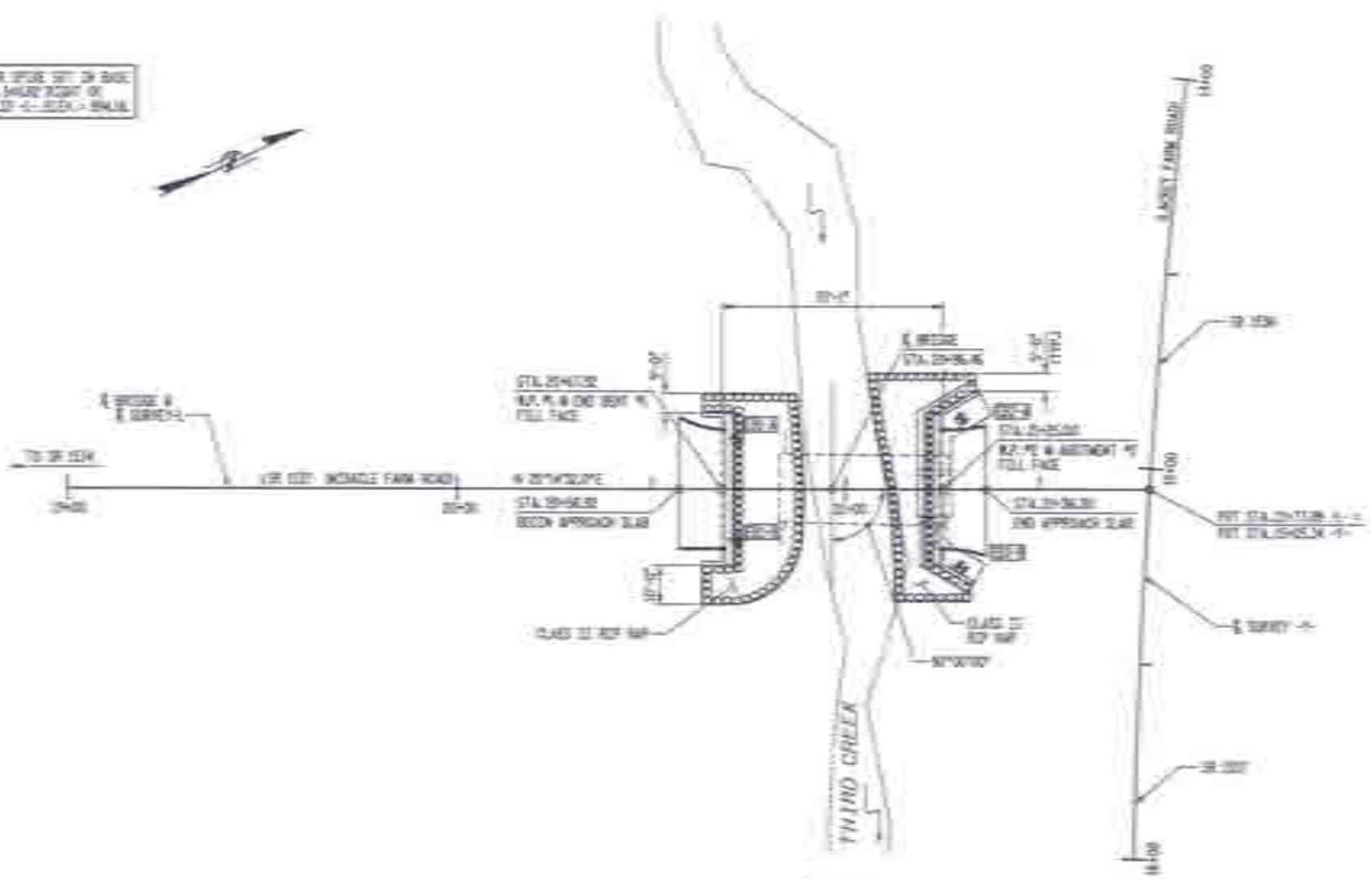
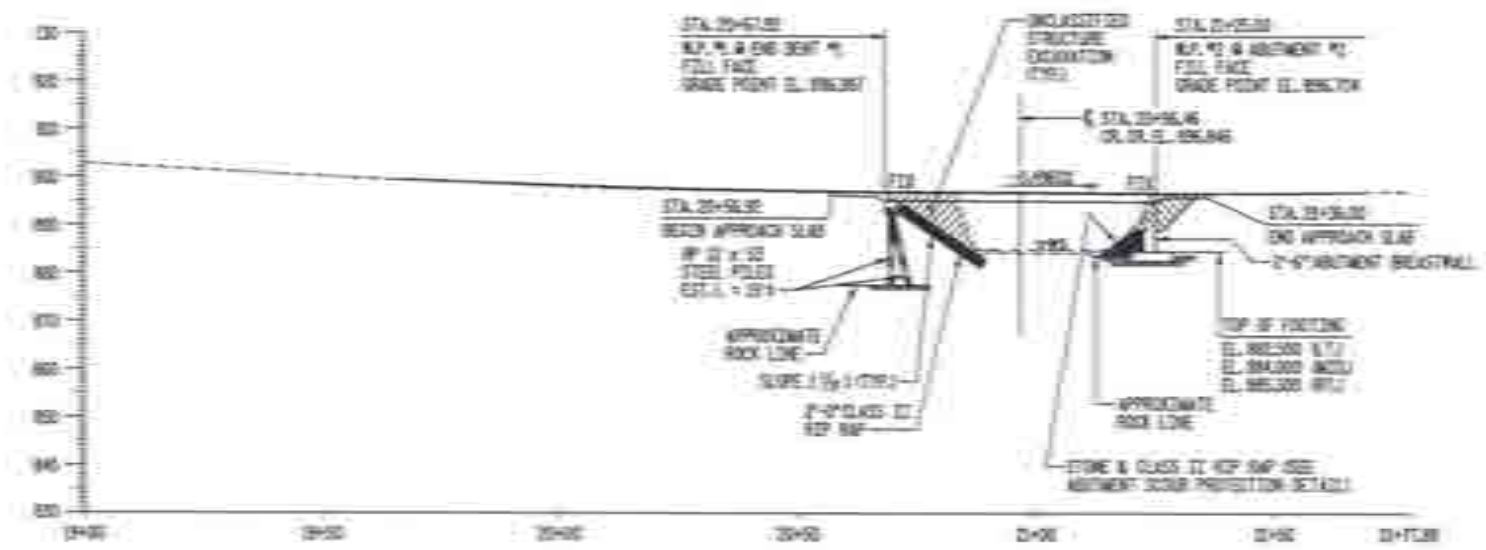


CLASS II - IN UPPER 20% OF BANK
OR 30" MAX. HORIZONTAL DIST. OF
STA. 20+12.00 TO 20+12.50 - SHALL



PLAN
SCALE: 1" = 20'



PROFILE ALONG C SURVEY
SCALE: 1" = 20'

- NOTE**
- THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH SHALL BE RECORDED INTO THE COMPLETED AND MAINTAINED RECORD. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED ON TRUCKS OR CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED MEASURING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON.
 - PLAN RIP RAP QUANTITIES LISTED AT THIRD PIERED PIERED:

END BENT NO. 1	150 TONS	140 SQUARE YARDS
PIER NO. 2	150 TONS	140 SQUARE YARDS
TOTAL	300 TONS	280 SQUARE YARDS

 - STEEL PILES AT END BENT NO. 1 TO A REQUIRED BEARING CAPACITY OF 45 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A SAFETY FACTOR OF 2.0.
 - WITH STEEL PILES, THE WINDWARD BENT SHALL NOT BE DROPPED.
 - PILES AT END BENT NO. 1 SHALL BE DRIVEN TO AN ELEVATION NOT HIGHER THAN EL. 87.1 FT. AND VERIFY THE BEARING CAPACITY OF 45 TONS EACH.
 - THE SOIL OPTICAL SECTION FOR BENT NO. 2 IS 8L 88.0 FT. THE SOIL OPTICAL SECTION IS FOR USE BY MAINTENANCE PERSONNEL TO MONITOR THROUGH SOIL PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 - THE REQUIRED BEARING CAPACITY OF THE BRIDGE FOOTING AT BENT NO. 2 IS 2 TONS. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.
 - TO PREPARE FOOTING FOR THIS BRIDGE, THE FOOTING SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.
 - FOOTING AT BENT NO. 2 SHALL BE REVEALED TO SHOW THE TOP OF THE FOOTING WITH MINIMUM 18" COVER AS SHOWN ON THE PLANS.
 - FOOTING SOIL PROTECTION SHALL BE REQUIRED AT BENT NO. 2. RIP RAP SHALL NOT BE PLACED ABOVE THE STREAM LINE.
 - THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 106 OF THE STANDARD SPECIFICATIONS.
 - CURRENT AND FUTURE ESTIMATED.
 - ALL PORTIONS OF BRIDGE WALL AND ON STEEL BENT SUPPORTS SHALL BE PAINTED IN THE FIELD SECTION WITH GALVANIZED STEEL BENT SUPPORTS.
- ⊕ INDICATES EXISTING LOCATION

DESCRIPTION OF EXISTING BRIDGE
1 SPAN @ 40'-0" APPROX BEARING SURFACE ON 2x12 AND 2x8 TIMBER BEAM ON I-BEAM END BENTS CONSIST OF TIMBER CAPS AND PILES WITH TIMBER BEARING SURFACE CLEAR ROADWAY WIDTH.

