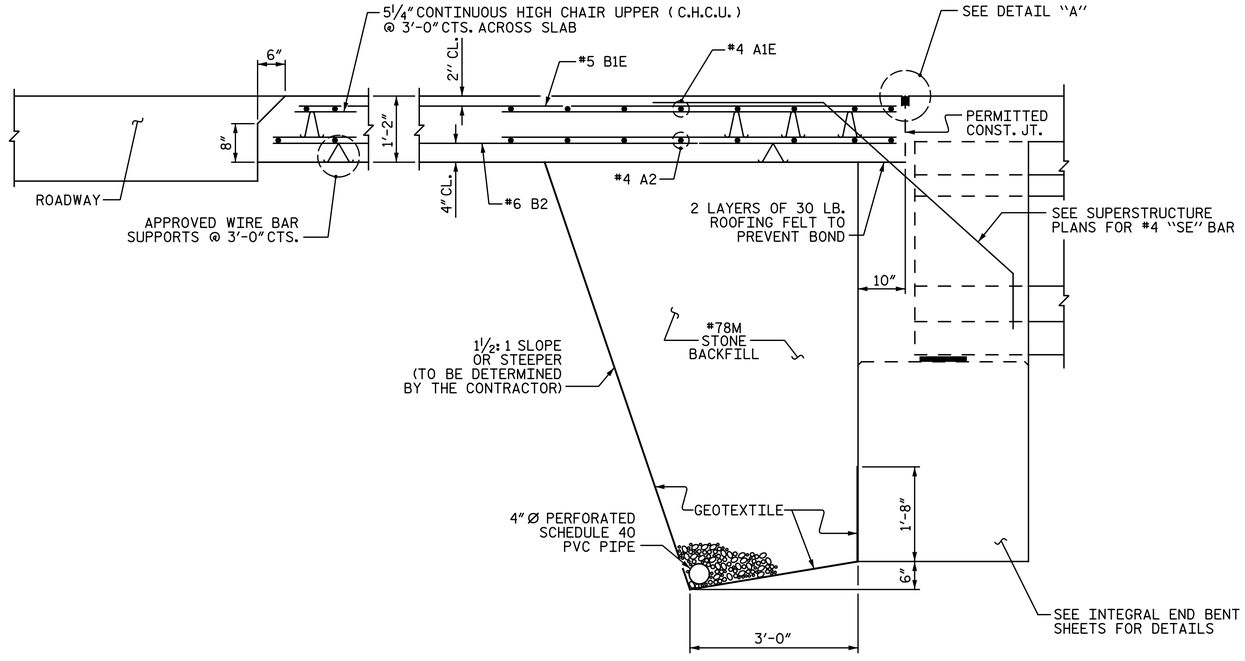
SECTION M-M

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

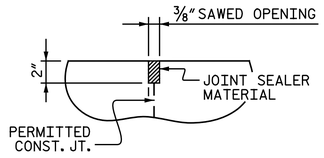
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	26	#4	STR.	27′ - 0″	469
A2	26	#4	STR.	27′ - 0″	469
B1E	54	#5	STR.	24′ - 2″	1,361
B2	54	#6	STR.	24′ - 8″	2,001
REINFORCING STEEL				LBS.	2,470
EPOXY COATED REINFORCING STEEL				LBS.	1,830
CLASS AA CONCRETE				C.Y.	29.6

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

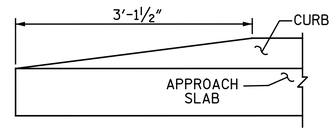
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	26	#4	STR.	27′ - 0″	469
A2	26	#4	STR.	27′ - 0″	469
B1E	54	#5	STR.	24′ - 2″	1,361
B2	54	#6	STR.	24′ - 8″	2,001
REINFORCING STEEL				LBS.	2,470
EPOXY COATED REINFORCING STEEL				LBS.	1,830
CLASS AA CONCRETE				C.Y.	29.6



SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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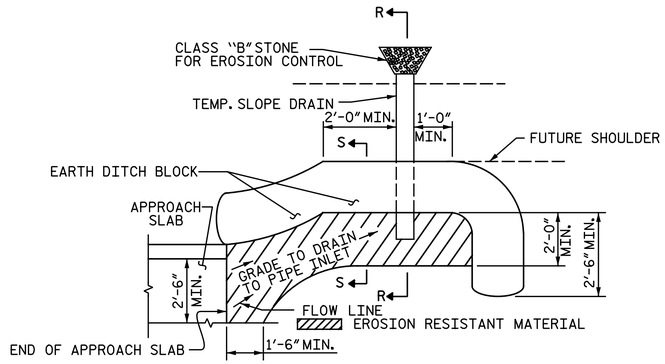
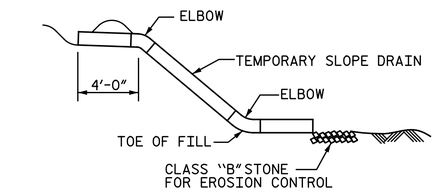
DRAWN BY : N. B. SPEAKS DATE : 4-10-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17

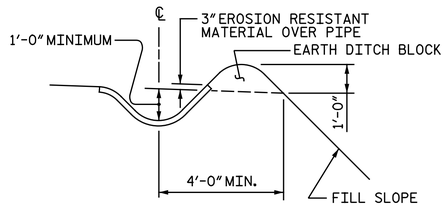


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



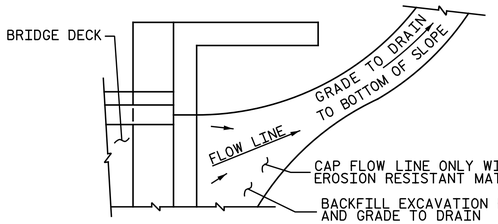
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe
8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-12-17
CHECKED BY : A. H. SHARPE	DATE : 5-10-17

DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

Michael Baker INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
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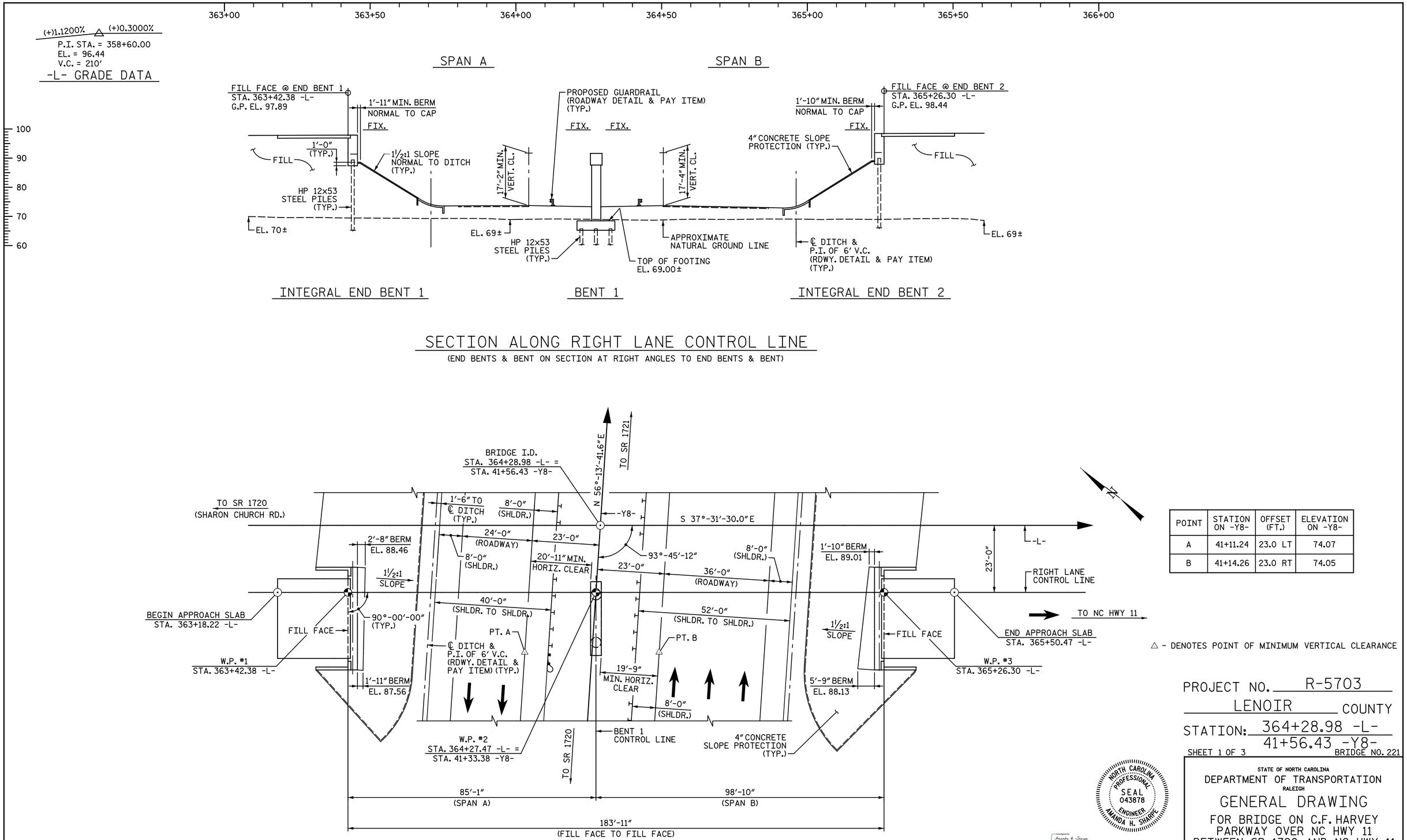
1			3			TOTAL SHEETS
2			4			29

STD. NO. BAS4



SECTION ALONG RIGHT LANE CONTROL LINE

(END BENTS & BENT ON SECTION AT RIGHT ANGLES TO END BENTS & BENT)

PLAN

(PILES & FOOTINGS NOT SHOWN IN PLAN VIEW FOR CLARITY)

POINT	STATION ON -Y8-	OFFSET (FT.)	ELEVATION ON -Y8-
A	41+11.24	23.0 LT	74.07
B	41+14.26	23.0 RT	74.05

△ - DENOTES POINT OF MINIMUM VERTICAL CLEARANCE

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-
41+56.43 -Y8-

SHEET 1 OF 3 BRIDGE NO. 221

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC HWY 11 BETWEEN SR 1720 AND NC HWY 11

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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REVISIONS						SHEET NO.
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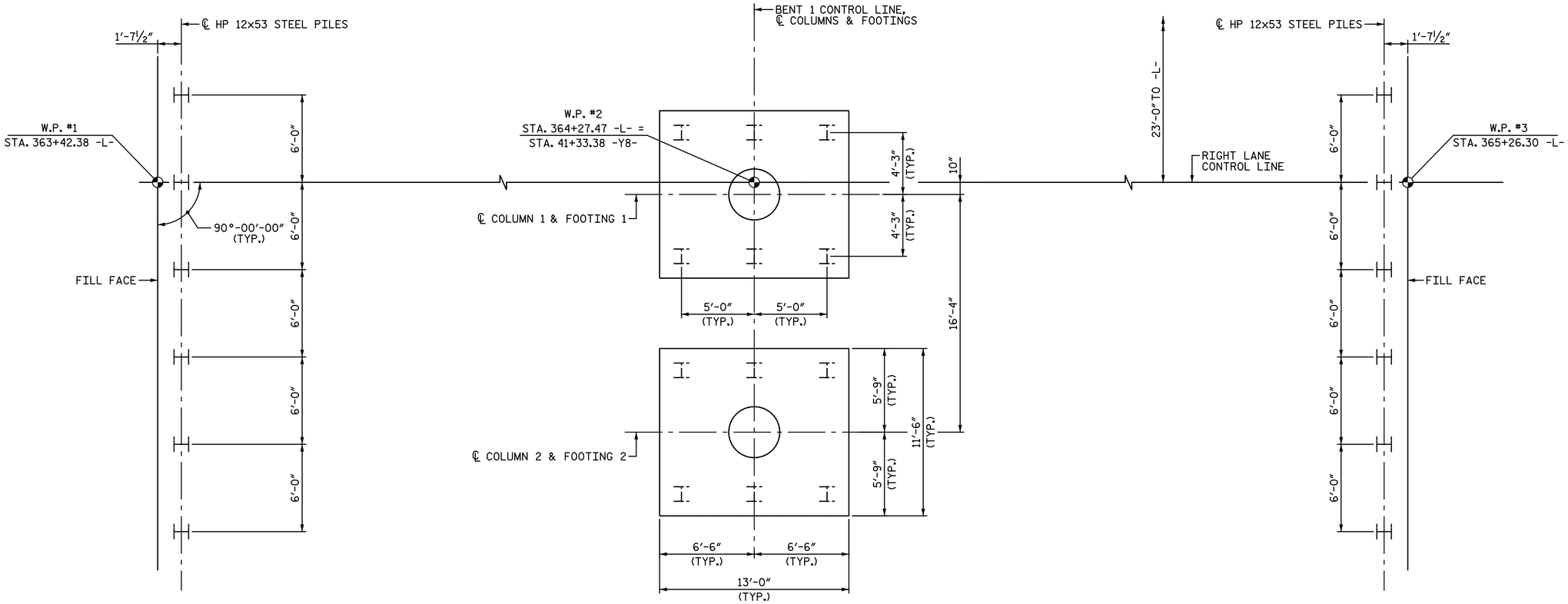
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : M. D. MAYHEW DATE : 4-12-17
CHECKED BY : A. H. SHARPE DATE : 5-8-17



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

ALL INTERIOR BENT PILES ARE HP 12x53 STEEL PILES.

ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1, BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40,000 TO 50,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1, BENT NO. 1, OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

DRAWN BY : M. D. MAYHEW DATE : 4-13-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 364+28.98 -L-
41+56.43 -Y8-
SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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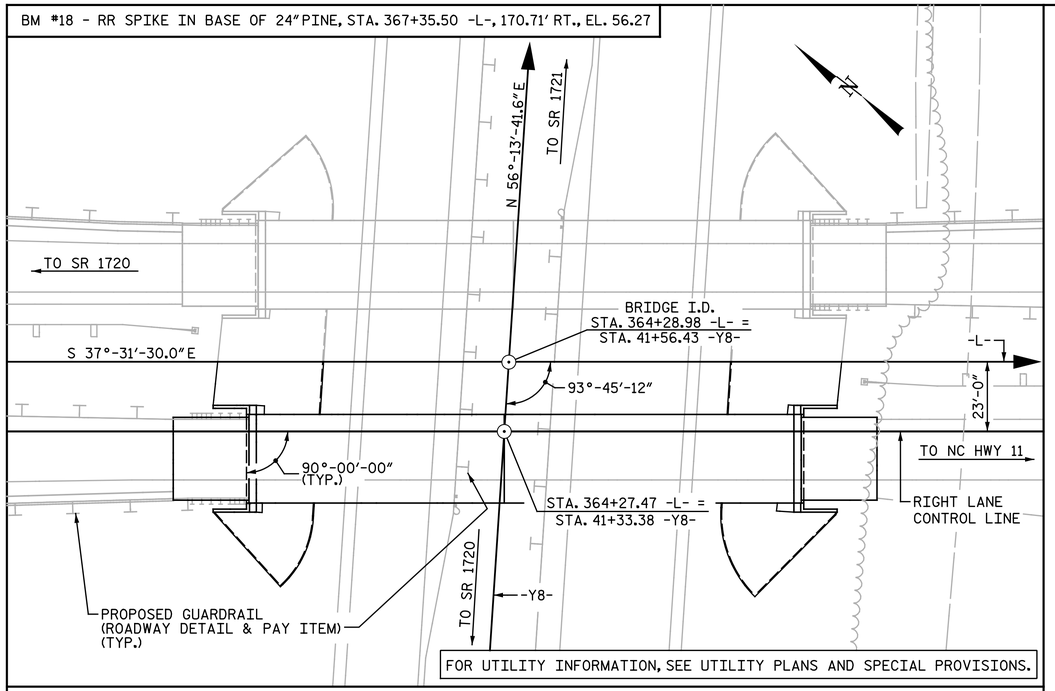
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC HWY 11 BETWEEN SR 1720 AND NC HWY 11

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-2
1			3			TOTAL SHEETS
2			4			29



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	FOUNDATION EXCAVATION FOR BENT 1	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			5,380	5,296					6	543.8						364.50		LUMP SUM
END BENT 1					28.7		4,698				6	6	312	6	5		280	
BENT 1	LUMP SUM				71.2		9,230	1002			12	12	249	12	6			
END BENT 2					28.7		4,698				6	6	252	6	5		310	
TOTAL	LUMP SUM	1	5,380	5,296	128.6	LUMP SUM	18,626	1002	6	543.8	24	24	813	24	16	364.50	590	LUMP SUM

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-
41+56.43 -Y8-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe
9/13/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC HWY 11 BETWEEN SR 1720 AND NC HWY 11

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-3
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : M. D. MAYHEW DATE : 9-11-17
CHECKED BY : A. H. SHARPE DATE : 9-12-17

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	1.02	--	1.75	0.90	1.25	A	ER	41.22	1.05	1.17	B	I	87.00	1.00	0.90	1.02	A	ER	41.22	1,2
		HL-93 (OPERATING)	N/A		1.54	--	1.35	0.90	1.62	A	ER	41.22	1.05	1.54	B	I	9.00	N/A	--	--	--	--	--	1,2
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.37	49.32	1.75	0.90	1.67	A	ER	41.22	1.05	1.58	B	I	87.00	1.00	0.90	1.37	A	ER	41.22	1,2
		HS-20 (OPERATING)	36.000		2.08	74.88	1.35	0.90	2.17	A	ER	41.22	1.05	2.08	B	I	9.00	N/A	--	--	--	--	--	1,2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.15	42.53	1.40	0.90	4.82	A	ER	41.22	1.05	5.07	B	I	87.00	1.00	0.90	3.15	A	ER	41.22	1,2
		SNGARBS2	20.000		2.32	46.40	1.40	0.90	3.55	A	ER	41.22	1.05	3.52	B	I	87.00	1.00	0.90	2.32	A	ER	41.22	1,2
		SNAGRIS2	22.000		2.18	47.96	1.40	0.90	3.34	A	ER	41.22	1.05	3.24	B	I	87.00	1.00	0.90	2.18	A	ER	41.22	1,2
		SNCOTTS3	27.250		1.57	42.78	1.40	0.90	2.40	A	ER	41.22	1.05	2.47	B	I	87.00	1.00	0.90	1.57	A	ER	41.22	1,2
		SNAGGRS4	34.925		1.30	45.40	1.40	0.90	1.99	A	ER	41.22	1.05	2.00	B	I	87.00	1.00	0.90	1.30	A	ER	41.22	1,2
		SNS5A	35.550		1.27	45.15	1.40	0.90	1.94	A	ER	41.22	1.05	2.01	B	I	9.00	1.00	0.90	1.27	A	ER	41.22	1,2
		SNS6A	39.950		1.16	46.34	1.40	0.90	1.78	A	ER	41.22	1.05	1.81	B	I	87.00	1.00	0.90	1.16	A	ER	41.22	1,2
		SNS7B	42.000		1.11	46.62	1.40	0.90	1.69	A	ER	41.22	1.05	1.76	B	I	9.00	1.00	0.90	1.11	A	ER	41.22	1,2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.41	46.53	1.40	0.90	2.16	A	ER	41.22	1.05	2.19	B	I	87.00	1.00	0.90	1.41	A	ER	41.22	1,2
		TNT4A	33.075		1.42	46.97	1.40	0.90	2.17	A	ER	41.22	1.05	2.14	B	I	9.00	1.00	0.90	1.42	A	ER	41.22	1,2
		TNT6A	41.600		1.16	48.26	1.40	0.90	1.77	A	ER	41.22	1.05	1.85	B	I	87.00	1.00	0.90	1.16	A	ER	41.22	1,2
		TNT7A	42.000		1.16	48.72	1.40	0.90	1.77	A	ER	41.22	1.05	1.82	B	I	9.00	1.00	0.90	1.16	A	ER	41.22	1,2
		TNT7B	42.000		1.19	49.98	1.40	0.90	1.83	A	ER	41.22	1.05	1.73	B	I	9.00	1.00	0.90	1.19	A	ER	41.22	1,2
		TNAGRIT4	43.000		1.14	49.02	1.40	0.90	1.74	A	ER	41.22	1.05	1.67	B	I	87.00	1.00	0.90	1.14	A	ER	41.22	1,2
		TNAGT5A	45.000		1.08	48.60	1.40	0.90	1.65	A	ER	41.22	1.05	1.64	B	I	9.00	1.00	0.90	1.08	A	ER	41.22	1,2
		TNAGT5B	45.000	⟨3⟩	1.07	48.15	1.40	0.90	1.63	A	ER	41.22	1.05	1.59	B	I	9.00	1.00	0.90	1.07	A	ER	41.22	1,2

