MA05003B

#17 FRANKLIN

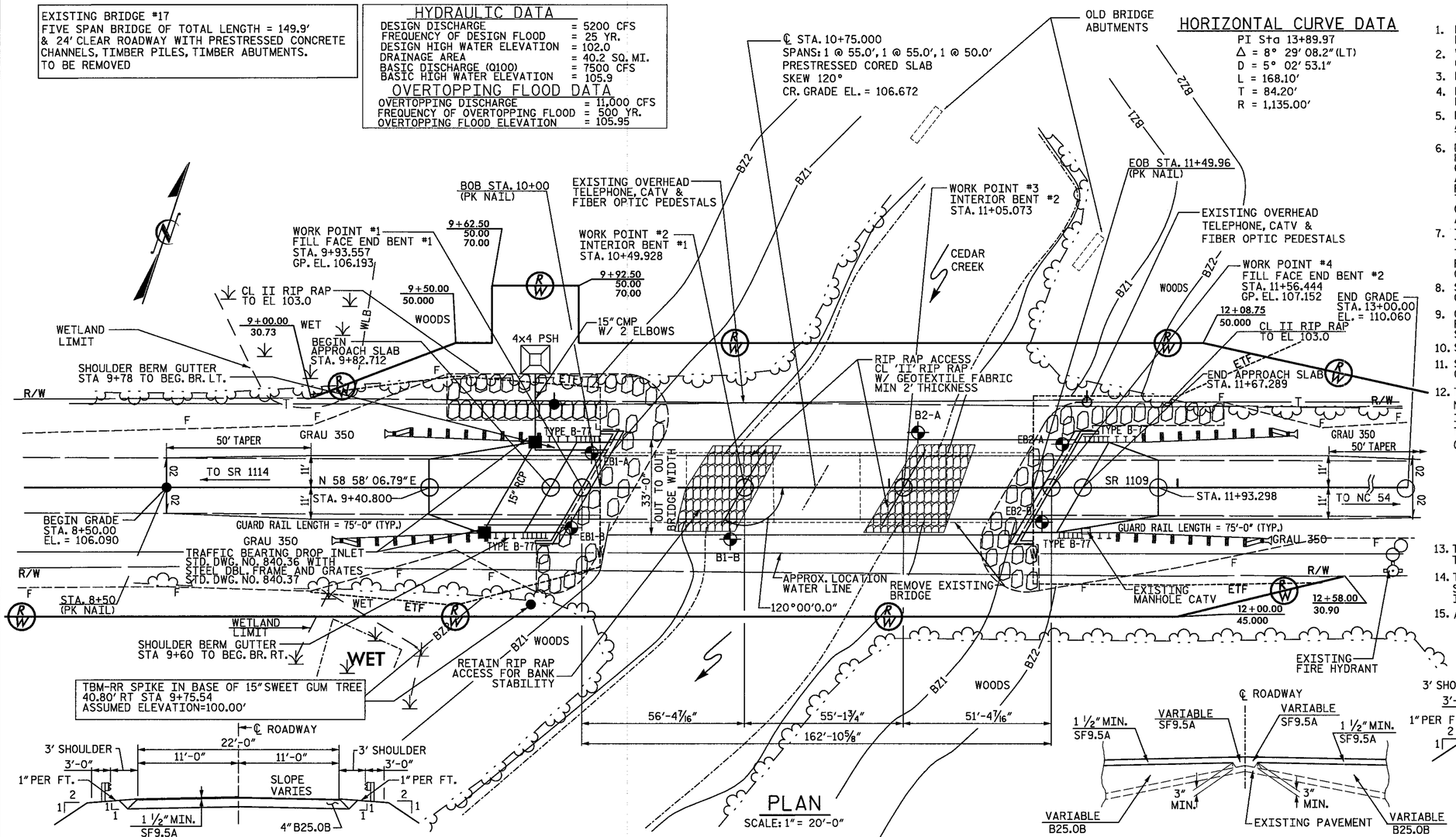
EXISTING BRIDGE #17
FIVE SPAN BRIDGE OF TOTAL LENGTH = 149.9'
& 24' CLEAR ROADWAY WITH PRESTRESSED CONCRETE
CHANNELS, TIMBER PILES, TIMBER ABUTMENTS.
TO BE REMOVED

HYDRAULIC DATA

DESIGN DISCHARGE	= 5200 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 102.0
DRAINAGE AREA	= 40.2 SQ. MI.
BASIC DISCHARGE (Q100)	= 7500 CFS
BASIC HIGH WATER ELEVATION	= 105.9

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 11,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR.
OVERTOPPING FLOOD ELEVATION	= 105.95



PLAN
SCALE: 1" = 20'-0"

HORIZONTAL CURVE DATA
PI Sta 13+89.97
Δ = 8° 29' 08.2" (LT)
D = 5° 02' 53.1"
L = 168.10'
T = 84.20'
R = 1,135.00'

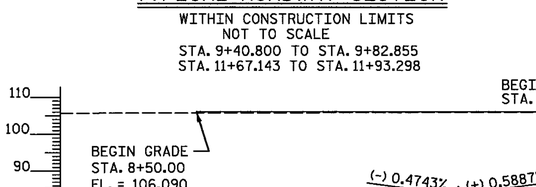
NOTES

1. PILES AT END BENTS 1 AND 2 SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 45 TONS EACH.
2. WHEN DRIVING PILES, THE MAXIMUM BLOW COUNT SHALL NOT BE EXCEEDED.
3. FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
4. DRILLED PIERS HAVE BEEN DESIGNED FOR AN APPLIED LOAD OF 420 KIPS EACH AT THE TIP OF THE PIER.
5. DRILLED PIERS HAVE BEEN DESIGNED FOR BOTH SKIN FRICTION AND TIP BEARING. THE REQUIRED TIP BEARING CAPACITY IS 18 TSF. THE TIP BEARING CAPACITY SHALL BE VERIFIED.
6. DRILLED PIERS AT BENT 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 63.5 FEET AND SATISFY THE REQUIRED TIP BEARING CAPACITY WITH A MINIMUM PENETRATION OF 4 FEET INTO ROCK AS DEFINED BY THE DRILLED PIERS SPECIAL PROVISION. DRILLED PIERS AT BENT 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 59.0 FEET AND SATISFY THE REQUIRED TIP BEARING CAPACITY WITH A MINIMUM PENETRATION OF 4 FEET INTO ROCK AS DEFINED BY THE DRILLED PIERS SPECIAL PROVISION.
7. THE SCOUR CRITICAL ELEVATION (SCE) FOR BENT 1 IS 68.5 FEET. THE SCOUR CRITICAL ELEVATION (SCE) FOR BENT 2 IS 63.3 FEET. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF STRUCTURE.
8. SPT TESTING IS NOT REQUIRED TO DETERMINE THE TIP BEARING CAPACITY OF THE DRILLED PIERS.
9. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. SEE SPECIAL PROVISION FOR CROSSHOLE SONIC LOGGING.
10. SLURRY CONSTRUCTION SHALL NOT BE USED FOR THIS PROJECT.
11. SID INSPECTIONS ARE NOT REQUIRED TO DETERMINE THE BOTTOM CLEANLINESS OF THE DRILLED PIERS.
12. THE QUANITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED IN TRUCKS CERTIFIED WEIGHING DEVICES. THE QUANITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON.

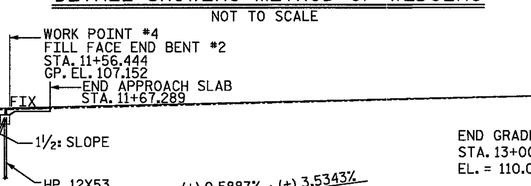
PLAIN RIP RAP CLASS II (2'-0" THICK) W/ FILTER FABRIC
END BENT NO. 1 = 270 TONS
BENT NO. 1 = 70 TONS
BENT NO. 2 = 70 TONS
END BENT NO. 2 = 205 TONS
TOTAL: = 615 TONS

13. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH FHWA'S TECHNICAL ADVISORY T5140.20 (SCOUR AT BRIDGES).
14. THE EXISTING BRIDGE SHALL BE REMOVED BY SAWING AND/OR NON SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE WATER.
15. ADT 1500 FOR YEAR 2010.

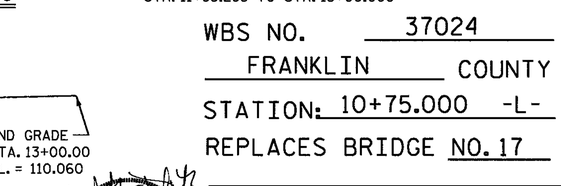
⊕ DENOTES GEO-TECH BORING HOLE LOCATIONS.



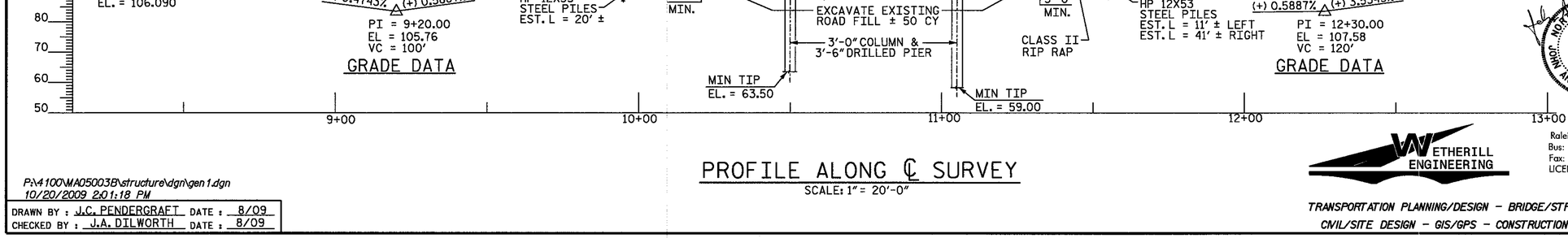
TYPICAL ROADWAY SECTION
WITHIN CONSTRUCTION LIMITS
NOT TO SCALE
STA. 9+40.800 TO STA. 9+82.855
STA. 11+67.143 TO STA. 11+93.298



DETAIL SHOWING METHOD OF WEDGING
NOT TO SCALE



TYPICAL ROADWAY SECTION
WITHIN CONSTRUCTION LIMITS
NOT TO SCALE
STA. 8+50.000 TO STA. 9+40.800
STA. 11+93.298 TO STA. 13+00.000



GRADE DATA

GRADE DATA

PROFILE ALONG ℄ SURVEY
SCALE: 1" = 20'-0"

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRG.# 17 ON SR 1109
OVER CEDAR CREEK

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

WETHERILL ENGINEERING
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	1
1			3			TOTAL SHEETS
2			4			19

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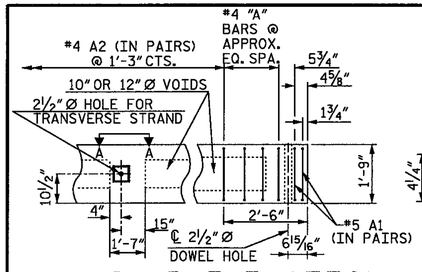
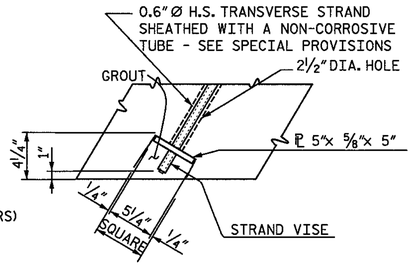
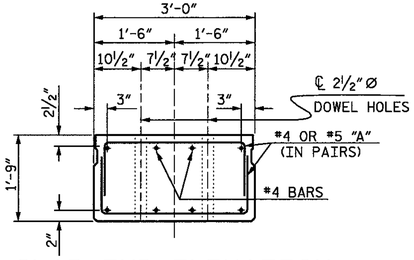
DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09



SLAB ELEVATION @ ℄ SLAB



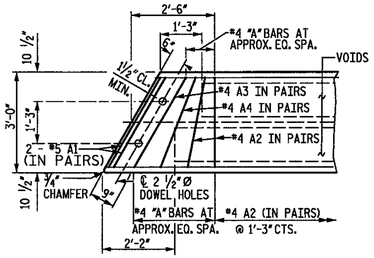
SECTION A-A



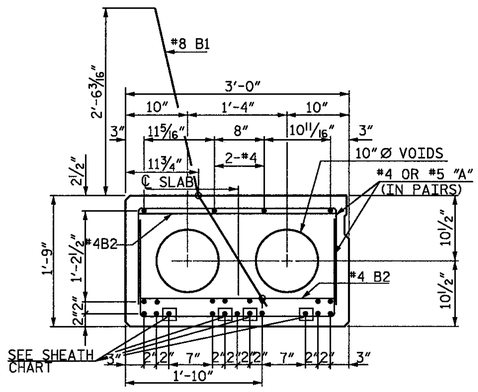
SLAB END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)

INTERIOR SLAB SECTION SHOWN- EXTERIOR SLAB SIMILAR EXCEPT SHEAR KEY LOCATION.

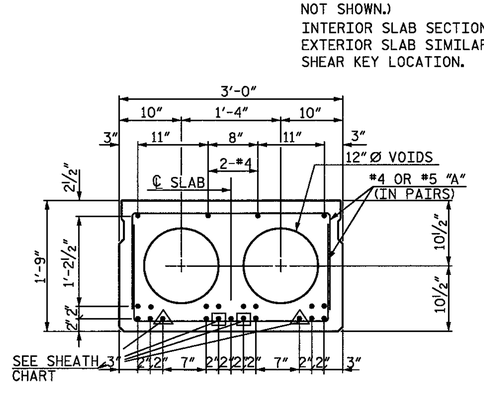


PART PLAN END OF CORED SLAB



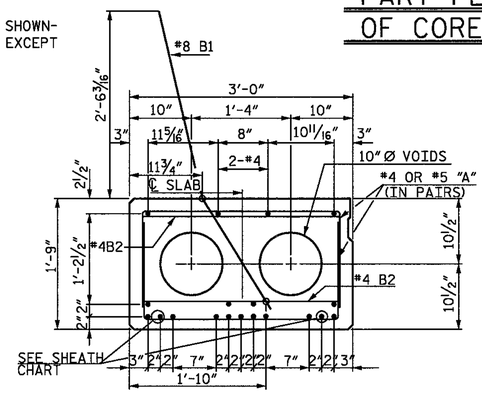
55' SPAN

21 - 0.6" Ø H.S. STRANDS
EXTERIOR SLAB SECTIONS
FINAL DEFLECTION 2.356" (UP)



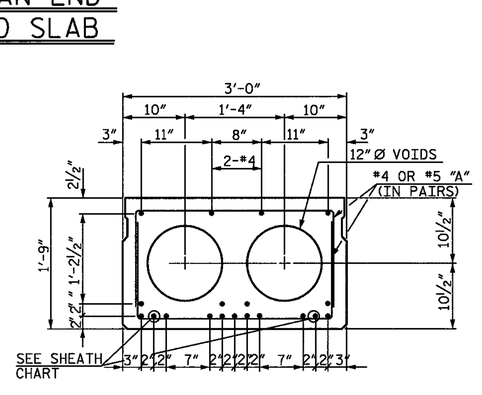
55' SPAN

21 - 0.6" Ø H.S. STRANDS
INTERIOR SLAB SECTIONS
FINAL DEFLECTION 2.635" (UP)



50' SPAN

17 - 0.6" Ø H.S. STRANDS
EXTERIOR SLAB SECTIONS
FINAL DEFLECTION 1.717" (UP)



50' SPAN

17 - 0.6" Ø H.S. STRANDS
INTERIOR SLAB SECTIONS
FINAL DEFLECTION 1.954" (UP)

GENERAL NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE BEAMS HAVE BEEN DESIGNED FOR HS 25.