PROJECT NO. 33504
COUNTY: IREDELL
STATION: 20+96.46
REPLACES BRIDGE NO. 95

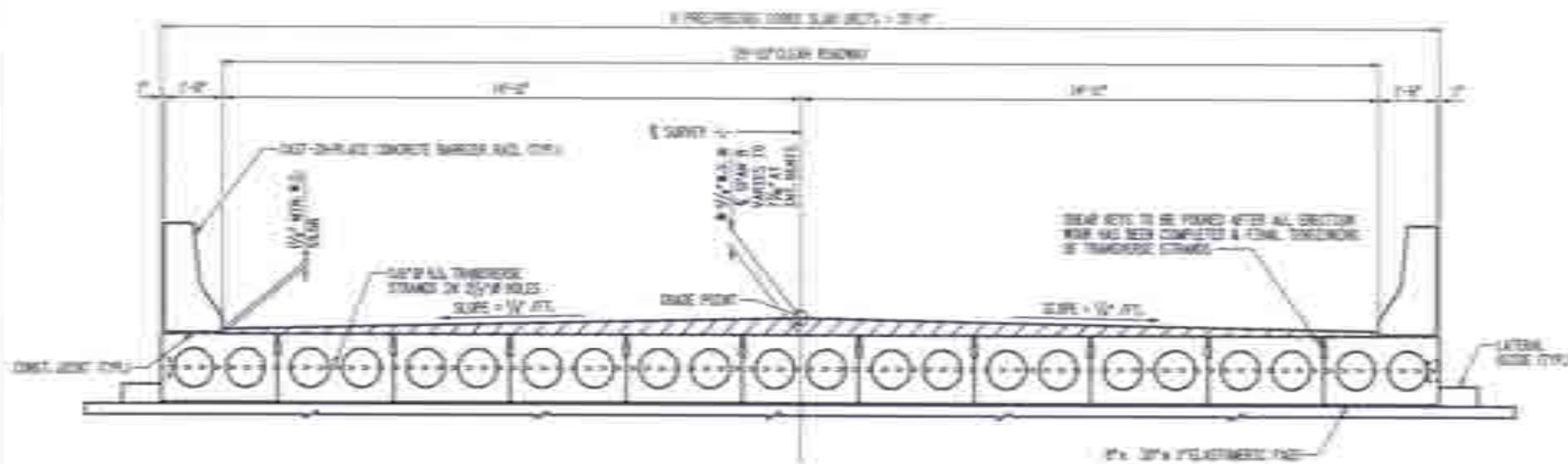
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE NO. 95 ON SR 1537
OVER THIRD CREEK
29'-10" CLEAR ROWY - 90" SKEN

CO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
A Division of Matthews, Inc., Charlotte
100 W. WILSON ROAD, SUITE 100, CHARLOTTE, NC 28203
704.366.1111



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

DESIGNED BY: M. J. LAMOND
CHECKED BY: J. L. WOODRUFF
DATE: 03/11/04



TYPICAL SECTION

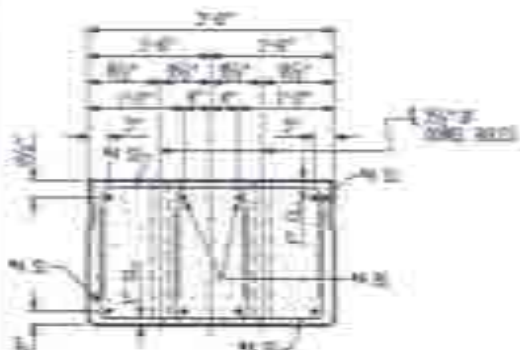


GENERAL NOTES:
 1. ALL PRESTRESS STRANDS SHALL BE 7 WIRE LOW RELAXATION HIGH STRENGTH CABLES IN ACCORDANCE WITH THE SPECIFICATIONS. SIZE TYPE AREA AULTIMATE STR. 1/2\"/>

SHEATH CHART

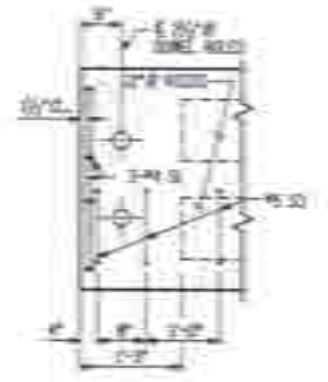
SPAN LENGTH	NUMBER OF ENCASED STRANDS FOR EXTERIOR SLAB SECTION	NUMBER OF ENCASED STRANDS FOR INTERIOR SLAB SECTION
55'	4 @ 2"	4 @ 2"

W BOND SHALL BE GIVEN ON THESE STRANDS FOR A DISTANCE OF 4 FEET FROM THE END OF THE SLAB.

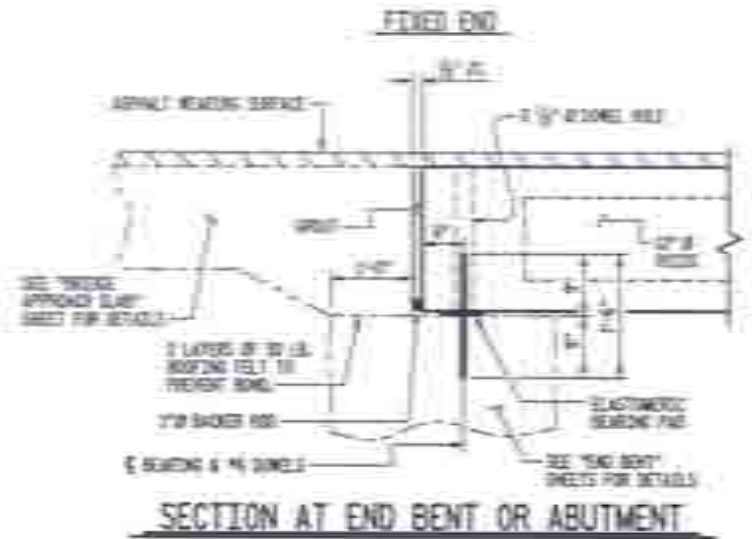


END ELEVATION

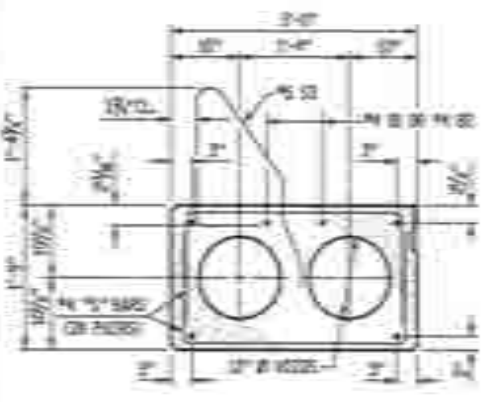
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOME HOLES. STRAND LAYOUT NOT SHOWN. EXTERIOR SLAB SECTION SHOWS EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. THE 1/2\"/>



PART PLAN EXTERIOR CORED SLAB

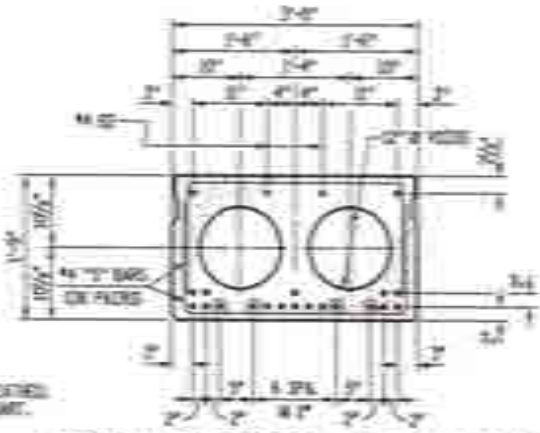


SECTION AT END BENT OR ABUTMENT

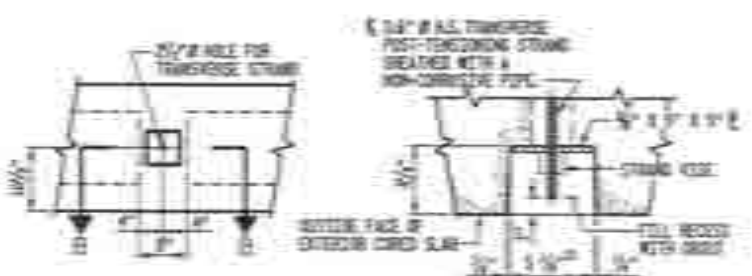


55' SPAN-EXTERIOR SLAB SECTION

IF STRAND IS SEATED, SEE DESIGN CHART.