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

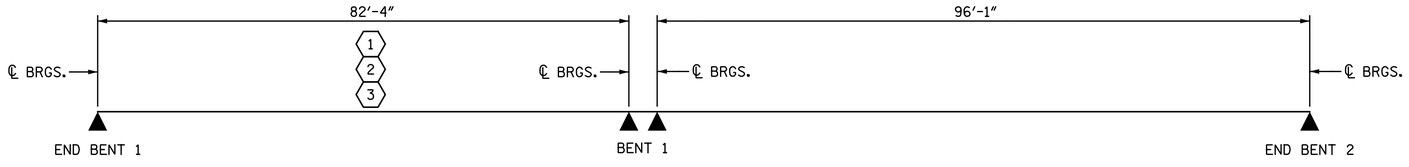
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-
41+56.43 -Y8-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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Cary, North Carolina 27518
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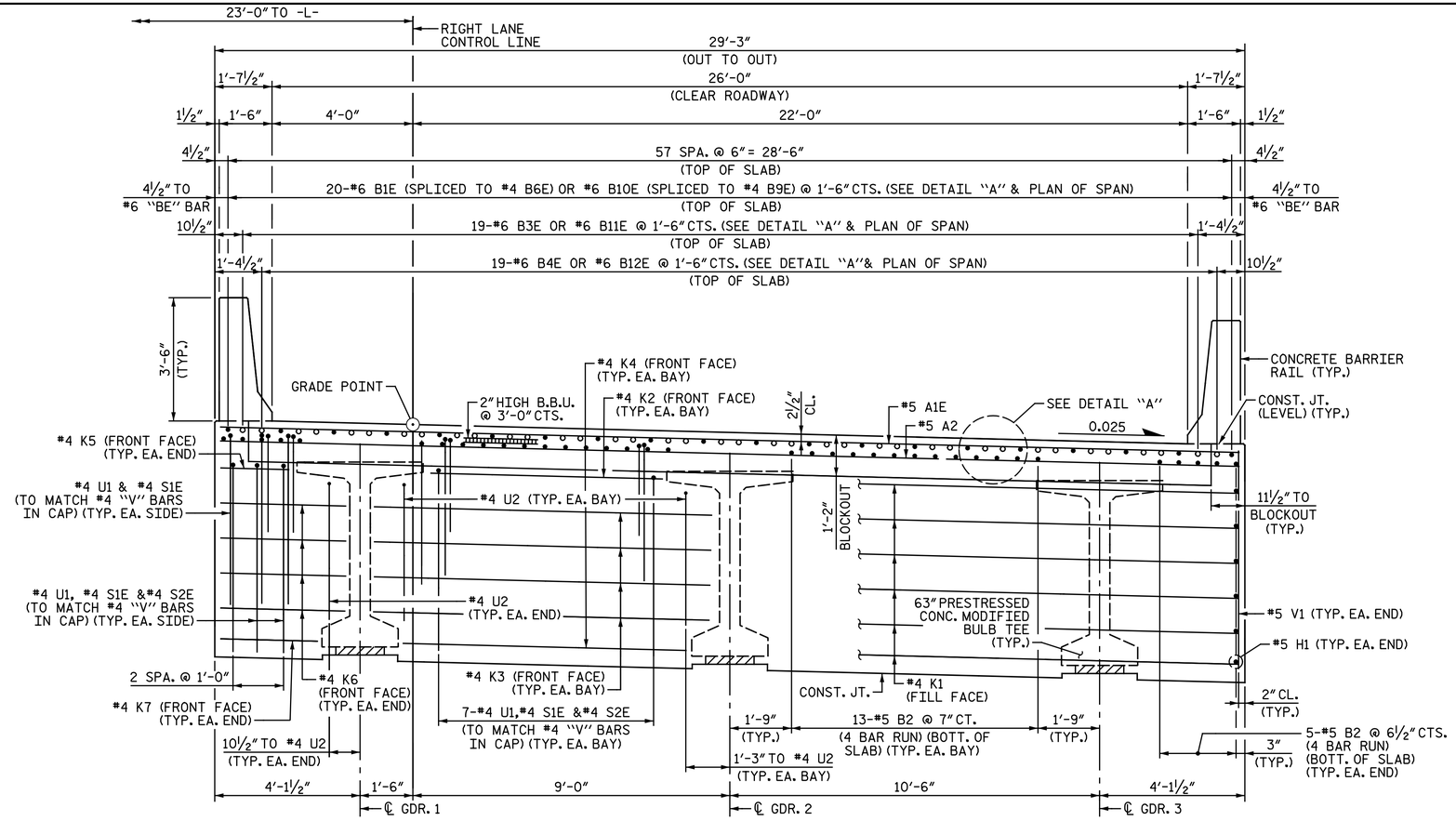
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-4
1			3			TOTAL SHEETS
2			4			29

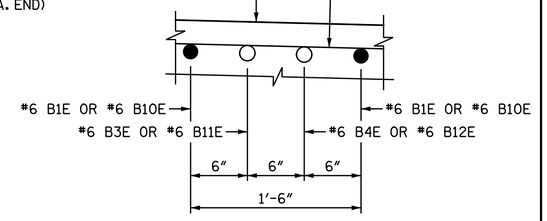
STD. NO. LRFR1

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-13-17
CHECKED BY : A. H. SHARPE	DATE : 5-3-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

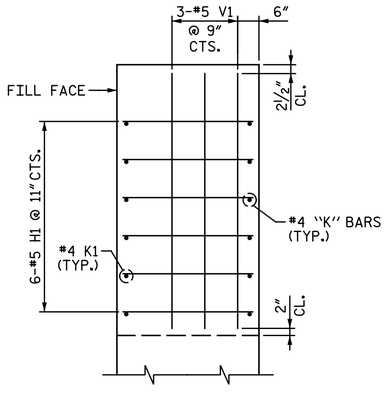


TYPICAL SECTION AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

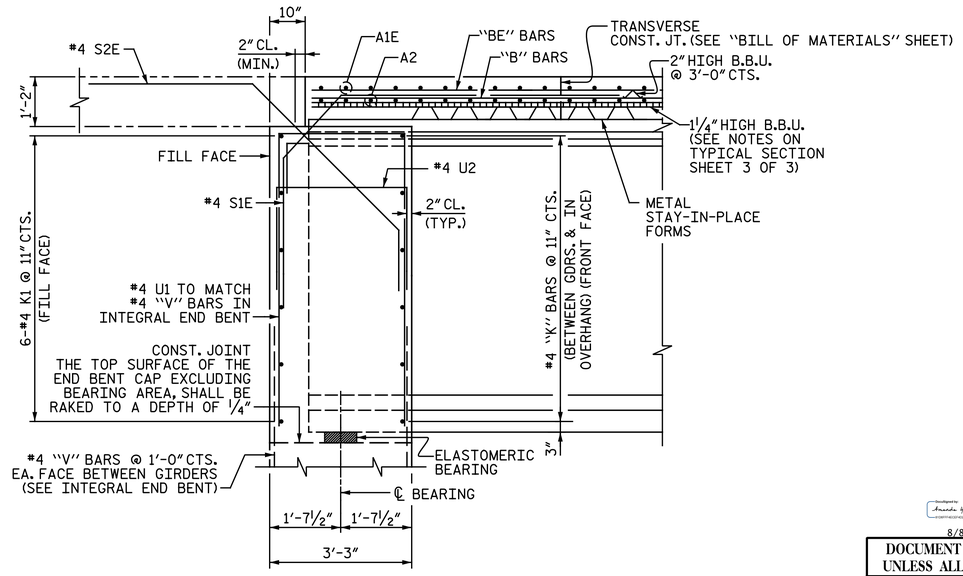


DETAIL ″A″



END OF END BENT DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



END OF GIRDER DETAIL AT INTEGRAL END BENT

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : M. D. MAYHEW DATE : 5-3-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17

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Cary, North Carolina 27518
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SI4-5
1			3			TOTAL SHEETS
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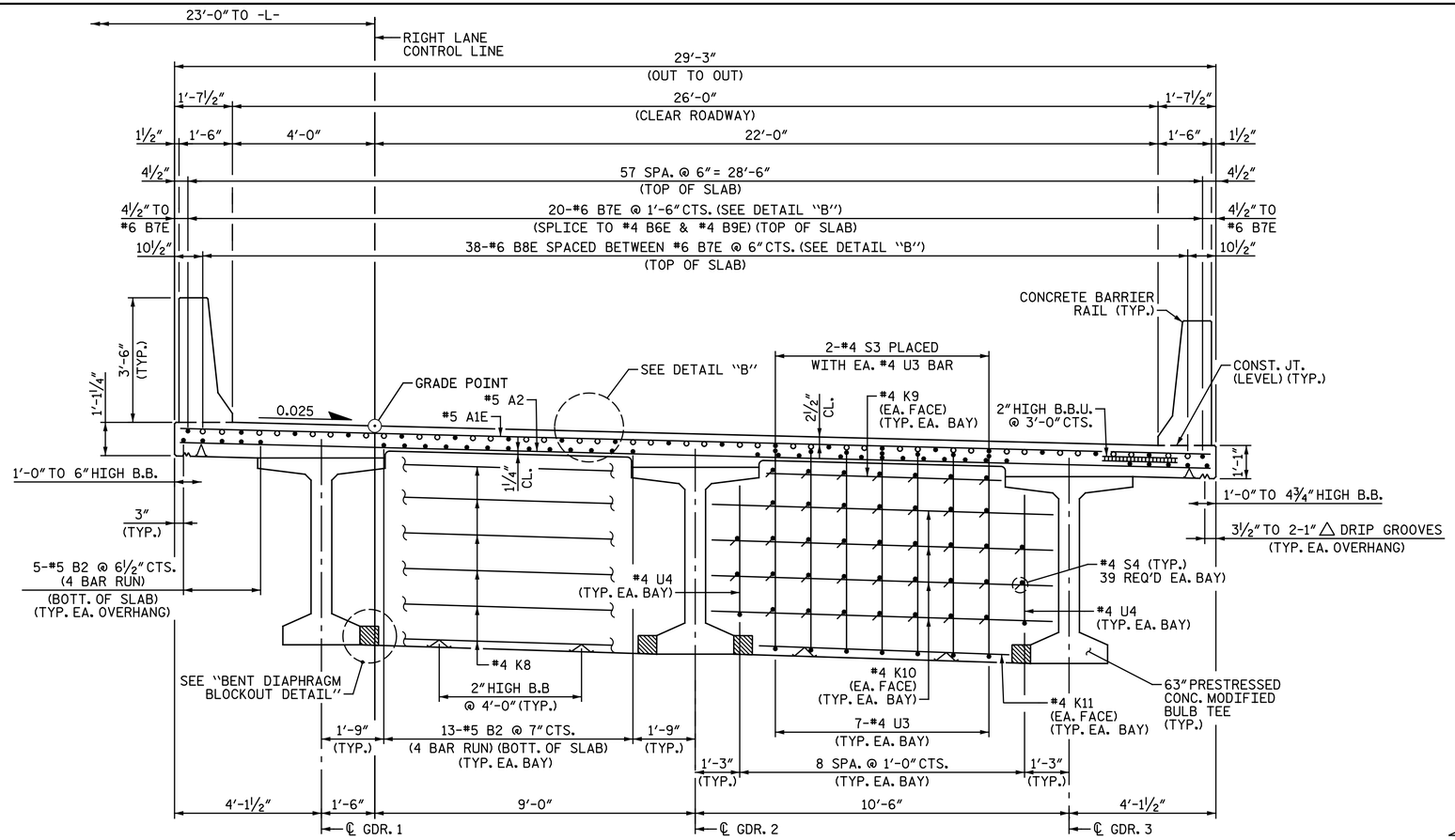
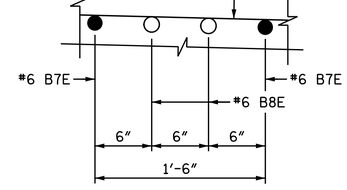
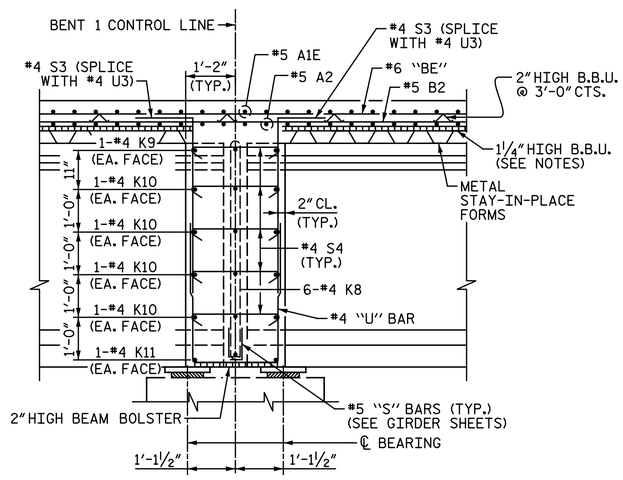


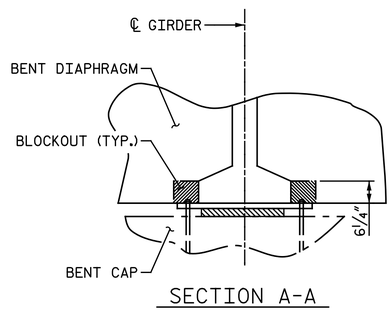
TYPICAL SECTION AT BENT



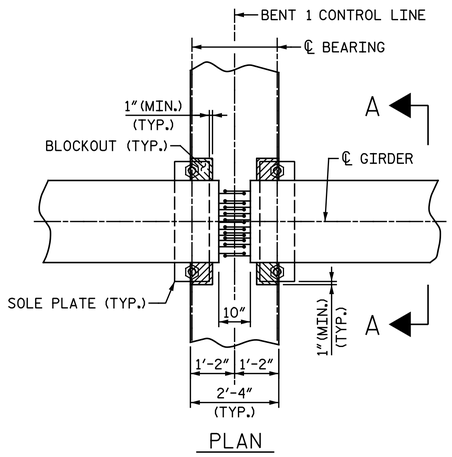
DETAIL "B"



SECTION THRU BENT DIAPHRAGM



SECTION A-A



PLAN

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

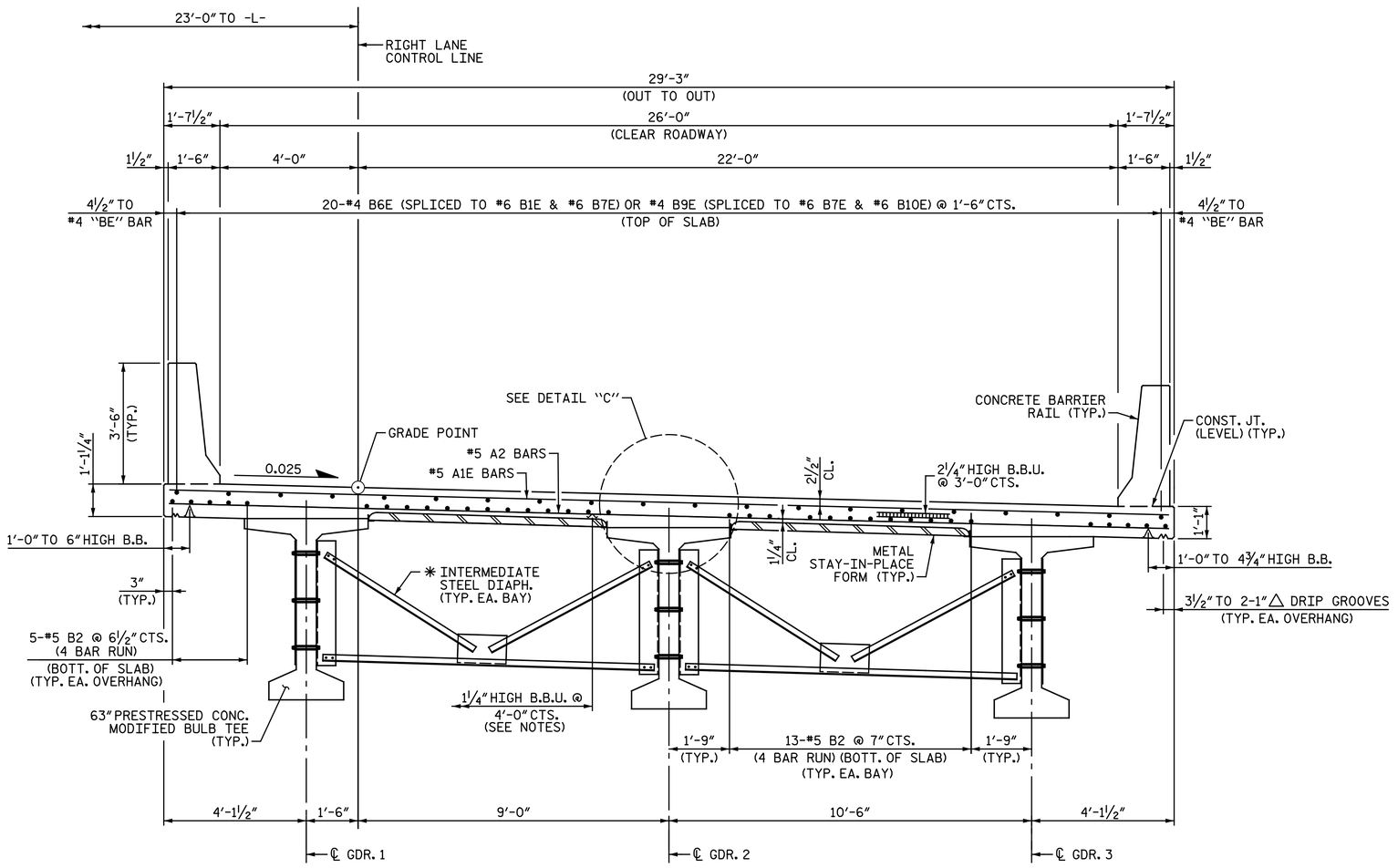
8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : M. D. MAYHEW DATE : 5-4-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-6
1			3			TOTAL SHEETS
2			4			29



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:

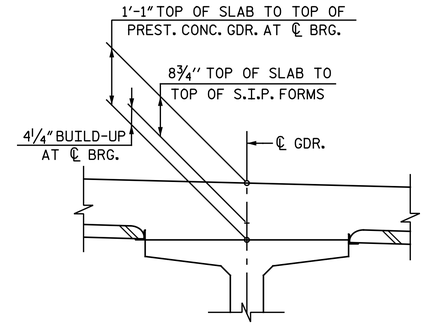
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF ″A″ BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF ″A″ BARS A CLEAR DISTANCE OF 2½″ ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.

FOR CONCRETE BARRIER RAIL DETAILS, SEE ″CONCRETE BARRIER RAIL″ SHEET.

PREVIOUSLY CAST CONCRETE IN A SPAN UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE ″INTERMEDIATE STEEL DIAPHRAGMS FOR 63″ MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS″ SHEET.



DETAIL ″C″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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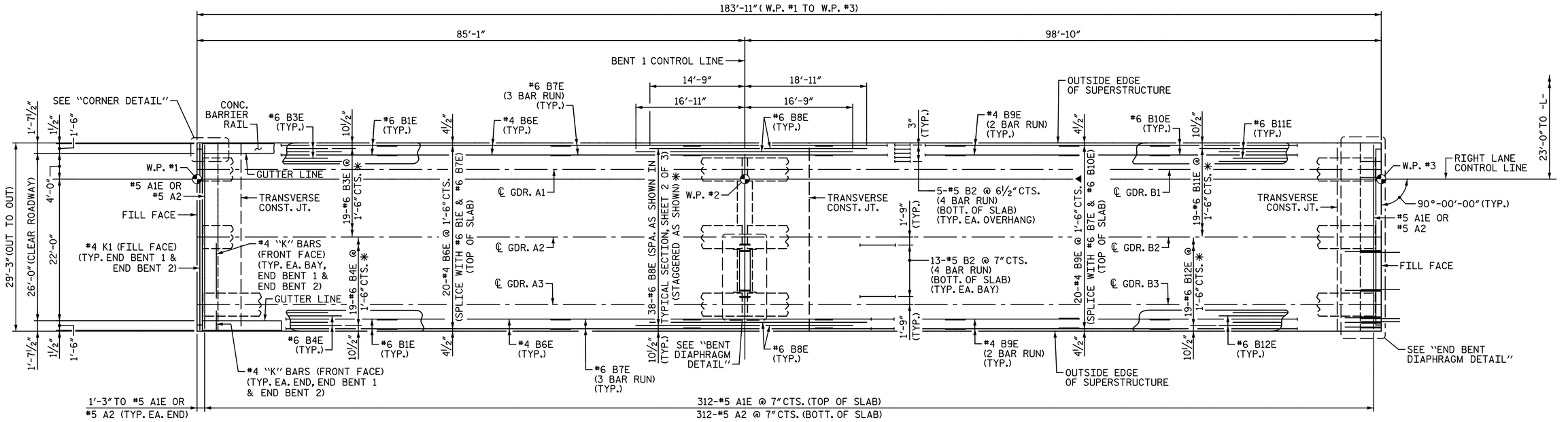
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : M. D. MAYHEW DATE : 5-4-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17

NOTES:

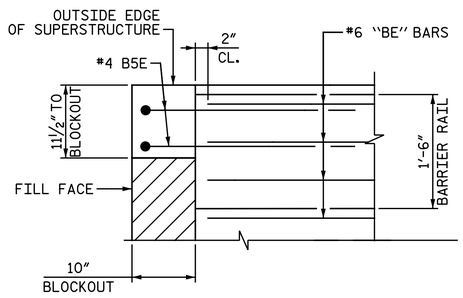
FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.



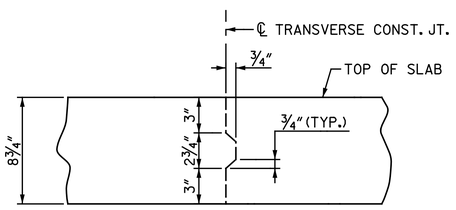
PLAN OF SPAN

✳ TOP OF SLAB
▲ 2 BAR RUN



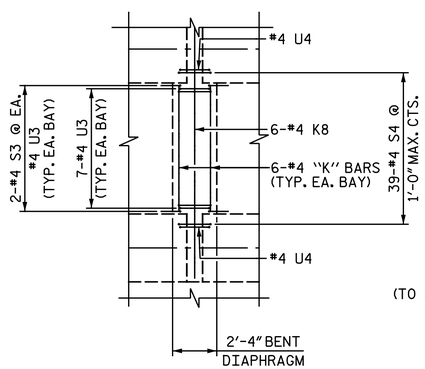
CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.