CONCRETE: f'c = 7000 psi MINIMUM 55' SPAN COMPRESSIVE STRENGTH @ 28 DAYS
f'ci = 5600 psi MINIMUM 55' SPAN COMPRESSIVE STRENGTH @ TRANSFER OF STRESSING FORCE

CONCRETE: f'c = 6000 psi MINIMUM 50' SPAN COMPRESSIVE STRENGTH @ 28 DAYS
f'ci = 4800 psi MINIMUM 50' SPAN COMPRESSIVE STRENGTH @ TRANSFER OF STRESSING FORCE

ALL PRESTRESS STRANDS SHALL MEET THE REQUIREMENTS OF ASTM A416.

ALL PRESTRESS STRANDS SHALL BE 7 WIRE, LOW RELAXATION, HIGH STRENGTH CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

55' AND 50' SPAN

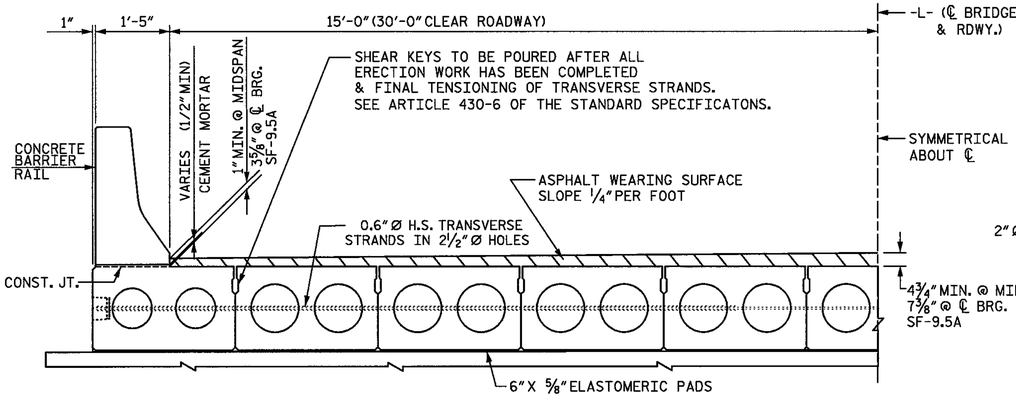
SIZE	TYPE	AREA	ULTIMATE STR.
0.6" Ø	HIGH STR.	0.217 IN.²	58,600* PER CABLE
	APPLIED FORCE		43,950* PER CABLE

STRUCTURAL STEEL ITEMS SHALL BE OF A GRADE CONFORMING TO EITHER ASTM A36 OR A373, EXCEPT HIGH STRENGTH BOLTS. HIGH STRENGTH BOLTS SHALL BE ASTM A325. ALL STRUCTURAL STEEL SHALL BE GALVANIZED AS PER THE SPECIFICATIONS.

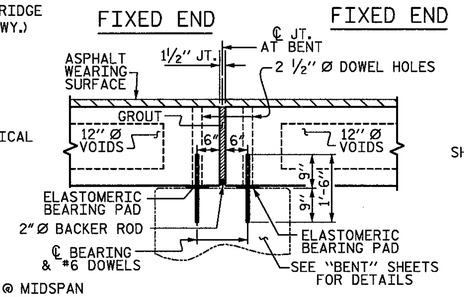
ALL MATERIAL AND WORKMANSHIP SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OF THE NC DEPARTMENT OF TRANSPORTATION DATED JULY 2006 AND WITH THE SPECIAL PROVISIONS.

A POSITIVE HOLD DOWN SYSTEM MUST BE EMPLOYED TO PREVENT VOIDS FROM RISING.

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURE SHALL BE CHAMFERED ¾".

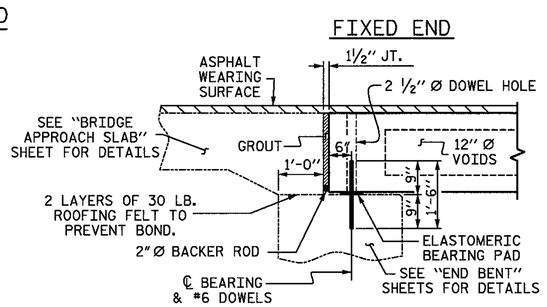


TYPICAL HALF SECTION



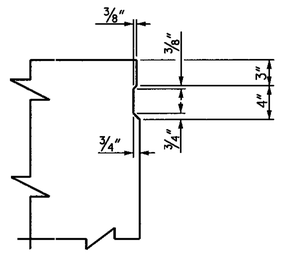
SECTION AT BENT

NOTE:
℄ OF DOWELS SHALL MATCH ℄ OF DOWEL HOLES IN CORED SLAB UNITS.



SECTION AT END BENT

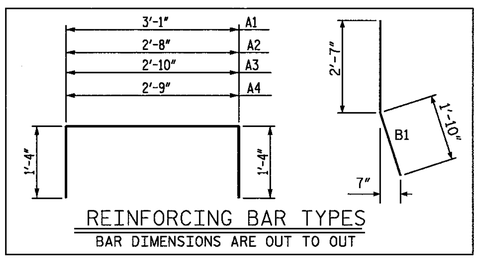
NOTE:
℄ OF DOWELS SHALL MATCH ℄ OF DOWEL HOLES IN CORED SLAB UNITS.



SHEAR KEY DETAIL

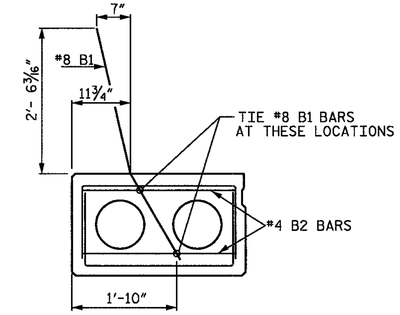
SHEATH CHART		
SPAN LENGTH	NUMBER OF SHEATHED STRANDS PER EXTERIOR SLAB SECTIONS	NUMBER OF SHEATHED STRANDS PER INTERIOR SLAB SECTIONS
50'	2	2
55'	4	4

○ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4 FEET FROM END OF SLAB.
□ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8 FEET FROM END OF SLAB.
△ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10 FEET FROM END OF SLAB.



REINFORCING BAR TYPES

BAR DIMENSIONS ARE OUT TO OUT



TIE LOCATION FOR #8 B1

NOTE: NOT TO SCALE

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD PRESTRESSED CORED SLAB 55' & 50' SPANS 30' CLEAR ROADWAY, 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2
1			3			TOTAL SHEETS
2			4			19

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER ARTHUR DILWORTH

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

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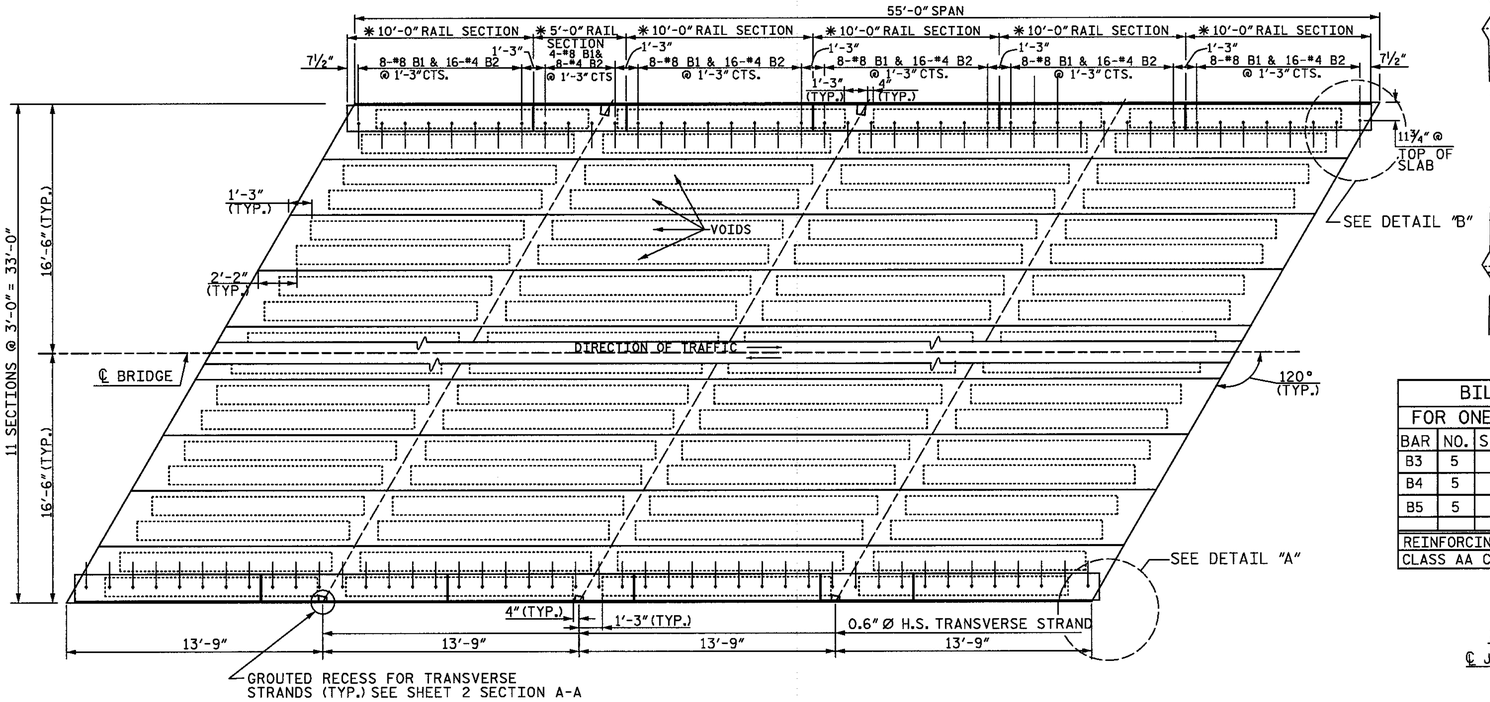
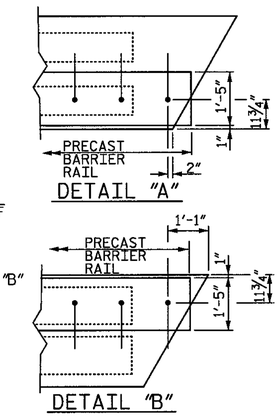


SUPERSTRUCTURE PLAN

*NOTE: RAIL SECTION DIMENSIONS ARE FROM ℄ JOINT TO ℄ JOINT OF BARRIER RAIL.



DETAIL "A"

DETAIL "B"

NOTES:

EACH PRECAST RAIL UNIT SHALL BE CAST WITH CLASS AA CONCRETE.

GROUT SHALL BE 5" ABOVE GUTTER LINE BETWEEN RAIL SECTIONS.

EACH PRECAST RAIL UNIT SHALL BE SUPPLIED WITH LIFTING DEVICE(S). NO CABLES ARE TO BE WRAPPED AROUND THE RAIL UNITS FOR LIFTING.

THE JOINT SEALER SHALL BE LOW MODULUS SILICONE SEALANT. SEE SECTION 1028-4 OF THE STANDARD SPECIFICATIONS.

THE 2½" Ø DOWEL HOLES AT EACH END OF THE SLAB SECTIONS SHALL BE FILLED WITH GROUT, SEE STANDARD SPECIFICATIONS.

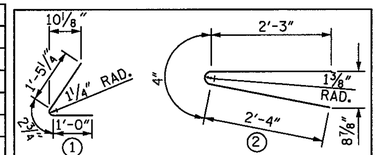
CONCRETE CHAMFERS:
UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS SHOWN OTHERWISE ON PLANS.

BILL OF MATERIAL
FOR ONE 5'-0" RAIL SECTION

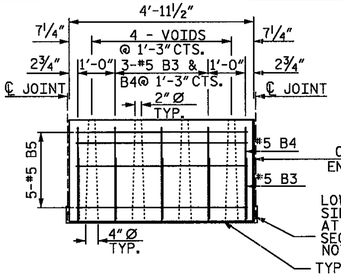
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	5	#5	1	2'-8"	14
B4	5	#5	2	4'-11"	26
B5	5	#5	STR	4'-7"	24
REINFORCING STEEL LBS. = 64					
CLASS AA CONCRETE CU. YDS. = 0.5					

BILL OF MATERIAL
FOR ONE 10'-0" RAIL SECTION

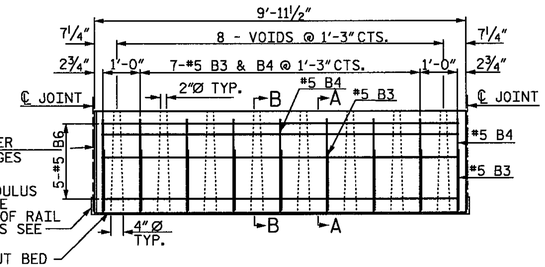
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	9	#5	1	2'-8"	25
B4	9	#5	2	4'-11"	46
B6	5	#5	STR	9'-7"	50
REINFORCING STEEL LBS. = 121					
CLASS AA CONCRETE CU. YDS. = 1.0					



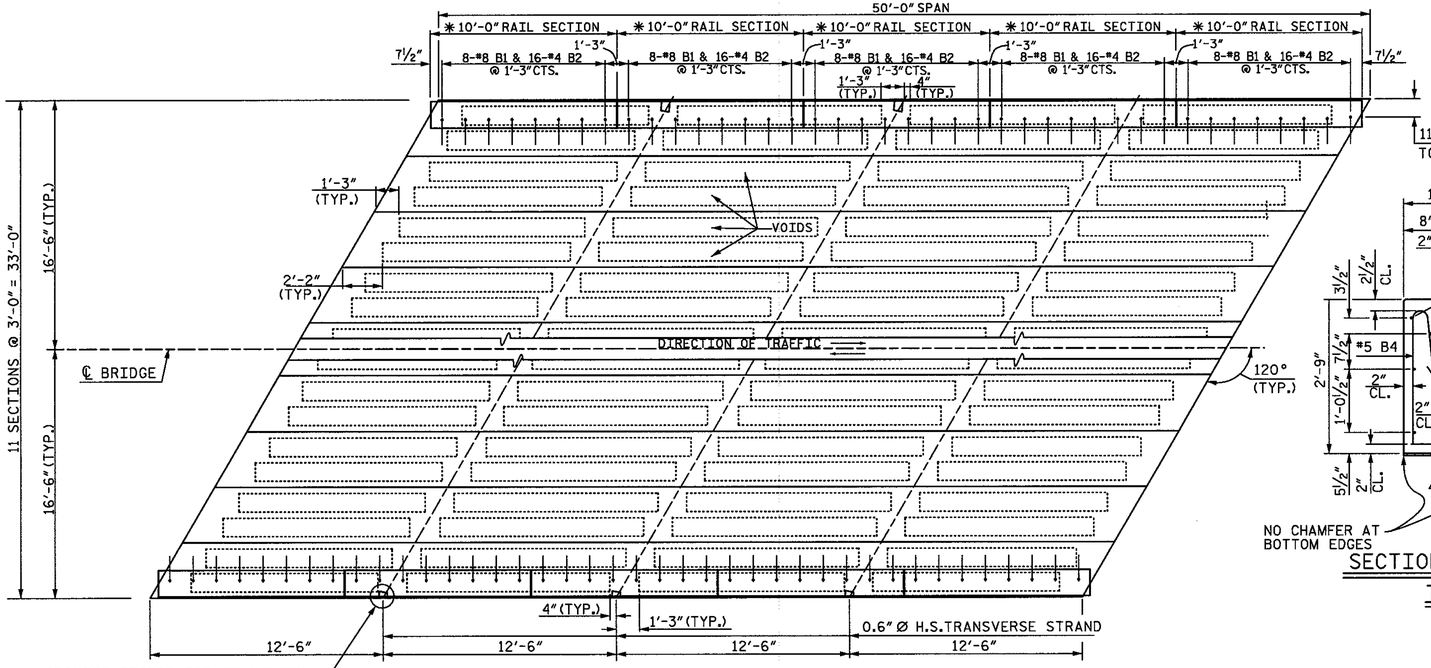
REINFORCING BAR TYPES
(BAR DIMENSIONS ARE OUT TO OUT.)