55' SPAN-INTERIOR SLAB SECTION



ELEVATION VIEW SECTION B-B
 GROUDED RECESS AT END OF POST-TENSIONED STRAND - CORED SLABS

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 NCEM

3'-0" X 1'-9"
 PRESTRESSED CORED SLAB UNIT
 29'-10" CLEAR ROADWAY - 90° SKEW

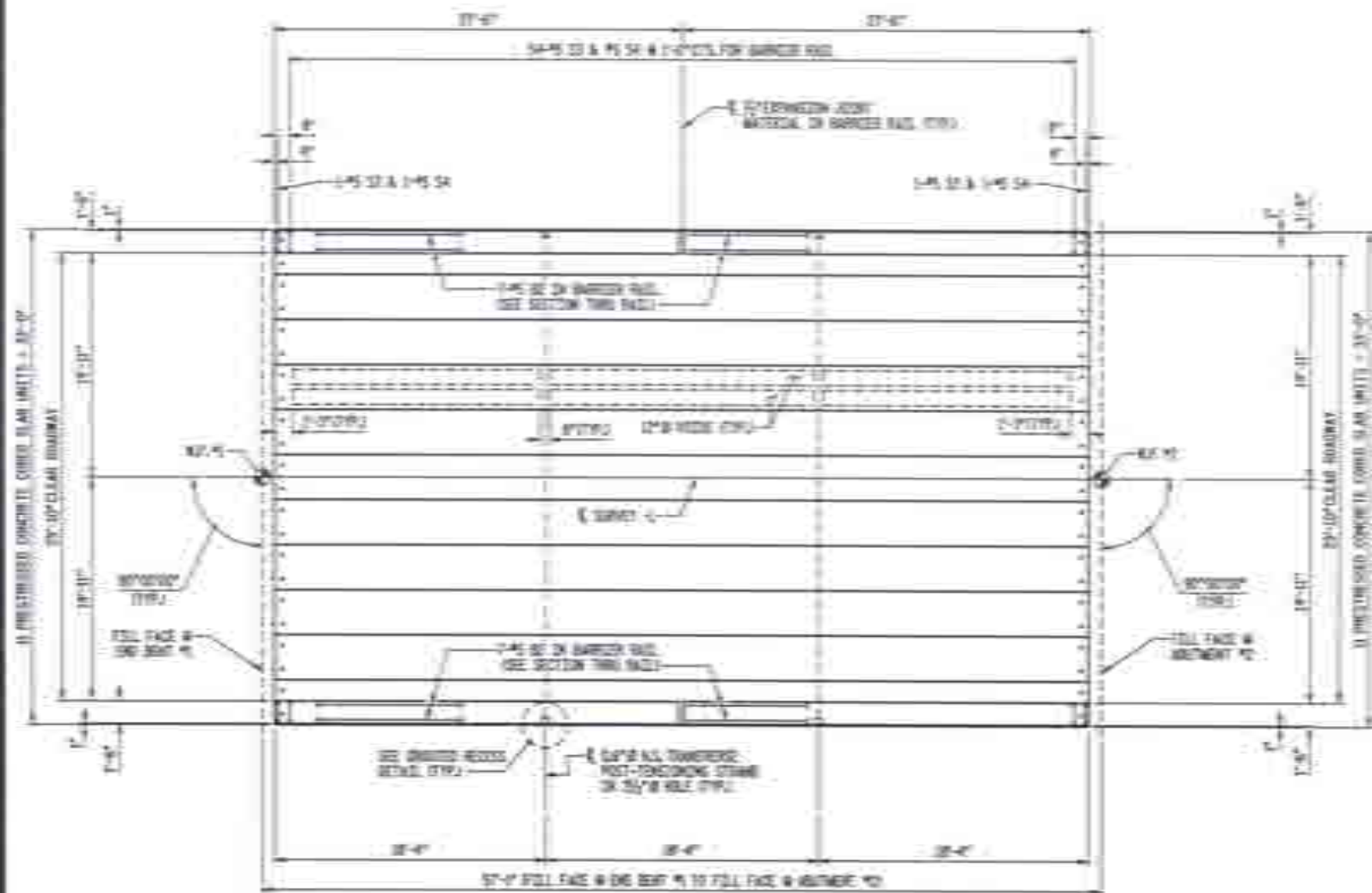
KL & ASSOCIATES, P.C.
 Consulting Engineers
 & Architects & Surveyors, Inc., Raleigh



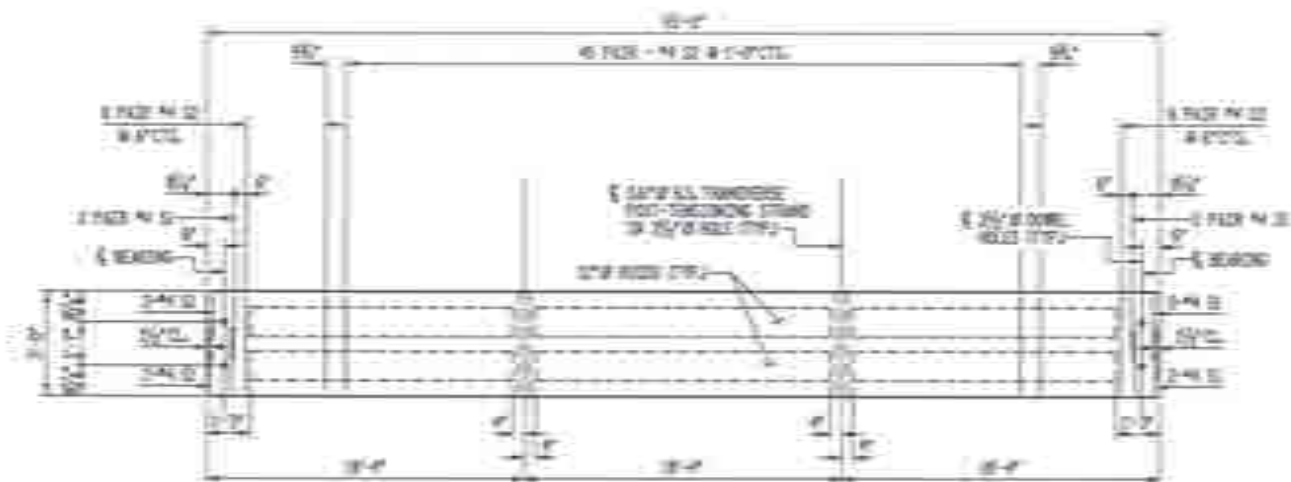
REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			2		
2			3		

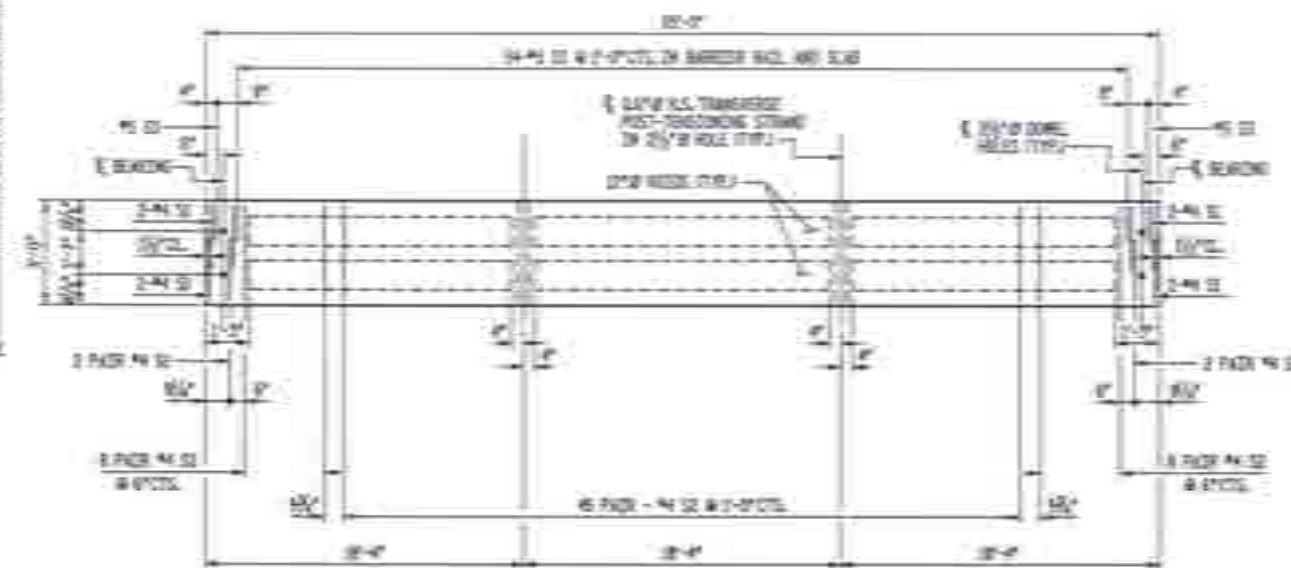
NOT TO SCALE



PLAN OF SPAN



55' SPAN - PLAN OF INTERIOR CORED SLAB UNIT



55' SPAN - PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BALDWIN
 PLAN OF SPAN
 CORED SLAB DETAILS,
 3'-0" X 1'-9"
 PRESTRESSED CORED SLAB UNIT
 55' SPAN

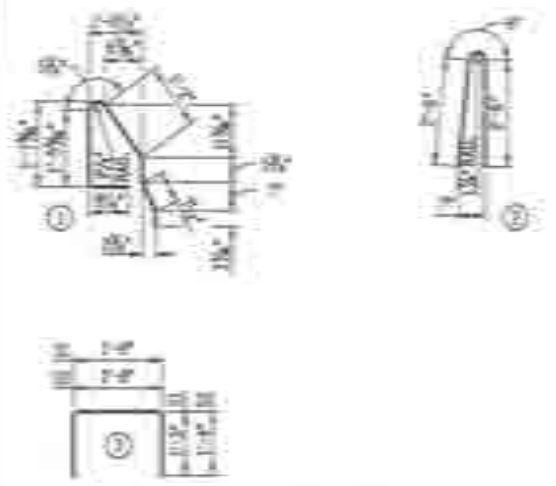
KO & ASSOCIATES, P.C.
 Consulting Engineers
 & Architects
 1000 W. HARRIS STREET, SUITE 200
 RALEIGH, N.C. 27601