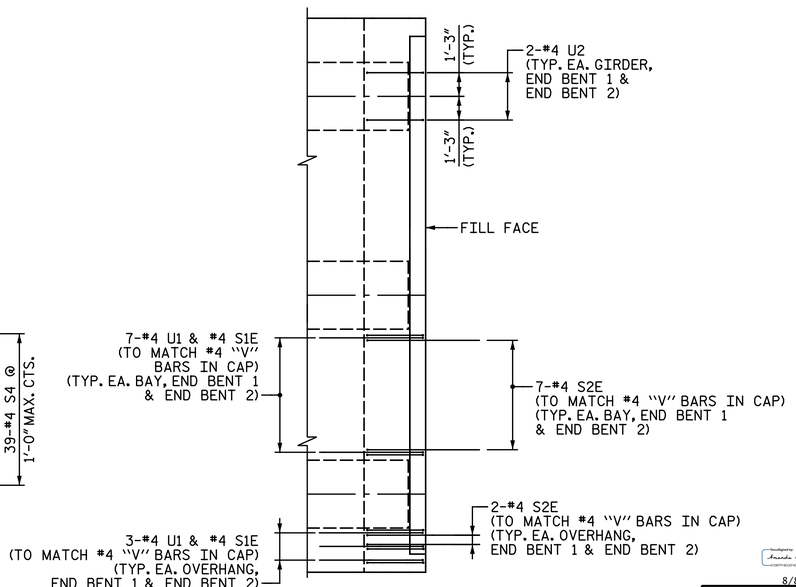


TRANSVERSE CONST. JT. DETAIL

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



BENT DIAPHRAGM DETAIL



END BENT DIAPHRAGM DETAIL

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-0"	2'-7"

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPAN

RIGHT LANE

REVISIONS						SHEET NO.
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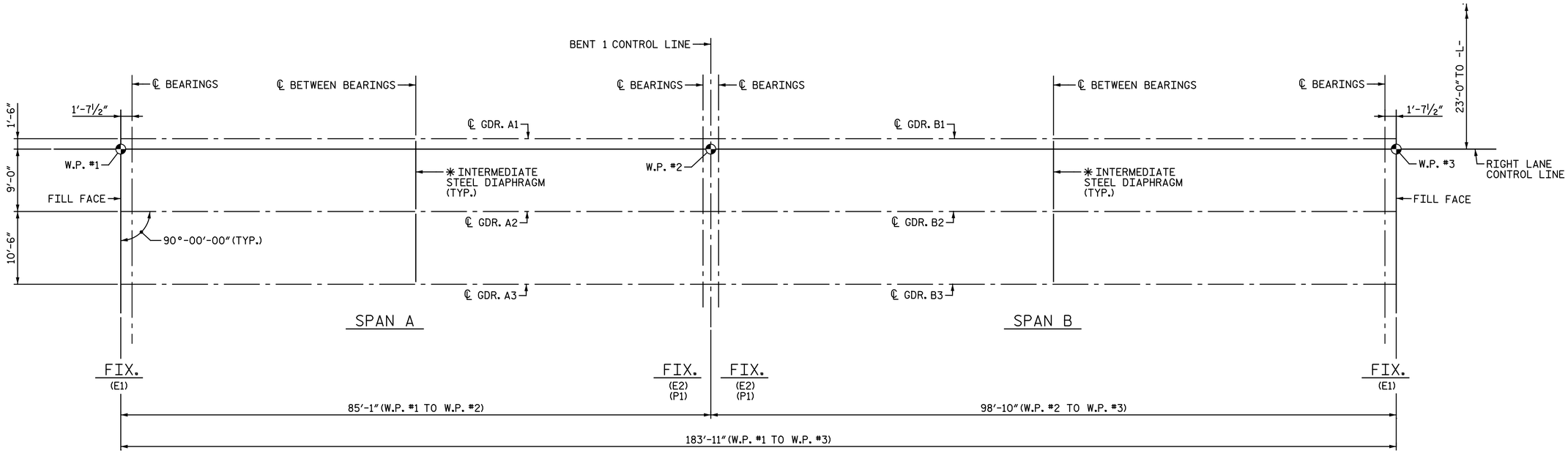
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : M. D. MAYHEW DATE : 5-2-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17



GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER LAYOUT

RIGHT LANE

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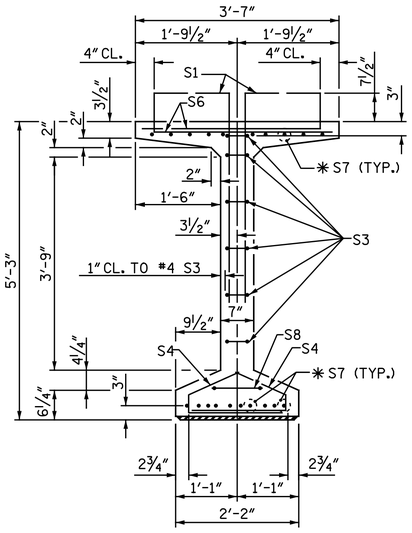
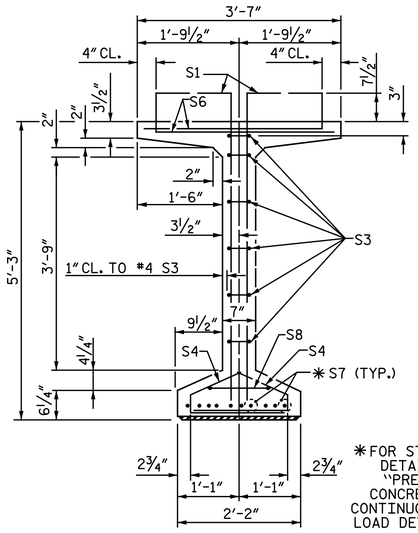
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-9
1			3			TOTAL SHEETS
2			4			29

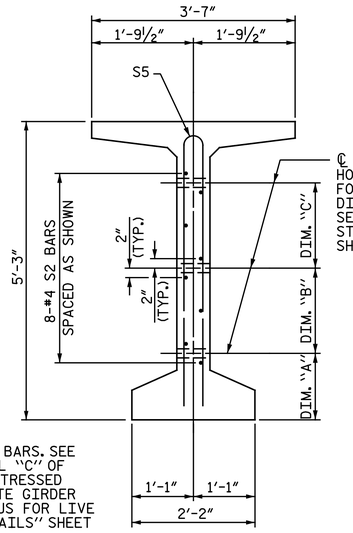
DRAWN BY : D.A.L. / M.D.M. DATE : 4-20-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17



SECTION A-A



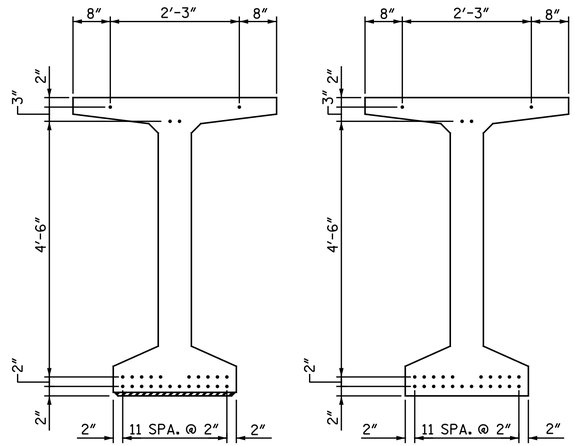
SECTION B-B



SECTION C-C

✱FOR S7 BARS. SEE DETAIL "C" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET

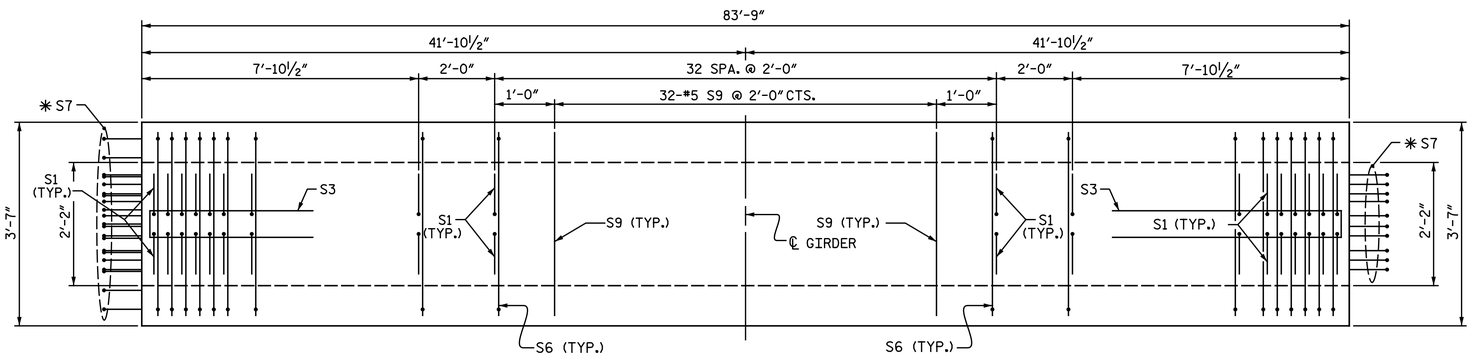
(S1, S6 AND S9 BARS NOT SHOWN)



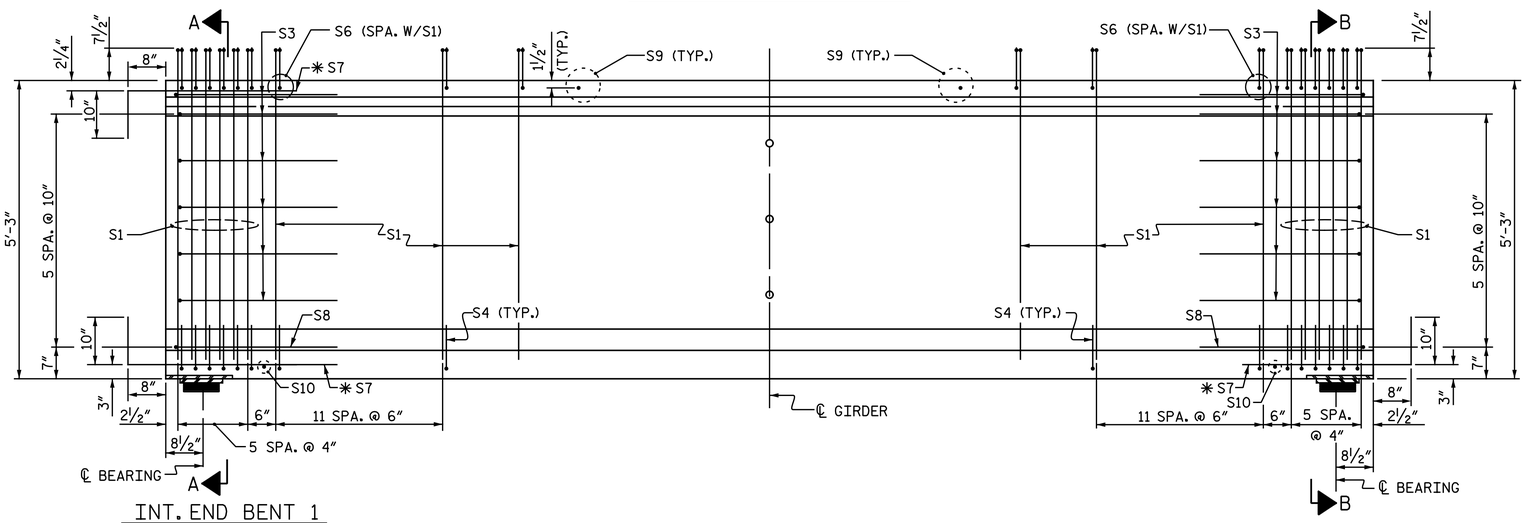
AT END OF GIRDER AT ℄ OF GIRDER

0.6"Ø LOW RELAXATION STRAND LAYOUT

(ALL STRANDS FULLY BONDED)



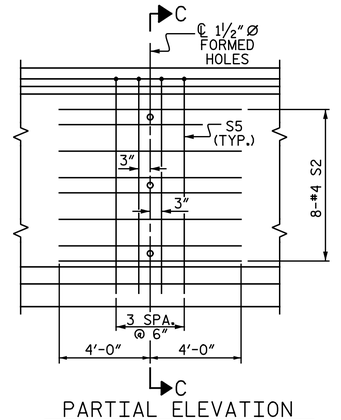
PLAN OF GIRDER



INT. END BENT 1

FIX

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 3

0.6"Ø L. R. GRADE 270 STRANDS

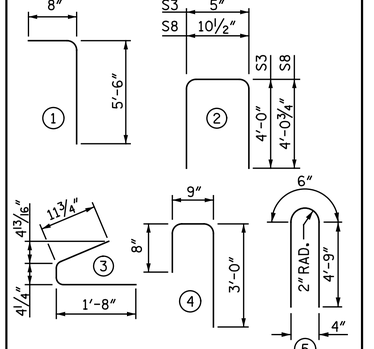
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	138	#5	1	6'-2"	888
S2	8	#4	STR	8'-0"	43
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	4	#5	5	10'-0"	42
S6	138	#5	4	4'-5"	636
✱S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	32	#5	STR	3'-3"	108
S10	2	#3	STR	1'-10"	1

✱NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
	2,063	16.6	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
3	83.8	251.3

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-12-17		
CHECKED BY : A. H. SHARPE	DATE : 5-3-17		
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM	
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM	
	REV. 1/15	MAA/TMG	

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
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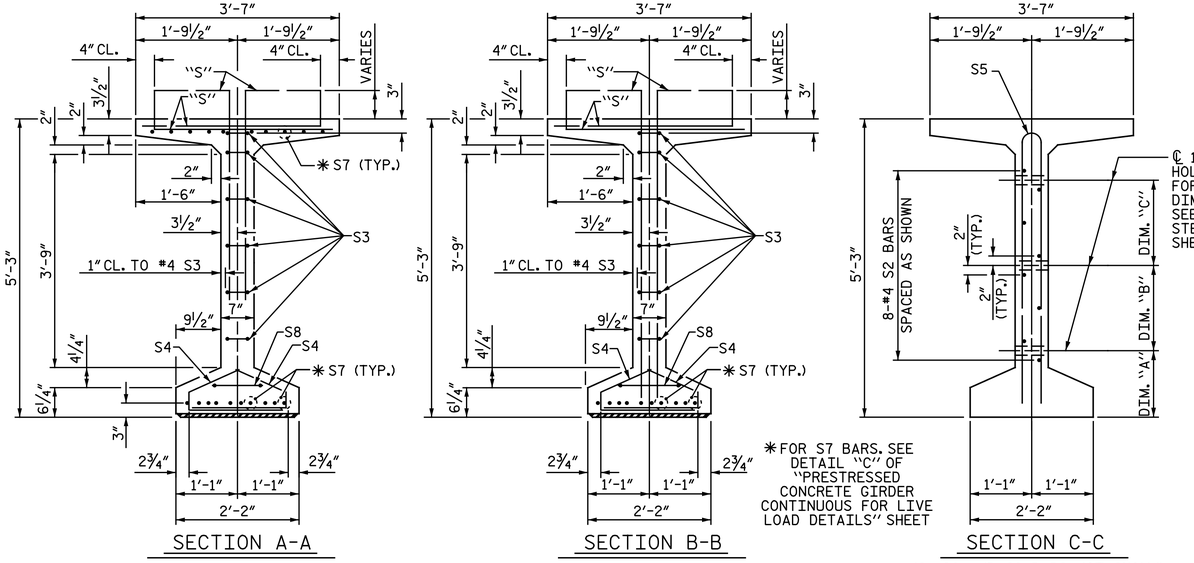
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN A
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-10
1			3			TOTAL SHEETS
2			4			29

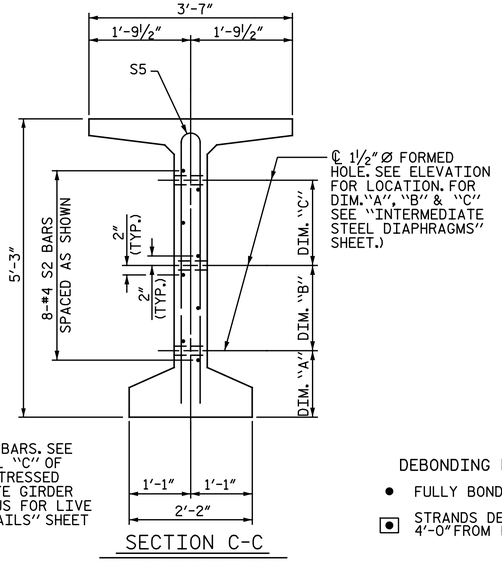
STD. NO. PCG7



SECTION A-A

SECTION B-B

✱FOR S7 BARS, SEE DETAIL "C" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET

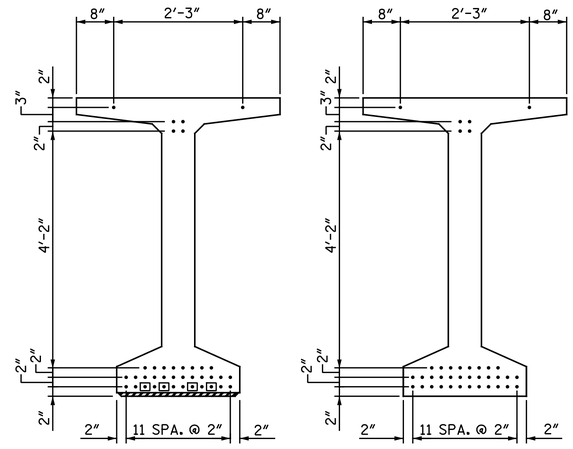


SECTION C-C

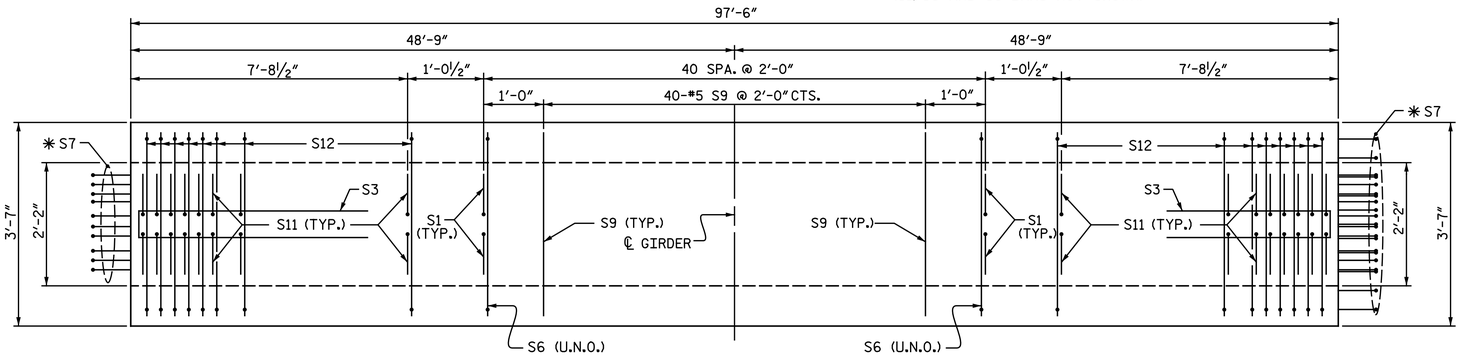
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

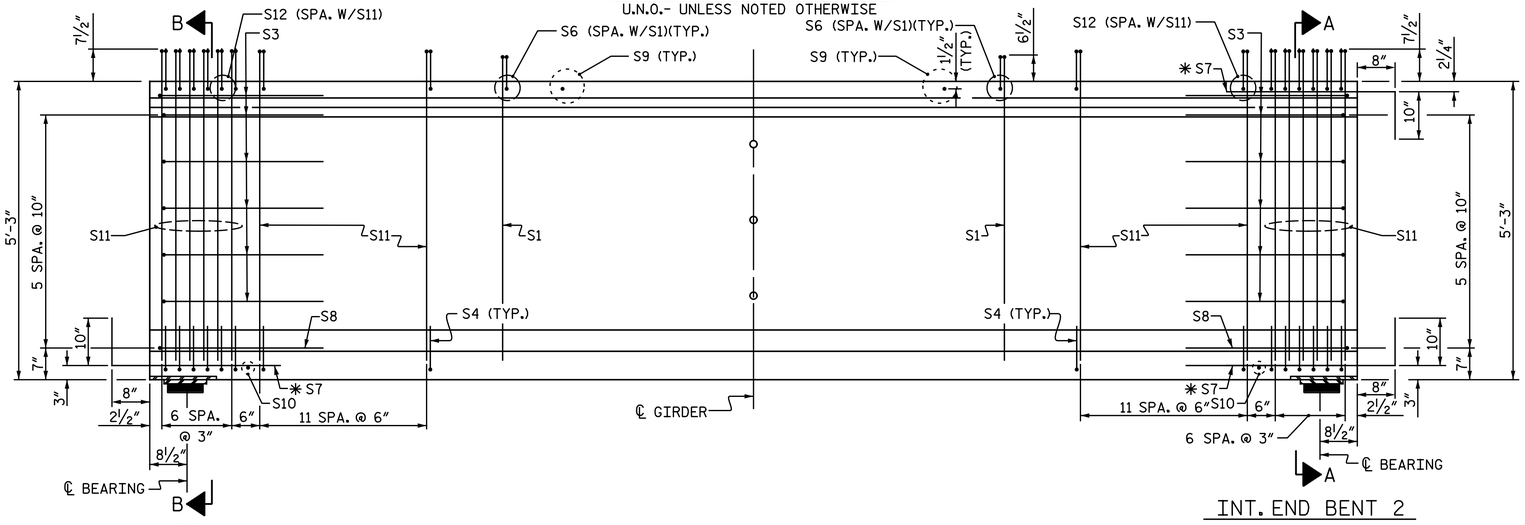


0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

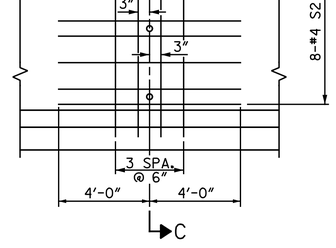
U.N.O.- UNLESS NOTED OTHERWISE



FIX

INT. END BENT 2

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 3

0.6" Ø L. R. GRADE 270 STRANDS

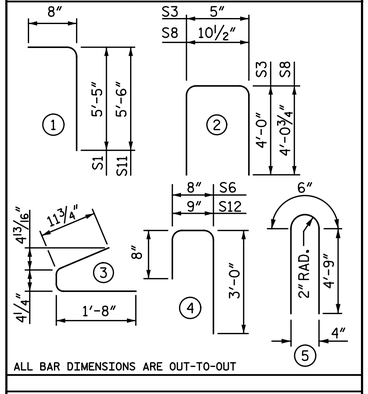
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#5	1	6'-1"	520
S2	8	#4	STR	8'-0"	43
S3	12	#4	2	8'-5"	67
S4	76	#4	3	3'-0"	152
S5	4	#5	5	10'-0"	42
S6	82	#5	4	4'-4"	371
✱S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	40	#5	STR	3'-3"	136
S10	2	#3	STR	1'-10"	1
S11	76	#5	1	6'-2"	489
S12	76	#5	4	4'-5"	350

✱NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
	2,305	19.3	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
3	97.5	292.5

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN B
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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NO.	BY:	DATE:	NO.	BY:	DATE:	S14-11
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : N. B. SPEAKS		DATE : 4-12-17
CHECKED BY : A. H. SHARPE		DATE : 5-3-17
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG7

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6″Ø LOW RELAXATION	GIRDERS 1 & 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.019	0.038	0.052	0.061	0.065	0.061	0.052	0.038	0.019	0.000
FINAL CAMBER ↑	0″	3/16″	3/8″	1/2″	9/16″	5/8″	9/16″	1/2″	3/8″	3/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 2										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.037	0.070	0.096	0.113	0.119	0.113	0.096	0.070	0.037	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.020	0.039	0.054	0.064	0.067	0.064	0.054	0.039	0.020	0.000
FINAL CAMBER ↑	0″	3/16″	3/8″	1/2″	9/16″	9/16″	9/16″	1/2″	3/8″	3/16″	0″

* INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXECPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR SPAN B

0.6″Ø LOW RELAXATION	GIRDERS 1 & 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.066	0.125	0.171	0.201	0.211	0.201	0.171	0.125	0.066	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.036	0.070	0.097	0.114	0.120	0.114	0.097	0.070	0.036	0.000
FINAL CAMBER ↑	0″	5/16″	5/8″	7/8″	1″	1 1/16″	1″	7/8″	5/8″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 2										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.066	0.125	0.171	0.201	0.211	0.201	0.171	0.125	0.066	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.037	0.072	0.100	0.118	0.124	0.118	0.100	0.072	0.037	0.000
FINAL CAMBER ↑	0″	5/16″	5/8″	13/16″	15/16″	1″	15/16″	13/16″	5/8″	5/16″	0″

* INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXECPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2″ BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI.