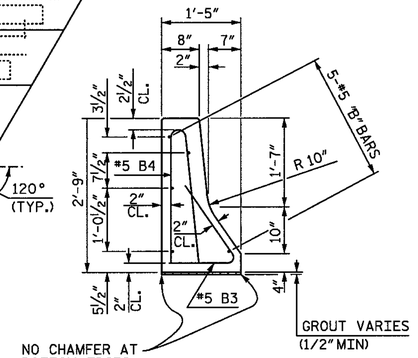


TYPICAL 5'-0" PRECAST UNIT

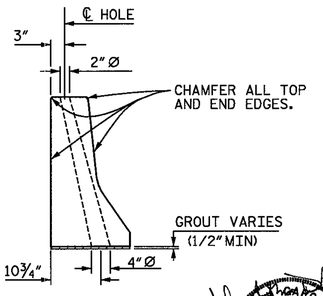


TYPICAL 10'-0" PRECAST UNIT





SECTION A-A
TYPICAL 10'-0" PRECAST UNIT



SECTION B-B
TYPICAL 10'-0" PRECAST UNIT

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09
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WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD SUPERSTRUCTURE
STANDARD PRECAST CONCRETE BARRIER RAIL SECTIONS
50' & 55' SPANS, 120° SKEW
30' CLEAR ROADWAY

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	3
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

NOTE: NOT TO SCALE

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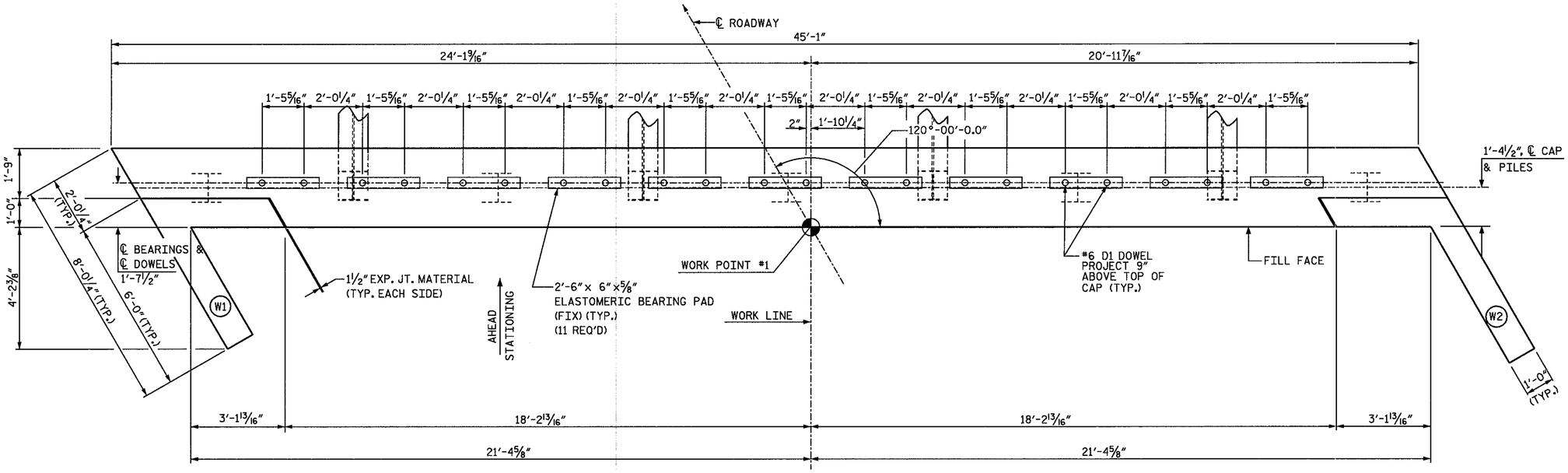
NOTES:

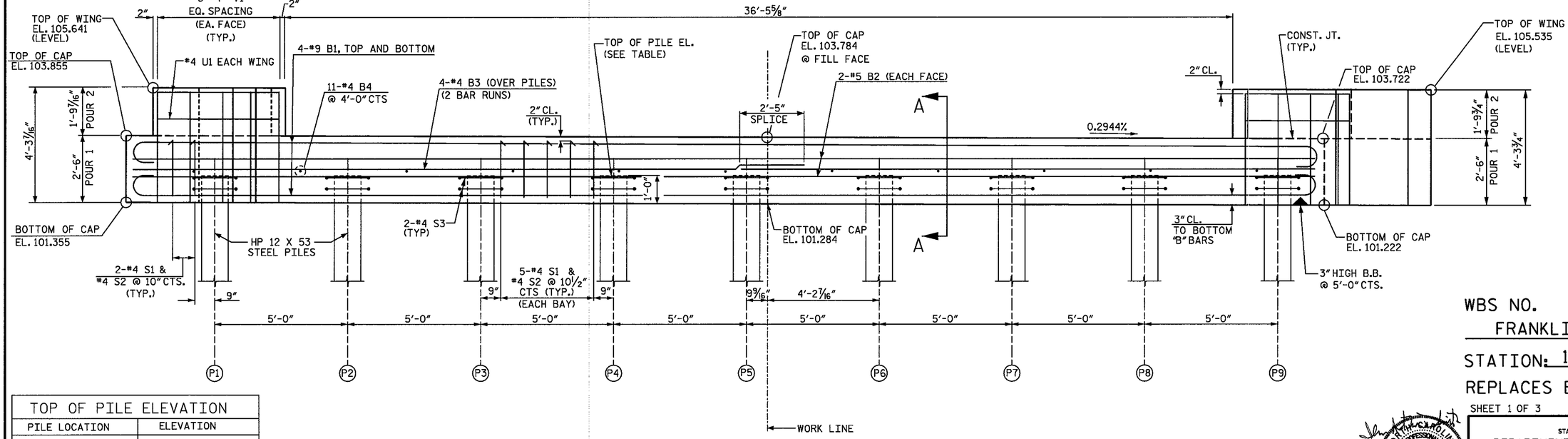
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR SECTION A-A, SEE SHT. 2 OF 3.

FOR MISC. DETAILS, SEE SHT. 2 OF 3.



PLAN



ELEVATION

TOP OF PILE ELEVATION	
PILE LOCATION	ELEVATION
P1	102.346
P2	102.332
P3	102.317
P4	102.302
P5	102.287
P6	102.272
P7	102.258
P8	102.243
P9	102.228

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

NOTE: NOT TO SCALE

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	4
1			3			TOTAL SHEETS
2			4			19

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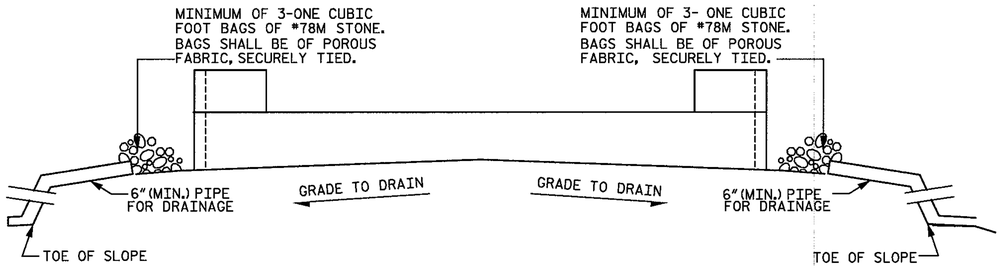


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

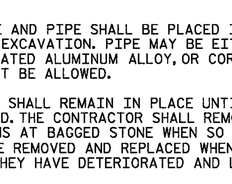
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

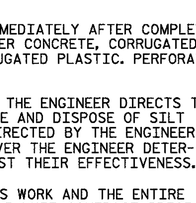
TEMPORARY DRAINAGE AT END BENT

*PILE VERTICAL

*PILE HORIZONTAL OR VERTICAL



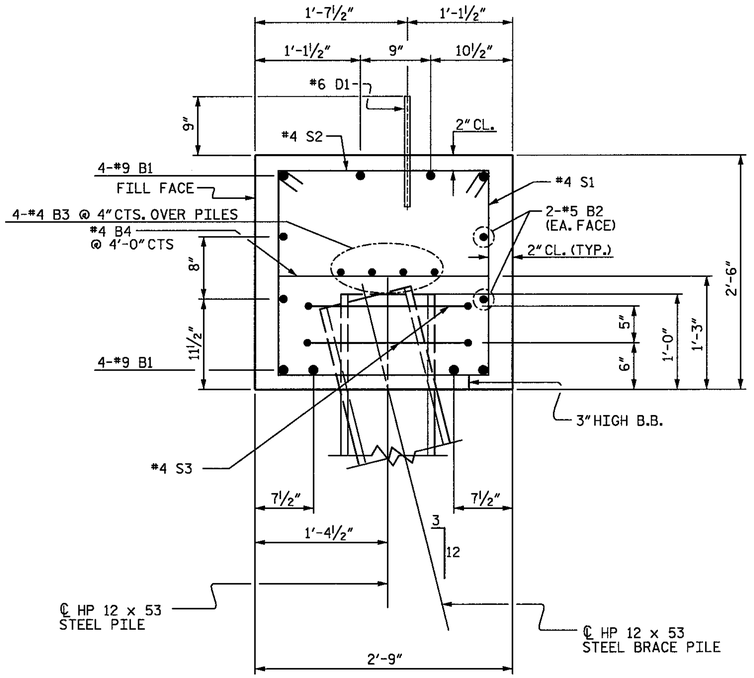
DETAIL A



DETAIL B

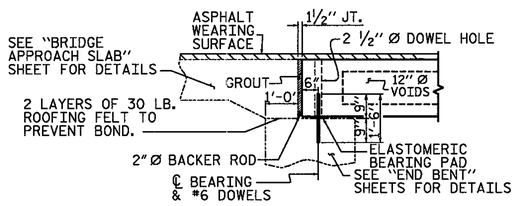
*POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

FIXED END



SECTION AT END BENT

NOTE:
℄ OF DOWELS SHALL MATCH ℄ OF DOWEL HOLES IN CORED SLAB UNITS.

WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

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WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5
1			3			TOTAL SHEETS
2			4			19

NOTE: NOT TO SCALE

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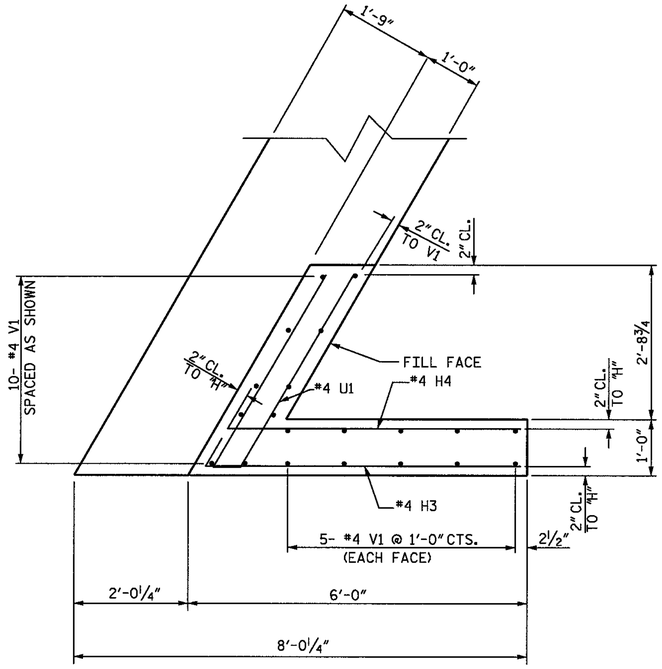
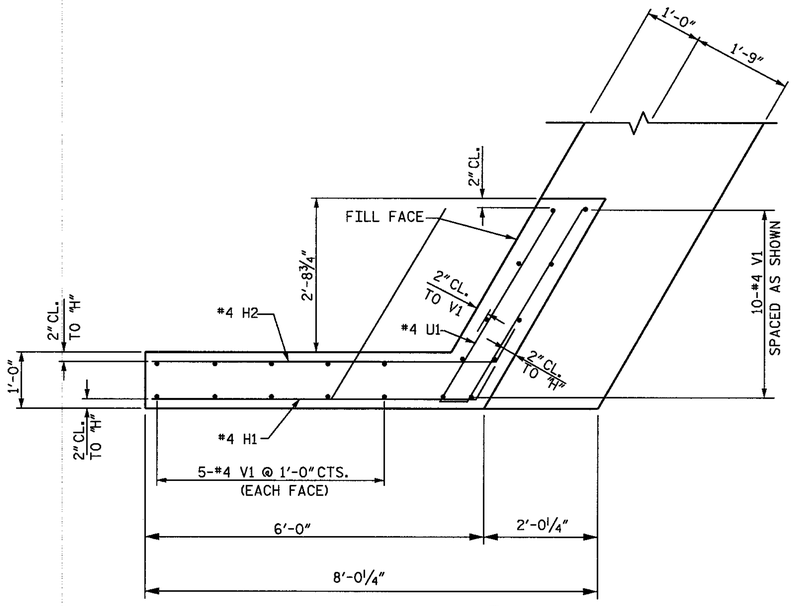
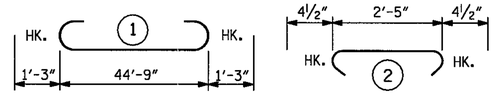


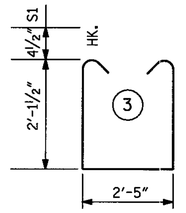
PLAN OF WING (W1)

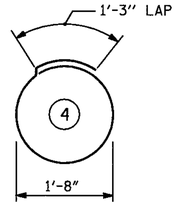


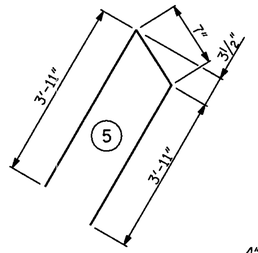
PLAN OF WING (W2)

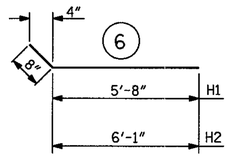
BAR TYPES

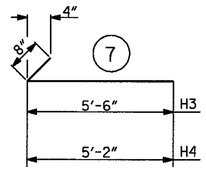












(ALL BAR DIMENSIONS ARE OUT TO OUT.)

