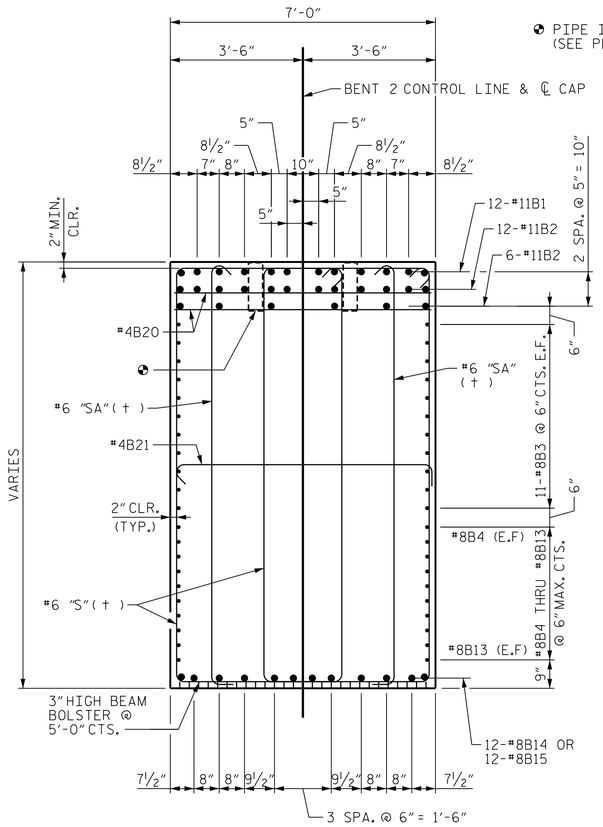
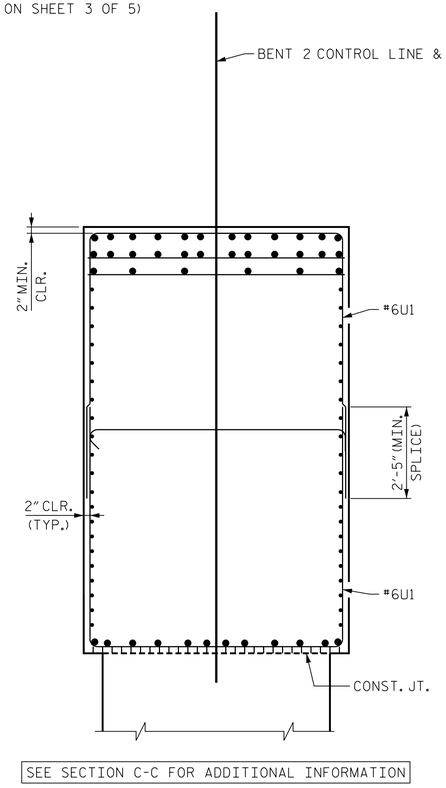


SECTION C-C

(†) SEE "STIRRUP SET DETAIL"

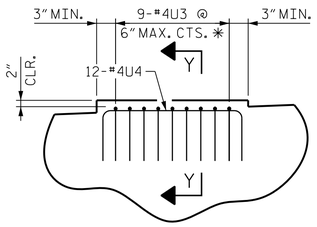
PIPE INSERT FOR ANCHOR BOLTS (TYP.)
(SEE PLAN OF CAP ON SHEET 3 OF 5)



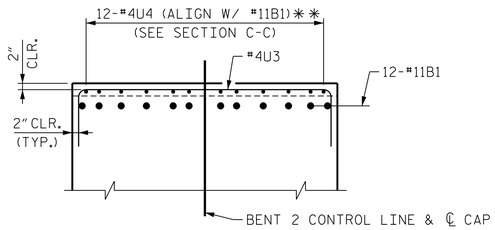
SEE SECTION C-C FOR ADDITIONAL INFORMATION

SECTION D-D

COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY



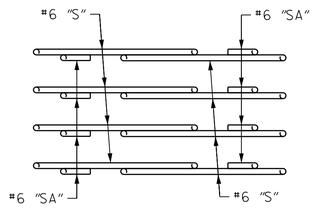
DETAIL "B"



SECTION Y-Y

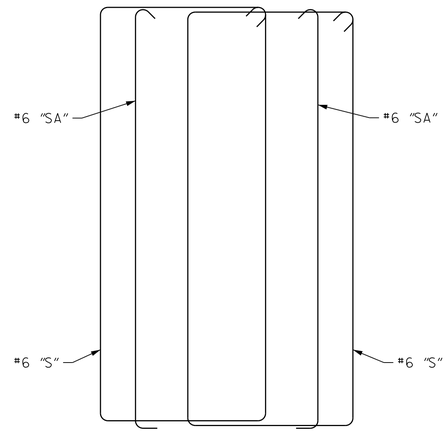
✱ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR PIPE INSERTS FOR ANCHOR BOLTS.

✱✱ NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN

(SHOWING BAR PLACEMENT)



ELEVATION

(SCHEMATIC)

STIRRUP SET DETAIL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-098
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

BILL OF MATERIAL - BENT 2

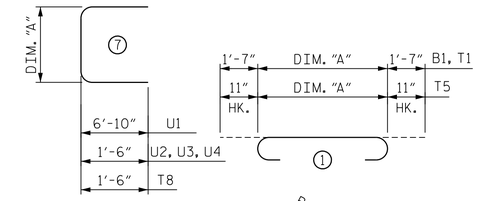
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848
B2	18	#11	STR	--	40'-10"	3,905
B3	22	#8	STR	--	41'-8"	2,448
B4	2	#8	STR	--	38'-5"	205
B5	2	#8	STR	--	35'-9"	191
B6	2	#8	STR	--	33'-2"	177
B7	2	#8	STR	--	30'-6"	163
B8	2	#8	STR	--	27'-11"	149
B9	2	#8	STR	--	25'-3"	135
B10	2	#8	STR	--	22'-7"	121
B11	2	#8	STR	--	20'-0"	107
B12	2	#8	STR	--	17'-3"	92
B13	2	#8	STR	--	14'-7"	78
B14	12	#8	2	--	22'-5"	718
B15	12	#8	2	--	22'-11"	734
B20	22	#4	STR	--	6'-8"	98
B21	11	#4	5	6'-8"	7'-5"	54
M1	60	#11	3	12'-6"	14'-1"	4,489
S1	2	#6	4	6'-9 1/2"	23'-7"	71
S2	2	#6	4	6'-11"	23'-10"	72
S3	2	#6	4	7'-0 1/2"	24'-1"	72
S4	4	#6	4	7'-4"	24'-8"	148
S5	2	#6	4	7'-5 1/2"	24'-11"	75
S6	2	#6	4	7'-7 1/2"	25'-3"	76
S7	2	#6	4	7'-9"	25'-6"	77
S8	2	#6	4	7'-10 1/2"	25'-9"	77
S9	2	#6	4	8'-0"	26'-0"	78
S10	2	#6	4	8'-2"	26'-4"	79
S11	2	#6	4	8'-3 1/2"	26'-7"	80
S12	2	#6	4	8'-5"	26'-10"	81
S13	2	#6	4	8'-7"	27'-2"	82
S14	2	#6	4	8'-8 1/2"	27'-5"	82
S15	2	#6	4	8'-10"	27'-8"	83
S16	2	#6	4	9'-0"	28'-0"	84
S17	2	#6	4	9'-1 1/2"	28'-3"	85
S18	2	#6	4	9'-3"	28'-6"	86
S19	2	#6	4	9'-5"	28'-10"	87
S20	2	#6	4	9'-6 1/2"	29'-1"	87
S21	2	#6	4	9'-8"	29'-4"	88
S22	2	#6	4	9'-9 1/2"	29'-7"	89
S23	2	#6	4	9'-11 1/2"	29'-11"	90
S24	2	#6	4	10'-1"	30'-2"	91
S25	2	#6	4	10'-2 1/2"	30'-5"	91
S26	2	#6	4	10'-4 1/2"	30'-9"	92
S27	2	#6	4	10'-6"	31'-0"	93
S28	8	#6	4	10'-8 1/2"	31'-5"	378
S29	8	#6	4	10'-9 1/2"	31'-7"	380
S30	8	#6	4	11'-1"	32'-2"	387
S31	8	#6	4	11'-2"	32'-4"	389
S32	2	#6	4	11'-0"	32'-0"	96
S33	2	#6	4	10'-10"	31'-8"	95
S34	2	#6	4	10'-8"	31'-4"	94
S35	2	#6	4	10'-6 1/2"	31'-1"	93
S36	2	#6	4	10'-4 1/2"	30'-9"	92
S37	2	#6	4	10'-2 1/2"	30'-5"	91
S38	2	#6	4	10'-0 1/2"	30'-1"	90
S39	2	#6	4	9'-11"	29'-10"	90
S40	2	#6	4	9'-9"	29'-6"	89
S41	2	#6	4	9'-7"	29'-2"	88
S42	2	#6	4	9'-5 1/2"	28'-11"	87
S43	2	#6	4	9'-3 1/2"	28'-7"	86
S44	2	#6	4	9'-1 1/2"	28'-3"	85
S45	2	#6	4	8'-11 1/2"	27'-11"	84
S46	2	#6	4	8'-10"	27'-8"	83
S47	2	#6	4	8'-8"	27'-4"	82
S48	2	#6	4	8'-6"	27'-0"	81
S49	2	#6	4	8'-4"	26'-8"	80
S50	2	#6	4	8'-2 1/2"	26'-5"	79
S51	2	#6	4	8'-0 1/2"	26'-1"	78
S52	2	#6	4	7'-10 1/2"	25'-9"	77
S53	2	#6	4	7'-8 1/2"	25'-5"	76
S54	2	#6	4	7'-7"	25'-2"	76
S55	4	#6	4	7'-5"	24'-10"	149
S56	2	#6	4	7'-1"	24'-2"	73

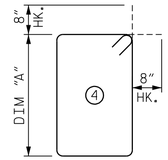
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
S57	2	#6	4	6'-11 1/2"	23'-11"	72
S58	2	#6	4	6'-9 1/2"	23'-7"	71
S1A	2	#6	5	6'-10"	8'-6"	26
S2A	2	#6	5	6'-11"	8'-7"	26
S3A	2	#6	5	7'-1"	8'-9"	26
S4A	4	#6	5	7'-4"	9'-0"	54
S5A	2	#6	5	7'-6"	9'-2"	28
S6A	2	#6	5	7'-8"	9'-4"	28
S7A	2	#6	5	7'-9"	9'-5"	28
S8A	2	#6	5	7'-11"	9'-7"	29
S9A	2	#6	5	8'-0"	9'-8"	29
S10A	2	#6	5	8'-2"	9'-10"	30
S11A	2	#6	5	8'-4"	10'-0"	30
S12A	2	#6	5	8'-5"	10'-1"	30
S13A	2	#6	5	8'-7"	10'-3"	31
S14A	2	#6	5	8'-8"	10'-4"	31
S15A	2	#6	5	8'-10"	10'-6"	32
S16A	2	#6	5	9'-0"	10'-8"	32
S17A	2	#6	5	9'-2"	10'-10"	33
S18A	2	#6	5	9'-3"	10'-11"	33
S19A	2	#6	5	9'-5"	11'-1"	33
S20A	2	#6	5	9'-7"	11'-3"	34
S21A	2	#6	5	9'-8"	11'-4"	34
S22A	2	#6	5	9'-10"	11'-6"	35
S23A	2	#6	5	9'-11"	11'-7"	35
S24A	2	#6	5	10'-1"	11'-9"	35
S25A	2	#6	5	10'-2"	11'-10"	36
S26A	2	#6	5	10'-5"	12'-1"	36
S27A	2	#6	5	10'-6"	12'-2"	37
S28A	8	#6	5	10'-9"	12'-5"	149
S29A	8	#6	5	10'-10"	12'-6"	150
S30A	8	#6	5	11'-1"	12'-9"	153
S31A	8	#6	5	11'-2"	12'-10"	154
S32A	2	#6	5	11'-0"	12'-8"	38
S33A	2	#6	5	10'-10"	12'-6"	38
S34A	2	#6	5	10'-8"	12'-4"	37
S35A	2	#6	5	10'-7"	12'-3"	37
S36A	2	#6	5	10'-5"	12'-1"	36
S37A	2	#6	5	10'-2"	11'-10"	36
S38A	2	#6	5	10'-1"	11'-9"	35
S39A	2	#6	5	9'-11"	11'-7"	35
S40A	2	#6	5	9'-9"	11'-5"	34
S41A	2	#6	5	9'-7"	11'-3"	34
S42A	2	#6	5	9'-5"	11'-1"	33
S43A	2	#6	5	9'-4"	11'-0"	33
S44A	2	#6	5	9'-2"	10'-10"	33
S45A	2	#6	5	8'-11"	10'-7"	32
S46A	2	#6	5	8'-10"	10'-6"	32
S47A	2	#6	5	8'-8"	10'-4"	31
S48A	2	#6	5	8'-6"	10'-2"	31
S49A	2	#6	5	8'-4"	10'-0"	30
S50A	2	#6	5	8'-2"	9'-10"	30
S51A	2	#6	5	8'-1"	9'-9"	29
S52A	2	#6	5	7'-11"	9'-7"	29
S53A	2	#6	5	7'-9"	9'-5"	28
S54A	2	#6	5	7'-7"	9'-3"	28
S55A	4	#6	5	7'-5"	9'-1"	55
S56A	2	#6	5	7'-1"	8'-9"	26
S57A	2	#6	5	7'-0"	8'-8"	26
S58A	2	#6	5	6'-10"	8'-6"	26
S100	62	#5	6	5'-8"	18'-9"	1,212
S101	93	#5	5	5'-8"	6'-8"	647
T1	68	#11	1	22'-6"	25'-8"	9,273
T3	36	#5	STR	--	22'-6"	845
T5	48	#8	1	22'-6"	24'-4"	3,119
Δ T7	16	#6	3	3'-11"	4'-7"	110
T8	180	#5	7	5'-2"	8'-2"	1,533

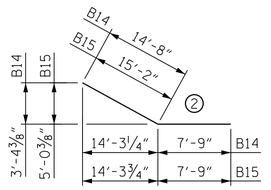
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
U1	20	#6	7	6'-8"	20'-4"	611
U2	36	#6	7	6'-6 1/2"	9'-7"	518
U3	36	#4	7	6'-8"	9'-8"	232
U4	48	#4	7	3'-8"	6'-8"	214
V1	60	#11	STR	--	20'-7"	6,562

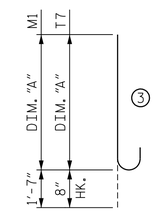
BAR TYPES

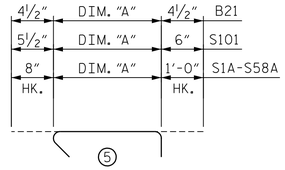
ALL BAR DIMENSIONS ARE OUT TO OUT

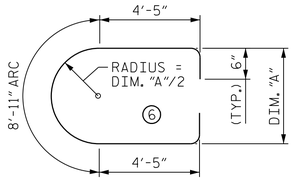












SUMMARY OF QUANTITIES - BENT 2		
REINFORCING STEEL	LBS.	50,124
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	127.4
POUR #2 - COLUMN	C.Y.	36.4
POUR #3 - CAP	C.Y.	108.0
TOTAL	C.Y.	271.8
HP 14x73 STEEL PILES	NO.	36
	LF	1,260
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	36

Δ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2 BILL OF MATERIALS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-099
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY: B. PETERSON DATE: 10/19
DES CHK: S. NIFONG DATE: 10/19

DWG BY: B. PETERSON DATE: 10/19
CHK BY: M. WERNER DATE: 11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: PPETERSO DATE: 10/14/2021
FILE: ...\SUBSTR
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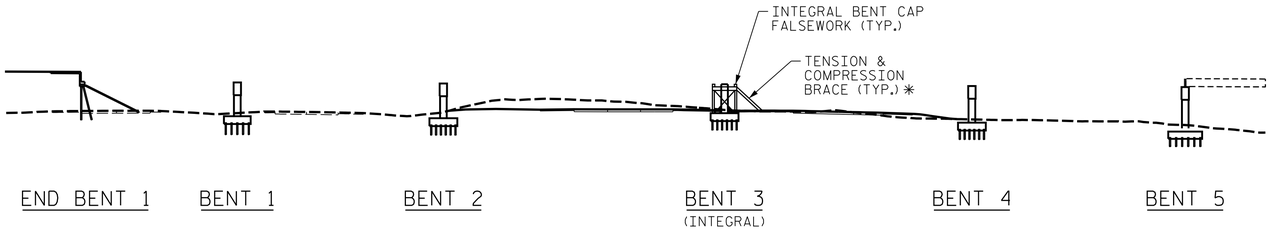
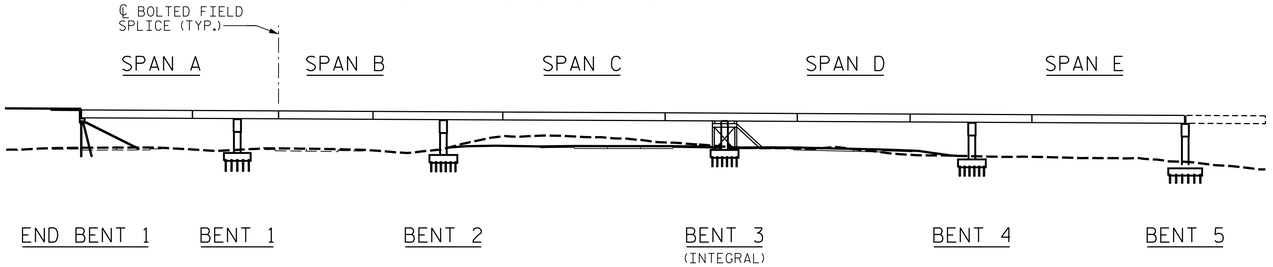


STAGE 1

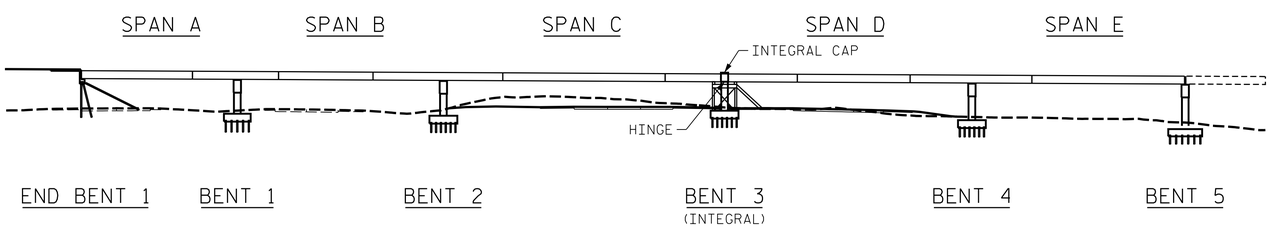
1. CONSTRUCT END BENT 1, BENTS 1, 2, 4 & 5 BEFORE STAGE 2.
2. CONSTRUCT FOOTING AND COLUMN FOR BENT 3.
3. ERECT FALSEWORK FOR BENT 3.

* = PROVIDE BRACING TO RESTRAIN THE SUPERSTRUCTURE AT THE TOP OF BENT 3 AFTER THE COLUMNS ARE CONSTRUCTED. BRACING TO REMAIN IN PLACE UNTIL INTEGRAL BENT CAP CONSTRUCTION IS COMPLETE.



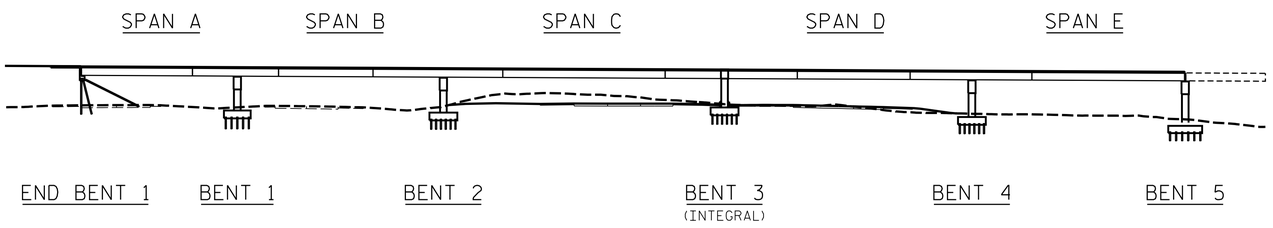
STAGE 2

1. ERECT ALL STRUCTURAL STEEL FOR SPANS A THRU E. GIRDERS SHALL BE SET IN THE PROPOER POSITION TAKING INTO ACCOUNT THE ANTICIPATED DEAD LOAD DEFLECTION.
2. INSTALL HIGH STRENGTH BOLTS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



STAGE 3

1. CONSTRUCT INTEGRAL BENT CAP (SEE INTEGRAL BENT CAP CONSTRUCTION SEQUENCE NOTES).



STAGE 4

1. REMOVE INTEGRAL BENT CAP FALSEWORK (SEE INTEGRAL BENT CONSTRUCTION SEQUENCE NOTES).
2. CONSTRUCT REMAINING PORTIONS OF SPANS A THRU E.

INTEGRAL BENT CONSTRUCTION SEQUENCE

THIS BRIDGE IS DESIGNED FOR THE CONSTRUCTION SEQUENCE SHOWN. IF THE CONTRACTOR USES AN ALTERNATE DESIGN FOR POST-TENSIONING TENDONS AS ALLOWED BY THE SPECIAL PROVISION, THEN THE CONTRACTOR BECOMES RESPONSIBLE FOR CHANGES TO THE CONSTRUCTION SEQUENCE. THE REVISED CONSTRUCTION SEQUENCE SHALL BE SUBMITTED FOR APPROVAL WITH THE ALTERNATE POST-TENSIONING DESIGN. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL APPLY UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER.

1. CONSTRUCT FOOTING AND COLUMN IN ACCORDANCE WITH THE PLANS.
2. ERECT INTEGRAL BENT CAP FALSEWORK. FALSEWORK SHALL SUPPORT GIRDERS ON BOTH SIDES OF INTEGRAL CAP. GIRDER SUPPORT SHALL BE WITHIN 10'-0" OF CENTERLINE BENT. PROVIDE BEARING STIFFENERS IN THE GIRDERS AS NECESSARY.
3. ERECT ALL STRUCTURAL STEEL IN SPANS A THRU E. SEE "GIRDER ERECTION DETAILS" SHEETS. STRUCTURAL STEEL SHALL BE SUPPORTED BY TEMPORARY FALSEWORK AT BENT 3.
4. WHEN FOOTING AND COLUMN CONCRETE HAS ATTAINED THE SPECIFIED COMPRESSIVE STRENGTH VALUE (f'c), CONSTRUCT INTEGRAL CAP, INCLUDING POST-TENSIONING DUCTS. GROUT TUBES AND ANCHORAGES REQUIRED FOR CAP, IN ACCORDANCE WITH THE PLANS.
5. WHEN CAP CONCRETE HAS ATTAINED THE SPECIFIED INITIAL COMPRESSIVE STRENGTH VALUE (f'ci) INSTALL POST-TENSIONING TENDONS IN THE CAP (T1-T11) AND TENSION IN THE ORDER SHOWN BELOW.
6. WHEN TENSIONING OF THE CAP TENDONS (T1-T11) IS COMPLETE, TENDONS SHALL BE GROUTED AND ANCHORAGES SHALL BE PROTECTED. SEE POST-TENSIONING SPECIAL PROVISION FOR PROTECTION OF END ANCHORAGES.
7. REMOVE FALSEWORK AFTER COMPLETION OF INTEGRAL CAPS FOR BENT 3.
8. CAST DECK & RAILS AS SPECIFIED IN THE SUPERSTRUCTURE PLANS.

POST-TENSIONING DATA

CONCRETE
- CAP, HINGE & UPPER PORTION OF COLUMN
  - STRENGTH AT 28 DAYS (f'c) = 6 KSI
  - STRENGTH AT POST-TENSIONING (f'ci) = 4.5 KSI
- FOOTING AND LOWER PORTION OF COLUMN = 4.5 KSI (CLASS AA)
  - STRENGTH AT 28 DAYS (f'c)

TENDONS IN BENT CAP 3
- T1 THRU T7: 19-0.6" DIA., GRADE 270, SEVEN WIRE, LOW-RELAXATION STRANDS PER TENDON
- T8 THRU 11: 7-0.6" DIA., GRADE 270, SEVEN WIRE, LOW-RELAXATION STRANDS PER TENDON

FRICTION (U)	= 0.20
WOBBLE (K)	= 0.0002/FT
ANCHOR SET	= 0.25"
MODULUS OF ELASTICITY (Es)	= 28,500 KSI
JACKING STRESS BEFORE ANCHOR SET (ALL TENDONS)	= 205 KSI

DUCTS
- T1 THRU T7: MINIMUM 4½" NOMINAL DIAMETER GALVANIZED RIGID OR SEMI-RIGID DUCTS
- T8 THRU 11: MINIMUM 2¾" NOMINAL DIAMETER GALVANIZED RIGID OR SEMI-RIGID DUCTS

TENDON STRESSING DATA

TENDON	STRESSING SEQUENCE	JACKING FORCE BEFORE ANCHOR SET	ELONGATION BEFORE ANCHOR SET	ELONGATION AFTER ANCHOR SET
		KIPS	IN.	IN.
T1	10	845	3.11	2.86
T2	4	845	3.11	2.86
T3	5	845	3.11	2.86
T4	11	845	3.11	2.86
T5	2	845	2.98	2.73
T6	1	845	2.98	2.73
T7	3	845	2.98	2.73
T8	8	311	3.11	2.86
T9	6	311	3.11	2.86
T10	7	311	3.11	2.86
T11	9	311	3.11	2.86

TENDON STRESSING NOTES

ALL CAP TENDONS (T1-T11) SHALL BE STRESSED FROM THE SAME END.

DURING STRESSING NO PERSONS SHALL BE DIRECTLY BEHIND EITHER TENDON END.

INTEGRAL BENT NOTES (BENT 3)

NO CONCRETE SHALL BE PLACED IN ANY PORTION OF THE BENT UNTIL REVIEW OF THE POST-TENSIONING SYSTEM SUBMITTED BY THE CONTRACTOR HAS BEEN COMPLETED.

POST-TENSIONING BEARING PLATES FOR CAP TENDONS (T1 THRU T11) SHALL BE FABRICATED OF HOT-ROLLED STEEL CONFORMING TO ASTM A588 AND APPROVED BY THE ENGINEER. BEARING PLATES SHALL FIT FLAT AGAINST THE GIRDER WEB AND RECEIVE AN ANSI 500 FINISH ON THE SURFACE IN CONTACT WITH THE WEB. CENTERLINE OF THE TENDONS IS TO BE NORMAL TO OUTSIDE FACE OF BEARING PLATE.

POST-TENSIONING ANCHORAGE DETAILS SHALL BE DETERMINED BY THE POST-TENSIONING MATERIALS SUPPLIER. DETAILS SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE ANCHORAGE SYSTEM AND LENGTH OF PROJECTING PRESTRESSING STEEL AT THE DEAD END ANCHORAGES SHALL PERMIT JACKING WITH THE SAME JACKING EQUIPMENT USED ON THE LIVE END. SEE SPECIAL PROVISION FOR POST-TENSIONING TENDONS.

BAR REINFORCEMENT INTERFERING WITH DUCT ALIGNMENT SHALL BE ADJUSTED AS APPROVED BY THE ENGINEER.

SPECIAL CARE SHALL BE TAKEN TO ENSURE PROPER CONSOLIDATION OF CONCRETE UNDER THE TOP FLANGE OF THE GIRDERS DURING PLACEMENT OF CONCRETE FOR INTEGRAL CAPS AND ANCHORAGE ENCASEMENTS TO ELIMINATE FORMATION OF VOIDS BENEATH TOP FLANGE.

AFTER CASTING CAP BUT PRIOR TO TENSIONING OF THE CAP, THE ENGINEER SHALL THOROUGHLY INSPECT THE INTERFACE BETWEEN THE GIRDER FLANGES AND CONCRETE TO LOCATE ANY VOIDS DUE TO INCOMPLETE CONSOLIDATION DURING PLACEMENT OF CONCRETE. IF VOIDS ARE DETECTED OR AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL REMOVE A SUFFICIENT VOLUME OF CONCRETE AND REPLACE WITH NON-SHRINK GROUT.

ENCASEMENT OF THE POST-TENSIONING ANCHORAGES SHALL BE SUBJECT TO THE SAME INSPECTION AND REPAIR CRITERIA AS SPECIFIED FOR THE CAP ABOVE.

TOP SURFACE OF THE CAP SHALL BE INTENTIONALLY ROUGHENED WITH A WIRE BRUSH WHEN CAST AND THOROUGHLY CLEANED PRIOR TO PLACING DECK CONCRETE.

THE DUCTS AND STRANDS SHALL BE FREE OF DIRT, LOOSE RUST AND OTHER DELETERIOUS SUBSTANCE BEFORE INSTALLING TENDONS. POST TENSIONING DUCTS SHALL BE FILLED WITH GROUT AFTER STRESSING HAS BEEN COMPLETED. SEE SPECIAL PROVISION FOR POST-TENSIONING TENDONS.

CONTRACTOR SHALL SUBMIT DESIGN AND DRAWINGS OF FALSEWORK AND ERECTION PROCEDURES TO THE ENGINEER FOR APPROVAL. SEE SPECIAL PROVISION FOR POST-TENSIONING TENDONS.

THERE IS NO PAYMENT FOR THE FALSEWORK AS THE FALSEWORK IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF BENT 3.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SCHEMATIC SEQUENCE OF CONSTRUCTION AND NOTES INTEGRAL BENT 3

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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DWG BY:	B. PETERSON	DATE :	11/19
CHK BY:	J. CABABE	DATE :	11/19

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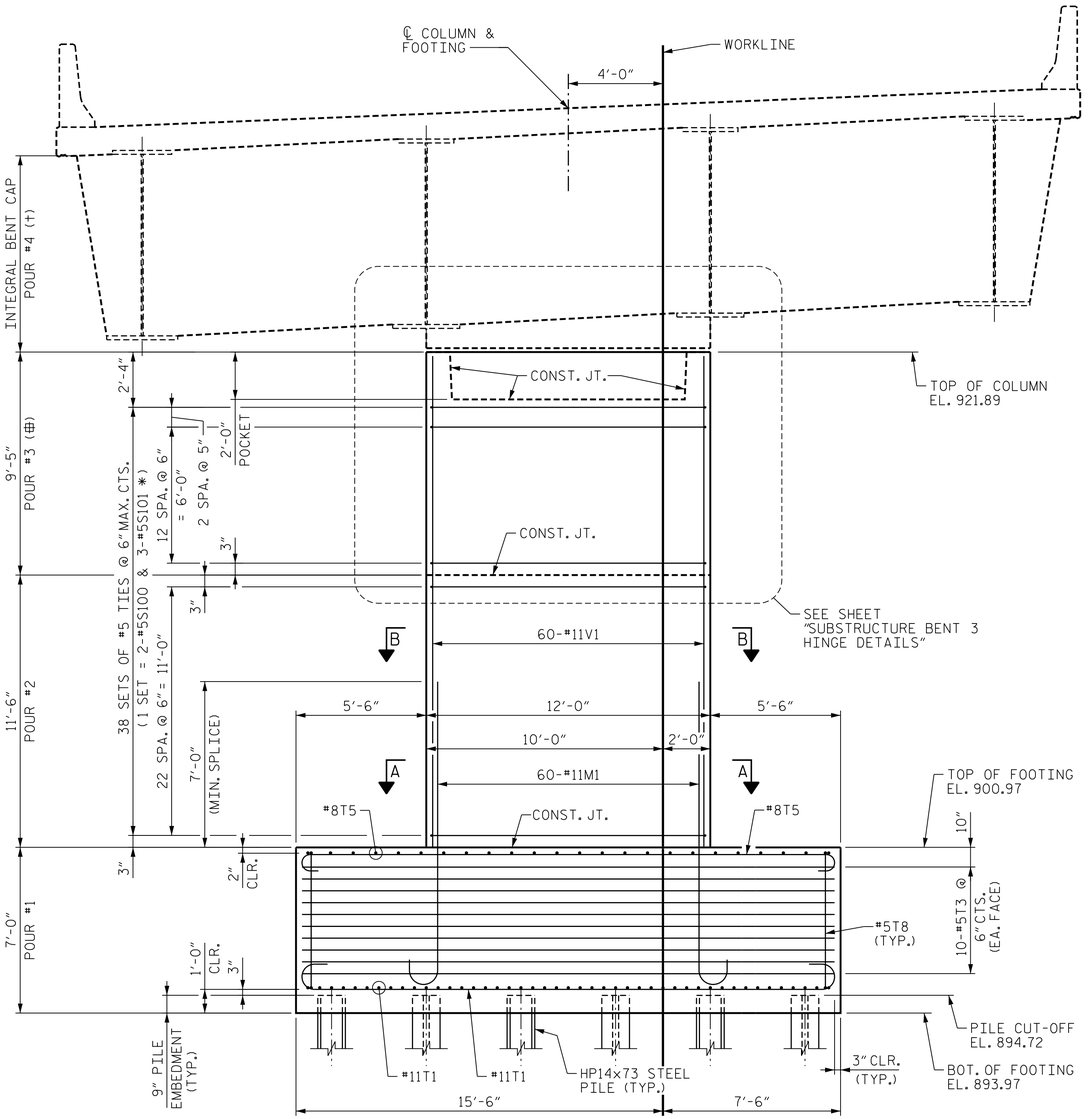
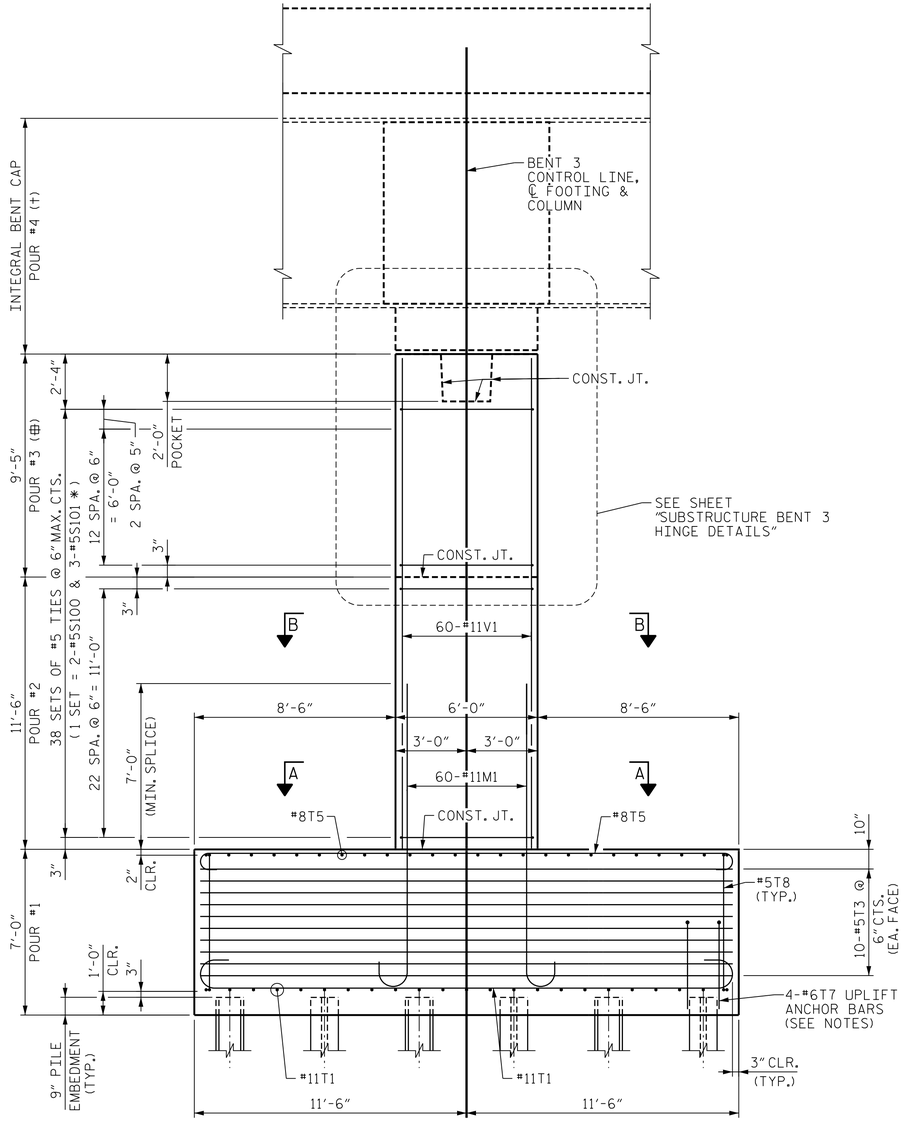


FRONT ELEVATION



END ELEVATION

* INVERT ORIENTATION OF ALTERNATE #5S101 TIES

NOTES

FOR DETAILS OF INTEGRAL BENT CAP, SEE "SUBSTRUCTURE BENT 3 BENT CAP DETAILS" SHEETS.

FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 3 FOOTING & COLUMN DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 3 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.

⊕ = TOP OF COLUMN (POUR #3) SHALL BE CAST WITH 6,000 PSI CONCRETE

† = POUR 4 SHALL BE CAST WITH 6,000 PSI CONCRETE. POUR 4 INCLUDES THE INTEGRAL BENT CAP, HINGE, AND KEY.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUBSTRUCTURE BENT 3 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-101
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DWG BY:	B. PETERSON	DATE :	10/19
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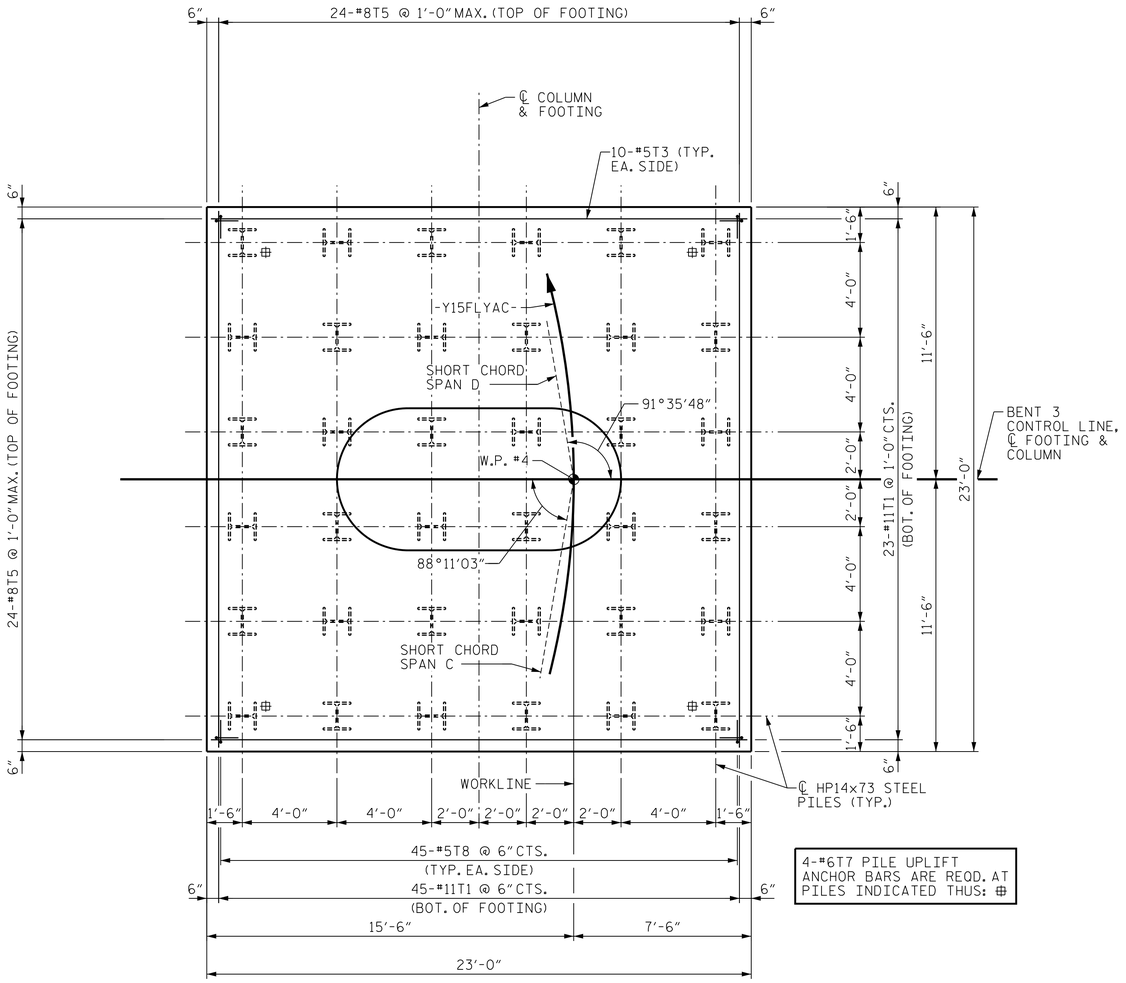
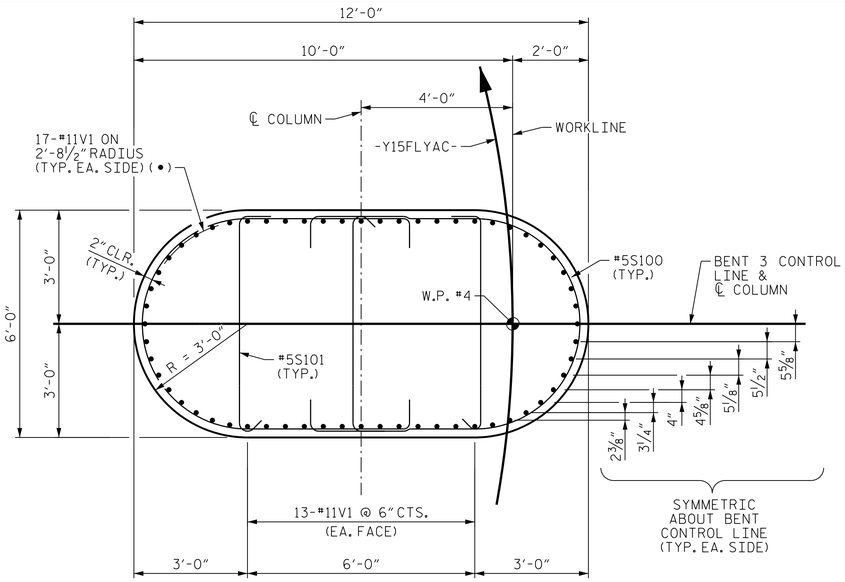
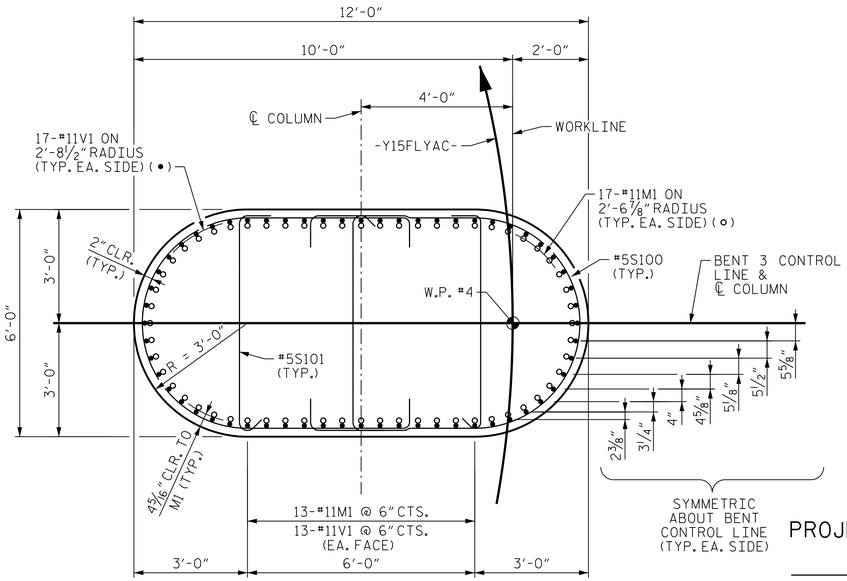


4-#6T7 PILE UPLIFT ANCHOR BARS ARE REQD. AT PILES INDICATED THUS: ⊕

FOOTING PLAN



SECTION B-B



SECTION A-A

NOTE

SEE SHEET 1 OF 4 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE BENT 3 FOOTING & COLUMN DETAILS

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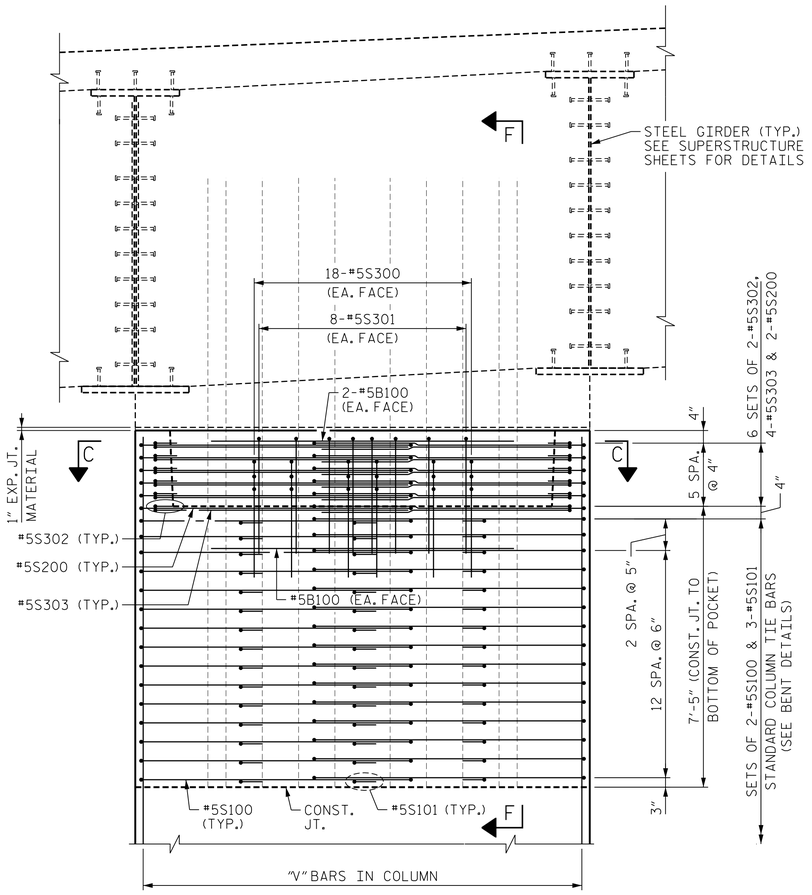

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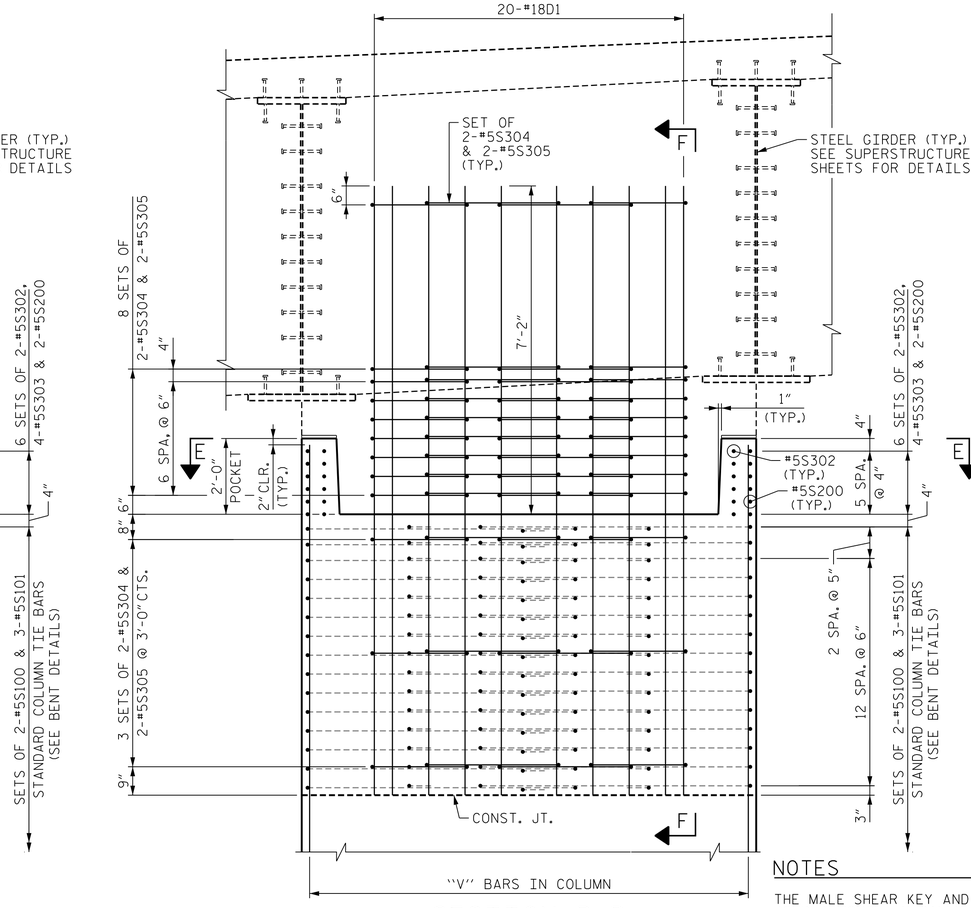

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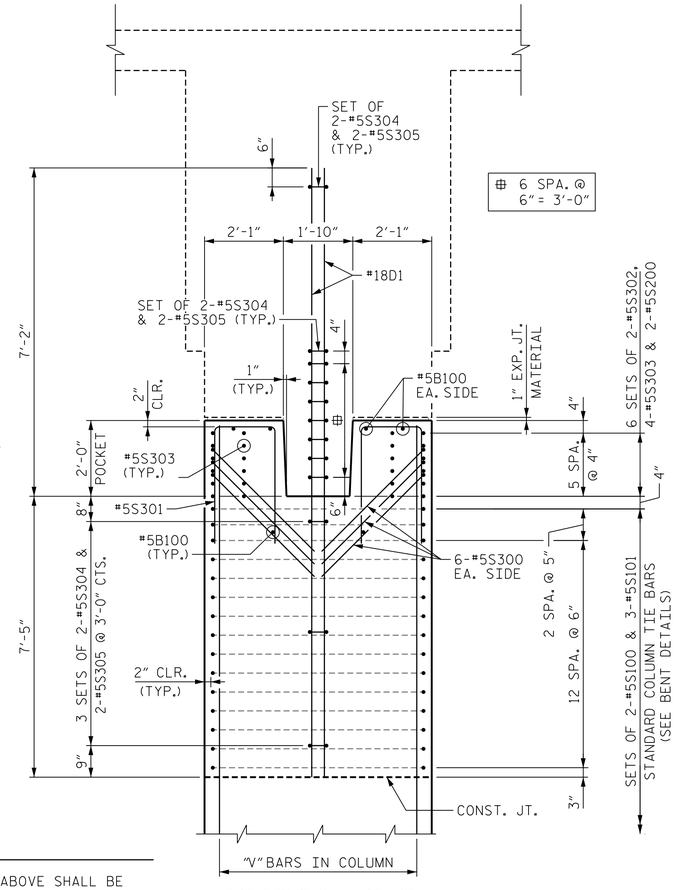

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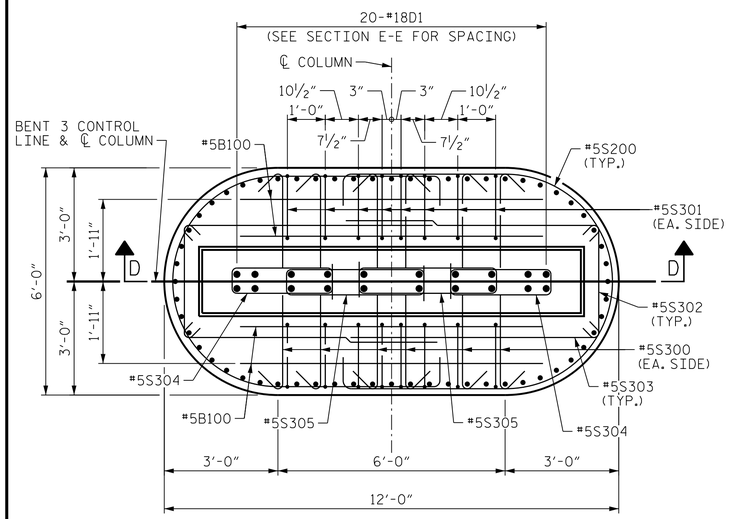

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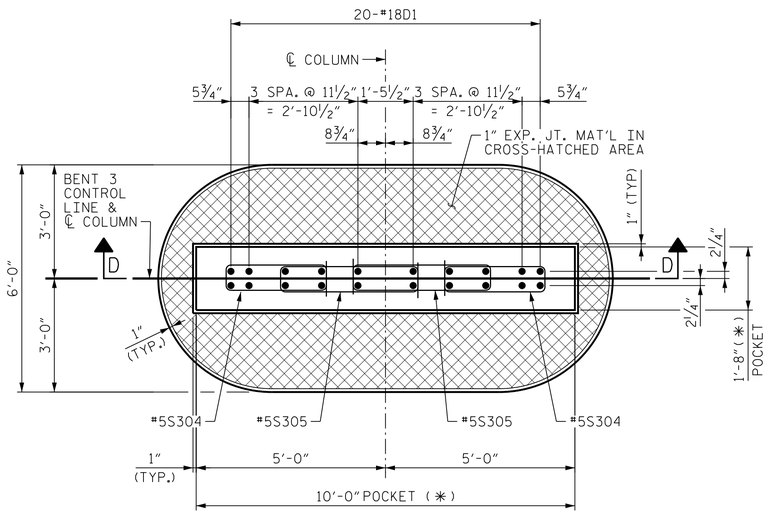

SECTION E-E

(*) = MEASURED AT BOTTOM OF POCKET

NOTES

THE MALE SHEAR KEY AND ABOVE SHALL BE POURED MONOLITHICALLY WITH THE INTEGRAL BENT CAP CONCRETE (6000 PSI CONCRETE).

THE 1" EXPANSION JOINT MATERIAL AND LOW MODULUS SILICONE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SHALL BE CONSIDERED INCIDENTAL TO THE PRICE BID FOR 6000 PSI CONCRETE.

REINFORCING IN THE HINGE REGION MAY BE SHIFTED SLIGHTLY AS DIRECTED BY THE ENGINEER.

SEE DRAWING "SCHEMATIC SEQUENCE OF CONSTRUCTION AND NOTES INTEGRAL BENT 3".

TOP OF COLUMN SHALL RECEIVE A SMOOTH TROWELLED FINISH AND BE THOROUGHLY CLEANED PRIOR TO PLACEMENT OF EXPANSION JOINT MATERIAL AND HINGE MALE SHEAR KEY AND ABOVE CONCRETE.

SIDE SURFACE OF THE SHEAR KEY POCKET SHALL BE SMOOTH AND SHALL BE THOROUGHLY CLEANED PRIOR TO PLACEMENT OF ROOFING FELT (BOND BREAKER) AND HINGE MALE SHEAR KEY CONCRETE.

BOTTOM SURFACE OF THE SHEAR KEY POCKET SHALL BE SMOOTH AND SHALL BE THOROUGHLY CLEANED AND FREE FROM STANDING WATER PRIOR TO PLACEMENT OF MALE SHEAR KEY CONCRETE.

FOR REINFORCING STEEL AND CONCRETE QUANTITIES SEE SHEET 4 OF 4. SEE "SUBSTRUCTURE BENT 3 BENT CAP DETAILS" SHEET 2 OF 3 FOR LOW MODULUS SILICONE SEAL, 20# ROOFING FELT, MALE SHEAR KEY AND ABOVE CONCRETE AND REINFORCING DETAILS.

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 3 HINGE DETAILS

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DWG BY: B. PETERSON DATE: 10/19
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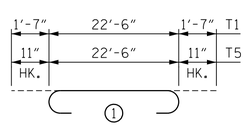
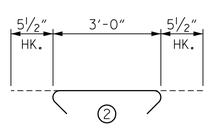
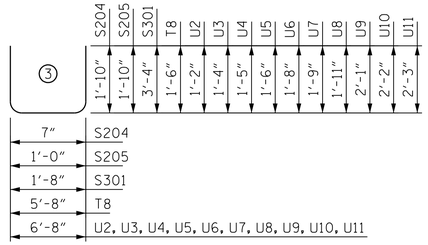
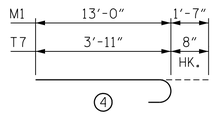
BAR TYPES

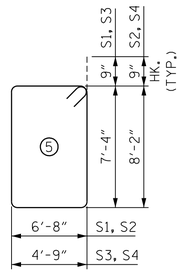
ALL BAR DIMENSIONS ARE OUT TO OUT

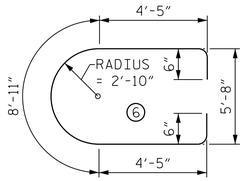


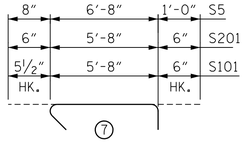


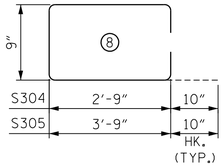


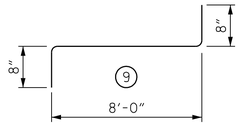


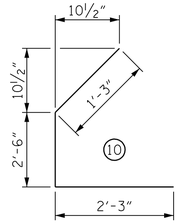


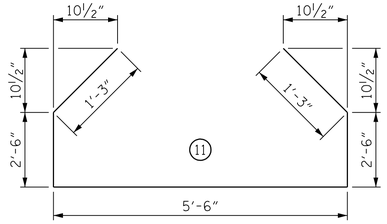


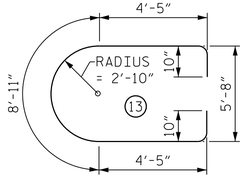












BILL OF MATERIAL - BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	38	#10	STR.	37'-8"	6,159
B2	26	#5	STR.	6'-8"	181
B100	6	#5	STR.	8'-6"	53
D1	20	#18	STR.	14'-7"	3,967
M1	60	#11	4	14'-7"	4,649
S1	18	#6	5	29'-6"	798
S2	57	#6	5	31'-2"	2,668
S3	36	#6	5	25'-8"	1,388
S4	114	#6	5	27'-4"	4,680
S5	300	#6	7	8'-4"	3,755
S100	76	#5	6	18'-9"	1,486
S101	114	#5	7	6'-8"	793
S200	17	#5	13	19'-5"	344
S201	16	#5	7	6'-8"	111
S202	4	#5	10	6'-0"	25
S203	8	#5	11	13'-0"	108
S204	7	#5	3	4'-3"	31
S205	7	#5	3	4'-8"	34
S300	36	#5	12	4'-4"	163
S301	16	#5	3	8'-4"	139
S302	12	#5	2	3'-11"	49
S303	24	#5	12	7'-9"	194
S304	24	#5	8	7'-11"	198
S305	24	#5	8	9'-11"	248

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
T1	68	#11	1	25'-8"	9,273
T3	40	#5	STR.	22'-6"	939
T5	48	#8	1	24'-4"	3,119
Δ T7	16	#6	4	4'-7"	110
T8	180	#5	3	8'-8"	1,627
U1	16	#4	9	9'-4"	100
U2	2	#4	3	9'-0"	12
U3	2	#4	3	9'-4"	12
U4	2	#4	3	9'-6"	13
U5	2	#4	3	9'-8"	13
U6	2	#4	3	10'-0"	13
U7	2	#4	3	10'-2"	14
U8	2	#4	3	10'-6"	14
U9	2	#4	3	10'-10"	14
U10	2	#4	3	11'-0"	15
U11	2	#4	3	11'-2"	15
V1	60	#11	STR.	20'-9"	6,615

SUMMARY OF QUANTITIES - BENT 3	
REINFORCING STEEL	54,139 LBS.
CLASS AA CONCRETE	
POUR #1 - FOOTING	137.2 C.Y.
POUR #2 - LOWER COLUMN	27.4 C.Y.
POUR #5 - ENDS OF INTEGRAL CAP	8.4 C.Y.
TOTAL	173.0 C.Y.
6000 PSI CONCRETE	
POUR #3 - UPPER COLUMN	21.1 C.Y.
POUR #4 - INTEGRAL CAP, HINGE & KEY	74.1 C.Y.
TOTAL	95.2 C.Y.
POST-TENSIONING ENCASEMENT	
EPOXY GROUT	LUMP SUM
HP 14x73 STEEL PILES	
NO.	36
LF	2,160
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES EA.	36

Δ = ASTM A706 WELDABLE REINFORCING STEEL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 3 BILL OF MATERIALS

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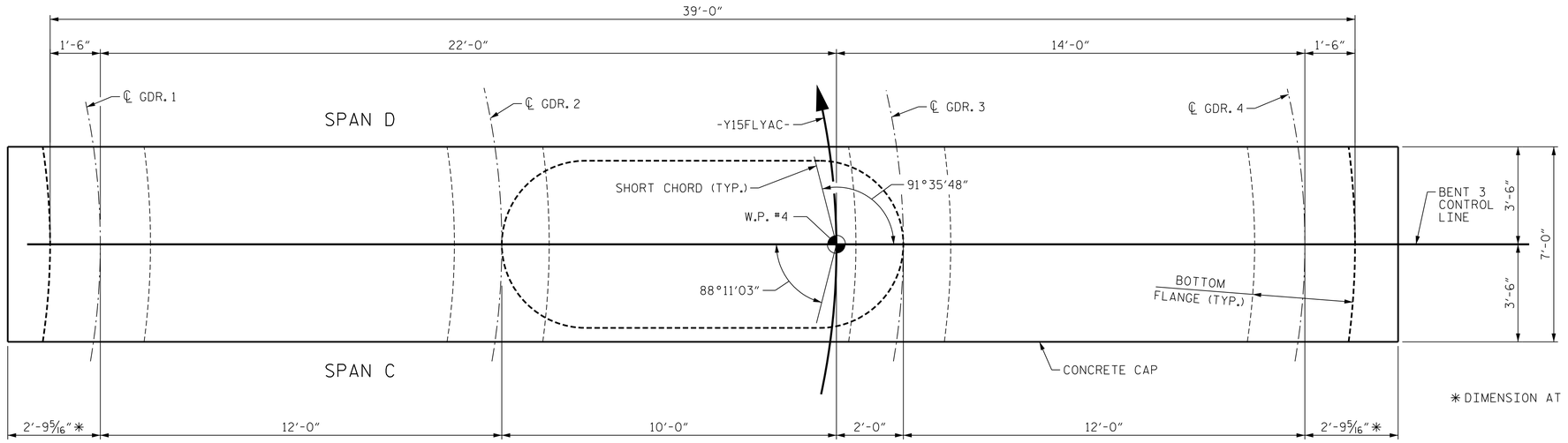
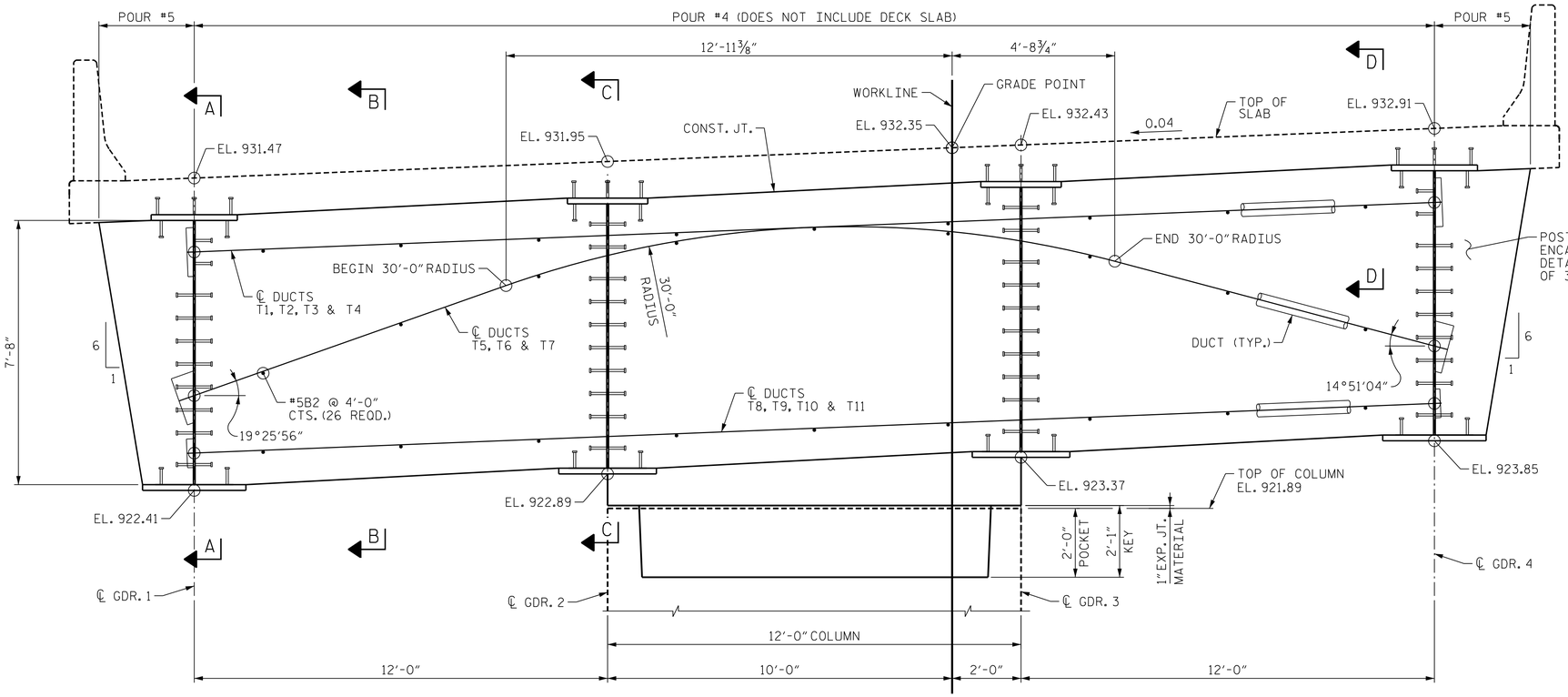


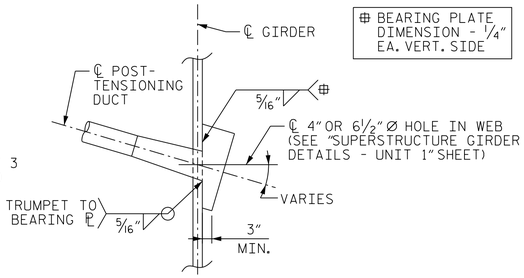
PLAN

(DECK SLAB NOT SHOWN FOR CLARITY)



ELEVATION

(SHOWING POST-TENSIONING)



SECTION AT BEARING PLATE

(GDR. 4 SHOWN, GDR. 1 SIMILAR)

NOTES

FOR STRUCTURAL STEEL DETAILS OF INTEGRAL BENT CAP SEE, "SUPERSTRUCTURE GIRDER DETAILS UNIT 1" SHEET.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THE INTEGRAL BENT SHALL BE SUBMITTED. SEE "SCHEMATIC SEQUENCE OF CONSTRUCTION AND NOTES INTEGRAL BENT 3" SHEET, "STANDARD NOTES" SHEET, AND POST-TENSIONING TENDON SPECIAL PROVISION.