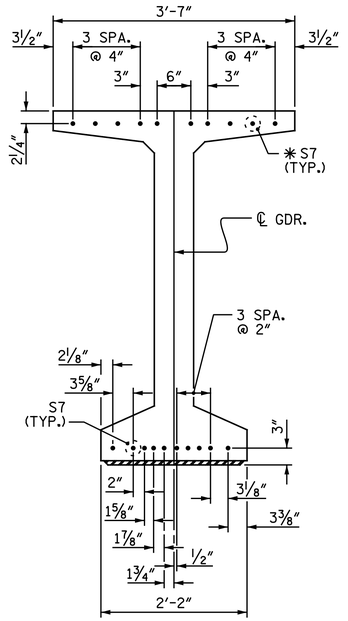
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4″, SHALL BE RAKED TO A DEPTH OF 1/4″.

A 2″ × 2″ CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63″ AND 72″ MODIFIED BULB TEES ONLY.

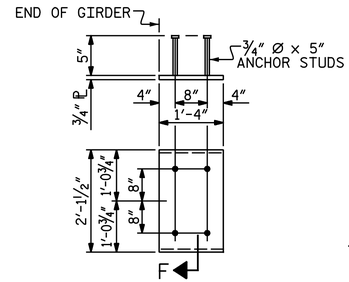
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

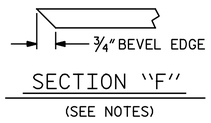
FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



DETAIL "C"

* S7 BARS IN TOP OF GIRDER ARE ONLY APPLICABLE AT INTEGRAL END BENT LOCATIONS





SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS
(2 REQUIRED PER GIRDER)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

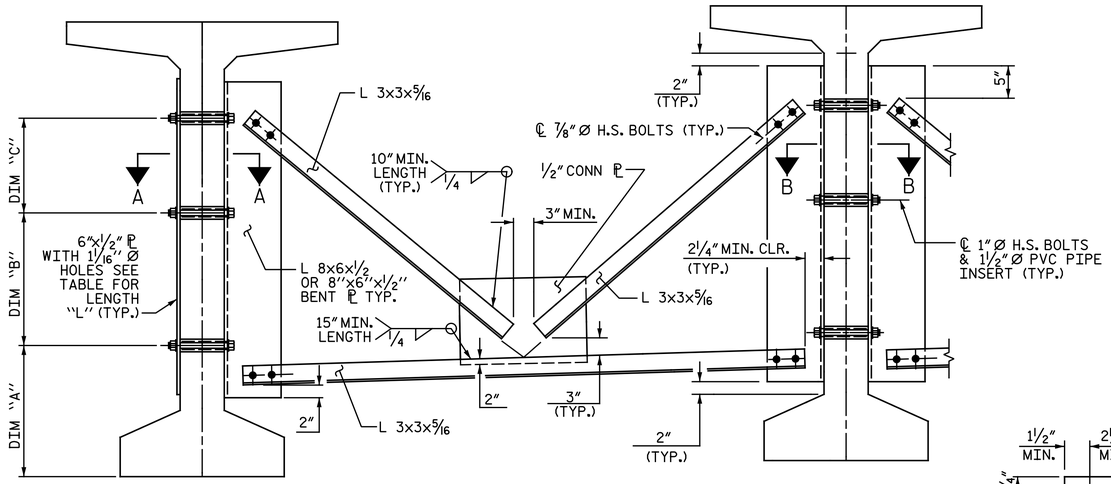
PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

RIGHT LANE

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-12
1			3			TOTAL SHEETS
2			4			29

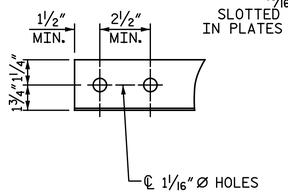
DRAWN BY : N. B. SPEAKS DATE : 4-11-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17



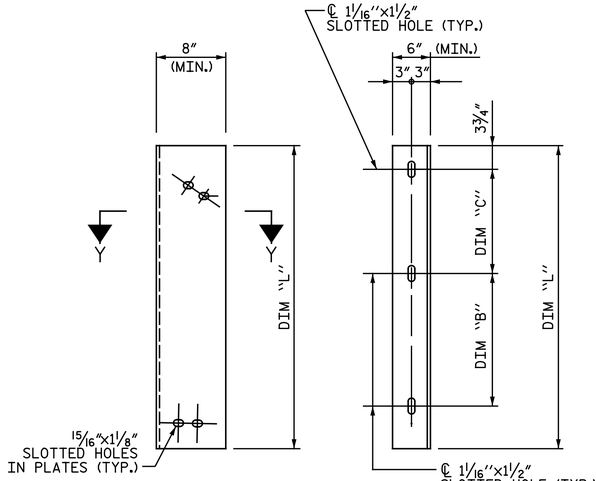
EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

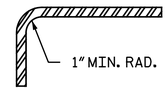


ANGLE END
(L 3 X 3 X 5/16)



DIAPHRAGM FACE

WEB FACE



SECTION Y-Y

CONNECTOR PLATE DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

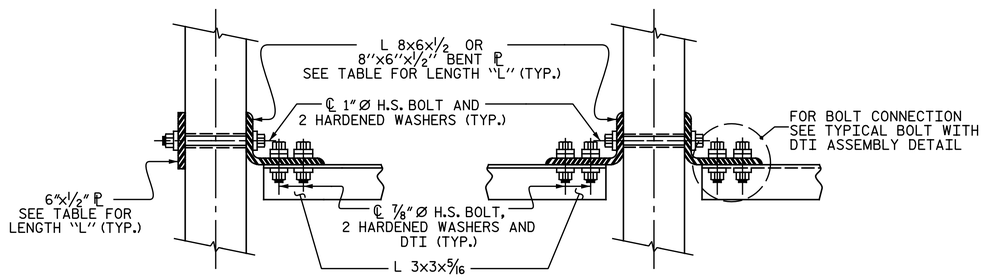
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

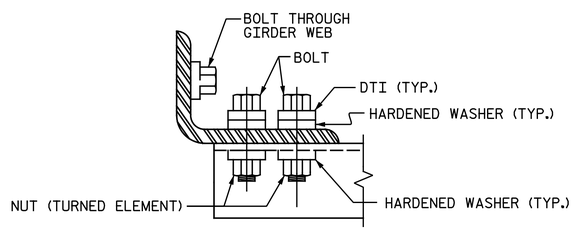
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-5 3/4"	1'-4"	1'-4"	3'-5"



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS RIGHT LANE

ASSEMBLED BY :	D. A. LAMAY
CHECKED BY :	A. H. SHARPE
DATE :	3-8-17
DATE :	5-9-17
DRAWN BY :	RWW 11/09
CHECKED BY :	GM 11/09
ADDED	11/23/09R
REV.	10/1/11 MAA/GM

Michael Baker INTERNATIONAL

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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

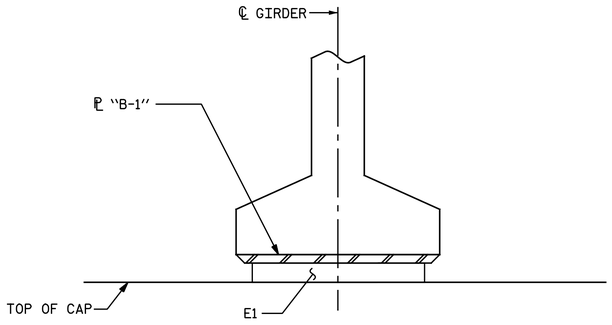
REVISIONS

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

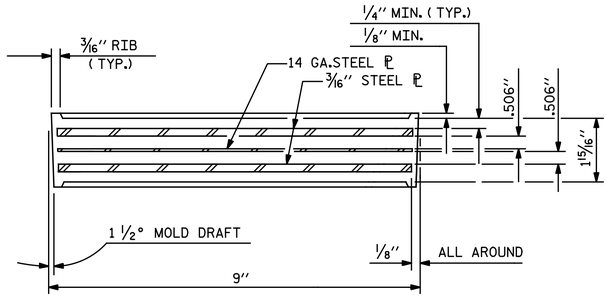
SHEET NO. S14-13

TOTAL SHEETS 29

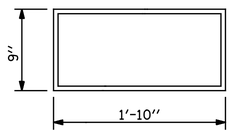
STD. NO. PCG11



SECTION
(AT INTEGRAL END BENTS)



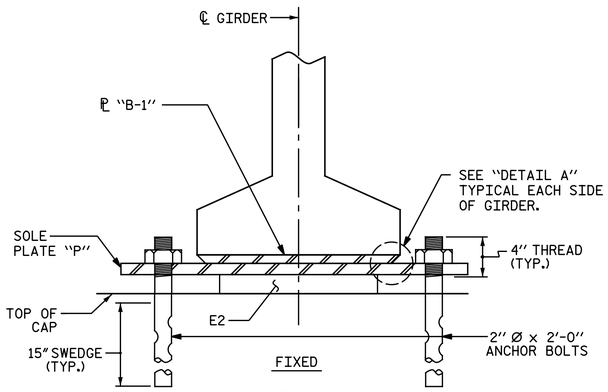
TYPICAL SECTION OF ELASTOMERIC BEARINGS



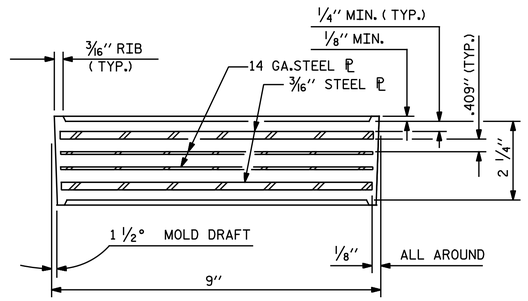
E1 (6 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

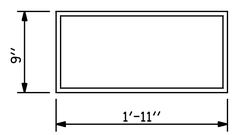
TYPE IV



SECTION E-E
(AT BENT)



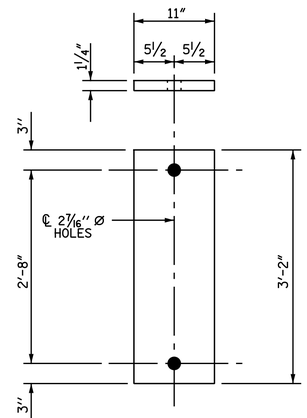
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E2 (6 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

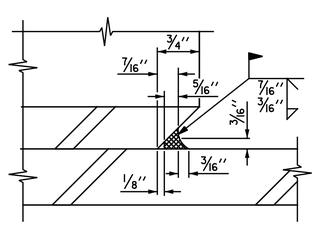
TYPE V



P1
(FIXED)

P1 (6 REQ'D)

SOLE PLATE DETAILS ("P")



DETAIL A

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

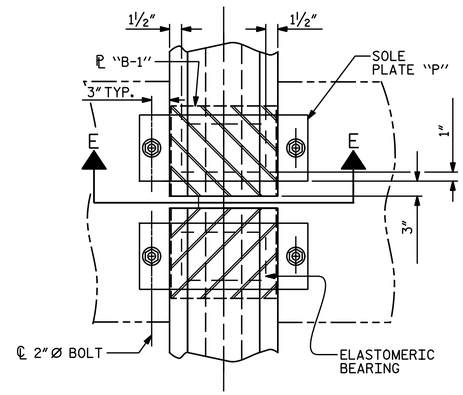
SOLE PLATE "P", BOLTS, AND NUTS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, AND NUTS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



TYPICAL PLAN

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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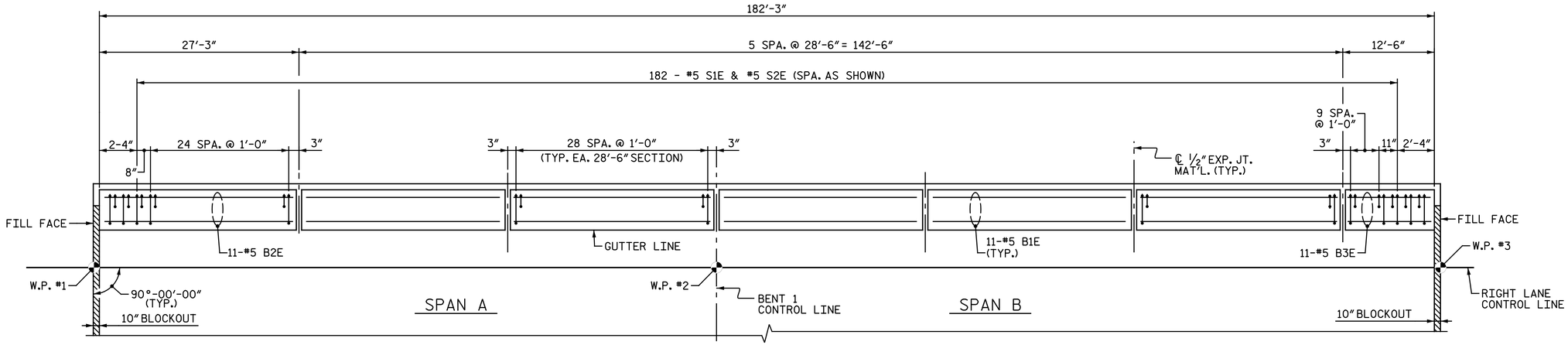
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-14
1			3			TOTAL SHEETS
2			4			29

ASSEMBLED BY : N. B. SPEAKS		DATE : 4-13-17
CHECKED BY : A. H. SHARPE		DATE : 5-9-17
DRAWN BY : EEM 2/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/97	REV. 6/13	AAC/MAA
	REV. 1/15	MAA/TMG

STD. NO. EB4



PLAN OF BARRIER RAIL

(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)

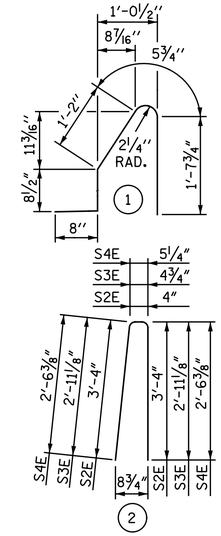
NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. 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 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES

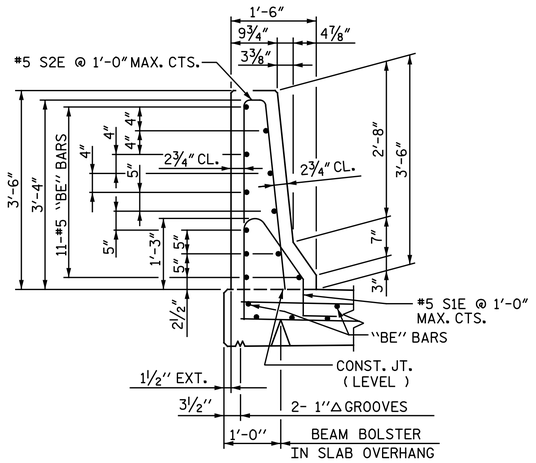


ALL BAR DIMENSIONS ARE OUT TO OUT

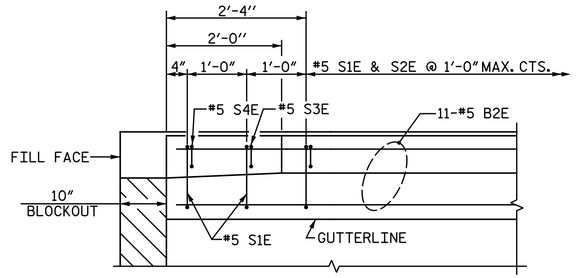
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

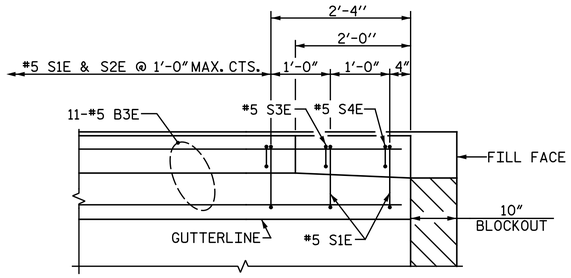
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	110	#5	STR.	28′ - 0″	3,212
B2E	22	#5	STR.	26′ - 9″	614
B3E	22	#5	STR.	12′ - 0″	275
S1E	372	#5	1	4′ - 8″	1,811
S2E	364	#5	2	7′ - 0″	2,658
S3E	4	#5	2	6′ - 3″	26
S4E	4	#5	2	5′ - 6″	23
EPOXY COATED REINFORCING STEEL				LBS.	8,619
CLASS AA CONCRETE				C.Y.	49.5
CONCRETE BARRIER RAIL				L.F.	364.5



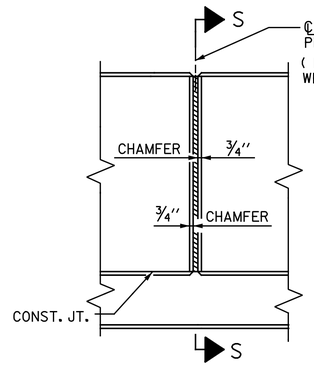
SECTION THRU RAIL



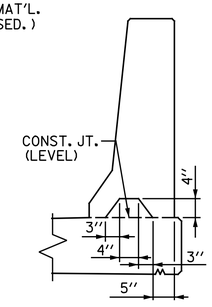
END BENT 1



END BENT 2



ELEVATION AT EXPANSION JOINTS

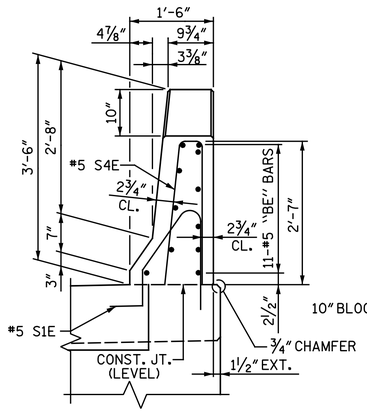


SECTION S-S

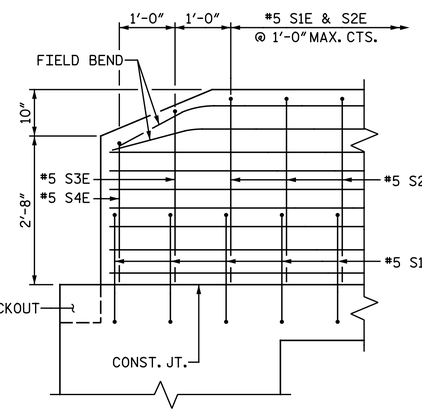
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

PLAN

(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)



END VIEW



SIDE VIEW

BARRIER RAIL DETAILS

END OF RAIL DETAILS

ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17
CHECKED BY : A. H. SHARPE		DATE : 9-12-17
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe
9/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
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8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