BILL OF MATERIAL

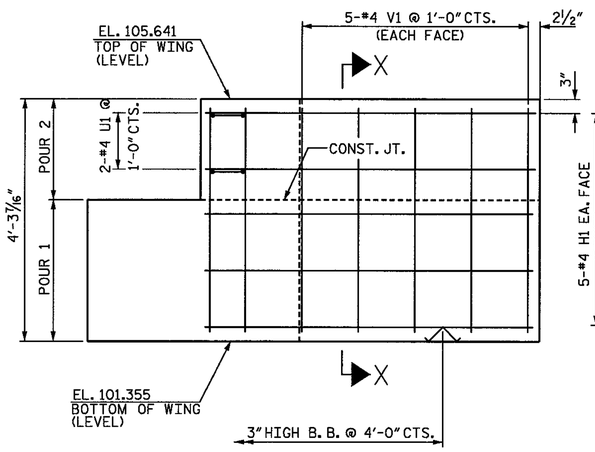
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	# 9	1	47'-3"	1285
B2	4	# 5	STR	44'-9"	187
B3	8	# 4	STR	23'-7"	126
B4	11	# 4	STR	2'-5"	18
D1	22	# 6	STR	1'-6"	50
H1	5	# 4	6	6'-4"	21
H2	5	# 4	6	6'-9"	23
H3	5	# 4	7	6'-2"	21
H4	5	# 4	7	5'-10"	19
S1	44	# 4	3	7'-5"	218
S2	44	# 4	2	3'-2"	93
S3	18	# 4	4	6'-6"	78
U1	4	# 4	5	8'-5"	22
V1	40	# 4	STR	3'-10"	102

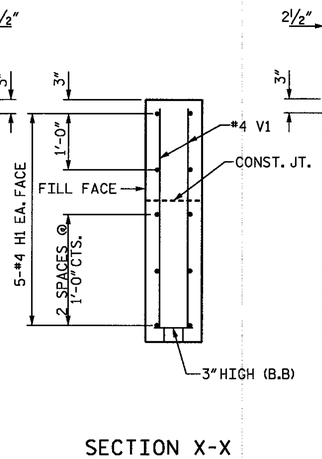
REINFORCING STEEL = 2263 LBS

CLASS A CONCRETE
POUR 1 CAP & LOWER PART OF WINGS C.Y. 12.4
POUR 2 UPPER PART OF WINGS C.Y. 1.2
TOTAL C.Y. 13.6

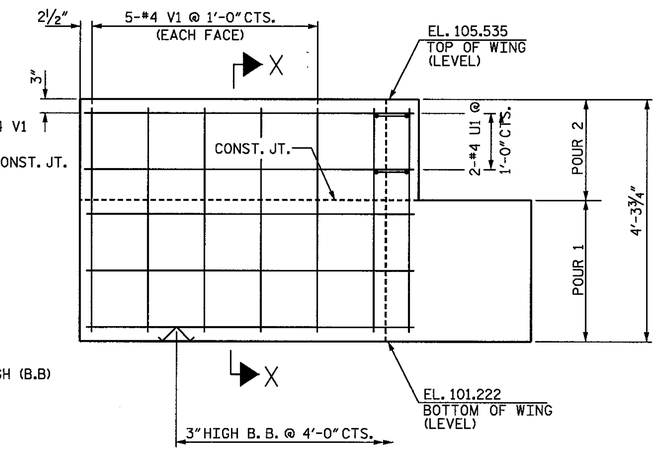
HP 12 X 53 STEEL PILES
NO. 9 (LIN. FT.) 189



ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

NOTE: NOT TO SCALE

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	6
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

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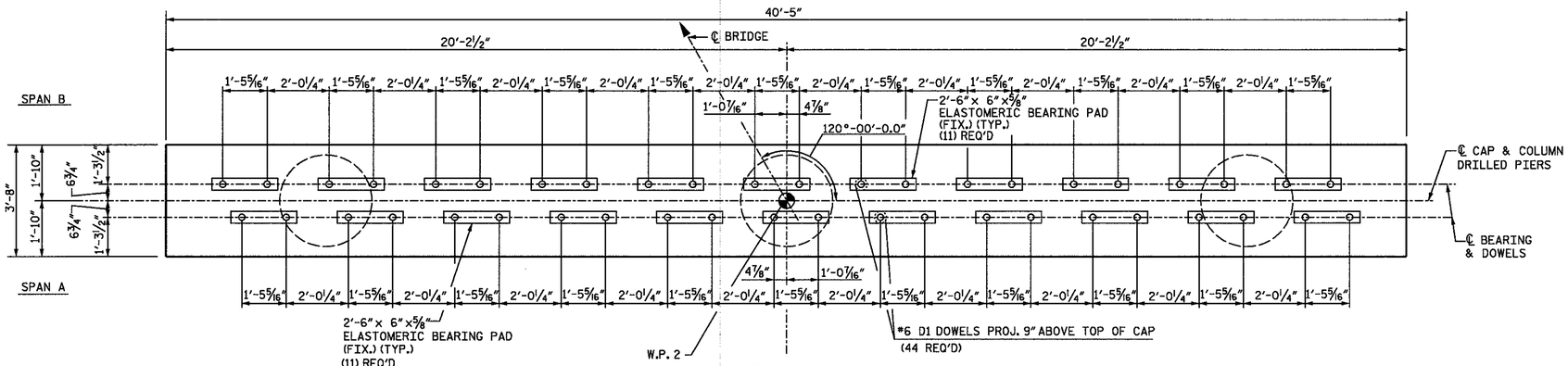
NOTES

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

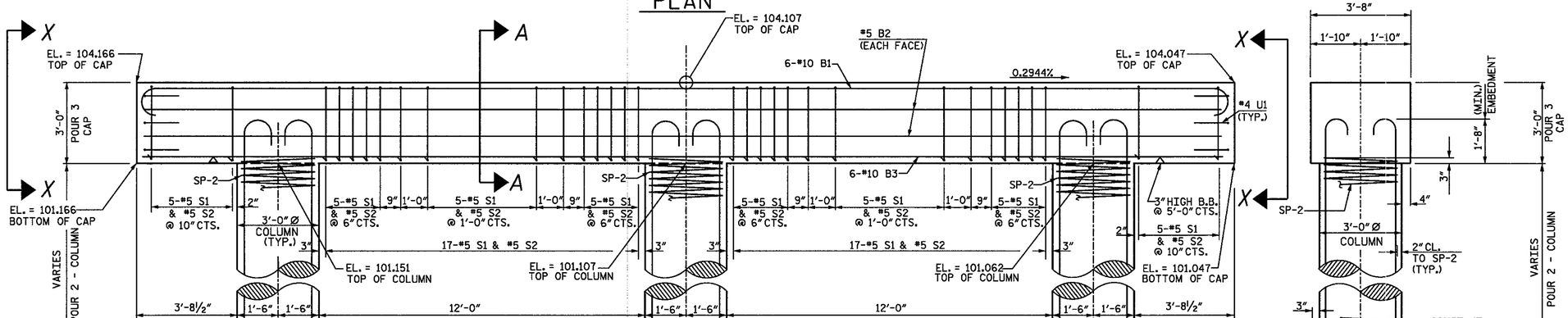
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEM FOR "PLACEMENT OF SUBSTRUCTURE".

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

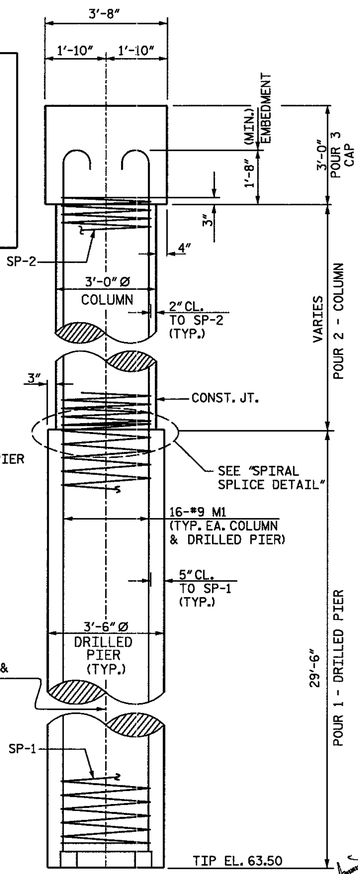


PLAN



ELEVATION

REINFORCING STEEL AND DIMENSIONS TYPICAL FOR ALL DRILLED PIERS



END ELEVATION

NOTE: NOT TO SCALE

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10-23-09

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
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WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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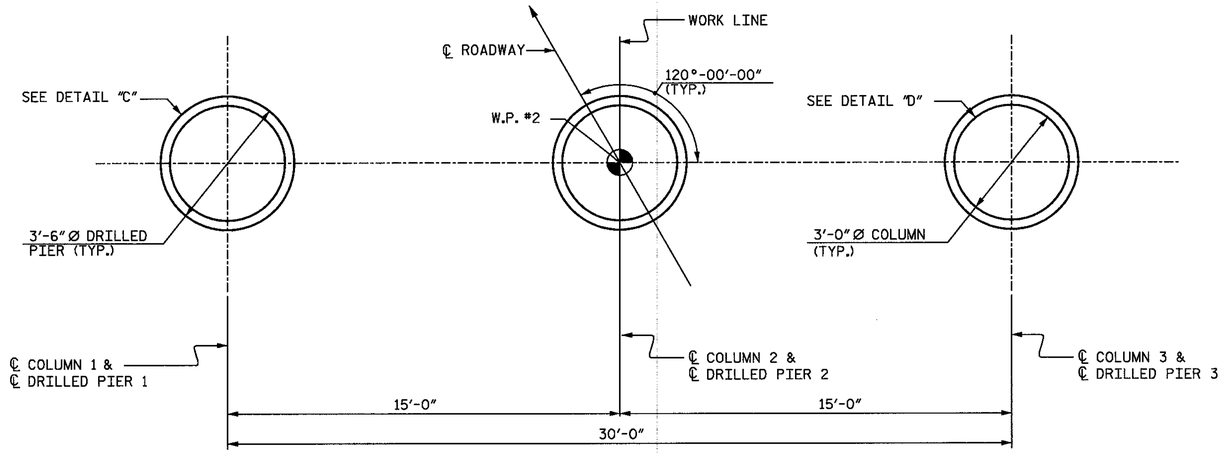
WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

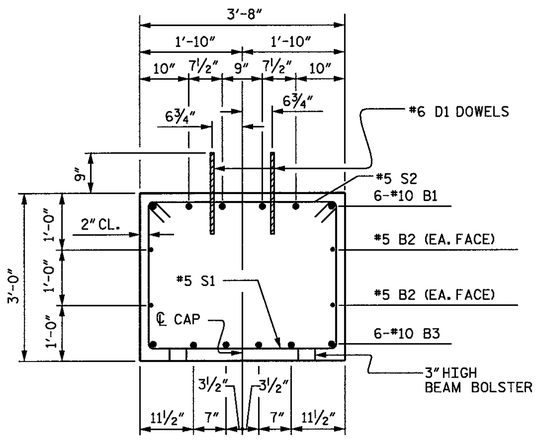
SUBSTRUCTURE
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	7
1			3			TOTAL SHEETS
2			4			19

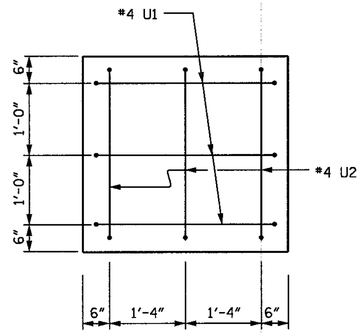


PLAN OF COLUMNS & DRILLED PIERS

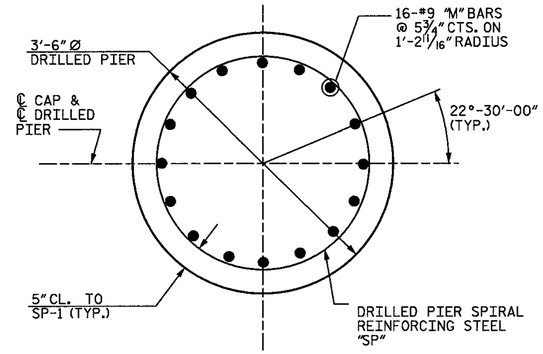
REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS & DRILLED PIERS



SECTION A-A



SECTION X-X



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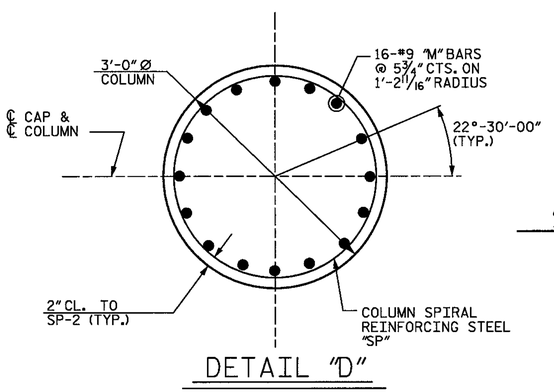