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

NOT TO SCALE

BAR TYPES



ALL BAR DIMENSIONS ARE SET TO 90°

BILL OF MATERIAL FOR ONE 55'-0" INTERIOR CORED SLAB SECTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
#4	4	#4	TOP	26'-0"	15	
#4	20	#4	2"	4'-0"	61	
#2	100	#4	3"	2'-0"	450	
REINFORCING STEEL					LB	526
7000 P.S.I. CONCRETE					C.Y.	1.8
1/2" DIA. L.A. STRANDS					NO.	20

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
#4	12	#4	TOP	21'-0"	70	
#4	12	#4	2"	2'-0"	64	
WEPON COATED REINFORCING STEEL					LB	134
CLASS 88 CONCRETE					C.Y.	10.2
TOTAL CUB. FT. OF CONCRETE SURFACE RAIL						102.0

BILL OF MATERIAL FOR ONE 55'-0" EXTERIOR CORED SLAB SECTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
#4	4	#4	TOP	26'-0"	15	
#4	16	#4	3"	4'-0"	61	
#2	100	#4	3"	2'-0"	450	
#20	20	#4	1"	2'-0"	101	
REINFORCING STEEL					LB	526
WEPON COATED REINFORCING STEEL					LB	307
7000 P.S.I. CONCRETE					C.Y.	1.8
1/2" DIA. L.A. STRANDS					NO.	20

GRADE 270 STRANDS

WEB	1/2" DIA. L.A.
1 SQUARE STRAND	1.00
2 TRIANGULAR STRANDS	1.00
APPROX. PROPOSED	4.00

CORED SLABS REQUIRED

SECTION	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	1	55'-0"	55'-0"
INTERIOR C.S.	1	55'-0"	55'-0"

SUMMARY FOR EXTERIOR CORED SLAB SECTIONS

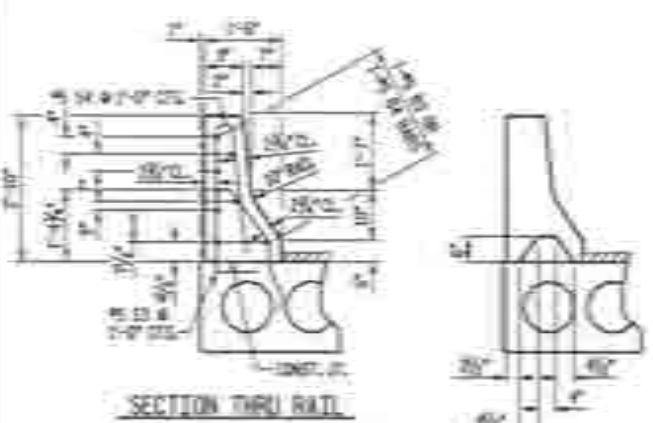
	55' SW	TOTAL
REINFORCING STEEL	LB	1052
WEPON COATED REINFORCING STEEL	LB	307
7000 P.S.I. CONCRETE	C.Y.	3.6
1/2" DIA. L.A. STRANDS	NO.	40

SUMMARY FOR INTERIOR CORED SLAB SECTIONS

	55' SW	TOTAL
REINFORCING STEEL	LB	1052
7000 P.S.I. CONCRETE	C.Y.	3.6
1/2" DIA. L.A. STRANDS	NO.	40

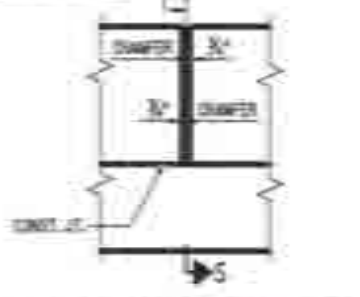
DEAD LOAD DEFLECTION AND CAMBER

	55' SW
3-0" X 1'-0"	
1/2" DIA. L.A. STRAND	
CAMBER (SLAB ALONG IN PLACE)	1/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.40" ↓
NET CAMBER	1/8" ↑

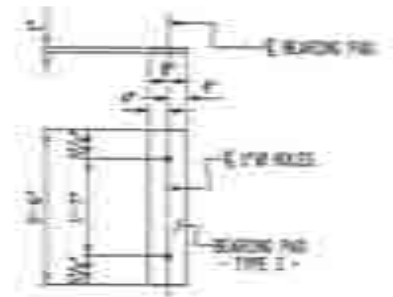


SECTION S-S
AT 2" DIA. IN OPEN JOINT
THIS IS TO BE USED ONLY
WHEN SLP FORM IS USED

FOR EXP. JOINT, WELD IN PLACE WITH GALVANIZED WIRE. NOTE: INCT. EXP. JOINT, WELD WHEN SLP FORM IS USED.



ELEVATION AT EXPANSION JOINT BARRIER RAIL DETAILS



FIXED END ELASTOMERIC BEARING DETAILS

NOTES

- ALL REINFORCING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO A930 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL CAST WITH THE CONCRETE SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.
- EXCESS FOR PARALLEL STRANDS SHALL BE GRATED WITH THE TENSIONING OF THE STRANDS.
- THE 2" DIA. BORE HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.
- THE BORE HOLES SHALL CONFORM TO THE REQUIREMENTS OF TYPE A BOND SPREADER SEE SECTION 1008 OF THE STANDARD SPECIFICATIONS.
- WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT HOLES FROM RISING OR WITHDRAWING. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM, IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE DETAILED.
- ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.
- REINFORCING STRANDS SHALL BE CUT FLUSH WITH THE CONCRETE UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO CONCRETE UNIT ENDS.
- VERTICAL BRIDGED CONTRACTION JOINTS, 10" IN DEPTH, SHALL BE TOOK IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 604-08 OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THREE FEET BETWEEN BARRIER RAIL EXPANSION JOINTS.
- THE MINIMUM HEIGHT OF THE BARRIER RAIL SHALL BE 30" MIN. THE HEIGHT OF THE BARRIER RAIL, MEASURED TO THE TOP OF THE RAIL FOLLOWING THE PROFILE OF THE GUTTERLINE.

PROJECT NO. 33504
COUNTY: IREDELL
STATION: 20+96.46
REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HAZARD
BILL OF MATERIALS

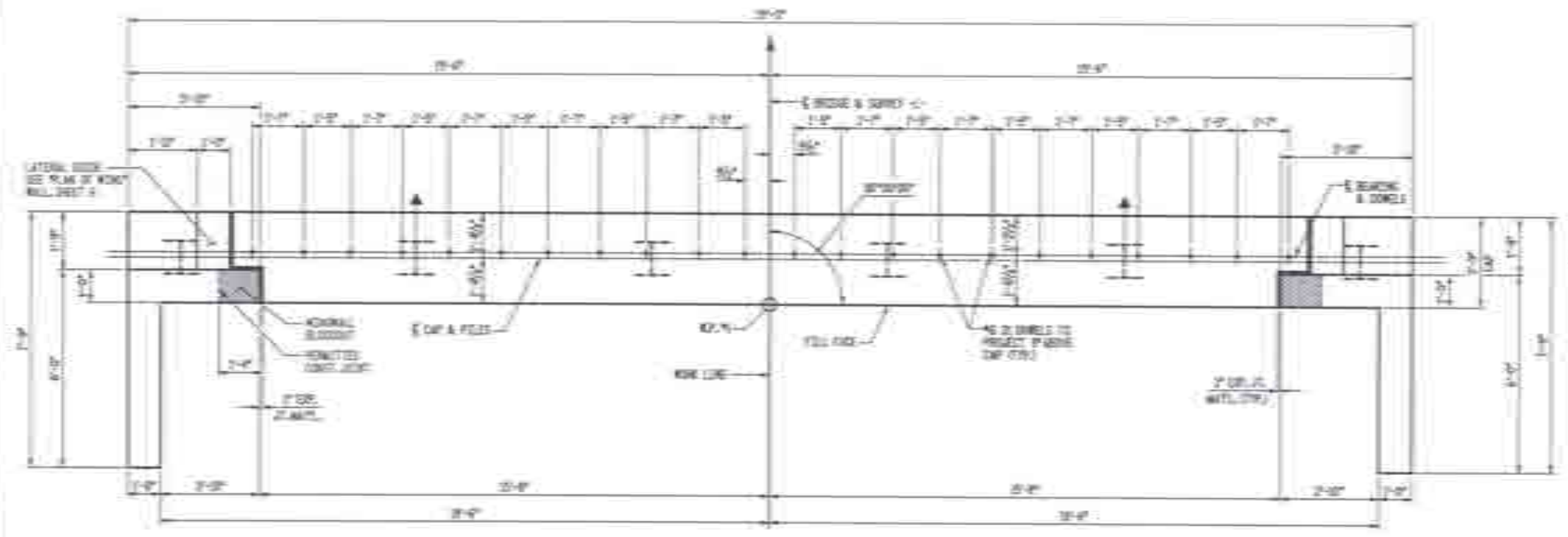
KO & ASSOCIATES, P.C.
Civil/Structural Engineers
A Division of K&A Associates, Inc. (Incorporated)
100 W. Hargett Street, Suite 2000, Raleigh, NC 27601-2000