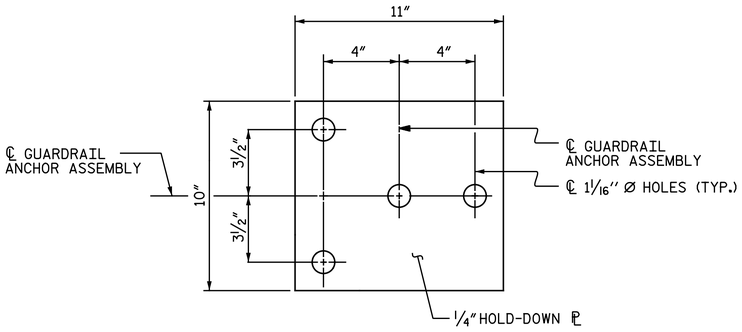
STANDARD

CONCRETE BARRIER RAIL

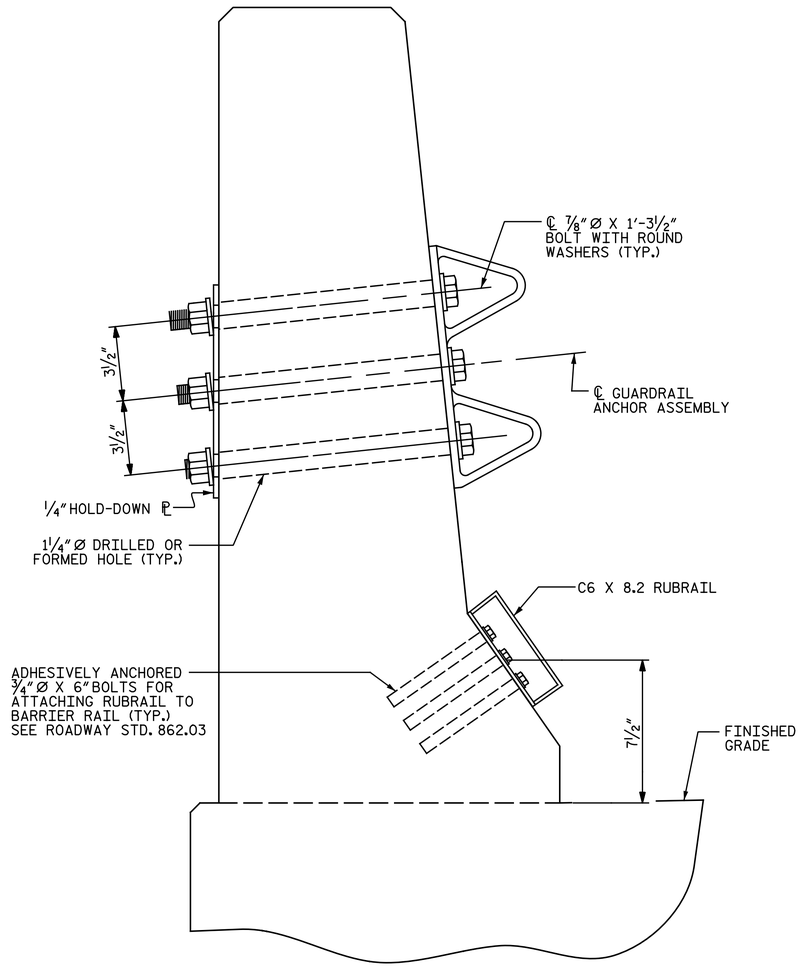
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-15
1			3			TOTAL SHEETS
2			4			29

STD. NO. CBR1

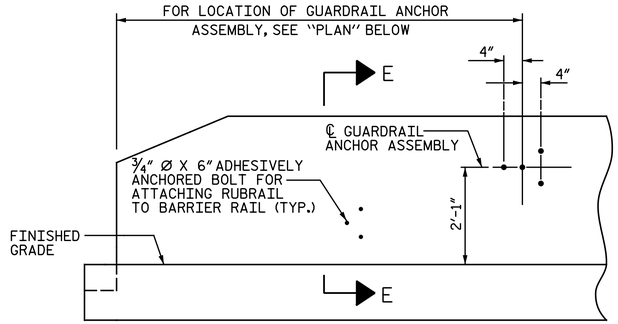


PLAN

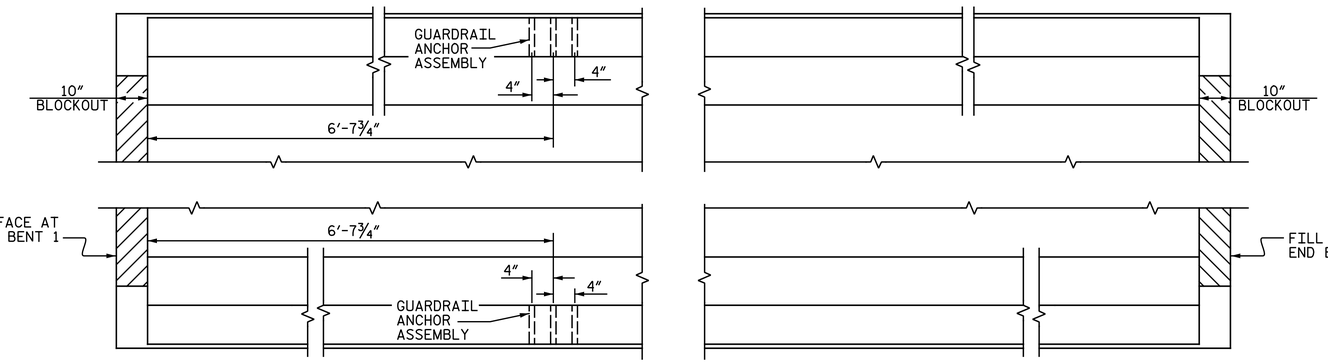


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

NOTES

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

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

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

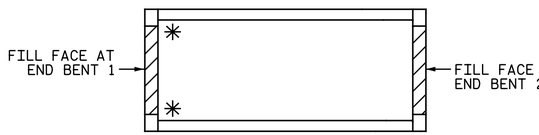
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4″Ø X 6″BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4″Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE 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-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

Amanda H. Sharpe
9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : A. H. SHARPE	DATE : 9-12-17

DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

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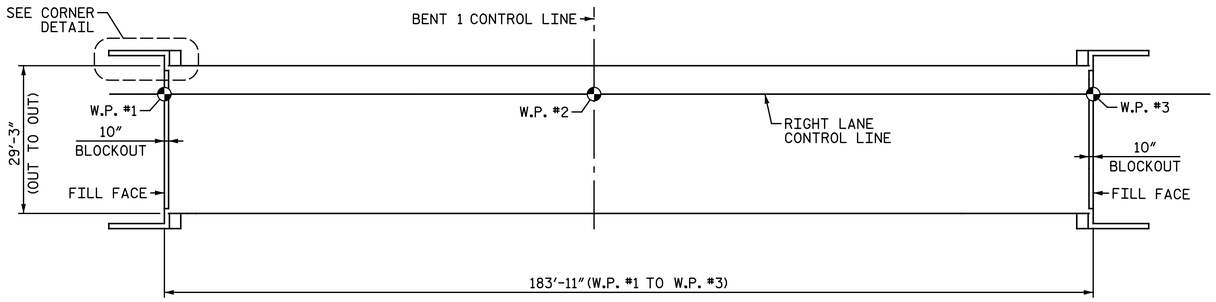
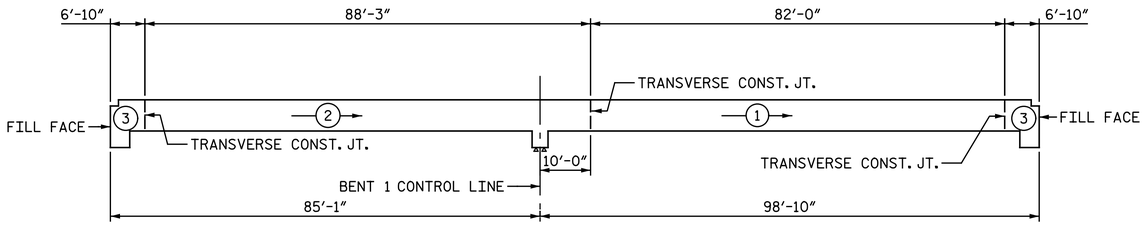
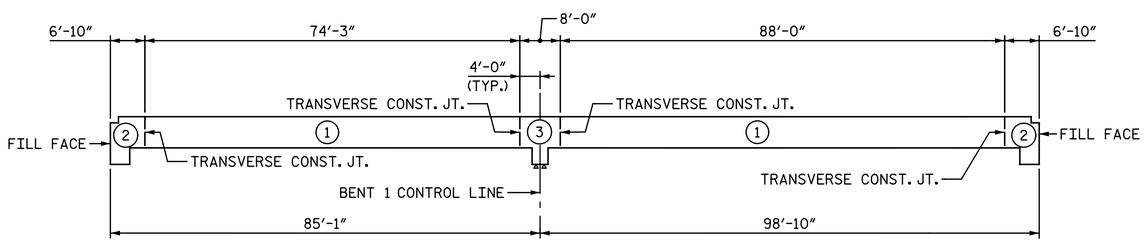
STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 5,380)

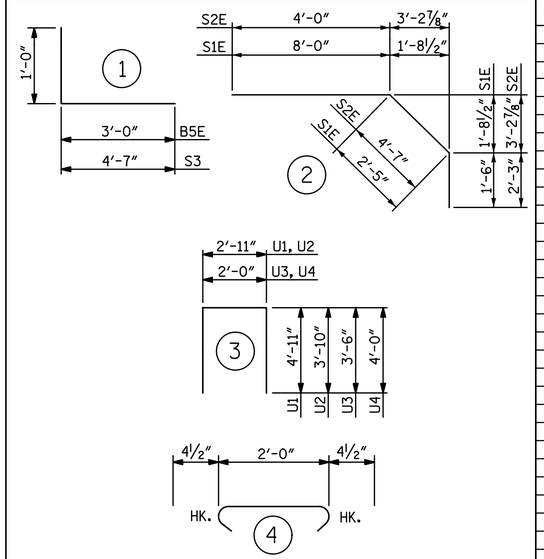


POURING SEQUENCE
(#) DENOTES POUR NUMBER AND DIRECTION



OPTIONAL POURING SEQUENCE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A&B		18,071	19,360
POUR 1	78.6		
POUR 2	98.1		
POUR 3	54.9		
TOTALS *	231.6	18,071	19,360

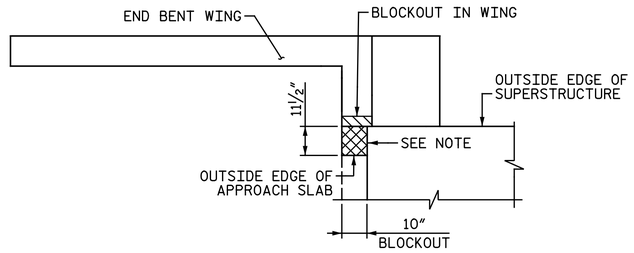
* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

REINFORCING BAR SCHEDULE
SPANS A & B

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	312	#5	STR.	28' - 11"	9,410
A2	312	#5	STR.	28' - 11"	9,410
B1E	20	#6	STR.	30' - 0"	901
B2	144	#5	STR.	47' - 2"	7,084
B3E	19	#6	STR.	19' - 3"	549
B4E	19	#6	STR.	21' - 5"	611
B5E	8	#4	1	4' - 0"	21
B6E	20	#4	STR.	30' - 0"	401
B7E	60	#6	STR.	23' - 5"	2,110
B8E	38	#6	STR.	33' - 8"	1,922
B9E	40	#4	STR.	18' - 5"	492
B10E	20	#6	STR.	34' - 10"	1,046
B11E	19	#6	STR.	22' - 0"	628
B12E	19	#6	STR.	24' - 2"	690
H1	24	#5	STR.	2' - 11"	73
K1	12	#4	STR.	28' - 11"	232
K2	4	#4	STR.	6' - 7"	18
K3	16	#4	STR.	9' - 7"	102
K4	4	#4	STR.	8' - 0"	21
K5	4	#4	STR.	2' - 0"	5
K6	16	#4	STR.	3' - 6"	37
K7	4	#4	STR.	2' - 8"	7
K8	6	#4	STR.	21' - 3"	85
K9	4	#4	STR.	6' - 7"	18
K10	16	#4	STR.	9' - 7"	102
K11	4	#4	STR.	6' - 10"	18
S1E	40	#4	2	11' - 11"	318
S2E	36	#4	2	10' - 10"	261
S3	28	#4	1	5' - 7"	104
S4	78	#4	4	2' - 9"	143
U1	40	#4	3	12' - 9"	341
U2	12	#4	3	10' - 7"	85
U3	14	#4	3	9' - 0"	84
U4	4	#4	3	10' - 0"	27
V1	12	#5	STR.	6' - 0"	75

REINFORCING STEEL	LBS.	18,071
EPOXY COATED REINF. STEEL	LBS.	19,360

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL.



CORNER DETAIL

CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND SHEET 1 OF "INTEGRAL END BENT 2" SHEETS.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,112	SQ.FT.
BRIDGE DECK	4,184	SQ.FT.
TOTAL	5,296	SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

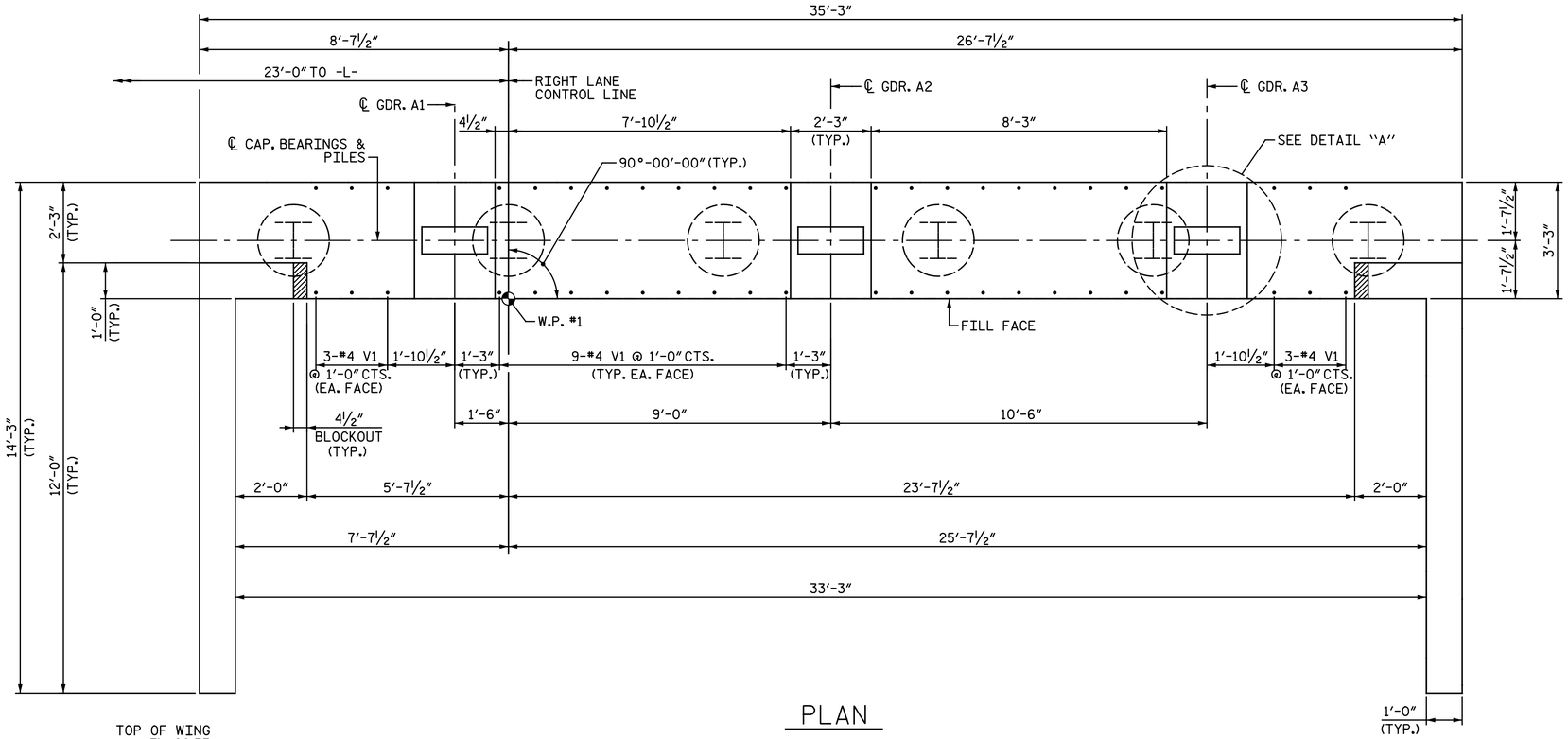
SUPERSTRUCTURE

BILL OF MATERIAL

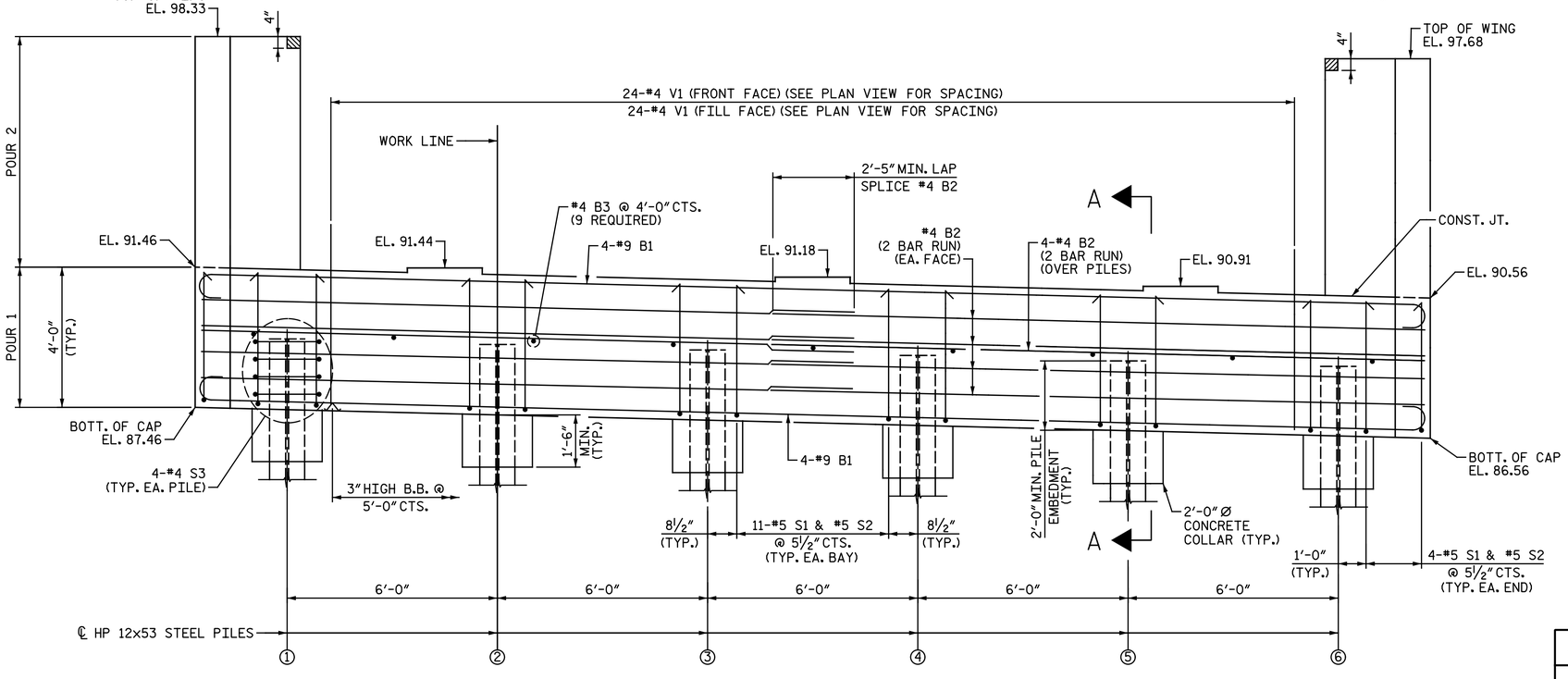
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-17
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D.A.L. / M.D.M. DATE : 5-8-17
CHECKED BY : A. H. SHARPE DATE : 5-9-17



PLAN



ELEVATION

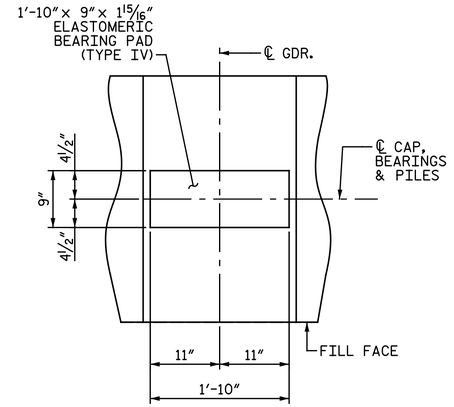
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	89.41
②	89.25
③	89.10
④	88.95
⑤	88.79
⑥	88.64

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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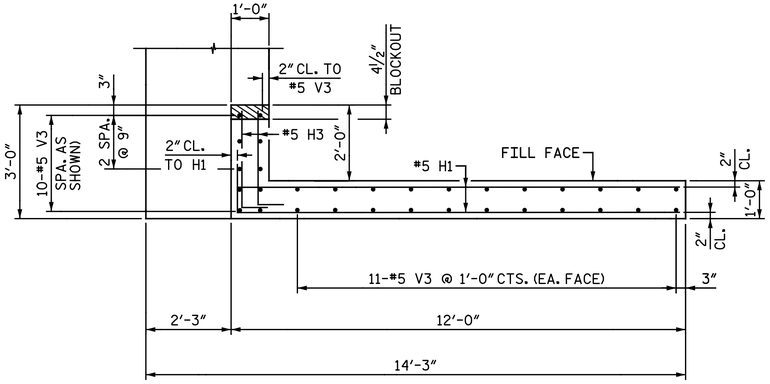
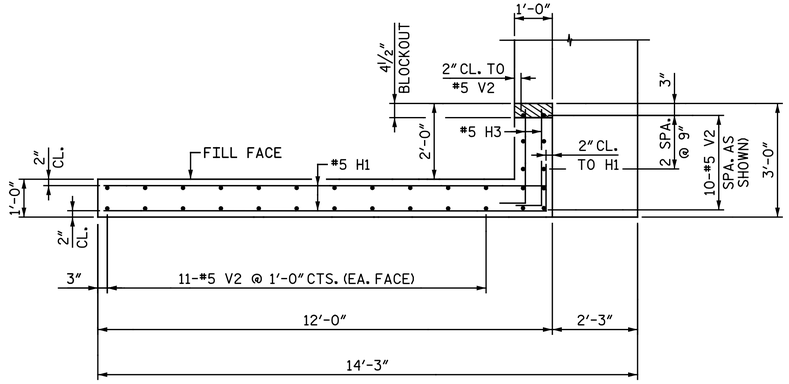
2			4			29