FOR CAP AND SHEAR KEY REINFORCING, SEE SHEET 2 OF 3.

FOR SECTIONS A-A, B-B, C-C & D-D, SEE SHEET 3 OF 3.

FOR HINGE REINFORCING, SEE "SUBSTRUCTURE BENT 3 HINGE DETAILS" SHEET.

FOR PRESTRESS 6000 PSI CONCRETE, SEE SPECIAL PROVISIONS.

FOR PROTECTION OF END ANCHORAGES (POST-TENSIONING ENCASEMENT), SEE POST-TENSIONING TENDONS SPECIAL PROVISION.

TOP OF SLAB ELEVATIONS SHOWN ARE ALONG THE BENT 3 CONTROL LINE.

* DIMENSION AT TOP OF CAP

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 3 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-105
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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DES BY:	S. JING	DATE :	10/19
DES CHK:	J. CABABE	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	J. CABABE	DATE :	11/19

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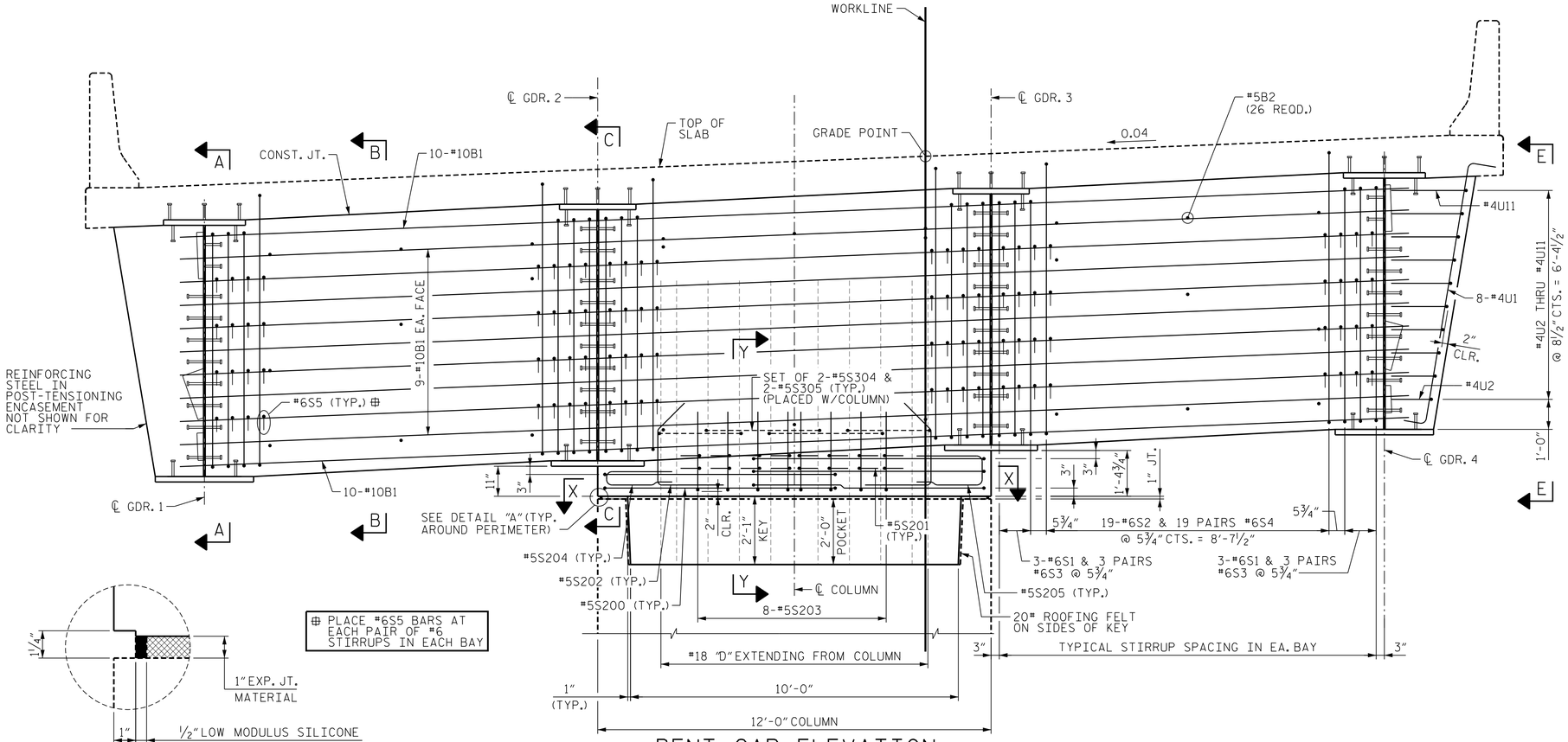
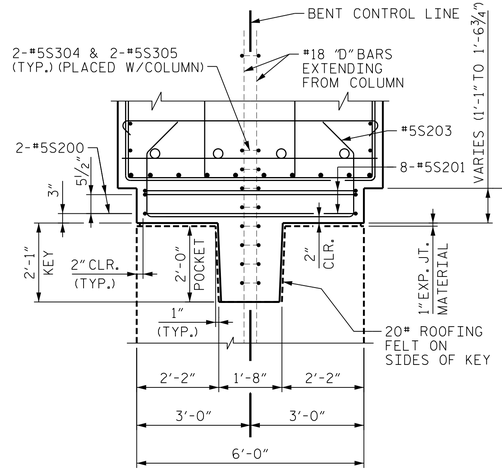


⊕ PLACE #6S5 BARS AT EACH PAIR OF #6 STIRRUPS IN EACH BAY

BENT CAP ELEVATION

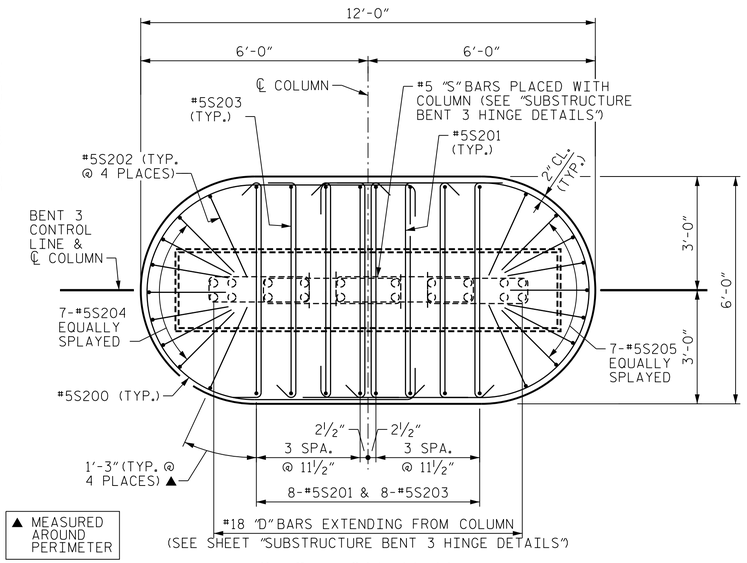
CAP REINFORCING STEEL SHOWN



DETAIL "A"

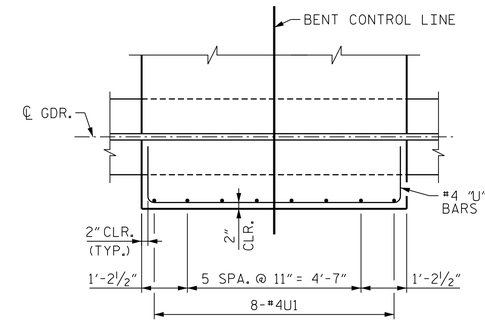
(TYP. AROUND PERIMETER)

SECTION Y-Y



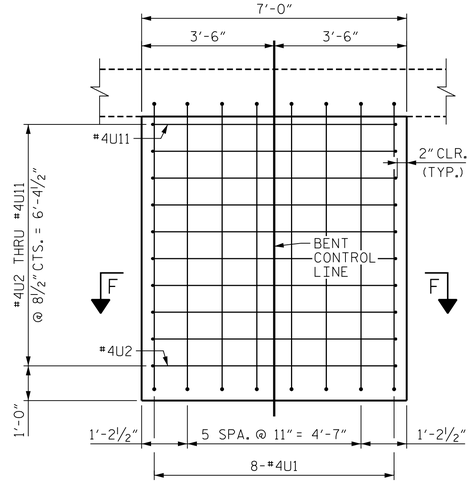
▲ MEASURED AROUND PERIMETER

SECTION X-X



SECTION F-F

(SHEAR STUDS NOT SHOWN FOR CLARITY)



SECTION E-E

(TYPICAL EACH END)

NOTES

REINFORCING STEEL IN THE HINGE REGION MAY BE SHIFTED SLIGHTLY AS DIRECTED BY THE ENGINEER.

LOCATION OF U2-U11 BARS MAY BE SHIFTED SLIGHTLY TO TIE TO B1 BARS IN CAP.

B1 BARS AT BEARING PLATES MAY BE CUT AS APPROVED BY ENGINEER TO AVOID INTERFERING WITH POST TENSIONING EQUIPMENT.

FOR ADDITIONAL NOTES, SEE "SUBSTRUCTURE BENT 3 HINGE DETAILS" SHEET.

S5 BARS IN CAP MAY BE SHIFTED AND BUNDLED AS NECESSARY TO CLEAR POST TENSIONING DUCTS.

FOR REINFORCING STEEL AND CONCRETE QUANTITIES, SEE "SUBSTRUCTURE BENT 3 BILL OF MATERIALS".

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 3 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-106
1	--	--	3	--	--	TOTAL SHEETS
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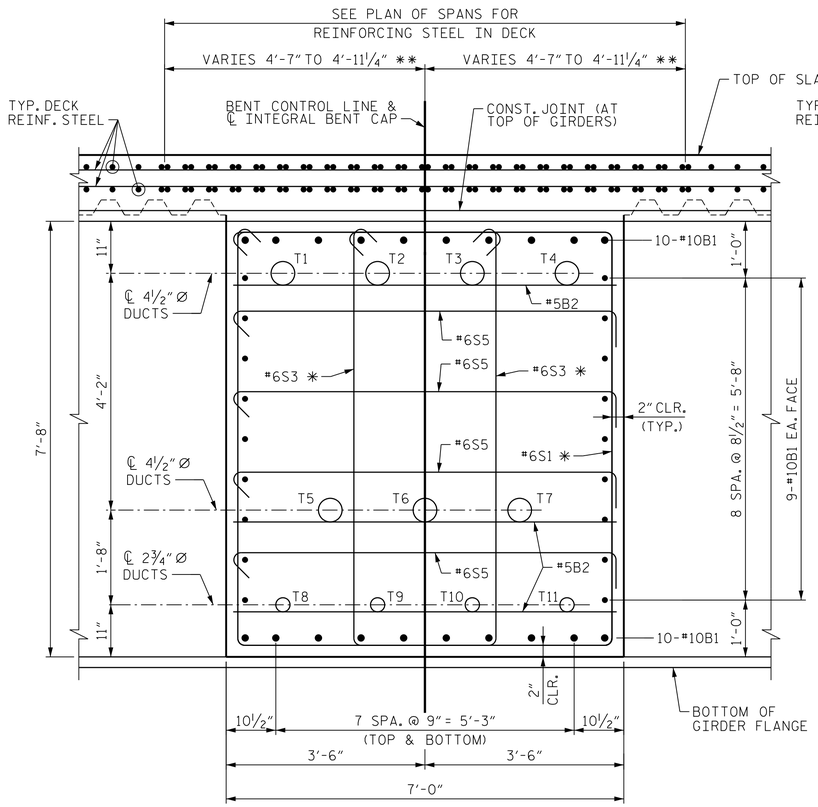
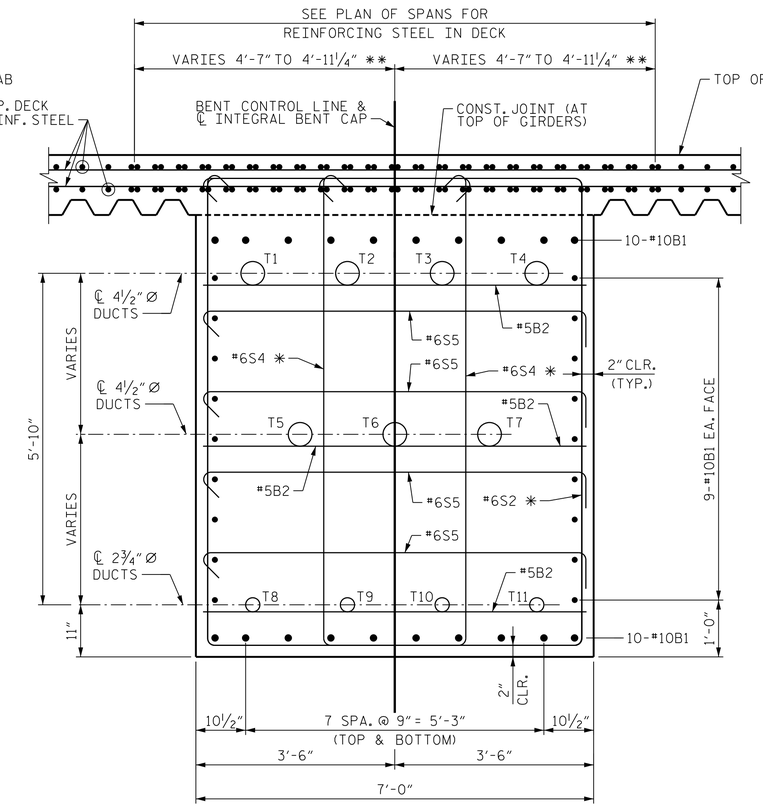
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	J. CABABE	DATE :	11/19



SECTION A-A

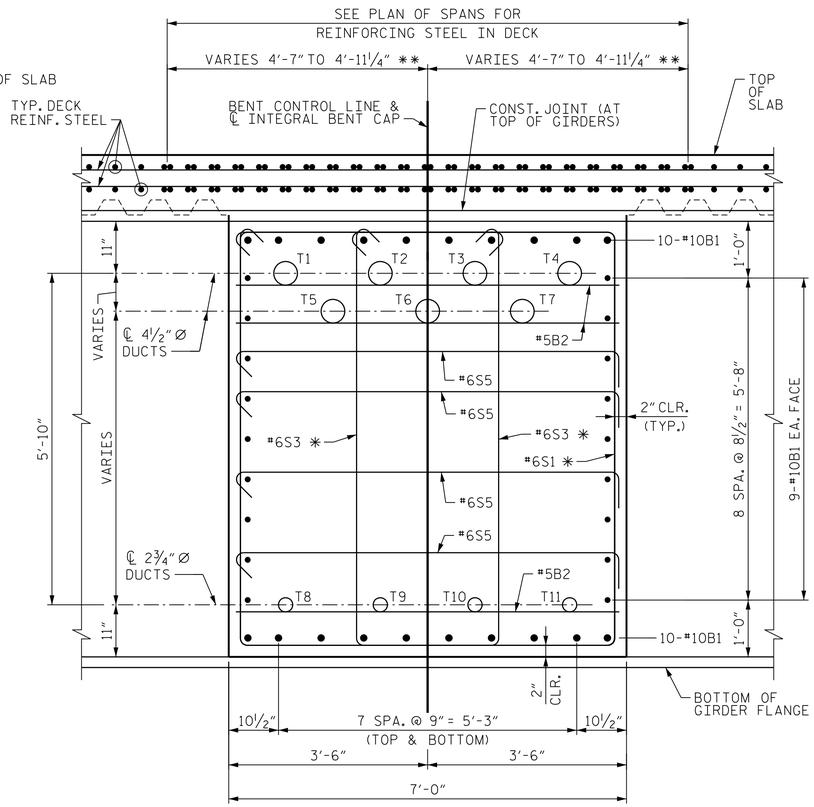
** = SEE "SUPERSTRUCTURE PLAN OF SPANS UNIT 1" SHEET 3 OF 4



SECTION B-B

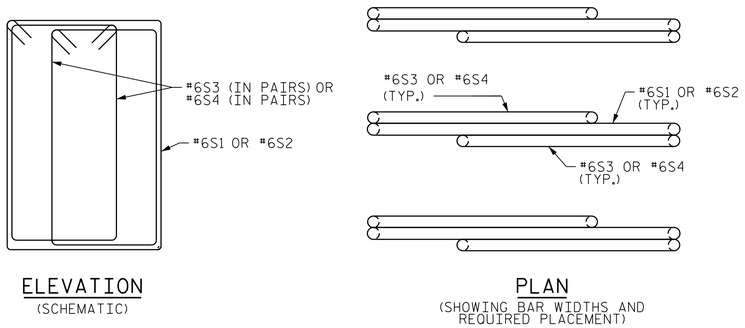
* = SEE STIRRUP DIAGRAM

** = SEE "SUPERSTRUCTURE PLAN OF SPANS UNIT 1" SHEET 3 OF 4



SECTION C-C

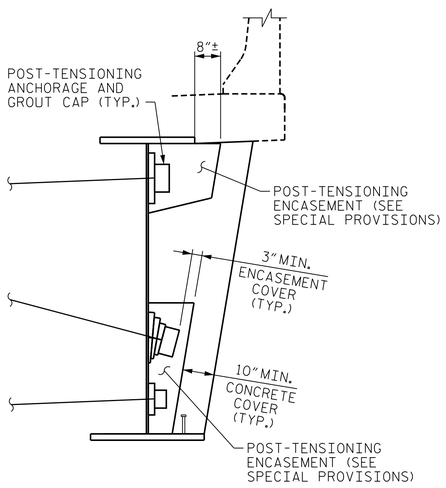
** = SEE "SUPERSTRUCTURE PLAN OF SPANS UNIT 1" SHEET 3 OF 4



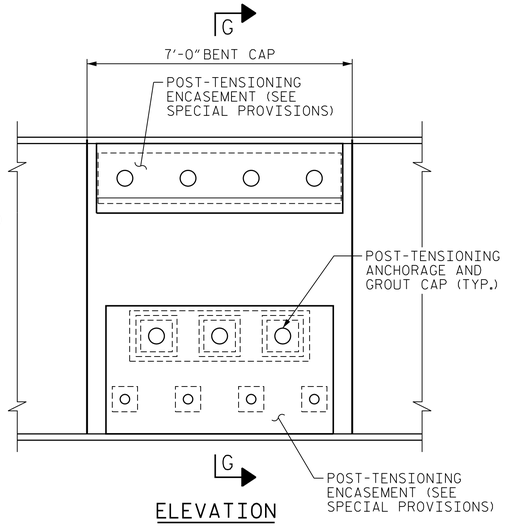
ELEVATION
(SCHEMATIC)

PLAN
(SHOWING BAR WIDTHS AND REQUIRED PLACEMENT)

STIRRUP DIAGRAM



SECTION G-G



ELEVATION

POST-TENSIONING ENCASEMENT DETAILS

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 3 BENT CAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-107
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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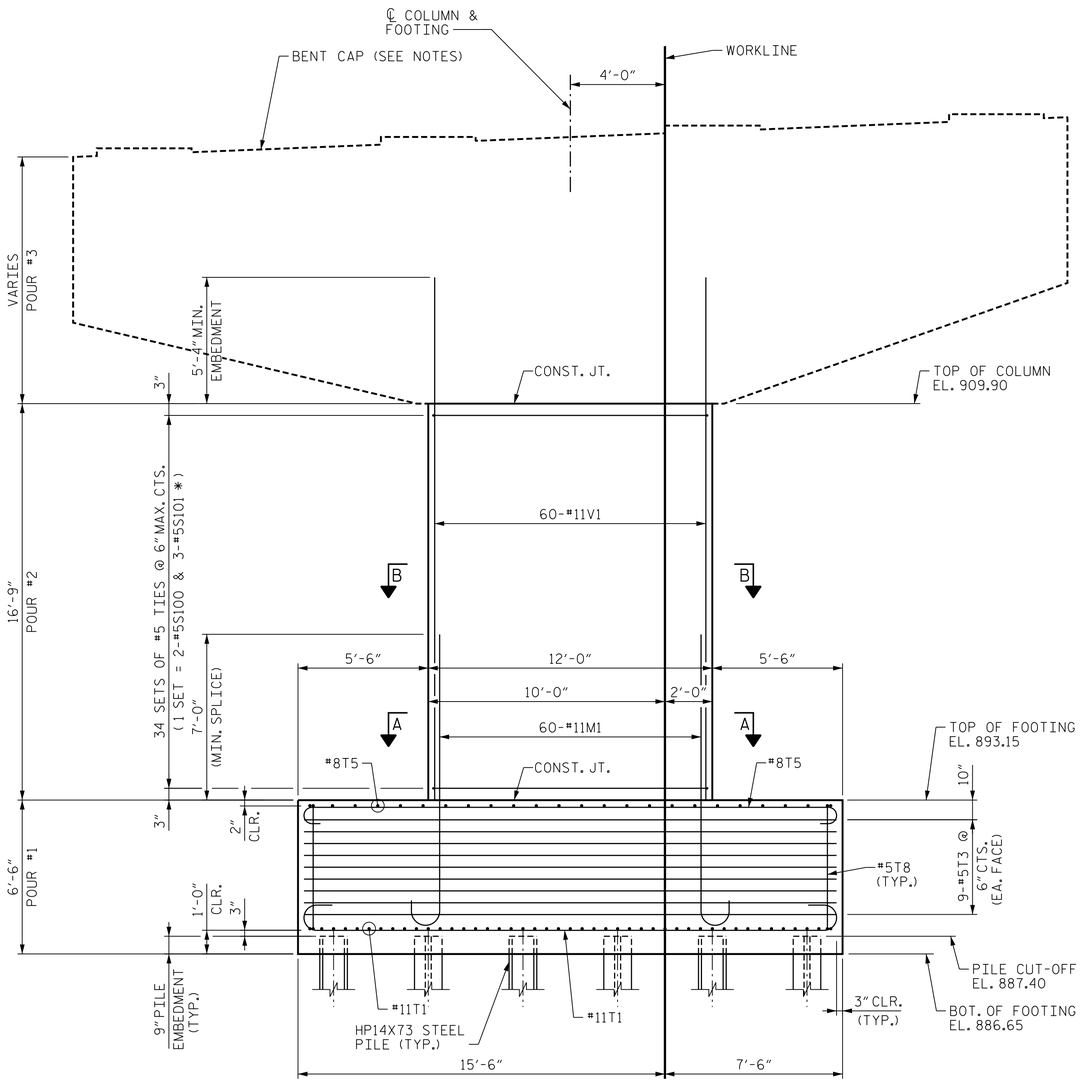
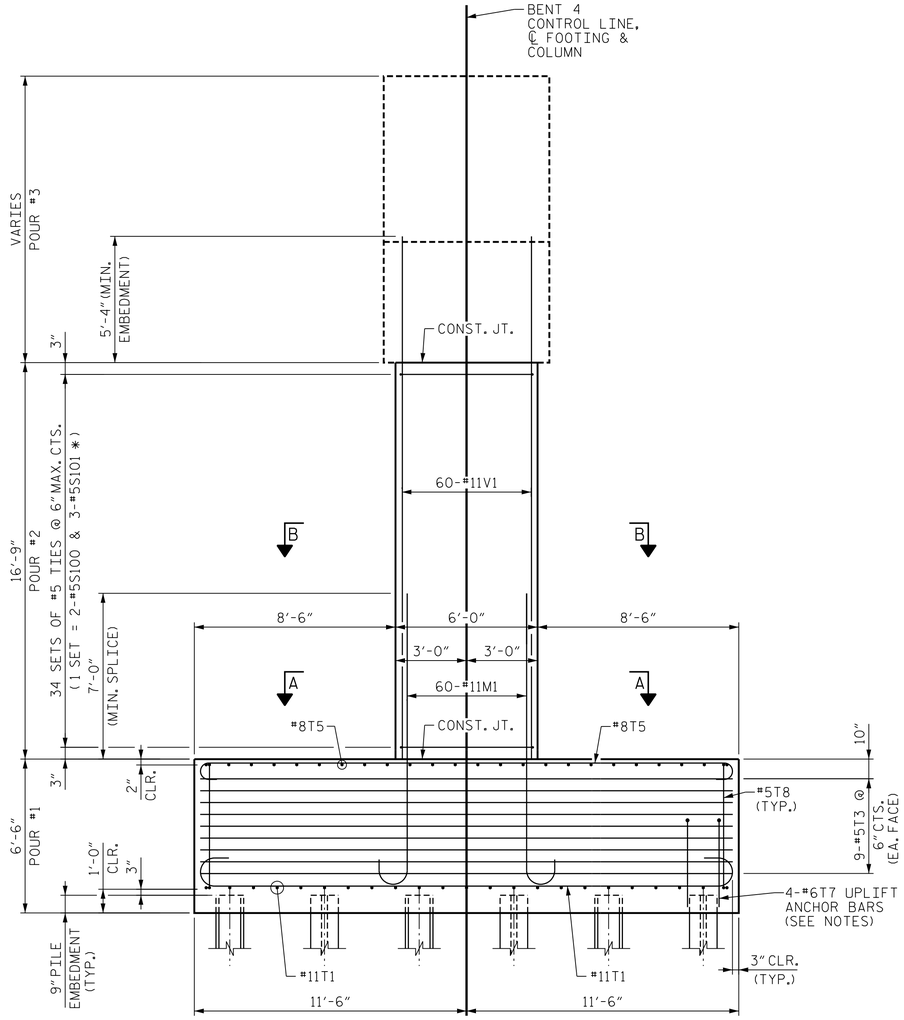


FRONT ELEVATION



END ELEVATION

* INVERT ORIENTATION OF ALTERNATE #5S101 TIES

NOTES

FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 4 FOOTING & COLUMN DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 4 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 4 BENT CAP DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 4 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-108
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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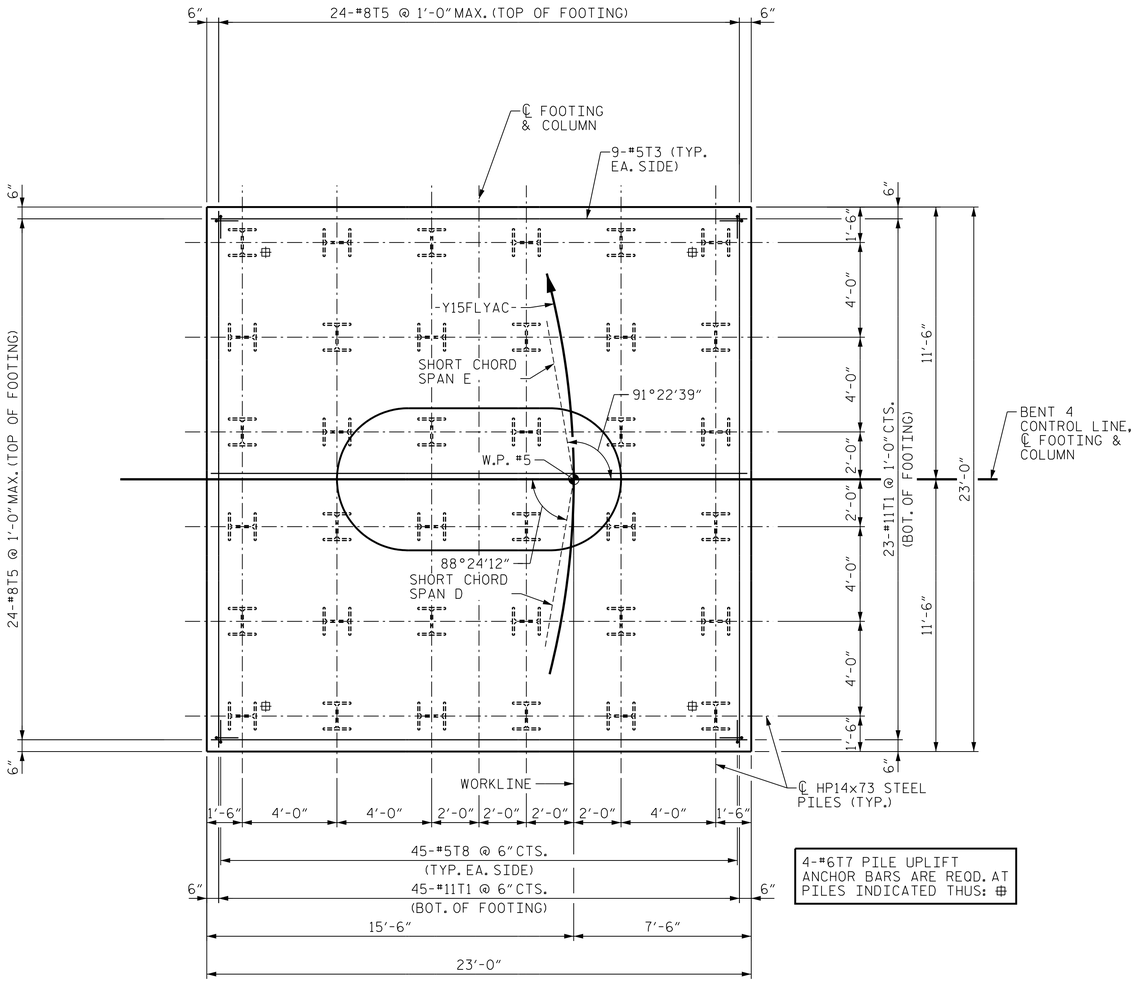
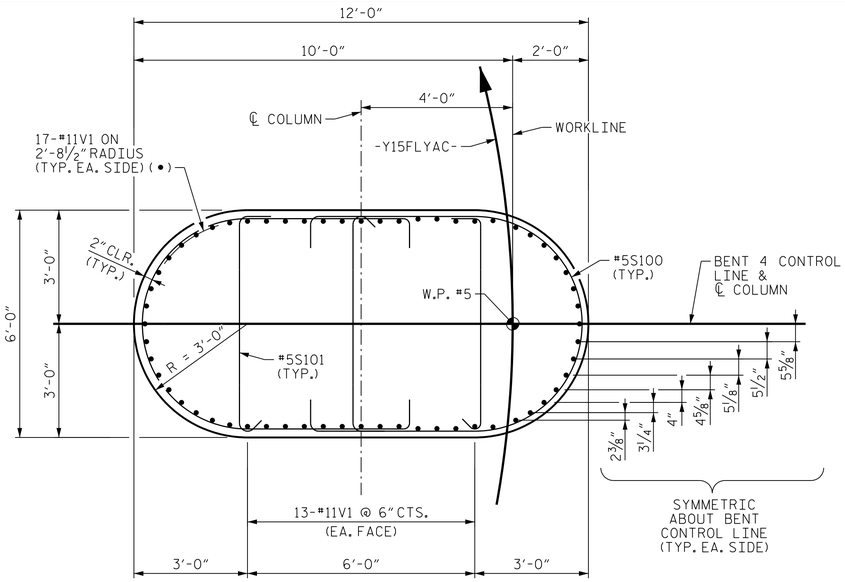
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

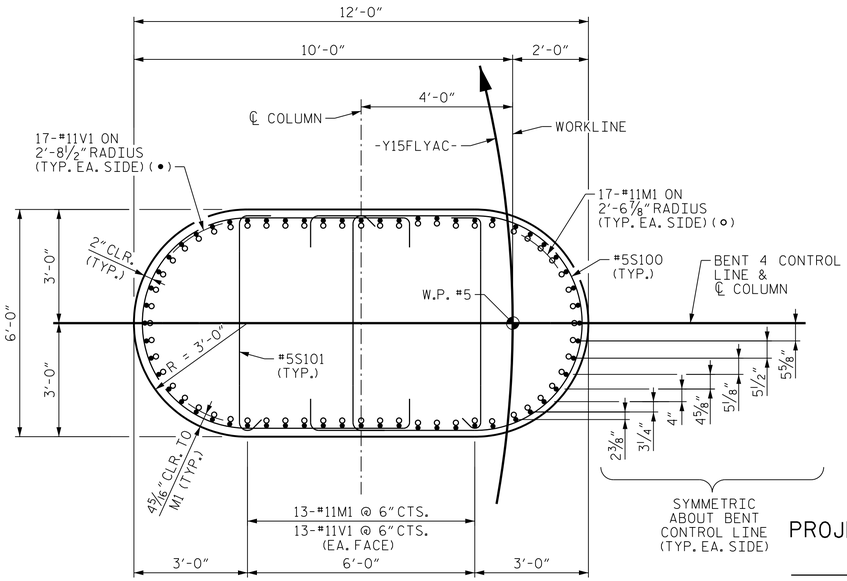


4-#6T7 PILE UPLIFT ANCHOR BARS ARE REQD. AT PILES INDICATED THUS: ⊕

FOOTING PLAN



SECTION B-B



SECTION A-A

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO. S04-109
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 144
1	--	--	3	--	--	
2	--	--	4	--	--	

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DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
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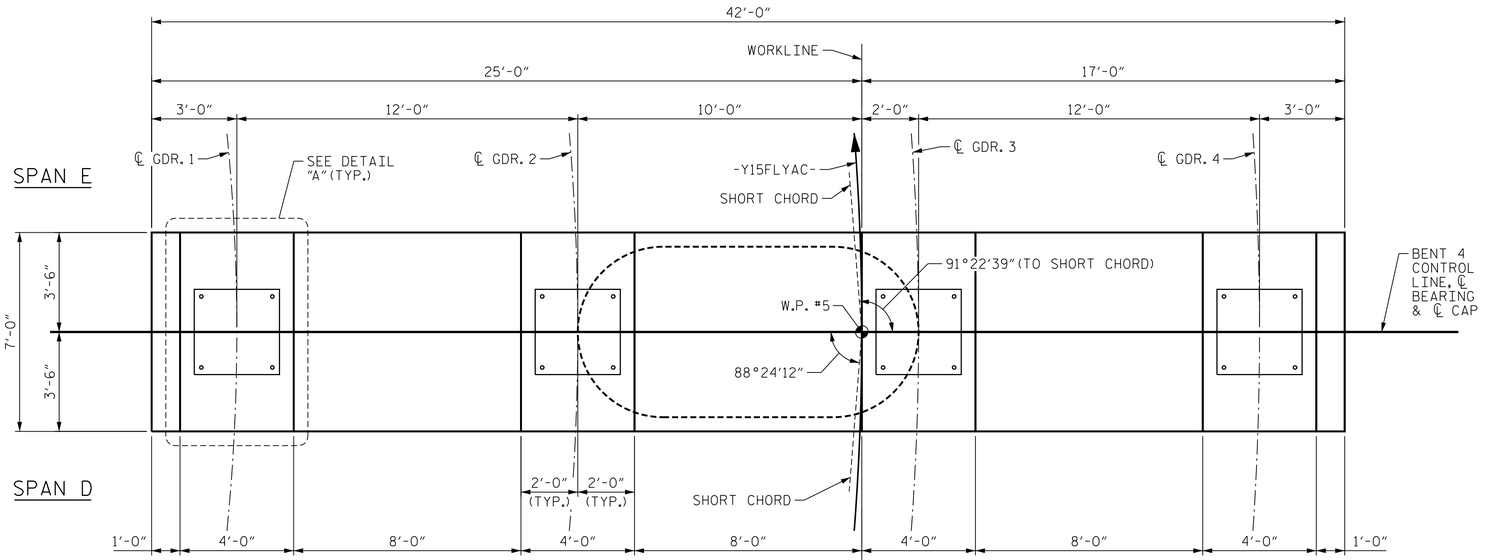
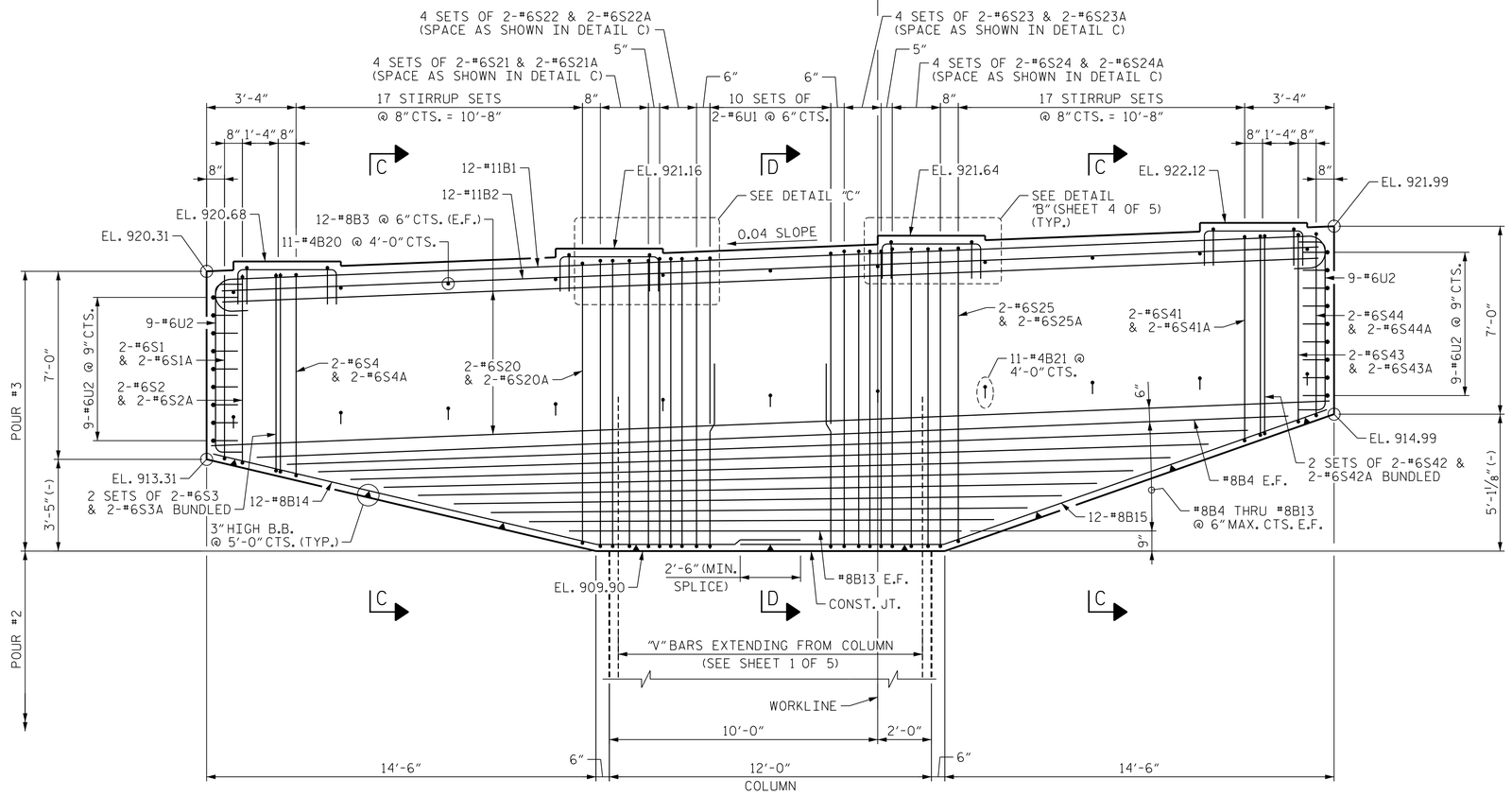


PLAN OF CAP

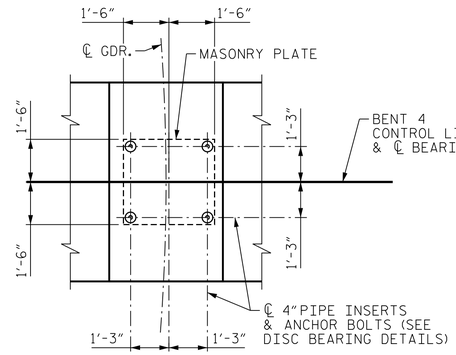


ELEVATION OF CAP

NOTES

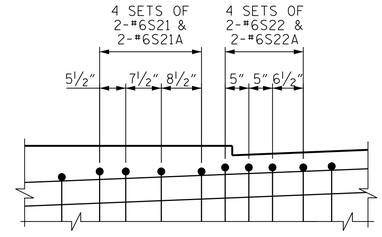
FOR SECTIONS C-C AND D-D, SEE "SUBSTRUCTURE BENT 4 BENT CAP DETAILS", SHEET 4 OF 5.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.



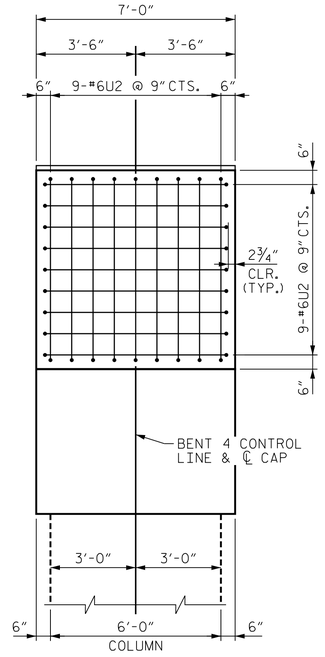
DETAIL "A"

(TYP. @ EA. BEARING)



DETAIL "C"

DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S23/#6S23A AND #6S24/#6S24A AS SHOWN ON THE ELEVATION)



END VIEW

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4 BENT CAP PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-110
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

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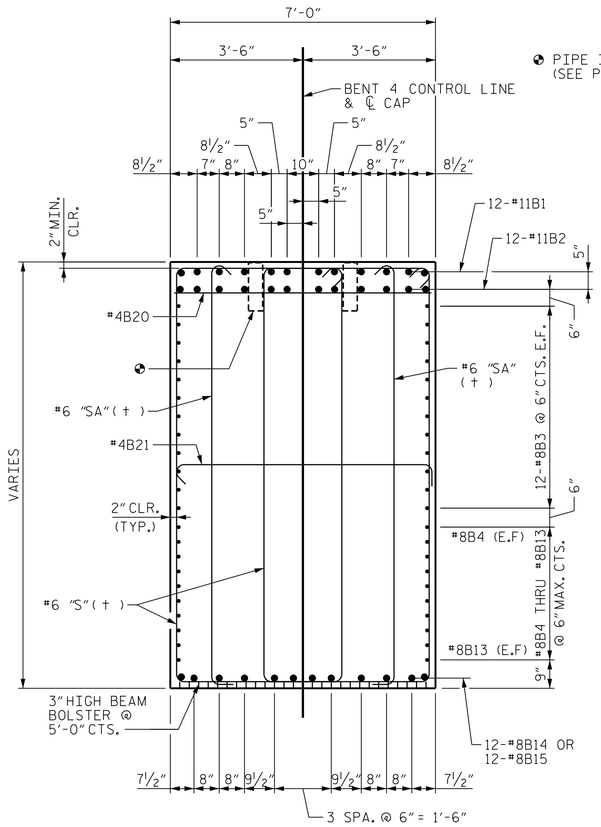
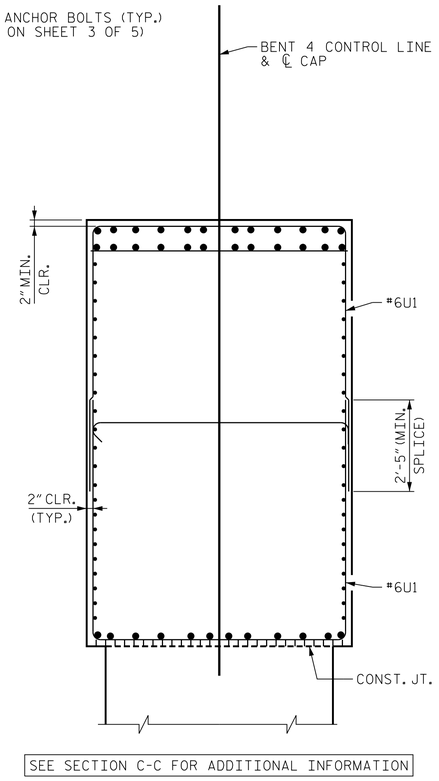


SECTION C-C

(†) SEE "STIRRUP SET DETAIL"

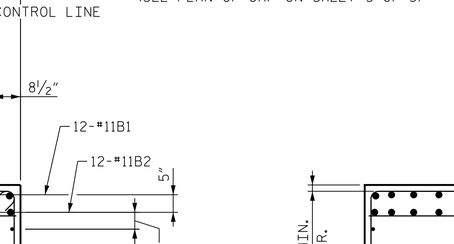


SEE SECTION C-C FOR ADDITIONAL INFORMATION

SECTION D-D

COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY

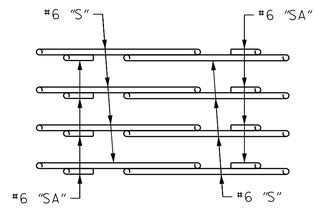
DETAIL "B"



SECTION Y-Y

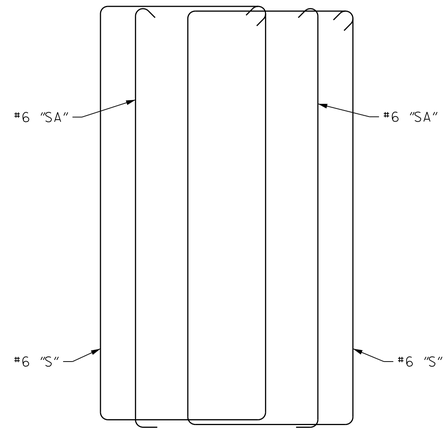
✳ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR PIPE INSERTS FOR ANCHOR BOLTS.

✳✳ NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN

(SHOWING BAR PLACEMENT)



ELEVATION

(SCHEMATIC)

STIRRUP SET DETAIL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4 BENT CAP DETAILS

REVISIONS						SHEET NO. S04-111
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 144
1	--	--	3	--	--	
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Domenic A. Coletti 10/15/2021

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DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

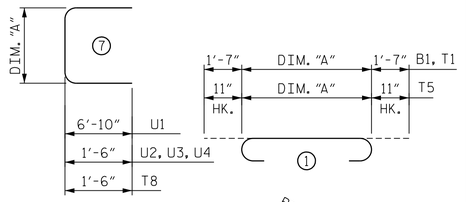
BILL OF MATERIAL - BENT 4

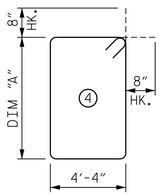
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848	S1A	2	#6	5	6'-10"	8'-6"	26
B2	12	#11	STR	--	40'-10"	2,603	S2A	2	#6	5	7'-0"	8'-8"	26
B3	24	#8	STR	--	41'-8"	2,670	S3A	4	#6	5	7'-5"	9'-1"	55
B4	2	#8	STR	--	38'-5"	205	S4A	2	#6	5	7'-7"	9'-3"	28
B5	2	#8	STR	--	35'-9"	191	S5A	2	#6	5	7'-9"	9'-5"	28
B6	2	#8	STR	--	33'-2"	177	S6A	2	#6	5	7'-11"	9'-7"	29
B7	2	#8	STR	--	30'-6"	163	S7A	2	#6	5	8'-2"	9'-10"	30
B8	2	#8	STR	--	27'-11"	149	S8A	2	#6	5	8'-4"	10'-0"	30
B9	2	#8	STR	--	25'-3"	135	S9A	2	#6	5	8'-5"	10'-1"	30
B10	2	#8	STR	--	22'-7"	121	S10A	2	#6	5	8'-8"	10'-4"	31
B11	2	#8	STR	--	20'-0"	107	S11A	2	#6	5	8'-10"	10'-6"	32
B12	2	#8	STR	--	17'-3"	92	S12A	2	#6	5	9'-1"	10'-9"	32
B13	2	#8	STR	--	14'-7"	78	S13A	2	#6	5	9'-2"	10'-10"	33
B14	12	#8	2	--	22'-5"	718	S14A	2	#6	5	9'-5"	11'-1"	33
B15	12	#8	2	--	22'-11"	734	S15A	2	#6	5	9'-7"	11'-3"	34
							S16A	2	#6	5	9'-9"	11'-5"	34
							S17A	2	#6	5	9'-11"	11'-7"	35
							S18A	2	#6	5	10'-2"	11'-10"	36
							S19A	2	#6	5	10'-4"	12'-0"	36
B20	11	#4	STR	--	6'-8"	49	S20A	2	#6	5	10'-6"	12'-2"	37
B21	11	#4	5	6'-8"	7'-5"	54	S21A	8	#6	5	10'-9"	12'-5"	149
							S22A	8	#6	5	10'-10"	12'-6"	150
							S23A	8	#6	5	11'-1"	12'-9"	153
							S24A	8	#6	5	11'-2"	12'-10"	154
M1	60	#11	3	12'-6"	14'-1"	4,489	S25A	2	#6	5	11'-0"	12'-8"	38
							S26A	2	#6	5	10'-10"	12'-6"	38
							S27A	2	#6	5	10'-7"	12'-3"	37
							S28A	2	#6	5	10'-5"	12'-1"	36
S1	2	#6	4	6'-10"	23'-8"	71	S29A	2	#6	5	10'-2"	11'-10"	36
S2	2	#6	4	7'-0"	24'-0"	72	S30A	2	#6	5	9'-11"	11'-7"	35
S3	4	#6	4	7'-4½"	24'-9"	149	S31A	2	#6	5	9'-9"	11'-5"	34
S4	2	#6	4	7'-6½"	25'-1"	75	S32A	2	#6	5	9'-7"	11'-3"	34
S5	2	#6	4	7'-9"	25'-6"	77	S33A	2	#6	5	9'-4"	11'-0"	33
S6	2	#6	4	7'-11"	25'-10"	78	S34A	2	#6	5	9'-2"	10'-10"	33
S7	2	#6	4	8'-1½"	26'-3"	79	S35A	2	#6	5	8'-11"	10'-7"	32
S8	2	#6	4	8'-3½"	26'-7"	80	S36A	2	#6	5	8'-8"	10'-4"	31
S9	2	#6	4	8'-5½"	26'-11"	81	S37A	2	#6	5	8'-6"	10'-2"	31
S10	2	#6	4	8'-8"	27'-4"	82	S38A	2	#6	5	8'-4"	10'-0"	30
S11	2	#6	4	8'-10"	27'-8"	83	S39A	2	#6	5	8'-1"	9'-9"	29
S12	2	#6	4	9'-0½"	28'-1"	84	S40A	2	#6	5	7'-11"	9'-7"	29
S13	2	#6	4	9'-2½"	28'-5"	85	S41A	2	#6	5	7'-8"	9'-4"	28
S14	2	#6	4	9'-5"	28'-10"	87	S42A	4	#6	5	7'-6"	9'-2"	55
S15	2	#6	4	9'-7"	29'-2"	88	S43A	2	#6	5	7'-1"	8'-9"	26
S16	2	#6	4	9'-9"	29'-6"	89	S44A	2	#6	5	6'-10"	8'-6"	26
S17	2	#6	4	9'-11½"	29'-11"	90							
S18	2	#6	4	10'-1½"	30'-3"	91							
S19	2	#6	4	10'-4"	30'-8"	92	S100	68	#5	6	5'-8"	18'-9"	1,330
S20	2	#6	4	10'-6"	31'-0"	93	S101	102	#5	5	5'-8"	6'-8"	709
S21	8	#6	4	10'-8½"	31'-5"	378							
S22	8	#6	4	10'-9½"	31'-7"	380							
S23	8	#6	4	11'-1"	32'-2"	387	T1	68	#11	1	22'-6"	25'-8"	9,273
S24	8	#6	4	11'-2"	32'-4"	389							
S25	2	#6	4	11'-0"	32'-0"	96	T3	36	#5	STR	--	22'-6"	845
S26	2	#6	4	10'-9½"	31'-7"	95							
S27	2	#6	4	10'-7"	31'-2"	94	T5	48	#8	1	22'-6"	24'-4"	3,119
S28	2	#6	4	10'-4½"	30'-9"	92							
S29	2	#6	4	10'-2"	30'-4"	91	Δ T7	16	#6	3	3'-11"	4'-7"	110
S30	2	#6	4	9'-11½"	29'-11"	90	T8	180	#5	7	5'-2"	8'-2"	1,533
S31	2	#6	4	9'-9"	29'-6"	89							
S32	2	#6	4	9'-6½"	29'-1"	87	U1	20	#6	7	6'-8"	20'-4"	611
S33	2	#6	4	9'-4"	28'-8"	86	U2	36	#6	7	6'-6½"	9'-7"	518
S34	2	#6	4	9'-1½"	28'-3"	85	U3	36	#4	7	6'-8"	9'-8"	232
S35	2	#6	4	8'-11"	27'-10"	84	U4	48	#4	7	3'-8"	6'-8"	214
S36	2	#6	4	8'-8½"	27'-5"	82							
S37	2	#6	4	8'-6"	27'-0"	81	V1	60	#11	STR	--	22'-1"	7,040
S38	2	#6	4	8'-3½"	26'-7"	80							
S39	2	#6	4	8'-1"	26'-2"	79							
S40	2	#6	4	7'-10½"	25'-9"	77							
S41	2	#6	4	7'-8"	25'-4"	76							
S42	4	#6	4	7'-5½"	24'-11"	150							
S43	2	#6	4	7'-0½"	24'-1"	72							
S44	2	#6	4	6'-10"	23'-8"	71							

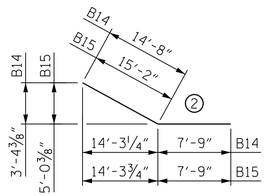
DES BY: B. PETERSON DATE : 10/19
DES CHK: S. NIFONG DATE : 10/19
DWG BY: B. PETERSON DATE : 10/19
CHK BY: M. WERNER DATE : 11/19

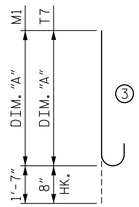
BAR TYPES

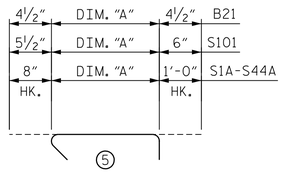
ALL BAR DIMENSIONS ARE OUT TO OUT

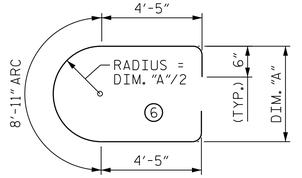












SUMMARY OF QUANTITIES - BENT 4		
REINFORCING STEEL	LBS.	48,066
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	127.4
POUR #2 - COLUMN	C.Y.	39.9
POUR #3 - CAP	C.Y.	108.0
TOTAL	C.Y.	275.3
HP 14x73 STEEL PILES	NO.	36
	LF	2,250
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	36

Δ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB
FORSYTH COUNTY
STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 4 BILL OF MATERIALS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-112
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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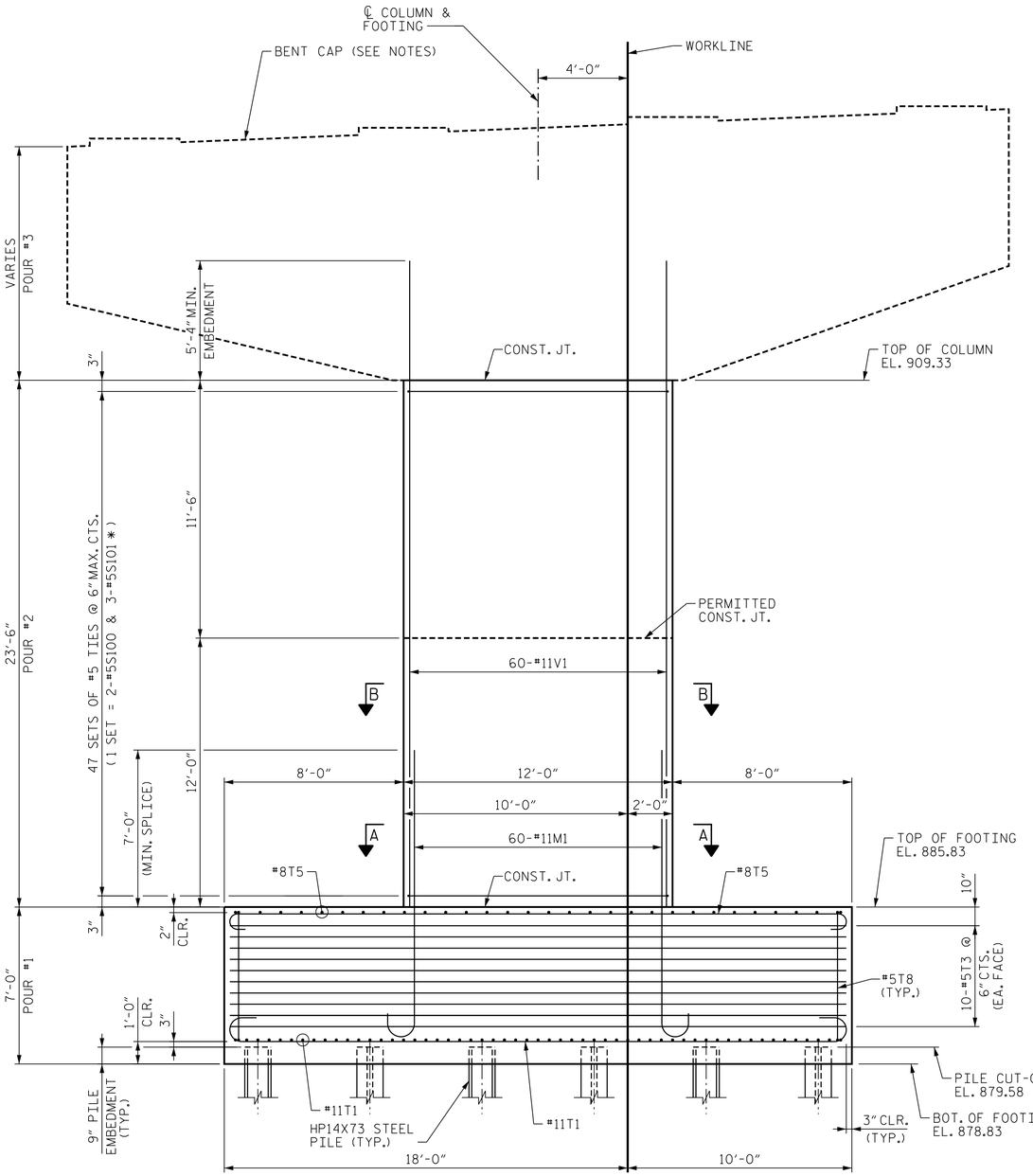
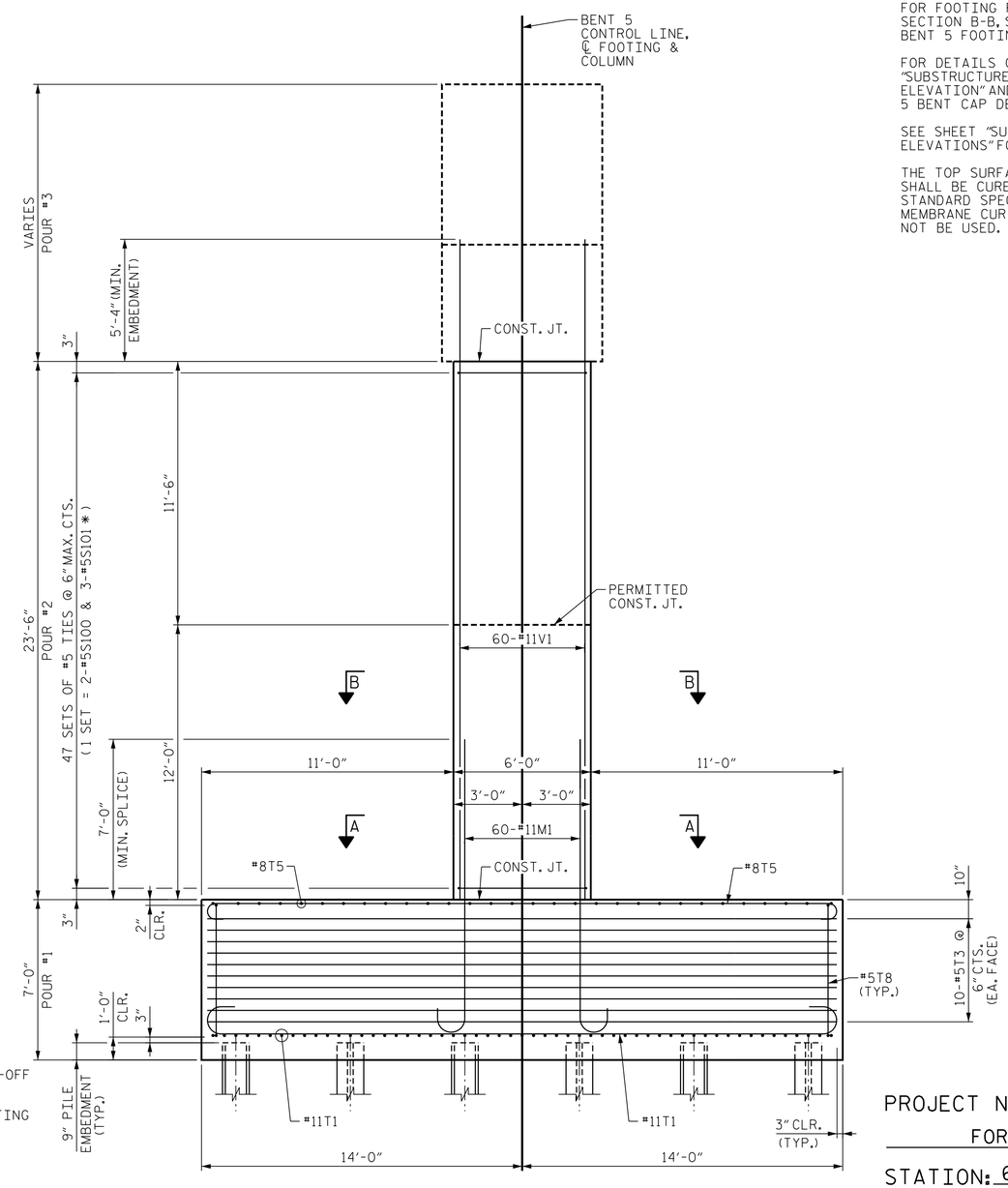


FRONT ELEVATION

* INVERT ORIENTATION OF ALTERNATE #5S101 TIES



END ELEVATION

NOTES

FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 5 FOOTING & COLUMN DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 5 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 5 BENT CAP DETAILS".

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES.