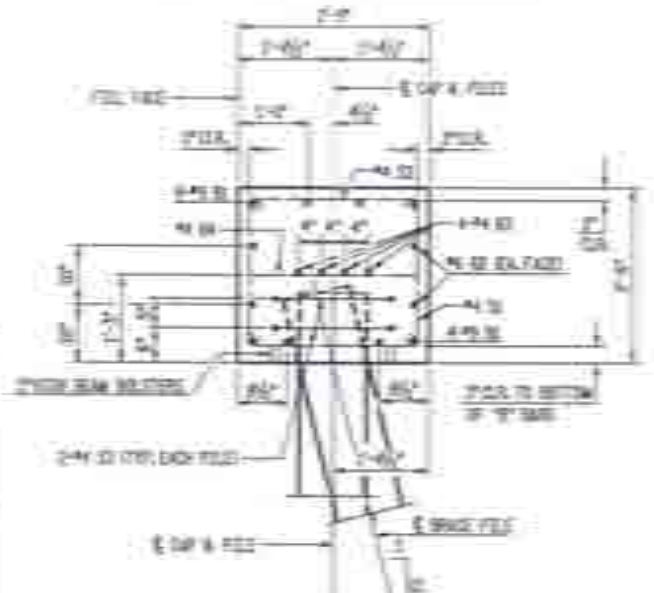
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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2			2		

NOT TO SCALE

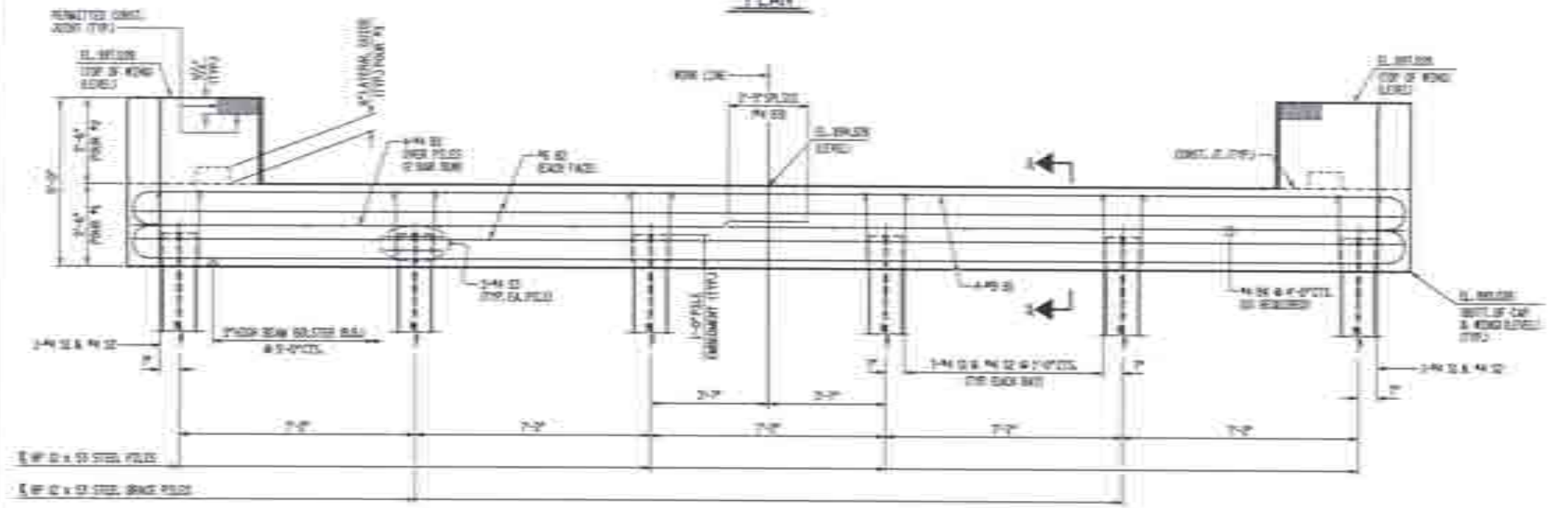
DRAWN BY: J.L. WOODRUFF DATE: 12/17/09
CHECKED BY: J.L. WOODRUFF DATE: 12/17/09



PLAN



SECTION A-A



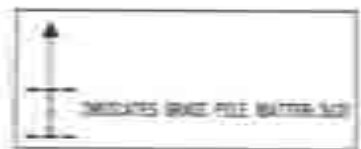
ELEVATION

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BUREAU

CAST-IN-PLACE
 END BENT NO. 1
 29'-10" CLEAR ROWY - 90° SKEW

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

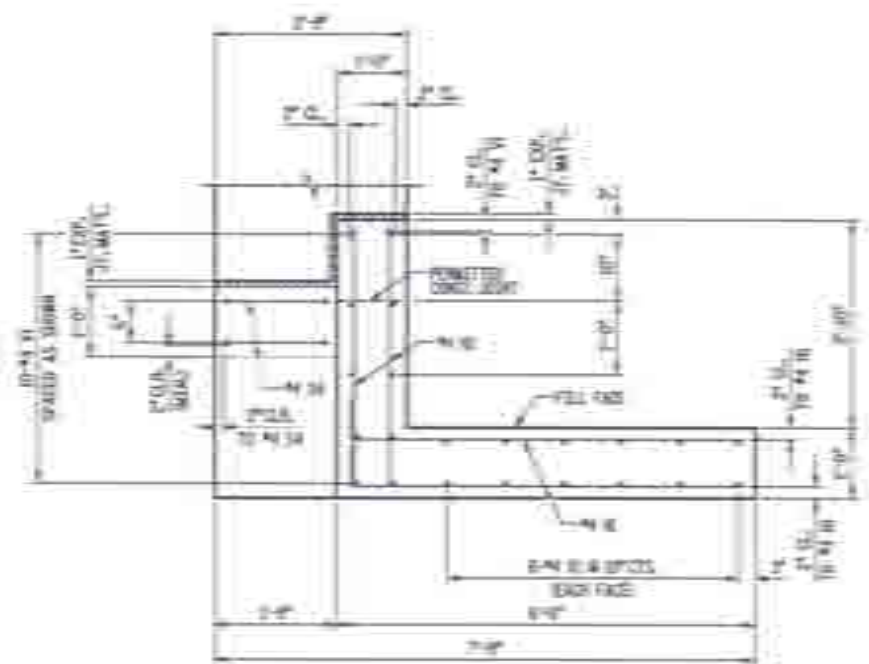


NOT TO SCALE

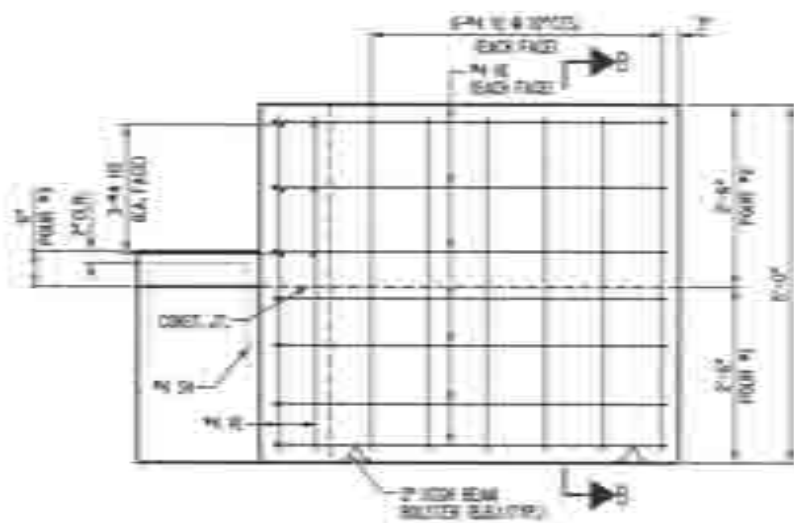
KO & ASSOCIATES, P.C.
 A Planning & Consulting Firm
 1000 W. HARRIS STREET, SUITE 200
 RALEIGH, NC 27601



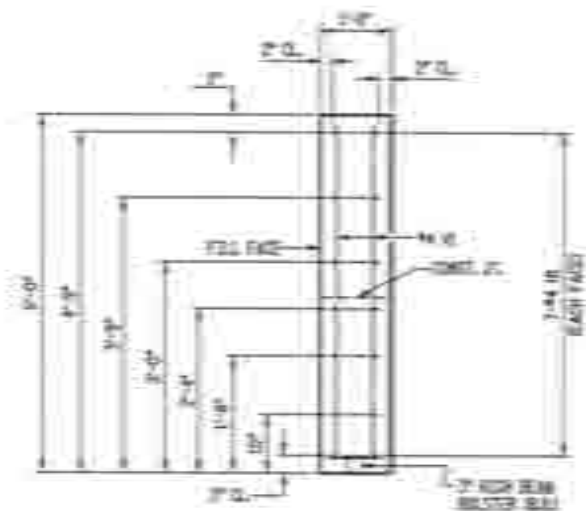
DATE: 11-2-09
 DRAWN BY: K. W. WOOD
 CHECKED BY: K. W. WOOD
 ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE AASHTO AND MICHIGAN BRIDGE DESIGN CRITERIA.