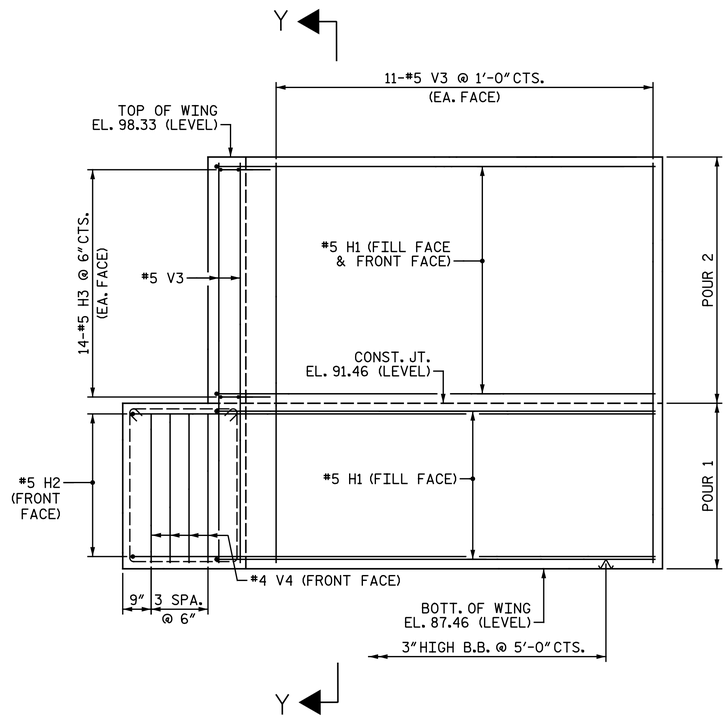
DRAWN BY : C. E. MAYHEW DATE : 5-2-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17



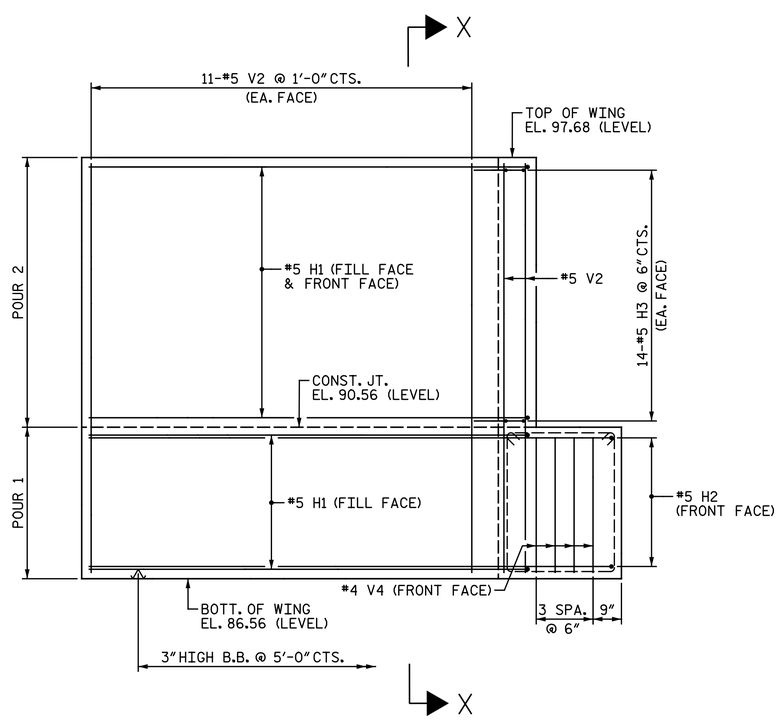
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



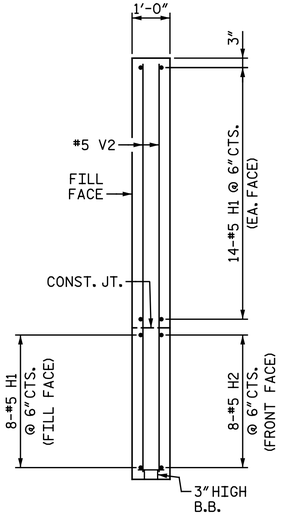
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



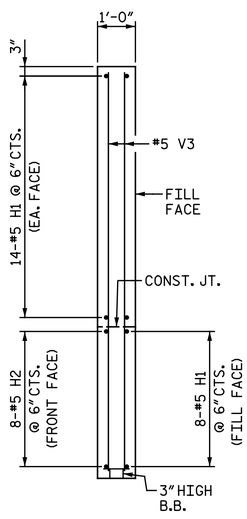
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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DRAWN BY : C. E. MAYHEW DATE : 5-2-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
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Cary, North Carolina 27518
NC License No.: F-1084

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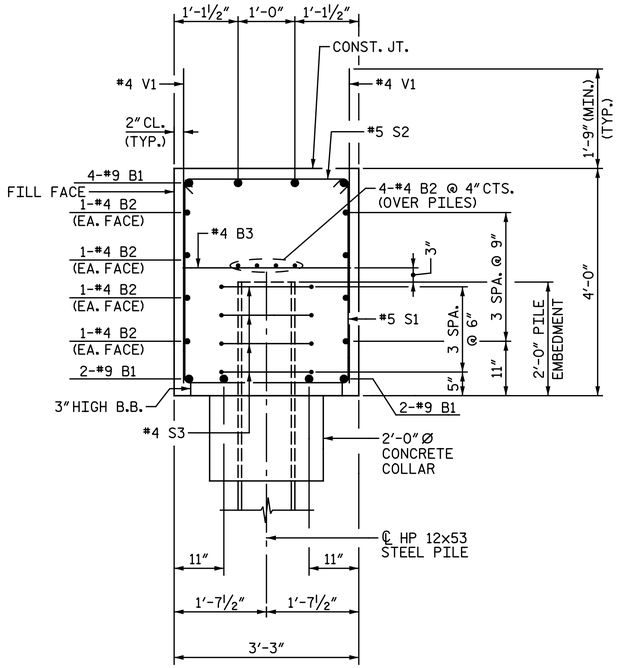
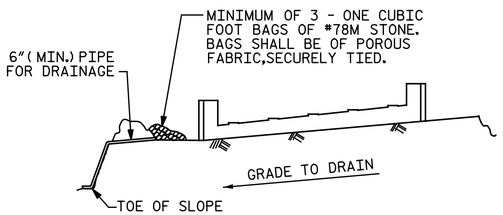


SECTION A-A



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL
INTEGRAL END BENT 1

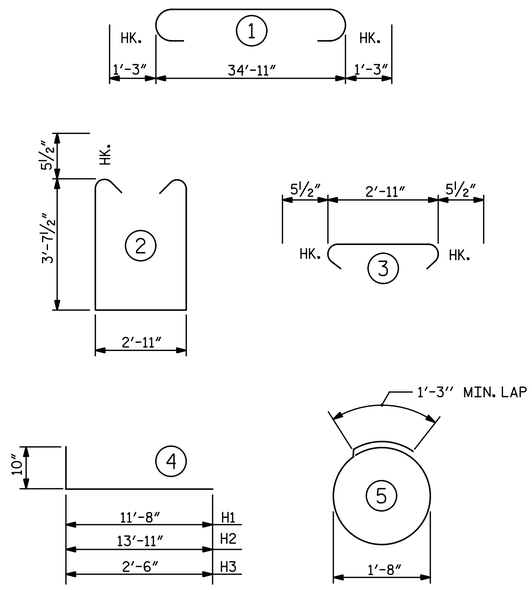
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37' - 5"	1018
B2	24	#4	STR.	18' - 8"	299
B3	9	#4	STR.	2' - 11"	18
H1	72	#5	4	12' - 6"	939
H2	16	#5	4	14' - 9"	246
H3	56	#5	4	3' - 4"	195
S1	63	#5	2	11' - 1"	728
S2	63	#5	3	3' - 10"	252
S3	24	#4	5	6' - 6"	104
V1	48	#4	STR.	5' - 6"	176
V2	32	#5	STR.	10' - 8"	356
V3	32	#5	STR.	10' - 5"	348
V4	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	4,698
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	21.4
POUR 2 -		
UPPER PART OF WINGS	C.Y.	7.3
TOTAL	C.Y.	28.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	6
HP 12x53 STEEL PILES NO. 6	L.F.	312
STEEL PILE POINTS	EA.	6
PILE REDRIVES	EA.	5

NOTES:

FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

RIGHT LANE

DRAWN BY : C. E. MAYHEW DATE : 5-2-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17

Michael Baker INTERNATIONAL
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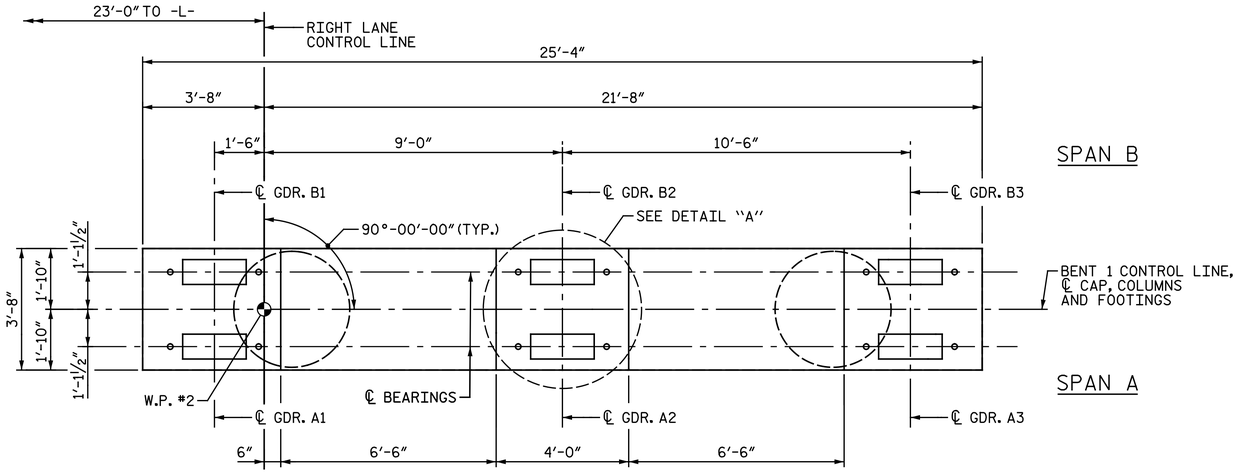
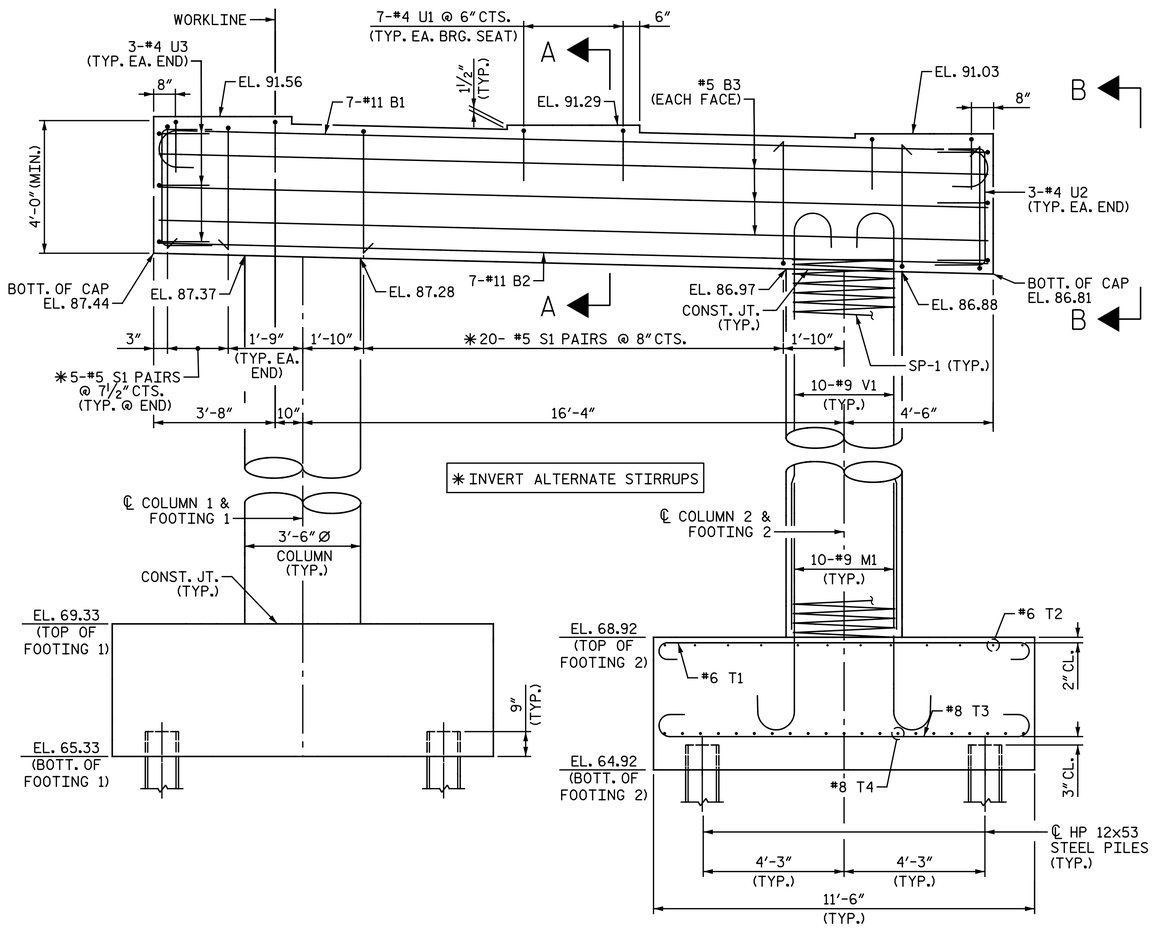
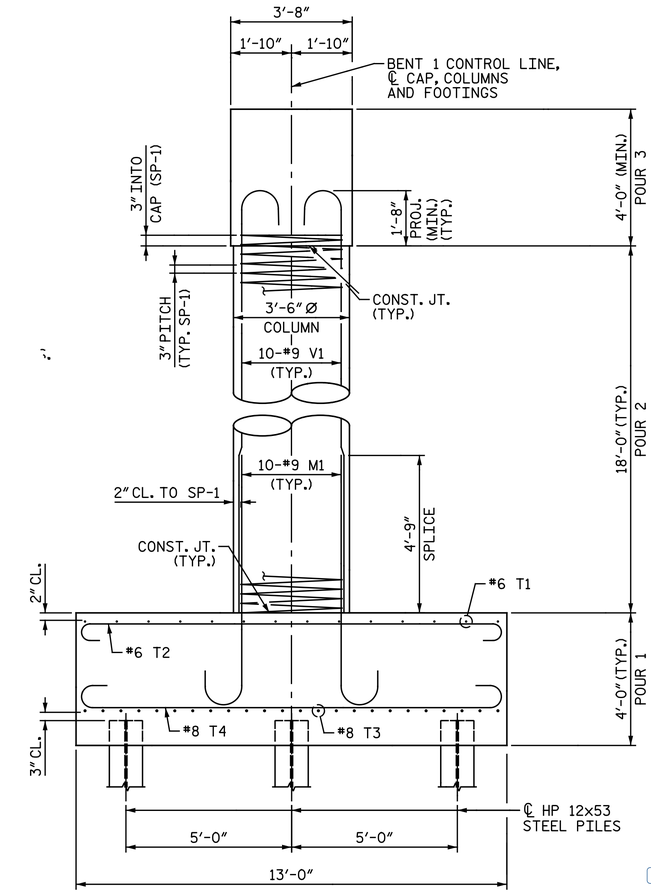


PLAN





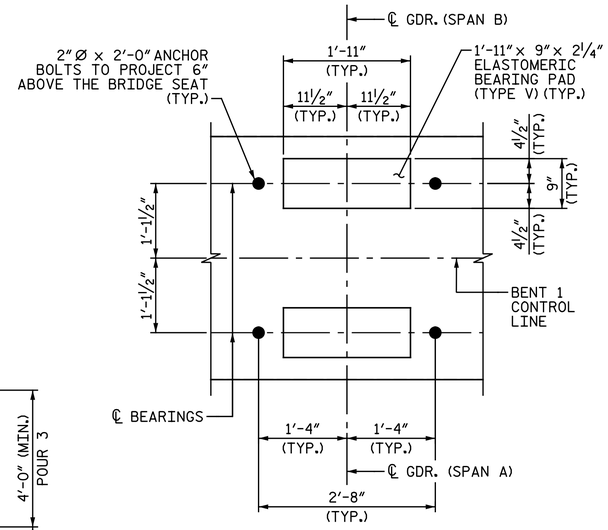
END ELEVATION

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

FOR SECTION A-A AND SECTION B-B , SEE "BENT 1 DETAILS" SHEET.



DETAIL "A"

ALL DIMENSIONS & DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

RIGHT LANE

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Michael Baker INTERNATIONAL
Michael Baker Engineering
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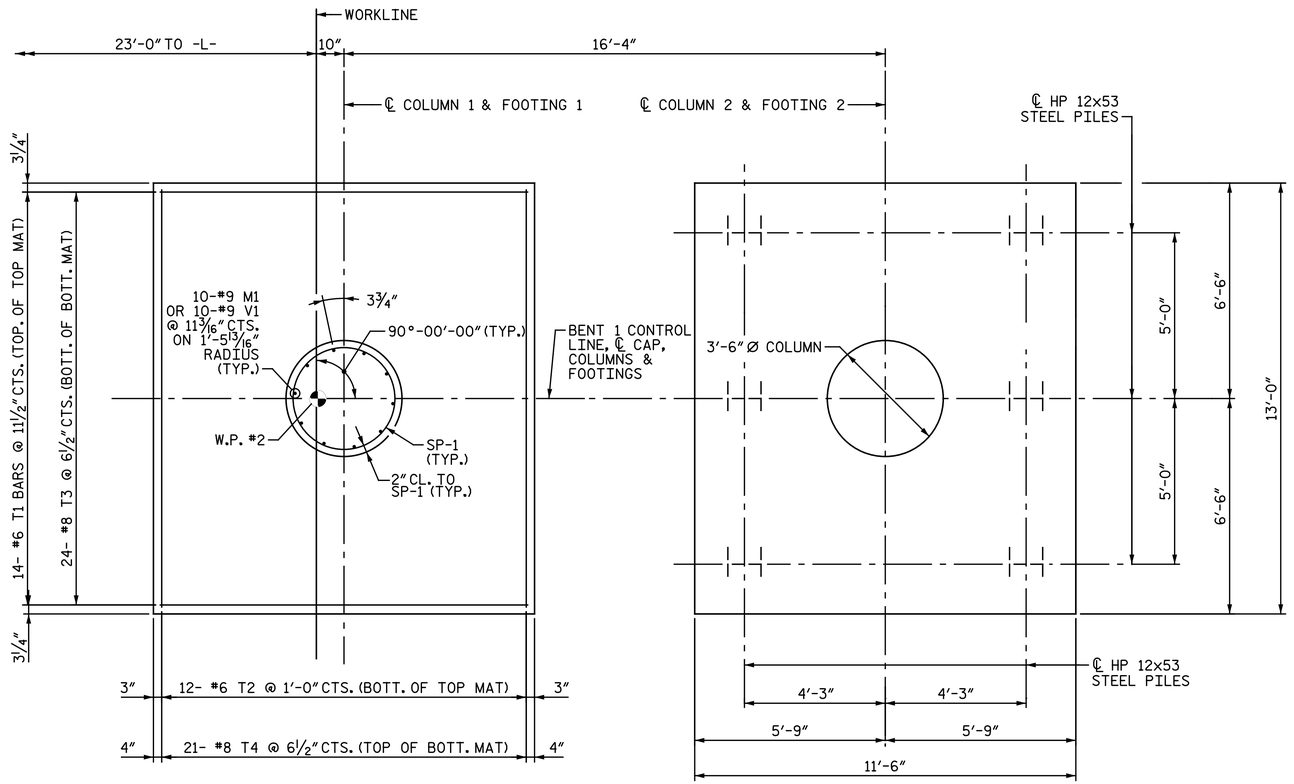
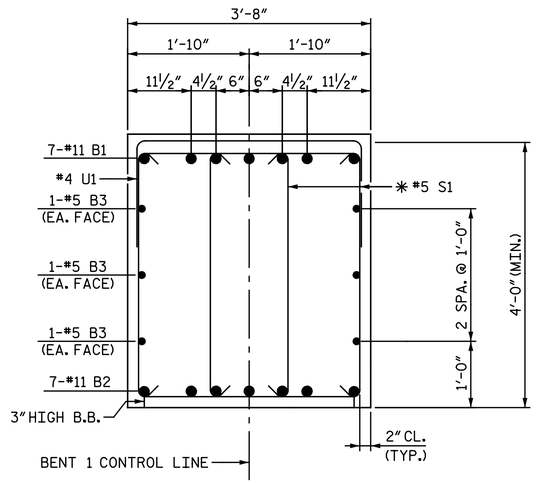
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-21
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : D.A.L. / M.D.M. DATE : 5-7-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17