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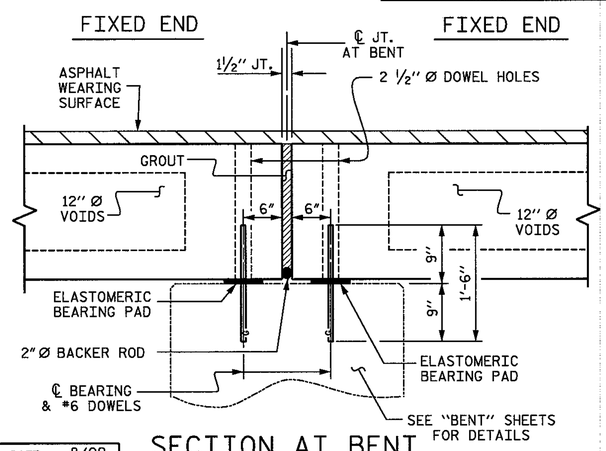
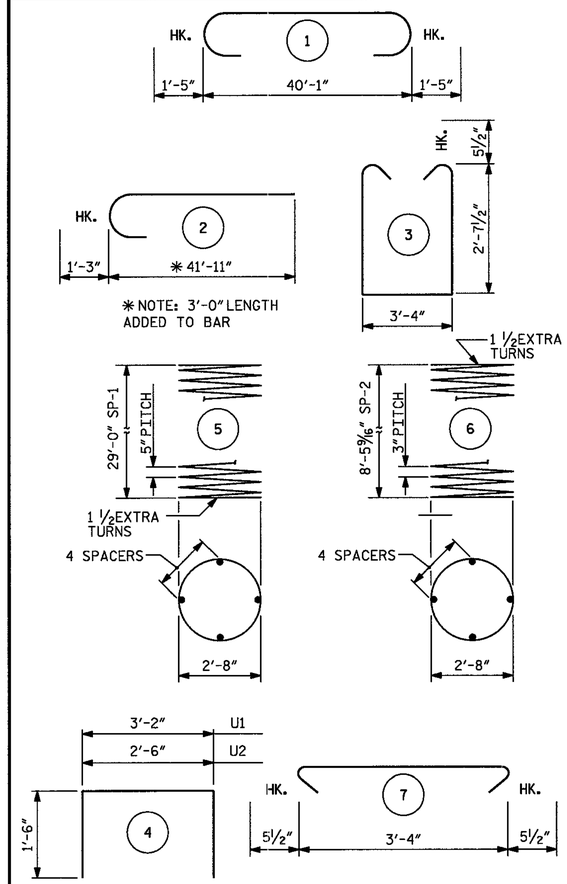


SECTION AT BENT

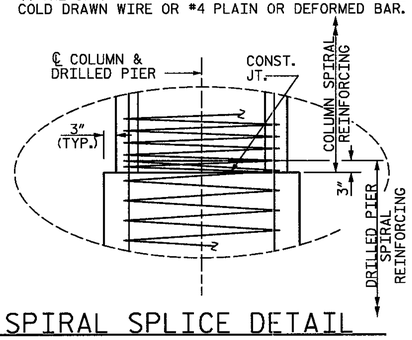
BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT.)

✳ THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

✳✳ THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



SPIRAL SPLICE DETAIL

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	42'-11"	1108
B2	4	#5	STR	40'-1"	167
B3	6	#10	STR	40'-1"	1035
D1	44	#6	STR	1'- 6"	99
M1	48	#9	2	43'-2"	7045
S1	44	#5	3	9'- 6"	436
S2	44	#5	7	4'- 3"	195
U1	6	#4	4	6'- 2"	25
U2	6	#4	4	5'-6"	22

REINFORCING STEEL 10132 LBS.

SP-1	3	✳	5	590'-11⅞"	1849
SP-2	3	✳✳	6	296'-5⅛"	594

SPIRAL COLUMN
REINFORCING STEEL 2443 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMN)	6.4 C.Y.
POUR 3 (CAP)	16.5 C.Y.
TOTAL CLASS A CONCRETE	22.9 C.Y.

3'-6" Ø DRILLED PIERS

DRILLED PIER CONCRETE

POUR 1 (DRILLED PIERS)	31.5 C.Y.

3'-6" Ø DRILLED PIERS IN SOIL : 68.5 LIN. FT.

3'-6" Ø DRILLED PIERS NOT IN SOIL : 20.0 LIN. FT.

WBS NO. 37024

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SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	8
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

NOTE: NOT TO SCALE

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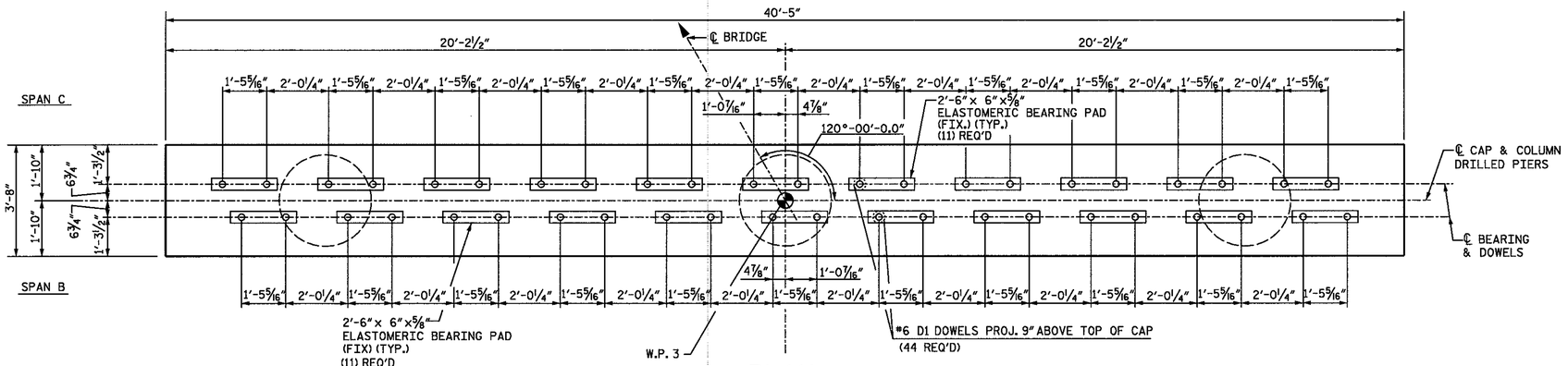

PLAN

ELEVATION

REINFORCING STEEL AND DIMENSIONS TYPICAL
FOR ALL DRILLED PIERS

END ELEVATION

NOTES

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

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

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEM FOR "PLACEMENT OF SUBSTRUCTURE."

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

WBS NO. 37024
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SHEET 1 OF 2

SEAL 22072
ARTHUR DILWORTH
10-23-09

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

REVISIONS

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

SHEET NO. 9
TOTAL SHEETS 19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

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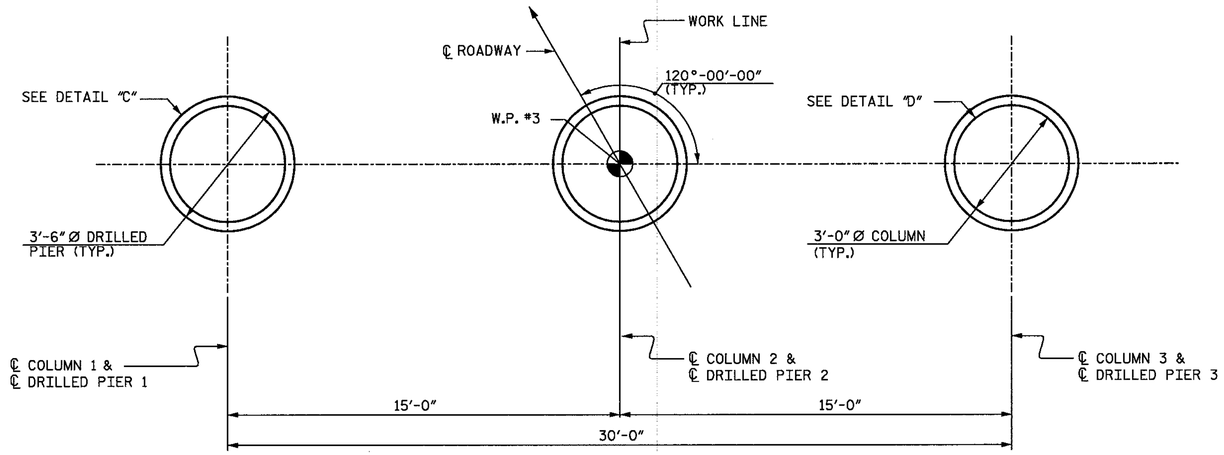
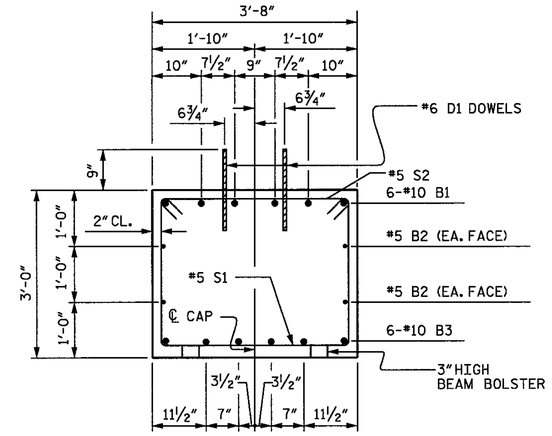
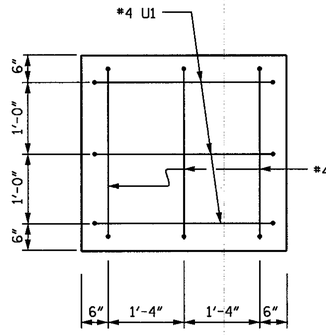


PLAN OF COLUMNS & DRILLED PIERS

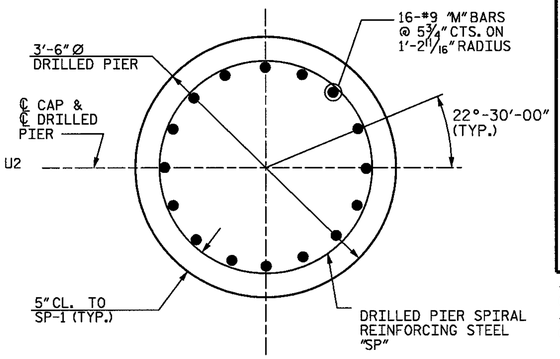
REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS & DRILLED PIERS



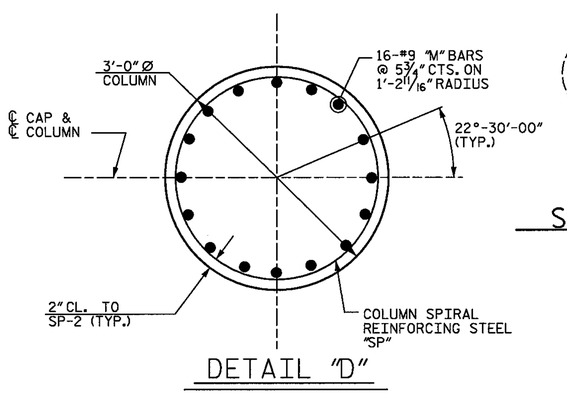
SECTION A-A



SECTION X-X



DETAIL "C"



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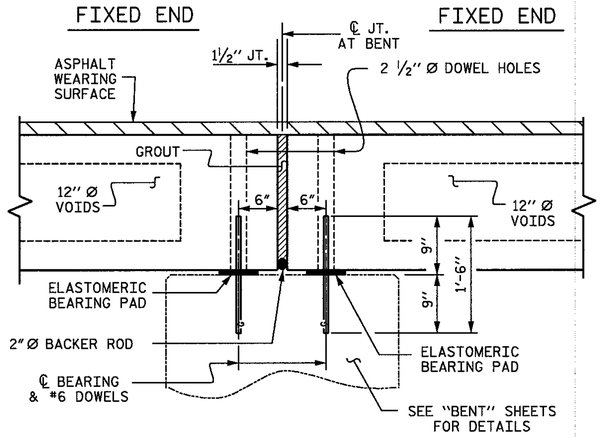
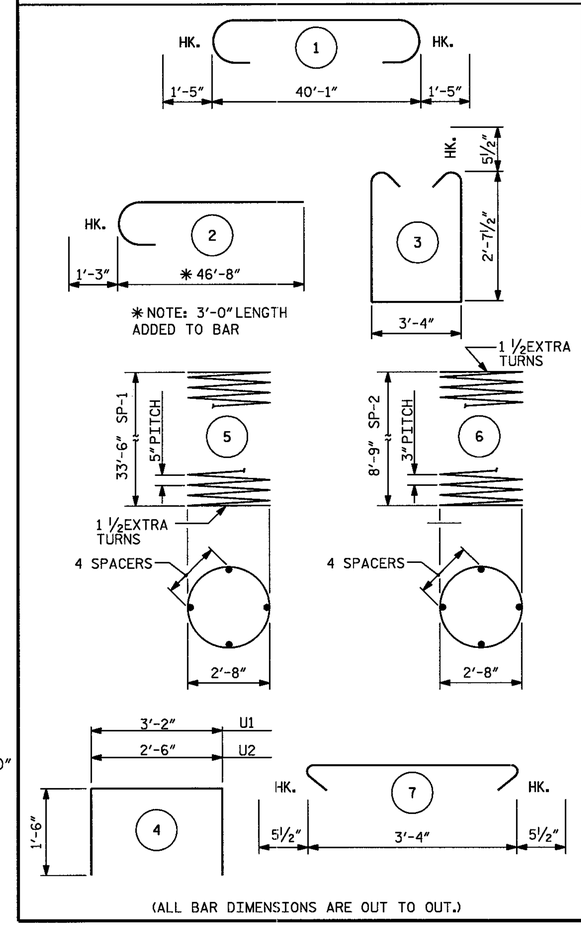


SECTION AT BENT

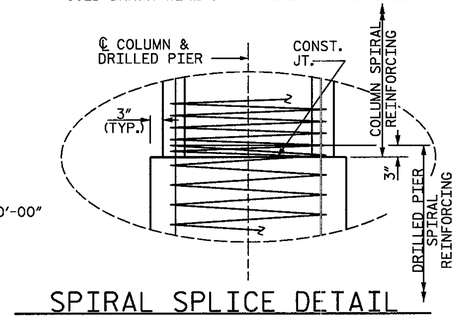
BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT.)

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



SPIRAL SPLICE DETAIL

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	42'-11"	1108
B2	4	#5	STR	40'-1"	167
B3	6	#10	STR	40'-1"	1035
D1	44	#6	STR	1'- 6"	99
M1	48	#9	2	47'-11"	7820
S1	44	#5	3	9'- 6"	436
S2	44	#5	7	4'- 3"	195
U1	6	#4	4	6'- 2"	25
U2	6	#4	4	5'-6"	22
REINFORCING STEEL					10907 LBS.
SP-1	3	*	5	673'-1"	2106
SP-2	3	**	6	304'-8"	611
SPIRAL COLUMN REINFORCING STEEL					2717 LBS.

CLASS A CONCRETE BREAKDOWN

POUR 2 (COLUMN)	6.7 C.Y.
POUR 3 (CAP)	16.5 C.Y.
TOTAL CLASS A CONCRETE	23.2 C.Y.

3'-6" Ø DRILLED PIERS

DRILLED PIER CONCRETE	
POUR 1 (DRILLED PIERS)	36.3 C.Y.
3'-6" Ø DRILLED PIERS IN SOIL :	89.0 LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL :	13.0 LIN. FT.

WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10/23/09

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	10
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

NOTE: NOT TO SCALE

WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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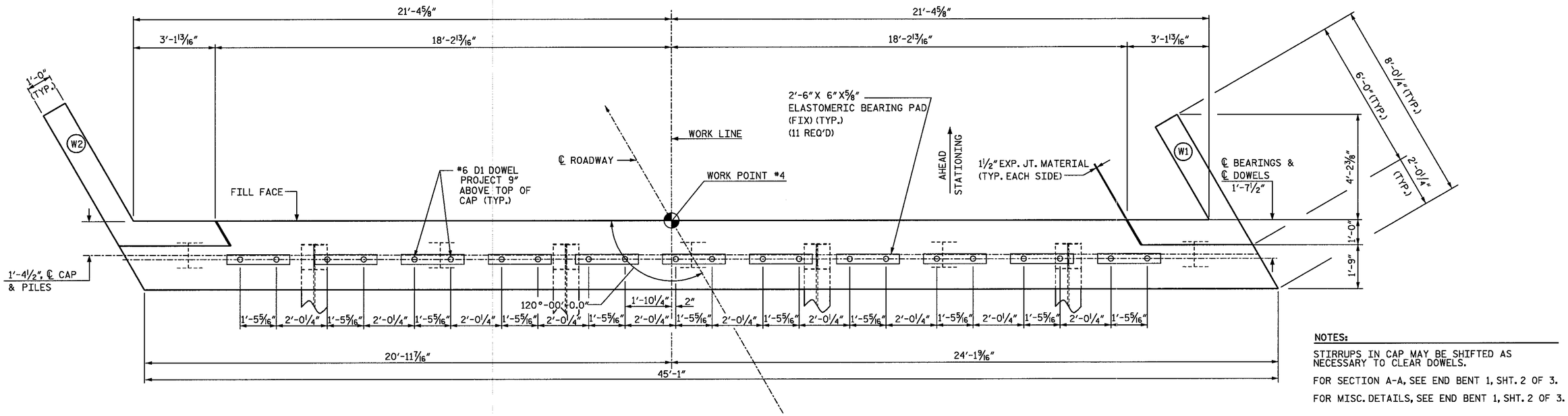


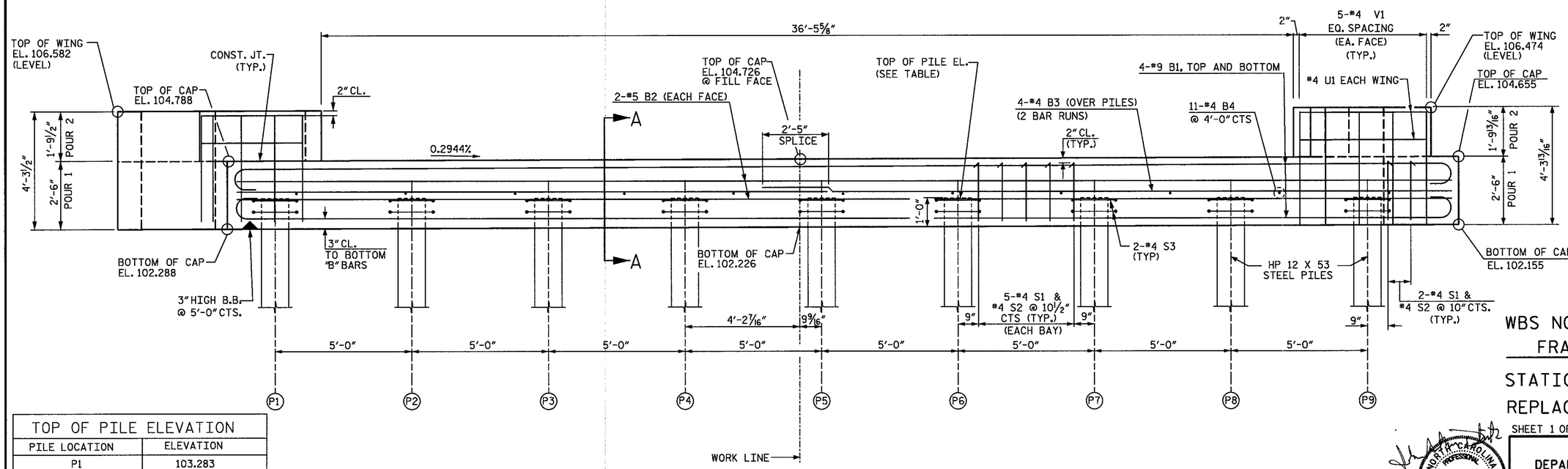
PLAN

NOTES:

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

FOR SECTION A-A, SEE END BENT 1, SHT. 2 OF 3.

FOR MISC. DETAILS, SEE END BENT 1, SHT. 2 OF 3.



ELEVATION

TOP OF PILE ELEVATION	
PILE LOCATION	ELEVATION
P1	103.283
P2	103.268
P3	103.254
P4	103.239
P5	103.224
P6	103.209
P7	103.195
P8	103.180
P9	103.165

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NOTE: NOT TO SCALE

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
10-23-09

WETHERILL ENGINEERING
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	11
1			3			TOTAL SHEETS
2			4			19

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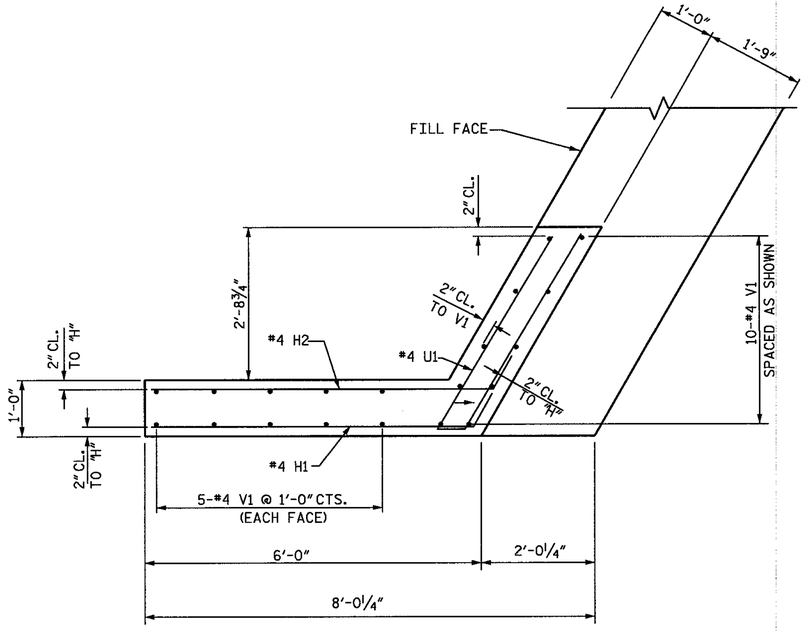
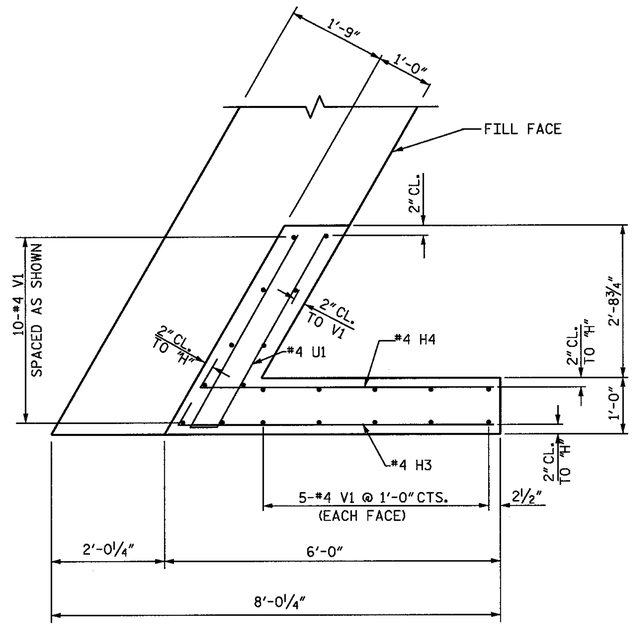
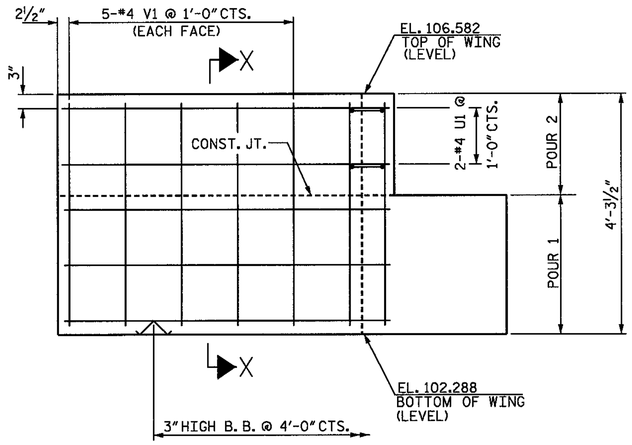


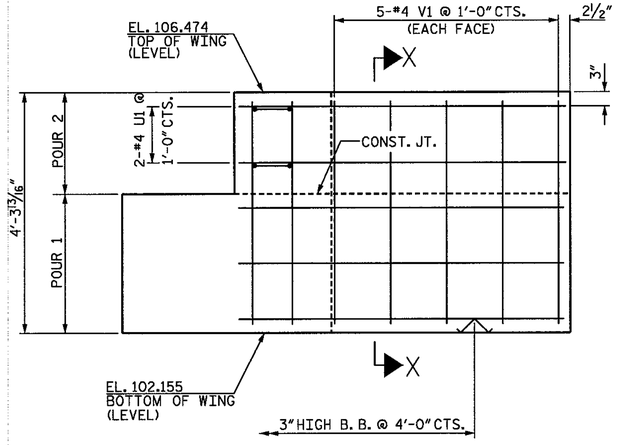
PLAN OF WING (W1)



PLAN OF WING (W2)

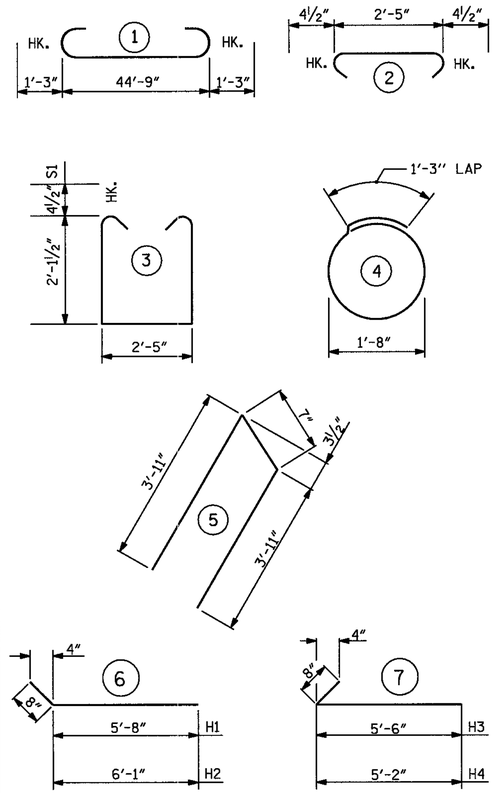


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT.)

BILL OF MATERIAL

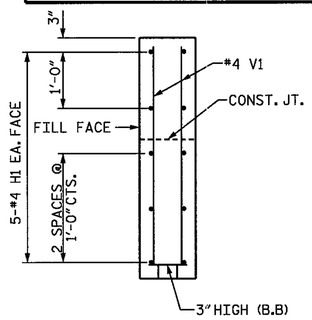
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	# 9	1	47'-3"	1285
B2	4	# 5	STR	44'-9"	187
B3	8	# 4	STR	23'-7"	126
B4	11	# 4	STR	2'-5"	18
D1	22	# 6	STR	1'-6"	50
H1	5	# 4	6	6'-4"	21
H2	5	# 4	6	6'-9"	23
H3	5	# 4	7	6'-2"	21
H4	5	# 4	7	5'-10"	19
S1	44	# 4	3	7'-5"	218
S2	44	# 4	2	3'-2"	93
S3	18	# 4	4	6'-6"	78
U1	4	# 4	5	8'-5"	22
V1	40	# 4	STR	3'-10"	102

REINFORCING STEEL = 2263 LBS

CLASS A CONCRETE
POUR 1 CAP & LOWER PART OF WINGS C.Y. 12.4
POUR 2 UPPER PART OF WINGS C.Y. 1.2
TOTAL C.Y. 13.6

HP 12 X 53 STEEL PILES
NO. 9 (LIN. FT.) 264



SECTION X-X

WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 10/23/09

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	12
1			3			TOTAL SHEETS
2			4			19

NOTE: NOT TO SCALE

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
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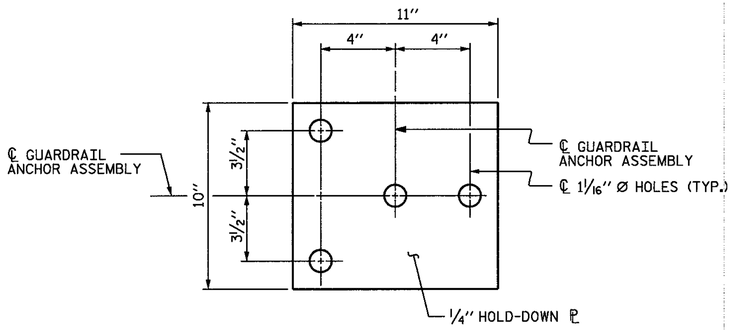
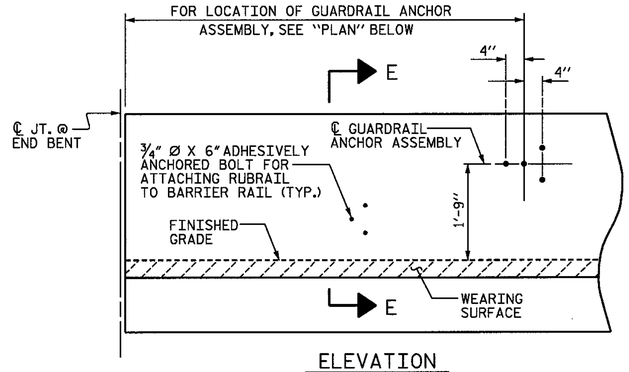
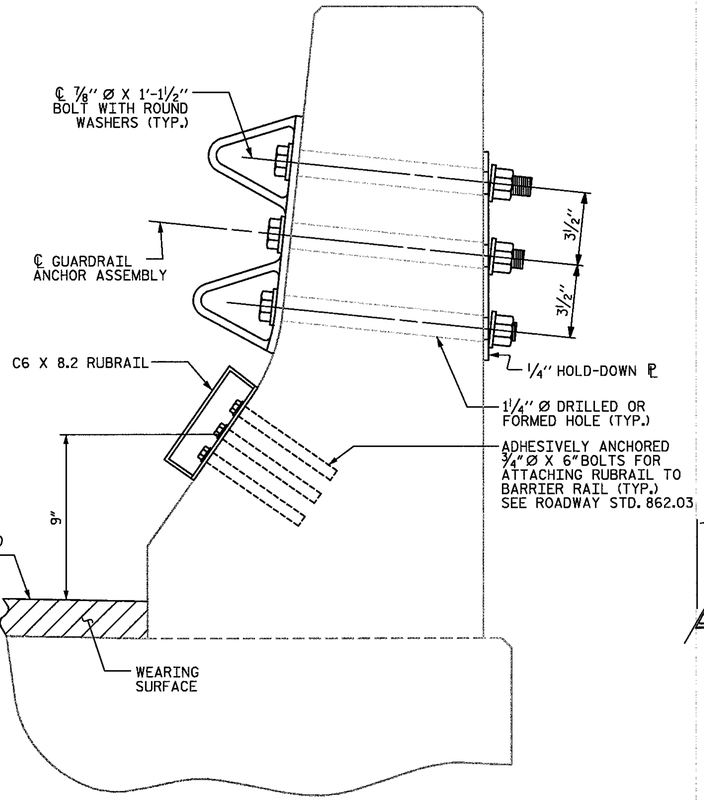