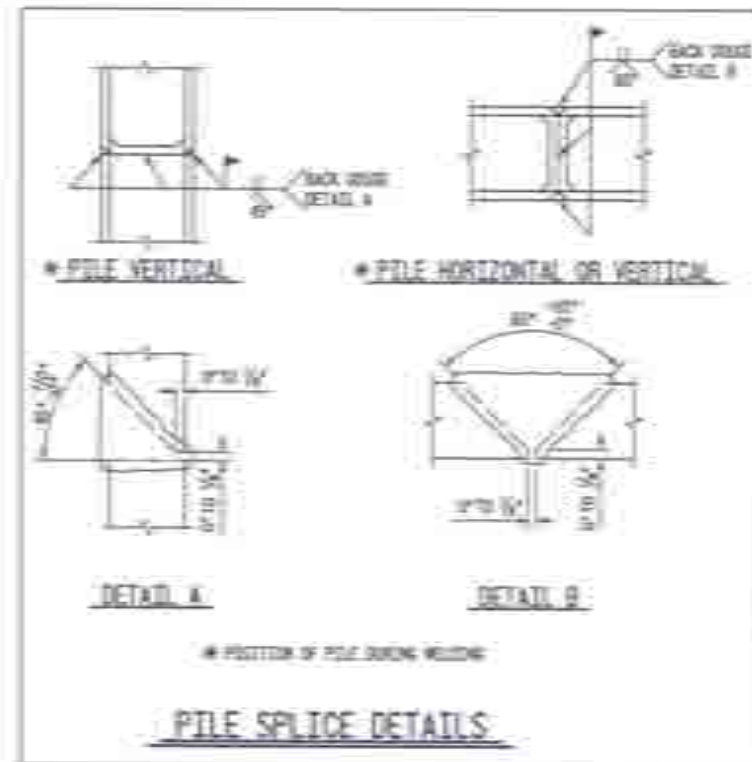
PLAN OF WING



ELEVATION OF WING



SECTION B-B



BILL OF MATERIAL

END BENT 1

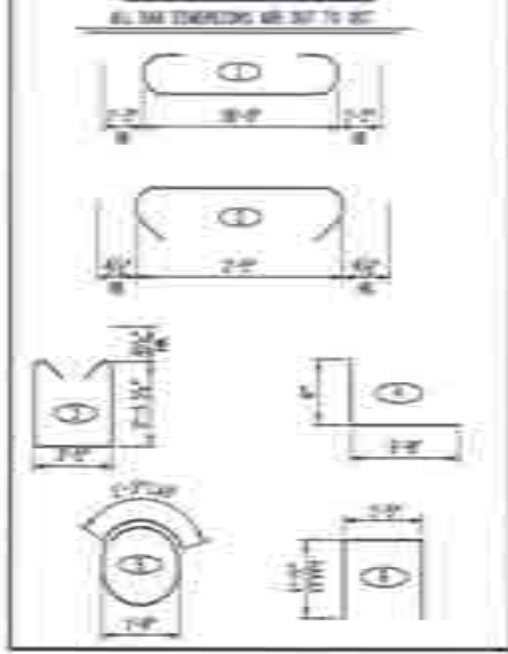
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#4	TOP	8'-0"	10.00
B2	#4	TOP	8'-0"	10.00
B3	#4	TOP	8'-0"	10.00
B4	#4	TOP	8'-0"	10.00
B5	#4	TOP	8'-0"	10.00
B6	#4	TOP	8'-0"	10.00
B7	#4	TOP	8'-0"	10.00
B8	#4	TOP	8'-0"	10.00
B9	#4	TOP	8'-0"	10.00
B10	#4	TOP	8'-0"	10.00
B11	#4	TOP	8'-0"	10.00
B12	#4	TOP	8'-0"	10.00
B13	#4	TOP	8'-0"	10.00
B14	#4	TOP	8'-0"	10.00
B15	#4	TOP	8'-0"	10.00
B16	#4	TOP	8'-0"	10.00
B17	#4	TOP	8'-0"	10.00
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B27	#4	TOP	8'-0"	10.00
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B36	#4	TOP	8'-0"	10.00
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B81	#4	TOP	8'-0"	10.00
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B83	#4	TOP	8'-0"	10.00
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B85	#4	TOP	8'-0"	10.00
B86	#4	TOP	8'-0"	10.00
B87	#4	TOP	8'-0"	10.00
B88	#4	TOP	8'-0"	10.00
B89	#4	TOP	8'-0"	10.00
B90	#4	TOP	8'-0"	10.00
B91	#4	TOP	8'-0"	10.00
B92	#4	TOP	8'-0"	10.00
B93	#4	TOP	8'-0"	10.00
B94	#4	TOP	8'-0"	10.00
B95	#4	TOP	8'-0"	10.00
B96	#4	TOP	8'-0"	10.00
B97	#4	TOP	8'-0"	10.00
B98	#4	TOP	8'-0"	10.00
B99	#4	TOP	8'-0"	10.00
B100	#4	TOP	8'-0"	10.00

REINFORCING STEEL TOTAL 2,133 LB

CLASS "A" CONCRETE

POUR 1 (CAP & BOTTOM OF WINGS)	10.9	CY
POUR 2 (TOP OF WINGS)	1.3	CY
POUR 3 (LATERAL GUIDES)	0.1	CY
TOTAL	12.3	CY

BAR TYPES



PRELIMINARY PLANS

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 HALDEN
 DRAWING NO. XX
 CAST-IN-PLACE
 END BENT NO. 1 DETAILS
 29'-10" CLEAR ROWY - 90° SKEW

KO & ASSOCIATES, P.C.
 Consulting Engineers
 & Surveyors & Architects, Inc. (Delaware)
 1000 W. HARRIS STREET, SUITE 200
 WARRINGTON, VA 22090

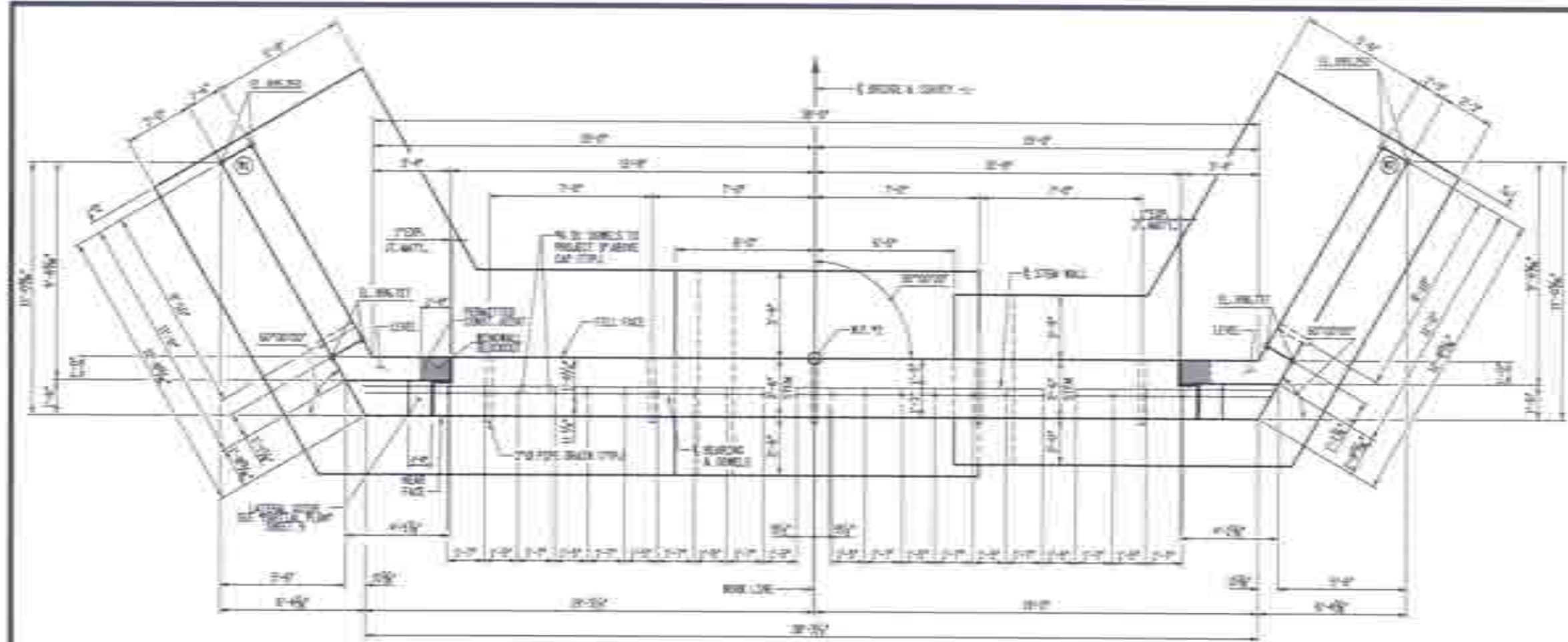


REVISIONS		DATE	BY	DATE	BY
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2					