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

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 5 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-113
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	J. CABABE	DATE :	10/19
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

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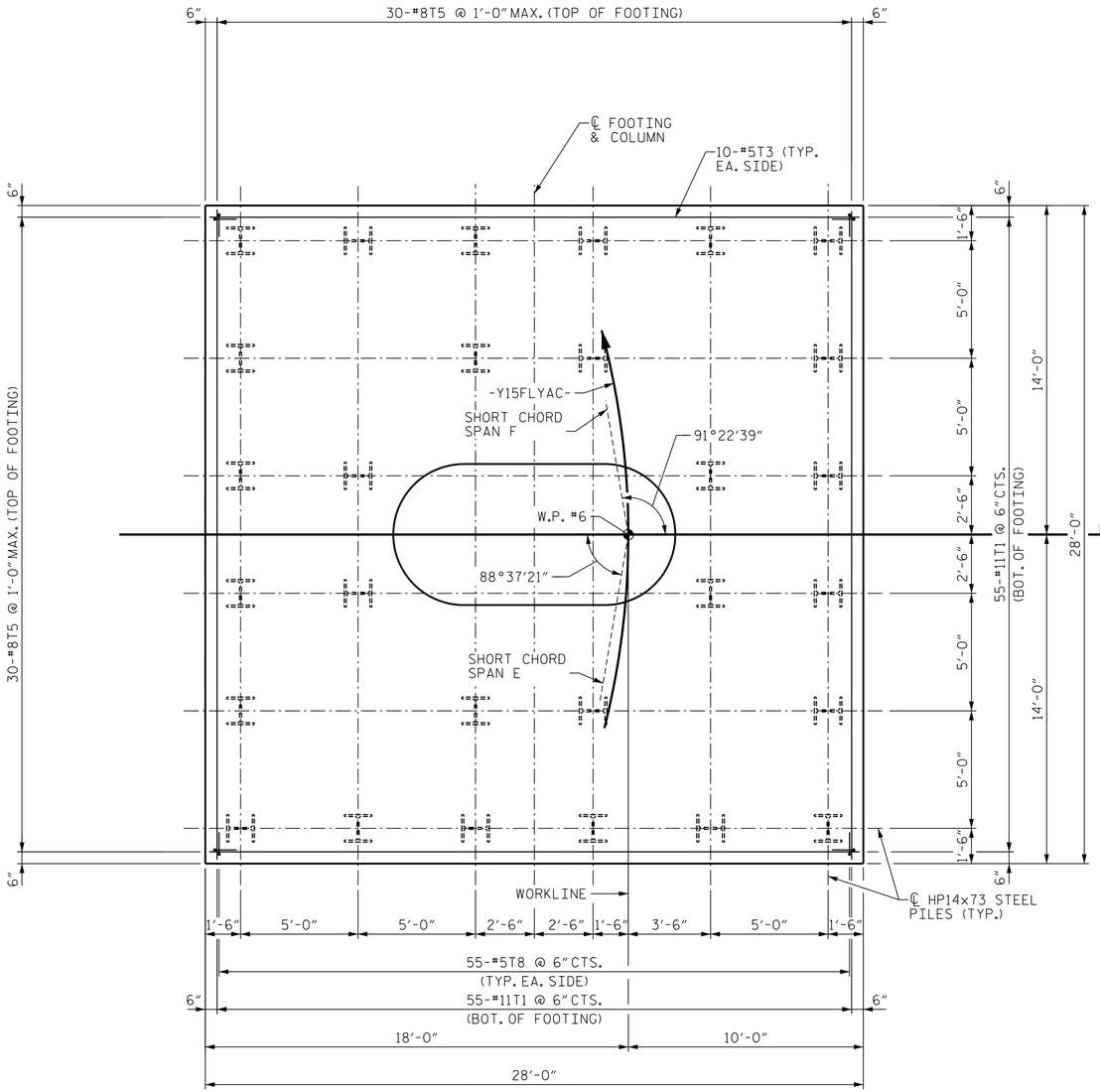
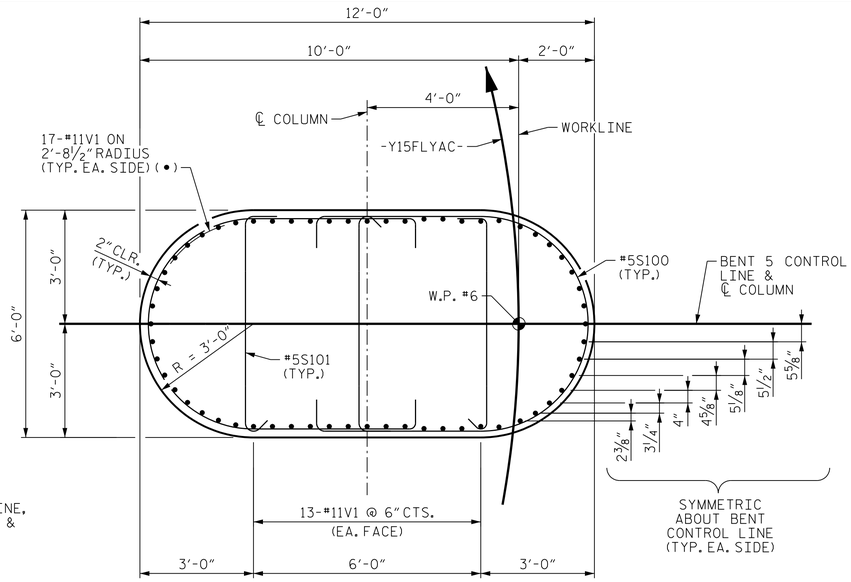
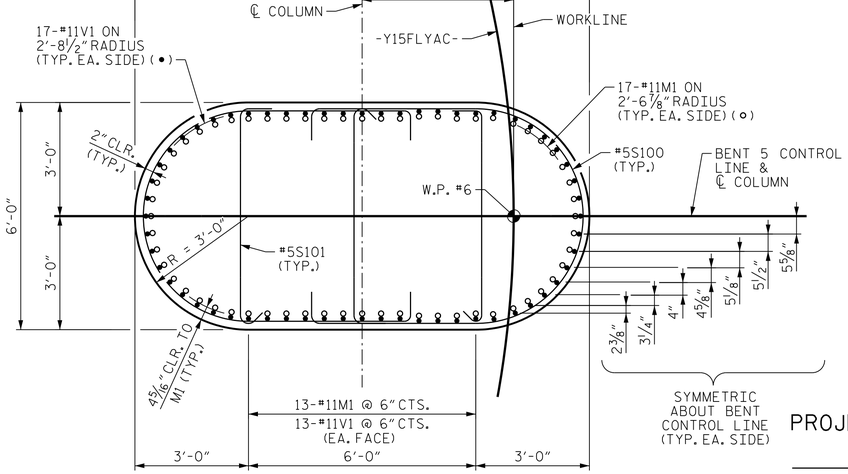


FOOTING PLAN



SECTION B-B



SECTION A-A

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 5 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-114
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI
Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	J. CABABE	DATE :	10/19
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

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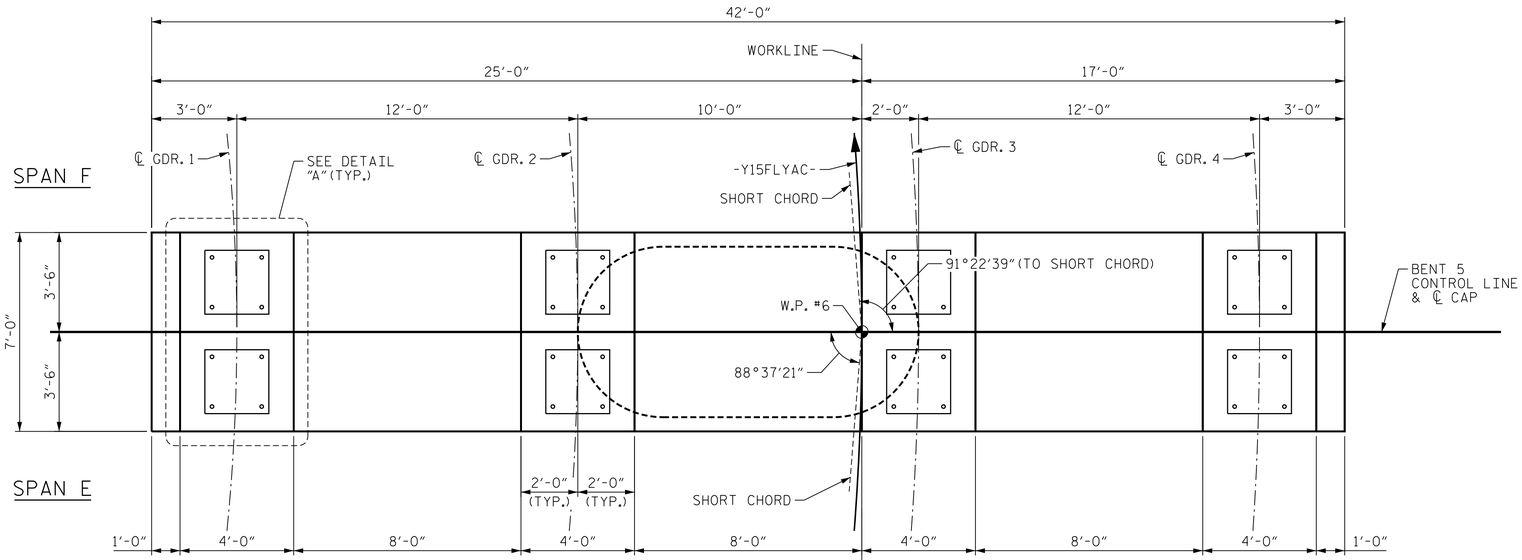
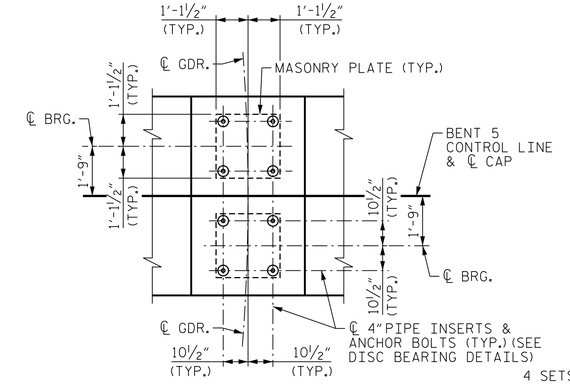
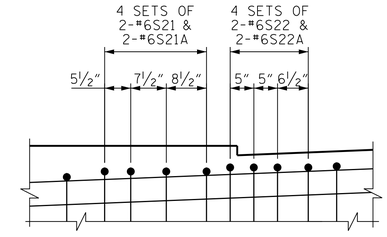


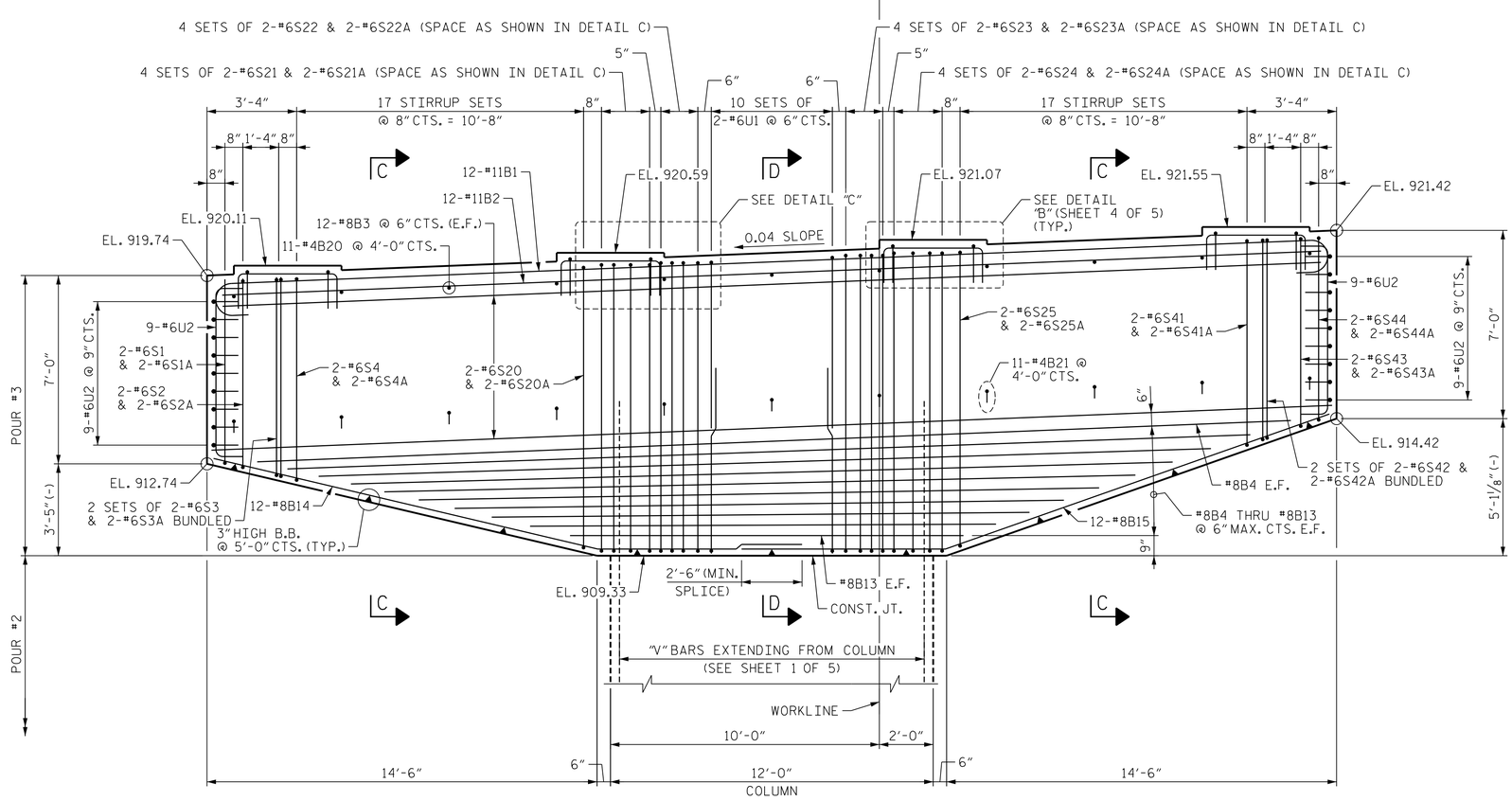
PLAN OF CAP



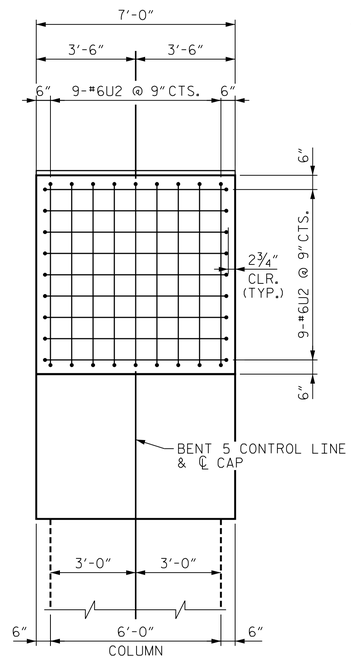
DETAIL "A"
(TYP. @ EA. BEARING)



DETAIL "C"
DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S23/#6S23A AND #6S24/#6S24A AS SHOWN ON THE ELEVATION)



ELEVATION OF CAP



END VIEW

NOTES

FOR SECTIONS C-C AND D-D, SEE "SUBSTRUCTURE BENT 5 BENT CAP DETAILS", SHEET 4 OF 5.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 5 BENT CAP PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-115
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

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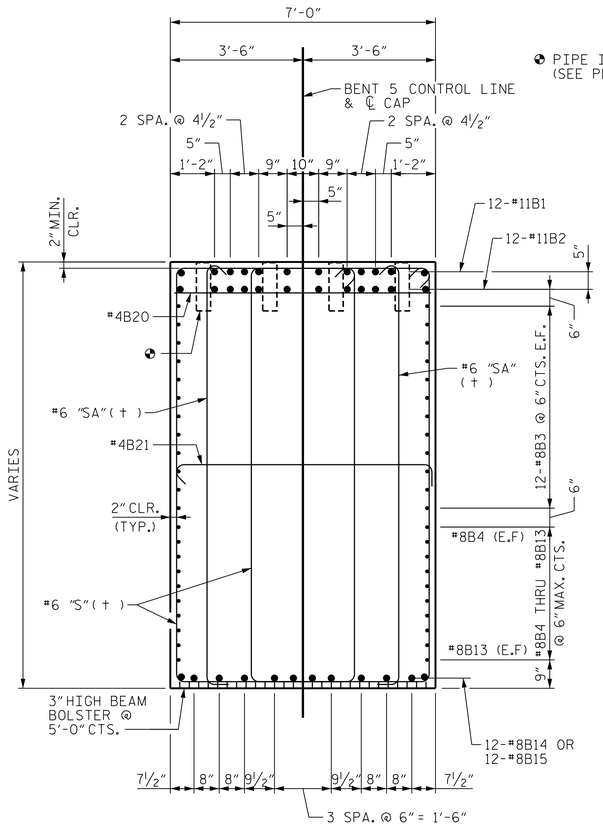
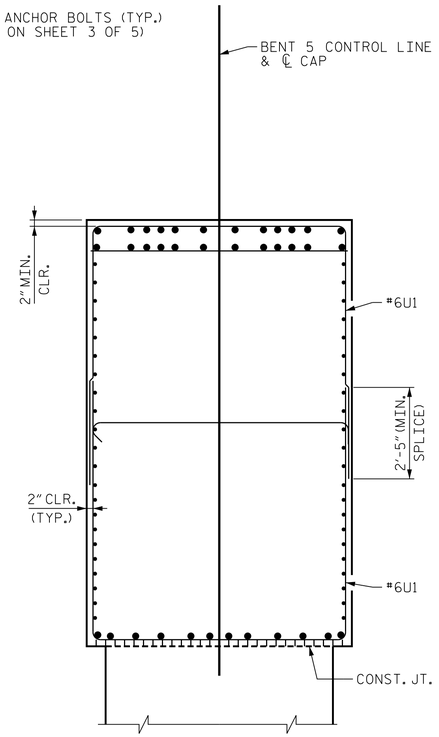


SECTION C-C

(†) SEE "STIRRUP SET DETAIL"

PIPE INSERT FOR ANCHOR BOLTS (TYP.) (SEE PLAN OF CAP ON SHEET 3 OF 5)

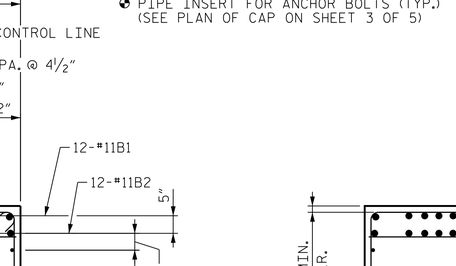


SEE SECTION C-C FOR ADDITIONAL INFORMATION

SECTION D-D

COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY

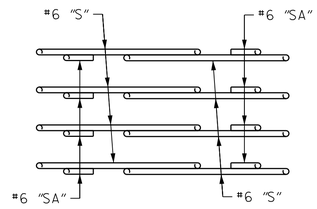
DETAIL "B"



SECTION Y-Y

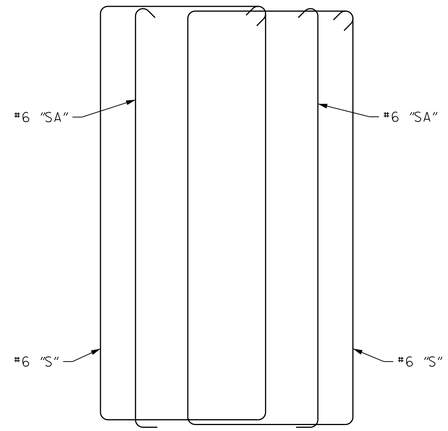
* NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR PIPE INSERTS FOR ANCHOR BOLTS.

** NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN

(SHOWING BAR PLACEMENT)



ELEVATION

(SCHEMATIC)

STIRRUP SET DETAIL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 5 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-116
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

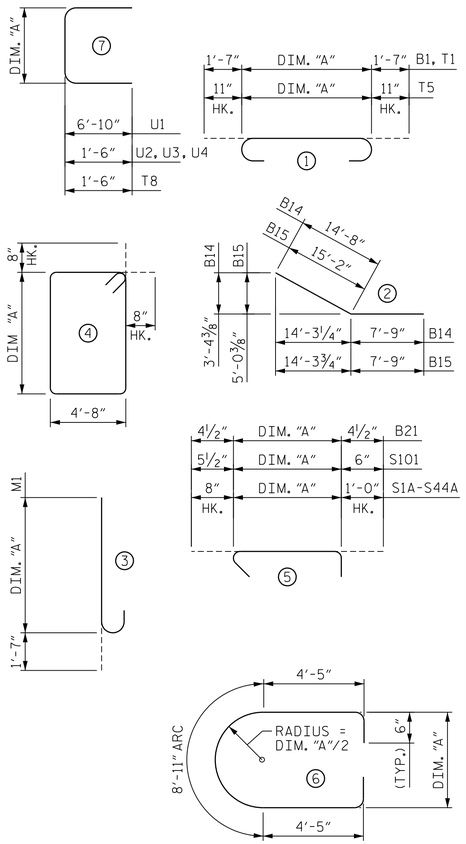
BILL OF MATERIAL - BENT 5

BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848
B2	12	#11	STR.	--	40'-10"	2,603
B3	24	#8	STR.	--	41'-8"	2,670
B4	2	#8	STR.	--	38'-5"	205
B5	2	#8	STR.	--	35'-9"	191
B6	2	#8	STR.	--	33'-2"	177
B7	2	#8	STR.	--	30'-6"	163
B8	2	#8	STR.	--	27'-11"	149
B9	2	#8	STR.	--	25'-3"	135
B10	2	#8	STR.	--	22'-7"	121
B11	2	#8	STR.	--	20'-0"	107
B12	2	#8	STR.	--	17'-3"	92
B13	2	#8	STR.	--	14'-7"	78
B14	12	#8	2	--	22'-5"	718
B15	12	#8	2	--	22'-11"	734
B20	11	#4	STR.	--	6'-8"	49
B21	11	#4	5	6'-8"	7'-5"	54
M1	60	#11	3	13'-0"	14'-7"	4,649
S1	2	#6	4	6'-10"	24'-4"	73
S2	2	#6	4	7'-0"	24'-8"	74
S3	4	#6	4	7'-4½"	25'-5"	153
S4	2	#6	4	7'-6½"	25'-9"	77
S5	2	#6	4	7'-9"	26'-2"	79
S6	2	#6	4	7'-11"	26'-6"	80
S7	2	#6	4	8'-1½"	26'-11"	81
S8	2	#6	4	8'-3½"	27'-3"	82
S9	2	#6	4	8'-5½"	27'-7"	83
S10	2	#6	4	8'-8"	28'-0"	84
S11	2	#6	4	8'-10"	28'-4"	85
S12	2	#6	4	9'-0½"	28'-9"	86
S13	2	#6	4	9'-2½"	29'-1"	87
S14	2	#6	4	9'-5"	29'-6"	89
S15	2	#6	4	9'-7"	29'-10"	90
S16	2	#6	4	9'-9"	30'-2"	91
S17	2	#6	4	9'-11½"	30'-7"	92
S18	2	#6	4	10'-1½"	30'-11"	93
S19	2	#6	4	10'-4"	31'-4"	94
S20	2	#6	4	10'-6"	31'-8"	95
S21	8	#6	4	10'-8½"	32'-1"	386
S22	8	#6	4	10'-9½"	32'-3"	388
S23	8	#6	4	11'-1"	32'-10"	395
S24	8	#6	4	11'-2"	33'-0"	397
S25	2	#6	4	11'-0"	32'-8"	98
S26	2	#6	4	10'-9½"	32'-3"	97
S27	2	#6	4	10'-7"	31'-10"	96
S28	2	#6	4	10'-4½"	31'-5"	94
S29	2	#6	4	10'-2"	31'-0"	93
S30	2	#6	4	9'-11½"	30'-7"	92
S31	2	#6	4	9'-9"	30'-2"	91
S32	2	#6	4	9'-6½"	29'-9"	89
S33	2	#6	4	9'-4"	29'-4"	88
S34	2	#6	4	9'-1½"	28'-11"	87
S35	2	#6	4	8'-11"	28'-6"	86
S36	2	#6	4	8'-8½"	28'-1"	84
S37	2	#6	4	8'-6"	27'-8"	83
S38	2	#6	4	8'-3½"	27'-3"	82
S39	2	#6	4	8'-1"	26'-10"	81
S40	2	#6	4	7'-10½"	26'-5"	79
S41	2	#6	4	7'-8"	26'-0"	78
S42	4	#6	4	7'-5½"	25'-7"	154
S43	2	#6	4	7'-0½"	24'-9"	74
S44	2	#6	4	6'-10"	24'-4"	73

BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
S1A	2	#6	5	6'-10"	8'-6"	26
S2A	2	#6	5	7'-0"	8'-8"	26
S3A	4	#6	5	7'-5"	9'-1"	55
S4A	2	#6	5	7'-7"	9'-3"	28
S5A	2	#6	5	7'-9"	9'-5"	28
S6A	2	#6	5	7'-11"	9'-7"	29
S7A	2	#6	5	8'-2"	9'-10"	30
S8A	2	#6	5	8'-4"	10'-0"	30
S9A	2	#6	5	8'-5"	10'-1"	30
S10A	2	#6	5	8'-8"	10'-4"	31
S11A	2	#6	5	8'-10"	10'-6"	32
S12A	2	#6	5	9'-1"	10'-9"	32
S13A	2	#6	5	9'-2"	10'-10"	33
S14A	2	#6	5	9'-5"	11'-1"	33
S15A	2	#6	5	9'-7"	11'-3"	34
S16A	2	#6	5	9'-9"	11'-5"	34
S17A	2	#6	5	9'-11"	11'-7"	35
S18A	2	#6	5	10'-2"	11'-10"	36
S19A	2	#6	5	10'-4"	12'-0"	36
S20A	2	#6	5	10'-6"	12'-2"	37
S21A	8	#6	5	10'-9"	12'-5"	149
S22A	8	#6	5	10'-10"	12'-6"	150
S23A	8	#6	5	11'-1"	12'-9"	153
S24A	8	#6	5	11'-2"	12'-10"	154
S25A	2	#6	5	11'-0"	12'-8"	38
S26A	2	#6	5	10'-10"	12'-6"	38
S27A	2	#6	5	10'-7"	12'-3"	37
S28A	2	#6	5	10'-5"	12'-1"	36
S29A	2	#6	5	10'-2"	11'-10"	36
S30A	2	#6	5	9'-11"	11'-7"	35
S31A	2	#6	5	9'-9"	11'-5"	34
S32A	2	#6	5	9'-7"	11'-3"	34
S33A	2	#6	5	9'-4"	11'-0"	33
S34A	2	#6	5	9'-2"	10'-10"	33
S35A	2	#6	5	8'-11"	10'-7"	32
S36A	2	#6	5	8'-8"	10'-4"	31
S37A	2	#6	5	8'-6"	10'-2"	31
S38A	2	#6	5	8'-4"	10'-0"	30
S39A	2	#6	5	8'-1"	9'-9"	29
S40A	2	#6	5	7'-11"	9'-7"	29
S41A	2	#6	5	7'-8"	9'-4"	28
S42A	4	#6	5	7'-6"	9'-2"	55
S43A	2	#6	5	7'-1"	8'-9"	26
S44A	2	#6	5	6'-10"	8'-6"	26
S100	94	#5	6	5'-8"	18'-9"	1,838
S101	141	#5	5	5'-8"	6'-8"	980
T1	110	#11	1	27'-6"	30'-8"	17,923
T3	40	#5	STR.	--	27'-6"	1,147
T5	60	#8	1	27'-6"	29'-4"	4,699
T8	220	#5	7	5'-8"	8'-8"	1,989
U1	20	#6	7	6'-8"	20'-4"	611
U2	36	#6	7	6'-6½"	9'-7"	518
U3	36	#4	7	6'-8"	9'-8"	232
U4	48	#4	7	3'-8"	6'-8"	214
V1	60	#11	STR.	--	28'-10"	9,191

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT



SUMMARY OF QUANTITIES - BENT 5		
REINFORCING STEEL	LBS.	62,150
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	203.3
POUR #2 - COLUMN	C.Y.	56.0
POUR #3 - CAP	C.Y.	108.0
TOTAL	C.Y.	367.3
HP 14x73 STEEL PILES	NO.	28
	LF	1,820
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	28

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

DES BY: B. PETERSON DATE : 10/19
DES CHK: S. NIFONG DATE : 10/19
DWG BY: B. PETERSON DATE : 10/19
CHK BY: M. WERNER DATE : 10/19

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. U-2579AB
FORSYTH COUNTY
STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 5 BILL OF MATERIALS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-117
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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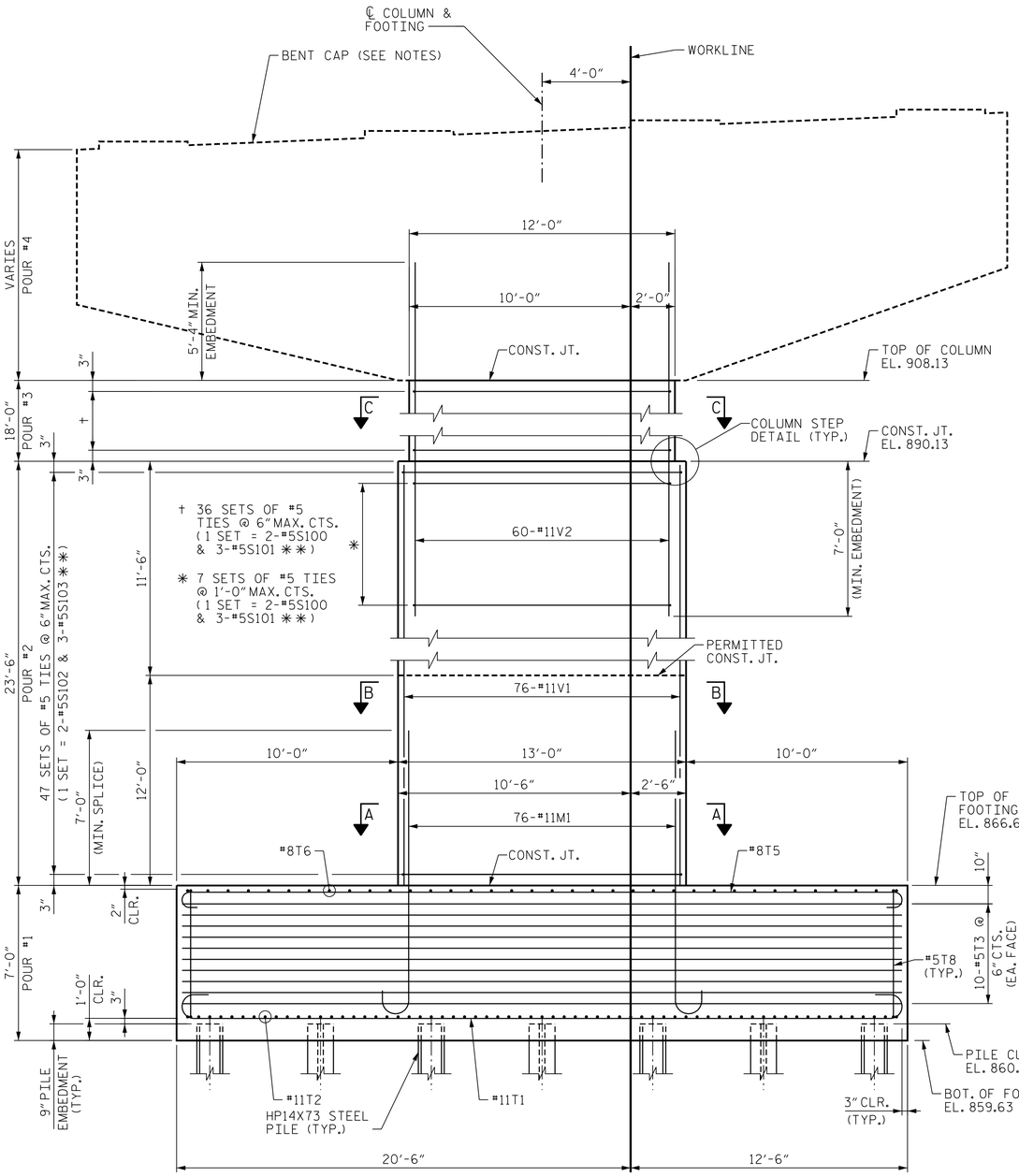
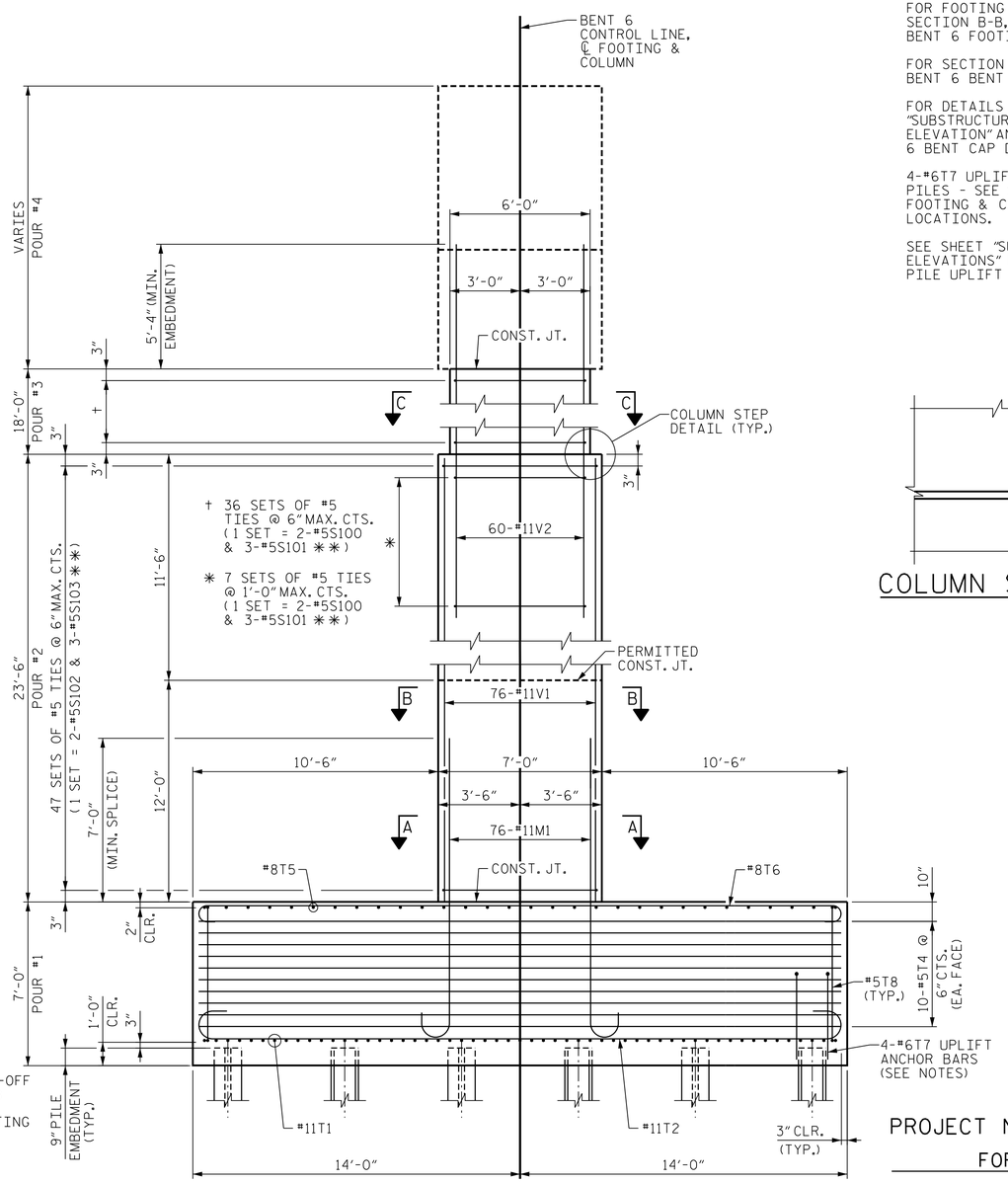


FRONT ELEVATION

** INVERT ORIENTATION OF ALTERNATE #5S101 AND #5S103 TIES



END ELEVATION

NOTES

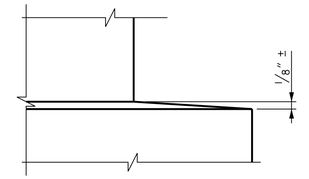
FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 6 FOOTING & COLUMN DETAILS".

FOR SECTION C-C, SEE SHEET "SUBSTRUCTURE BENT 6 BENT CAP DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 6 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 6 BENT CAP DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 6 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.



COLUMN STEP DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 6 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-118
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	J. CABABE	DATE :	10/19
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
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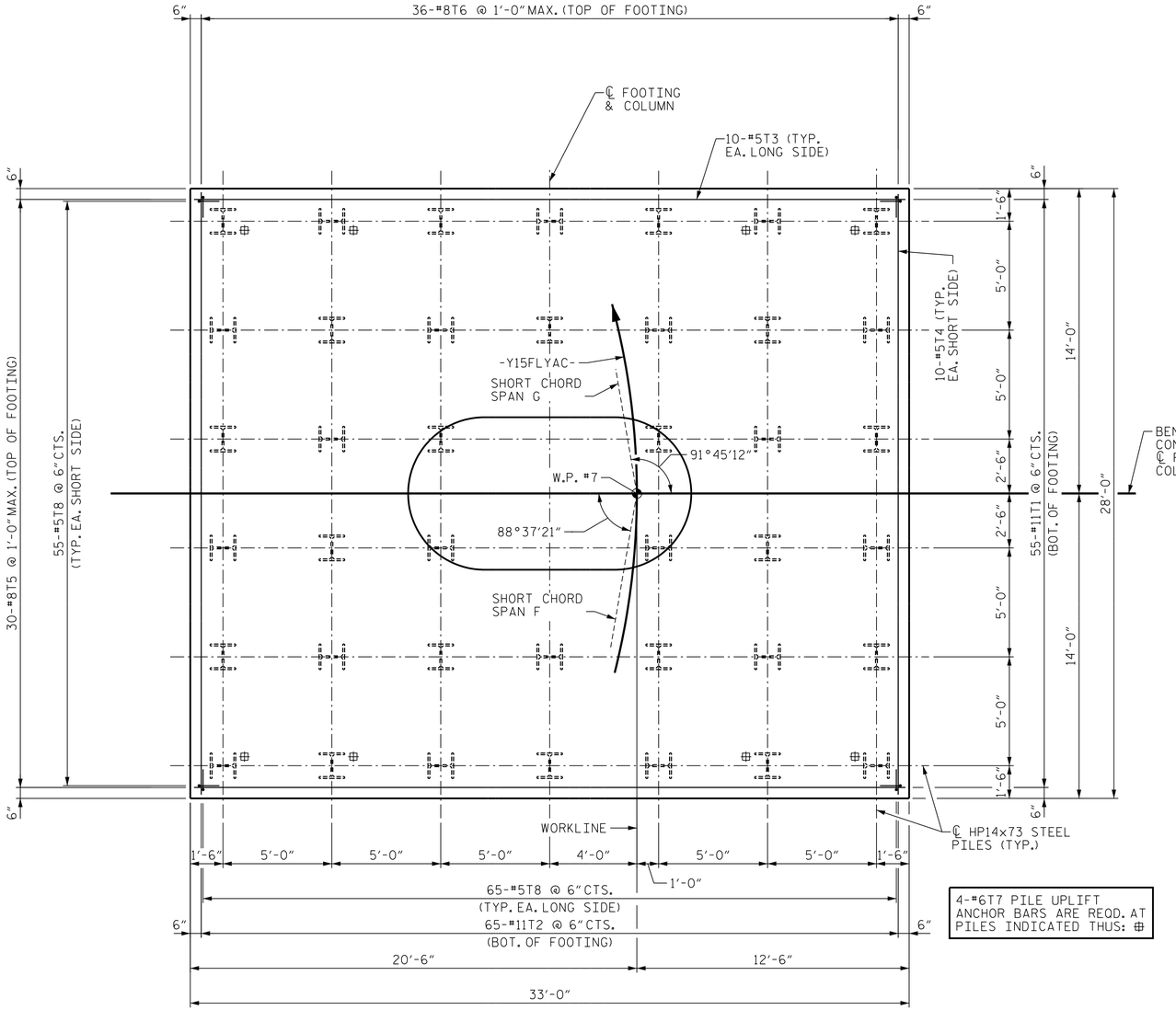
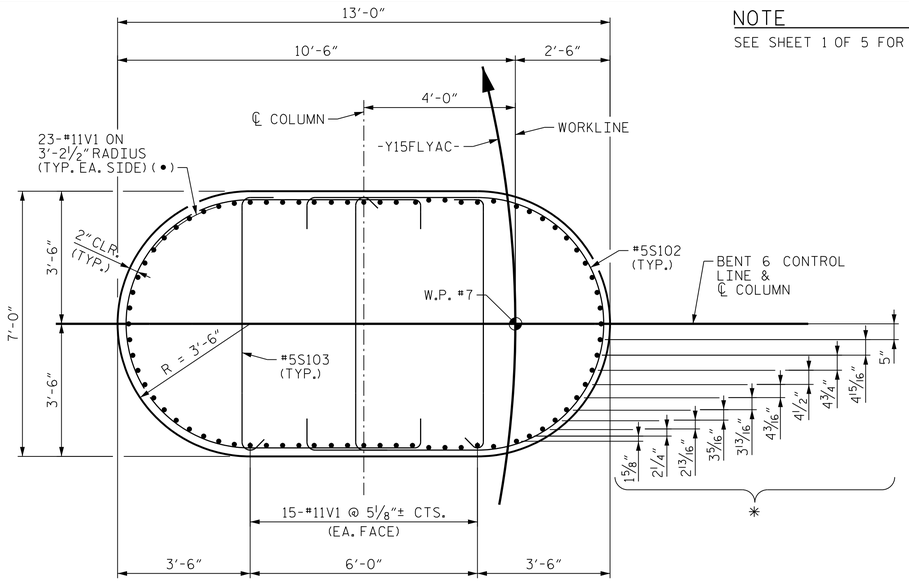


FOOTING PLAN



SECTION B-B

SECTION A-A

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 6 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-119
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY: J. CABABE	DATE: 10/19	DWG BY: B. PETERSON	DATE: 10/19
DES CHK: S. CHAUDHARI	DATE: 10/19	CHK BY: N. LIU	DATE: 11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: PPETERSO DATE: 10/14/2021
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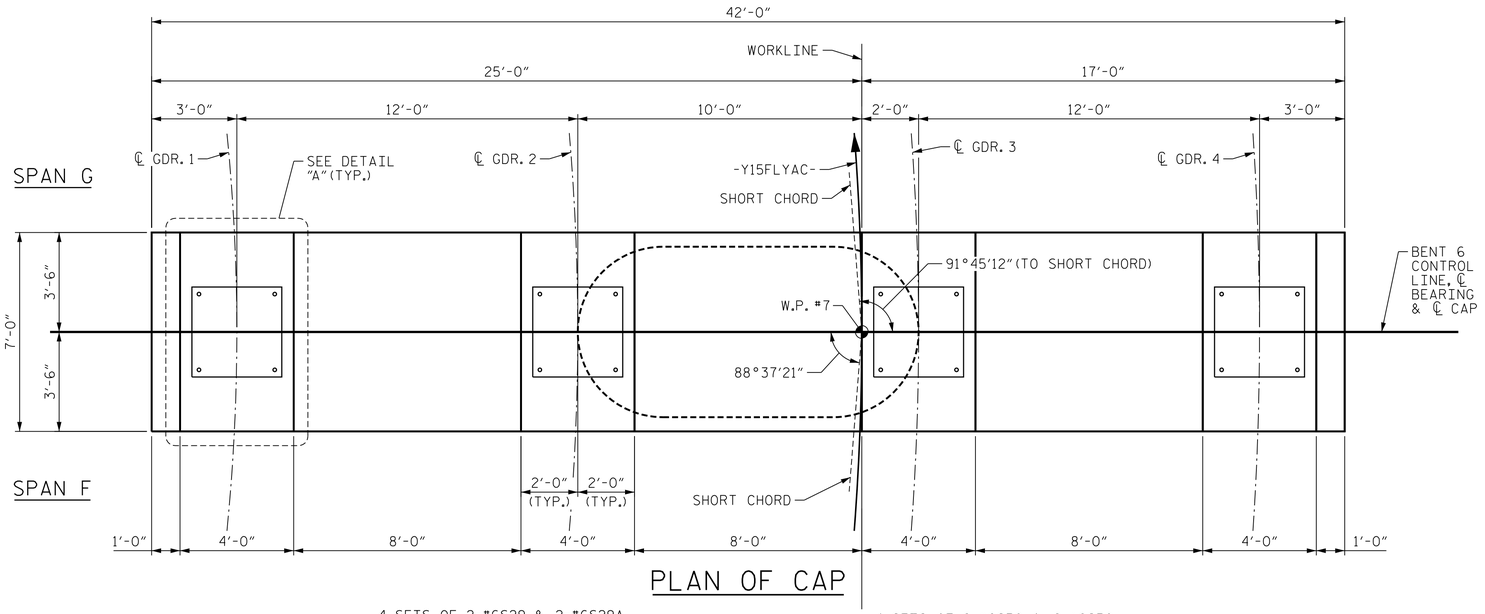
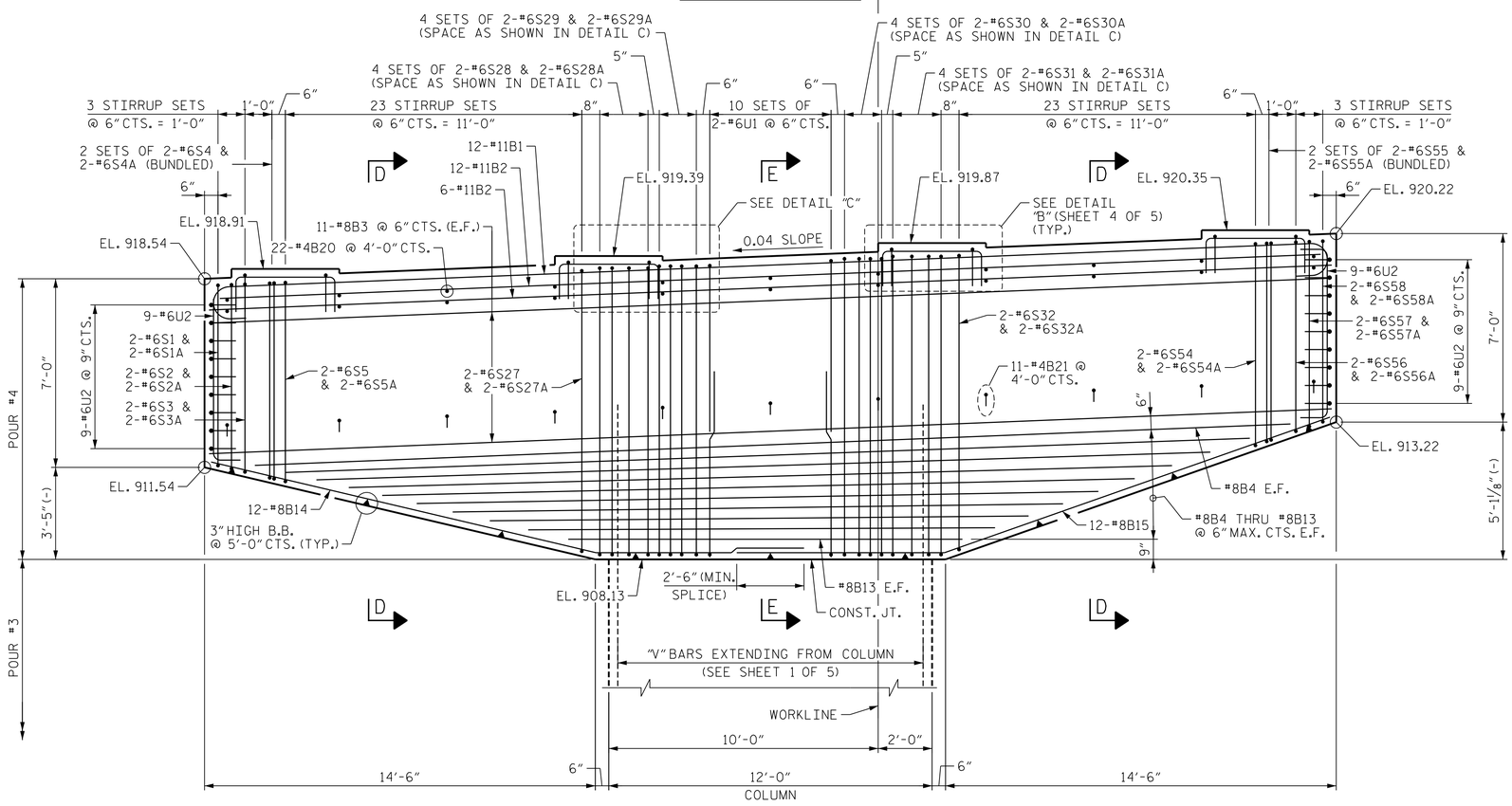


PLAN OF CAP

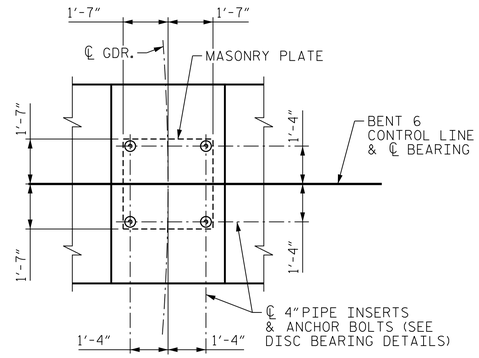


ELEVATION OF CAP

NOTES

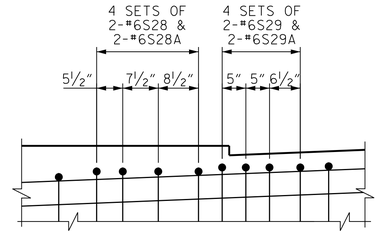
FOR SECTIONS D-D AND E-E, SEE "SUBSTRUCTURE BENT 6 BENT CAP DETAILS", SHEET 4 OF 5.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.



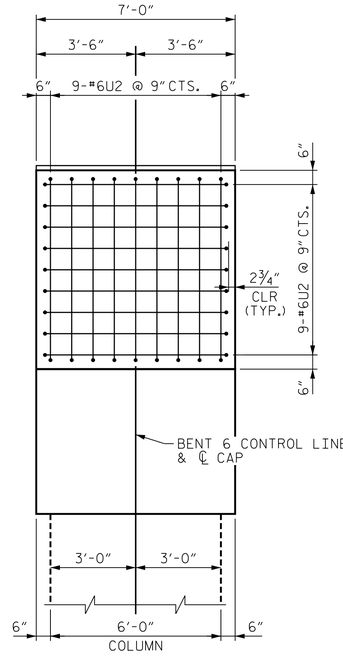
DETAIL "A"

(TYP. @ EA. BEARING)



DETAIL "C"

DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S30/#6S30A AND #6S31/#6S31A AS SHOWN ON THE ELEVATION)



END VIEW

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 6 BENT CAP PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-120
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

PLOT DRIVER: NCDOT_pdf color_eng_50.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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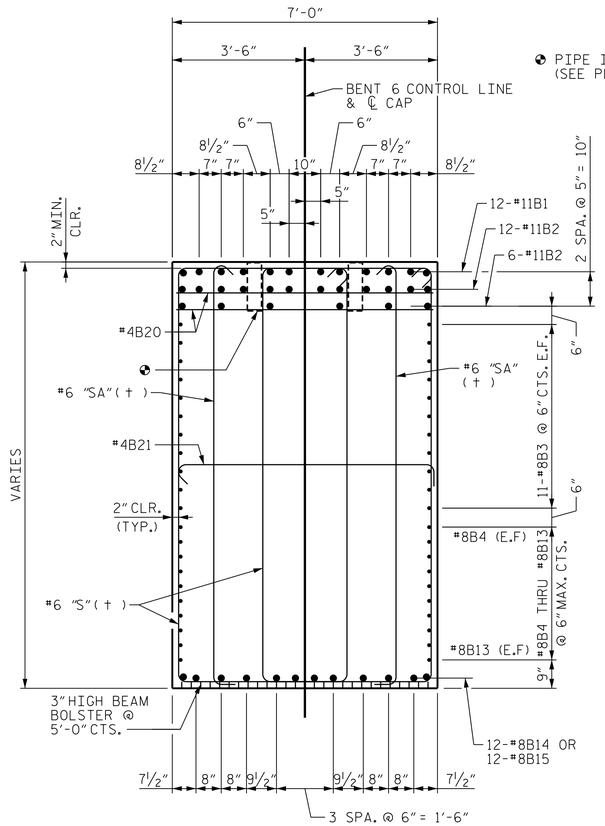
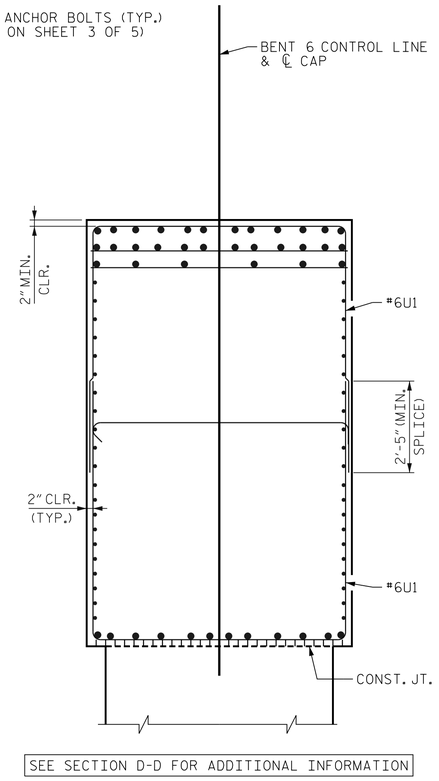


SECTION D-D

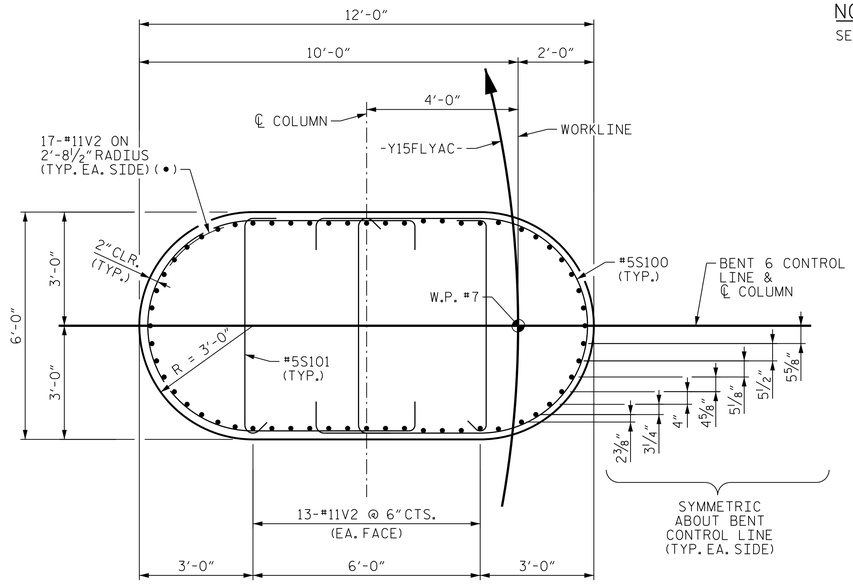
(†) SEE "STIRRUP SET DETAIL"



SEE SECTION D-D FOR ADDITIONAL INFORMATION

SECTION E-E

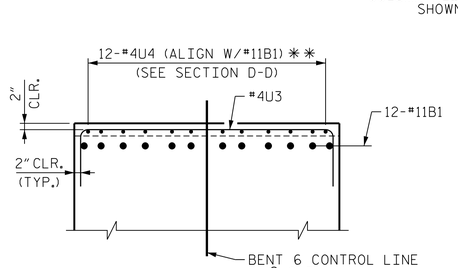
COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY



SECTION C-C

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

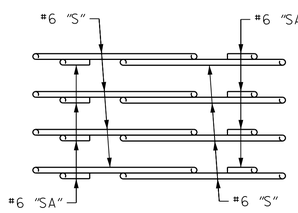


DETAIL "B"

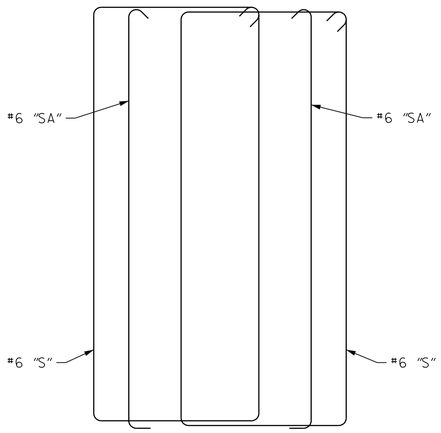
SECTION Y-Y

✱ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR PIPE INSERTS FOR ANCHOR BOLTS.