PLAN



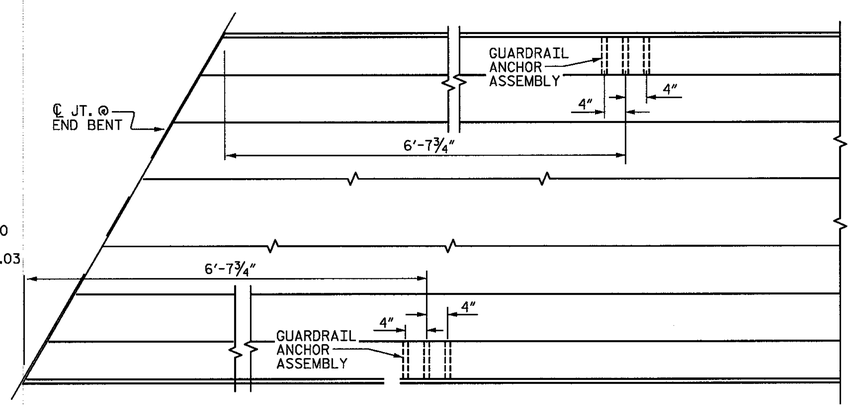
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



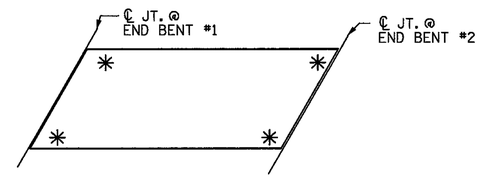
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

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

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

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

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

WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

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WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	13
1			3			TOTAL SHEETS
2			4			19

NOTE: NOT TO SCALE

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
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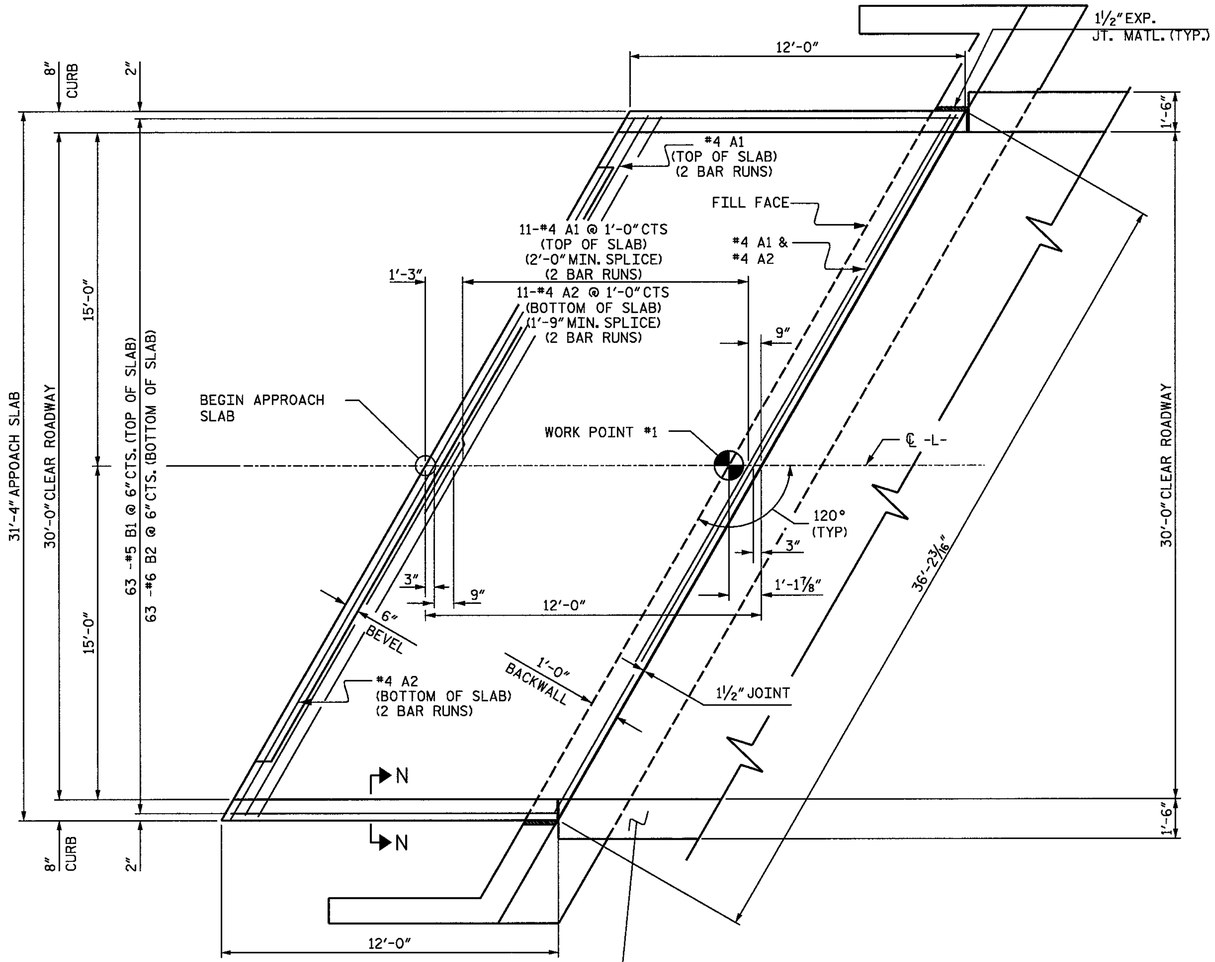
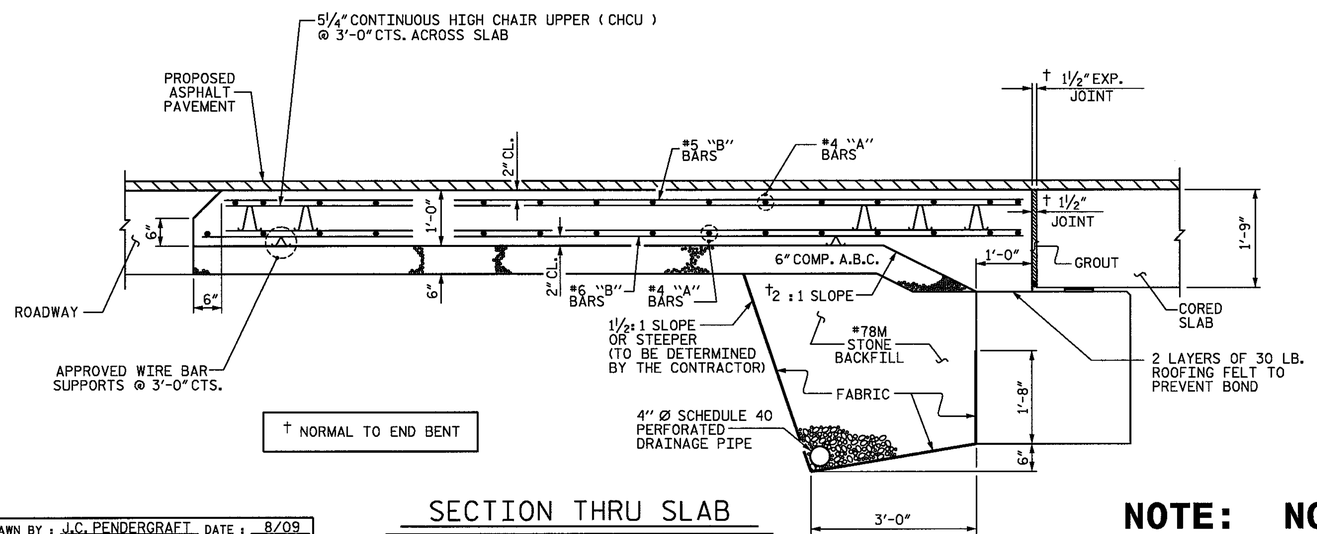


PLAN OF APPROACH SLAB @ END BENT 1

(END BENT 2 SIMILAR)

PRECAST CONCRETE BARRIER RAIL (TYP.)



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND *78M STONE BACKFILL, SEE ROADWAY STANDARDS 422.10.

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

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

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

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

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

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED WITH 4" OF INTERMEDIATE OR SURFACE COURSE ASPHALT.

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

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

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

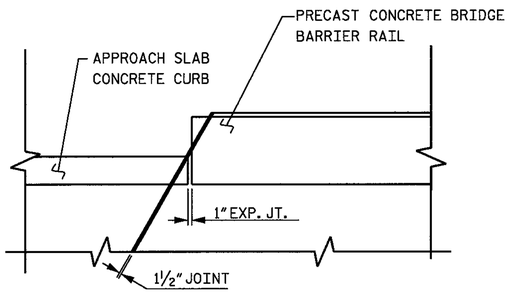
FOR JOINT DETAILS, SEE SHEET NO. 2.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

WORK SHOWN ON THIS DRAWING WILL BE PAID UNDER THE LUMP SUM PRICE FOR APPROACH SLABS.

TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR APPROACH SLABS, SEE ROADWAY STANDARD 1622.01.



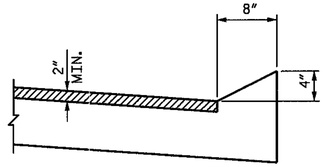
BARRIER RAIL AND CURB DETAIL

BILL OF MATERIAL

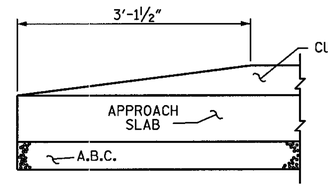
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	19'-0"	330
A2	26	#4	STR	18'-10"	327
* B1	63	#5	STR	11'-2"	734
B2	63	#6	STR	11'-8"	1104

REINFORCING STEEL	LBS.	1431
*EPOXY COATED REINFORCING STEEL	LBS.	1064
CLASS AA CONCRETE	C. Y.	15.8



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH

10/28/09

WETHERILL ENGINEERING

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
DETAILS FOR PRESTRESSED
CONCRETE CORED SLAB
(SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	14
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
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NOTE: NOT TO SCALE

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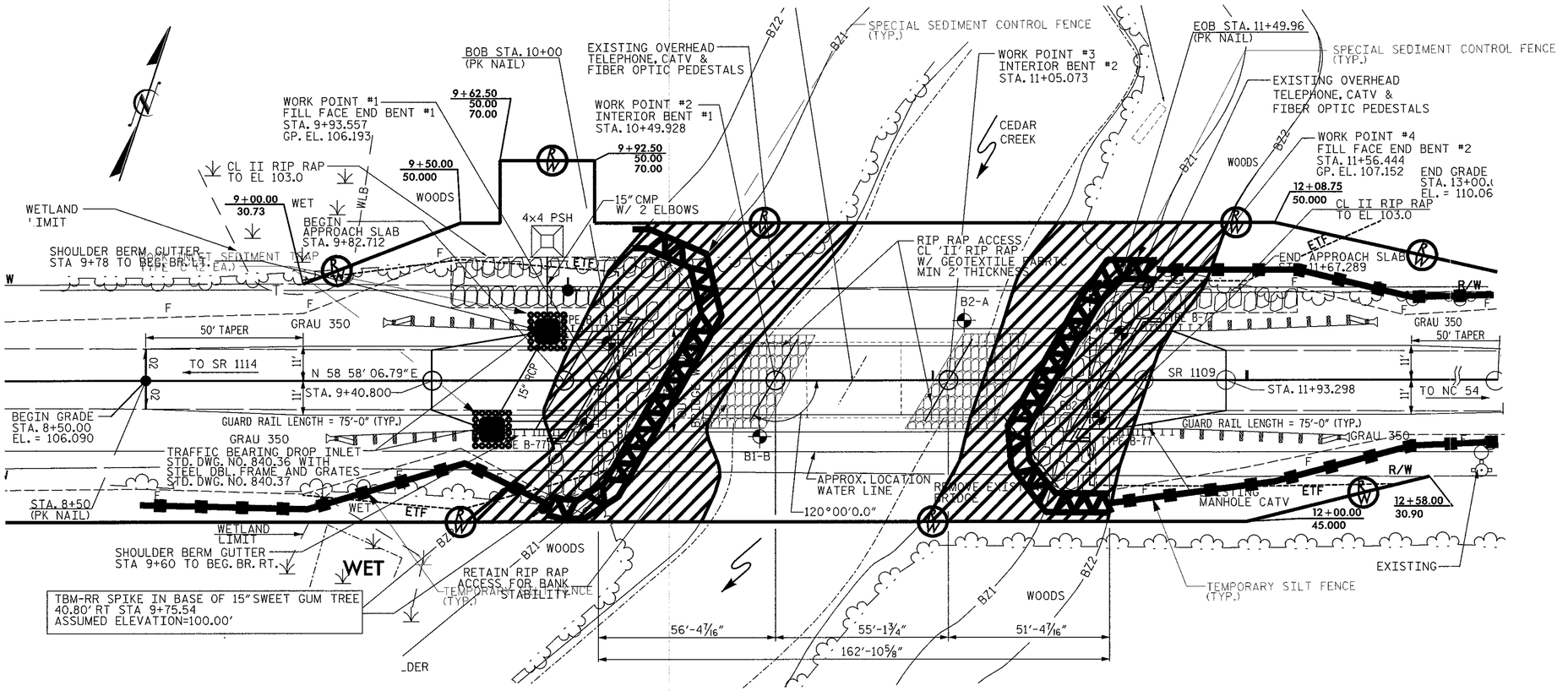
EROSION CONTROL PLAN



PLAN

Std. #	Description		Symbol
1605.01	Temporary Silt Fence	400 LF	
1606.01	Special Sediment Control Fence	250 LF	
1632.03	Rock Inlet Sediment Trap Type C	2	

ENVIRONMENTALLY SENSITIVE AREA
PLEASE SEE NOTE

NOTE: NOT TO SCALE

CONSTRUCTION SEQUENCE

1. ACCESS AND MOBILIZATION: STABILIZE BARE AREAS IMMEDIATELY WITH TEMPORARY VEGETATION AND/OR GRAVEL AS CONSTRUCTION TAKES PLACE.
2. INSTALL SILT FENCE. SILT FENCE SHALL BE INSTALLED UP TO THE EXISTING BRIDGE ABUTMENTS TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE. SILT FENCE SHALL BE INSTALLED AT THE PERIMETER OF DISTURBED AREAS.
3. PROCEED WITH CONSTRUCTION OF THE NEW BRIDGE. ADDITIONAL GRAVEL STABILIZATION OR SILT FENCE MAY BE REQUIRED BEHIND THE OLD ABUTMENTS WHEN THE OLD BRIDGE IS REMOVED AND BEFORE THE NEW BRIDGE IS INSTALLED.
4. MAINTENANCE INSPECTIONS SHALL BE PERFORMED WEEKLY AND AFTER PERIODS OF RAINFALL. REPAIRS SHALL BE MADE IMMEDIATELY.
5. ONCE THE SITE IS STABILIZED, REMOVE ALL EROSION CONTROL DEVICES.