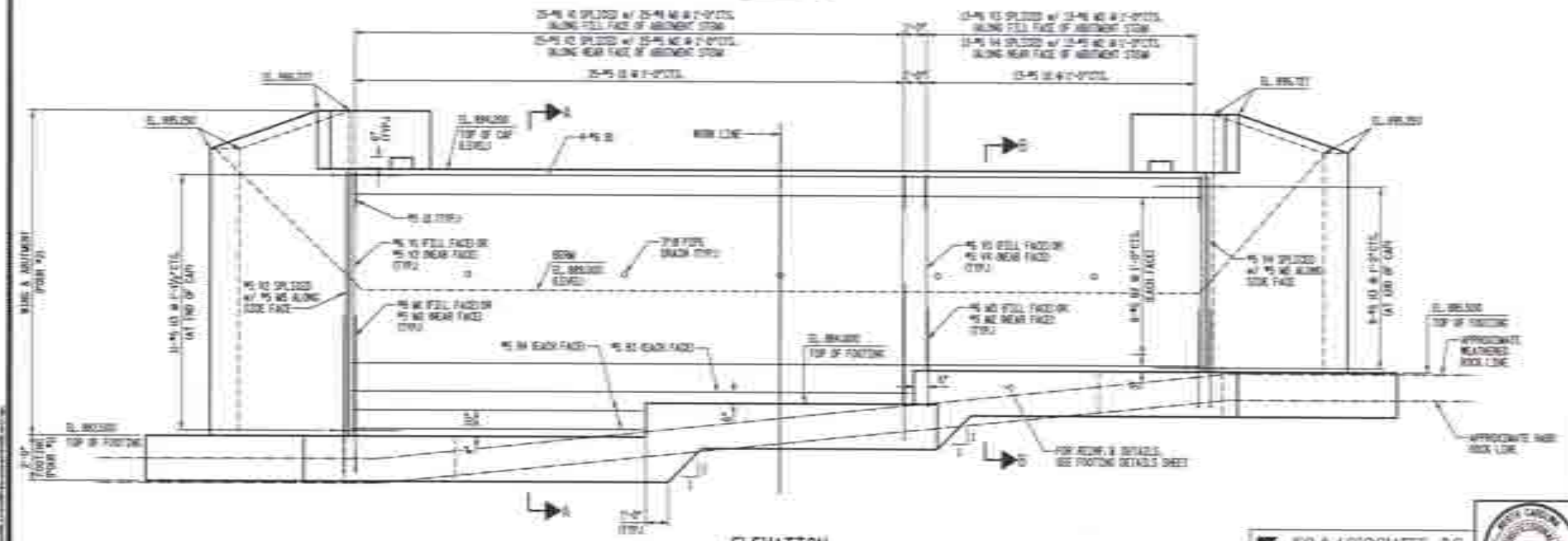
NOT TO SCALE

SCALE OF ALL DIMENSIONS: 1/8" = 1'-0"
 UNLESS OTHERWISE NOTED

NOTES:
 STIRRUPS MAY BE OMITTED SLIGHTLY AS NECESSARY TO CLEAR DIMLS.
 FIRE BRACKS MAY BE OMITTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND DIMLS.
 FOOTINGS SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLAN.
 THE WITHDRAW DETAILS, SEE DETAIL SHEET NO. 1.
 FOR SECTION 4-4' AND SECTION 4-11', SEE DETAIL SHEET NO. 1.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE REINFORCEMENT IS DETAILLED WITH 2 FEET OF ADDITIONAL LENGTH.



PLAN



ELEVATION

FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY

NOT TO SCALE

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

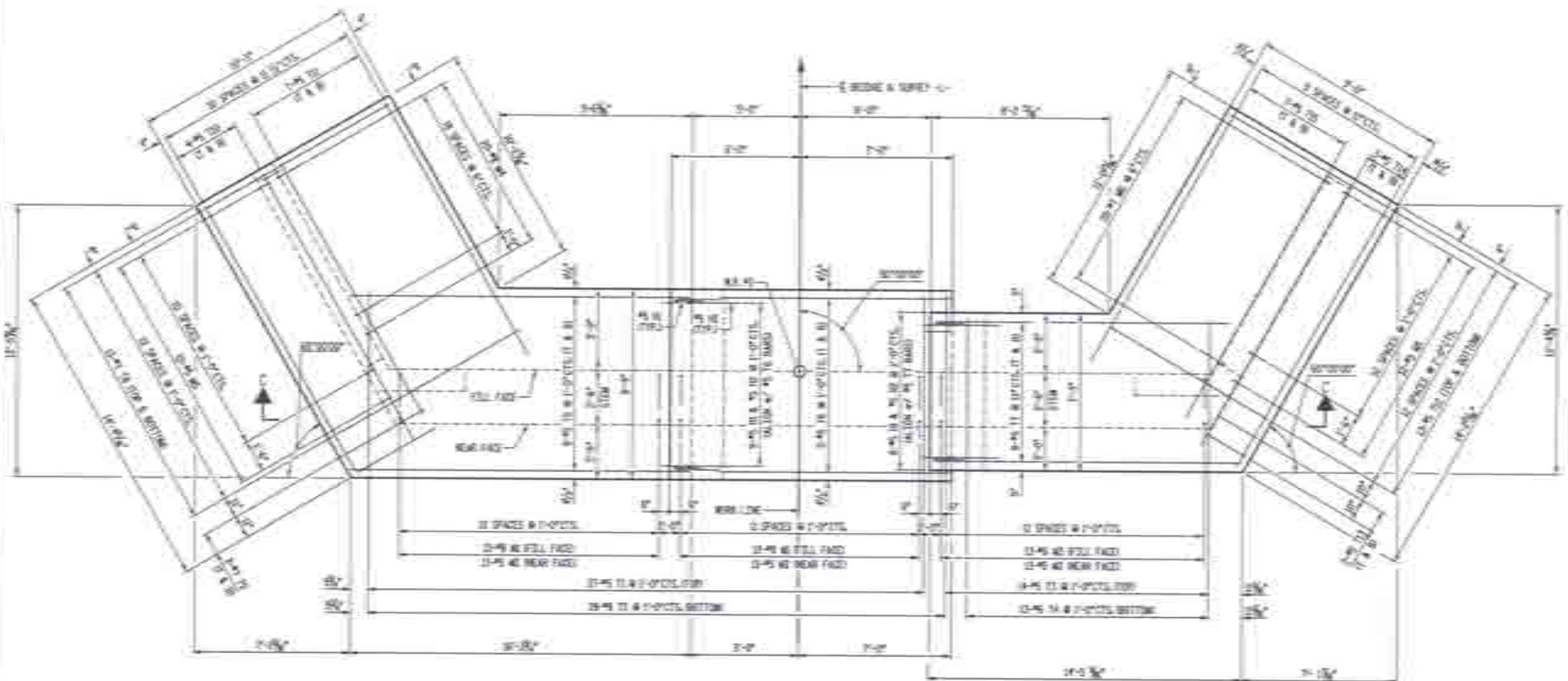
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BALDWIN
 CAST-IN-PLACE
 ABUTMENT NO. 2
 55' SPAN WITH APPROACH SLAB
 29'-10" CLEAR ROWY - 90° SKEW

RO & ASSOCIATES, P.C.
 Consulting Engineers
 4015 North Carolina Street, Suite 200
 Raleigh, NC 27609
 919-873-8888

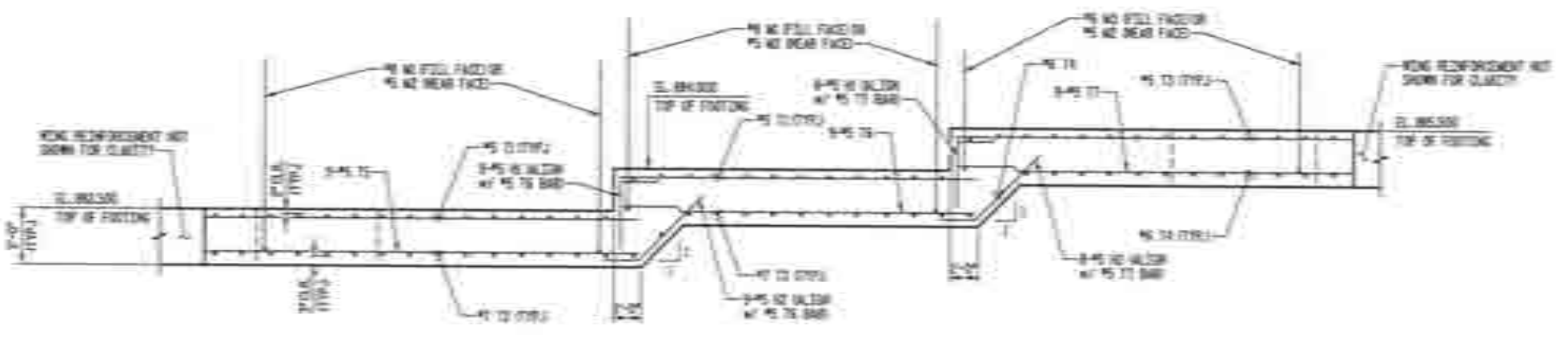


REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			1		
2			2		
			3		

7
 21



FOOTING PLAN
 NOTES: 1" = 8' INDICATED TOP & BOTTOM



SECTION C-C

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BALDWIN
 CAST-IN-PLACE
 ABUTMENT NO. 2
 FOOTING DETAILS
 55' SPAN WITH APPROACH SLAB
 29'-10" CLEAR RDWY - 90° SKEM