✱✱ NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN
(SHOWING BAR PLACEMENT)



ELEVATION
(SCHEMATIC)

STIRRUP SET DETAIL

DES BY: K. OLIVER	DATE: 10/19	DWG BY: B. PETERSON	DATE: 10/19
DES CHK: M. WERNER	DATE: 10/19	CHK BY: K. OLIVER	DATE: 11/19

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 6 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-121
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

BILL OF MATERIAL - BENT 6

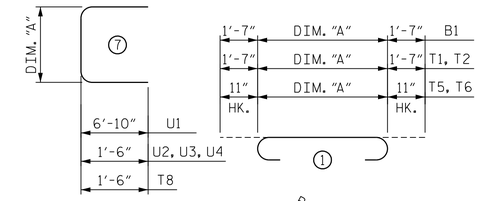
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848
B2	18	#11	STR.	--	40'-10"	3,905
B3	22	#8	STR.	--	41'-8"	2,448
B4	2	#8	STR.	--	38'-5"	205
B5	2	#8	STR.	--	35'-9"	191
B6	2	#8	STR.	--	33'-2"	177
B7	2	#8	STR.	--	30'-6"	163
B8	2	#8	STR.	--	27'-11"	149
B9	2	#8	STR.	--	25'-3"	135
B10	2	#8	STR.	--	22'-7"	121
B11	2	#8	STR.	--	20'-0"	107
B12	2	#8	STR.	--	17'-3"	92
B13	2	#8	STR.	--	14'-7"	78
B14	12	#8	2	--	22'-5"	718
B15	12	#8	2	--	22'-11"	734
B20	22	#4	STR.	--	6'-8"	98
B21	11	#4	5	6'-8"	7'-5"	54
M1	76	#11	3	13'-0"	14'-7"	5,889
S1	2	#6	4	6'-9½"	23'-9"	71
S2	2	#6	4	6'-11"	24'-0"	72
S3	2	#6	4	7'-0½"	24'-3"	73
S4	4	#6	4	7'-4"	24'-10"	149
S5	2	#6	4	7'-5½"	25'-1"	75
S6	2	#6	4	7'-7½"	25'-5"	76
S7	2	#6	4	7'-9"	25'-8"	77
S8	2	#6	4	7'-10½"	25'-11"	78
S9	2	#6	4	8'-0"	26'-2"	79
S10	2	#6	4	8'-2"	26'-6"	80
S11	2	#6	4	8'-3½"	26'-9"	80
S12	2	#6	4	8'-5"	27'-0"	81
S13	2	#6	4	8'-7"	27'-4"	82
S14	2	#6	4	8'-8½"	27'-7"	83
S15	2	#6	4	8'-10"	27'-10"	84
S16	2	#6	4	9'-0"	28'-2"	85
S17	2	#6	4	9'-1½"	28'-5"	85
S18	2	#6	4	9'-3"	28'-8"	86
S19	2	#6	4	9'-5"	29'-0"	87
S20	2	#6	4	9'-6½"	29'-3"	88
S21	2	#6	4	9'-8"	29'-6"	89
S22	2	#6	4	9'-9½"	29'-9"	89
S23	2	#6	4	9'-11½"	30'-1"	90
S24	2	#6	4	10'-1"	30'-4"	91
S25	2	#6	4	10'-2½"	30'-7"	92
S26	2	#6	4	10'-4½"	30'-11"	93
S27	2	#6	4	10'-6"	31'-2"	94
S28	8	#6	4	10'-8½"	31'-7"	380
S29	8	#6	4	10'-9½"	31'-9"	382
S30	8	#6	4	11'-1"	32'-4"	389
S31	8	#6	4	11'-2"	32'-6"	391
S32	2	#6	4	11'-0"	32'-2"	97
S33	2	#6	4	10'-10"	31'-10"	96
S34	2	#6	4	10'-8"	31'-6"	95
S35	2	#6	4	10'-6½"	31'-3"	94
S36	2	#6	4	10'-4½"	30'-11"	93
S37	2	#6	4	10'-2½"	30'-7"	92
S38	2	#6	4	10'-0½"	30'-3"	91
S39	2	#6	4	9'-11"	30'-0"	90
S40	2	#6	4	9'-9"	29'-8"	89
S41	2	#6	4	9'-7"	29'-4"	88
S42	2	#6	4	9'-5½"	29'-1"	87
S43	2	#6	4	9'-3½"	28'-9"	86
S44	2	#6	4	9'-1½"	28'-5"	85
S45	2	#6	4	8'-11½"	28'-1"	84
S46	2	#6	4	8'-10"	27'-10"	84
S47	2	#6	4	8'-8"	27'-6"	83
S48	2	#6	4	8'-6"	27'-2"	82
S49	2	#6	4	8'-4"	26'-10"	81
S50	2	#6	4	8'-2½"	26'-7"	80
S51	2	#6	4	8'-0½"	26'-3"	79
S52	2	#6	4	7'-10½"	25'-11"	78
S53	2	#6	4	7'-8½"	25'-7"	77
S54	2	#6	4	7'-7"	25'-4"	76

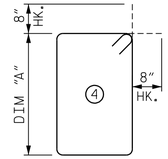
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
S55	4	#6	4	7'-5"	25'-0"	150
S56	2	#6	4	7'-1"	24'-4"	73
S57	2	#6	4	6'-11½"	24'-1"	72
S58	2	#6	4	6'-9½"	23'-9"	71
S1A	2	#6	5	6'-10"	8'-6"	26
S2A	2	#6	5	6'-11"	8'-7"	26
S3A	2	#6	5	7'-1"	8'-9"	26
S4A	4	#6	5	7'-4"	9'-0"	54
S5A	2	#6	5	7'-6"	9'-2"	28
S6A	2	#6	5	7'-8"	9'-4"	28
S7A	2	#6	5	7'-9"	9'-5"	28
S8A	2	#6	5	7'-11"	9'-7"	29
S9A	2	#6	5	8'-0"	9'-8"	29
S10A	2	#6	5	8'-2"	9'-10"	30
S11A	2	#6	5	8'-4"	10'-0"	30
S12A	2	#6	5	8'-5"	10'-1"	30
S13A	2	#6	5	8'-7"	10'-3"	31
S14A	2	#6	5	8'-8"	10'-4"	31
S15A	2	#6	5	8'-10"	10'-6"	32
S16A	2	#6	5	9'-0"	10'-8"	32
S17A	2	#6	5	9'-2"	10'-10"	33
S18A	2	#6	5	9'-3"	10'-11"	33
S19A	2	#6	5	9'-5"	11'-1"	33
S20A	2	#6	5	9'-7"	11'-3"	34
S21A	2	#6	5	9'-8"	11'-4"	34
S22A	2	#6	5	9'-10"	11'-6"	35
S23A	2	#6	5	9'-11"	11'-7"	35
S24A	2	#6	5	10'-1"	11'-9"	35
S25A	2	#6	5	10'-2"	11'-10"	36
S26A	2	#6	5	10'-5"	12'-1"	36
S27A	2	#6	5	10'-6"	12'-2"	37
S28A	8	#6	5	10'-9"	12'-5"	149
S29A	8	#6	5	10'-10"	12'-6"	150
S30A	8	#6	5	11'-1"	12'-9"	153
S31A	8	#6	5	11'-2"	12'-10"	154
S32A	2	#6	5	11'-0"	12'-8"	38
S33A	2	#6	5	10'-10"	12'-6"	38
S34A	2	#6	5	10'-8"	12'-4"	37
S35A	2	#6	5	10'-7"	12'-3"	37
S36A	2	#6	5	10'-5"	12'-1"	36
S37A	2	#6	5	10'-2"	11'-10"	36
S38A	2	#6	5	10'-1"	11'-9"	35
S39A	2	#6	5	9'-11"	11'-7"	35
S40A	2	#6	5	9'-9"	11'-5"	34
S41A	2	#6	5	9'-7"	11'-3"	34
S42A	2	#6	5	9'-5"	11'-1"	33
S43A	2	#6	5	9'-4"	11'-0"	33
S44A	2	#6	5	9'-2"	10'-10"	33
S45A	2	#6	5	8'-11"	10'-7"	32
S46A	2	#6	5	8'-10"	10'-6"	32
S47A	2	#6	5	8'-8"	10'-4"	31
S48A	2	#6	5	8'-6"	10'-2"	31
S49A	2	#6	5	8'-4"	10'-0"	30
S50A	2	#6	5	8'-2"	9'-10"	30
S51A	2	#6	5	8'-1"	9'-9"	29
S52A	2	#6	5	7'-11"	9'-7"	29
S53A	2	#6	5	7'-9"	9'-5"	28
S54A	2	#6	5	7'-7"	9'-3"	28
S55A	4	#6	5	7'-5"	9'-1"	55
S56A	2	#6	5	7'-1"	8'-9"	26
S57A	2	#6	5	7'-0"	8'-8"	26
S58A	2	#6	5	6'-10"	8'-6"	26
S100	86	#5	6	5'-8"	18'-9"	1,682
S101	129	#5	5	5'-8"	6'-8"	897
S102	94	#5	6	6'-8"	20'-4"	1,994
S103	141	#5	5	6'-8"	7'-8"	1,127
T1	55	#11	1	32'-6"	35'-8"	10,422
T2	65	#11	1	27'-6"	30'-8"	10,591
T3	20	#5	STR.	--	32'-6"	678
T4	20	#5	STR.	--	27'-6"	574
T5	30	#8	1	32'-6"	34'-4"	2,750
T6	36	#8	1	27'-6"	29'-4"	2,820
△ T7	32	#6	3	3'-11"	4'-7"	220
T8	240	#5	7	5'-8"	8'-8"	2,169

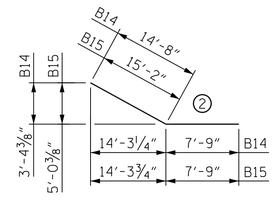
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
U1	20	#6	7	6'-8"	20'-4"	611
U2	36	#6	7	6'-6½"	9'-7"	518
U3	36	#4	7	6'-8"	9'-8"	232
U4	48	#4	7	3'-8"	6'-8"	214
V1	76	#11	STR.	--	23'-4"	9,422
V2	60	#11	STR.	--	30'-4"	9,670

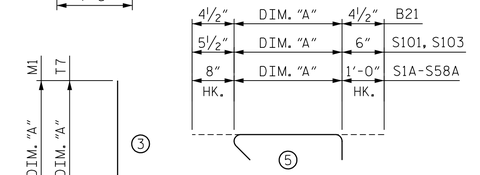
BAR TYPES

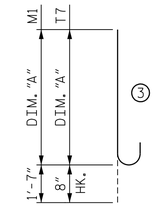
ALL BAR DIMENSIONS ARE OUT TO OUT

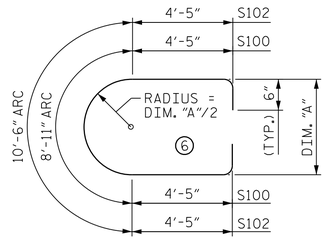












SUMMARY OF QUANTITIES - BENT 6		
REINFORCING STEEL	LBS.	83,276
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	239.6
POUR #2 - COLUMN	C.Y.	70.1
POUR #3 - COLUMN	C.Y.	42.9
POUR #4 - CAP	C.Y.	108.0
TOTAL	C.Y.	460.6
HP 14x73 STEEL PILES	NO.	40
	LF	1,400
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	40

△ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 6 BILL OF MATERIALS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-122
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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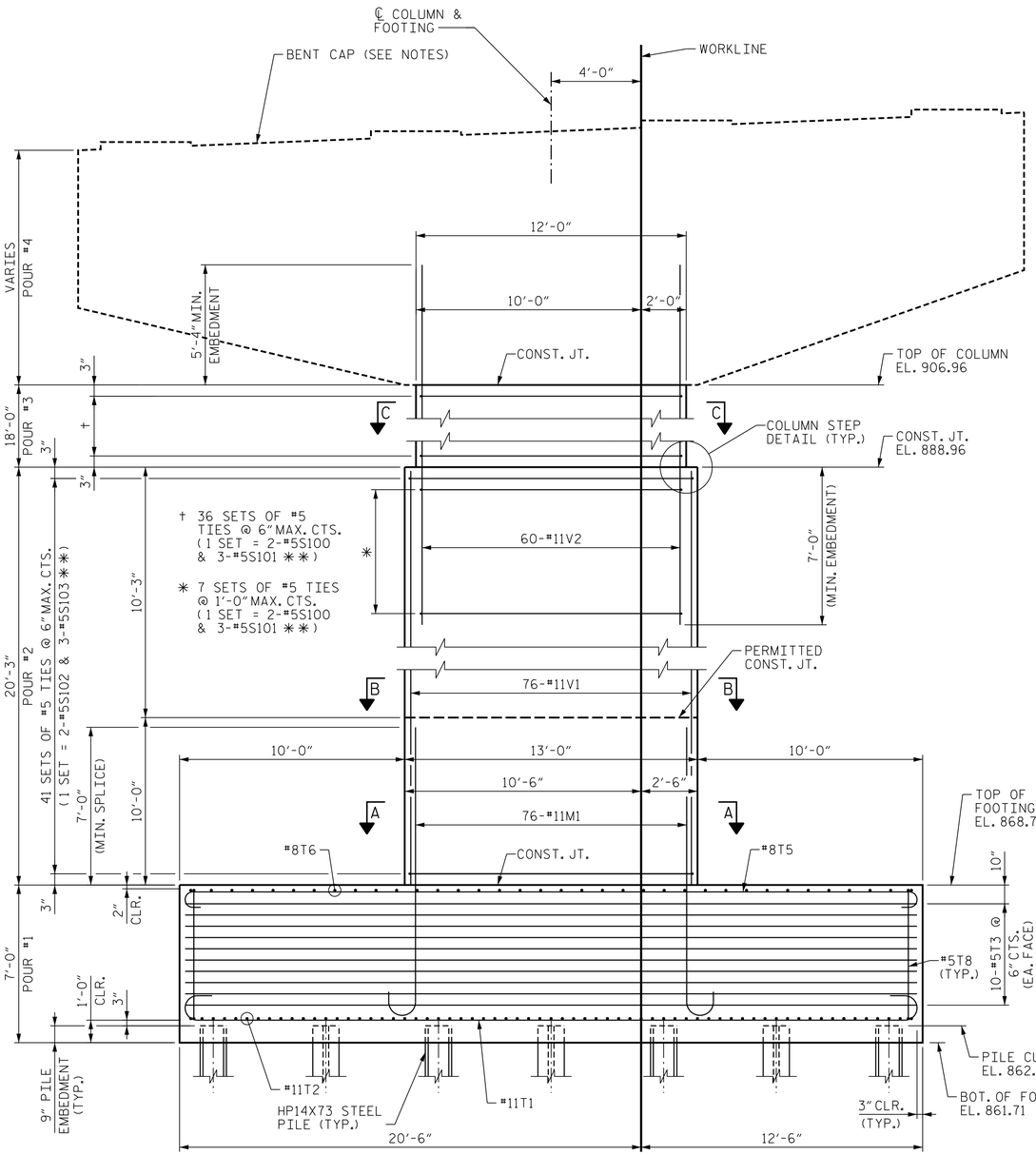
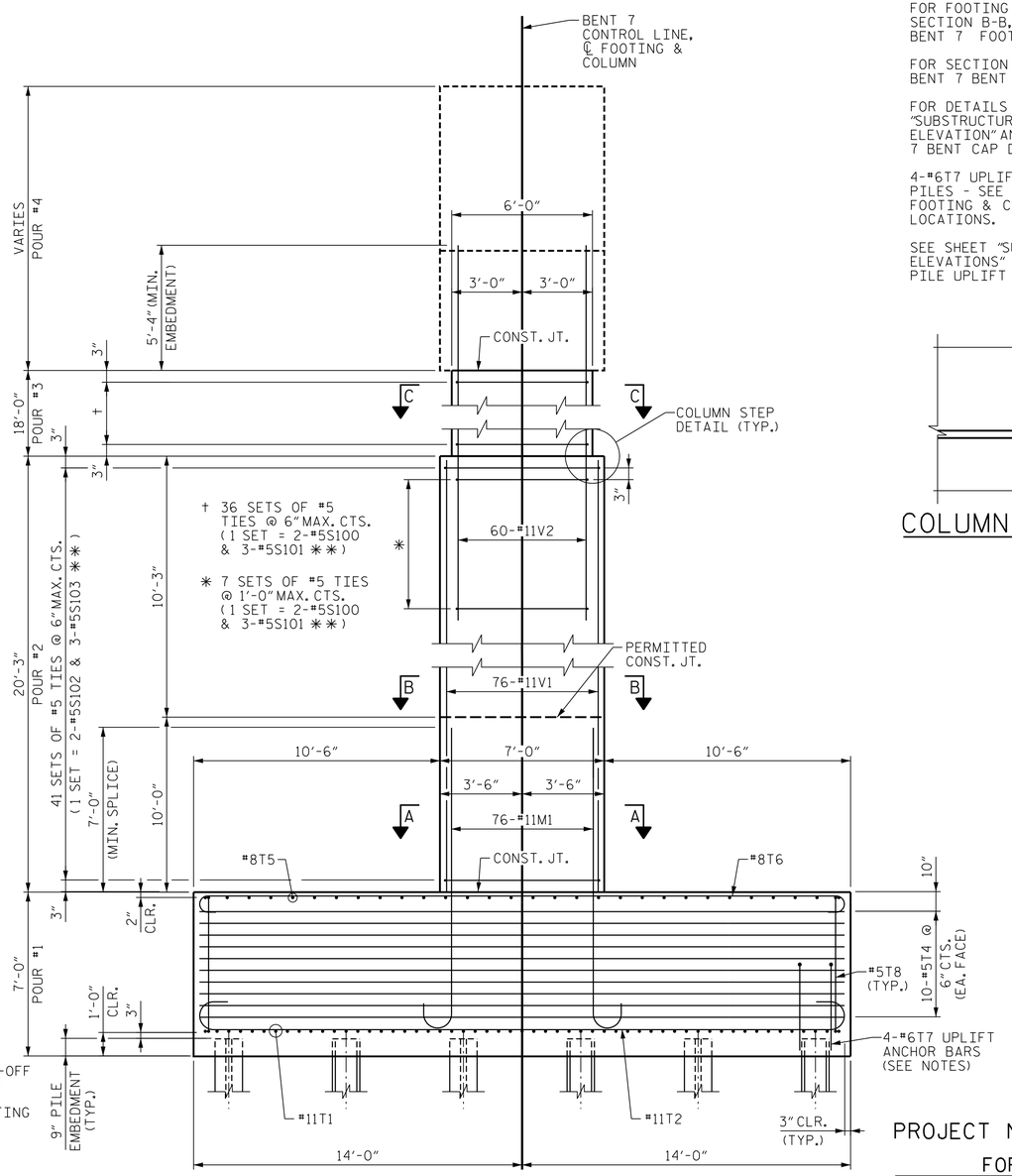
DES BY: B. PETERSON DATE: 10/19
DES CHK: S. NIFONG DATE: 10/19

DWG BY: B. PETERSON DATE: 10/19
CHK BY: M. WERNER DATE: 11/19



FRONT ELEVATION

** INVERT ORIENTATION OF ALTERNATE #5S101 AND #5S103 TIES



END ELEVATION

NOTES

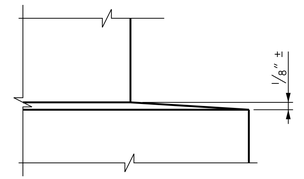
FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 7 FOOTING & COLUMN DETAILS".

FOR SECTION C-C, SEE SHEET "SUBSTRUCTURE BENT 7 BENT CAP DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 7 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 7 BENT CAP DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 7 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.



COLUMN STEP DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 7 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-123
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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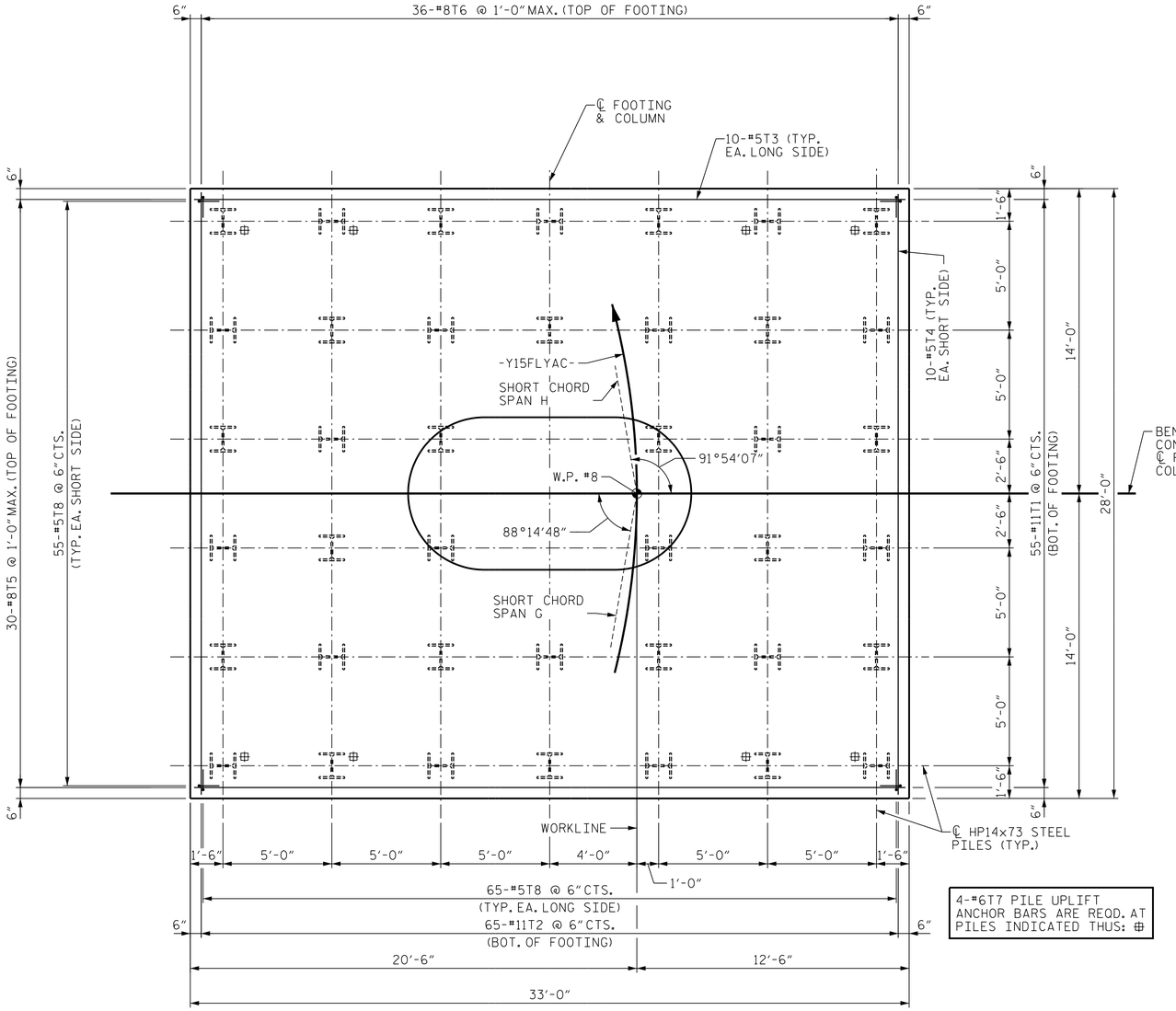
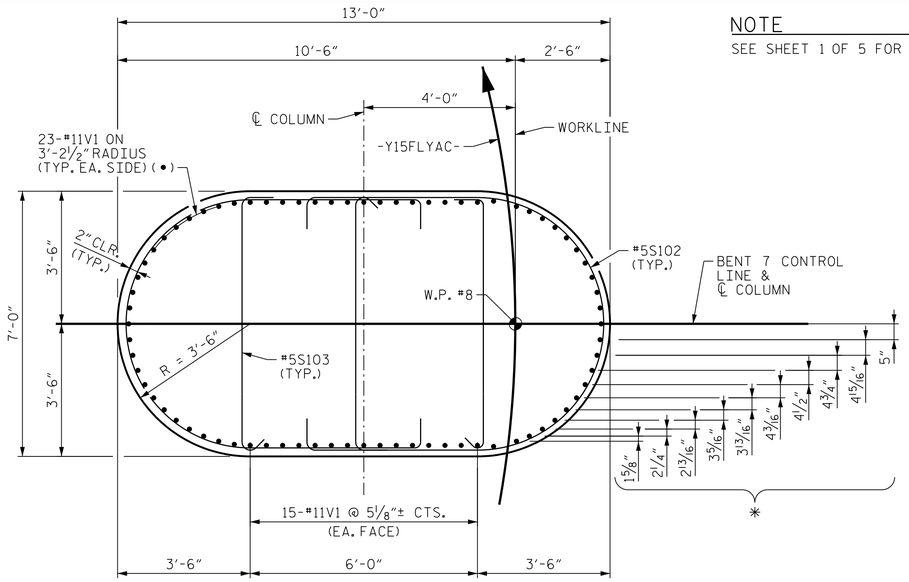
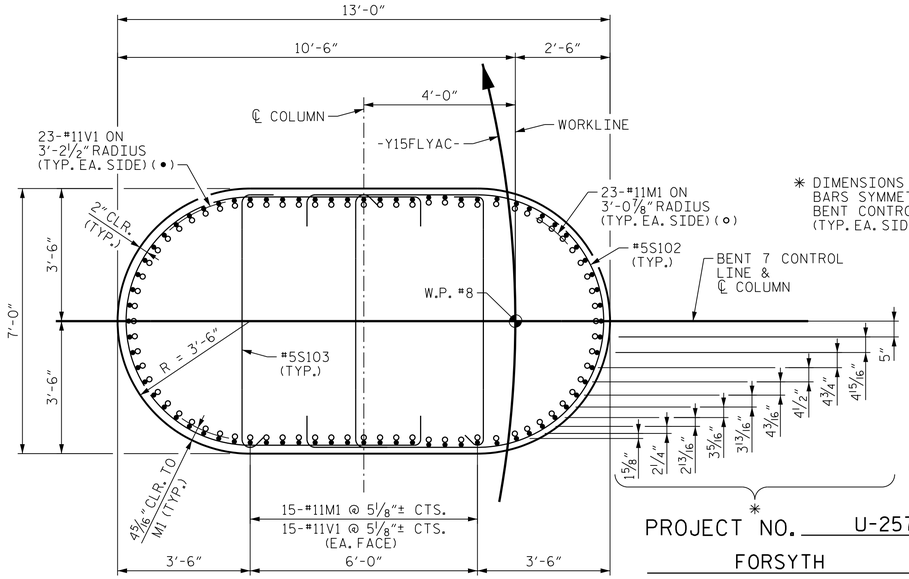
DES BY:	J. CABABE	DATE :	10/19
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19



FOOTING PLAN



SECTION B-B



SECTION A-A

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 7 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-124
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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DES BY: J. CABABE	DATE: 10/19	DWG BY: B. PETERSON	DATE: 10/19
DES CHK: S. CHAUDHARI	DATE: 10/19	CHK BY: N. LIU	DATE: 11/19

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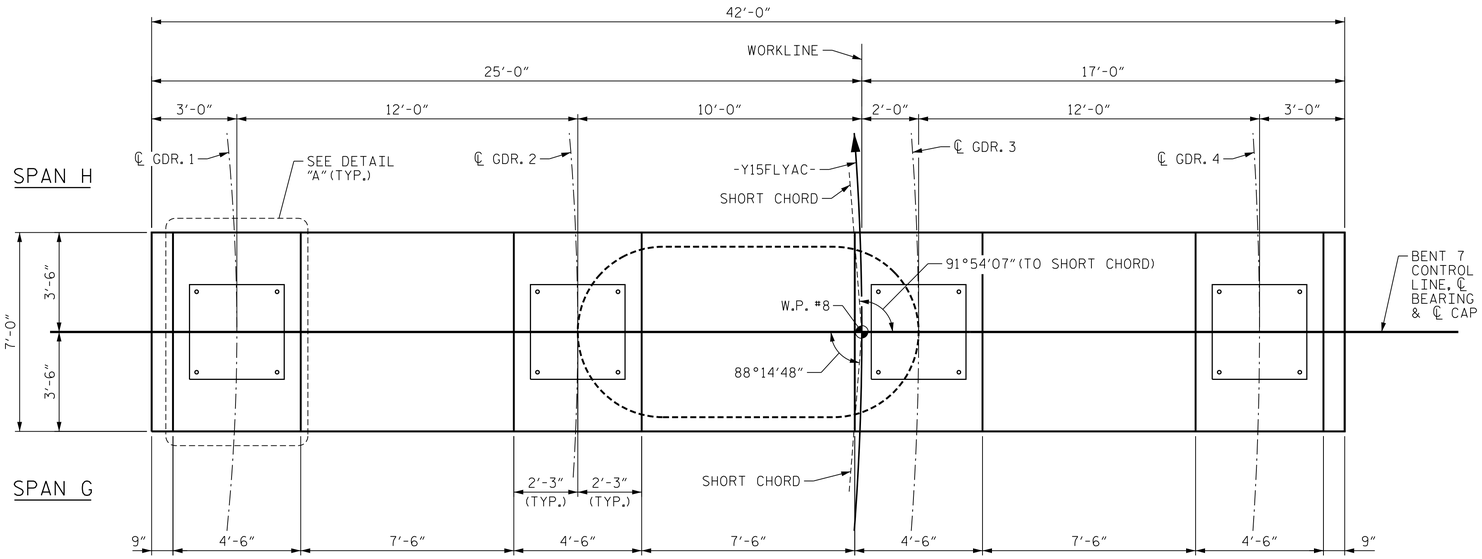
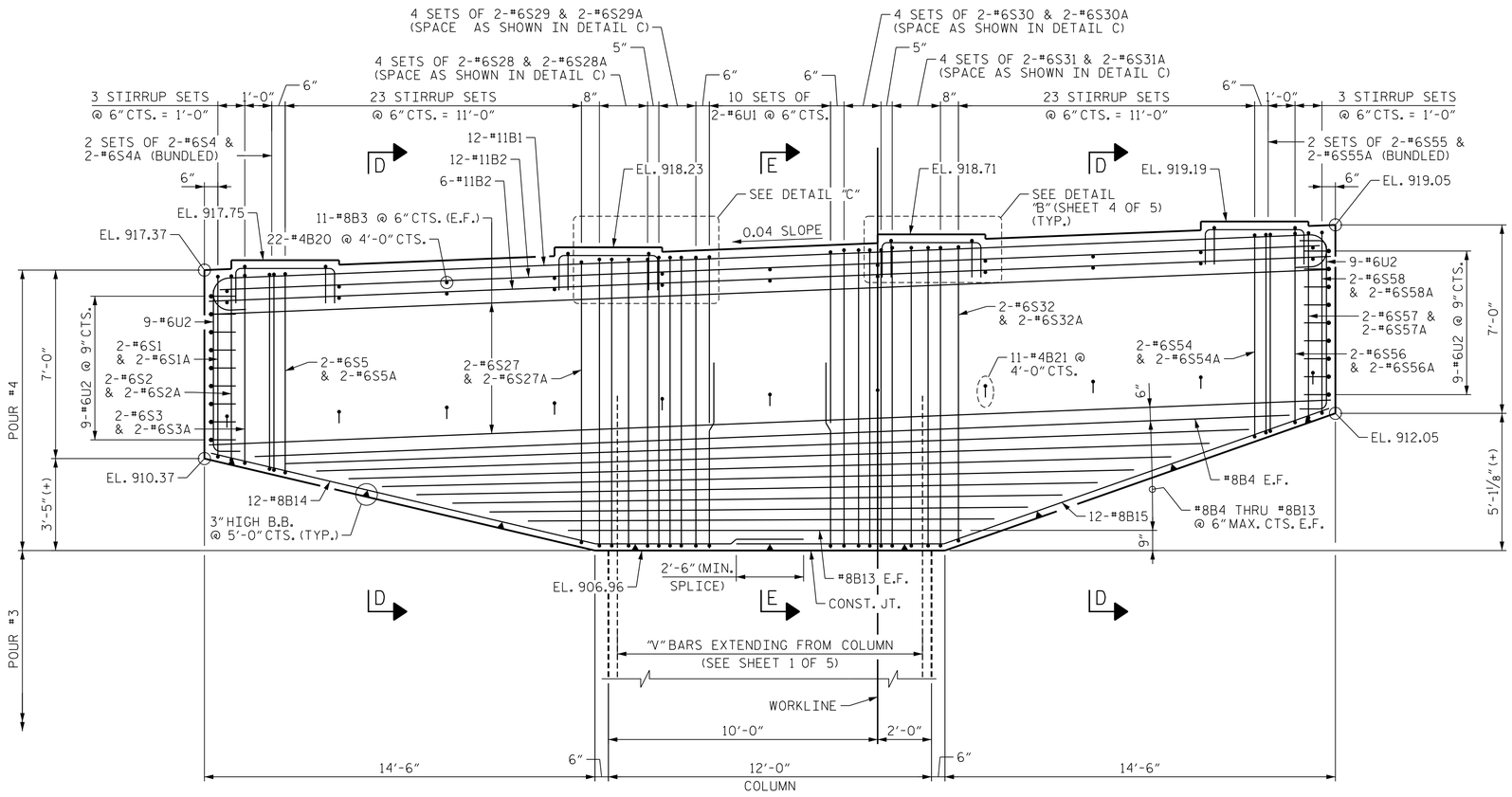


PLAN OF CAP

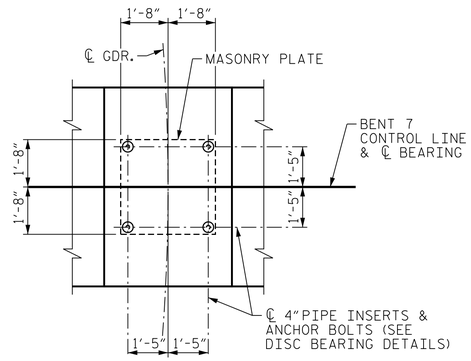


ELEVATION OF CAP

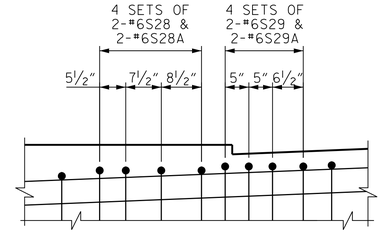
NOTES

FOR SECTIONS D-D AND E-E, SEE "SUBSTRUCTURE BENT 7 BENT CAP DETAILS", SHEET 4 OF 5.

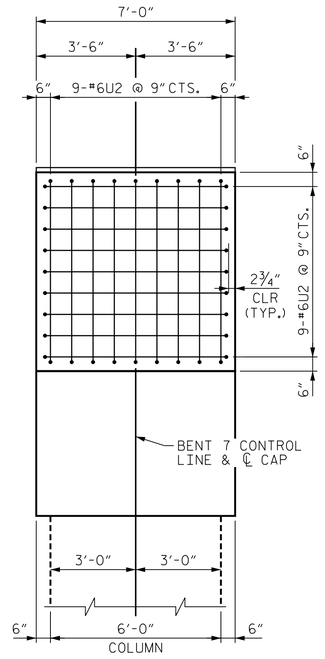
FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.



DETAIL "A"
(TYP. @ EA. BEARING)



DETAIL "C"
DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S30/#6S30A AND #6S31/#6S31A AS SHOWN ON THE ELEVATION)



END VIEW

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 7 BENT CAP PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
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1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

DES BY: K. OLIVER	DATE : 10/19	DWG BY: B. PETERSON	DATE : 10/19
DES CHK: M. WERNER	DATE : 10/19	CHK BY: K. OLIVER	DATE : 11/19

PLOT DRIVER: NCDOT_pdf color_eng_50.plt
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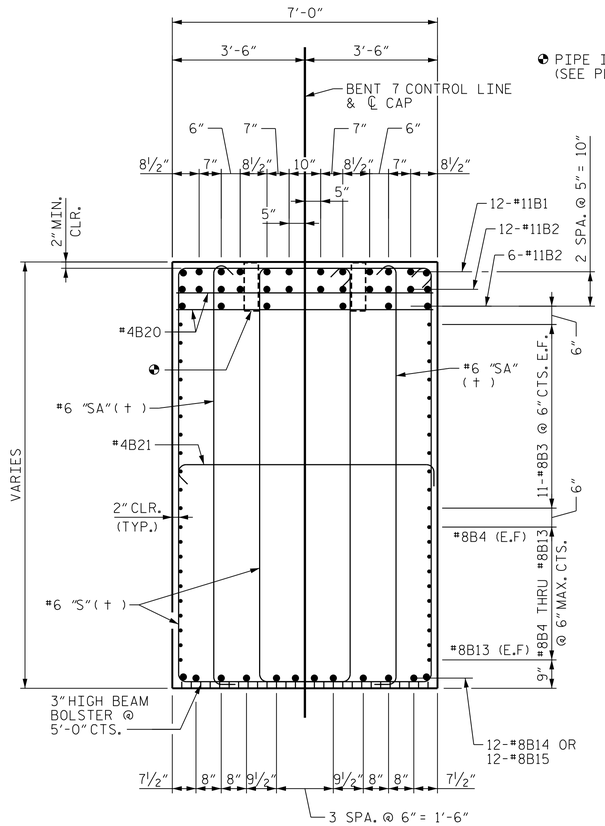
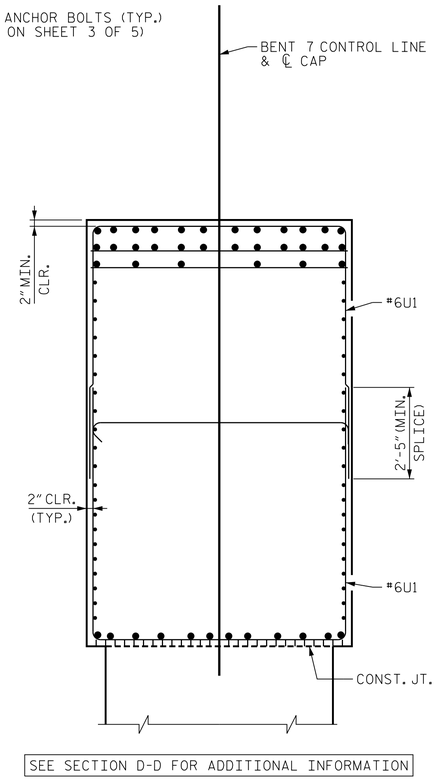


SECTION D-D

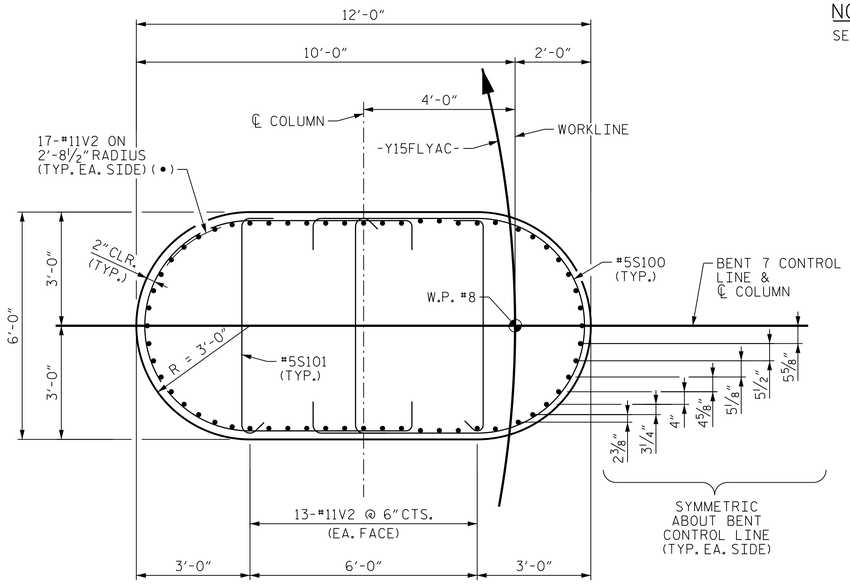
(†) SEE "STIRRUP SET DETAIL"



SEE SECTION D-D FOR ADDITIONAL INFORMATION

SECTION E-E

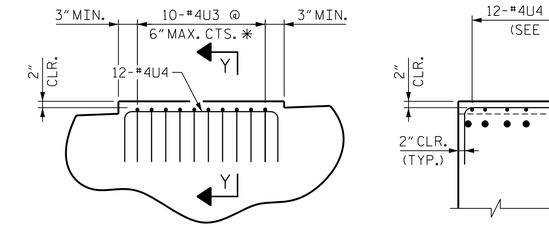
COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY



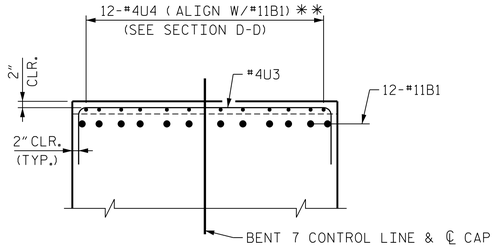
SECTION C-C

NOTE

SEE SHEET 1 OF 5 FOR NOTES.



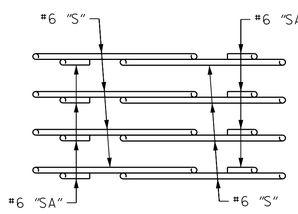
DETAIL "B"



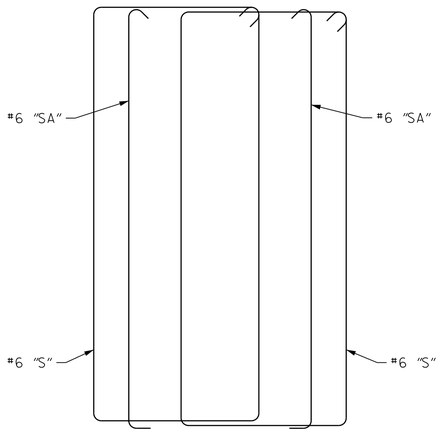
SECTION Y-Y

✳ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR PIPE INSERTS FOR ANCHOR BOLTS.

✳✳ NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN
(SHOWING BAR PLACEMENT)



ELEVATION
(SCHEMATIC)

STIRRUP SET DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 7 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-126
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

PLOT DRIVER: NCDOT.pdf_color_eng_50.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
USER: PPETERSO DATE: 10/14/2021 TIME: 4:11:35 PM
FILE: ...\SUBSTR

BILL OF MATERIAL - BENT 7

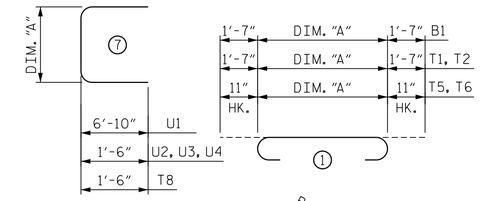
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848
B2	18	#11	STR.	--	40'-10"	3,905
B3	22	#8	STR.	--	41'-8"	2,448
B4	2	#8	STR.	--	38'-5"	205
B5	2	#8	STR.	--	35'-9"	191
B6	2	#8	STR.	--	33'-2"	177
B7	2	#8	STR.	--	30'-6"	163
B8	2	#8	STR.	--	27'-11"	149
B9	2	#8	STR.	--	25'-3"	135
B10	2	#8	STR.	--	22'-7"	121
B11	2	#8	STR.	--	20'-0"	107
B12	2	#8	STR.	--	17'-3"	92
B13	2	#8	STR.	--	14'-7"	78
B14	12	#8	2	--	22'-5"	718
B15	12	#8	2	--	22'-11"	734
B20	22	#4	STR.	--	6'-8"	98
B21	11	#4	5	6'-8"	7'-5"	54
M1	76	#11	3	13'-0"	14'-7"	5,889
S1	2	#6	4	6'-9 1/2"	23'-11"	72
S2	2	#6	4	6'-11"	24'-2"	73
S3	2	#6	4	7'-0 1/2"	24'-5"	73
S4	4	#6	4	7'-4"	25'-0"	150
S5	2	#6	4	7'-5 1/2"	25'-3"	76
S6	2	#6	4	7'-7 1/2"	25'-7"	77
S7	2	#6	4	7'-9"	25'-10"	78
S8	2	#6	4	7'-10 1/2"	26'-1"	78
S9	2	#6	4	8'-0"	26'-4"	79
S10	2	#6	4	8'-2"	26'-8"	80
S11	2	#6	4	8'-3 1/2"	26'-11"	81
S12	2	#6	4	8'-5"	27'-2"	82
S13	2	#6	4	8'-7"	27'-6"	83
S14	2	#6	4	8'-8 1/2"	27'-9"	83
S15	2	#6	4	8'-10"	28'-0"	84
S16	2	#6	4	9'-0"	28'-4"	85
S17	2	#6	4	9'-1 1/2"	28'-7"	86
S18	2	#6	4	9'-3"	28'-10"	87
S19	2	#6	4	9'-5"	29'-2"	88
S20	2	#6	4	9'-6 1/2"	29'-5"	88
S21	2	#6	4	9'-8"	29'-8"	89
S22	2	#6	4	9'-9 1/2"	29'-11"	90
S23	2	#6	4	9'-11 1/2"	30'-3"	91
S24	2	#6	4	10'-1"	30'-6"	92
S25	2	#6	4	10'-2 1/2"	30'-9"	92
S26	2	#6	4	10'-4 1/2"	31'-1"	93
S27	2	#6	4	10'-6"	31'-4"	94
S28	8	#6	4	10'-8 1/2"	31'-9"	382
S29	8	#6	4	10'-9 1/2"	31'-11"	384
S30	8	#6	4	11'-1"	32'-6"	391
S31	8	#6	4	11'-2"	32'-8"	393
S32	2	#6	4	11'-0"	32'-4"	97
S33	2	#6	4	10'-10"	32'-0"	96
S34	2	#6	4	10'-8"	31'-8"	95
S35	2	#6	4	10'-6 1/2"	31'-5"	94
S36	2	#6	4	10'-4 1/2"	31'-1"	93
S37	2	#6	4	10'-2 1/2"	30'-9"	92
S38	2	#6	4	10'-0 1/2"	30'-5"	91
S39	2	#6	4	9'-11"	30'-2"	91
S40	2	#6	4	9'-9"	29'-10"	90
S41	2	#6	4	9'-7"	29'-6"	89
S42	2	#6	4	9'-5 1/2"	29'-3"	88
S43	2	#6	4	9'-3 1/2"	28'-11"	87
S44	2	#6	4	9'-1 1/2"	28'-7"	86
S45	2	#6	4	8'-11 1/2"	28'-3"	85
S46	2	#6	4	8'-10"	28'-0"	84
S47	2	#6	4	8'-8"	27'-8"	83
S48	2	#6	4	8'-6"	27'-4"	82
S49	2	#6	4	8'-4"	27'-0"	81
S50	2	#6	4	8'-2 1/2"	26'-9"	80
S51	2	#6	4	8'-0 1/2"	26'-5"	79
S52	2	#6	4	7'-10 1/2"	26'-1"	78
S53	2	#6	4	7'-8 1/2"	25'-9"	77
S54	2	#6	4	7'-7"	25'-6"	77

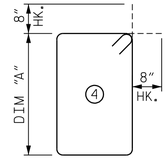
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
S55	4	#6	4	7'-5"	25'-2"	151
S56	2	#6	4	7'-1"	24'-6"	74
S57	2	#6	4	6'-11 1/2"	24'-3"	73
S58	2	#6	4	6'-9 1/2"	23'-11"	72
S1A	2	#6	5	6'-10"	8'-6"	26
S2A	2	#6	5	6'-11"	8'-7"	26
S3A	2	#6	5	7'-1"	8'-9"	26
S4A	4	#6	5	7'-4"	9'-0"	54
S5A	2	#6	5	7'-6"	9'-2"	28
S6A	2	#6	5	7'-8"	9'-4"	28
S7A	2	#6	5	7'-9"	9'-5"	28
S8A	2	#6	5	7'-11"	9'-7"	29
S9A	2	#6	5	8'-0"	9'-8"	29
S10A	2	#6	5	8'-2"	9'-10"	30
S11A	2	#6	5	8'-4"	10'-0"	30
S12A	2	#6	5	8'-5"	10'-1"	30
S13A	2	#6	5	8'-7"	10'-3"	31
S14A	2	#6	5	8'-8"	10'-4"	31
S15A	2	#6	5	8'-10"	10'-6"	32
S16A	2	#6	5	9'-0"	10'-8"	32
S17A	2	#6	5	9'-2"	10'-10"	33
S18A	2	#6	5	9'-3"	10'-11"	33
S19A	2	#6	5	9'-5"	11'-1"	33
S20A	2	#6	5	9'-7"	11'-3"	34
S21A	2	#6	5	9'-8"	11'-4"	34
S22A	2	#6	5	9'-10"	11'-6"	35
S23A	2	#6	5	9'-11"	11'-7"	35
S24A	2	#6	5	10'-1"	11'-9"	35
S25A	2	#6	5	10'-2"	11'-10"	36
S26A	2	#6	5	10'-5"	12'-1"	36
S27A	2	#6	5	10'-6"	12'-2"	37
S28A	8	#6	5	10'-9"	12'-5"	149
S29A	8	#6	5	10'-10"	12'-6"	150
S30A	8	#6	5	11'-1"	12'-9"	153
S31A	8	#6	5	11'-2"	12'-10"	154
S32A	2	#6	5	11'-0"	12'-8"	38
S33A	2	#6	5	10'-10"	12'-6"	38
S34A	2	#6	5	10'-8"	12'-4"	37
S35A	2	#6	5	10'-7"	12'-3"	37
S36A	2	#6	5	10'-5"	12'-1"	36
S37A	2	#6	5	10'-2"	11'-10"	36
S38A	2	#6	5	10'-1"	11'-9"	35
S39A	2	#6	5	9'-11"	11'-7"	35
S40A	2	#6	5	9'-9"	11'-5"	34
S41A	2	#6	5	9'-7"	11'-3"	34
S42A	2	#6	5	9'-5"	11'-1"	33
S43A	2	#6	5	9'-4"	11'-0"	33
S44A	2	#6	5	9'-2"	10'-10"	33
S45A	2	#6	5	8'-11"	10'-7"	32
S46A	2	#6	5	8'-10"	10'-6"	32
S47A	2	#6	5	8'-8"	10'-4"	31
S48A	2	#6	5	8'-6"	10'-2"	31
S49A	2	#6	5	8'-4"	10'-0"	30
S50A	2	#6	5	8'-2"	9'-10"	30
S51A	2	#6	5	8'-1"	9'-9"	29
S52A	2	#6	5	7'-11"	9'-7"	29
S53A	2	#6	5	7'-9"	9'-5"	28
S54A	2	#6	5	7'-7"	9'-3"	28
S55A	4	#6	5	7'-5"	9'-1"	55
S56A	2	#6	5	7'-1"	8'-9"	26
S57A	2	#6	5	7'-0"	8'-8"	26
S58A	2	#6	5	6'-10"	8'-6"	26
S100	86	#5	6	5'-8"	18'-9"	1,682
S101	129	#5	5	5'-8"	6'-8"	897
S102	82	#5	6	6'-8"	20'-4"	1,739
S103	123	#5	5	6'-8"	7'-8"	984
T1	55	#11	1	32'-6"	35'-8"	10,422
T2	65	#11	1	27'-6"	30'-8"	10,591
T3	20	#5	STR.	--	32'-6"	678
T4	20	#5	STR.	--	27'-6"	574
T5	30	#8	1	32'-6"	34'-4"	2,750
T6	36	#8	1	27'-6"	29'-4"	2,820
ΔT7	32	#6	3	3'-11"	4'-7"	220
T8	240	#5	7	5'-8"	8'-8"	2,169

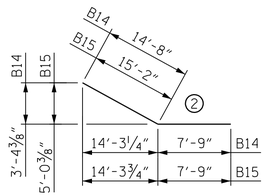
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
U1	20	#6	7	6'-8"	20'-4"	611
U2	36	#6	7	6'-6 1/2"	9'-7"	518
U3	40	#4	7	6'-8"	9'-8"	258
U4	48	#4	7	4'-2"	7'-2"	230
V1	76	#11	STR.	--	20'-1"	8,109
V2	60	#11	STR.	--	30'-4"	9,670

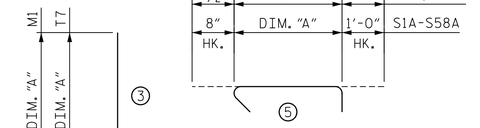
BAR TYPES

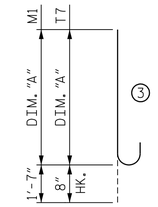
ALL BAR DIMENSIONS ARE OUT TO OUT

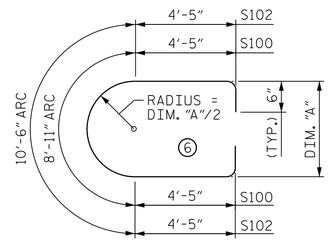












SUMMARY OF QUANTITIES - BENT 7		
REINFORCING STEEL	LBS.	81,642
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	239.6
POUR #2 - COLUMN	C.Y.	60.4
POUR #3 - COLUMN	C.Y.	42.9
POUR #4 - CAP	C.Y.	108.2
TOTAL	C.Y.	451.1
HP 14x73 STEEL PILES	NO.	40
	LF	2,800
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	40

Δ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 7 BILL OF MATERIALS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-127
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY: B. PETERSON DATE: 10/19
DES CHK: S. NIFONG DATE: 10/19

DWG BY: B. PETERSON DATE: 10/19
CHK BY: M. WERNER DATE: 10/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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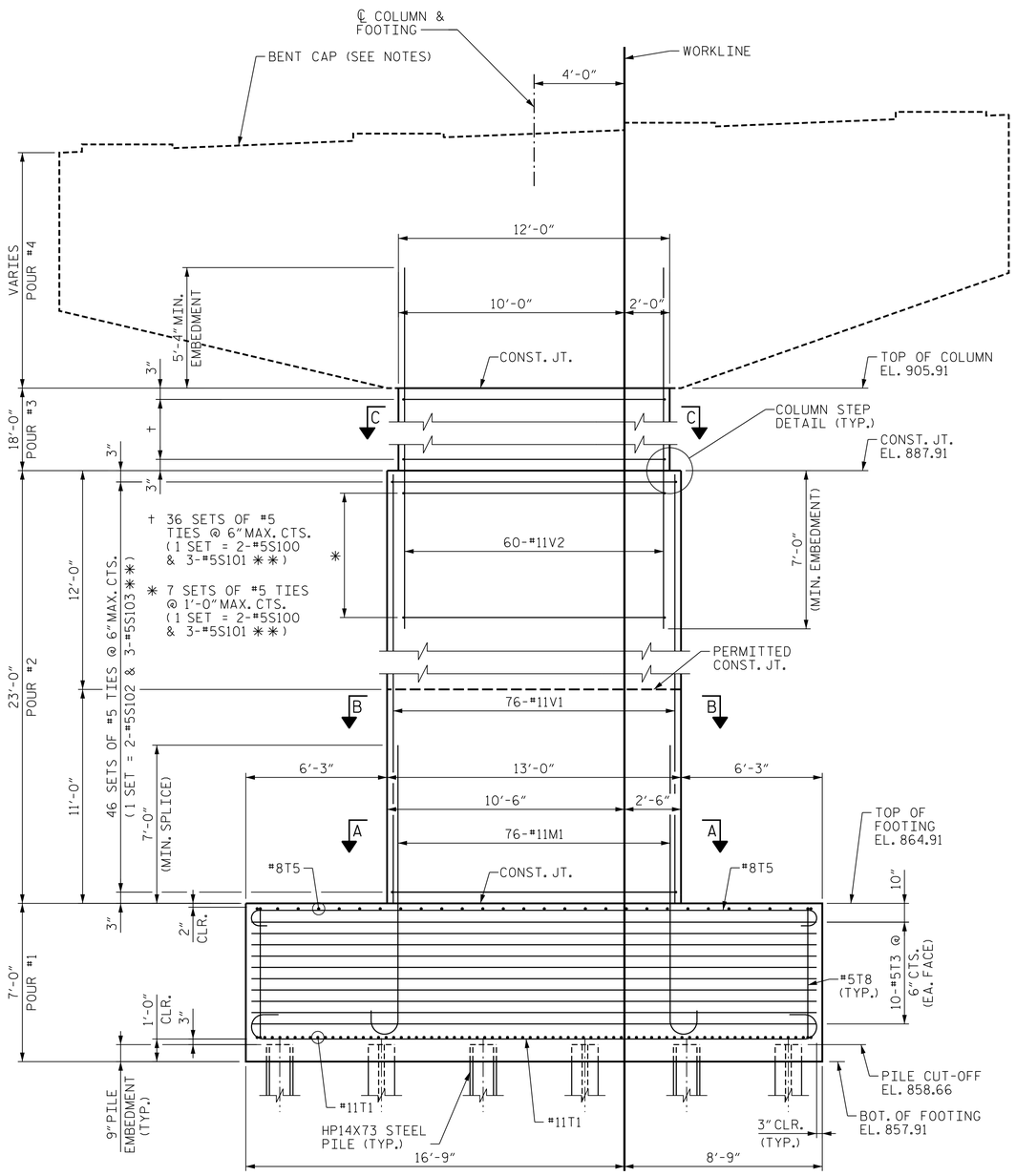
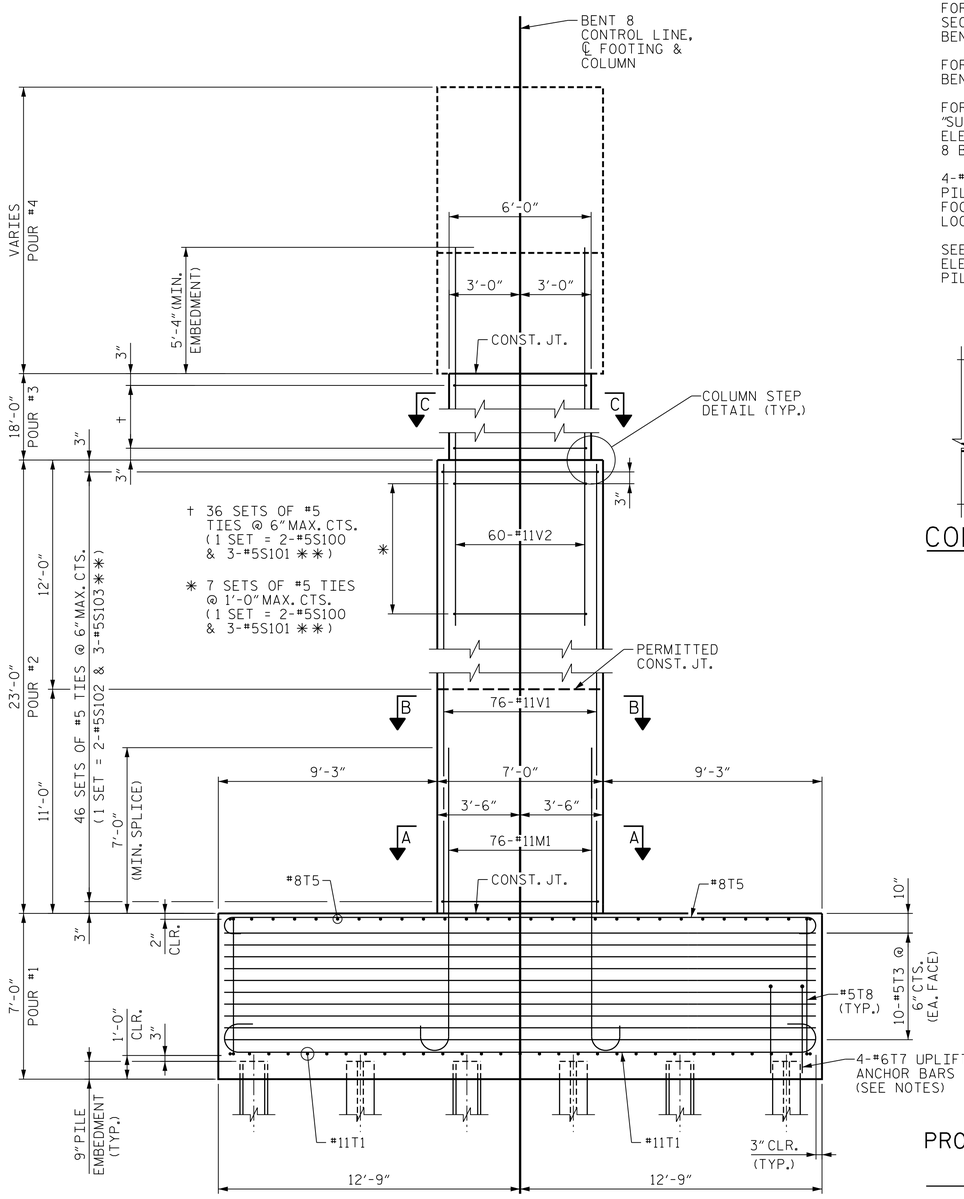


FRONT ELEVATION

✱✱ INVERT ORIENTATION OF ALTERNATE #5S101 AND #5S103 TIES



END ELEVATION

NOTES

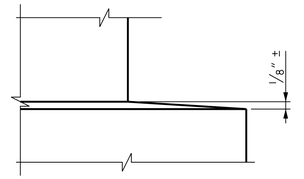
FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 8 FOOTING & COLUMN DETAILS".

FOR SECTION C-C, SEE SHEET "SUBSTRUCTURE BENT 8 BENT CAP DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 8 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 8 BENT CAP DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 8 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.



COLUMN STEP DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 8 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-128
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	J. CABABE	DATE: 10/19	DWG BY:	B. PETERSON	DATE: 10/19
DES CHK:	S. CHAUDHARI	DATE: 10/19	CHK BY:	N. LIU	DATE: 11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
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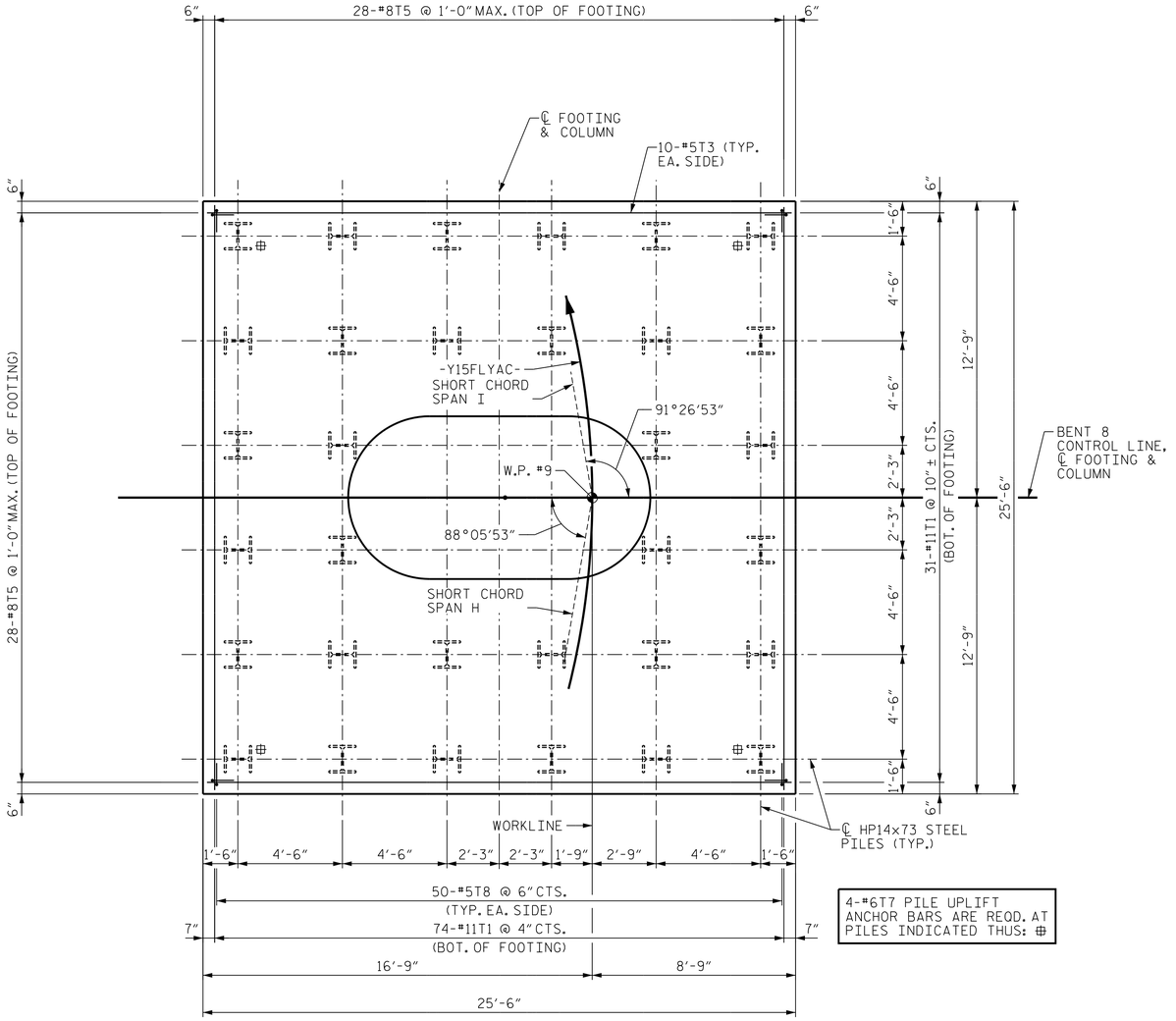
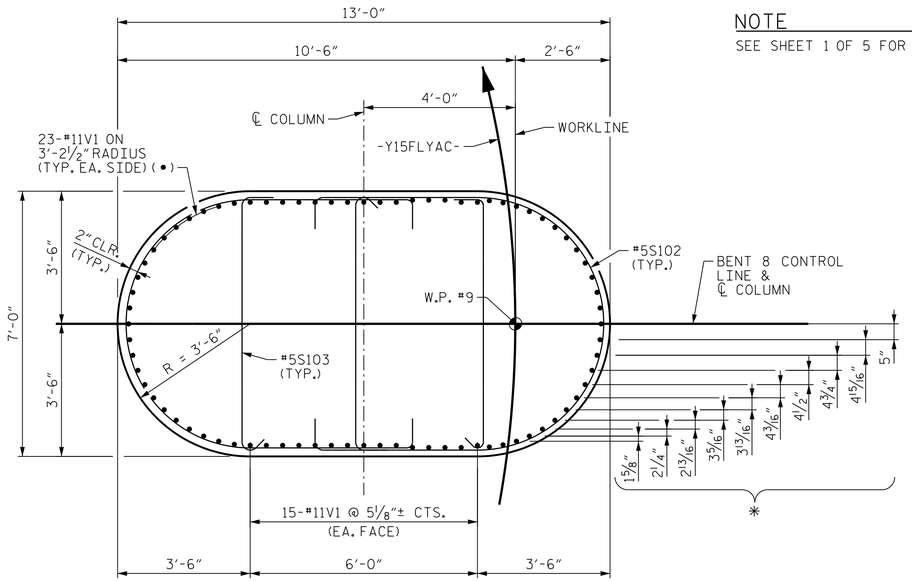
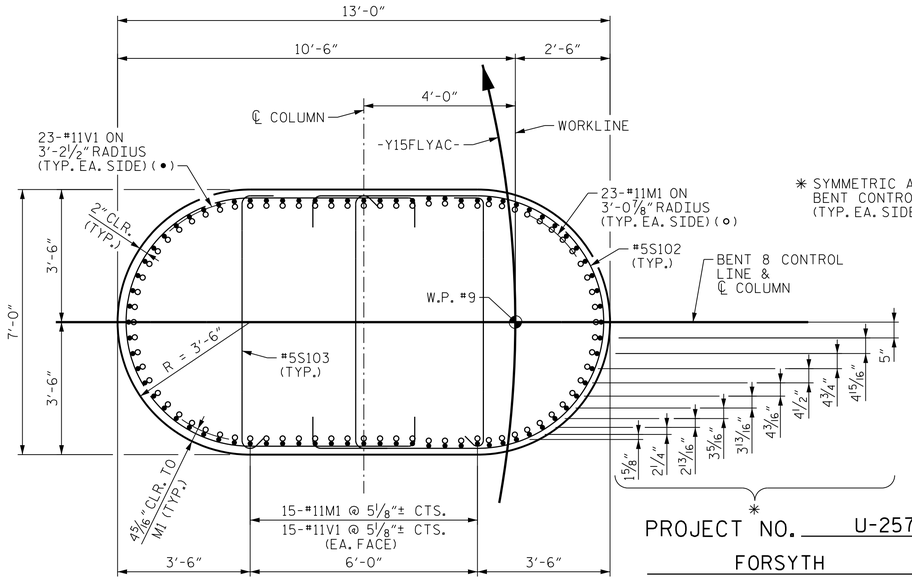


FOOTING PLAN



SECTION B-B



SECTION A-A

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 8 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-129
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

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Domenic A. Coletti 10/15/2021

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N.C.B.E.L.S. License Number: F-0116

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DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

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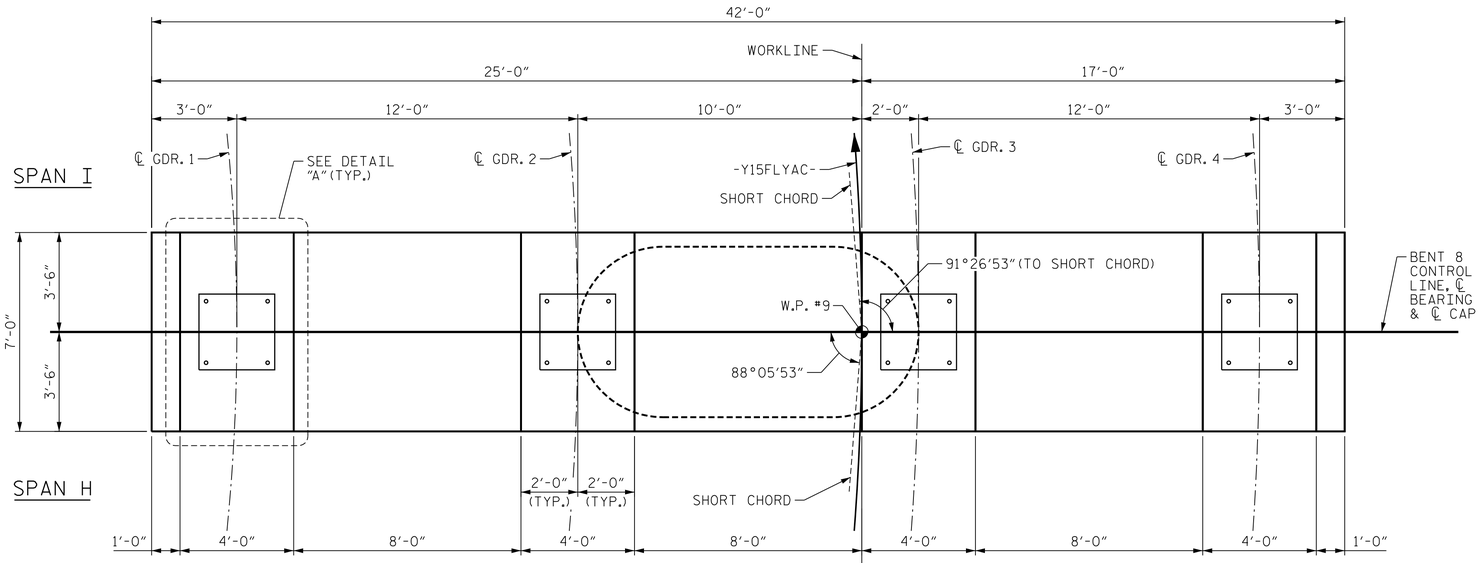
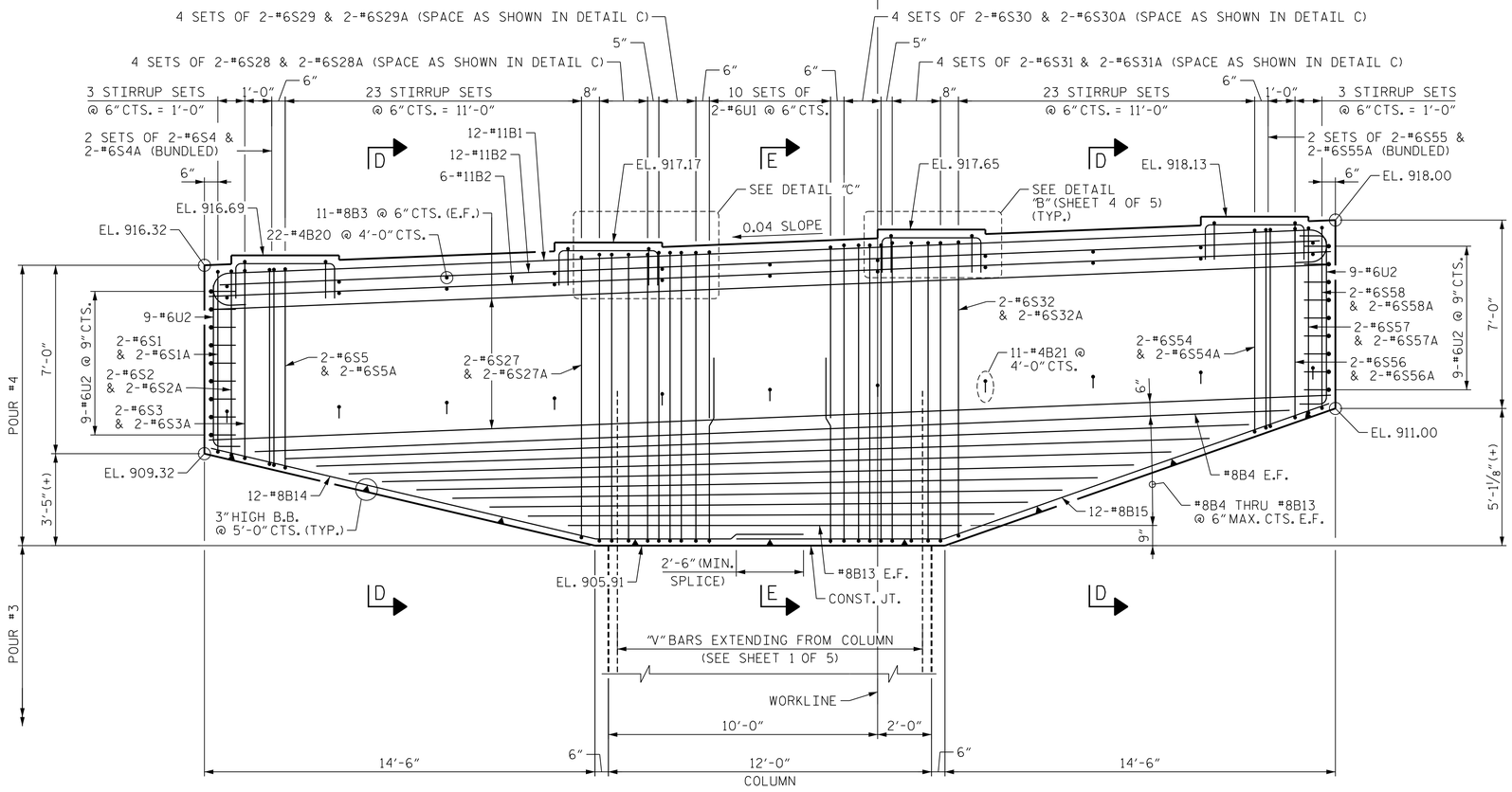


PLAN OF CAP

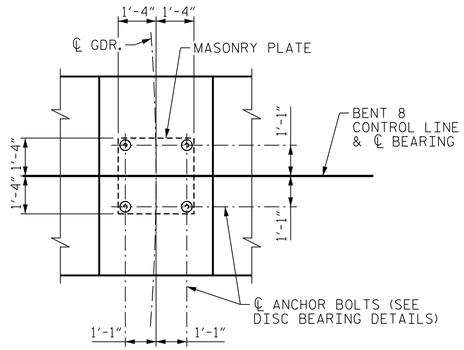


ELEVATION OF CAP

NOTES

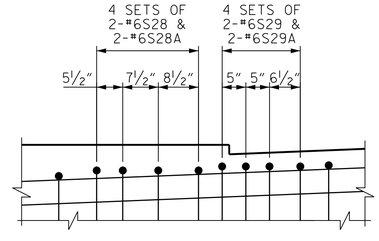
FOR SECTIONS D-D AND E-E, SEE "SUBSTRUCTURE BENT 8 BENT CAP DETAILS", SHEET 4 OF 5.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.