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

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
2006 STANDARD SPECIFICATIONS

WBS NO. 37024
FRANKLIN COUNTY
STATION: 10+75.000 -L-
REPLACES BRIDGE NO. 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE # 17 ON SR 1109
OVER CEDAR CREEK

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	15
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

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EROSION CONTROL PLAN

Environmentally Sensitive Areas:

This project is located in an "Environmentally Sensitive Area." This designation requires special procedures to be used for clearing and grubbing, temporary stream crossings, and grading operations within the area identified on the plans. This also requires special procedures to be used for seeding and mulching and staged seeding within the project.

Clearing and Grubbing:

In areas identified on the erosion control plans as "Environmentally Sensitive Areas", the Contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations as described in Section 200, Article 200-1, in the Standard Specifications. The "Environmentally Sensitive Area" shall be defined as a 50 foot buffer zone on both sides of the stream (or depression), measured from top of streambank, (or center of depression). Only clearing operations (not grubbing) shall be allowed in this buffer zone until immediately prior to beginning grading operations. Erosion control devices shall be installed immediately following the clearing operation.

Grading:

Once grading operations begin in identified "Environmentally Sensitive Areas", work will progress in a continuous manner until complete. All construction within these areas must progress in a continuous manner such that each phase is complete and areas permanently stabilized prior to beginning of next phase. Failure on the part of the Contractor to complete any phase of construction in a continuous manner in "Environmentally Sensitive Areas" as specified will be just cause for the Engineer to direct the suspension of work in accordance with Section 108-7 of the Standard Specifications.

Temporary Stream Crossings:

Any crossing of streams within the limits of this project must be accomplished in accordance with Section 107-13(b) of the Standard Specifications.

Seeding and Mulching:

Seeding and mulching shall be performed in accordance with Section 1660 of the Standard Specifications and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment. No appreciable time shall lapse into the contract time without stabilization of slopes, ditches and other areas within the "Environmentally Sensitive Areas" as indicated on the erosion control plans.

Stage Seeding:

The work covered by this section shall consist of the establishment of a vegetative cover on cut and fill slopes as grading progresses. Seeding and mulching shall be done in stages on cut and fill slopes which are greater than 20 feet in height measured along the slope, or greater than 2 acres in area. Each stage shall not exceed the limits stated above.

All work described above will be paid for at the contract price for "Lump Sum for Erosion Control" established in the contract for the work involved. Additional payments will not be made for the requirements of this section as the cost for this work should be included in the contract price for "Lump Sum for Erosion Control" for the work involved.

Special Sediment Control Fence:

Description:

The work covered by this section consists of the construction, maintenance, and removal of special sediment control fence. Place special sediment control fence as shown on the plans or as directed by the Engineer.

Materials:

(A) Posts:

Steel posts shall be at least 5 feet in length, approximately 1 3/8 inches wide measured parallel to the fence, and have a minimum weight of 1.25 lb/ft of length. The post shall be equipped with an anchor plate having a minimum area of 14.0 square inches, and shall have a means of retaining wire in the desired position without displacement.

(B) 1/4 inch Hardware Cloth:

Hardware cloth shall have 1/4 inch openings constructed from #24 gauge wire. Install hardware cloth according to the detail shown on the plans.

(C) Sediment Control Stone:

Sediment control stone shall meet the requirements of Section 1005. Install stone according to the detail shown on the plans.

Maintenance and Removal:

The Contractor shall maintain the special sediment control fence until the project is accepted or until the fence is removed, and shall remove and dispose of silt accumulations at the fence when so directed by the Engineer in accordance with Section 1630.

The quantity of posts, sediment control stone and hardware cloth as measured above will be paid for at the contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials, installation, and removal and disposal of silt accumulations and materials.

Reforestation:

Reforestation will be planted within disturbed areas of the buffer zone, in areas designated by the Engineer. Reforestation is not shown on the plan sheets. See the reforestation detail sheet.

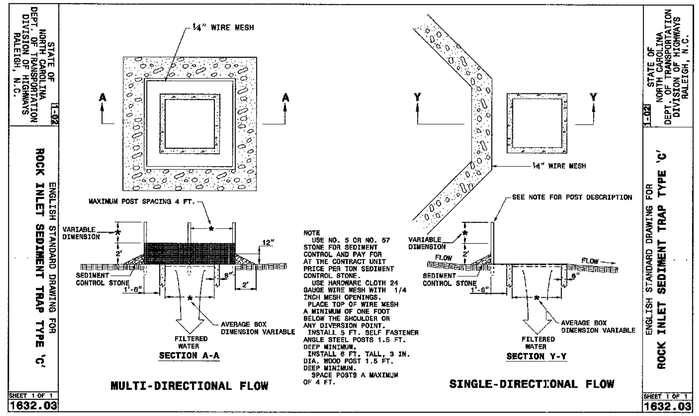
The entire Reforestation operation shall comply with section 1670 of the Standard Specifications.

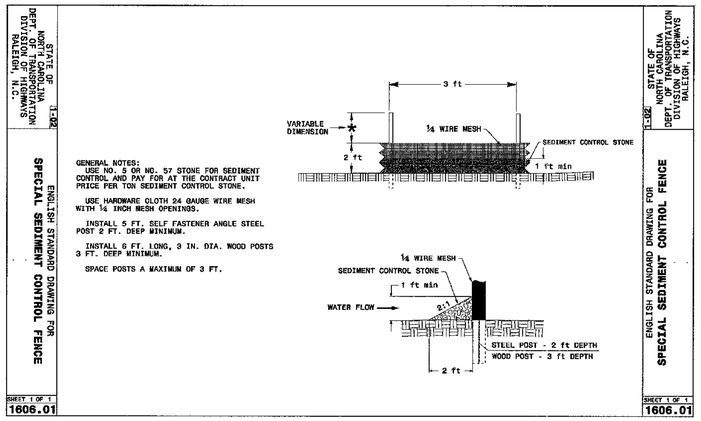
Seasonal limitations: Seedlings shall be planted from November 15 through March 15.

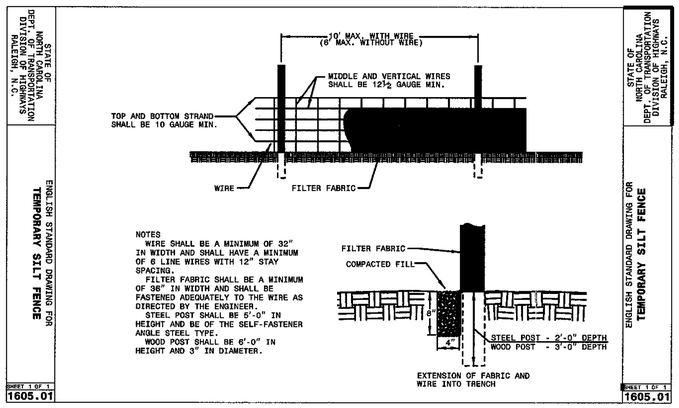
Seedlings shall be planted as soon as practical following permanent Seeding and Mulching. Seedlings shall be planted in a 16 ft. wide swath adjacent to mowing pattern line.

Root dip: The roots of reforestation seedlings shall be coated with a slurry of water, and either a fine clay ("kaolin") or a superabsorbent that is made to be used as a bare root dip. The type, mixture ratio, method of application, and the time of application shall be submitted to the Engineer for approval. With the approval of the Engineer, seedlings may be coated before delivery to the job or at the time of planting, but at no time shall the roots of the seedlings be allowed to dry out. The roots shall be moistened immediately prior to planting.

The quantity of reforestation seedlings as measured above will be paid for at the contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials and installation.







WBS NO. 37024

FRANKLIN COUNTY

STATION: 10+75.000 -L-

REPLACES BRIDGE NO. 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE # 17 ON SR 1109
OVER CEDAR CREEK

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	16
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : J.C. PENDERGRAFT DATE : 8/09
CHECKED BY : J.A. DILWORTH DATE : 8/09

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

NOTE: NOT TO SCALE

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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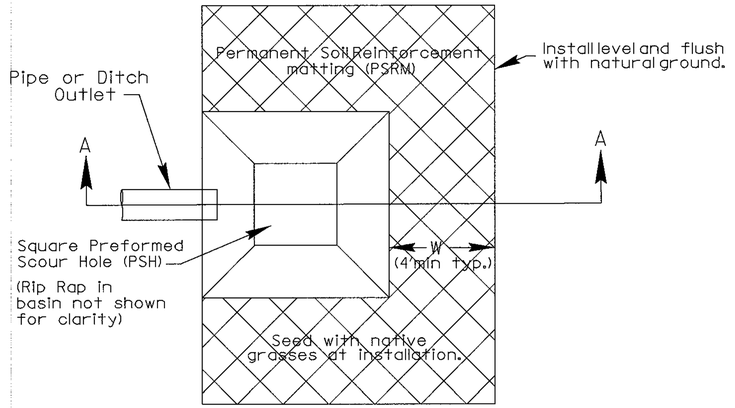
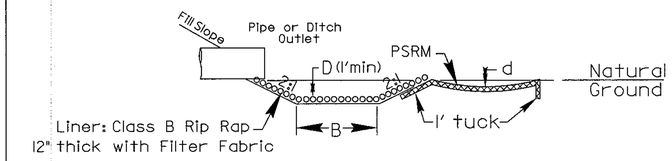
PREFORMED SCOUR HOLE

(Not to scale)

PLAN VIEW



SECTION A-A



STATION	B FT.	D FT.	W FT.	d FT.	CLASS 'B' RIP RAP TONS	PSRM SQ. FT.	FILTER FABRIC SQ. FT.
9+78 -L- LT	4	1	4	1	3	12	8
9+78 -L- RT	4	1	4	1	3	12	8

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

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
2006 STANDARD SPECIFICATIONS

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CHECKED BY : J.A. DILWORTH DATE : 8/09

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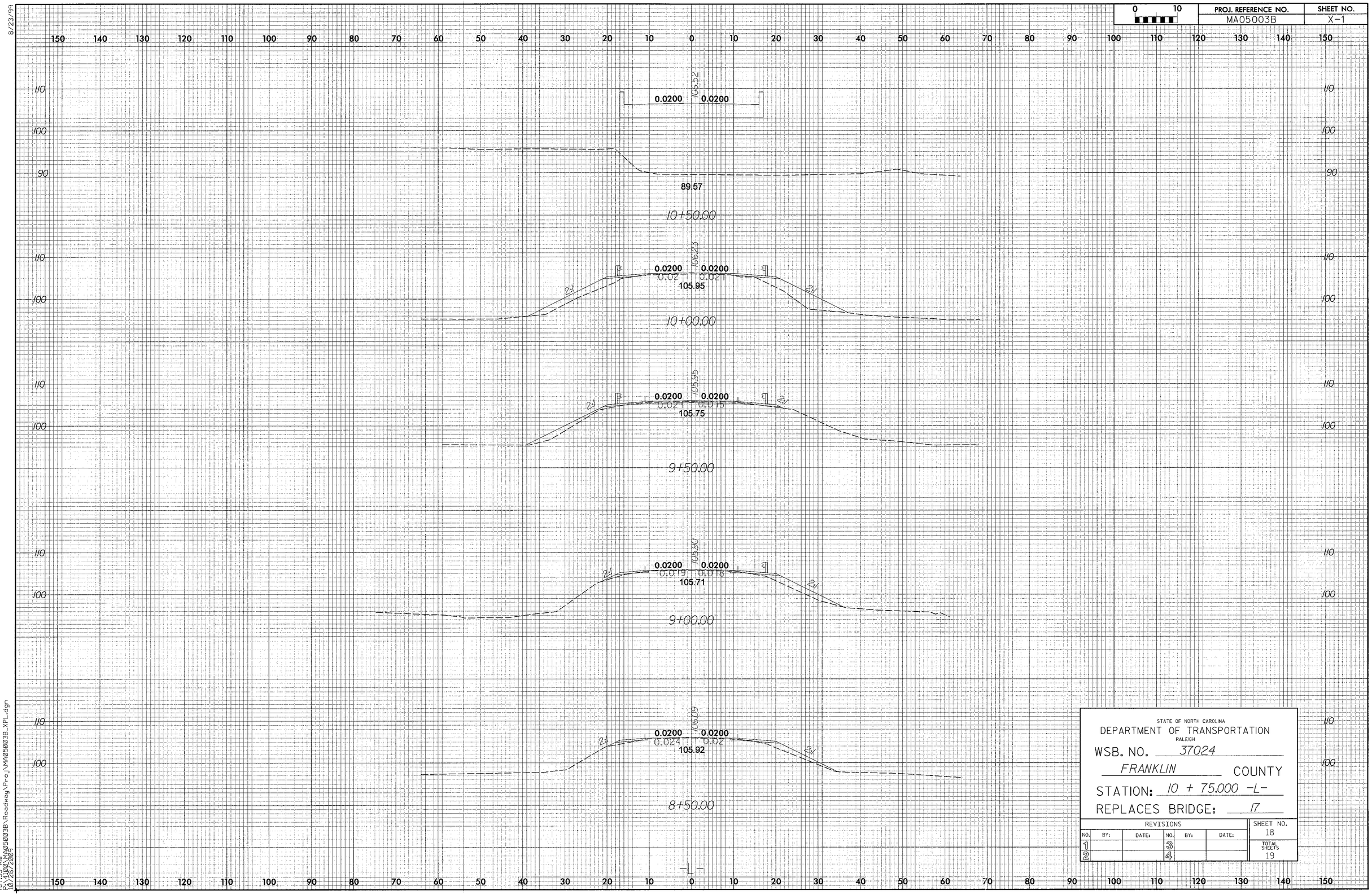

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WSB. NO. 37024

FRANKLIN COUNTY

STATION: 10 + 75.000 -L-

REPLACES BRIDGE: 17

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10/28/2009

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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FRANKLIN COUNTY

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REPLACES BRIDGE: 17

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