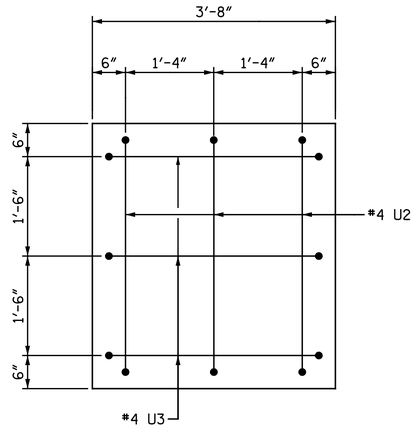
PLAN OF COLUMNS & FOOTINGS

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



SECTION A-A

✳INVERT ALTERNATE STIRRUPS



VIEW B-B

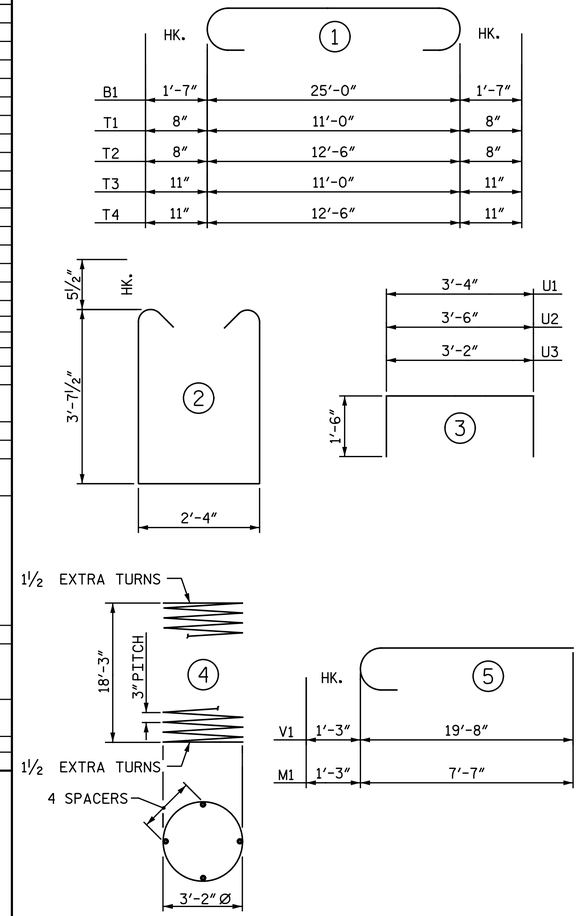
BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	28' - 2"	1,048
B2	7	#11	STR.	25' - 0"	930
B3	6	#5	STR.	25' - 0"	156
M1	20	#9	5	8' - 10"	601
S1	60	#5	2	10' - 6"	657
T1	28	#6	1	12' - 4"	519
T2	24	#6	1	13' - 10"	499
T3	48	#8	1	12' - 10"	1,645
T4	42	#8	1	14' - 4"	1,607
U1	21	#4	3	6' - 4"	89
U2	6	#4	3	6' - 6"	26
U3	6	#4	3	6' - 2"	25
V1	20	#9	5	21' - 0"	1,428
REINFORCING STEEL				LBS.	9,230
SP-1	2	✳✳	4	749' - 8"	1,002
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,002

CLASS A CONCRETE		
POUR 1 - FOOTINGS	C.Y.	44.3
POUR 2 - COLUMNS	C.Y.	12.8
POUR 3 - CAP	C.Y.	14.1
TOTAL CLASS A CONCRETE	C.Y.	71.2
FOUNDATION EXCAVATION	LUMP SUM	
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	12
HP 12x53 STEEL PILES NO. 12	L.F.	249
STEEL PILE POINTS	EA.	12
PILE REDRIVES	EA.	6

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

✳✳THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D20 COLD DRAWNN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

RIGHT LANE

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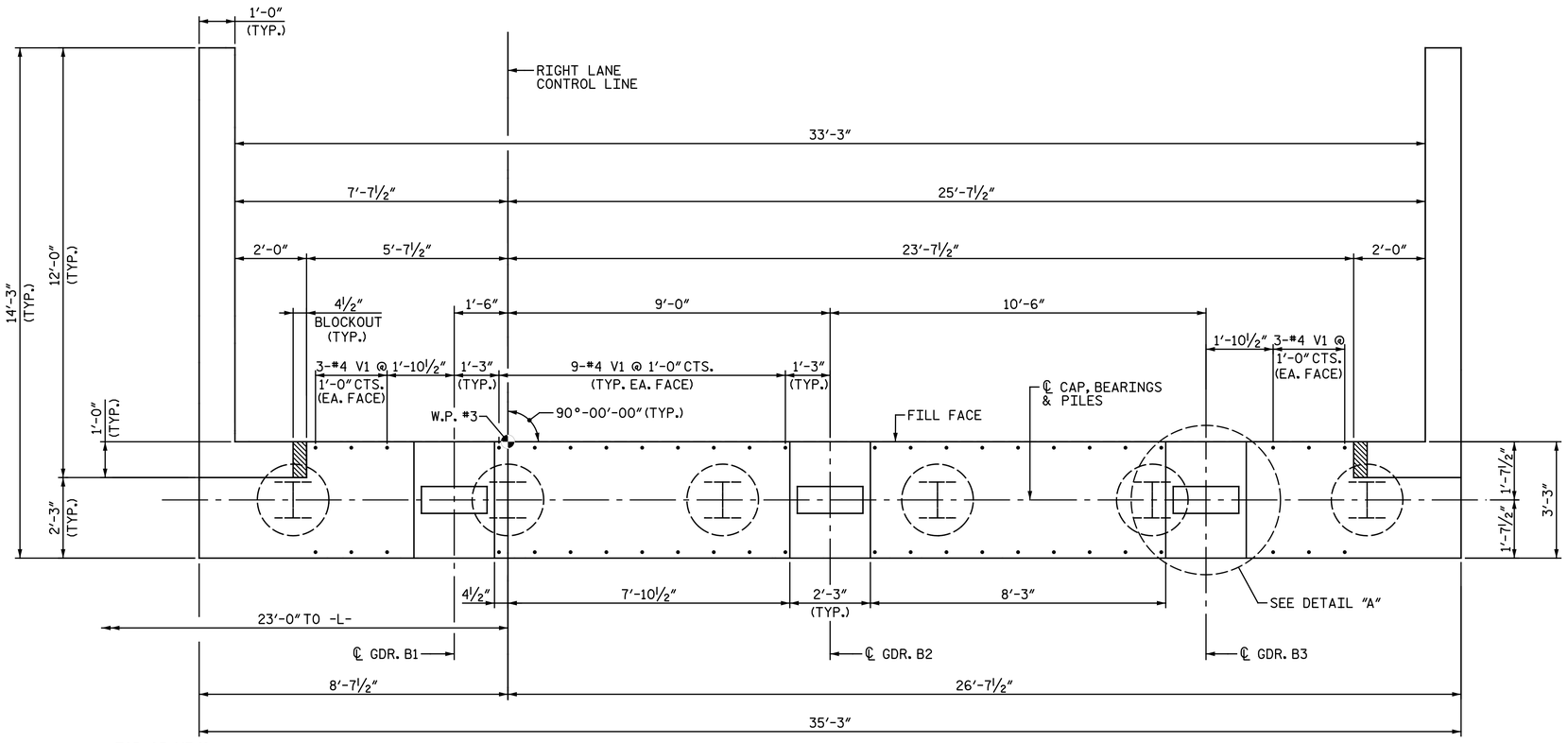
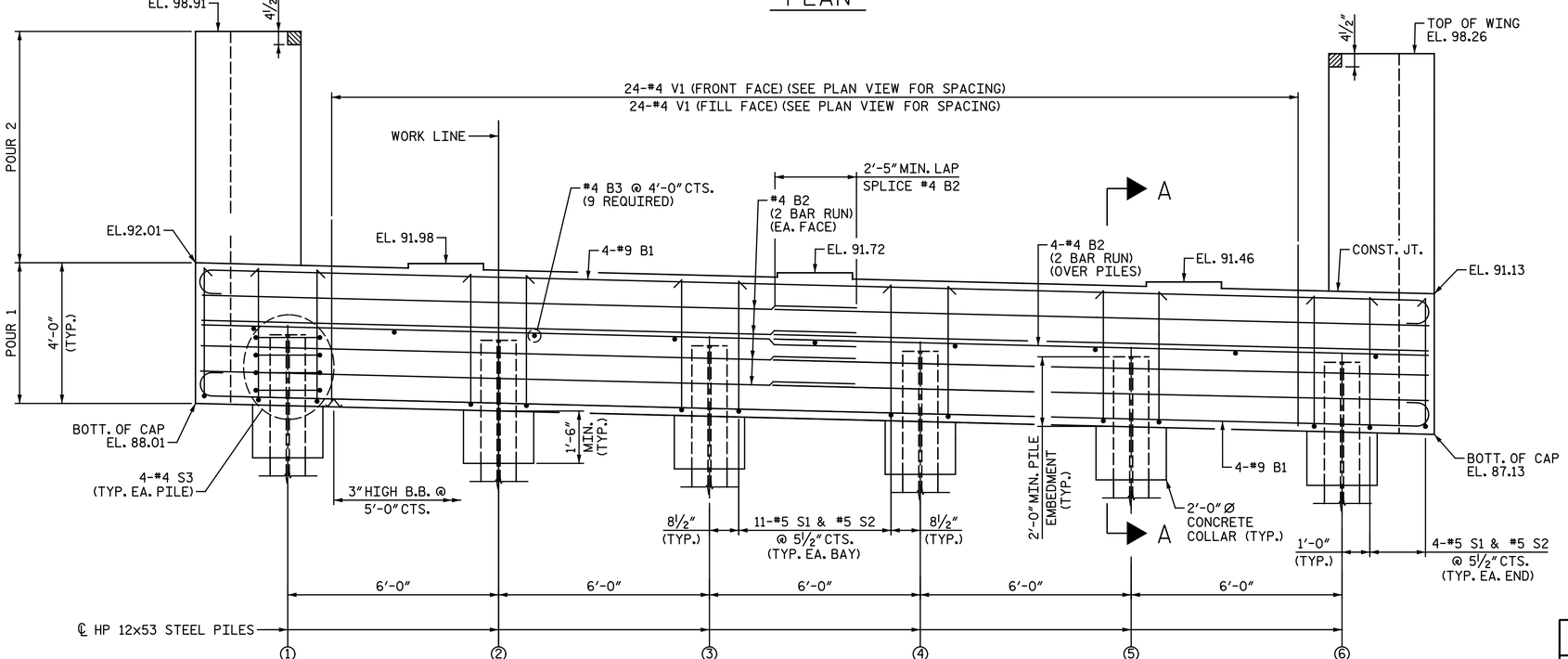
CHECKED BY : A. H. SHARPE DATE : 5-10-17



PLAN



ELEVATION

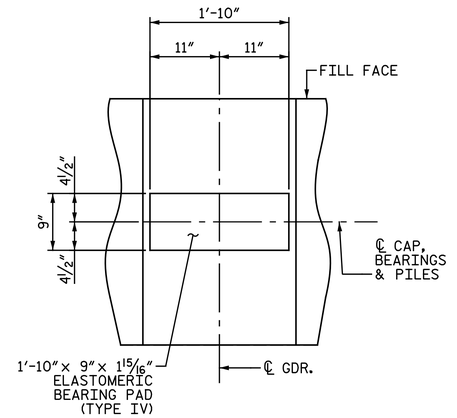
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	89.96
②	89.81
③	89.66
④	89.51
⑤	89.36
⑥	89.21

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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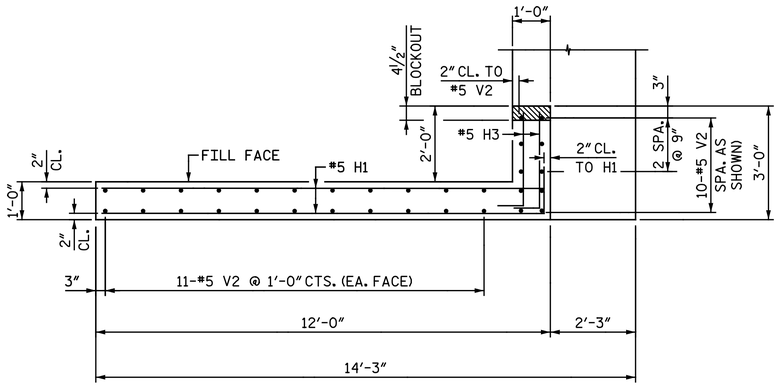
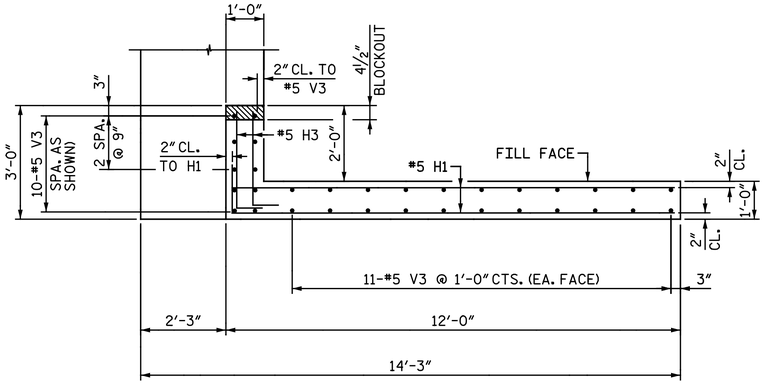
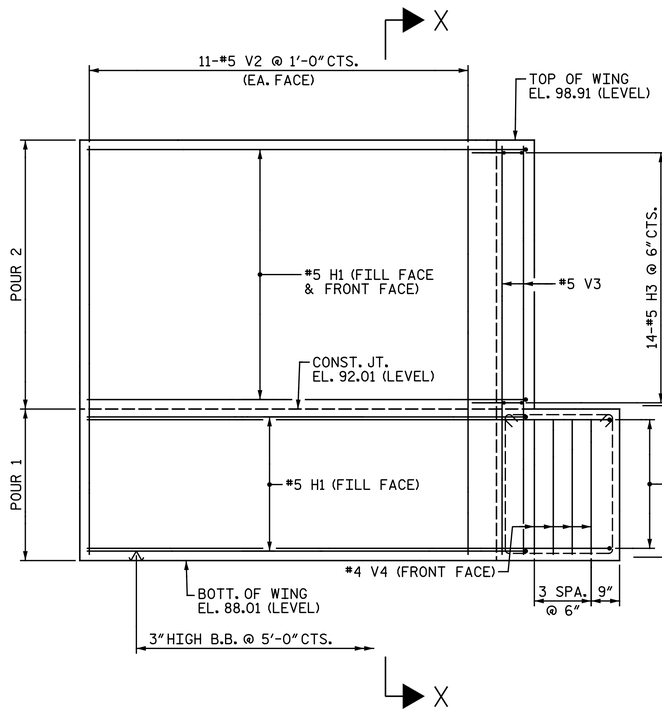
CHECKED BY : A. H. SHARPE DATE : 5-9-17



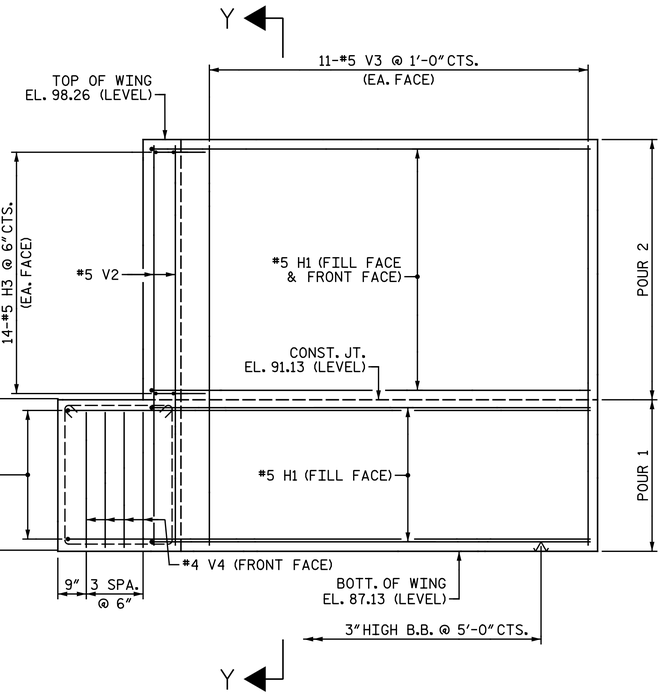
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



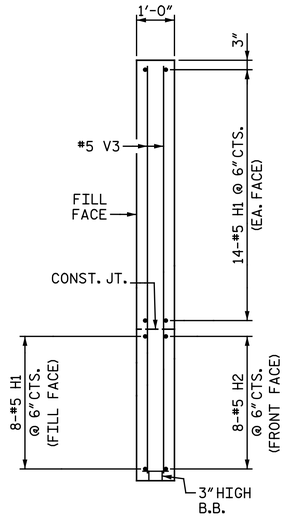
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



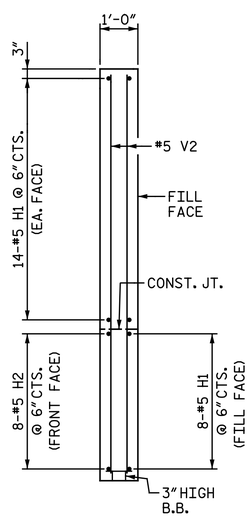
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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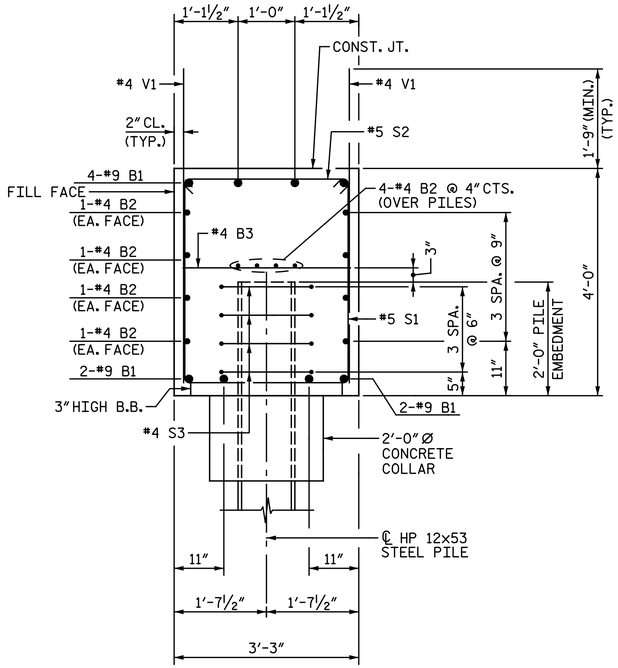
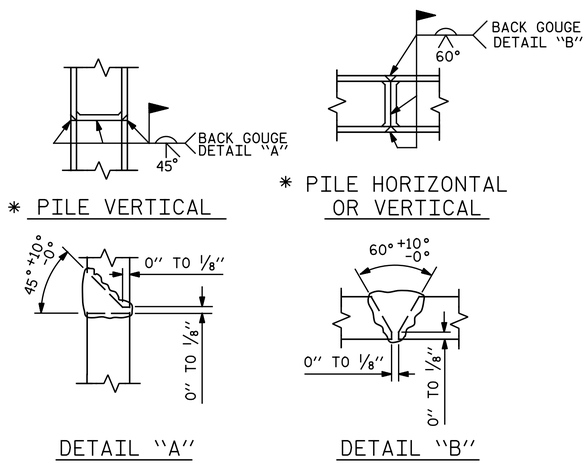
CHECKED BY : A. H. SHARPE DATE : 5-9-17



SECTION A-A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL

INTEGRAL END BENT 2

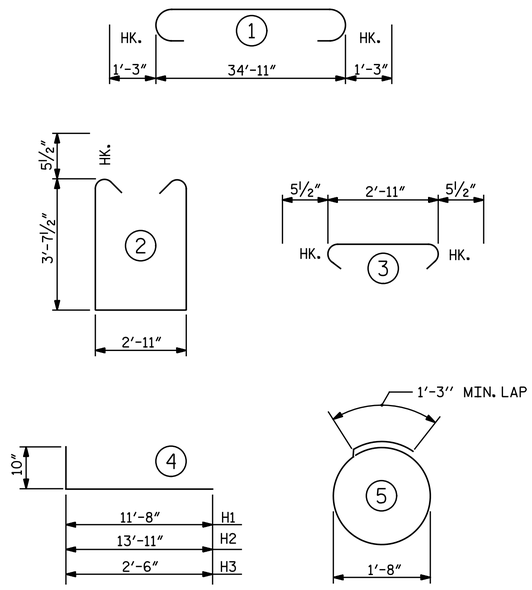
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37' - 5"	1018
B2	24	#4	STR.	18' - 8"	299
B3	9	#4	STR.	2' - 11"	18
H1	72	#5	4	12' - 6"	939
H2	16	#5	4	14' - 9"	246
H3	56	#5	4	3' - 4"	195
S1	63	#5	2	11' - 1"	728
S2	63	#5	3	3' - 10"	252
S3	24	#4	5	6' - 6"	104
V1	48	#4	STR.	5' - 6"	176
V2	32	#5	STR.	10' - 8"	356
V3	32	#5	STR.	10' - 5"	348
V4	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	4,698
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	21.4
POUR 2 -		
UPPER PART OF WINGS	C.Y.	7.3
TOTAL	C.Y.	28.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	6
HP 12x53 STEEL PILES NO. 6	L.F.	252
STEEL PILE POINTS	EA.	6
PILE REDRIVES	EA.	5

NOTES:

FOR TEMPORARY DRAINAGE AT END BENT DETAILS, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

RIGHT LANE

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2			4			29

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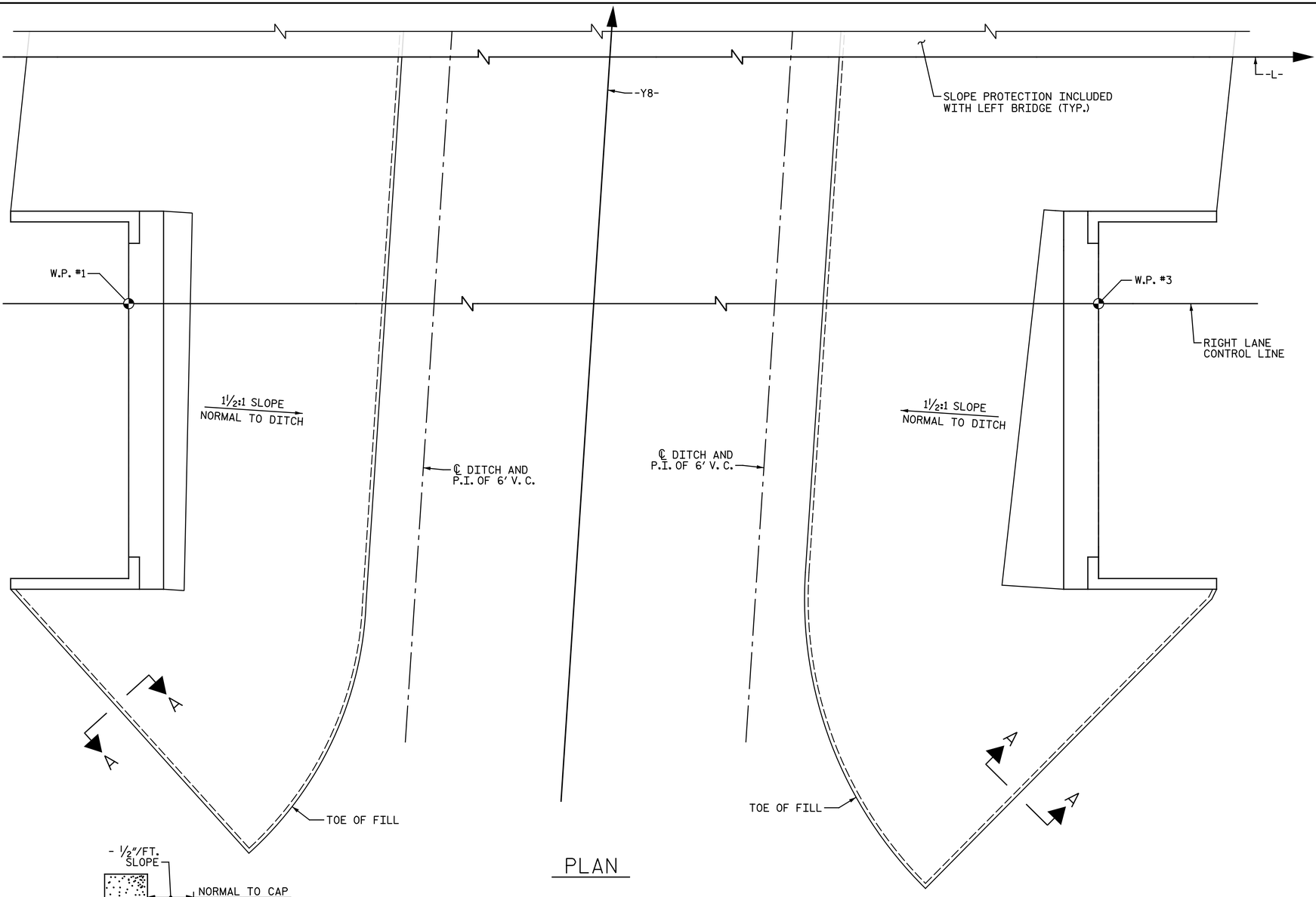
CHECKED BY : A. H. SHARPE DATE : 5-9-17



PLAN

GENERAL NOTES:

STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.

MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

FOR BERM WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND "SLOPE PROTECTION DETAILS" SHEET 2 OF 2.

SLOPE PROTECTION SHALL CONSIST OF 4" 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.

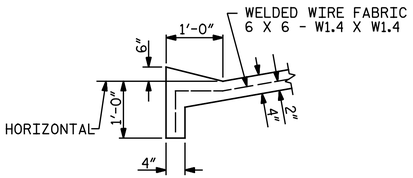
WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE.

SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

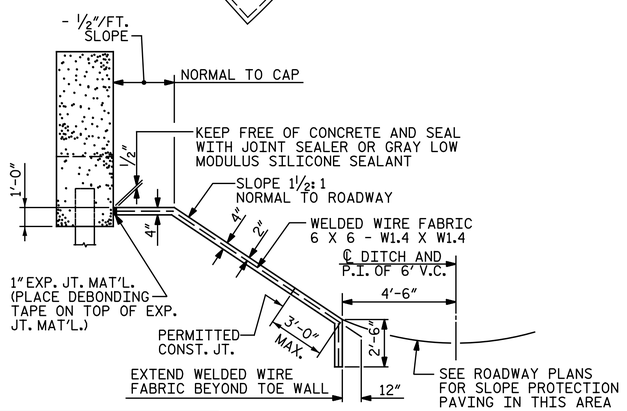
SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6".

THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

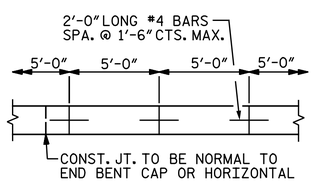
BRIDGE @ STA. 364+28.98 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	280	504
END BENT 2	310	558



SECTION A-A

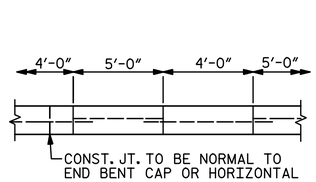


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

SLOPE PROTECTION DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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ASSEMBLED BY : C. E. MAYHEW	DATE : 4-18-17
CHECKED BY : A. H. SHARPE	DATE : 5-10-17
DRAWN BY : ELR 5/92	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11 MAA/GM
	REV. 1/16 MAA/TMG

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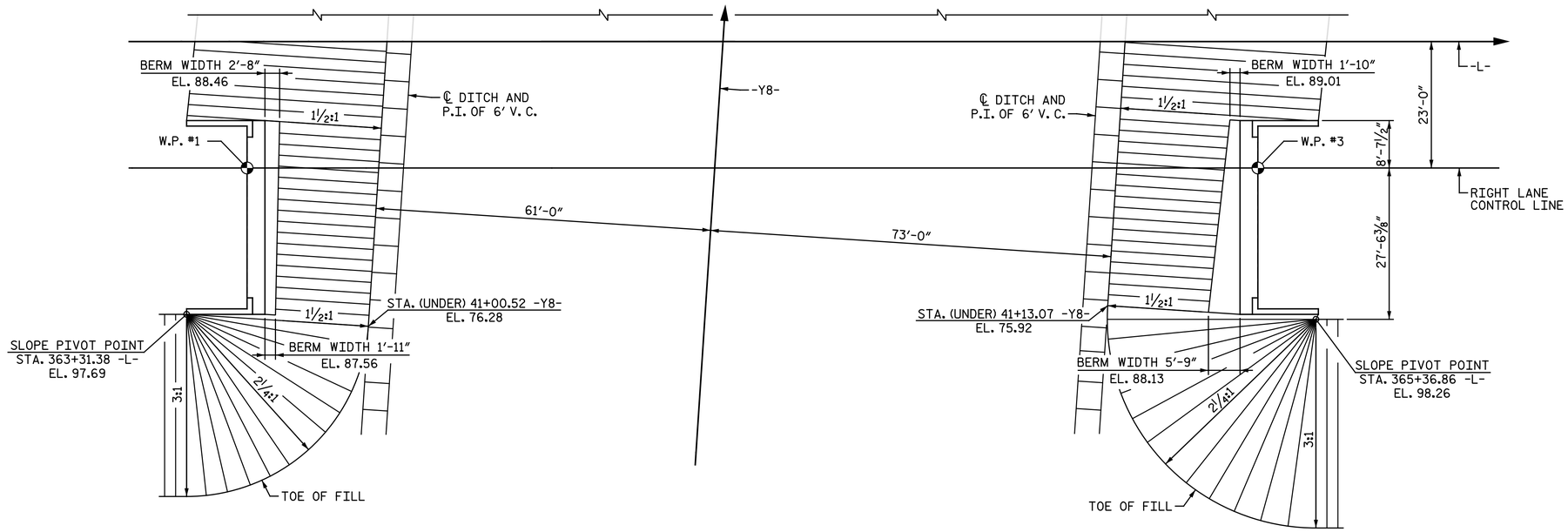
2			4			29

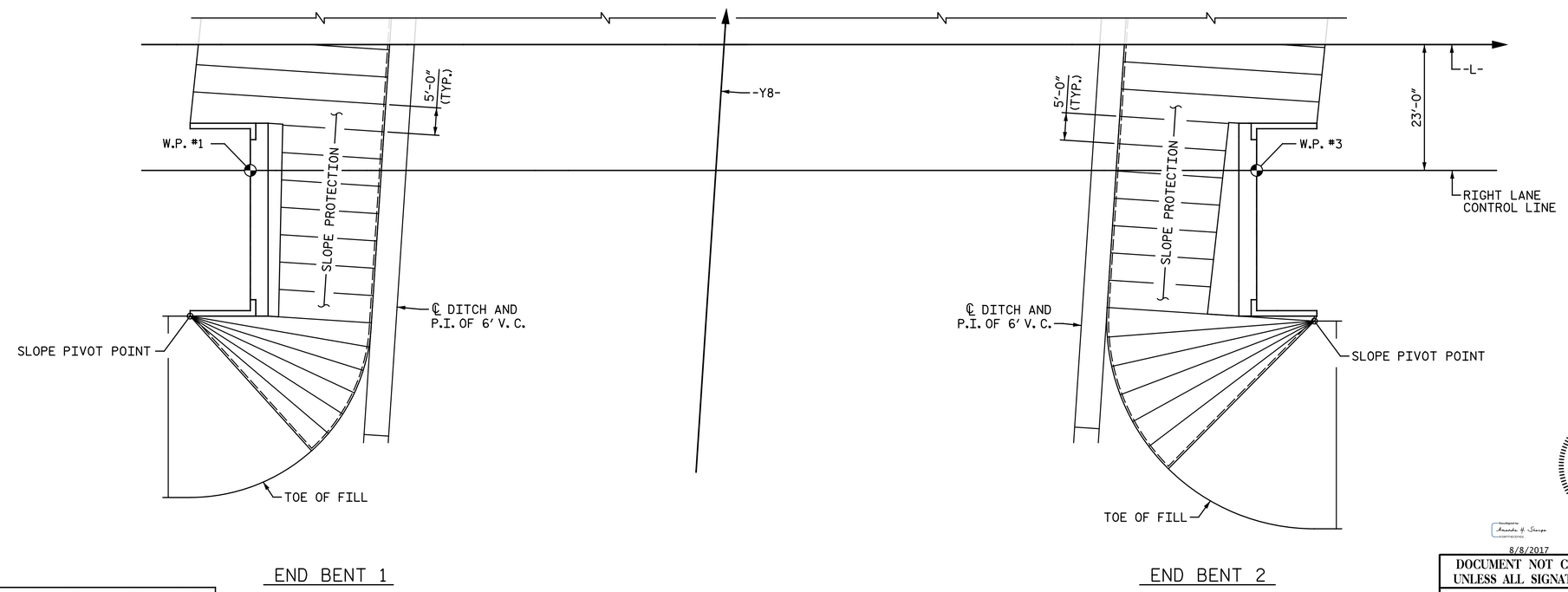
STD. NO. SP1

NOTE:

ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



PLAN - GRADING



PLAN - CONCRETE PLACEMENT

(1½: 1 SLOPE)

ASSEMBLED BY : C. E. MAYHEW		DATE :	4-28-17
CHECKED BY : A. H. SHARPE		DATE :	5-10-17
DRAWN BY : WJH 10/88	REV. 5/1/06		TLA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11		MAA/GM
	REV. 1/16		MAA/TMG

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SI4-27
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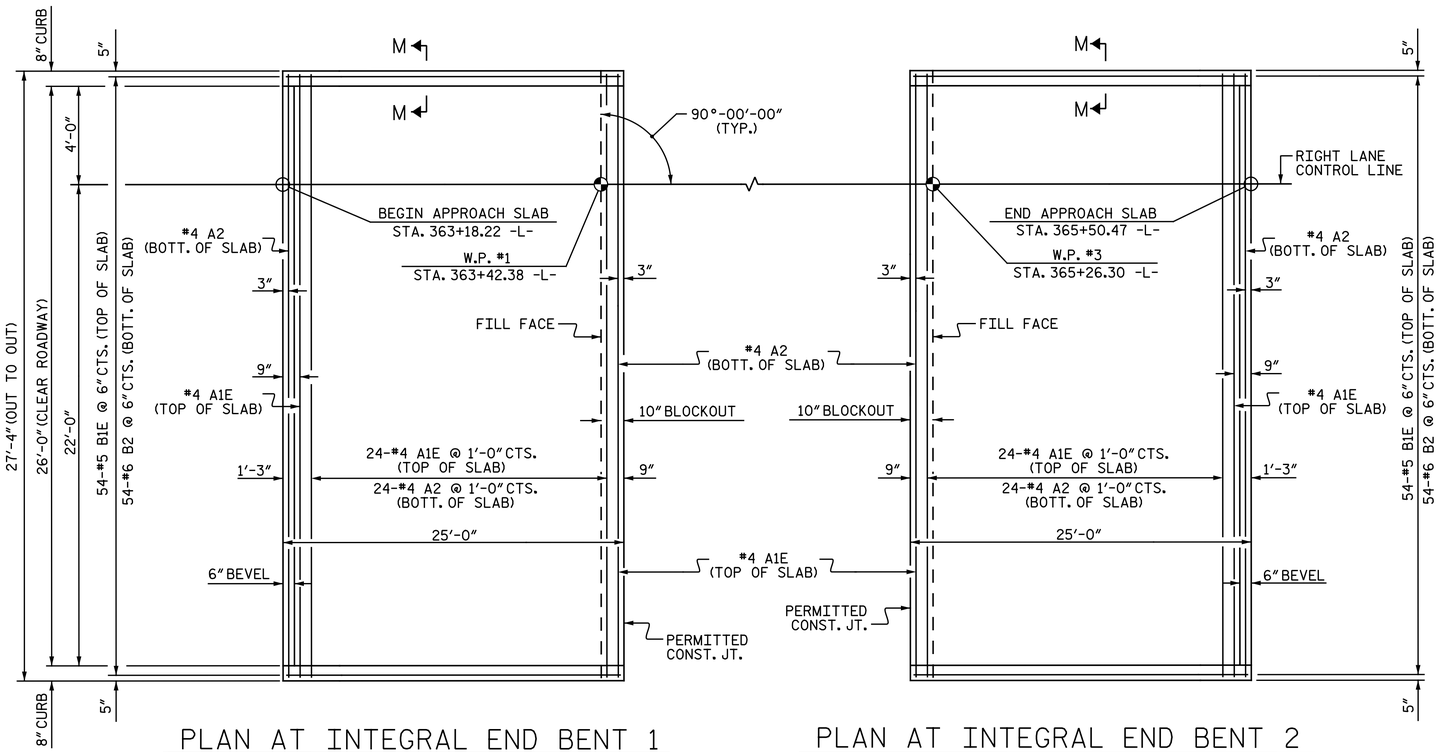
STD. NO. SP2



PLAN AT INTEGRAL END BENT 1

PLAN AT INTEGRAL END BENT 2

NOTES:

AT THE CONTRACTOR'S OPTION, THE APPROACH SLAB MAY BE CAST MONOLITHICALLY WITH THE INTEGRAL END BENT DIAPHRAGM AND THE END SECTION OF BRIDGE DECK. IF CAST WITH THE INTEGRAL DIAPHRAGM, THE LAYERS OF ROOFING FELT SHALL BE OMITTED. IF CAST SEPARATE FROM THE INTEGRAL DIAPHRAGM, 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 AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

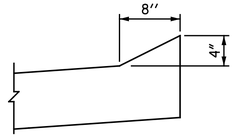
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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 OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.



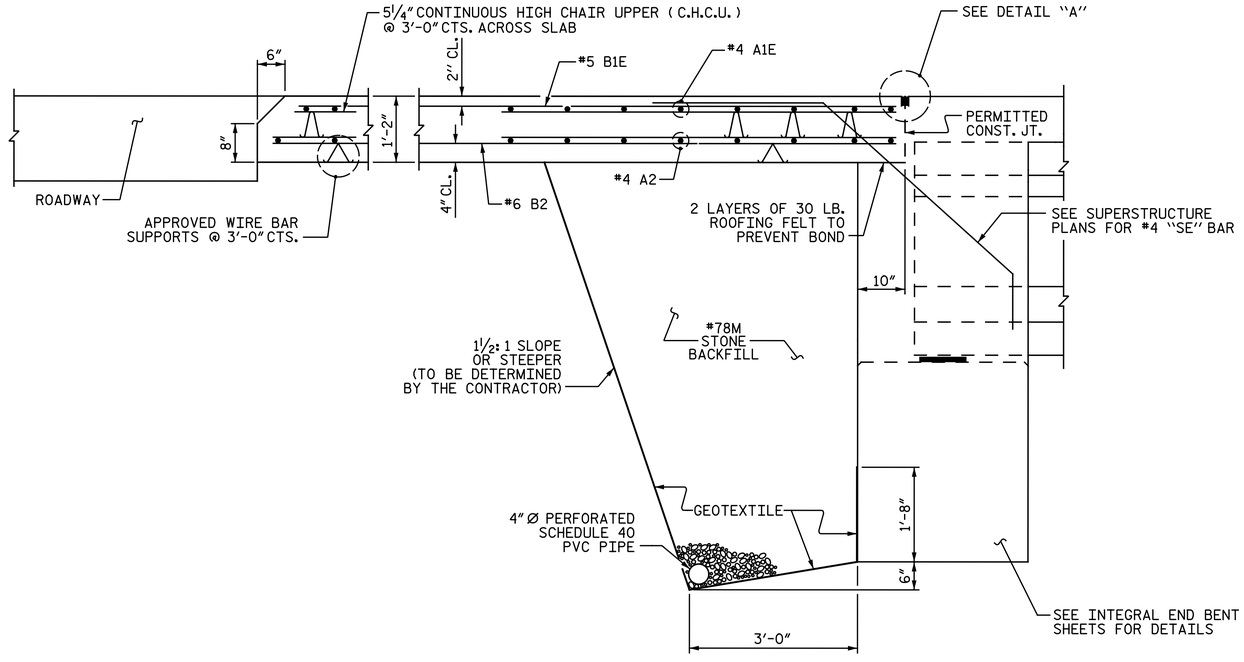
SECTION M-M

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

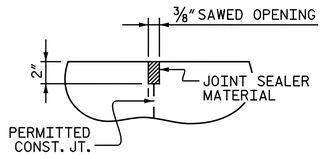
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	26	#4	STR.	27' - 0"	469
A2	26	#4	STR.	27' - 0"	469
B1E	54	#5	STR.	24' - 2"	1,361
B2	54	#6	STR.	24' - 8"	2,001
REINFORCING STEEL				LBS.	2,470
EPOXY COATED REINFORCING STEEL				LBS.	1,830
CLASS AA CONCRETE				C.Y.	29.6

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

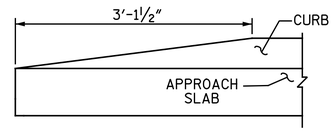
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	26	#4	STR.	27' - 0"	469
A2	26	#4	STR.	27' - 0"	469
B1E	54	#5	STR.	24' - 2"	1,361
B2	54	#6	STR.	24' - 8"	2,001
REINFORCING STEEL				LBS.	2,470
EPOXY COATED REINFORCING STEEL				LBS.	1,830
CLASS AA CONCRETE				C.Y.	29.6



SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

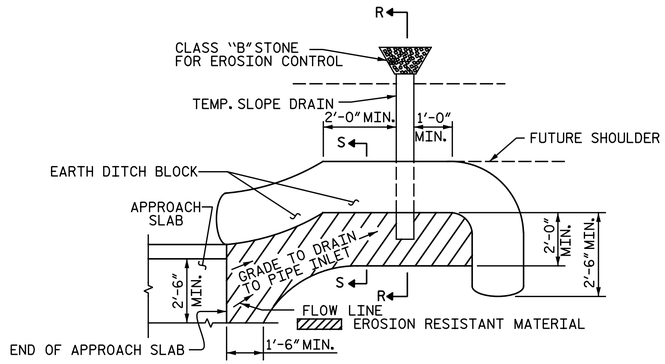
RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 4-10-17
CHECKED BY : A. H. SHARPE DATE : 5-10-17

Michael Baker INTERNATIONAL

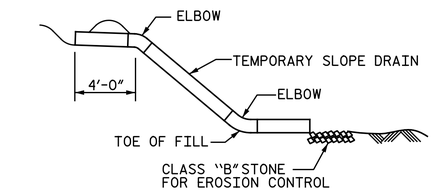
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S14-28
1			3			TOTAL SHEETS
2			4			29

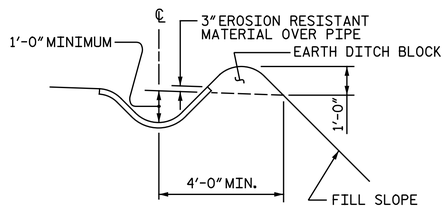


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



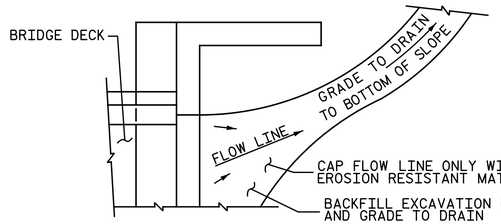
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 364+28.98 -L-

NORTH CAROLINA PROFESSIONAL SEAL 043878 ENGINEER AMANDA H. SHARPE

8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 4-12-17
CHECKED BY : A. H. SHARPE	DATE : 5-10-17

DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

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NC License No. : F-1084

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STD. NO. BAS4