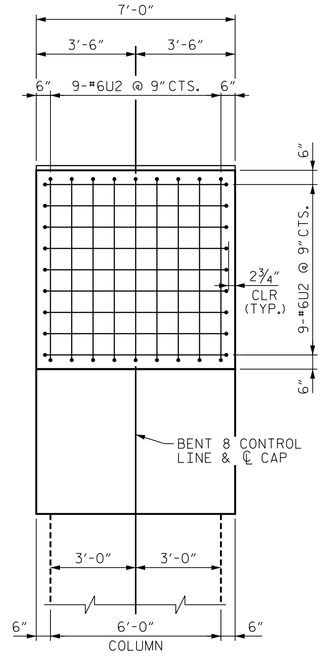
DETAIL "A"

(TYP. @ EA. BEARING)



DETAIL "C"

DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S30/#6S30A AND #6S31/#6S31A AS SHOWN ON THE ELEVATION)



END VIEW

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 8 BENT CAP PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-130
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

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FILE: ...\SUBSTR
DATE: 10/14/2021
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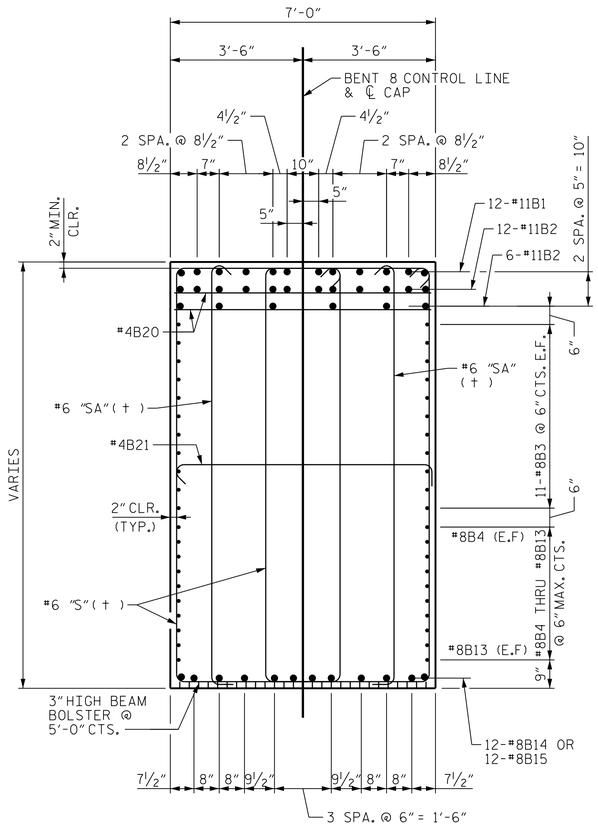
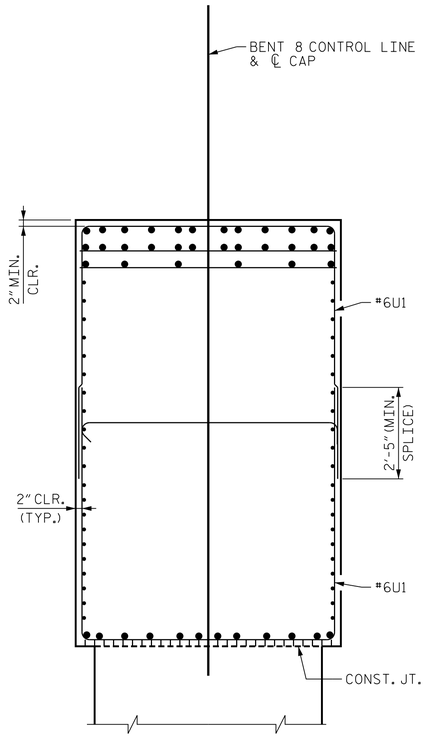


SECTION D-D

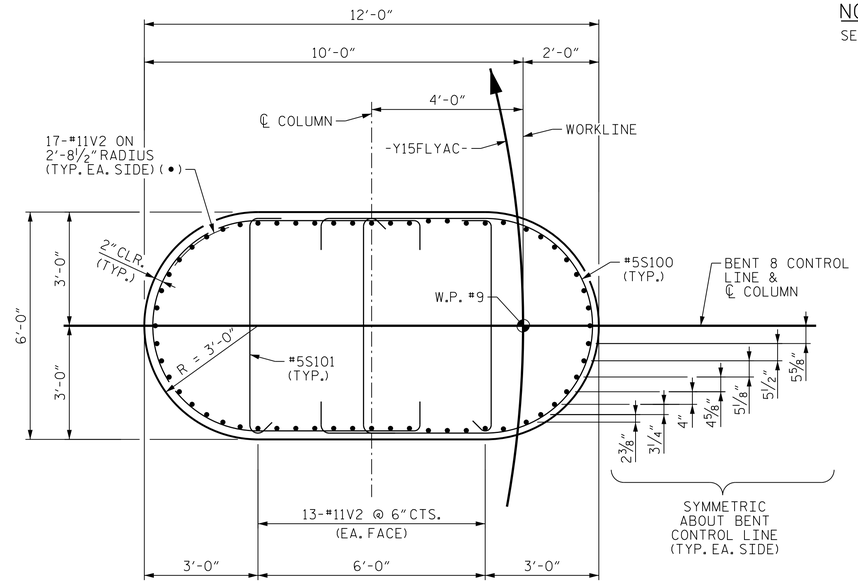
(†) SEE "STIRRUP SET DETAIL"



SEE SECTION D-D FOR ADDITIONAL INFORMATION

SECTION E-E

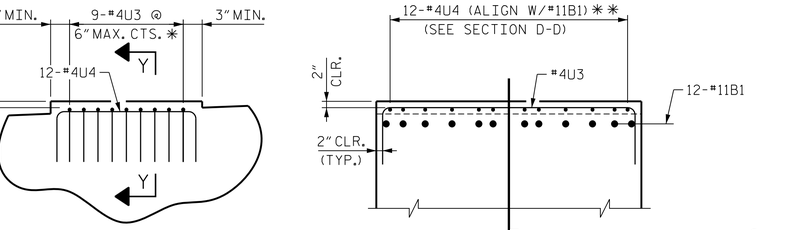
COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY



SECTION C-C

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

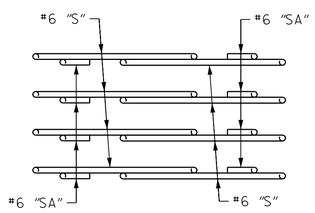


DETAIL "B"

SECTION Y-Y

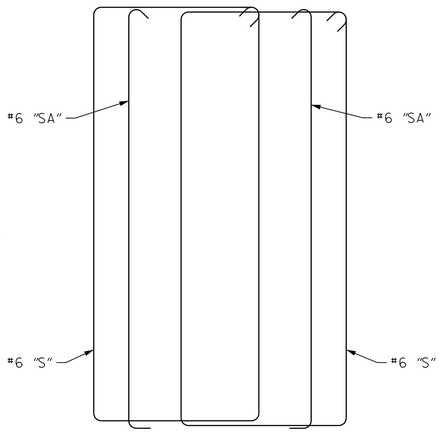
✳ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.

✳✳ NOTE:
#4U4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS.



PLAN

(SHOWING BAR PLACEMENT)



ELEVATION

(SCHEMATIC)

STIRRUP SET DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 8 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-131
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

BILL OF MATERIAL - BENT 8

BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848
B2	18	#11	STR	--	40'-10"	3,905
B3	22	#8	STR	--	41'-8"	2,448
B4	2	#8	STR	--	38'-5"	205
B5	2	#8	STR	--	35'-9"	191
B6	2	#8	STR	--	33'-2"	177
B7	2	#8	STR	--	30'-6"	163
B8	2	#8	STR	--	27'-11"	149
B9	2	#8	STR	--	25'-3"	135
B10	2	#8	STR	--	22'-7"	121
B11	2	#8	STR	--	20'-0"	107
B12	2	#8	STR	--	17'-3"	92
B13	2	#8	STR	--	14'-7"	78
B14	12	#8	2	--	22'-5"	718
B15	12	#8	2	--	22'-11"	734
B20	22	#4	STR	--	6'-8"	98
B21	11	#4	5	6'-8"	7'-5"	54
M1	76	#11	3	13'-0"	14'-7"	5,889
S1	2	#6	4	6'-9 1/2"	23'-7"	71
S2	2	#6	4	6'-11"	23'-10"	72
S3	2	#6	4	7'-0 1/2"	24'-1"	72
S4	4	#6	4	7'-4"	24'-8"	148
S5	2	#6	4	7'-5 1/2"	24'-11"	75
S6	2	#6	4	7'-7 1/2"	25'-3"	76
S7	2	#6	4	7'-9"	25'-6"	77
S8	2	#6	4	7'-10 1/2"	25'-9"	77
S9	2	#6	4	8'-0"	26'-0"	78
S10	2	#6	4	8'-2"	26'-4"	79
S11	2	#6	4	8'-3 1/2"	26'-7"	80
S12	2	#6	4	8'-5"	26'-10"	81
S13	2	#6	4	8'-7"	27'-2"	82
S14	2	#6	4	8'-8 1/2"	27'-5"	82
S15	2	#6	4	8'-10"	27'-8"	83
S16	2	#6	4	9'-0"	28'-0"	84
S17	2	#6	4	9'-1 1/2"	28'-3"	85
S18	2	#6	4	9'-3"	28'-6"	86
S19	2	#6	4	9'-5"	28'-10"	87
S20	2	#6	4	9'-6 1/2"	29'-1"	87
S21	2	#6	4	9'-8"	29'-4"	88
S22	2	#6	4	9'-9 1/2"	29'-7"	89
S23	2	#6	4	9'-11 1/2"	29'-11"	90
S24	2	#6	4	10'-1"	30'-2"	91
S25	2	#6	4	10'-2 1/2"	30'-5"	91
S26	2	#6	4	10'-4 1/2"	30'-9"	92
S27	2	#6	4	10'-6"	31'-0"	93
S28	8	#6	4	10'-8 1/2"	31'-5"	378
S29	8	#6	4	10'-9 1/2"	31'-7"	380
S30	8	#6	4	11'-1"	32'-2"	387
S31	8	#6	4	11'-2"	32'-4"	389
S32	2	#6	4	11'-0"	32'-0"	96
S33	2	#6	4	10'-10"	31'-8"	95
S34	2	#6	4	10'-8"	31'-4"	94
S35	2	#6	4	10'-6 1/2"	31'-1"	93
S36	2	#6	4	10'-4 1/2"	30'-9"	92
S37	2	#6	4	10'-2 1/2"	30'-5"	91
S38	2	#6	4	10'-0 1/2"	30'-1"	90
S39	2	#6	4	9'-11"	29'-10"	90
S40	2	#6	4	9'-9"	29'-6"	89
S41	2	#6	4	9'-7"	29'-2"	88
S42	2	#6	4	9'-5 1/2"	28'-11"	87
S43	2	#6	4	9'-3 1/2"	28'-7"	86
S44	2	#6	4	9'-1 1/2"	28'-3"	85
S45	2	#6	4	8'-11 1/2"	27'-11"	84
S46	2	#6	4	8'-10"	27'-8"	83
S47	2	#6	4	8'-8"	27'-4"	82
S48	2	#6	4	8'-6"	27'-0"	81
S49	2	#6	4	8'-4"	26'-8"	80
S50	2	#6	4	8'-2 1/2"	26'-5"	79
S51	2	#6	4	8'-0 1/2"	26'-1"	78
S52	2	#6	4	7'-10 1/2"	25'-9"	77
S53	2	#6	4	7'-8 1/2"	25'-5"	76
S54	2	#6	4	7'-7"	25'-2"	76
S55	4	#6	4	7'-5"	24'-10"	149
S56	2	#6	4	7'-1"	24'-2"	73
S57	2	#6	4	6'-11 1/2"	23'-11"	72
S58	2	#6	4	6'-9 1/2"	23'-7"	71
S1A	2	#6	5	6'-10"	8'-6"	26
S2A	2	#6	5	6'-11"	8'-7"	26
S3A	2	#6	5	7'-1"	8'-9"	26
S4A	4	#6	5	7'-4"	9'-0"	54
S5A	2	#6	5	7'-6"	9'-2"	28
S6A	2	#6	5	7'-8"	9'-4"	28
S7A	2	#6	5	7'-9"	9'-5"	28
S8A	2	#6	5	7'-11"	9'-7"	29
S9A	2	#6	5	8'-0"	9'-8"	29
S10A	2	#6	5	8'-2"	9'-10"	30
S11A	2	#6	5	8'-4"	10'-0"	30
S12A	2	#6	5	8'-5"	10'-1"	30
S13A	2	#6	5	8'-7"	10'-3"	31
S14A	2	#6	5	8'-8"	10'-4"	31
S15A	2	#6	5	8'-10"	10'-6"	32
S16A	2	#6	5	9'-0"	10'-8"	32
S17A	2	#6	5	9'-2"	10'-10"	33
S18A	2	#6	5	9'-3"	10'-11"	33
S19A	2	#6	5	9'-5"	11'-1"	33
S20A	2	#6	5	9'-7"	11'-3"	34
S21A	2	#6	5	9'-8"	11'-4"	34
S22A	2	#6	5	9'-10"	11'-6"	35
S23A	2	#6	5	9'-11"	11'-7"	35
S24A	2	#6	5	10'-1"	11'-9"	35
S25A	2	#6	5	10'-2"	11'-10"	36
S26A	2	#6	5	10'-5"	12'-1"	36
S27A	2	#6	5	10'-6"	12'-2"	37
S28A	8	#6	5	10'-9"	12'-5"	149
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S30A	8	#6	5	11'-1"	12'-9"	153
S31A	8	#6	5	11'-2"	12'-10"	154
S32A	2	#6	5	11'-0"	12'-8"	38
S33A	2	#6	5	10'-10"	12'-6"	38
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S35A	2	#6	5	10'-7"	12'-3"	37
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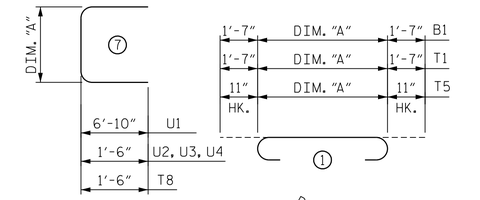
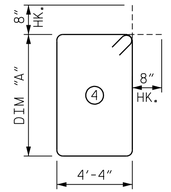
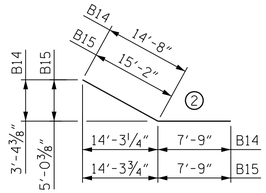
S52A	2	#6	5	7'-11"	9'-7"	29
S53A	2	#6	5	7'-9"	9'-5"	28
S54A	2	#6	5	7'-7"	9'-3"	28
S55A	4	#6	5	7'-5"	9'-1"	55
S56A	2	#6	5	7'-1"	8'-9"	26
S57A	2	#6	5	7'-0"	8'-8"	26
S58A	2	#6	5	6'-10"	8'-6"	26
S100	86	#5	6	5'-8"	18'-9"	1,682
S101	129	#5	5	5'-8"	6'-8"	897
S102	92	#5	6	6'-8"	20'-4"	1,951
S103	138	#5	5	6'-8"	7'-8"	1,103
T1	105	#11	1	25'-0"	28'-2"	15,713
T3	40	#5	STR.	--	25'-0"	1,043
T5	56	#8	1	25'-0"	26'-10"	4,012
Δ T7	16	#6	3	3'-11"	4'-7"	110
T8	200	#5	7	5'-8"	8'-8"	1,808
U1	20	#6	7	6'-8"	20'-4"	611
U2	36	#6	7	6'-6 1/2"	9'-7"	518
U3	36	#4	7	6'-8"	9'-8"	232
U4	48	#4	7	3'-8"	6'-8"	214
V1	76	#11	STR.	--	22'-10"	9,220
V2	60	#11	STR.	--	30'-4"	9,670

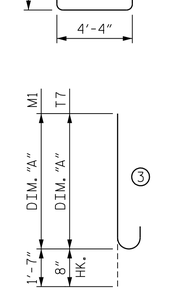
BAR TYPES

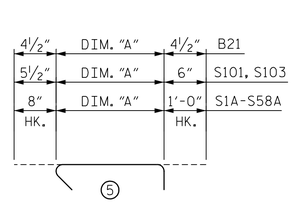
ALL BAR DIMENSIONS ARE OUT TO OUT

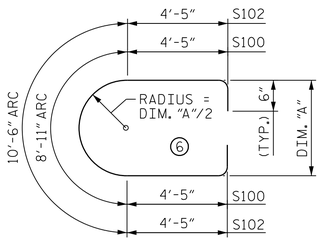












SUMMARY OF QUANTITIES - BENT 8		
REINFORCING STEEL	LBS.	75,432
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	168.6
POUR #2 - COLUMN	C.Y.	68.6
POUR #3 - COLUMN	C.Y.	42.9
POUR #4 - CAP	C.Y.	108.0
TOTAL		388.1
HP 14x73 STEEL PILES	NO.	32
	LF	1,600
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	32

Δ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

DES BY: B. PETERSON DATE: 10/19
DES CHK: S. NIFONG DATE: 10/19
DWG BY: B. PETERSON DATE: 10/19
CHK BY: M. WERNER DATE: 10/19

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. U-2579AB

FORSYTH COUNTY

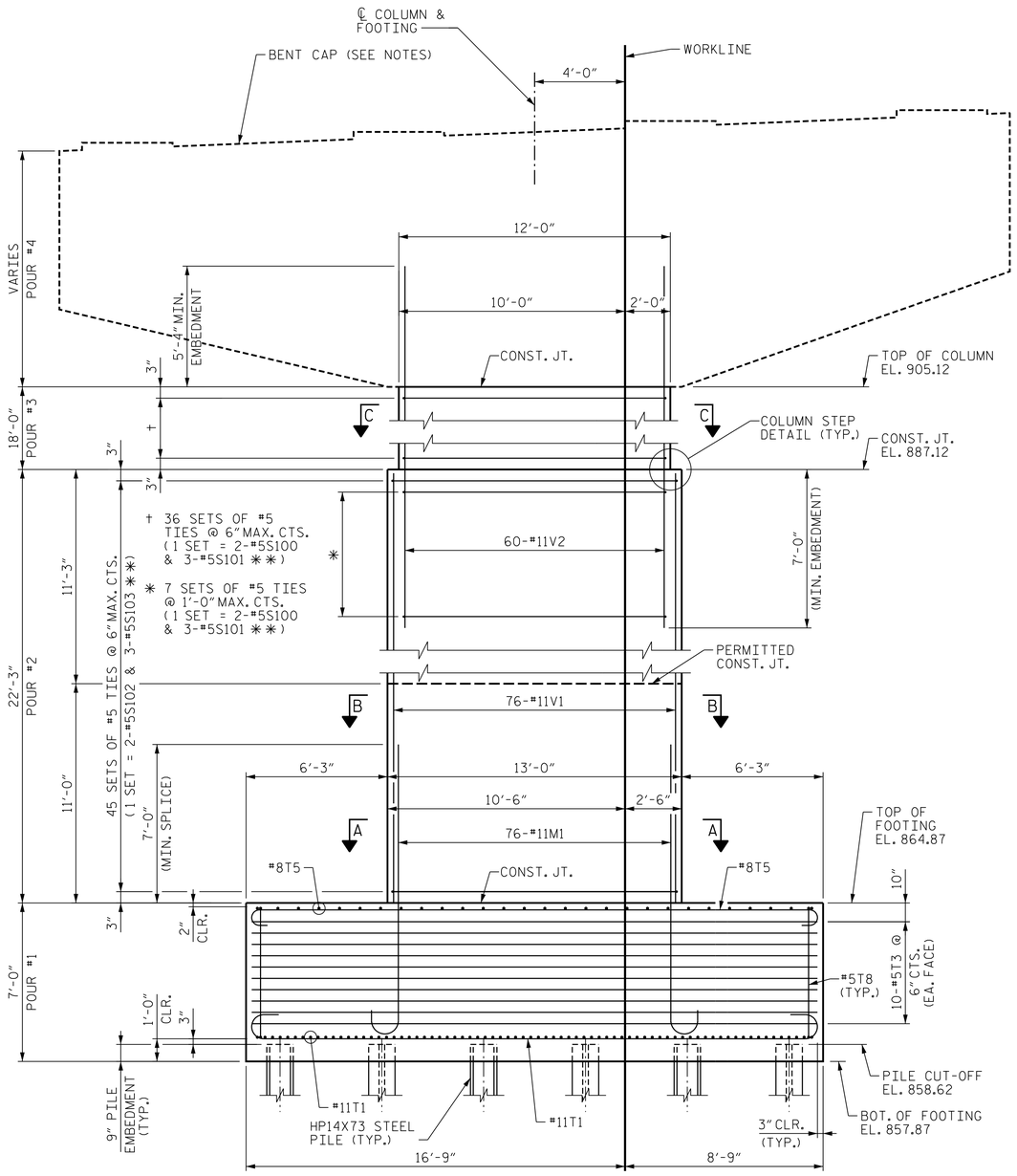
STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

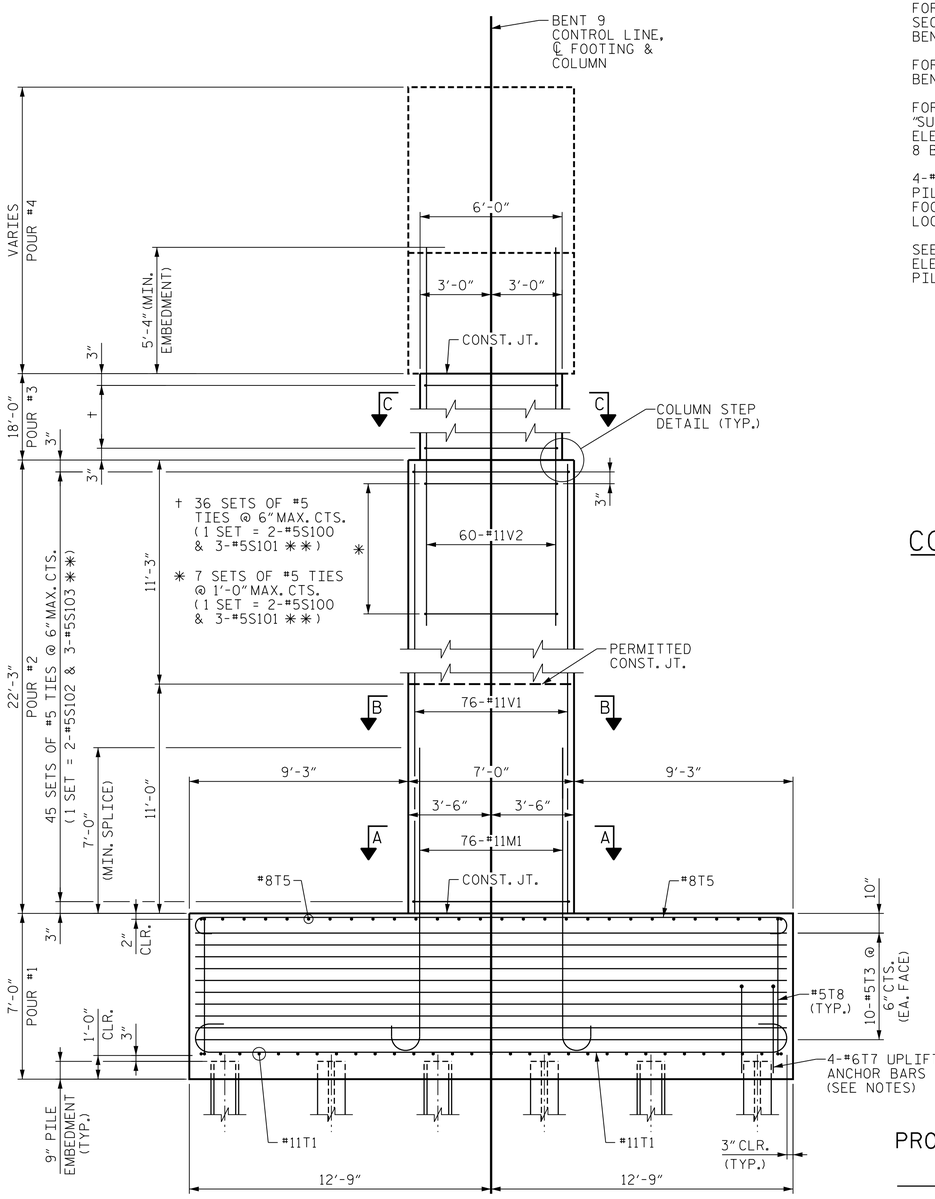
SUBSTRUCTURE
BENT 8
BILL OF MATERIALS

REVISIONS						SHEET NO. S04-132
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 144
1	--	--	3	--	--	
2	--	--	4	--	--	



FRONT ELEVATION

** INVERT ORIENTATION OF ALTERNATE #5S101 AND #5S103 TIES



END ELEVATION

NOTES

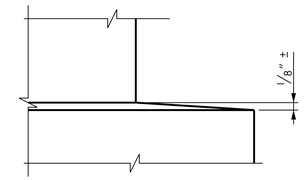
FOR FOOTING PLAN, SECTION A-A AND SECTION B-B, SEE SHEET "SUBSTRUCTURE BENT 9 FOOTING & COLUMN DETAILS".

FOR SECTION C-C, SEE SHEET "SUBSTRUCTURE BENT 9 BENT CAP DETAILS".

FOR DETAILS OF BENT CAP, SEE SHEET "SUBSTRUCTURE BENT 9 BENT CAP PLAN AND ELEVATION" AND SHEET "SUBSTRUCTURE BENT 8 BENT CAP DETAILS".

4-#6T7 UPLIFT ANCHOR BARS AT NOTED PILES - SEE SHEET "SUBSTRUCTURE BENT 9 FOOTING & COLUMN DETAILS" FOR LOCATIONS.

SEE SHEET "SUBSTRUCTURE BENT 1 ELEVATIONS" FOR ADDITIONAL NOTES AND PILE UPLIFT ANCHOR DETAIL.



COLUMN STEP DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 9 ELEVATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-133
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

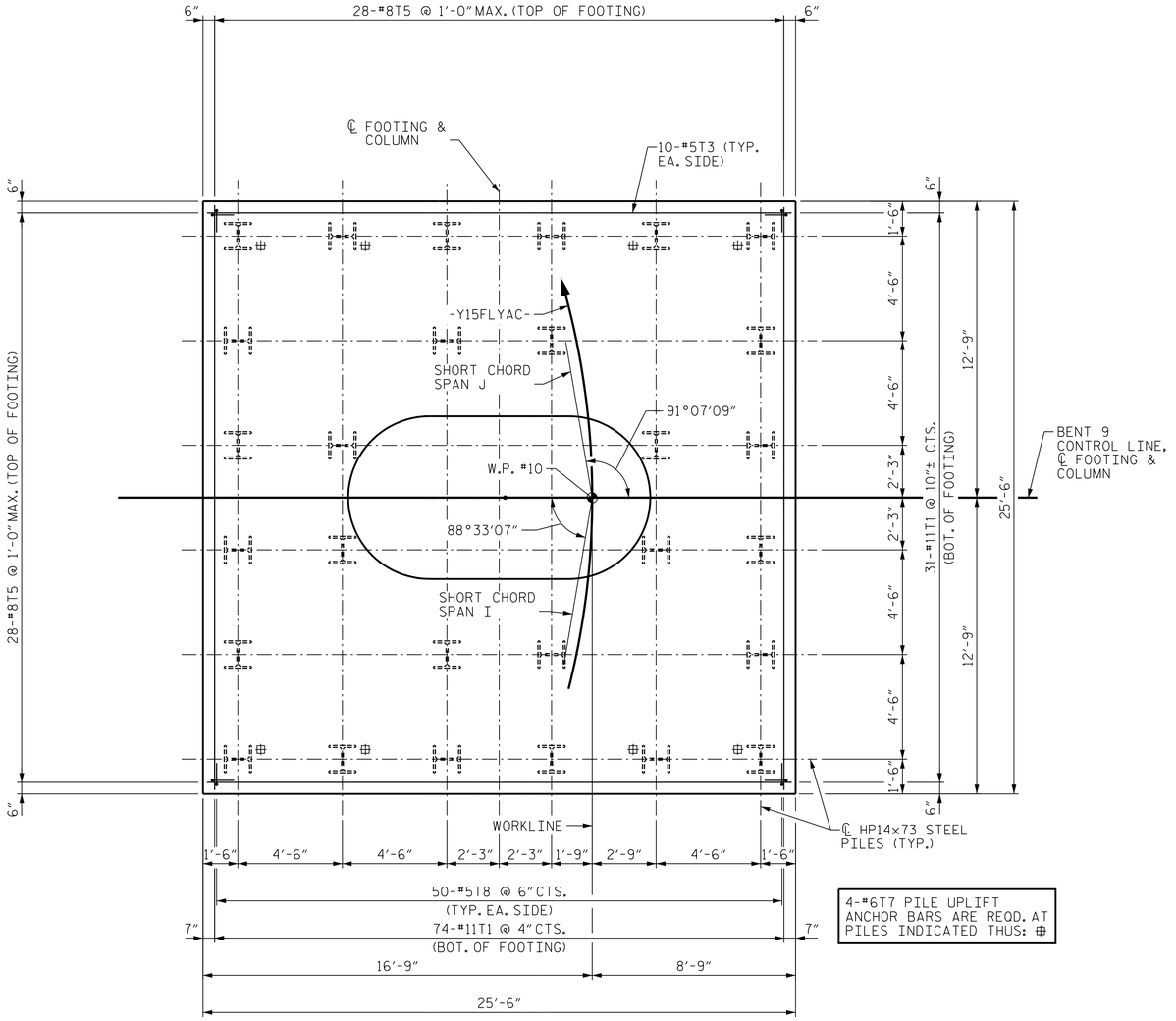
NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

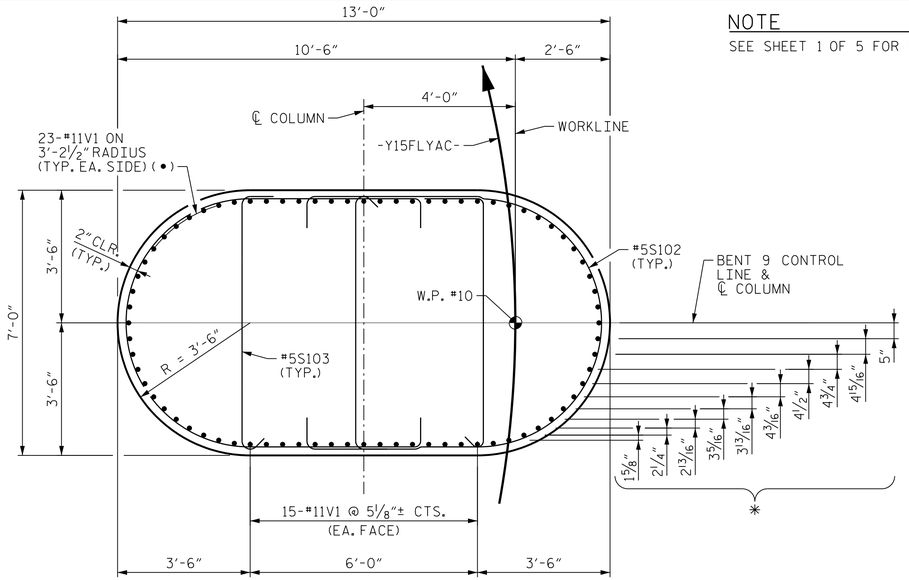
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	J. CABABE	DATE :	10/19
DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19



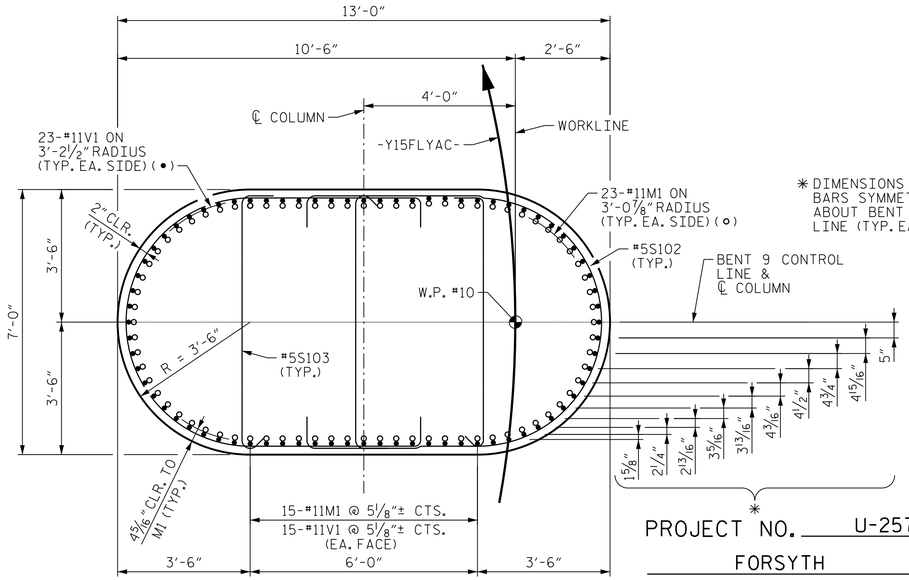
FOOTING PLAN



SECTION B-B

NOTE

SEE SHEET 1 OF 5 FOR NOTES.



SECTION A-A

* DIMENSIONS TO "V" BARS SYMMETRIC ABOUT BENT CONTROL LINE (TYP. EA. SIDE)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 9 FOOTING & COLUMN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-134
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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DES CHK:	S. CHAUDHARI	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	N. LIU	DATE :	11/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: PPETERSO DATE: 10/14/2021
FILE: ...\SUBSTR
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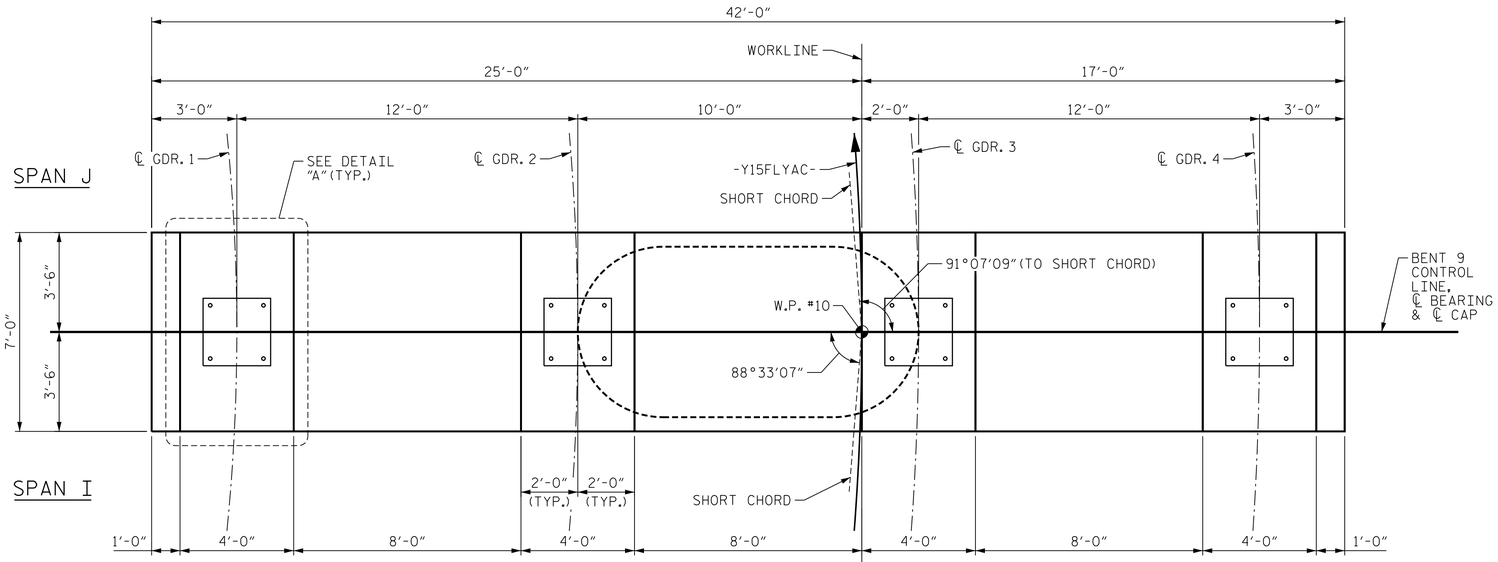
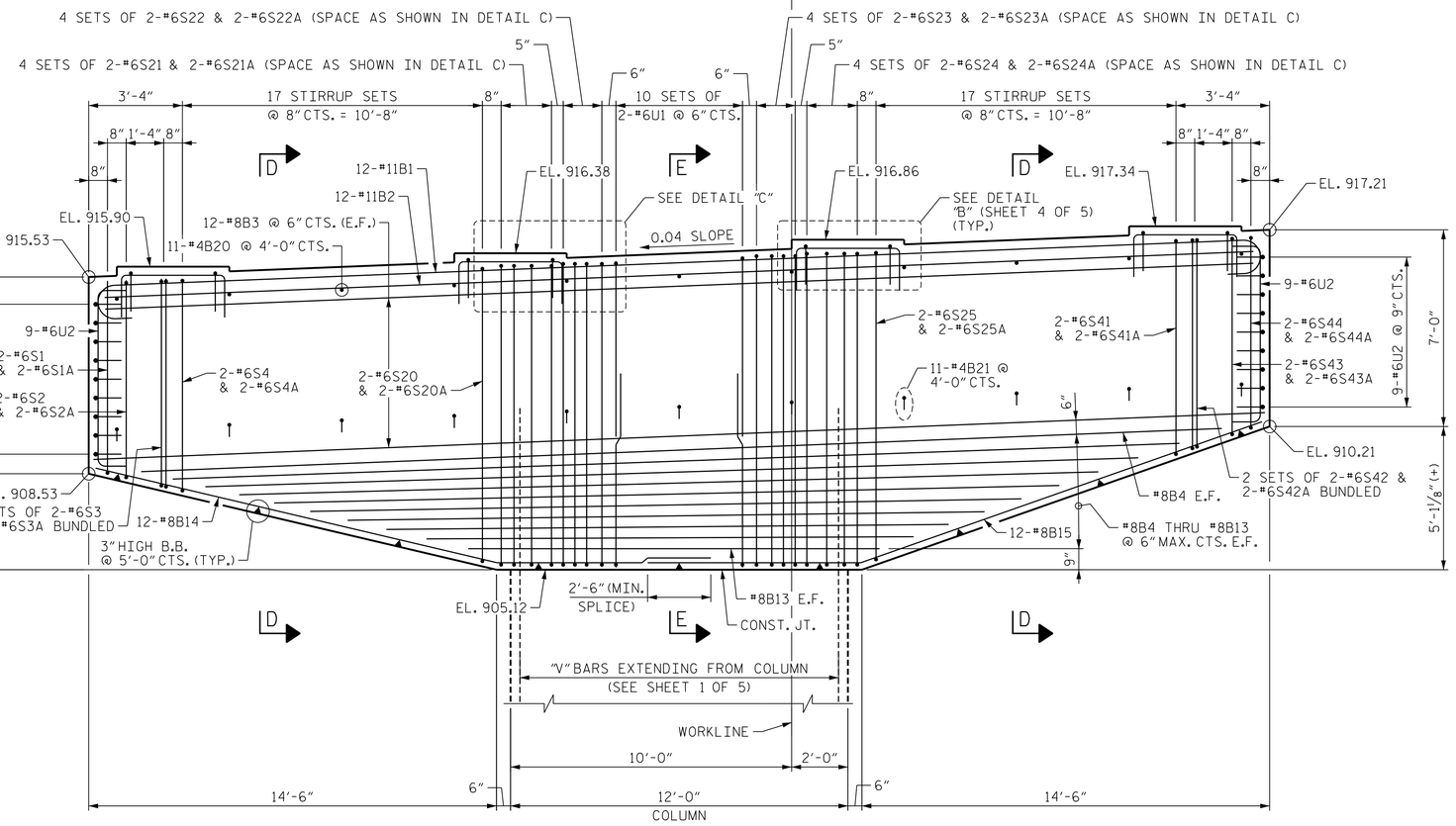
TIME: 4:13:01 PM



PLAN OF CAP

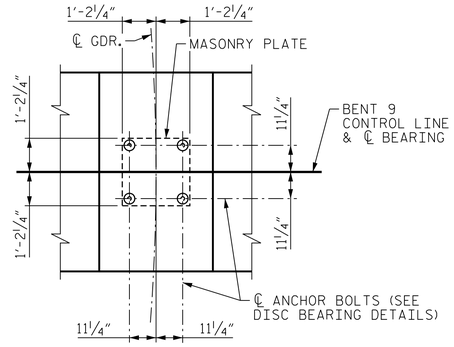


ELEVATION OF CAP

NOTES

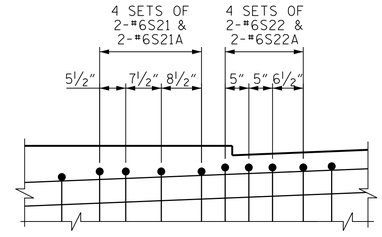
FOR SECTIONS D-D AND E-E, SEE "SUBSTRUCTURE BENT 9 BENT CAP DETAILS", SHEET 4 OF 5.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 5.



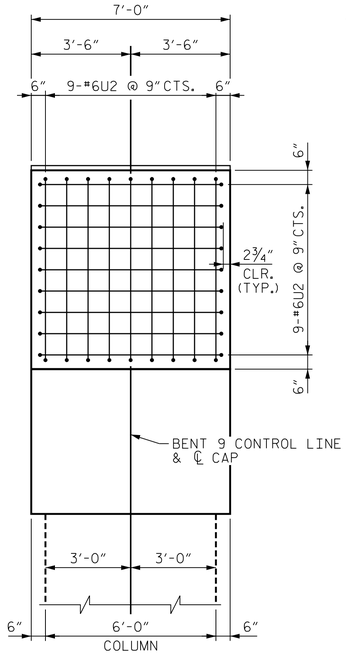
DETAIL "A"

(TYP. @ EA. BEARING)



DETAIL "C"

DETAIL SHOWN AT LEFT SIDE OF CAP (SPACING OF STIRRUPS MIRRORED AT RIGHT SIDE OF CAP WITH BARS #6S23/#6S23A AND #6S24A/#6S24 AS SHOWN ON THE ELEVATION)



END VIEW

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 9 BENT CAP PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-135
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

DES BY:	K. OLIVER	DATE :	09/19
DES CHK:	M. WERNER	DATE :	09/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

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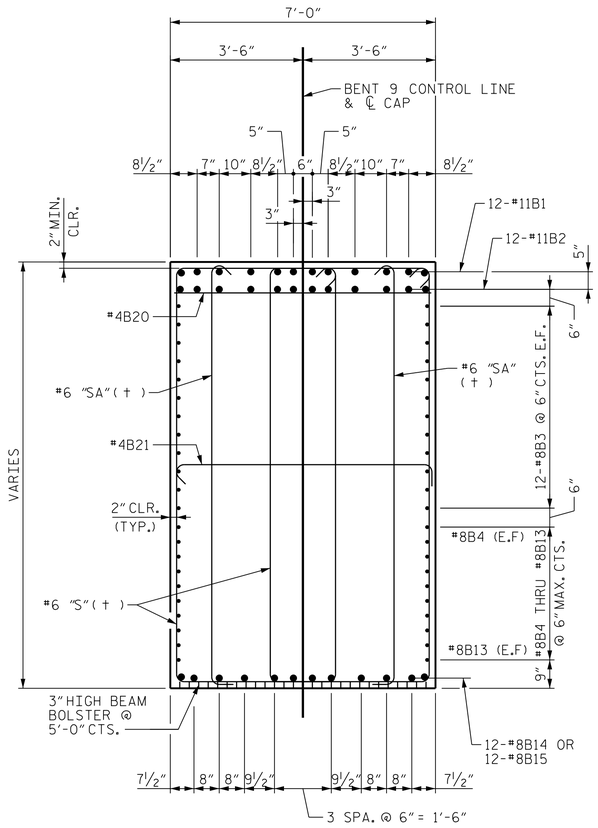
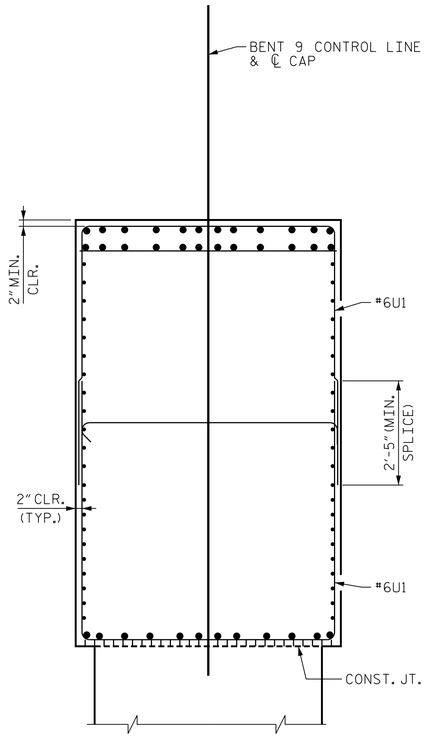


SECTION D-D

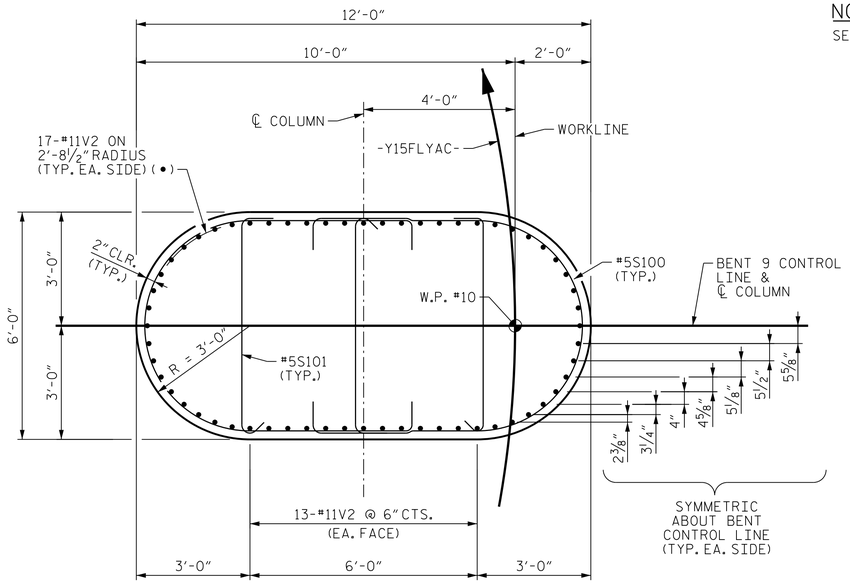
(†) SEE "STIRRUP SET DETAIL"



SEE SECTION D-D FOR ADDITIONAL INFORMATION

SECTION E-E

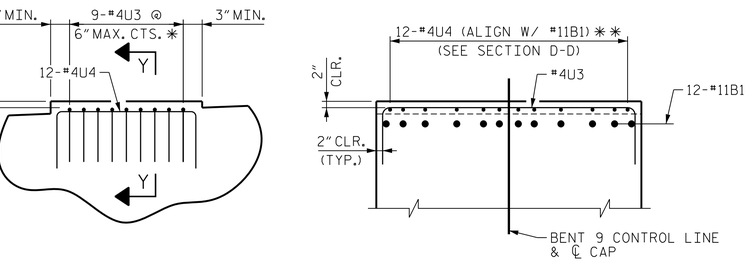
COLUMN REINFORCING STEEL NOT SHOWN FOR CLARITY



SECTION C-C

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

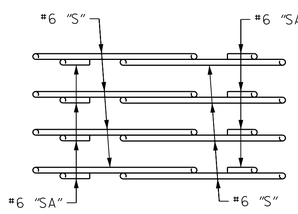


DETAIL "B"

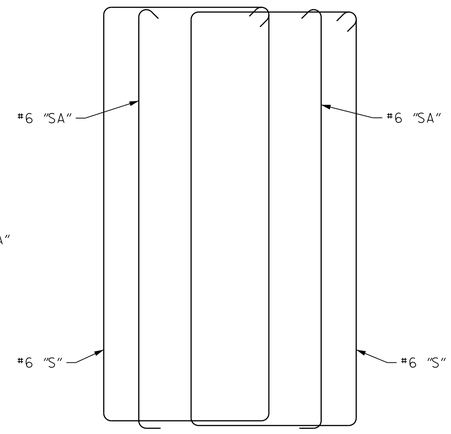
SECTION Y-Y

✳ NOTE:
#4U3 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS

✳✳ NOTE:
#4U4 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR #11B1 AND #11B2 BARS



PLAN
(SHOWING BAR PLACEMENT)



ELEVATION
(SCHEMATIC)

STIRRUP SET DETAIL

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 9 BENT CAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-136
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

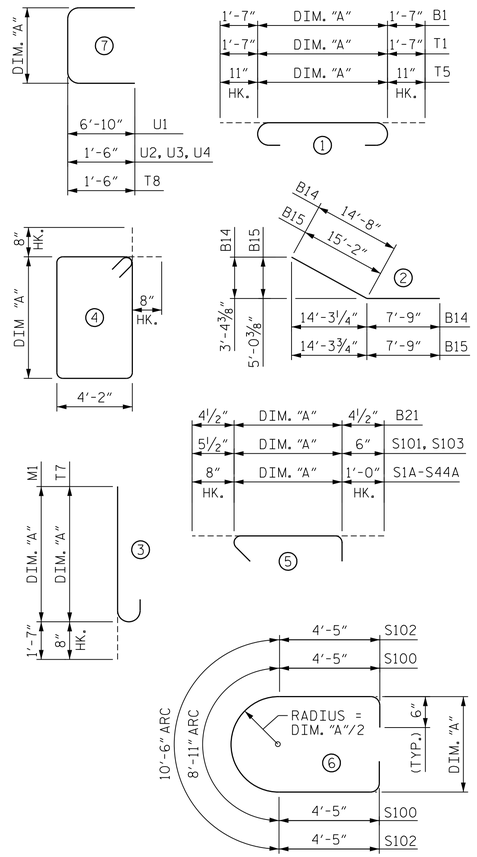
DES BY:	K. OLIVER	DATE :	10/19
DES CHK:	M. WERNER	DATE :	10/19
DWG BY:	B. PETERSON	DATE :	10/19
CHK BY:	K. OLIVER	DATE :	11/19

BILL OF MATERIAL - BENT 9

BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	41'-6"	44'-8"	2,848	S1A	2	#6	5	6'-10"	8'-6"	26
B2	12	#11	STR.	--	40'-10"	2,603	S2A	2	#6	5	7'-0"	8'-8"	26
B3	24	#8	STR.	--	41'-8"	2,670	S3A	4	#6	5	7'-5"	9'-1"	55
B4	2	#8	STR.	--	38'-5"	205	S4A	2	#6	5	7'-7"	9'-3"	28
B5	2	#8	STR.	--	35'-9"	191	S5A	2	#6	5	7'-9"	9'-5"	28
B6	2	#8	STR.	--	33'-2"	177	S6A	2	#6	5	7'-11"	9'-7"	29
B7	2	#8	STR.	--	30'-6"	163	S7A	2	#6	5	8'-2"	9'-10"	30
B8	2	#8	STR.	--	27'-11"	149	S8A	2	#6	5	8'-4"	10'-0"	30
B9	2	#8	STR.	--	25'-3"	135	S9A	2	#6	5	8'-5"	10'-1"	30
B10	2	#8	STR.	--	22'-7"	121	S10A	2	#6	5	8'-8"	10'-4"	31
B11	2	#8	STR.	--	20'-0"	107	S11A	2	#6	5	8'-10"	10'-6"	32
B12	2	#8	STR.	--	17'-3"	92	S12A	2	#6	5	9'-1"	10'-9"	32
B13	2	#8	STR.	--	14'-7"	78	S13A	2	#6	5	9'-2"	10'-10"	33
B14	12	#8	2	--	22'-5"	718	S14A	2	#6	5	9'-5"	11'-1"	33
B15	12	#8	2	--	22'-11"	734	S15A	2	#6	5	9'-7"	11'-3"	34
							S16A	2	#6	5	9'-9"	11'-5"	34
							S17A	2	#6	5	9'-11"	11'-7"	35
B20	11	#4	STR.	--	6'-8"	49	S18A	2	#6	5	10'-2"	11'-10"	36
B21	11	#4	5	6'-8"	7'-5"	54	S19A	2	#6	5	10'-4"	12'-0"	36
							S20A	2	#6	5	10'-6"	12'-2"	37
M1	76	#11	3	13'-0"	14'-7"	5,889	S21A	8	#6	5	10'-9"	12'-5"	149
							S22A	8	#6	5	10'-10"	12'-6"	150
S1	2	#6	4	6'-10"	23'-4"	70	S23A	8	#6	5	11'-1"	12'-9"	153
S2	2	#6	4	7'-0"	23'-8"	71	S24A	8	#6	5	11'-2"	12'-10"	154
S3	4	#6	4	7'-4½"	24'-5"	147	S25A	2	#6	5	11'-0"	12'-8"	38
S4	2	#6	4	7'-6½"	24'-9"	74	S26A	2	#6	5	10'-10"	12'-6"	38
S5	2	#6	4	7'-9"	25'-2"	76	S27A	2	#6	5	10'-7"	12'-3"	37
S6	2	#6	4	7'-11"	25'-6"	77	S28A	2	#6	5	10'-5"	12'-1"	36
S7	2	#6	4	8'-1½"	25'-11"	78	S29A	2	#6	5	10'-2"	11'-10"	36
S8	2	#6	4	8'-3½"	26'-3"	79	S30A	2	#6	5	9'-11"	11'-7"	35
S9	2	#6	4	8'-5½"	26'-7"	80	S31A	2	#6	5	9'-9"	11'-5"	34
S10	2	#6	4	8'-8"	27'-0"	81	S32A	2	#6	5	9'-7"	11'-3"	34
S11	2	#6	4	8'-10"	27'-4"	82	S33A	2	#6	5	9'-4"	11'-0"	33
S12	2	#6	4	9'-0½"	27'-9"	83	S34A	2	#6	5	9'-2"	10'-10"	33
S13	2	#6	4	9'-2½"	28'-1"	84	S35A	2	#6	5	8'-11"	10'-7"	32
S14	2	#6	4	9'-5"	28'-6"	86	S36A	2	#6	5	8'-8"	10'-4"	31
S15	2	#6	4	9'-7"	28'-10"	87	S37A	2	#6	5	8'-6"	10'-2"	31
S16	2	#6	4	9'-9"	29'-2"	88	S38A	2	#6	5	8'-4"	10'-0"	30
S17	2	#6	4	9'-11½"	29'-7"	89	S39A	2	#6	5	8'-1"	9'-9"	29
S18	2	#6	4	10'-1½"	29'-11"	90	S40A	2	#6	5	7'-11"	9'-7"	29
S19	2	#6	4	10'-4"	30'-4"	91	S41A	2	#6	5	7'-8"	9'-4"	28
S20	2	#6	4	10'-6"	30'-8"	92	S42A	4	#6	5	7'-6"	9'-2"	55
S21	8	#6	4	10'-8½"	31'-1"	373	S43A	2	#6	5	7'-1"	8'-9"	26
S22	8	#6	4	10'-9½"	31'-3"	376	S44A	2	#6	5	6'-10"	8'-6"	26
S23	8	#6	4	11'-1"	31'-10"	383							
S24	8	#6	4	11'-2"	32'-0"	385	S100	86	#5	6	5'-8"	18'-9"	1,682
S25	2	#6	4	11'-0"	31'-8"	95	S101	129	#5	5	5'-8"	6'-8"	897
S26	2	#6	4	10'-9½"	31'-3"	94	S102	90	#5	6	6'-8"	20'-4"	1,909
S27	2	#6	4	10'-7"	30'-10"	93	S103	135	#5	5	6'-8"	7'-8"	1,080
S28	2	#6	4	10'-4½"	30'-5"	91							
S29	2	#6	4	10'-2"	30'-0"	90	T1	105	#11	1	25'-0"	28'-2"	15,713
S30	2	#6	4	9'-11½"	29'-7"	89							
S31	2	#6	4	9'-9"	29'-2"	88	T3	40	#5	STR.	--	25'-0"	1,043
S32	2	#6	4	9'-6½"	28'-9"	86							
S33	2	#6	4	9'-4"	28'-4"	85	T5	56	#8	1	25'-0"	26'-10"	4,012
S34	2	#6	4	9'-1½"	27'-11"	84							
S35	2	#6	4	8'-11"	27'-6"	83	△T7	32	#6	3	3'-11"	4'-7"	220
S36	2	#6	4	8'-8½"	27'-1"	81	T8	200	#5	7	5'-8"	8'-8"	1,808
S37	2	#6	4	8'-6"	26'-8"	80							
S38	2	#6	4	8'-3½"	26'-3"	79	U1	20	#6	7	6'-8"	20'-4"	611
S39	2	#6	4	8'-1"	25'-10"	78	U2	36	#6	7	6'-6½"	9'-7"	518
S40	2	#6	4	7'-10½"	25'-5"	76	U3	36	#4	7	6'-8"	9'-8"	232
S41	2	#6	4	7'-8"	25'-0"	75	U4	48	#4	7	3'-8"	6'-8"	214
S42	4	#6	4	7'-5½"	24'-7"	148							
S43	2	#6	4	7'-0½"	23'-9"	71	V1	76	#11	STR.	--	22'-1"	8,917
S44	2	#6	4	6'-10"	23'-4"	70	V2	60	#11	STR.	--	30'-4"	9,670

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT



SUMMARY OF QUANTITIES - BENT 9		
REINFORCING STEEL	LBS.	72,399
CLASS AA CONCRETE:		
POUR #1 - FOOTING	C.Y.	168.6
POUR #2 - COLUMN	C.Y.	66.4
POUR #3 - COLUMN	C.Y.	42.9
POUR #4 - CAP	C.Y.	108.0
TOTAL		385.9
HP 14x73 STEEL PILES	NO.	28
	LF	1,820
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	EA.	28

△ = ASTM A706 WELDABLE REINFORCING STEEL

NOTE

SEE SHEET 1 OF 5 FOR NOTES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 9 BILL OF MATERIALS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-137
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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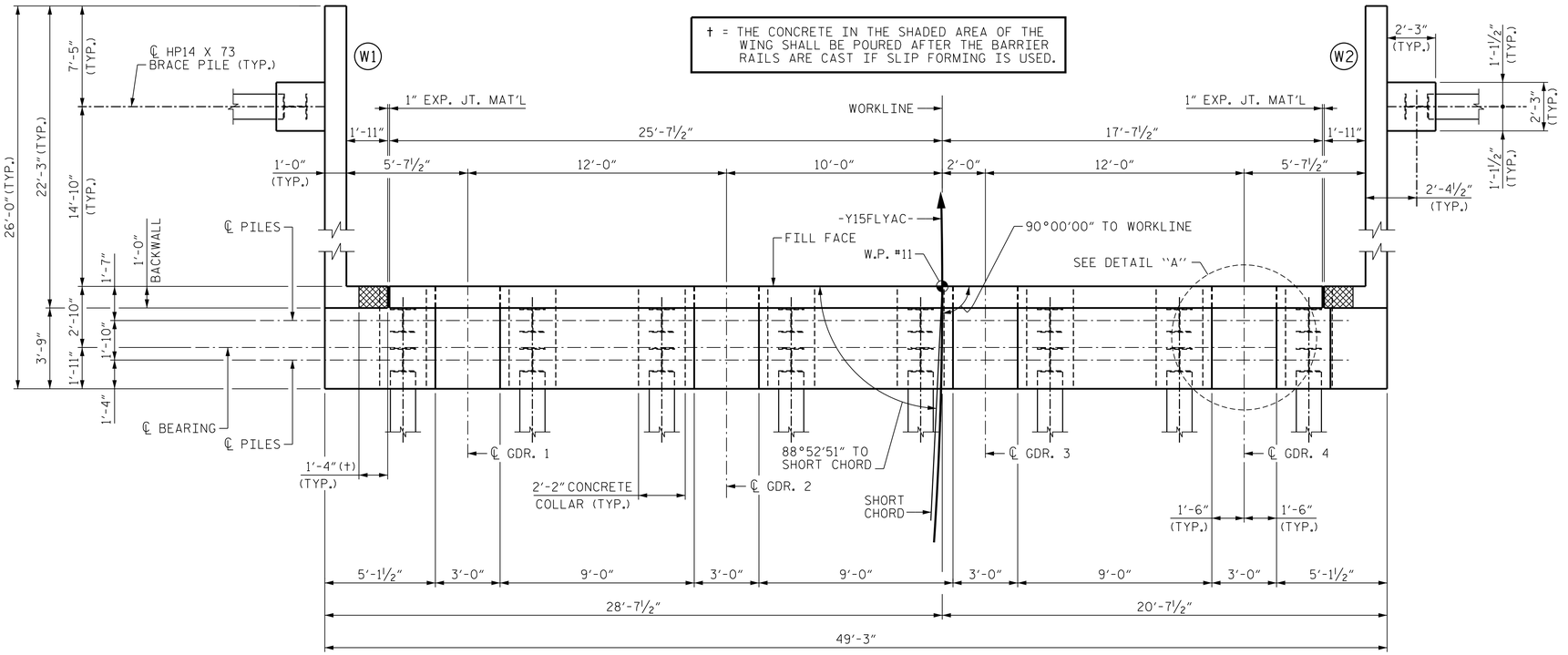
DES BY: B. PETERSON DATE: 09/19
DES CHK: S. NIFONG DATE: 09/19

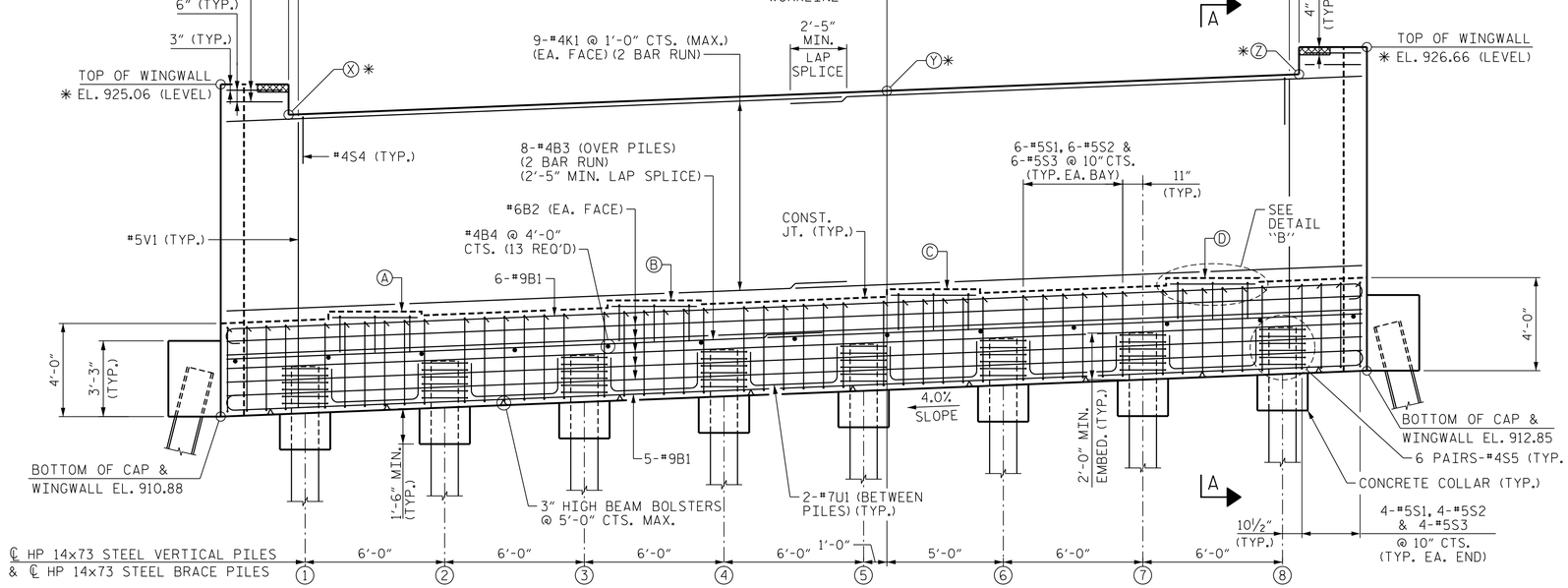
DWG BY: B. PETERSON DATE: 10/19
CHK BY: M. WERNER DATE: 10/19

PLOT DRIVER: NCDOT_pdf color_eng_50.plt
USER: PPETERSO
FILE: ...\SUBSTR
DATE: 10/14/2021
TIME: 4:13:39 PM
PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl

† = THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.



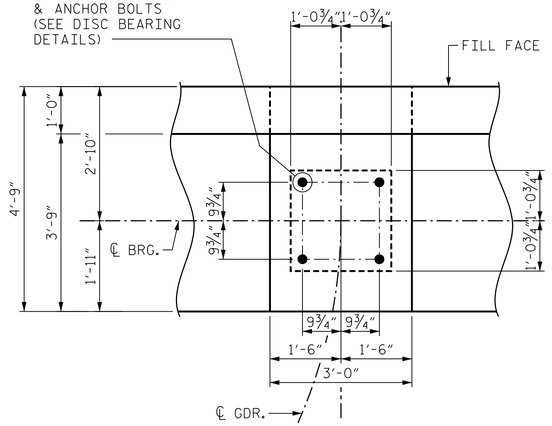
PLAN



ELEVATION

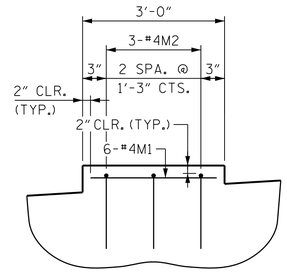
NOTES

FOR SECTION A-A AND ADDITIONAL NOTES SEE "END BENT 2 SECTION & DETAILS".



DETAIL "A"

(DIMENSIONS TYP. FOR ALL BEARINGS)



DETAIL "B"

(TYP. FOR ALL GIRDERS)

ELEVATION TABLE	
LOCATION	ELEVATION
A	915.37
B	915.85
C	916.33
D	916.81
* X	923.33
* Y	924.35
* Z	925.06
* AT FILL FACE	

TOP OF PILE ELEVATIONS	
LOCATION	ELEVATION
1	913.03
2	913.27
3	913.51
4	913.75
5	913.99
6	914.23
7	914.47
8	914.71

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-138
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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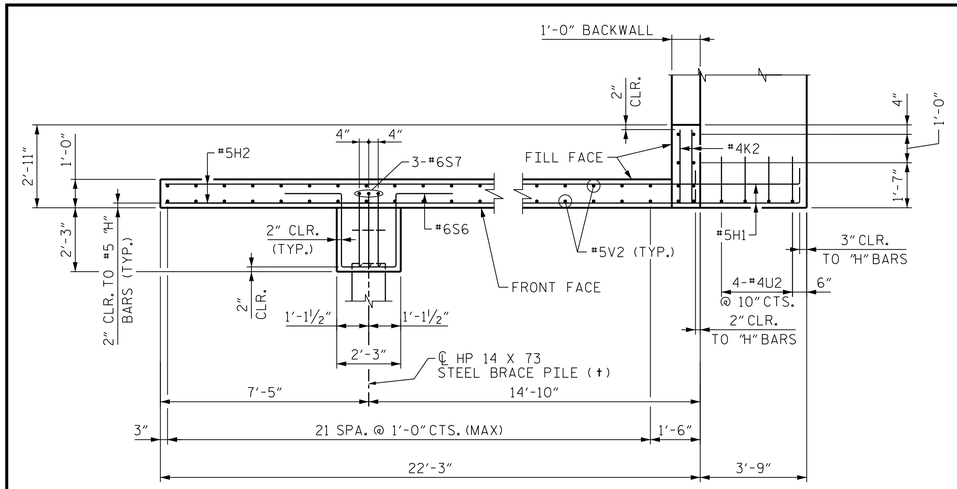
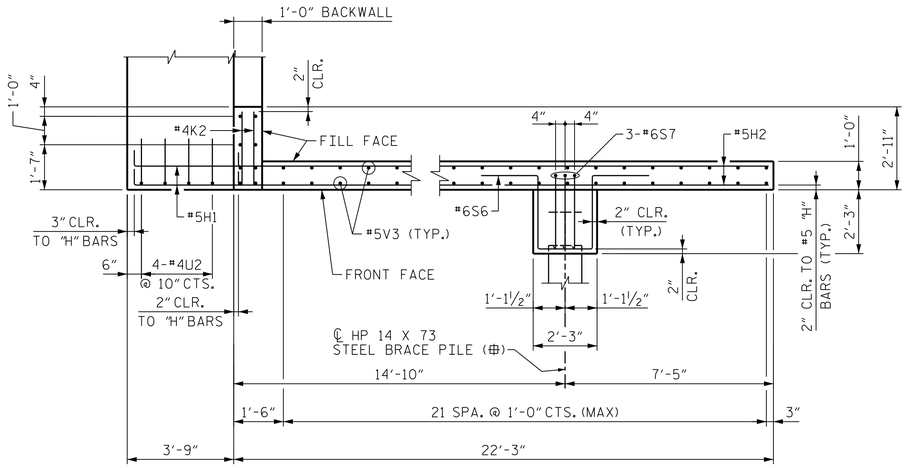
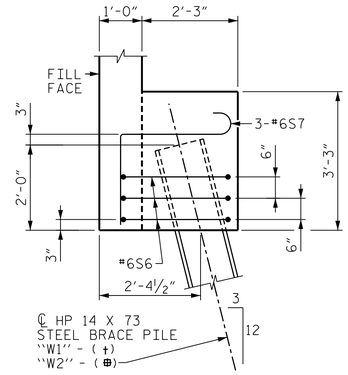
DES BY:	J. EARNEST	DATE :	07/19
DES CHK:	M. BARNES	DATE :	08/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	A. ZEITOUNI	DATE :	08/19



PLAN - WINGWALL ''W1''

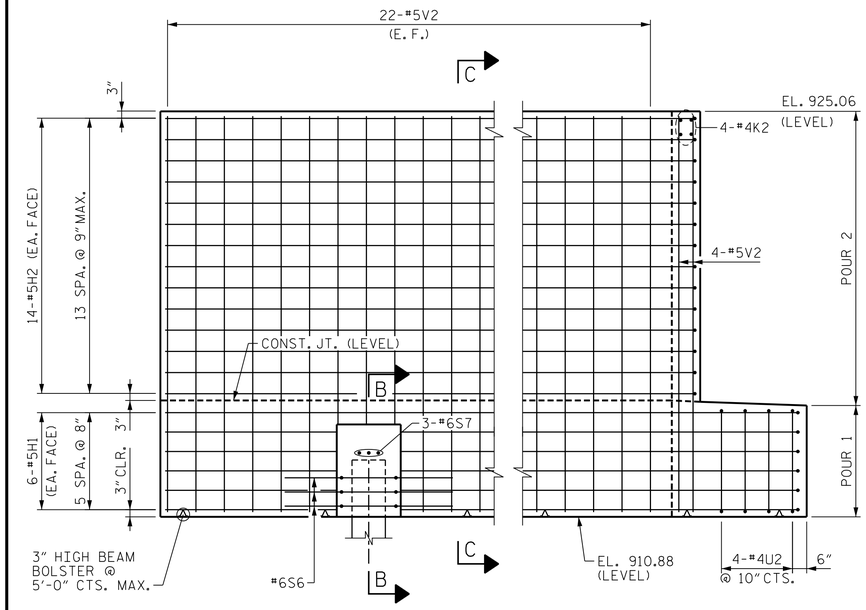


PLAN - WINGWALL ''W2''

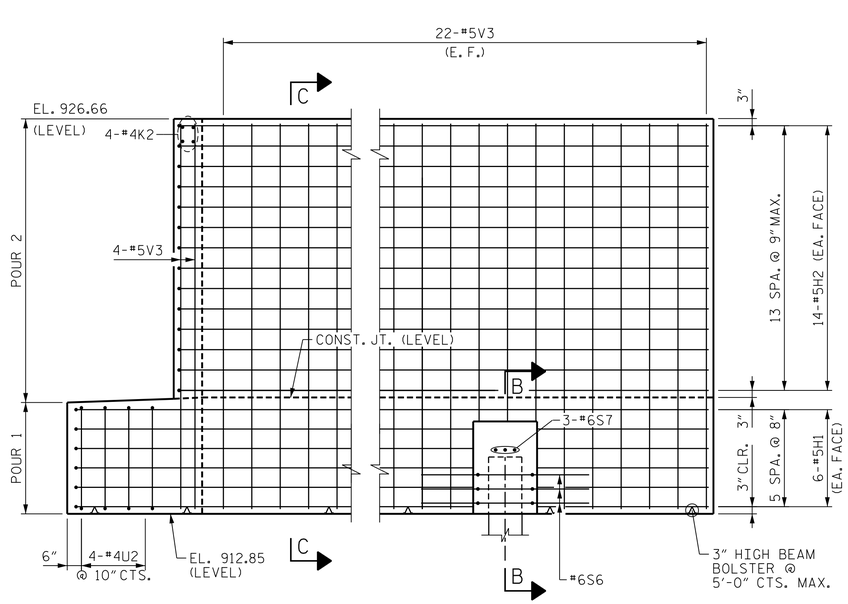


SECTION B-B

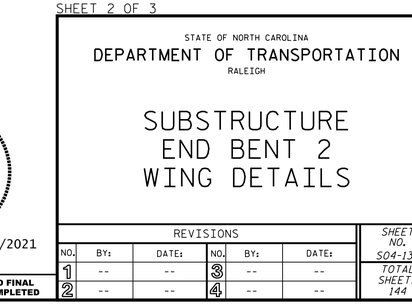
† = PILE CUTOFF ELEVATION 912.88
⊕ = PILE CUTOFF ELEVATION 914.85



ELEVATION - WINGWALL ''W1''



ELEVATION - WINGWALL ''W2''



SECTION C-C

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-139
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NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

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CHK BY:	A. ZEITOUNI	DATE :	08/19

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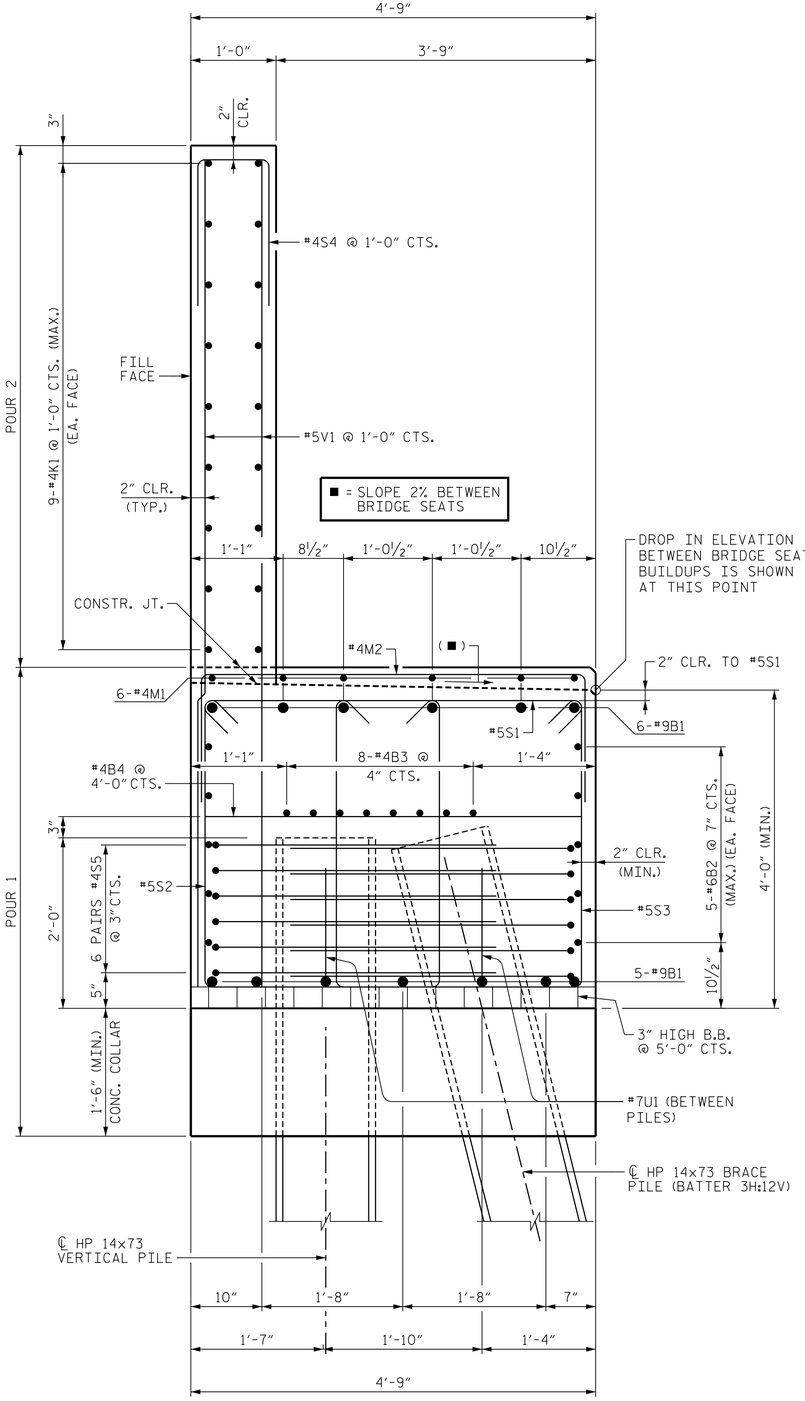


SECTION A-A

NOTES:

FOR PIPE INSERT DETAILS, SEE BEARING SHEETS.

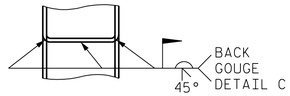
THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

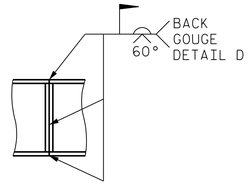
THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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

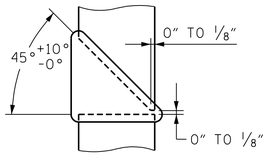
SEE GENERAL DRAWING "FOUNDATION LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.



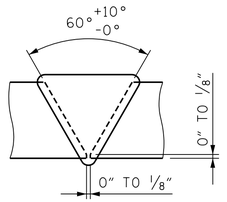
✱ PILE VERTICAL



✱ PILE HORIZONTAL OR VERTICAL



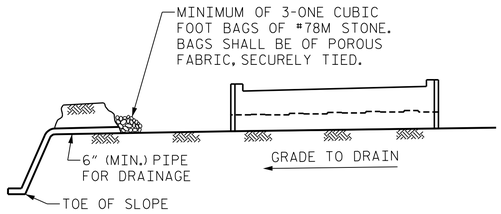
DETAIL C



DETAIL D

PILE SPLICE DETAILS

✱ = POSITION OF PILE DURING WELDING



NOTES:

BAGGED STONE AND PIPE SHALL 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.

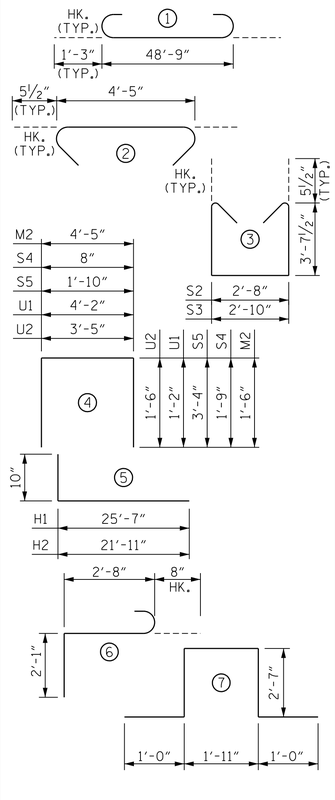
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

BAR TYPES

(ALL DIMENSIONS ARE OUT TO OUT)



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#9	1	51'-3"	1917
B2	10	#6	STR	48'-11"	735
B3	16	#4	STR	25'-8"	275
B4	13	#4	STR	4'-5"	39
H1	24	#5	5	26'-5"	662
H2	56	#5	5	22'-9"	1329
K1	36	#4	STR	25'-9"	620
K2	8	#4	STR	2'-7"	14
M1	24	#4	STR	2'-8"	43
M2	12	#4	4	7'-5"	60
S1	50	#5	2	5'-4"	279
S2	50	#5	3	10-10"	565
S3	50	#5	3	11'-0"	574
S4	44	#4	4	4'-2"	123
S5	96	#4	4	8'-6"	546
S6	6	#6	7	9'-1"	82
S7	6	#6	6	5'-5"	49
U1	14	#7	4	6'-6"	187
U2	8	#4	4	6'-5"	35
V1	88	#5	STR	11'-11"	1094
V2	52	#5	STR	13'-9"	746
V3	52	#5	STR	13'-4"	724
REINFORCING STEEL				LBS.	10698

CLASS "A" CONCRETE		
POUR 1: COLLAR, CAP, LOWER PART OF WINGS	CU. YDS.	47.6
POUR 2: BACKWALL & UPPER PART OF WINGS	CU. YDS.	32.0
TOTAL CONCRETE	CU. YDS.	79.6

HP 14x73 STEEL PILES	
NO.	18
LF	1620
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES EA.	18

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 SECTION & DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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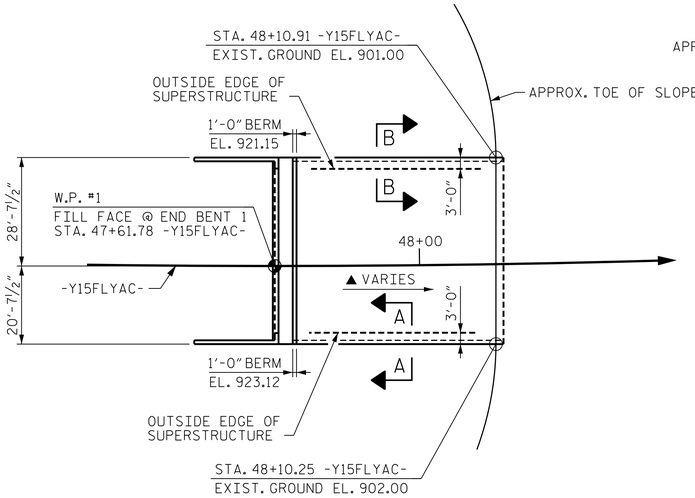
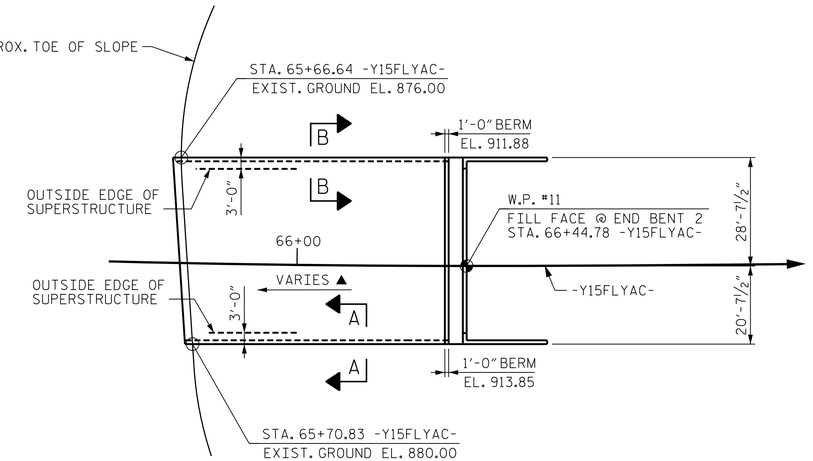
DES CHK:	M.BARNES	DATE :	08/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	A. ZEITOUNI	DATE :	08/19



END BENT 1



END BENT 2

▲ = 2:1 MIN.

PLAN

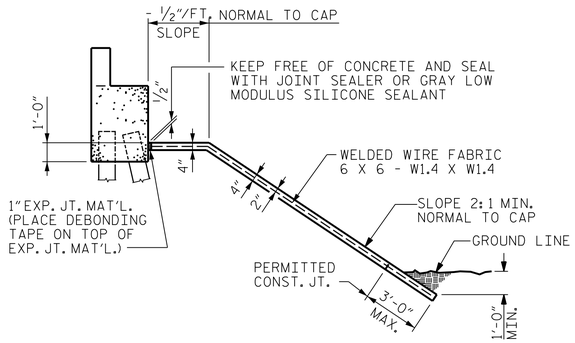
NOTES

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

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.

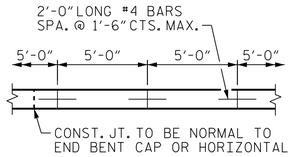
BRIDGE @ STA. 60+66.06 -Y15FLYAC-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	267	480
END BENT 2	435	783

* QUANTITY SHOWN IS BASED ON 5'-0" POURS.



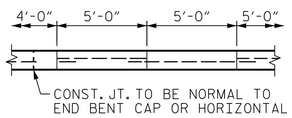
SECTION ALONG -Y15FLYAC-

WHEN DITCH IS NOT PROVIDED



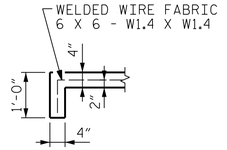
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

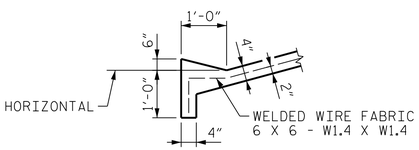


POUR A 4'-0'' STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



SECTION A-A



SECTION B-B

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE SLOPE PROTECTION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/15/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-141
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DES BY: S. NIFONG DATE : 10/19
DES CHK: M. NEIHEISEL DATE : 10/19

DWG BY: B. PETERSON DATE : 07/19
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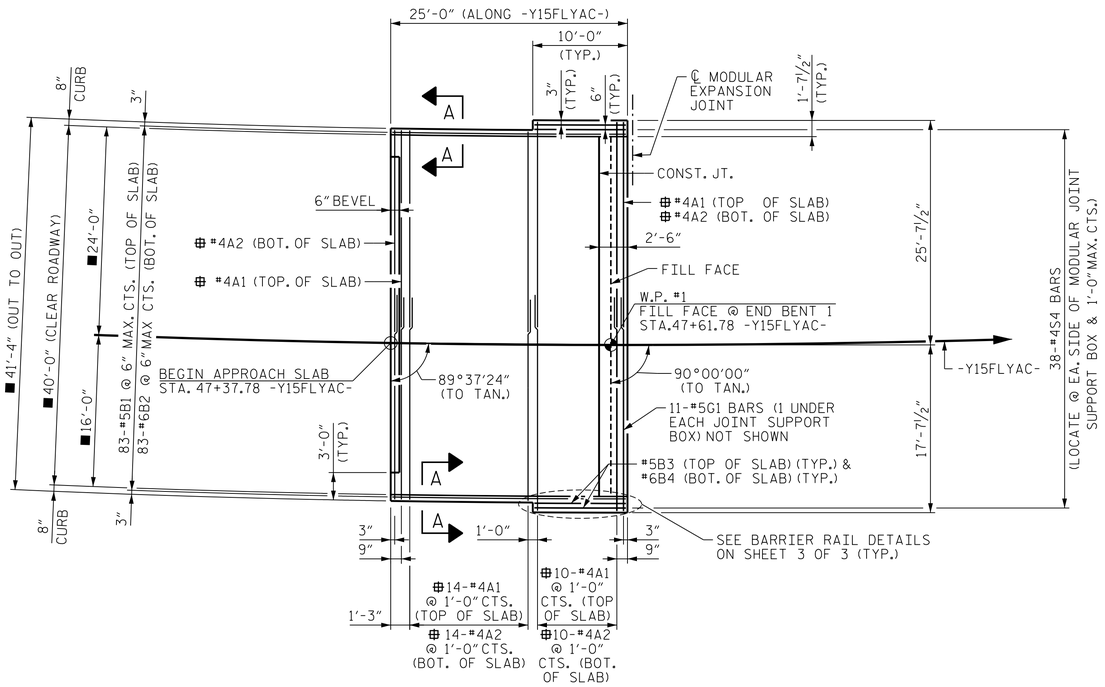
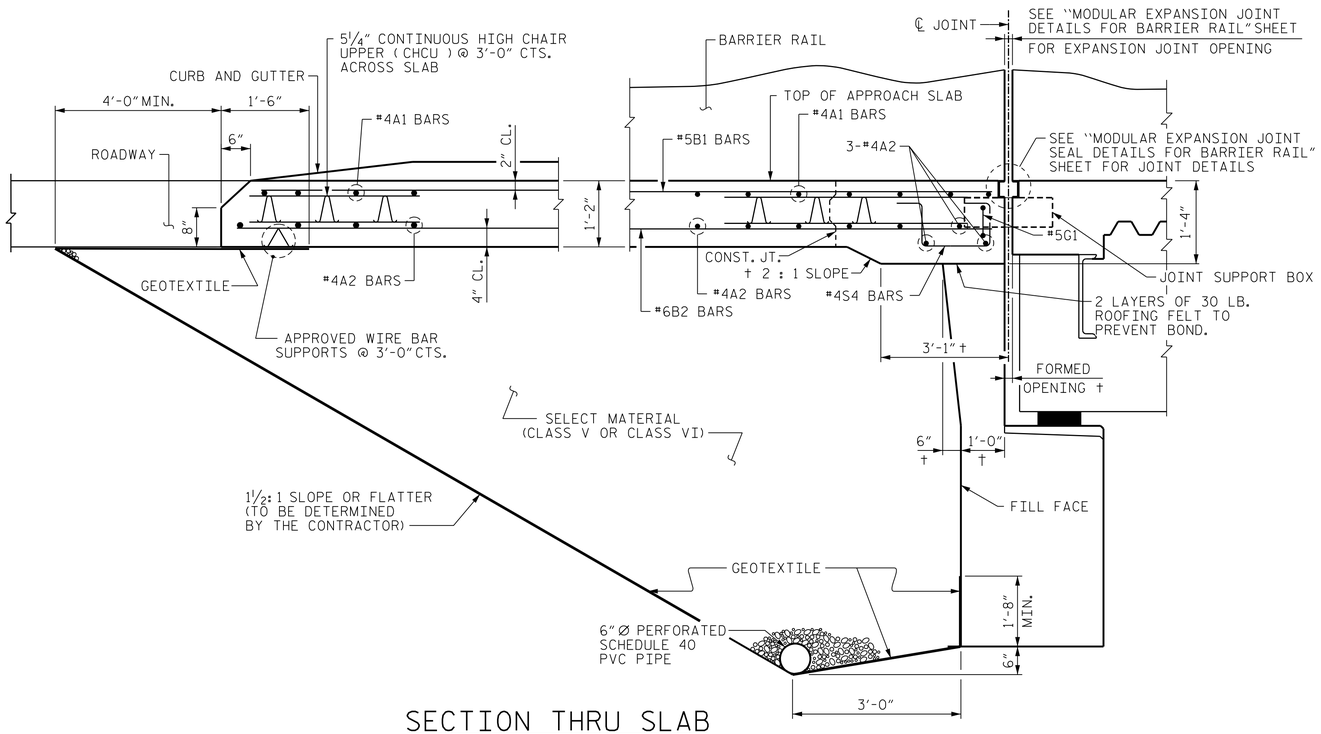
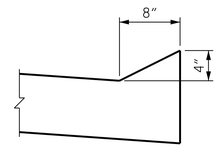


PLAN AT END BENT 1

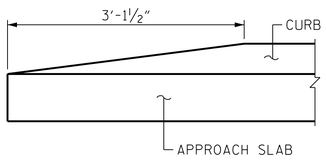


SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)



SECTION A-A



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

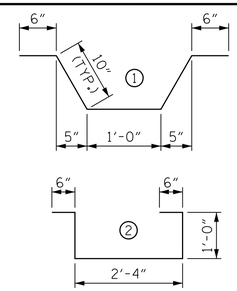
Δ = CONCRETE QUANTITY DOES NOT INCLUDE BARRIER RAIL
† = NORMAL TO END BENT
■ = RADIAL DIMENSION
⊞ = 2 BAR RUN

BILL OF MATERIAL

APPROACH SLAB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	50	#4	STR.	22'-5"	749
A2	52	#4	STR.	22'-3"	773
✳ B1	83	#5	STR.	23'-10"	2,064
B2	83	#6	STR.	24'-4"	3,034
✳ B3	4	#5	STR.	9'-8"	41
B4	4	#6	STR.	9'-8"	59
✳ G1	11	#5	1	3'-8"	43
✳ S4	38	#4	2	5'-4"	136
REINFORCING STEEL					3,866 LBS.
✳ EPOXY COATED REINFORCING STEEL					3,033 LBS.
Δ CLASS AA CONCRETE					46.1 C.Y.

BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT)

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE #6 "B" BARS IN THE APPROACH SLAB MAY BE CUT AS DIRECTED BY THE ENGINEER TO CLEAR THE MODULAR JOINT SUPPORT BOXES.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN AND SECTION

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

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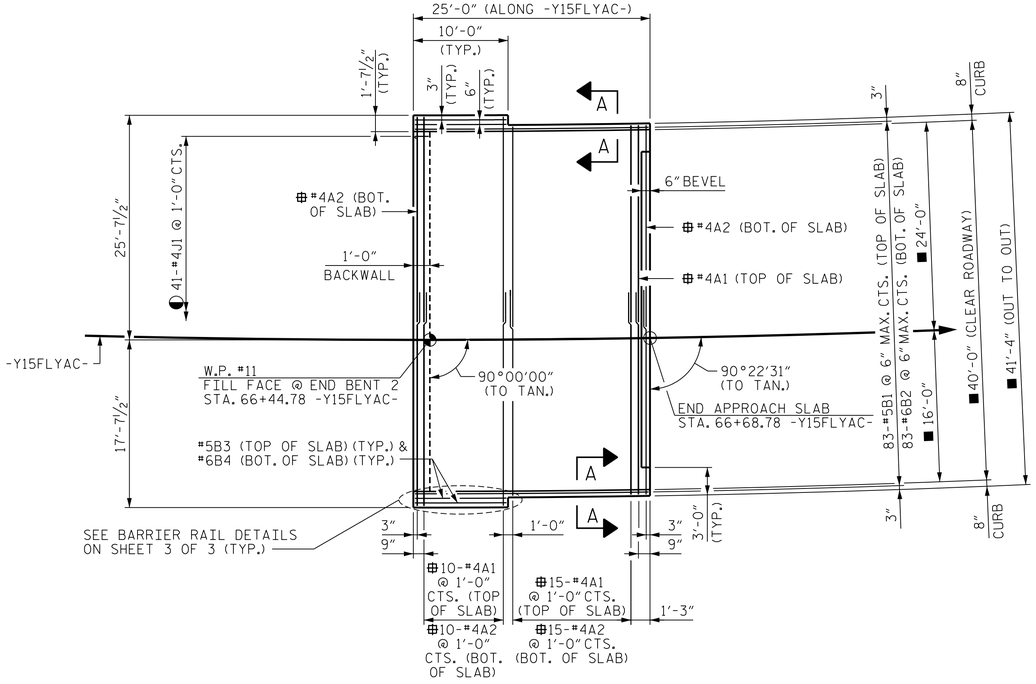
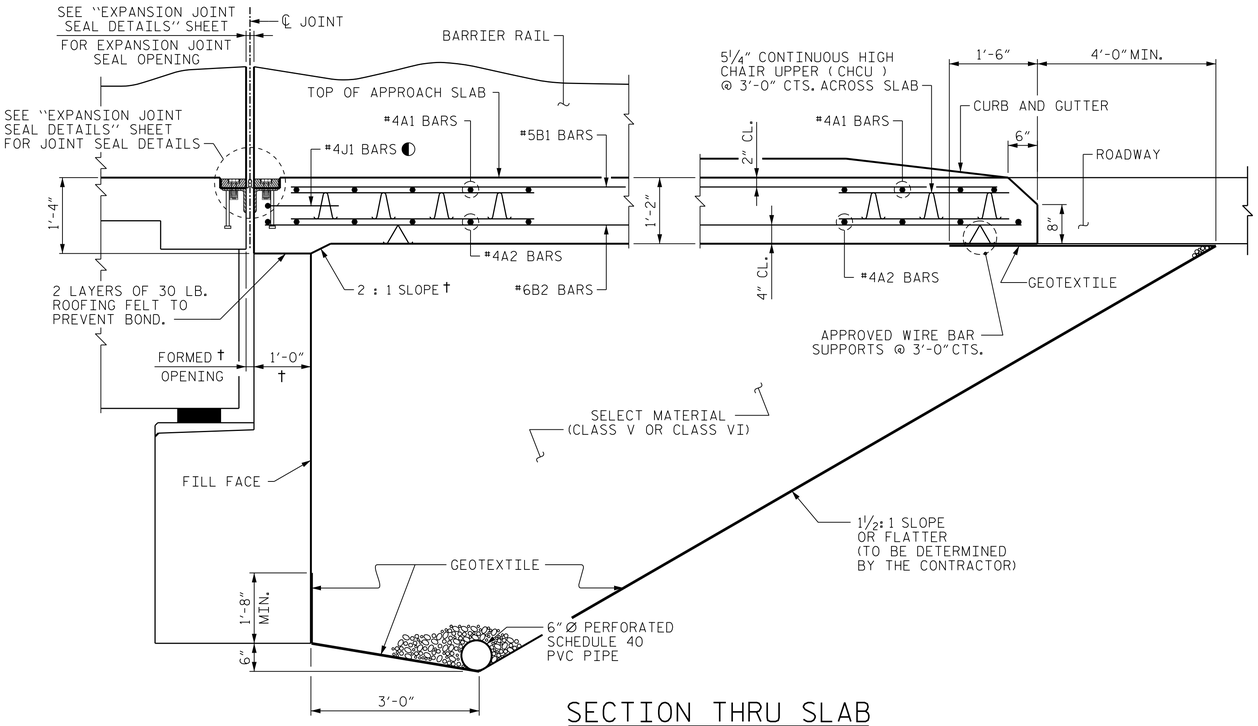
SHEET NO. S04-142
TOTAL SHEETS 144

DES BY:	L. ZAMPETTI	DATE :	07/19
DES CHK:	J. ROBERTS	DATE :	07/19
DWG BY:	M. SELLS	DATE :	07/19
CHK BY:	S. NIFONG	DATE :	11/19



PLAN AT END BENT 2



SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

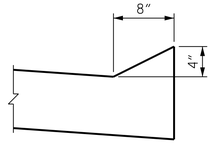
◐ = FOR PLACEMENT OF #4J1 BARS SEE "EXPANSION JOINT SEAL DETAILS" SHEET

△ = CONCRETE QUANTITY DOES NOT INCLUDE BARRIER RAIL

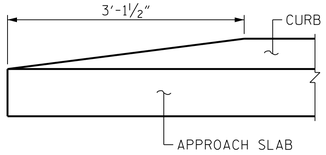
† = NORMAL TO END BENT

■ = RADIAL DIMENSION

⊕ = 2 BAR RUN



SECTION A-A



END OF CURB WITHOUT SHOULDER BERM GUTTER

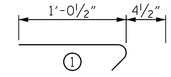
CURB DETAILS

BILL OF MATERIAL

APPROACH SLAB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	50	#4	STR.	22'-5"	749
A2	52	#4	STR.	22'-3"	773
✳ B1	83	#5	STR.	23'-10"	2,064
B2	83	#6	STR.	24'-4"	3,034
✳ B3	4	#5	STR.	9'-8"	41
B4	4	#6	STR.	9'-8"	59
✳ J1	41	#4	1	1'-5"	39
REINFORCING STEEL					3,866 LBS.
✳ EPOXY COATED REINFORCING STEEL					2,893 LBS.
△ CLASS AA CONCRETE					45.6 C. Y.

BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN AND SECTION

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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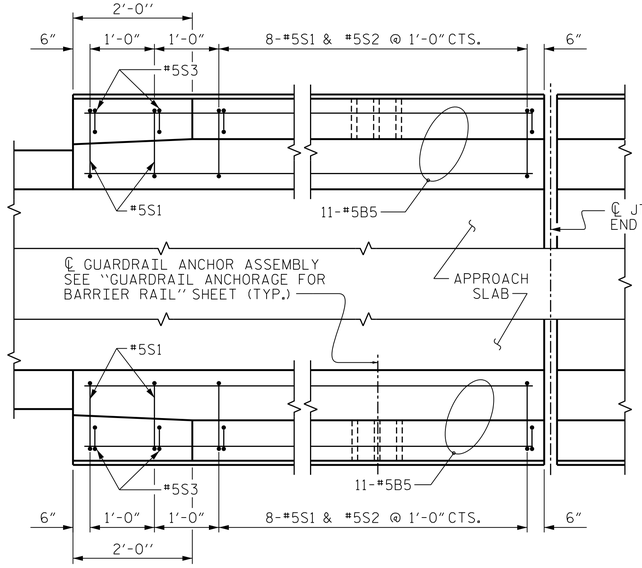
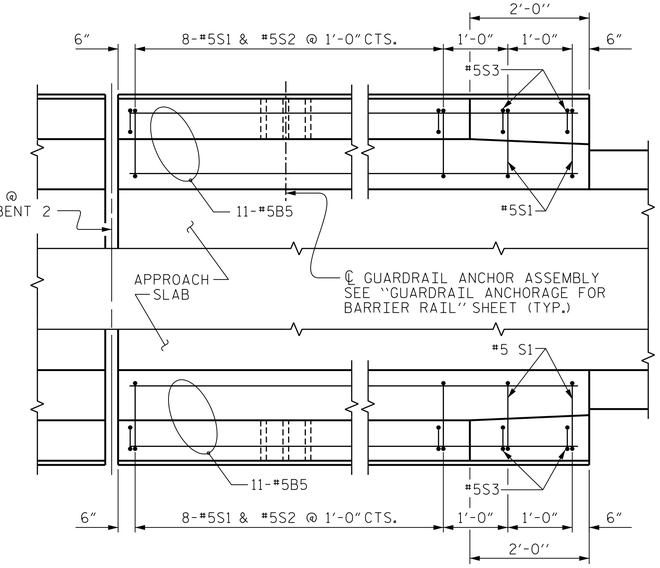
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-143
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

DES BY:	L. ZAMPETTI	DATE :	07/19
DES CHK:	J. ROBERTS	DATE :	07/19
DWG BY:	M. SELLS	DATE :	07/19
CHK BY:	S. NIFONG	DATE :	11/19



END BENT 1



END BENT 2

NOTES

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

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

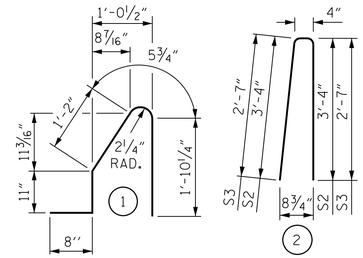
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

BILL OF MATERIAL

BARRIER RAIL ONLY

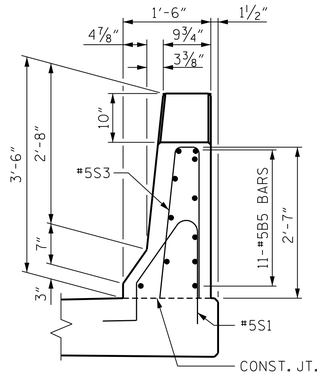
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B5	44	#5	STR.	9'-8"	444
✳ S1	40	#5	1	5'-1"	213
✳ S2	32	#5	2	7'-0"	234
✳ S3	8	#5	2	5'-6"	46
✳ EPOXY COATED REINFORCING STEEL					937 LBS.
CLASS AA CONCRETE					5.3 C.Y.
CONCRETE BARRIER RAIL					40.0 L.F.

BAR TYPES

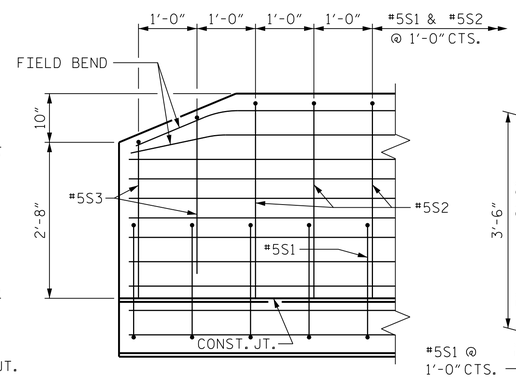


(ALL BAR DIMENSIONS ARE OUT TO OUT)

PLAN OF BARRIER RAIL

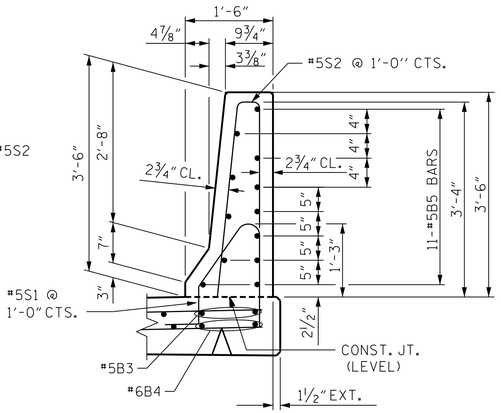


END VIEW

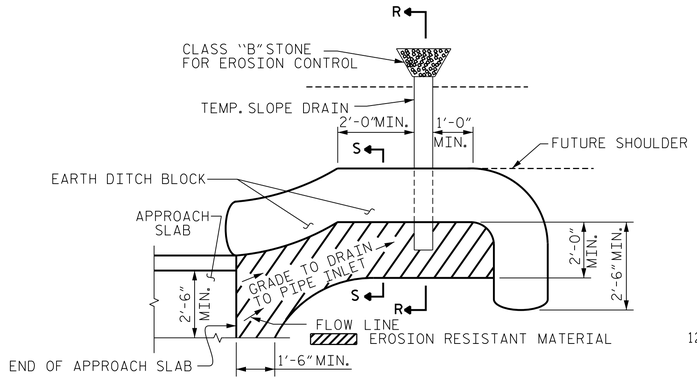


SIDE VIEW

END OF RAIL DETAILS

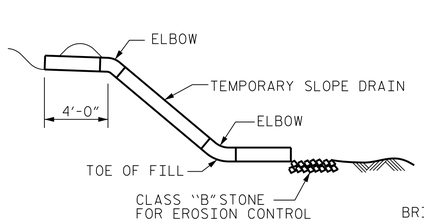


SECTION THRU RAIL

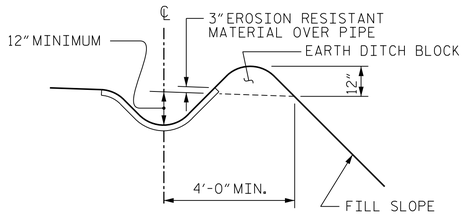


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

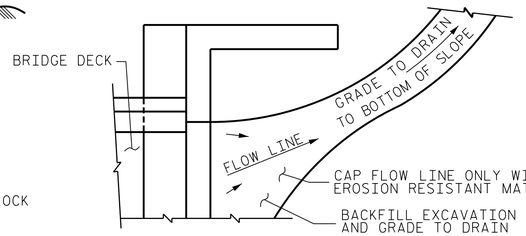
PLAN VIEW



SECTION R-R



SECTION S-S



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

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-144
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	144

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/15/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	L. ZAMPETTI	DATE :	07/19
DES CHK:	J. ROBERTS	DATE :	07/19
DWG BY:	M. SELLS	DATE :	07/19
CHK BY:	S. NIFONG	DATE :	11/19

STD. NO. BAS4

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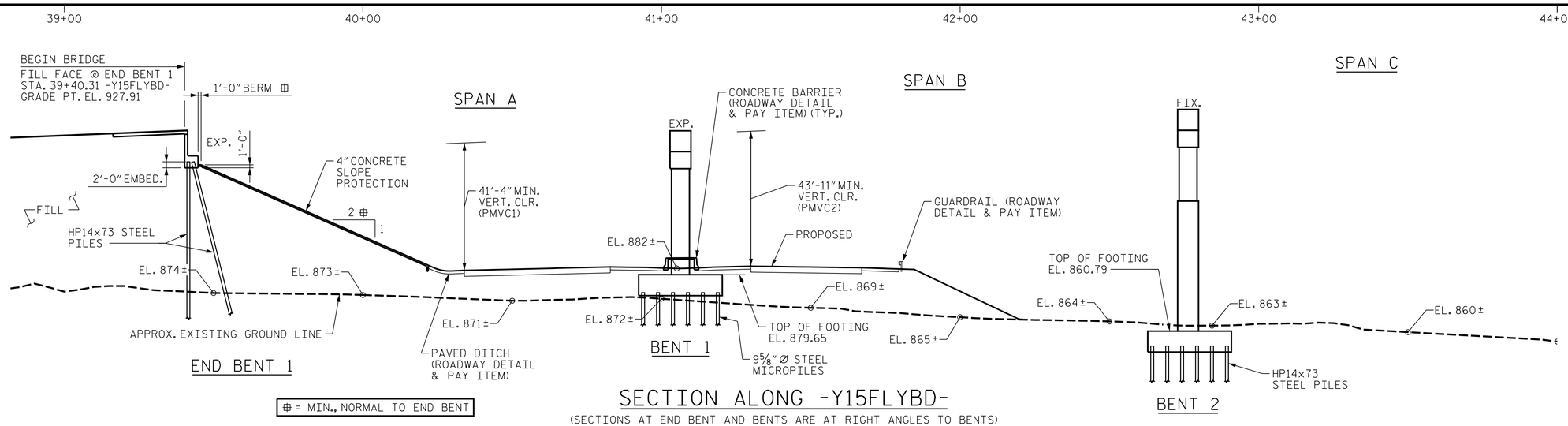
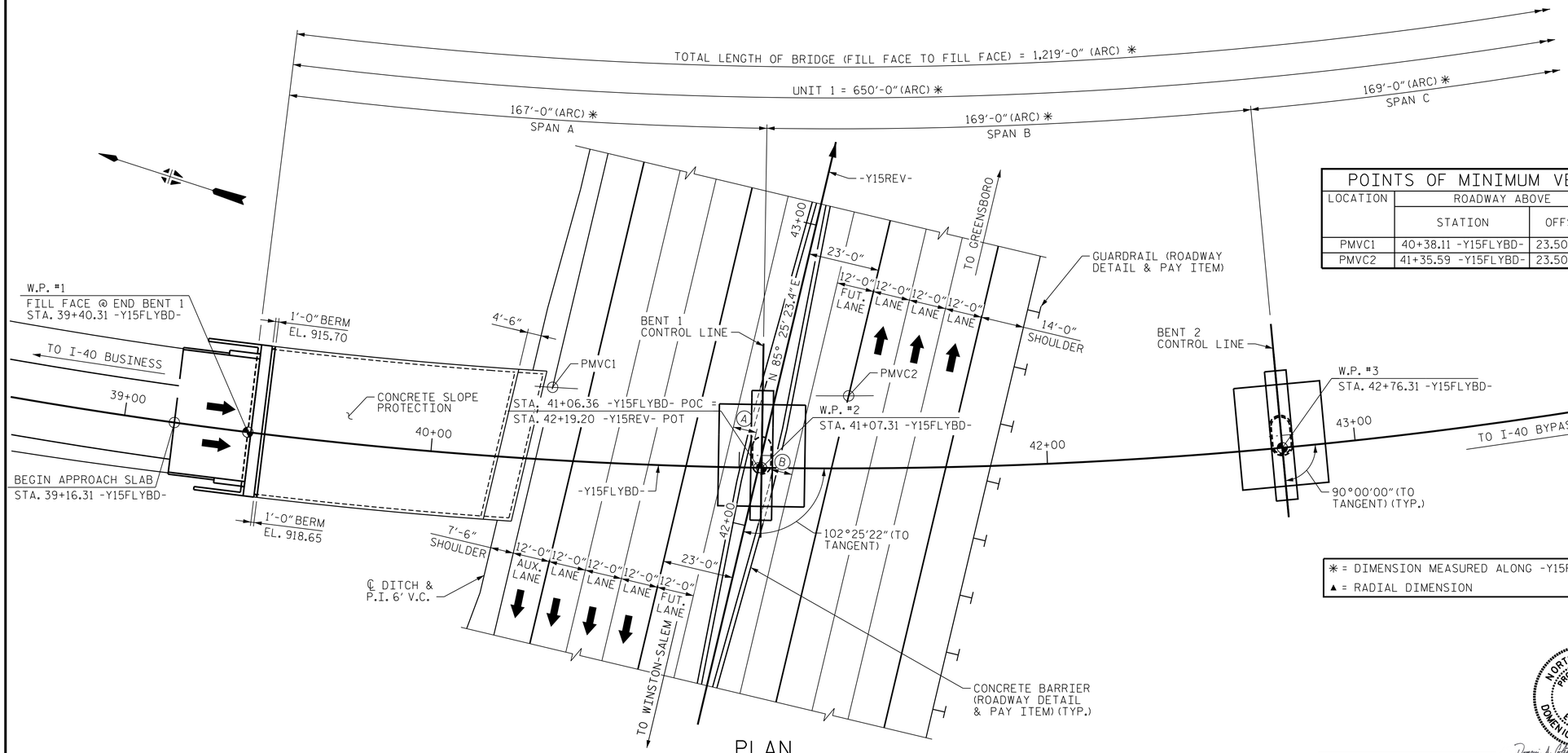


⊕ = MIN., NORMAL TO END BENT

SECTION ALONG -Y15FLYBD-

(SECTIONS AT END BENT AND BENTS ARE AT RIGHT ANGLES TO BENTS)



PLAN

(PILES NOT SHOWN FOR CLARITY)

HORIZONTAL CLEARANCE DIMENSIONS

- (A) 7'-5" MIN. HORIZ. CLEAR TO FACE OF COLUMN
- (B) 7'-3" MIN. HORIZ. CLEAR TO FACE OF COLUMN

POINTS OF MINIMUM VERTICAL CLEARANCE (PMVC1 & PMVC2)

LOCATION	ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE	ROADWAY BELOW		ELEV. ON ROADWAY BELOW
	STATION	OFFSET		STATION	OFFSET	
PMVC1	40+38.11 -Y15FLYBD-	23.50' (LT)	930.51	42+29.13 -Y15REV-	71.00' (LT)	881.66
PMVC2	41+35.59 -Y15FLYBD-	23.50' (LT)	934.51	42+48.61 -Y15REV-	23.00' (RT)	883.07

HORIZONTAL CURVE DATA -Y15FLYBD-

PI STA. 88+39.55
Δ = 150°28'10.6" (LT.)
D = 03°40'22.1"
L = 4,096.86'
T = 5,918.92'
R = 1,560.00'

SEE SHEET 2 FOR CONTINUATION

✳ = DIMENSION MEASURED ALONG -Y15FLYBD-
▲ = RADIAL DIMENSION

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-
795+32.16 -L-

SHEET 1 OF 9 BRIDGE NO. 726

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN
INTERCHANGE CONNECTING WINSTON-SALEM
NORTHERN BELTWAY AND I-40 BYPASS
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-001
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI
Domenic A. Coletti 10/11/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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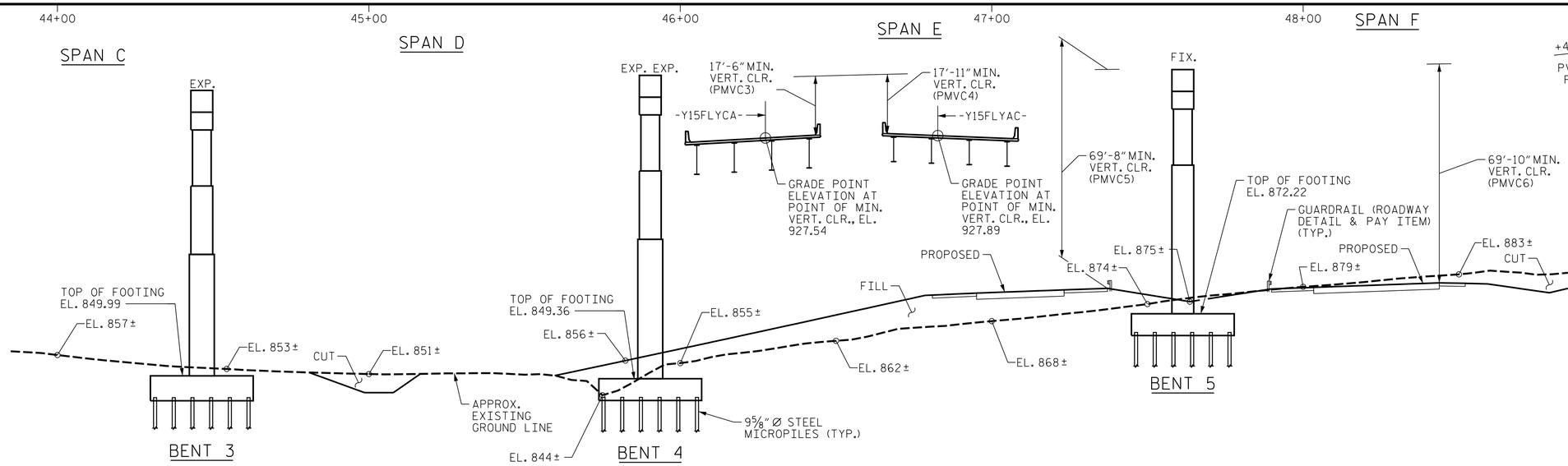
DES BY:	S. NIFONG	DATE :	12/19
DES CHK:	M. NEIHEISEL	DATE :	12/19
DWG BY:	B. PETERSON	DATE :	06/19
CHK BY:	S. NIFONG	DATE :	12/19



SECTION ALONG -Y15FLYBD-

(SECTIONS AT BENTS ARE AT RIGHT ANGLES TO BENTS)

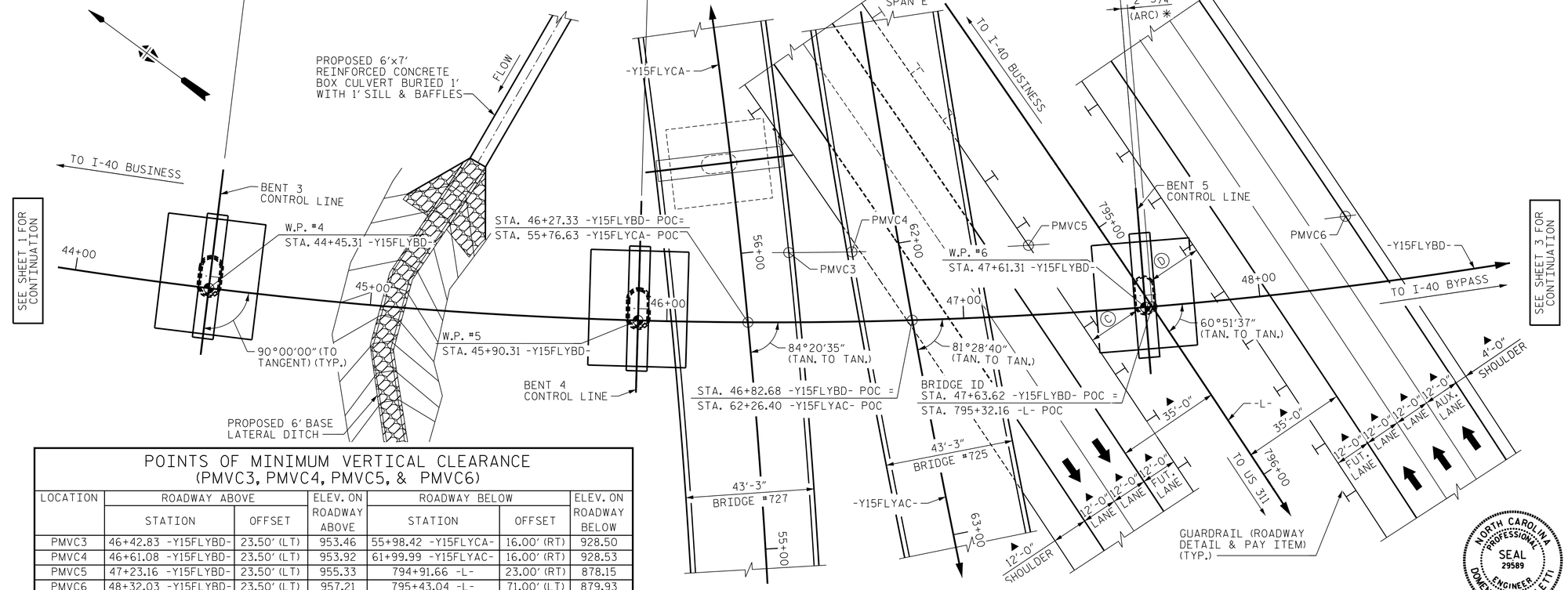
HORIZONTAL CLEARANCE DIMENSIONS
(C) 17'-11" MIN. HORIZ. CLEAR TO FACE OF COLUMN
(D) 18'-1" MIN. HORIZ. CLEAR TO FACE OF COLUMN

TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE) = 1,219'-0" (ARC) ✳

UNIT 1 = 650'-0" (ARC) ✳ | UNIT 2 = 569'-0" (ARC) ✳

169'-0" (ARC) ✳ SPAN C | 145'-0" (ARC) ✳ SPAN D | 171'-0" (ARC) ✳ SPAN E | 210'-0" (ARC) ✳ SPAN F

2'-3¾" (ARC) ✳



POINTS OF MINIMUM VERTICAL CLEARANCE (PMVC3, PMVC4, PMVC5, & PMVC6)

LOCATION	ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE	ROADWAY BELOW		ELEV. ON ROADWAY BELOW
	STATION	OFFSET		STATION	OFFSET	
PMVC3	46+42.83 -Y15FLYBD-	23.50' (LT)	953.46	55+98.42 -Y15FLYCA-	16.00' (RT)	928.50
PMVC4	46+61.08 -Y15FLYBD-	23.50' (LT)	953.92	61+99.99 -Y15FLYAC-	16.00' (RT)	928.53
PMVC5	47+23.16 -Y15FLYBD-	23.50' (LT)	955.33	794+91.66 -L-	23.00' (RT)	878.15
PMVC6	48+32.03 -Y15FLYBD-	23.50' (LT)	957.21	795+43.04 -L-	71.00' (LT)	879.93

PLAN

(PILES NOT SHOWN FOR CLARITY)

✳ = DIMENSION MEASURED ALONG -Y15FLYBD-

▲ = RADIAL DIMENSION

HORIZONTAL CURVE DATA -Y15FLYBD-
PI STA. 88+39.55
Δ = 150°28'10.6" (RT.)
D = 03°40'22.1"
L = 4,096.86'
T = 5,918.92'
R = 1,560.00'

HORIZONTAL CURVE DATA -Y15FLYCA-
PI STA. 65+16.52
Δ = 103°35'56.2" (LT.)
D = 02°28'10.7"
L = 4,194.89'
T = 2,948.14'
R = 2,320.00'

HORIZONTAL CURVE DATA -Y15FLYAC-
PI STA. 54+77.32
Δ = 82°37'38.4" (LT.)
D = 01°33'55.7"
L = 5,278.16'
T = 3,216.94'
R = 3,660.00'

HORIZONTAL CURVE DATA -L-
PI STA. 795+15.62
Δ = 29°47'50.6" (RT.)
D = 00°44'58.0"
L = 3,975.88'
T = 2,033.99'
R = 7,645.00'

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN
INTERCHANGE CONNECTING WINSTON-SALEM
NORTHERN BELTWAY AND I-40 BYPASS
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO. S05-002
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 116
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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DES BY: S. NIFONG DATE: 12/19
DES CHK: M. NEIHEISEL DATE: 12/19
DWG BY: B. PETERSON DATE: 06/19
CHK BY: S. NIFONG DATE: 12/19

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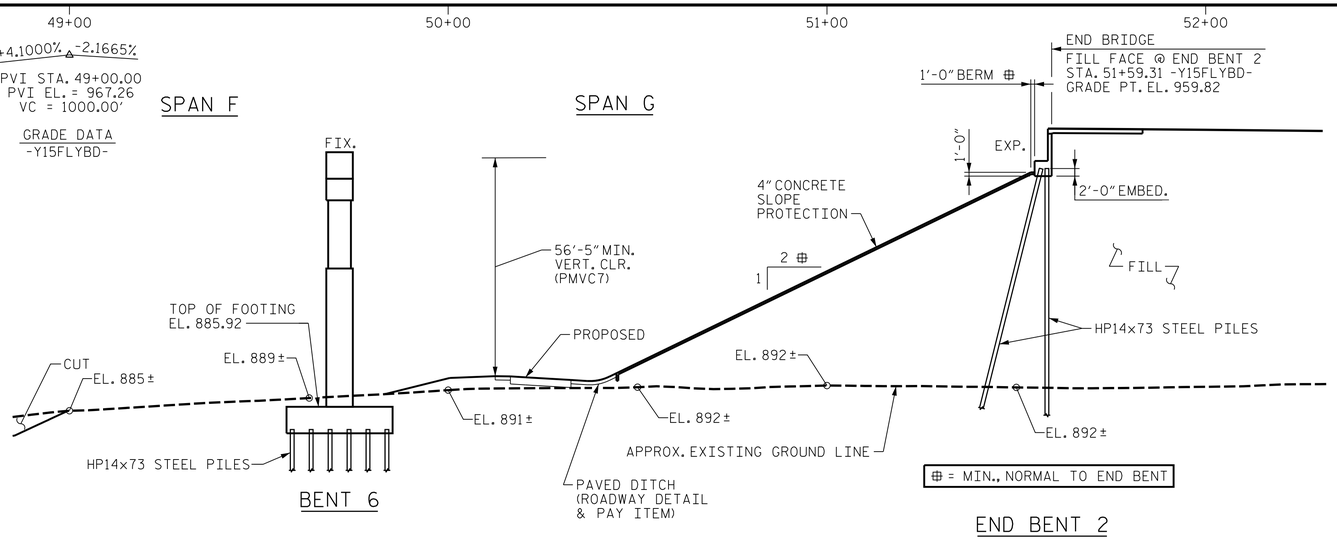
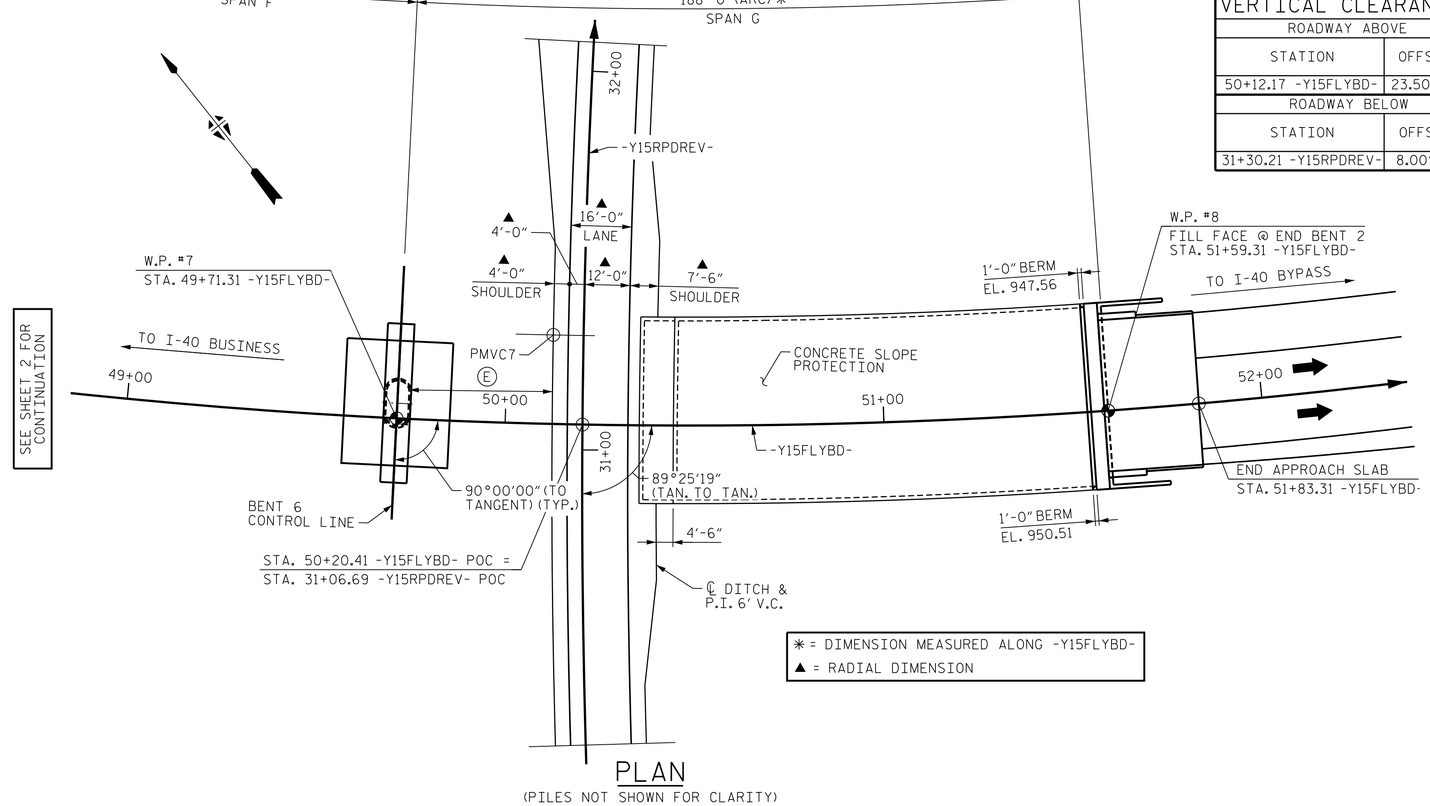


HORIZONTAL CLEARANCE DIMENSIONS
(E) 37'-3" MIN. HORIZ. CLEAR TO FACE OF COLUMN ▲

SECTION ALONG -Y15FLYBD-

(SECTIONS AT END BENT AND BENT ARE AT RIGHT ANGLES TO BENTS)



PLAN

(PILES NOT SHOWN FOR CLARITY)

POINT OF MINIMUM VERTICAL CLEARANCE (PMVC7)		
ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE
STATION	OFFSET	
50+12.17 -Y15FLYBD-	23.50' (LT)	958.70
ROADWAY BELOW		ELEV. ON ROADWAY BELOW
STATION	OFFSET	
31+30.21 -Y15RPDREV-	8.00' (LT)	894.78

HORIZONTAL CURVE DATA -Y15FLYBD-

PI STA. 88+39.55
Δ = 150°28'10.6" (LT.)
D = 03°40'22.1"
L = 4,096.86'
T = 5,918.92'
R = 1,560.00'

HORIZONTAL CURVE DATA -Y15RPDREV-

PI STA. 38+99.44
Δ = 48°08'45.1" (RT.)
D = 02°28'10.7"
L = 1,949.50'
T = 1,036.47'
R = 2,320.00'

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-003
1			3			TOTAL SHEETS
2			4			116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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DES CHK: M. NEIHEISEL	DATE: 12/19	CHK BY: S. NIFONG	DATE: 12/19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
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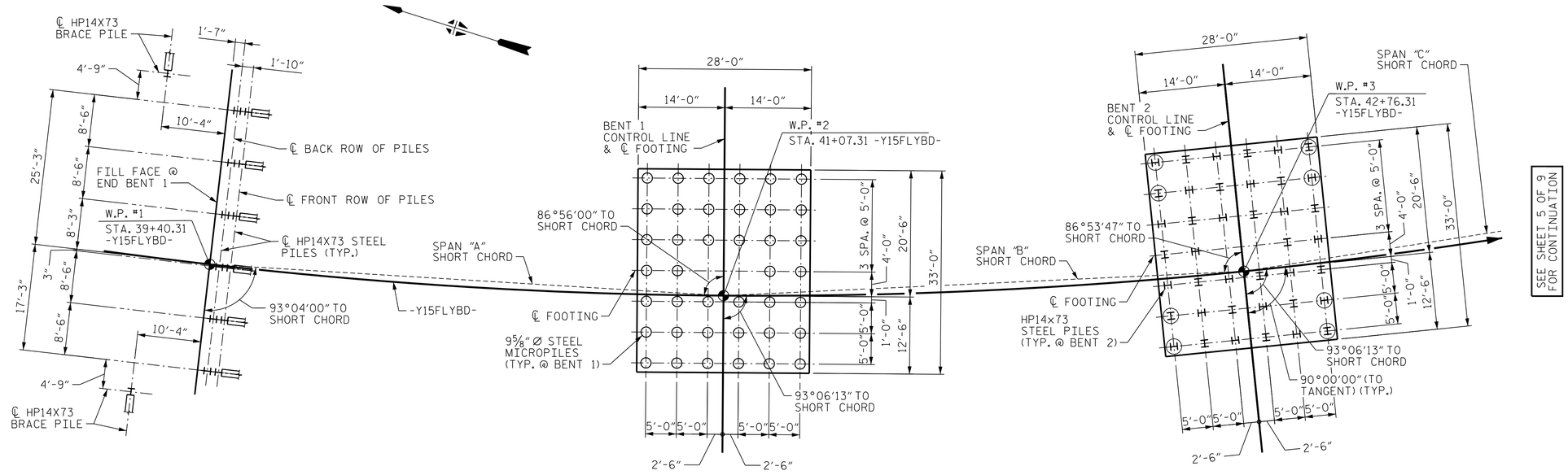


FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYBD- AT EACH WORK POINT.

℄ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYBD-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 50,000 - 70,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NOS. 1 AND 2 AND INTERIOR BENT NOS. 2 AND 6. 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.

OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION, WHICH INCLUDES PILE DRIVING, AT END BENT NOS. 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NOS. 1 AND 2.

FOR MICROPILES, SEE MICROPILE PROVISION.

USE PRIME DOMESTIC REINFORCING CASINGS WITH YIELD STRENGTHS OF AT LEAST 80 KSI AND A NOMINAL WALL THICKNESS OF 0.545 IN FOR MICROPILES AT BENT NOS. 1, 3, 4, AND 5.

REINFORCING CASING FOR MICROPILES ARE TO BE INSTALLED TO A DEPTH OF 20 FT BELOW THE BOTTOM OF FOOTING ELEVATION. MINIMUM CASING LENGTH IS REQUIRED TO RESIST A LATERAL FACTORED LOAD OF 7 KIPS PER PILE. NO CASING JOINTS WILL BE LOCATED WITHIN 10 FEET BELOW BOTTOM OF FOOTING.

MICROPILE ESTIMATED LENGTHS ARE BASED ON NCDOT GEOTECHNICAL DESIGN ASSUMPTION AND IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY MICROPILE LENGTHS FOR ESTIMATING PURPOSES.

A MINIMUM OF ONE VERIFICATION TEST IS REQUIRED ON A DEMONSTRATION MICROPILE INSTALLED AT THE SITE. ADDITIONAL VERIFICATION TEST AND DEMONSTRATION PILES MAYBE REQUIRED TO VERIFY ALL GEOTECHNICAL DESIGN BOND ASSUMPTIONS. PERFORM VERIFICATION TEST ON DEMONSTRATION PILE AT BENT NO. 3. LOCATION OF DEMONSTRATION PILE TO BE APPROVED BY ENGINEER.

PROOF TESTING IS REQUIRED AT EACH BENT LOCATION.

USE TYPE 2 MICROPILES FOR ALL TENSION PILES AS NOTED ON THE STRUCTURE PLANS AND ALL TEST PILES. USE TYPE 1 MICROPILES IN ALL OTHER LOCATIONS.

SEE SHEET "SUBSTRUCTURE MICROPILE DETAILS" FOR ADDITIONAL DETAILS AND THE FACTORED RESISTANCE, MINIMUM CASING TIP, MINIMUM TIP ELEVATION, AND MINIMUM WEATHERED ROCK AND ROCK PENETRATION FOR MICROPILES.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 210 KIPS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 350 KIPS PER PILE.

DESIGN MICROPILES AT BENT NO. 1 FOR A FACTORED RESISTANCE OF 270 KIPS PER PILE.

PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 290 KIPS PER PILE AND A FACTORED UPLIFT RESISTANCE OF 25 KIPS PER PILE.

DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 483 KIPS PER PILE.

DESIGN MICROPILES AT BENT NO. 3 FOR A FACTORED RESISTANCE OF 270 KIPS PER PILE AND A FACTORED UPLIFT RESISTANCE OF 30 KIPS PER PILE.

DESIGN MICROPILES AT BENT NO. 4 FOR A FACTORED RESISTANCE OF 235 KIPS PER PILE AND A FACTORED UPLIFT RESISTANCE OF 35 KIPS PER PILE.

DESIGN MICROPILES AT BENT NO. 5 FOR A FACTORED RESISTANCE OF 265 KIPS PER PILE.

PILES AT BENT NO. 6 ARE DESIGNED FOR A FACTORED RESISTANCE OF 290 KIPS PER PILE.

DRIVE PILES AT BENT NO. 6 TO A REQUIRED DRIVING RESISTANCE OF 483 KIPS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 KIPS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 375 KIPS PER PILE.

LEGEND

- HP14X73 VERTICAL PILE
- HP14X73 BRACE PILE (BATTER 3H:12V)
- HP14X73 TENSION PILE
- 9⅝" Ø STEEL MICROPILE (TYPE 1)
- 9⅝" Ø STEEL TENSION MICROPILE (TYPE 2)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-004
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

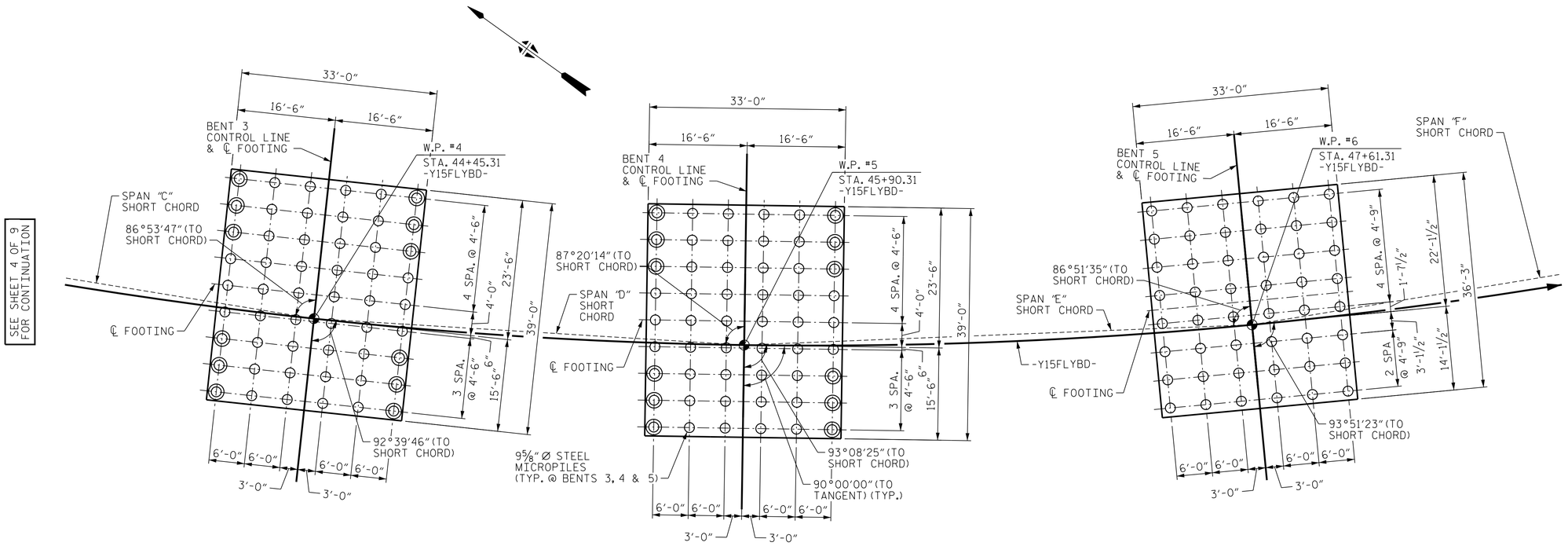
NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	K. OLIVER	DATE :	11/19
DES CHK:	N. LIU	DATE :	11/19
DWG BY:	B. PETERSON	DATE :	12/19
CHK BY:	M. WERNER	DATE :	12/19



BENT 3

BENT 4

BENT 5

NOTE

SEE NOTES ON SHEET 4 OF 9.

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYBD- AT EACH WORK POINT.

℄ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYBD-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

LEGEND

- H — HP14X73 VERTICAL PILE
- H — HP14X73 BRACE PILE (BATTER 3H:12V)
- (H) — HP14X73 TENSION PILE
- ○ — 9⅝" Ø STEEL MICROPILE (TYPE 1)
- ◎ — 9⅝" Ø STEEL TENSION MICROPILE (TYPE 2)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO. S05-005
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 116
2	--	--	4	--	--	

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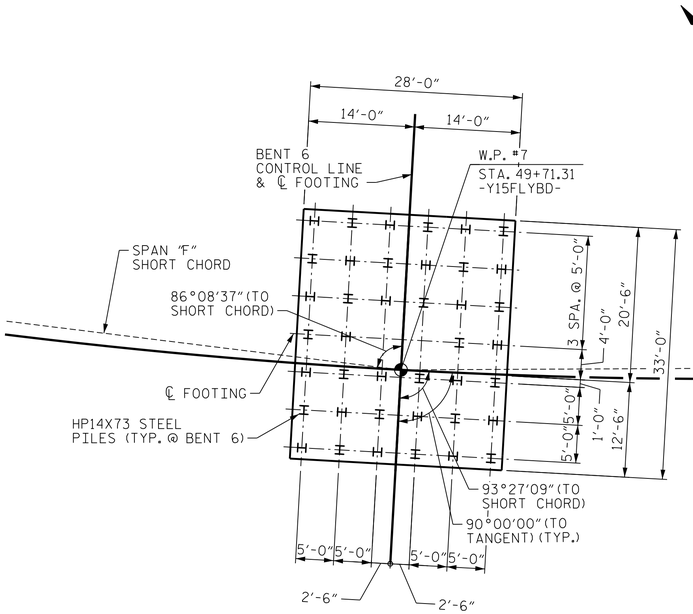
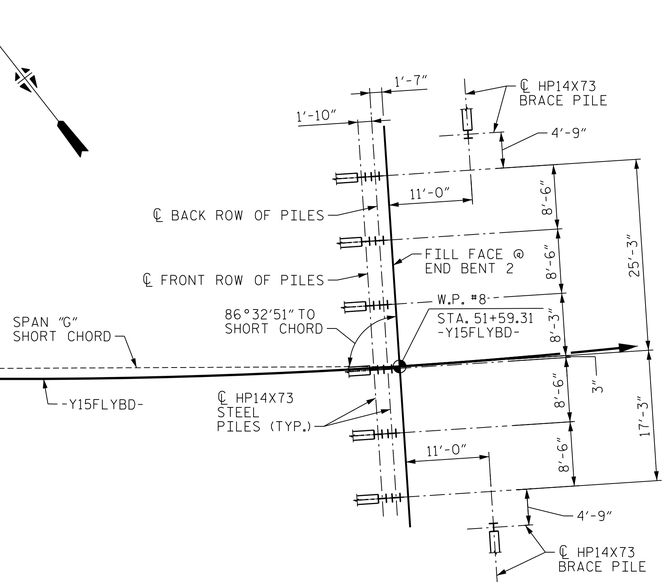
DES BY: K. OLIVER	DATE: 11/19	DWG BY: B. PETERSON	DATE: 12/19
DES CHK: N. LIU	DATE: 11/19	CHK BY: M. WERNER	DATE: 12/19

SEE SHEET 5 OF 9
FOR CONTINUATION



BENT 6



END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYBD- AT EACH WORK POINT.

℄ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYBD-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

LEGEND

- HP14X73 VERTICAL PILE
- HP14X73 BRACE PILE (BATTER 3H:12V)
- HP14X73 TENSION PILE
- 9⅝"Ø STEEL MICROPILE (TYPE 1)
- 9⅝"Ø STEEL TENSION MICROPILE (TYPE 2)

NOTE

SEE NOTES ON SHEET 4 OF 9.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN
INTERCHANGE CONNECTING WINSTON-SALEM
NORTHERN BELTWAY AND I-40 BYPASS
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-006
1			3			TOTAL SHEETS
2			4			116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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N.C.B.E.L.S. License Number: F-0116

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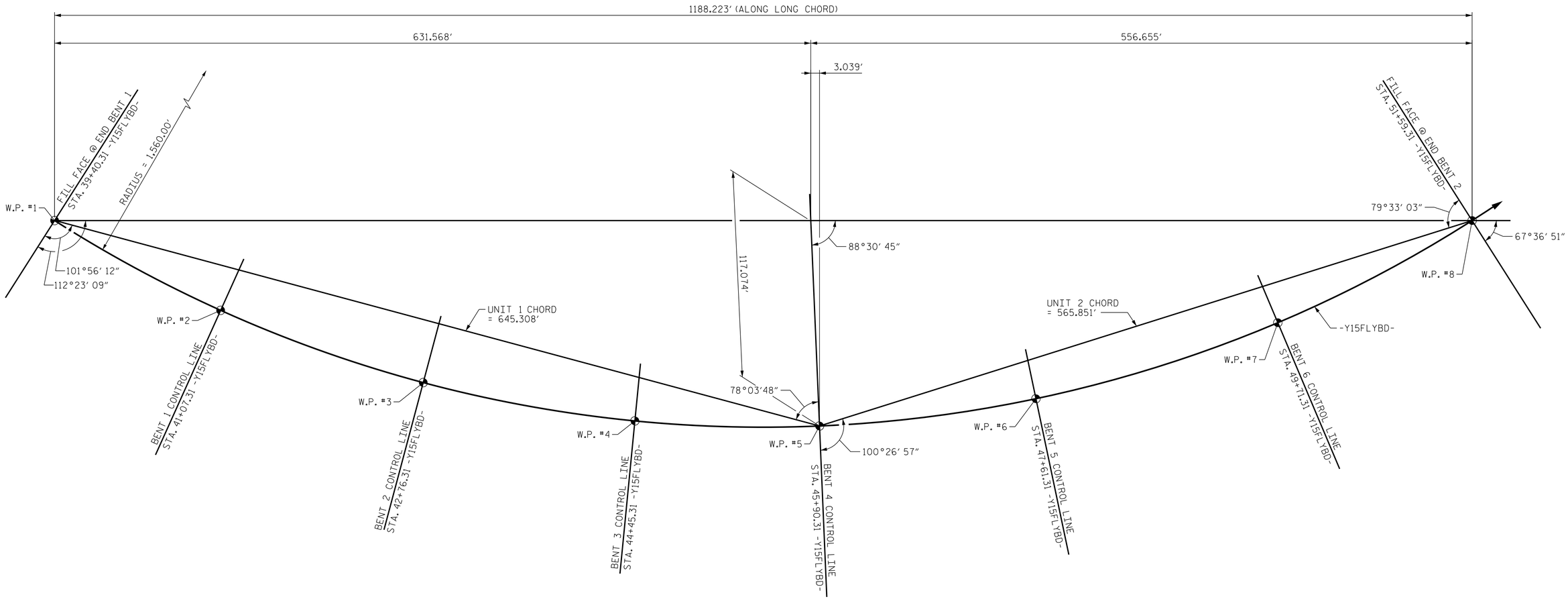
DES CHK:	N. LIU	DATE: 11/19	CHK BY:	M. WERNER	DATE: 12/19



LONG CHORD LAYOUT

ALL BENTS ARE RADIAL TO -Y15FLYBD-

HORIZONTAL CURVE DATA -Y15FLYBD-

PI STA. 88+39.55
Δ = 150°28'10.6" (LT.)
D = 03°40'22.1"
L = 4,096.86'
T = 5,918.92'
R = 1,560.00'

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 7 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN
INTERCHANGE CONNECTING WINSTON-SALEM
NORTHERN BELTWAY AND I-40 BYPASS
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
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1	--	--	3	--	--	TOTAL SHEETS
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NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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N.C.B.E.L.S. License Number: F-0116

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DES BY:	S. NIFONG	DATE: 06/19	DWG BY:	B. PETERSON	DATE: 06/19
DES CHK:	M. NEIHEISEL	DATE: 06/19	CHK BY:	S. NIFONG	DATE: 10/19

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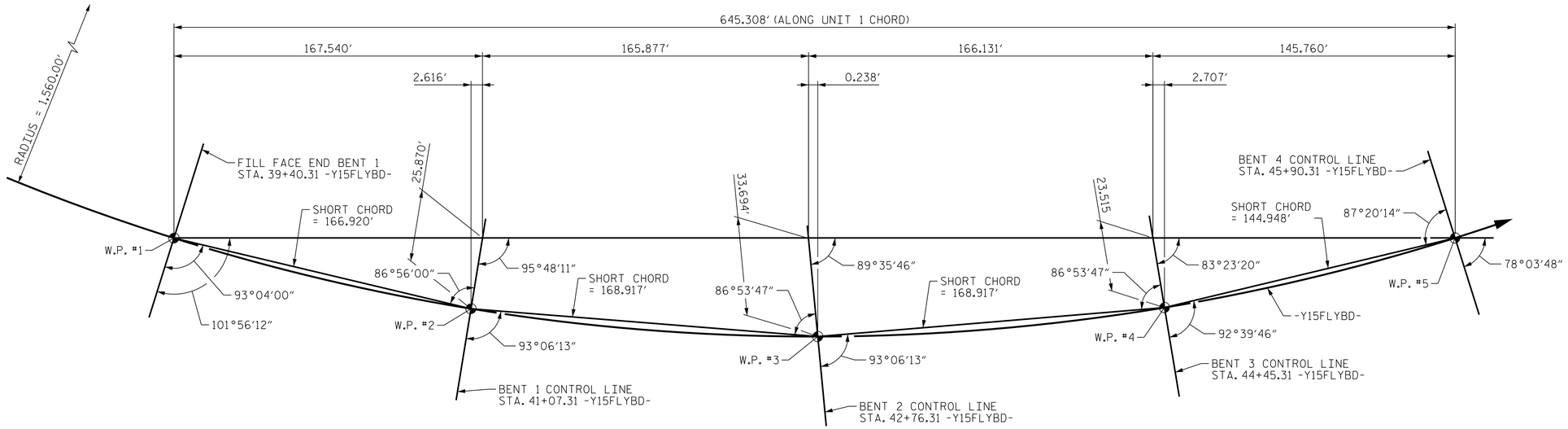
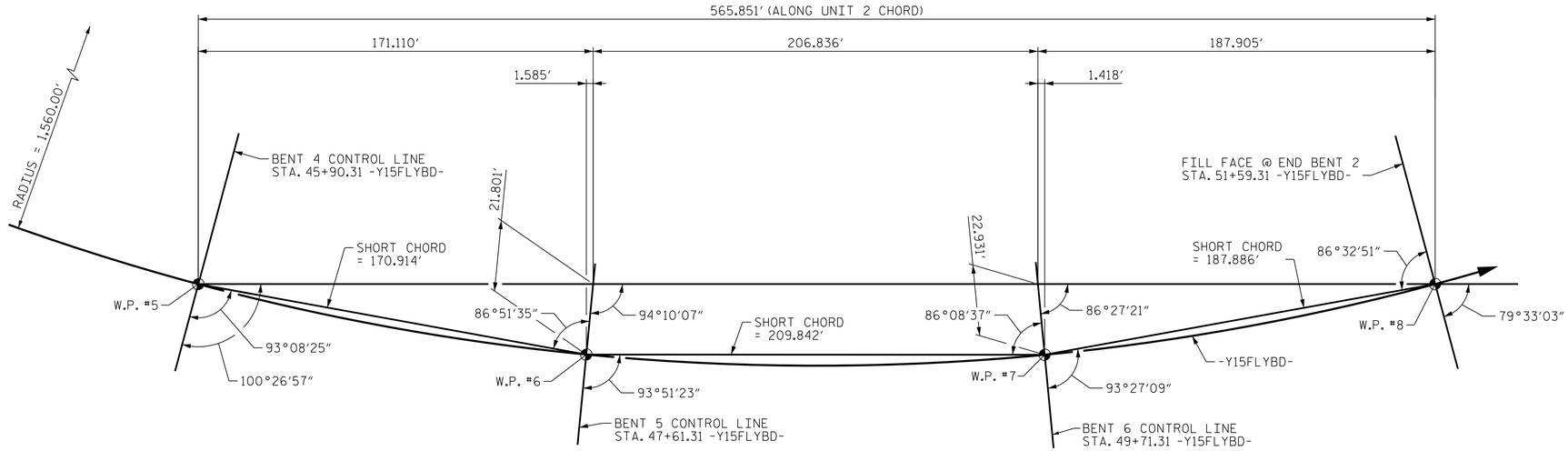


UNIT 1 CHORD LAYOUT

ALL BENTS ARE RADIAL TO -Y15FLYBD-



UNIT 2 CHORD LAYOUT

ALL BENTS ARE RADIAL TO -Y15FLYBD-

HORIZONTAL CURVE DATA -Y15FLYBD-

PI STA. 88+39.55
Δ = 150°28′10.6″(LT.)
D = 03°40′22.1″
L = 4,096.86′
T = 5,918.92′
R = 1,560.00′

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN
INTERCHANGE CONNECTING WINSTON-SALEM
NORTHERN BELTWAY AND I-40 BYPASS
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-008
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NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI
Domenic A. Coletti 10/11/2021

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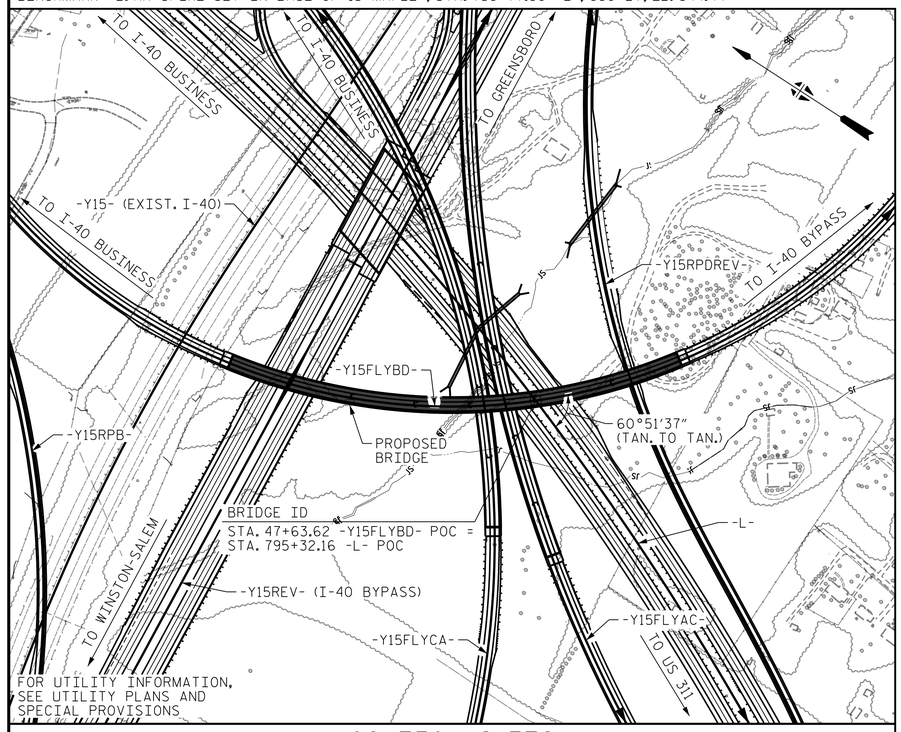
DES CHK:	M. NEIHEISEL	DATE :	06/19
DWG BY:	B. PETERSON	DATE :	06/19
CHK BY:	S. NIFONG	DATE :	10/19

BENCHMARK #2: RR SPIKE SET IN BASE OF 15" MAPLE , STA. 759+77.80 -L-, 680' LT, EL. 844.44'



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STA. 47+63.62 -Y15FLYBD-	REINFORCING STEEL	APPROX. 2,332,000 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP14X73 STEEL PILES	HP14x73 STEEL PILES	
	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	CU. YDS.	LUMP SUM	LB.	LUMP SUM	EA.	NO.	LIN. FT.
SUPERSTRUCTURE		52,471	46,611			LUMP SUM		LUMP SUM			
END BENT 1					66.4		8,461		14	14	1,260
BENT 1				433.2			73,360				
BENT 2	LUMP SUM			521.2			86,306		40	40	2,100
BENT 3	LUMP SUM			740.9			125,959				
BENT 4	LUMP SUM			714.1			128,931				
BENT 5	LUMP SUM			604.5			105,878				
BENT 6	LUMP SUM			500.4			90,191		40	40	2,200
END BENT 2					67.9		8,581		14	14	1,540
TOTAL	LUMP SUM	52,471	46,611	3,514.3	134.3	LUMP SUM	627,667	LUMP SUM	108	108	7,100

	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	EXPANSION JOINT SEALS	MODULAR EXPANSION JOINT SEALS	$9\frac{5}{8}$" Ø MICROPILES	DEMONSTRATION MICROPILES	MICROPILE VERIFICATION TEST	MICROPILE PROOF TEST
	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	EA.	EA.	EA.	EA.
SUPERSTRUCTURE	2,467.4		LUMP SUM	LUMP SUM	LUMP SUM				
END BENT 1		462							
BENT 1						40			1
BENT 2									
BENT 3						54			1
BENT 4						54			1
BENT 5						48			1
BENT 6									
END BENT 2		670							
TOTAL	2,467.4	1,132	LUMP SUM	LUMP SUM	LUMP SUM	196	1	1	✳8

✳ONE PROOF TEST IS REQUIRED FOR EACH BENT, PLUS 4 ADDITIONAL CONTINGENCY AS NEEDED.

SAMPLE BAR REPLACEMENT

SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30"(SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f_y= 60ksi.

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 "STANDARD NOTES" SHEET (SN).

ALL ELEVATIONS ARE IN FEET.

THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STATION 47+63.62 -Y15FLYBD-, SEE SPECIAL PROVISIONS.

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.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS

SPECIAL SNOWPLOW PROTECTION IS REQUIRED. SEE SPECIAL PROVISION FOR MODULAR EXPANSION JOINT SEALS.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS. BENTS 1, 2, 3, 4, 5, AND 6 INCLUDE MASS CONCRETE.

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

FOR MICROPILES, SEE SPECIAL PROVISIONS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

CLASS AA CONCRETE SHALL BE USED IN CAST-IN-PLACE COLUMNS, INTERIOR BENT CAPS, AND FOOTINGS, AS NOTED ON THE PLANS.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y15FLYBD- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-009
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	D. COLETTI	DATE :	06/19
DES CHK:	S. NIFONG	DATE :	01/20
DWG BY:	B. PETERSON	DATE :	06/19
CHK BY:	S. NIFONG	DATE :	01/20

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ_{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 (γ_{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⟩	1.09	--	1.75	--	1.17	A	4	95.42	--	1.09	B	4	0.00	1.30	--	1.66	A	4	95.42	--
		HL-93 (OPERATING)	N/A		1.41	--	1.35	--	1.52	A	4	95.42	--	1.41	B	4	0.00	1.00	--	2.16	A	4	95.42	--
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.80	64.80	1.75	--	1.83	D	4	86.73	--	1.80	D	4	48.14	1.30	--	2.59	D	4	86.73	--
		HS-20 (OPERATING)	36.000		2.33	84.00	1.35	--	2.37	D	4	86.73	--	2.33	D	4	48.14	1.00	--	3.37	D	4	86.73	--
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		3.12	39.00	1.40	--	3.12	D	4	19.95	--	5.95	D	4	48.14	1.30	--	4.37	D	4	19.95	--
		S3C	21.500		2.05	44.08	1.40	--	2.05	D	4	19.95	--	3.51	D	4	48.14	1.30	--	2.87	D	4	19.95	--
		S3A	22.750		1.96	44.59	1.40	--	1.96	D	4	19.95	--	3.32	D	4	48.14	1.30	--	2.74	D	4	19.95	--
		S4A	26.750		1.72	46.01	1.40	--	1.72	D	4	19.95	--	2.87	D	4	48.14	1.30	--	2.40	D	4	19.95	--
		S5A	30.500		1.53	46.67	1.40	--	1.53	D	4	19.95	--	2.52	D	4	48.14	1.30	--	2.15	D	4	19.95	--
		S6A	34.500		1.38	47.61	1.40	--	1.38	D	4	19.95	--	2.23	D	4	48.14	1.30	--	1.94	D	4	19.95	--
		S7B	38.500		1.26	48.51	1.40	--	1.26	D	4	19.95	--	2.09	B	4	0.00	1.30	--	1.76	D	4	19.95	--
		S7A	40.000	⟨3⟩	1.22	48.80	1.40	--	1.22	D	4	19.95	--	2.10	B	4	0.00	1.30	--	1.71	D	4	19.95	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		1.64	46.33	1.40	--	1.64	D	4	19.95	--	2.77	D	4	48.14	1.30	--	2.30	D	4	19.95	--
		T5B	32.000		1.47	47.04	1.40	--	1.47	D	4	19.95	--	2.58	B	4	0.00	1.30	--	2.07	D	4	19.95	--
		T6A	36.000		1.34	48.24	1.40	--	1.34	D	4	19.95	--	2.26	D	4	48.14	1.30	--	1.87	D	4	19.95	--
		T7A	40.000	⟨3⟩	1.22	48.80	1.40	--	1.22	D	4	19.95	--	2.07	B	4	0.00	1.30	--	1.71	D	4	19.95	--
		T7B	40.000		1.23	49.20	1.40	--	1.23	D	4	19.95	--	2.07	B	4	0.00	1.30	--	1.72	D	4	19.95	--
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75		--																			

LOAD FACTORS:

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

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WAS BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
3. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
4. LARSA 4D VERSION 8.00 r8101 WAS USED FOR INFLUENCE SURFACE ANALYSIS.
5. AS APPLICABLE FOR THIS UNIT, LEGAL LOAD RATING INCLUDES CONSIDERATION OF THE FOLLOWING (PER AASHTO MANUAL FOR BRIDGE EVALUATION, 3RD ED., 2018, 6A.4.4.2.1a):
   - 100% OF ONE LEGAL LOAD VEHICLE WITH NO LANE LOAD
   - 75% OF TWO LEGAL LOAD VEHICLES SEPARATED BY 30 FEET WITH 0.200 KLF LANE LOAD (NEGATIVE MOMENT ONLY)

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

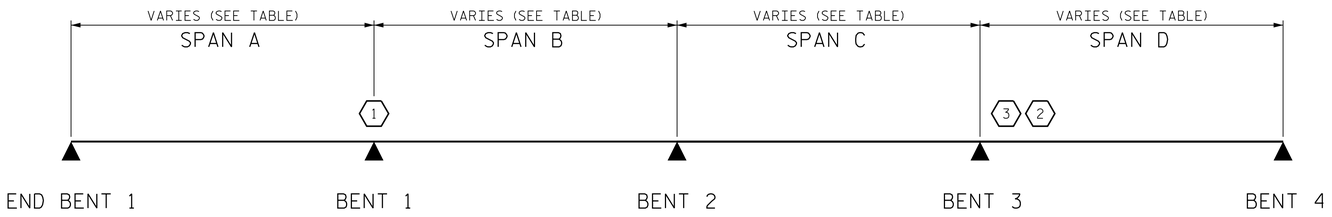
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y15FLYBD-



℄ BRG - ℄ BRG SPAN LENGTHS				
GIRDER	SPAN A	SPAN B	SPAN C	SPAN D
1	161′-9¾″	166′-7⅜″	166′-7⅜″	141′-2⅞″
2	163′-1⅛″	167′-11″	167′-11″	142′-3⅜″
3	164′-4⅝″	169′-2⅝″	169′-2⅝″	143′-5¼″
4	165′-8″	170′-6⅜″	170′-6⅜″	144′-6⅝″

LRFR SUMMARY

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR STEEL GIRDERS
(INTERSTATE TRAFFIC)
(UNIT 1)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-010
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/11/2021

DES BY: S. NIFONG DATE: 10/19
DES CHK: G. SCHMITZ DATE: 10/19

DWG BY: B. PETERSON DATE: 10/19
CHK BY: G. SCHMITZ DATE: 10/19

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STD. NO. LRFR4

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE II LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{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 (γ_{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⟩	1.17	--	1.75	--	1.17	G	4	79.79	--	1.22	E	4	8.03	1.30	--	1.66	G	4	79.79	--
		HL-93 (OPERATING)	N/A		1.52	--	1.35	--	1.52	G	4	79.79	--	1.58	E	4	8.03	1.00	--	2.16	G	4	79.79	--
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.83	65.88	1.75	--	1.96	E	4	68.31	--	1.83	G	3	177.44	1.30	--	2.81	E	4	68.31	--
		HS-20 (OPERATING)	36.000		2.37	85.40	1.35	--	2.54	E	4	68.31	--	2.37	G	3	177.44	1.00	--	3.65	E	4	68.31	--
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		4.16	52.00	1.40	--	4.16	F	4	189.85	--	5.74	G	3	177.44	1.30	--	5.30	E	4	150.80	--
		S3C	21.500		2.92	62.78	1.40	--	2.92	F	4	189.85	--	3.36	G	3	177.44	1.30	--	3.66	E	4	150.80	--
		S3A	22.750		2.80	63.70	1.40	--	2.80	F	4	189.85	--	3.21	G	3	177.44	1.30	--	3.51	E	4	150.80	--
		S4A	26.750		2.52	67.41	1.40	--	2.52	F	4	189.85	--	2.83	G	3	177.44	1.30	--	3.14	E	4	150.80	--
		S5A	30.500		2.31	70.46	1.40	--	2.31	F	4	189.85	--	2.63	G	3	177.44	1.30	--	2.87	E	4	150.80	--
		S6A	34.500		2.13	73.49	1.40	--	2.13	F	4	189.85	--	2.40	G	3	177.44	1.30	--	2.63	E	4	150.80	--
		S7B	38.500		1.98	76.23	1.40	--	1.98	F	4	189.85	--	2.28	G	3	177.44	1.30	--	2.44	E	4	150.80	--
		S7A	40.000	⟨3⟩	1.96	78.40	1.40	--	1.96	F	4	189.85	--	2.27	E	4	8.03	1.30	--	2.41	E	4	150.80	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		2.46	69.50	1.40	--	2.46	F	4	189.85	--	2.80	G	3	177.44	1.30	--	3.06	E	4	150.80	--
		T5B	32.000		2.26	72.32	1.40	--	2.26	F	4	189.85	--	2.72	G	3	177.44	1.30	--	2.80	E	4	150.80	--
		T6A	36.000		2.10	75.60	1.40	--	2.10	F	4	189.85	--	2.48	E	4	8.03	1.30	--	2.59	E	4	150.80	--
		T7A	40.000	⟨3⟩	1.96	78.40	1.40	--	1.96	F	4	189.85	--	2.27	E	4	8.03	1.30	--	2.42	E	4	150.80	--
		T7B	40.000		1.97	78.80	1.40	--	1.97	F	4	189.85	--	2.18	G	3	177.44	1.30	--	2.43	E	4	150.80	--
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75		--																			

LOAD FACTORS:

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

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WAS BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
3. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
4. LARSA 4D VERSION 8.00 r8101 WAS USED FOR INFLUENCE SURFACE ANALYSIS.
5. AS APPLICABLE FOR THIS UNIT, LEGAL LOAD RATING INCLUDES CONSIDERATION OF THE FOLLOWING (PER AASHTO MANUAL FOR BRIDGE EVALUATION, 3RD ED., 2018, 6A.4.4.2.1a):
   - 100% OF ONE LEGAL LOAD VEHICLE WITH NO LANE LOAD
   - 75% OF ONE LEGAL LOAD VEHICLE WITH 0.200 KLF LANE LOAD
   - 75% OF TWO LEGAL LOAD VEHICLES SEPARATED BY 30 FEET WITH 0.200 KLF LANE LOAD (NEGATIVE MOMENT ONLY)

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

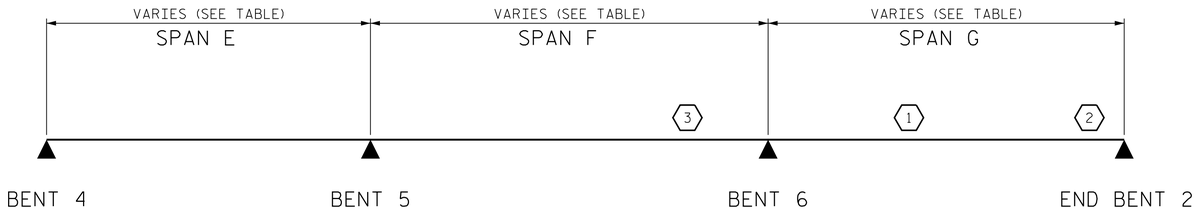
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y15FLYBD-



℄ BRG - ℄ BRG SPAN LENGTHS			
GIRDER	SPAN E	SPAN F	SPAN G
1	166′-10 1/16″	207′-0 7/16″	182′-6 3/16″
2	168′-1 7/8″	208′-7 7/8″	183′-11 9/16″
3	169′-5 5/8″	210′-3 1/4″	185′-4 7/8″
4	170′-9 7/16″	211′-10 5/8″	186′-10 1/4″

LRFR SUMMARY

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR STEEL GIRDERS
(INTERSTATE TRAFFIC)
(UNIT 2)

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

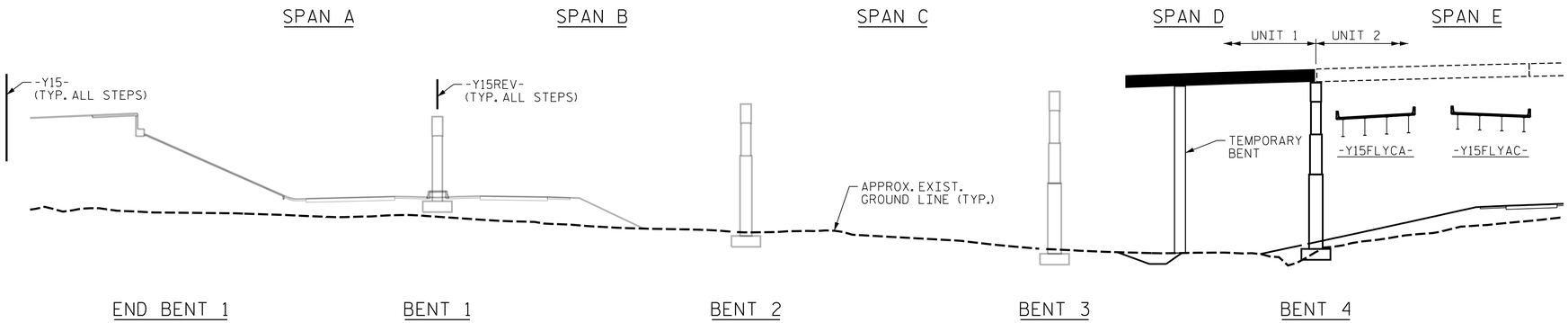
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-011
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

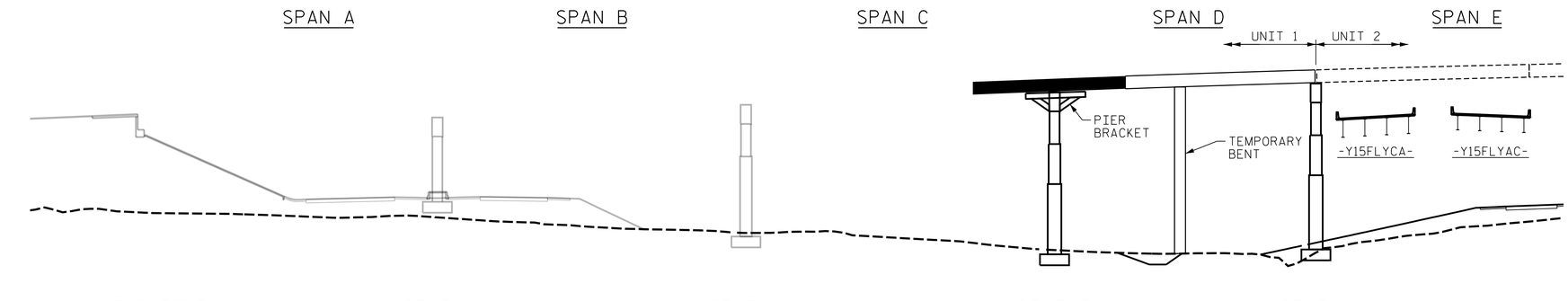
DES BY: A. MILLER DATE: 10/19
DES CHK: M. NEIHEISEL DATE: 10/19

DWG BY: M. SELLS DATE: 10/19
CHK BY: G. SCHMITZ DATE: 10/19

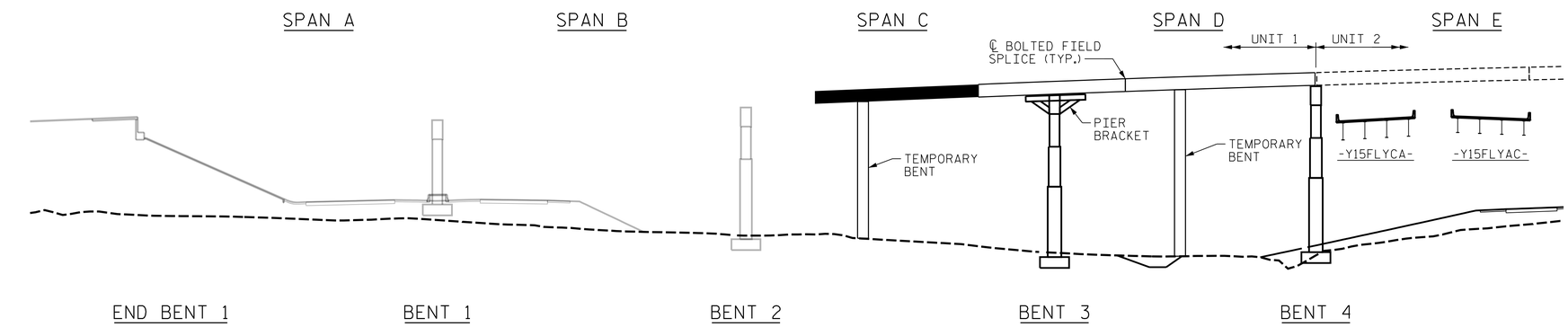
STD. NO. LRFR4



UNIT 1, STEP 1 GIRDER ERECTION



UNIT 1, STEP 2 GIRDER ERECTION



UNIT 1, STEP 3 GIRDER ERECTION

NOTES

UNIT 1 STEPS 1 THROUGH 6 SHALL BE ACCOMPLISHED PRIOR TO SHIFTING ANY TRAFFIC FROM -Y15- TO -Y15REV-. UNIT 1 STEP 7 SHALL BE ACCOMPLISHED AFTER SHIFTING -Y15-EB TRAFFIC TO -Y15REV- AND BEFORE SHIFTING -Y15-WB TRAFFIC TO -Y15REV-. SEE TRANSPORTATION MANAGEMENT PLAN (TMP) FOR MORE DETAILS.

UNIT 2 STEPS 1 THROUGH 5 SHALL BE ACCOMPLISHED PRIOR TO SHIFTING ANY TRAFFIC FROM -Y15- TO -Y15REV-. SEE TRANSPORTATION MANAGEMENT PLAN (TMP) FOR MORE DETAILS.

PROPOSED FILL MAY NOT BE IN PLACE AT TIME OF GIRDER ERECTION.

PROPOSED LATERAL VEE DITCH MAY OR MAY NOT HAVE BEEN CONSTRUCTED AT TIME OF GIRDER ERECTION.

ERECT A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGMS/CROSSFRAMES BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

ERECT EACH SUBSEQUENT GIRDER WITH DIAPHRAGMS/CROSSFRAMES CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING.

THE STRUCTURAL STEEL SHALL REMAIN SUPPORTED DURING ERECTION IN ITS NO-LOAD POSITION. TEMPORARY SUPPORTS (TEMPORARY BENTS OR PIER BRACKETS) AS SHOWN SHALL BE USED.

TEMPORARY BENTS AND PIER BRACKETS SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS/CROSSFRAMES ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

TEMPORARY BENTS AND PIER BRACKETS SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS MUST BE ATTACHED.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL TRANSFER THE STRUCTURAL WEIGHT TO THE PERMANENT STRUCTURAL STEEL FRAMING SYSTEM SUCH THAT THE GIRDERS WILL DEFLECT GRADUALLY AND UNIFORMLY TO THEIR INTENDED STEEL DEAD LOAD POSITION, WITHOUT EXPERIENCING UPLIFT OR OTHER ADVERSE INTERIM CONDITIONS.

PLANS FOR TEMPORARY BENT AND PIER BRACKET ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY BENTS AND PIER BRACKETS. THE DESIGN SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS FOR APPROVAL BY THE ENGINEER.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY SUPPORTS, BLOCKING, LATERAL BRACING, AND/OR OTHER MEANS OF SUPPORT, AS REQUIRED, TO MAINTAIN STABILITY, PREVENT UPLIFT OF THE GIRDERS AT TEMPORARY BENTS, PERMANENT BENTS, AND END BENTS, AND TO MAINTAIN PLUMBNESS OF THE GIRDERS IN THEIR SHORED (APPROXIMATELY NO-LOAD) CONDITION.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY SUPPORTS, TEMPORARY LATERAL BRACING OR OTHER MEANS OF SUPPORT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, DESIGN, LABOR AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY SUPPORTS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

THE CONTRACTOR IS ADVISED THAT THE EXISTING GROUND UNDER THE PROPOSED BRIDGE MAY HAVE STEEP SLOPES, STREAMS, AND/OR HEAVY VEGETATION.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

FOR TEMPORARY BENTS (AND PIER BRACKETS, WHICH ARE CONSIDERED A SUBSET OF TEMPORARY BENTS), SEE SPECIAL PROVISIONS.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS UNIT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-012
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	D. COLETTI	DATE :	07/19
DES CHK:	D. OLDS	DATE :	11/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	D. OLDS	DATE :	11/19

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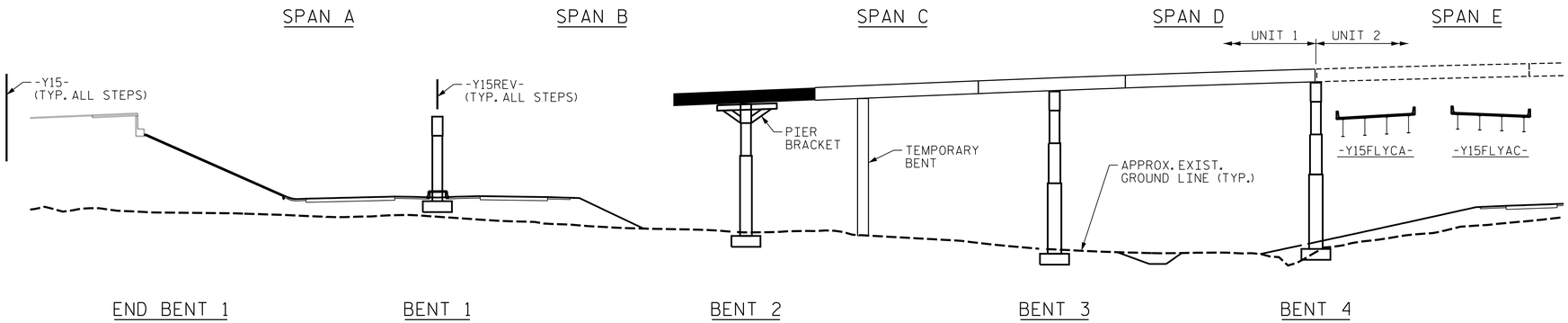
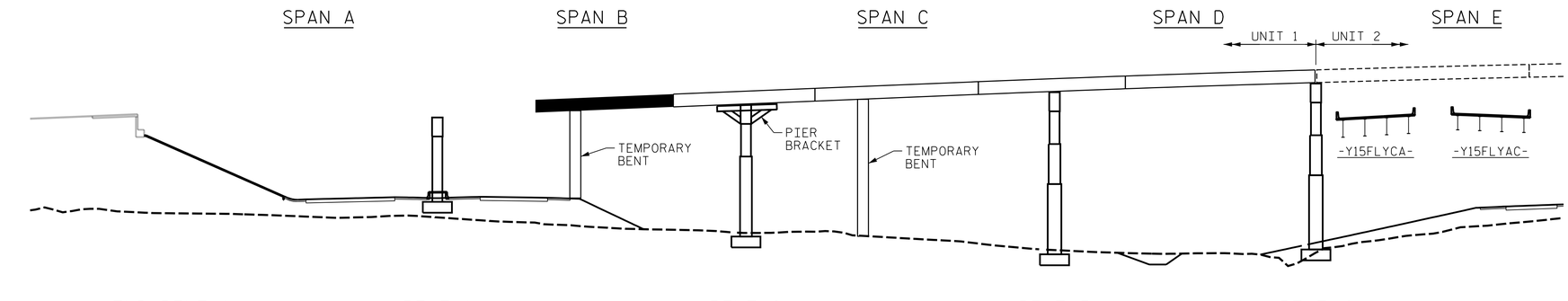
NOTES

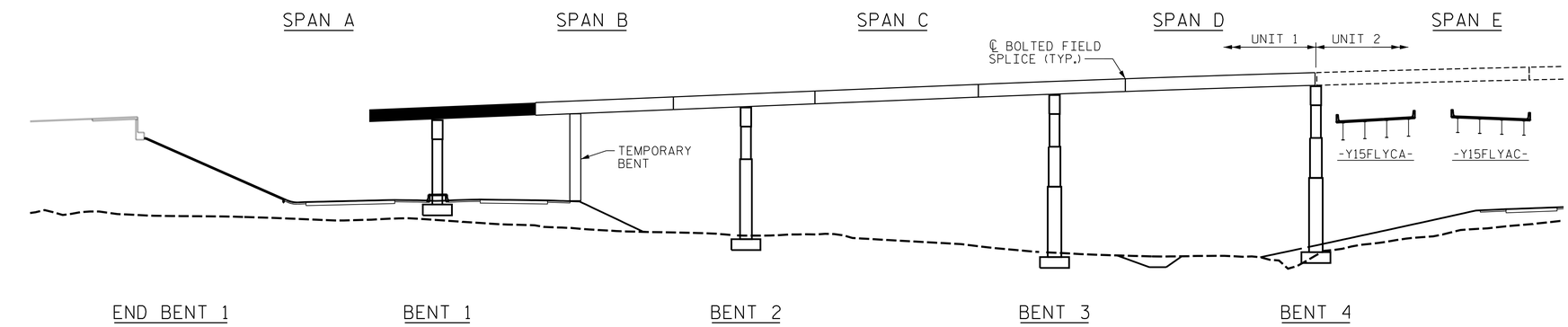
FOR NOTES, SEE "GIRDER ERECTION DETAILS UNIT 1", SHEET 1 OF 3.



UNIT 1, STEP 4 GIRDER ERECTION



UNIT 1, STEP 5 GIRDER ERECTION



UNIT 1, STEP 6 GIRDER ERECTION

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS UNIT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-013
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	D. COLETTI	DATE :	07/19
DES CHK:	D. OLDS	DATE :	11/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	D. OLDS	DATE :	11/19

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USER: PPETERSO DATE: 10/1/2021
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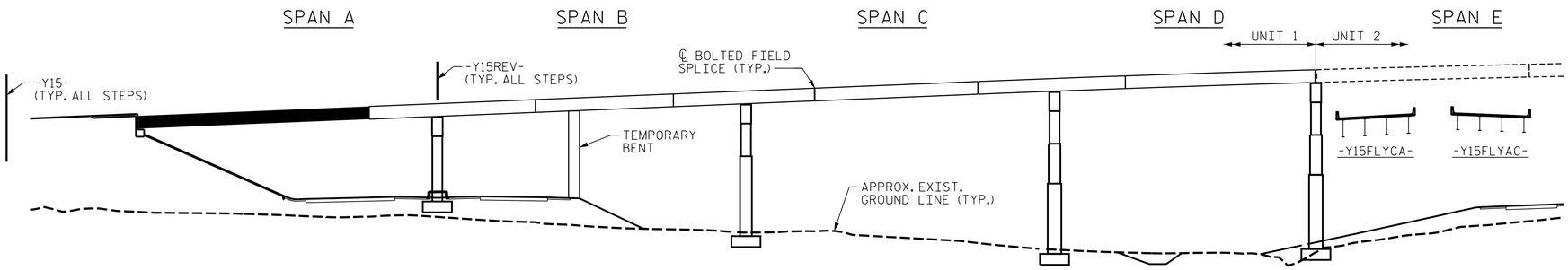

UNIT 1, STEP 7 GIRDER ERECTION

NOTES

FOR NOTES, SEE "GIRDER ERECTION DETAILS UNIT 1", SHEET 1 OF 3.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS UNIT 1

REVISIONS						SHEET NO. S05-014
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 116
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DES BY:	D. COLETTI	DATE :	07/19
DES CHK:	D. OLDS	DATE :	11/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	D. OLDS	DATE :	11/19

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USER: PPETERSO DATE: 10/1/2021 TIME: 8:20:01 AM
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SPAN D | SPAN E | SPAN F | SPAN G

UNIT 1 | UNIT 2

-L-
(TYP. ALL STEPS)

-Y15FLYCA- -Y15FLYAC-

APPROX. EXIST.
GROUND LINE (TYP.)

TEMPORARY
BENT

-Y15RPDREV-
(TYP. ALL STEPS)

BENT 4 BENT 5 BENT 6 END BENT 2

UNIT 2, STEP 1 GIRDER ERECTION

SPAN D | SPAN E | SPAN F | SPAN G

UNIT 1 | UNIT 2

-Y15FLYCA- -Y15FLYAC-

PIER
BRACKET

TEMPORARY
BENT

BENT 4 BENT 5 BENT 6 END BENT 2

UNIT 2, STEP 2 GIRDER ERECTION

SPAN D | SPAN E | SPAN F | SPAN G

UNIT 1 | UNIT 2

℄ BOLTED FIELD
SPLICE (TYP.)

-Y15FLYCA- -Y15FLYAC-

TEMPORARY
BENT

PIER
BRACKET

TEMPORARY
BENT

BENT 4 BENT 5 BENT 6 END BENT 2

UNIT 2, STEP 3 GIRDER ERECTION

NOTES

FOR NOTES, SEE "GIRDER ERECTION DETAILS UNIT 1", SHEET 1 OF 3.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS UNIT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-015
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

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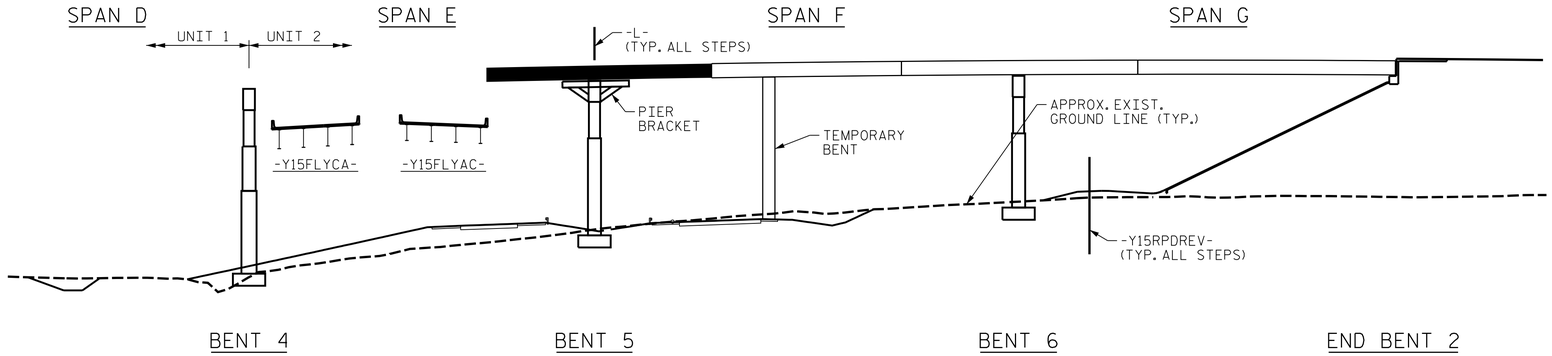
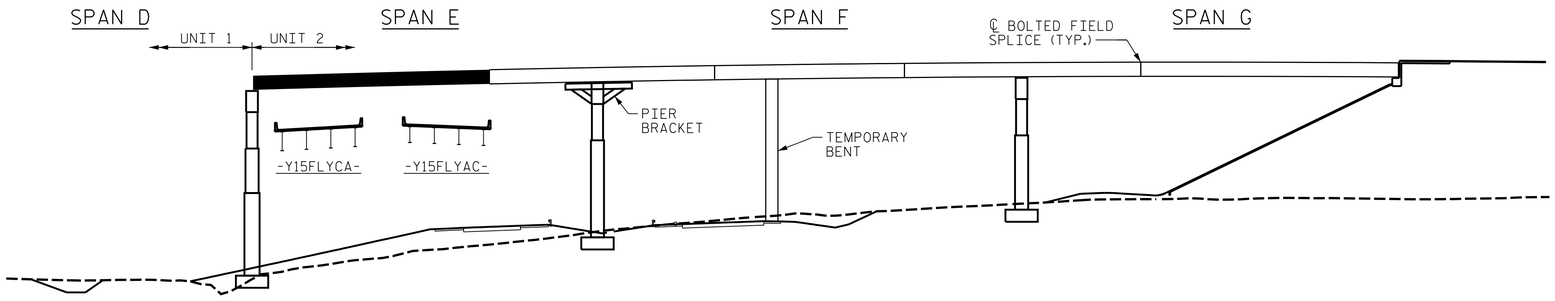


UNIT 2, STEP 4 GIRDER ERECTION



UNIT 2, STEP 5 GIRDER ERECTION

NOTES

FOR NOTES, SEE "GIRDER ERECTION DETAILS UNIT 1", SHEET 1 OF 3.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS UNIT 2

REVISIONS						SHEET NO.
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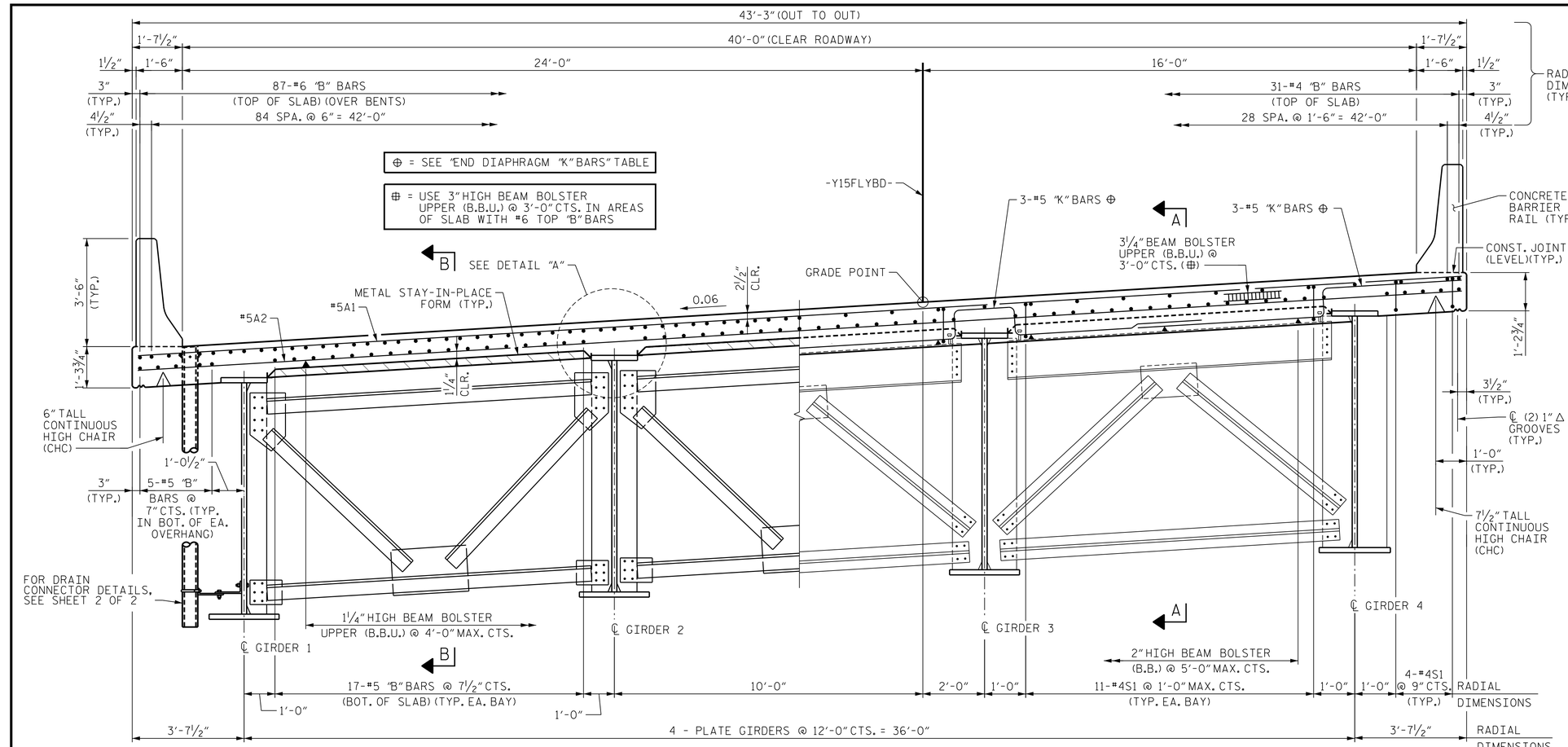


NOTES

PROVIDE 1¼" HIGH BEAM BOLSTER UPPER (BBU) AT 4'-0" MAX. CENTERS 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" MAX. CENTERS WITH HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

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

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

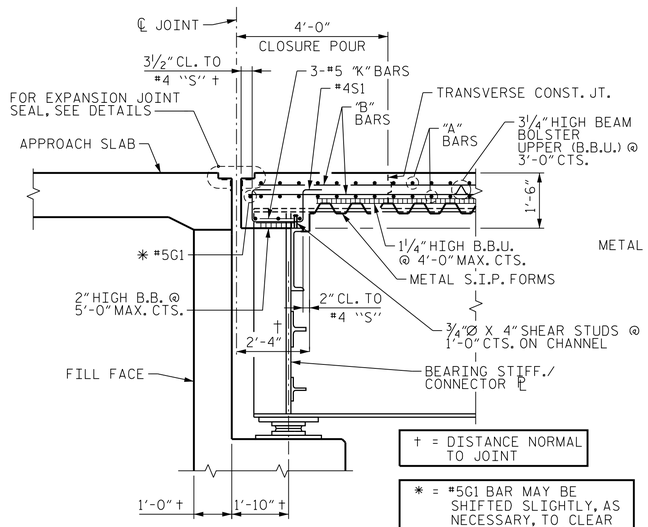
STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

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

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

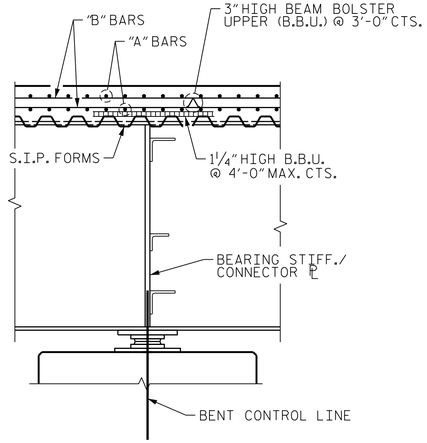
SECTION AT INTERMEDIATE & BENT DIAPHRAGM

(TYP. @ BENTS 1 THRU 3 & 5 THRU 6)



SECTION A-A

(TYP. @ END BENT 1 AND END BENT 2)



SECTION B-B

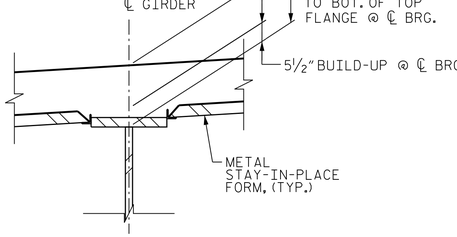
(TYP. @ BENTS 1 THRU 3 & 5 THRU 6)

TYPICAL SECTION

SECTION AT END BENT DIAPHRAGM

(TYP. @ END BENT 1 & END BENT 2)

END DIAPHRAGM "K" BARS			
BENT	UNIT	GIRDER LOCATION	
		INTERIOR	EXTERIOR
END BENT 1	1	#5K2	#5K1
END BENT 2	2	#5K4	#5K3



DETAIL "A"

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-017
1	--	--	3	--	--	TOTAL SHEETS
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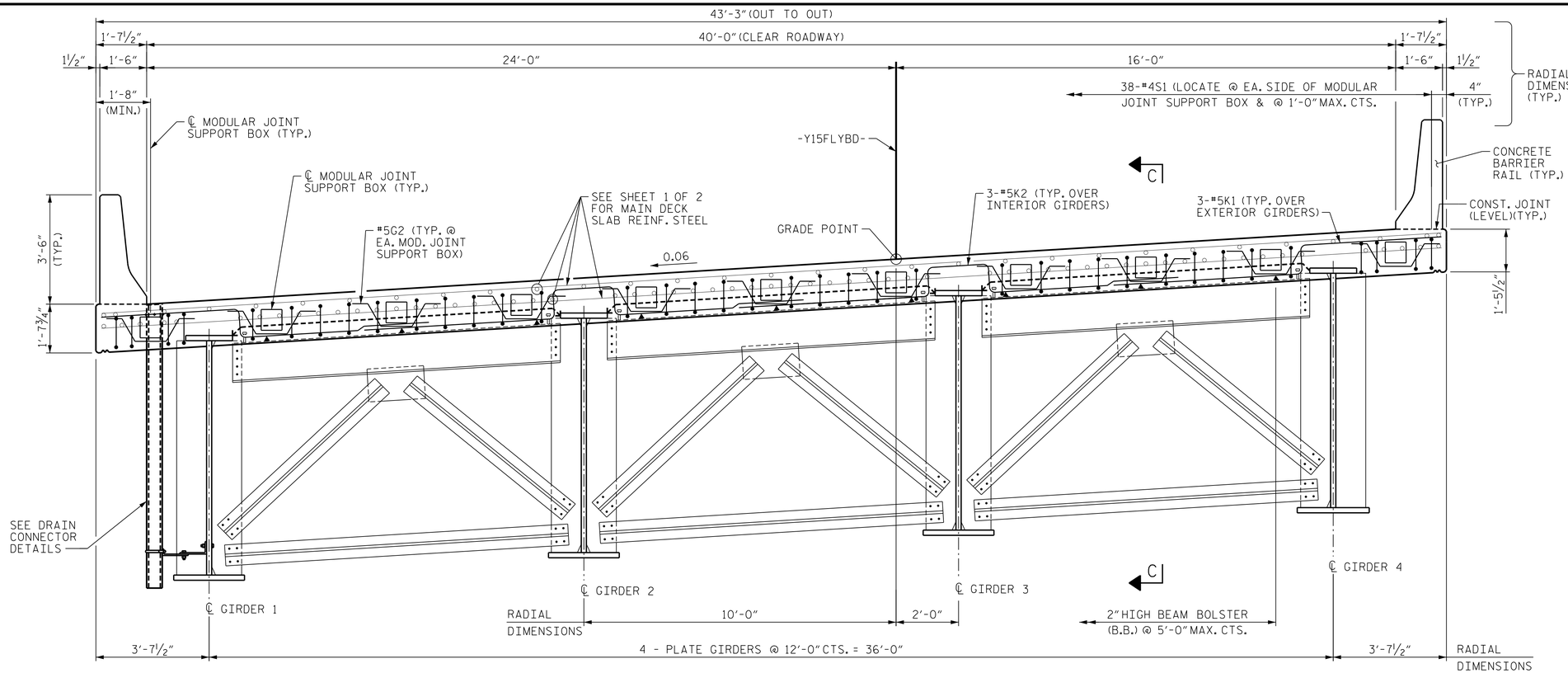
CHK BY:	S. NIFONG	DATE:	08/19



TYPICAL SECTION AT BENT DIAPHRAGM

(SHOWING MODULAR JOINT DETAILS @ BENT 4)

NOTES

SEE SHEET 1 OF 2 FOR ADDITIONAL NOTES NOT SHOWN HERE.

SET TOP OF MODULAR EXPANSION JOINT SEAL DEVICE A MINIMUM OF ⅛" AND A MAXIMUM OF ¼" BELOW THE TOP SLAB.

THE "B" BARS IN THE DECK SLAB MAY BE CUT AS DIRECTED BY THE ENGINEER TO CLEAR THE MODULAR JOINT SUPPORT BOXES.

FOR MODULAR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

SPECIAL SNOWPLOW PROTECTION IS REQUIRED. SEE SPECIAL PROVISION FOR MODULAR EXPANSION JOINT SEALS.

DECK DRAIN NOTES

PVC DECK DRAINS SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-09 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS THICK. DECK DRAINS SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC DECK DRAINS AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REINFORCED CONCRETE DECK SLAB.

TOP OF FLOOR DRAIN TO BE SET ⅜" BELOW SURFACE OF SLAB.

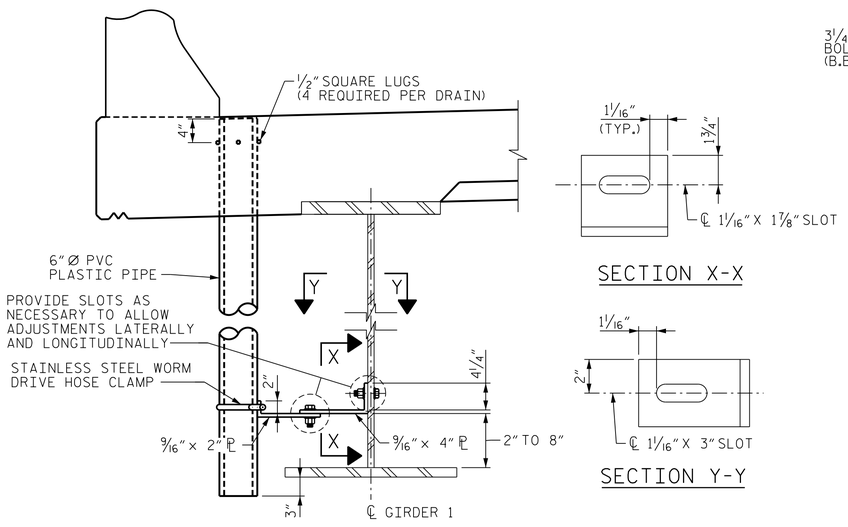
4 - ½" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

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

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

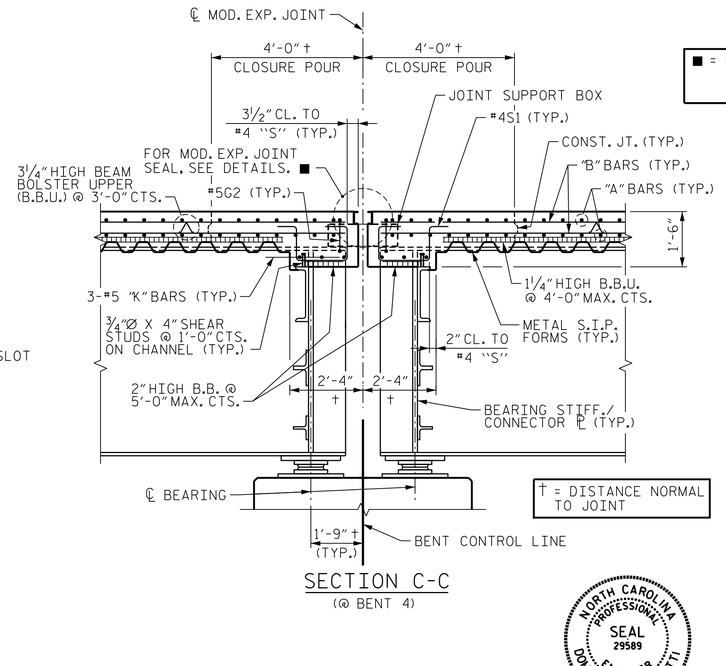
THE 6" DIA. PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

PLATES SHALL CONFORM TO AASHTO M270 GRADE 50W STEEL OR APPROVED EQUAL.



DRAIN CONNECTOR DETAILS

(29 REQ'D)



SECTION C-C

(@ BENT 4)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-018
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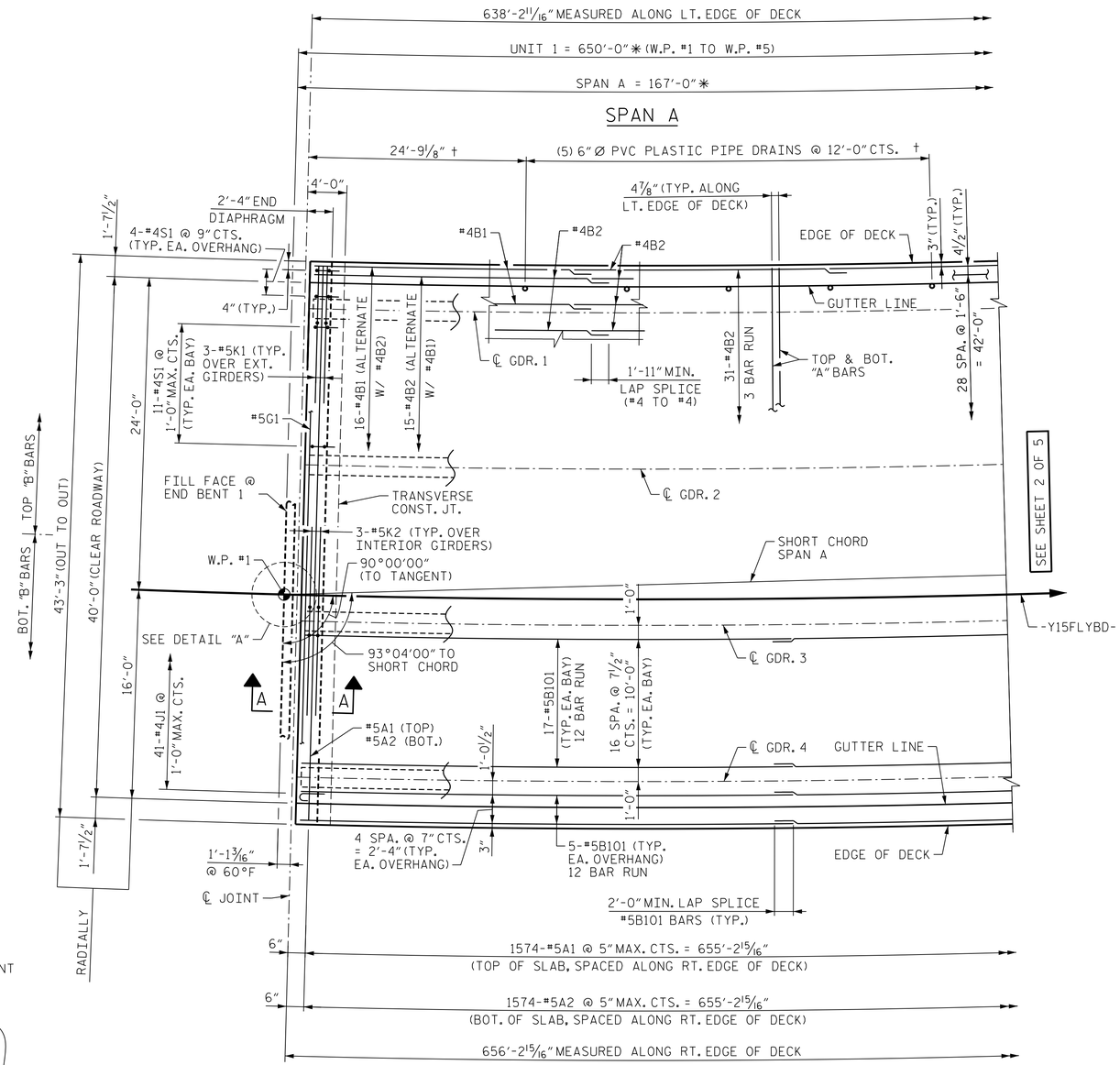
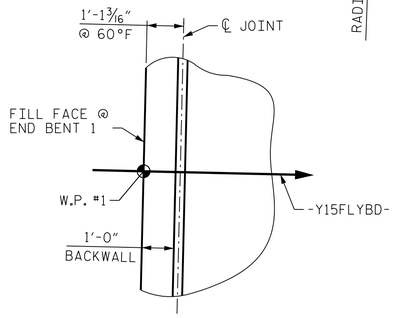


PARTIAL PLAN OF SPANS - UNIT 1

* = DIMENSIONS MEASURED ALONG -Y15FLYBD-
† = DIMENSIONS MEASURED ALONG LEFT EDGE OF DECK



DETAIL "A"

NOTES

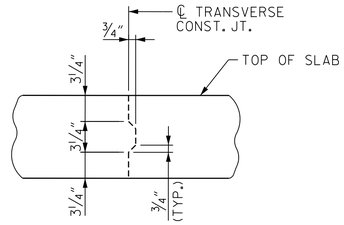
FOR SECTION A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 1 OF 2.

SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 1 OF 2 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.

FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "SUPERSTRUCTURE CONCRETE BARRIER RAIL" SHEETS.

#5 "A" BARS ARE TO BE PLACED RADIALLY SPACED AT 5" MAX. CTS. ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.

FOR DECK POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-019
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

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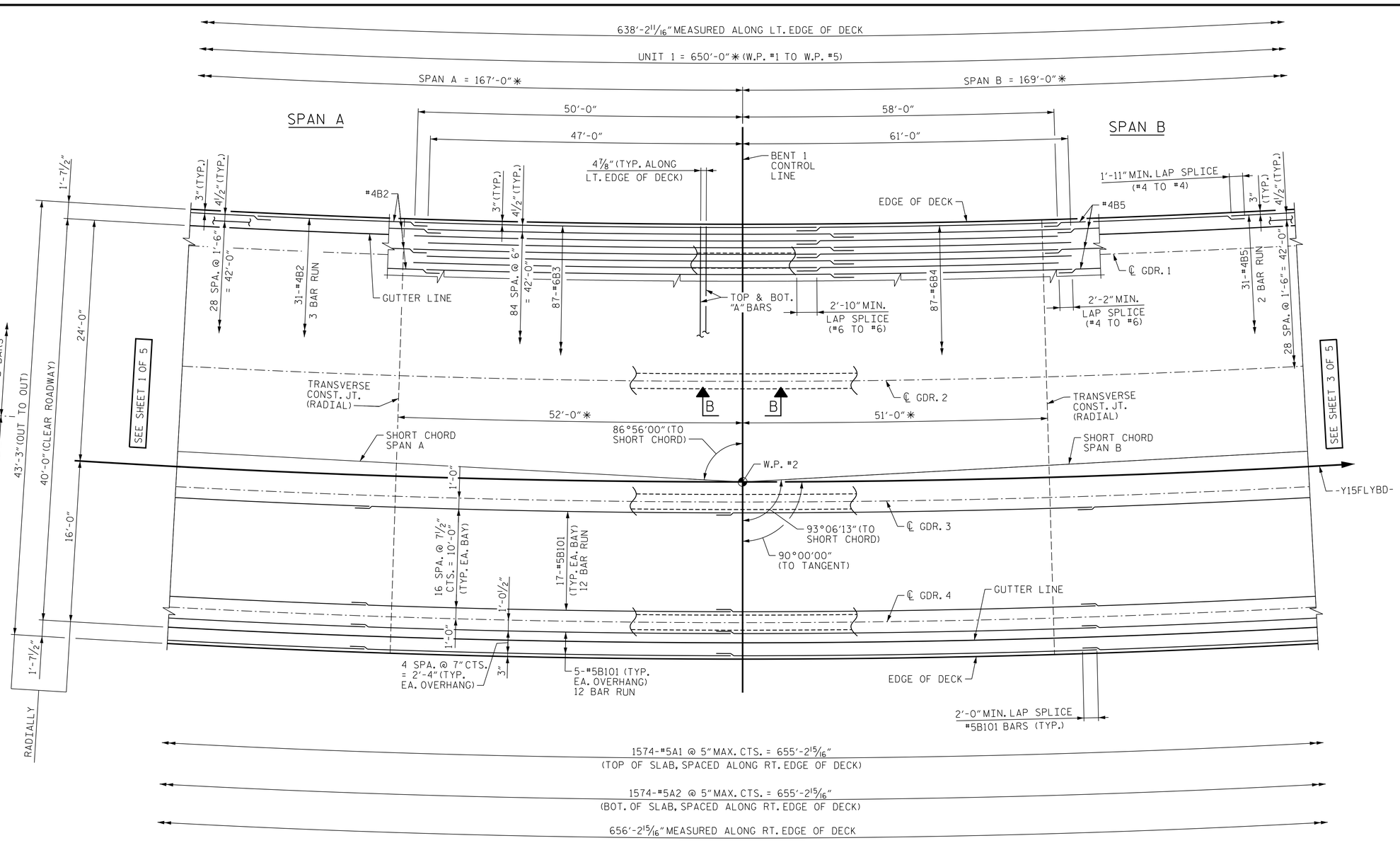

NOTES

FOR SECTION B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 1 OF 2.

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FOR TRANSVERSE CONST. JT. DETAIL, SEE SHEET 1 OF 5.

PARTIAL PLAN OF SPANS - UNIT 1

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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 1

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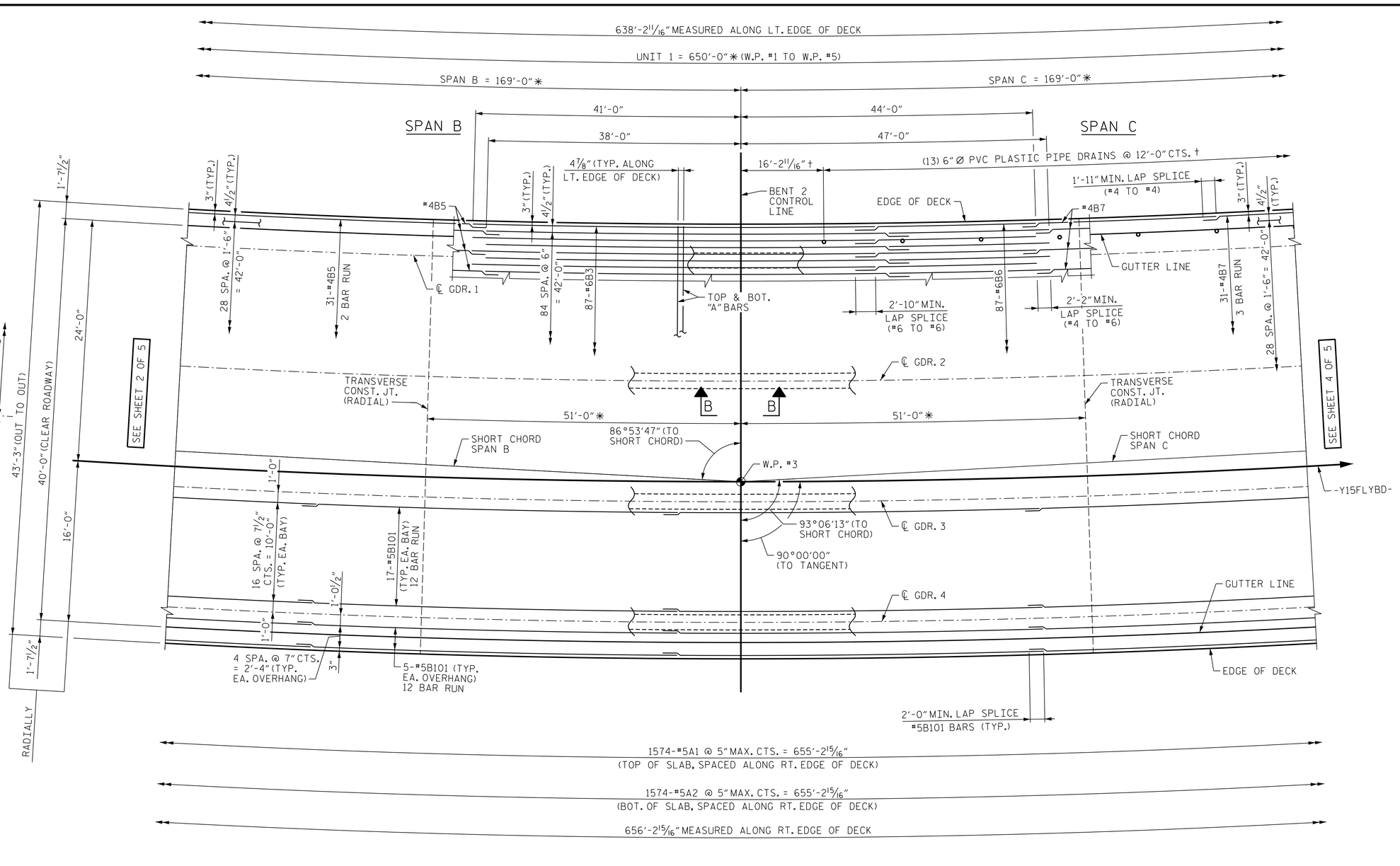

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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 1

REVISIONS						SHEET NO.
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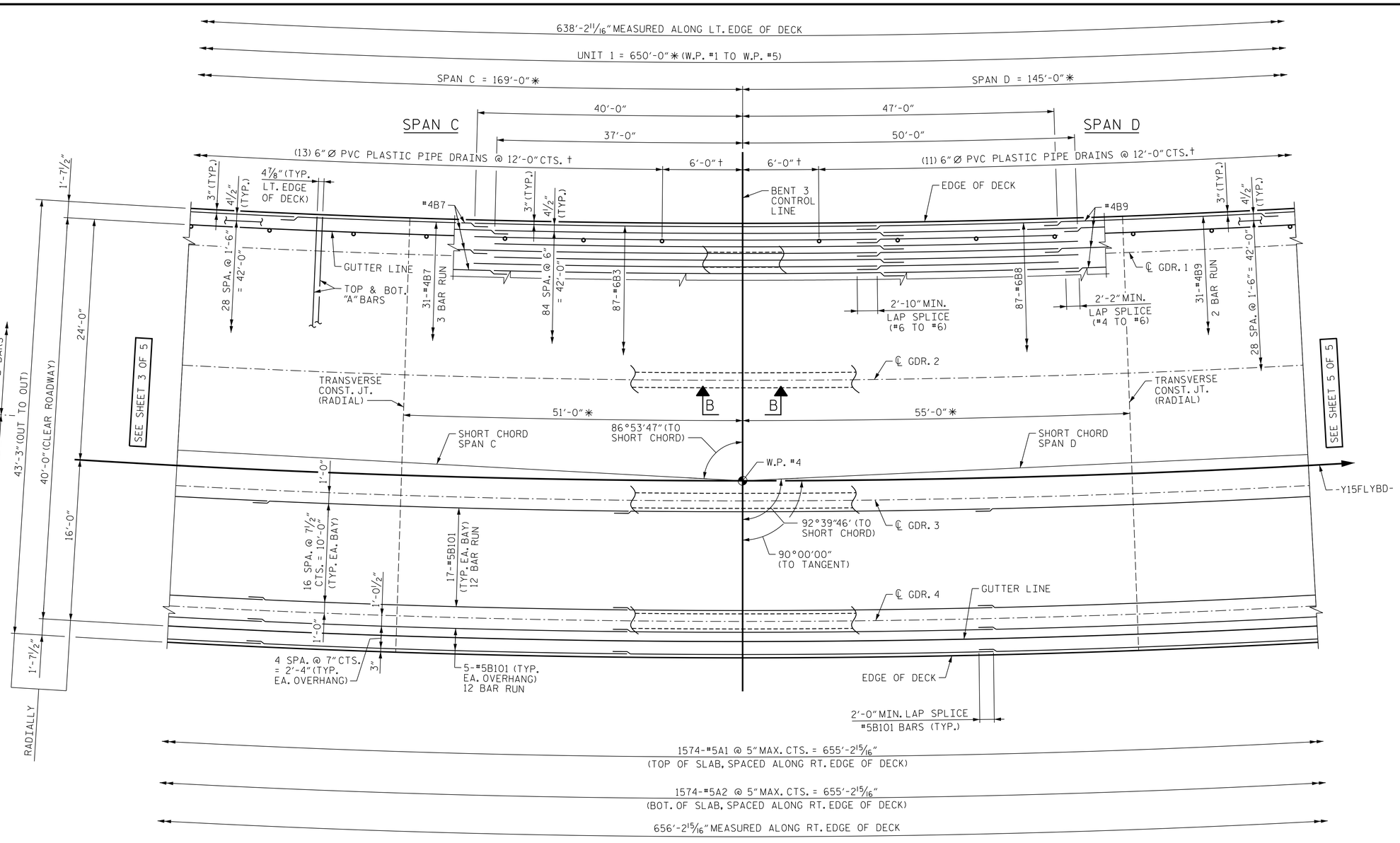

NOTES

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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 1

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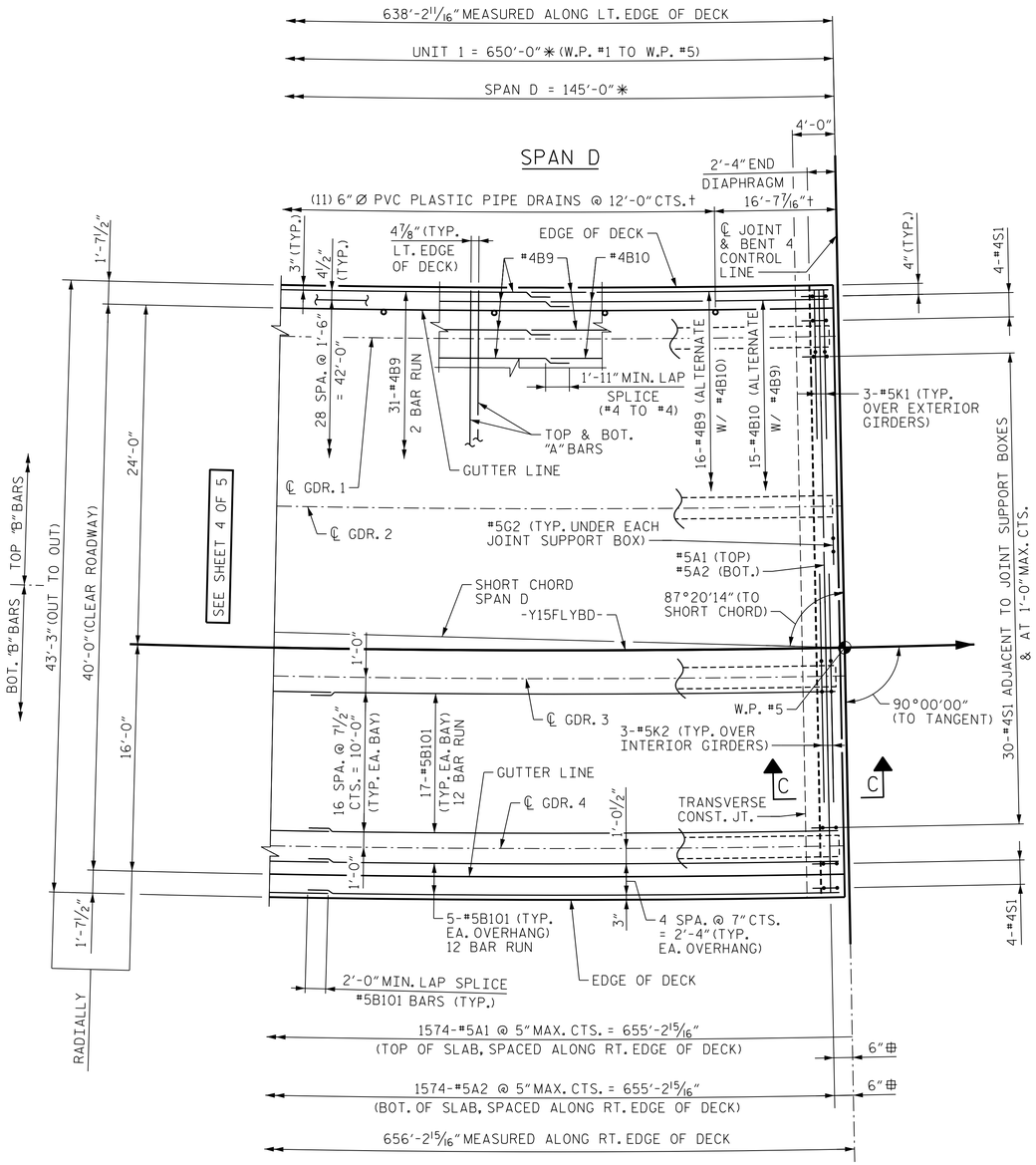

PARTIAL PLAN OF SPANS - UNIT 1

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⊕ = ADJUST AS REQUIRED TO CLEAR MODULAR EXPANSION JOINT ASSEMBLY
† = DIMENSIONS MEASURED ALONG LEFT EDGE OF DECK

NOTES

FOR SECTION C-C, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 2 OF 2.

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FOR DECK POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIALS" SHEET.

FOR TRANSVERSE CONST. JT. DETAIL, SEE SHEET 1 OF 5.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-023
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/11/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	S. NIFONG	DATE :	07/19
DES CHK:	G. SCHMITZ	DATE :	07/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	S. NIFONG	DATE :	10/19

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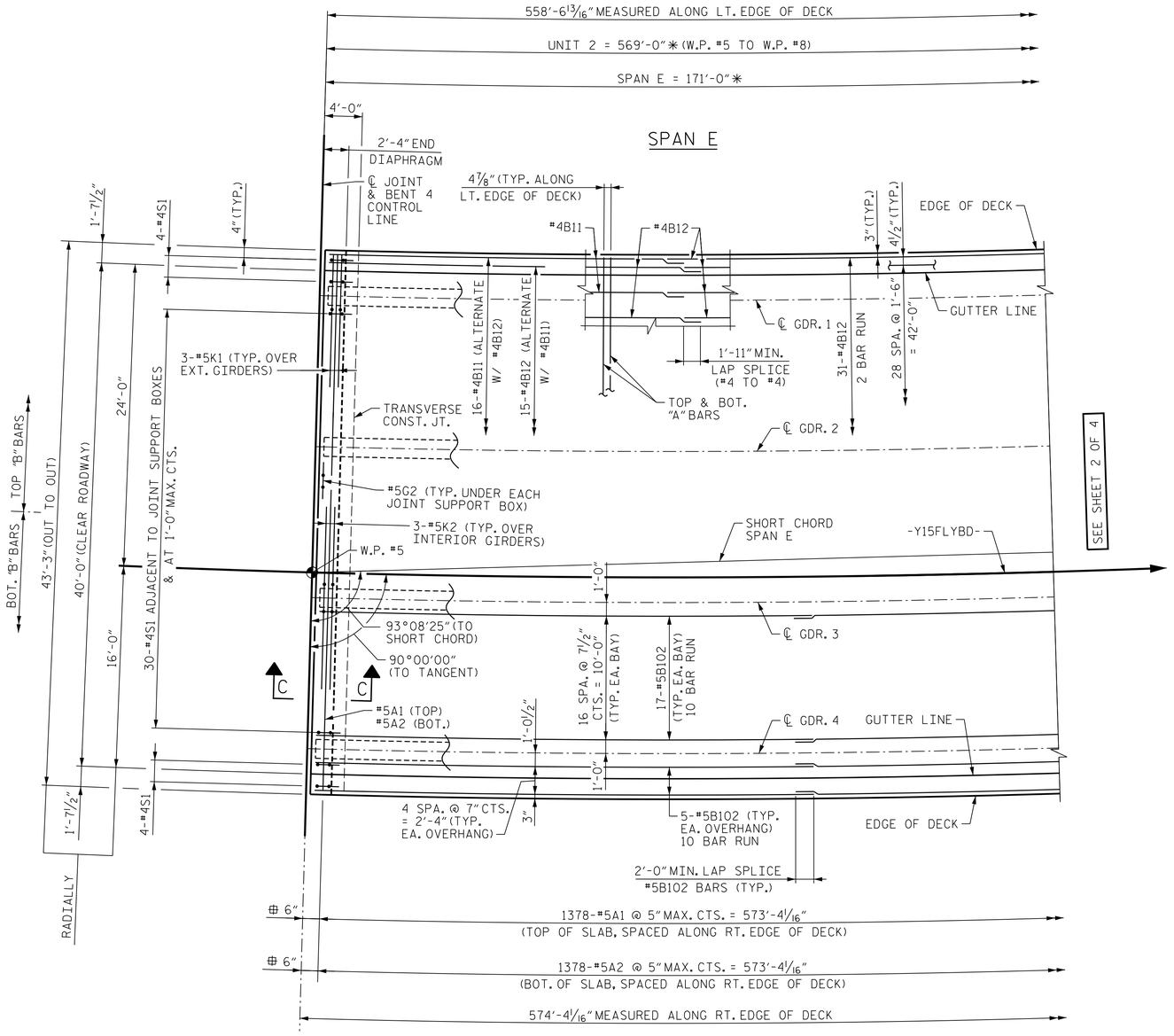

PARTIAL PLAN OF SPANS - UNIT 2

* = DIMENSIONS MEASURED ALONG -Y15FLYBD-

= ADJUST AS REQUIRED TO CLEAR MODULAR EXPANSION JOINT ASSEMBLY

NOTES

FOR SECTION C-C, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 2 OF 2.

SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 2 OF 2 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.

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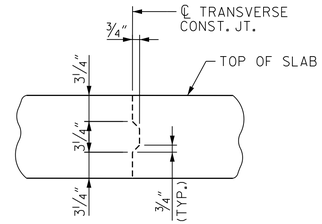

TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-024
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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DES BY:	A. MILLER	DATE :	09/19
DES CHK:	M. NEIHEISEL	DATE :	09/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	M. NEIHEISEL	DATE :	11/19

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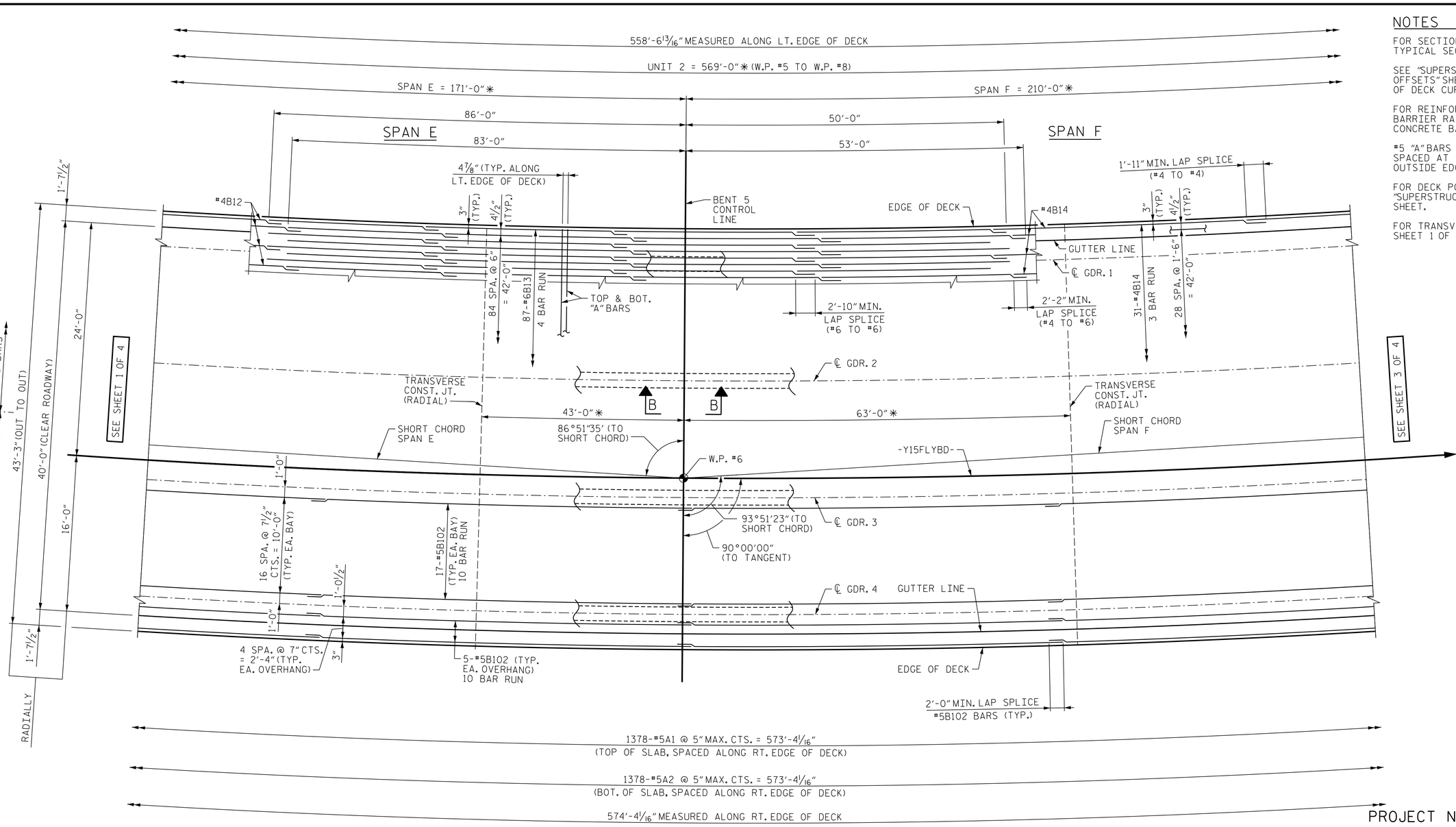

NOTES

FOR SECTION B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 1 OF 2.

SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 2 OF 2 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.

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FOR TRANSVERSE CONST. JT. DETAIL, SEE SHEET 1 OF 4.

PARTIAL PLAN OF SPANS - UNIT 2

* = DIMENSIONS MEASURED ALONG -Y15FLYBD-

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-025
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

DES BY: A. MILLER	DATE: 09/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: M. NEIHEISEL	DATE: 09/19	CHK BY: M. NEIHEISEL	DATE: 11/19

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NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

10/11/2021

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NOTES

FOR SECTION B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 1 OF 2.

SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 2 OF 2 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.

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FOR TRANSVERSE CONST. JT. DETAIL, SEE SHEET 1 OF 4.

PARTIAL PLAN OF SPANS - UNIT 2

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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-026
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

DES BY:	A. MILLER	DATE :	09/19
DES CHK:	M. NEIHEISEL	DATE :	09/19
DWG BY:	B. PETERSON	DATE :	07/19
CHK BY:	M. NEIHEISEL	DATE :	11/19

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI
10/11/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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NOTES

FOR SECTION A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET 1 OF 2.

SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 2 OF 2 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.

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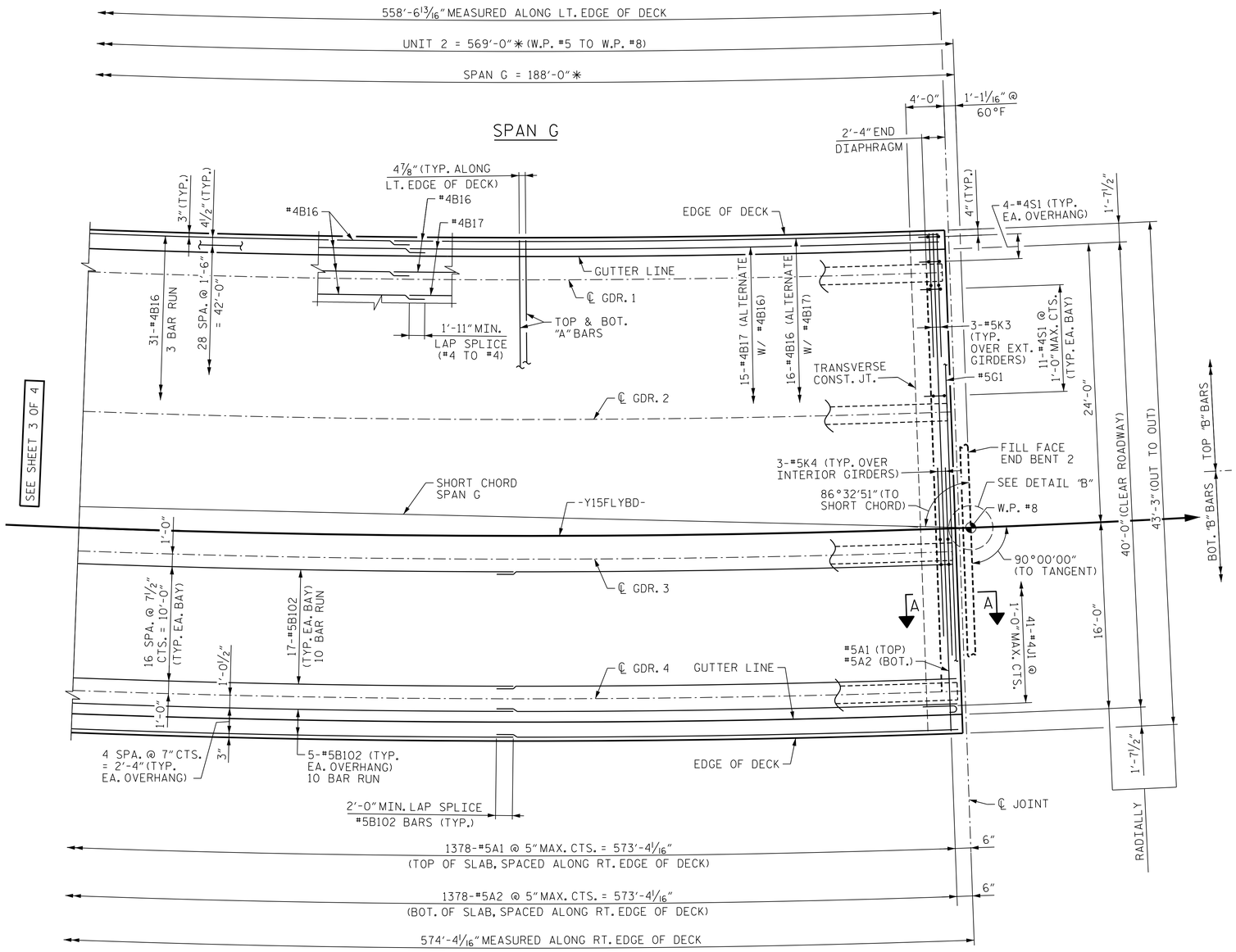
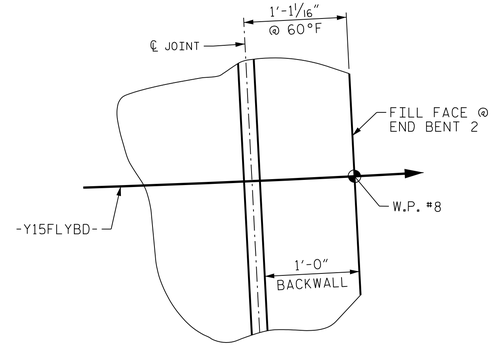
FOR TRANSVERSE CONST. JT. DETAIL, SEE SHEET 1 OF 4.



PARTIAL PLAN OF SPANS - UNIT 2

* = DIMENSIONS MEASURED ALONG -Y15FLYBD-



DETAIL "B"

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS UNIT 2

REVISIONS						SHEET NO. S05-027
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 116
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2	--	--	4	--	--	

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DES CHK:	M. NEIHEISEL	DATE :	09/19
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CHK BY:	M. NEIHEISEL	DATE :	11/19

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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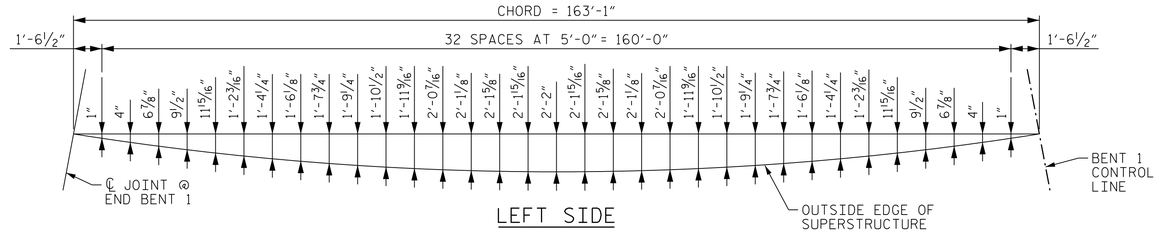
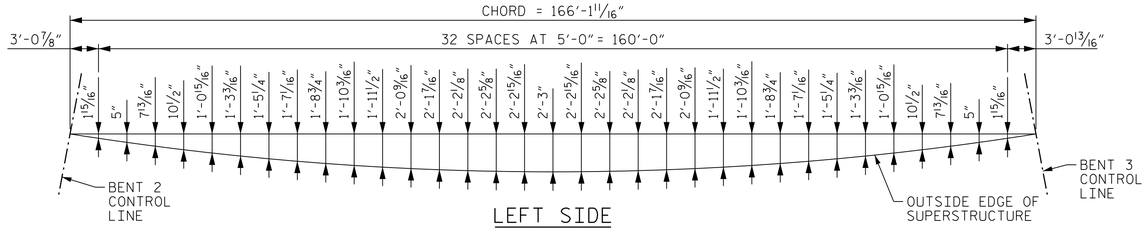
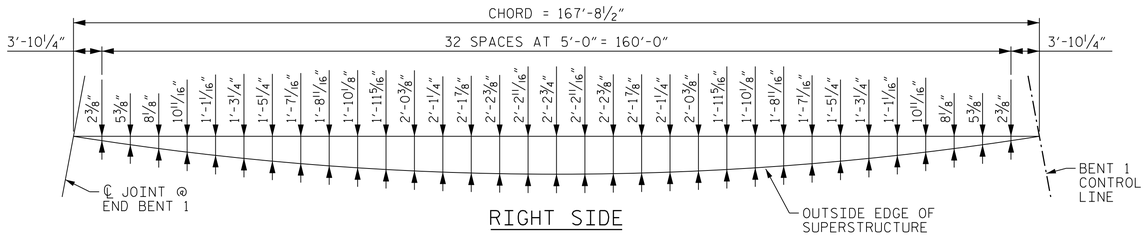
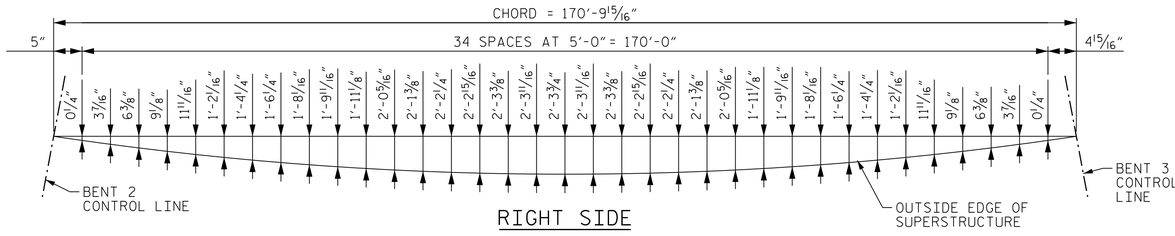


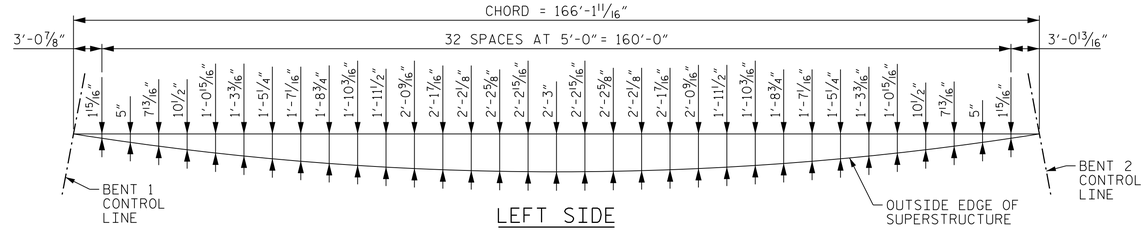


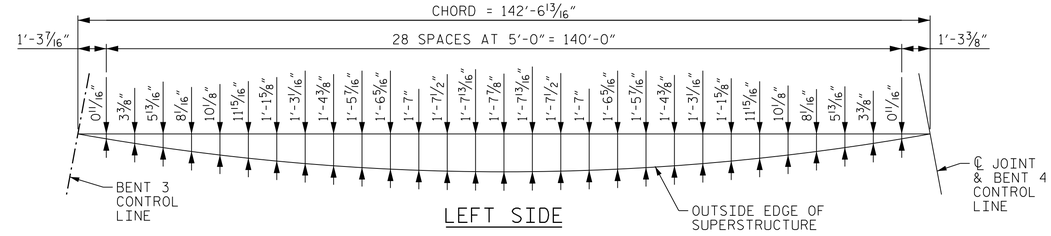


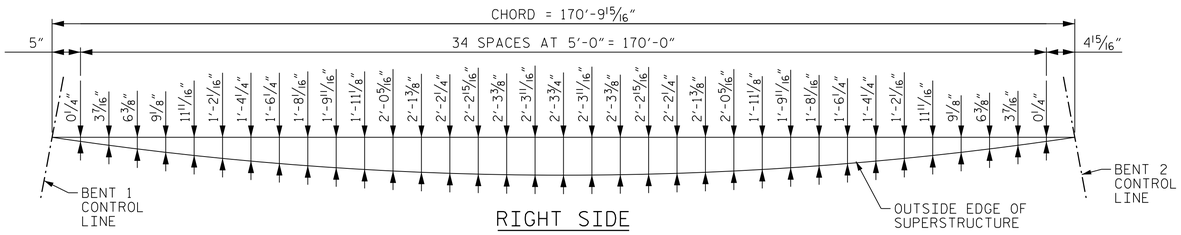
OUTSIDE EDGE ARC OFFSETS - SPAN A



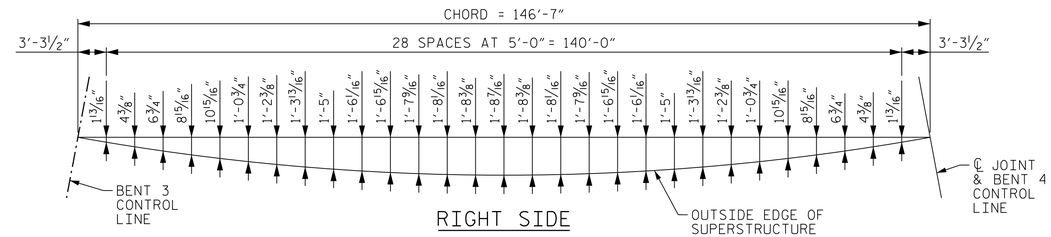
OUTSIDE EDGE ARC OFFSETS - SPAN C







OUTSIDE EDGE ARC OFFSETS - SPAN B



OUTSIDE EDGE ARC OFFSETS - SPAN D

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-028
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	115

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti 10/11/2021

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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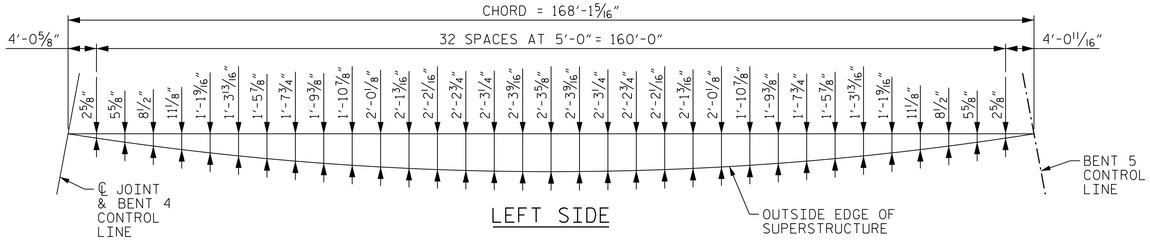
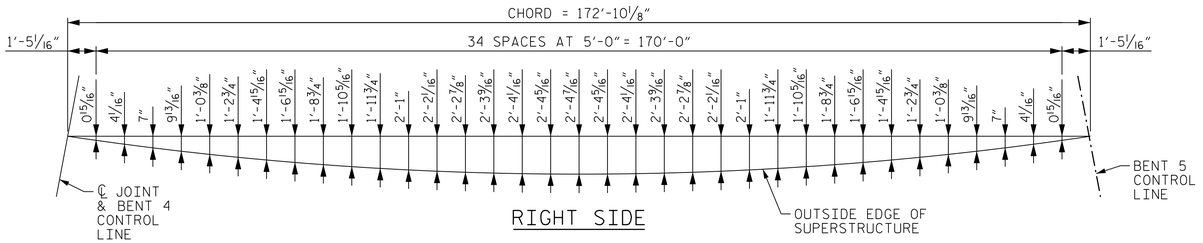
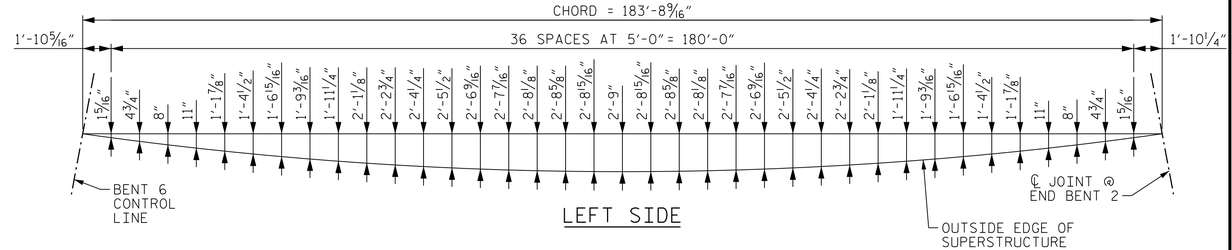


LEFT SIDE

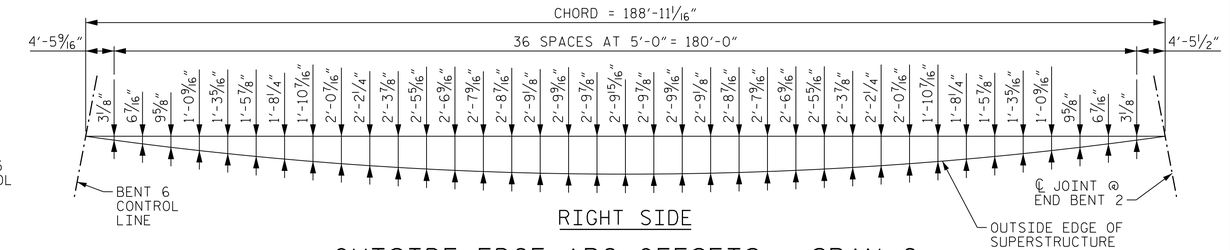


RIGHT SIDE

OUTSIDE EDGE ARC OFFSETS - SPAN E

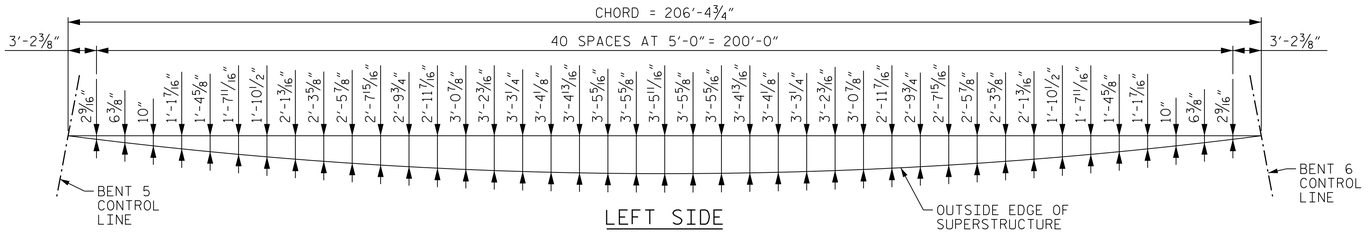


LEFT SIDE



RIGHT SIDE

OUTSIDE EDGE ARC OFFSETS - SPAN G



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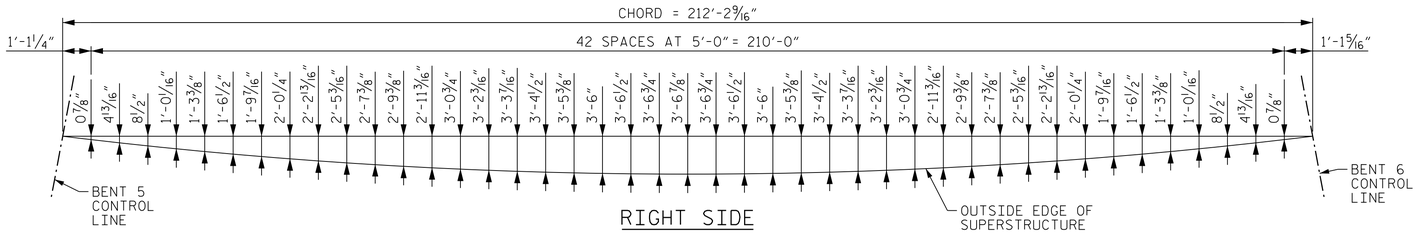

RIGHT SIDE

OUTSIDE EDGE ARC OFFSETS - SPAN F

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-029
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	116

NORTH CAROLINA PROFESSIONAL SEAL 29589 ENGINEER DOMENIC A. COLETTI

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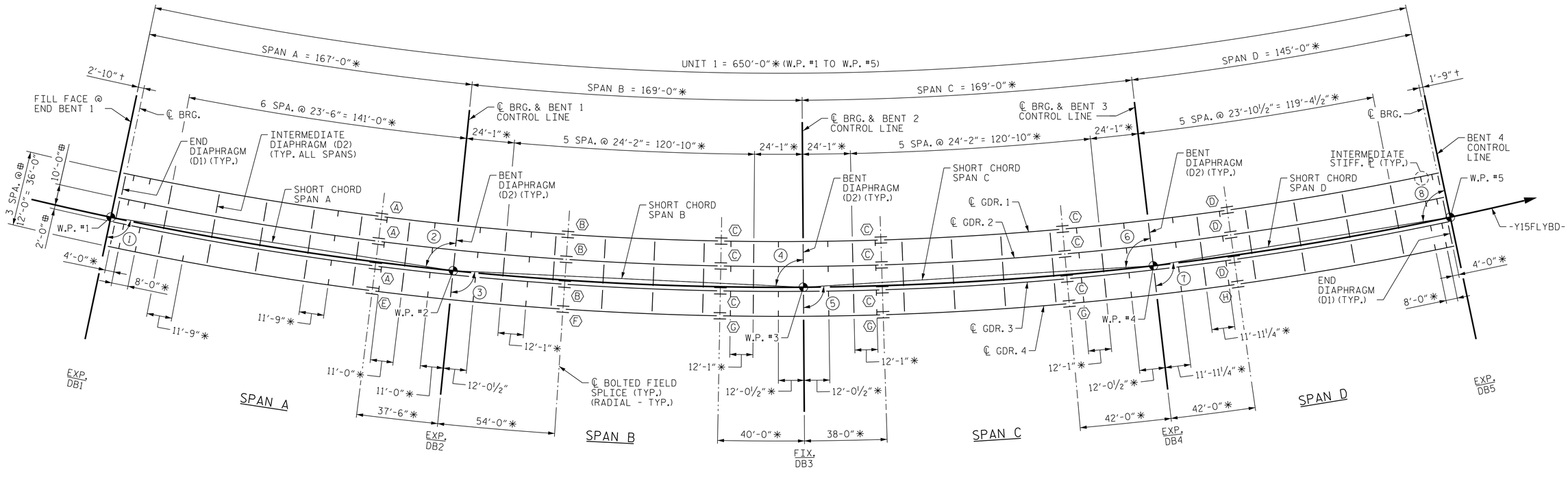

*	= ARC LENGTH ALONG -Y15FLYBD-
⊕	= RADIAL DIMENSION
†	= MEASURED PERPENDICULAR TO BENT CONTROL LINE OR END BENT FILL FACE
⟨X⟩	= FIELD SPLICE TYPE

ANGLES TO SHORT CHORD

①	93°04'00"
②	86°56'00"
③	93°06'13"
④	86°53'47"
⑤	93°06'13"
⑥	86°53'47"
⑦	92°39'46"
⑧	87°20'14"

FRAMING PLAN - UNIT 1

STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED IN THE PLANS.

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

ALL FIELD CONNECTIONS TO BE 7/8" Ø DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

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

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELD AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELDS.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ENDS OF GIRDERS SHALL BE PLUMB IN THE FINAL CONDITION.

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

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR NO-LOAD FIT UP.

FOR FIELD SPLICE TYPES, SEE "SUPERSTRUCTURE BOLTED FIELD SPLICE DETAILS" SHEETS.

FOR DIAPHRAGM TYPES, SEE "SUPERSTRUCTURE STRUCTURAL STEEL DETAILS" SHEETS.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+63.62 -Y15FLYBD-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE FRAMING PLAN UNIT 1

REVISIONS						SHEET NO. S05-030
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 116
1	--	--	3	--	--	
2	--	--	4	--	--	

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