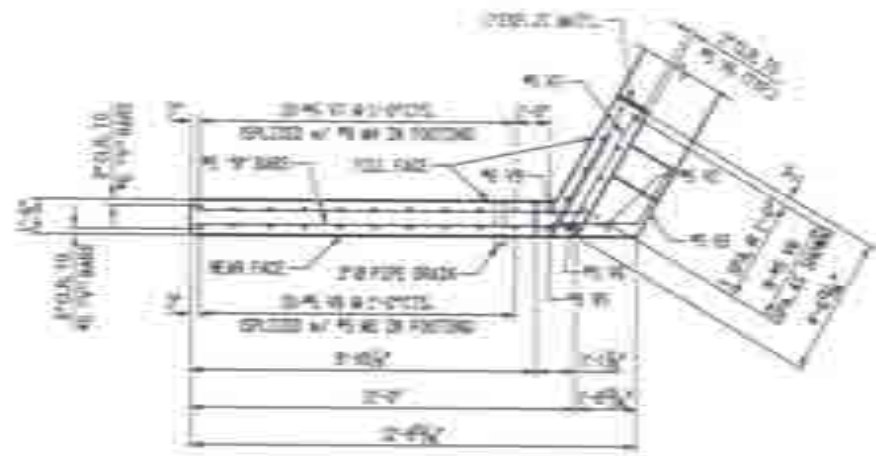
KO & ASSOCIATES, P.C.
 Consulting Engineers
 4700 W. 10th Street, Suite 200
 Raleigh, NC 27609
 (919) 873-8800



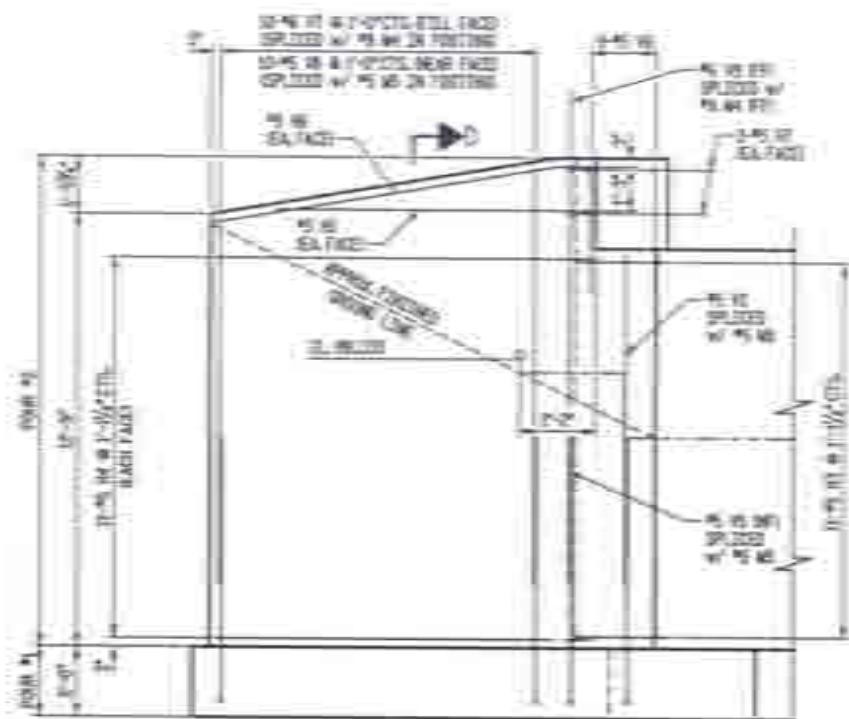
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NOT TO SCALE

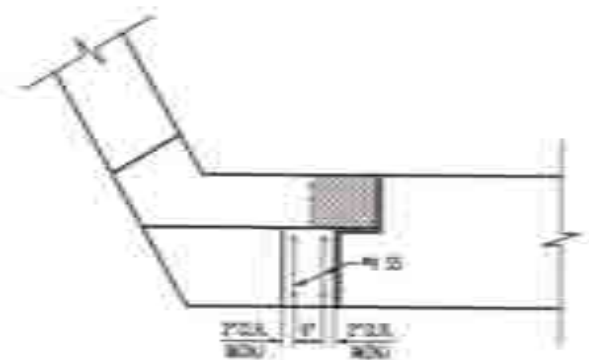
PROPERTY OF K&A ASSOCIATES, P.C. DATE 10/27/09
 PROJECT: 401212-0000-0000-0000-0000-0000-0000



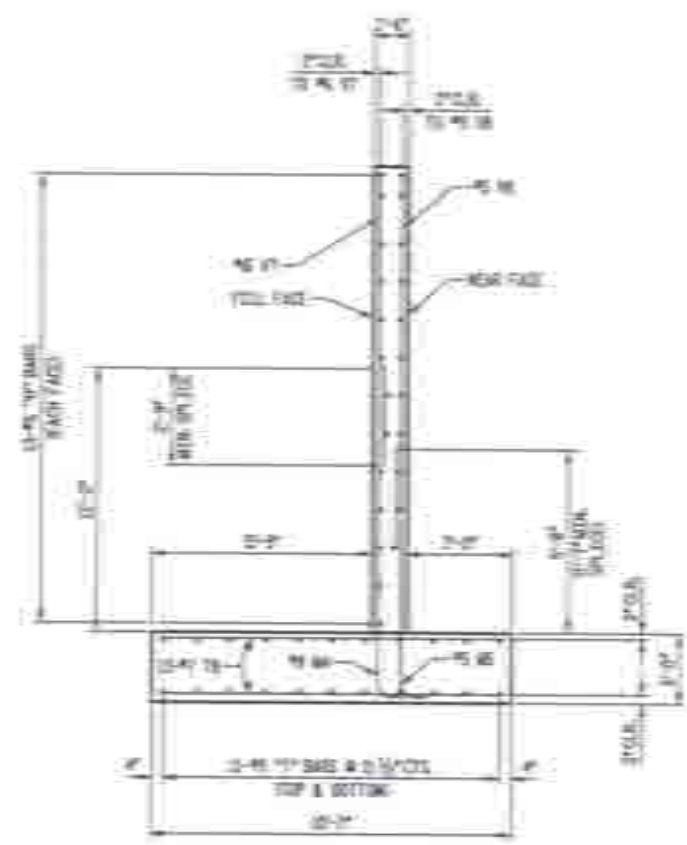
PLAN OF WING - W1



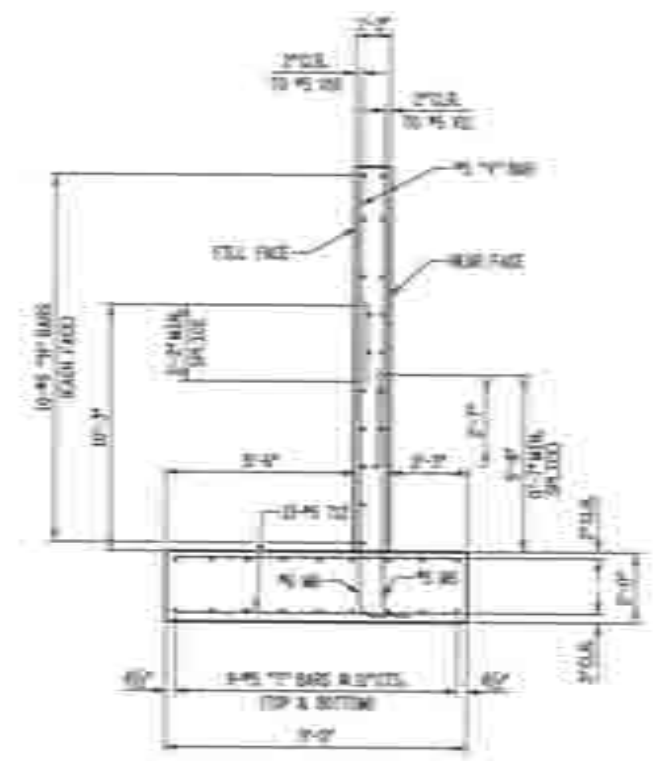
ELEVATION OF WING - W1



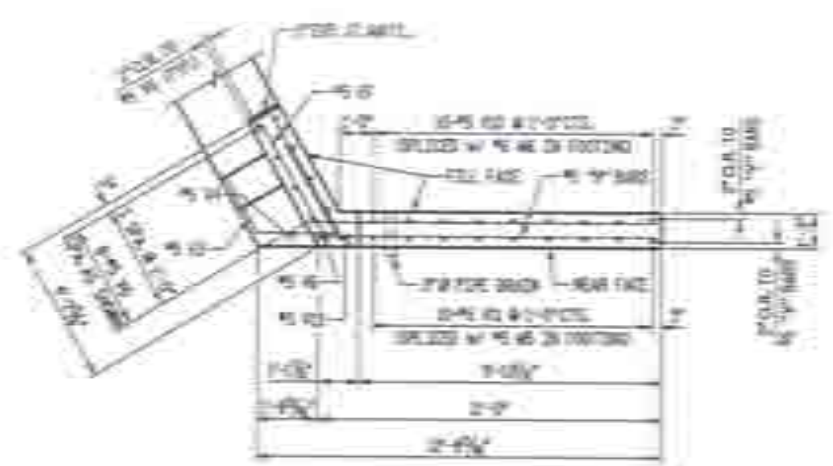
PARTIAL PLAN



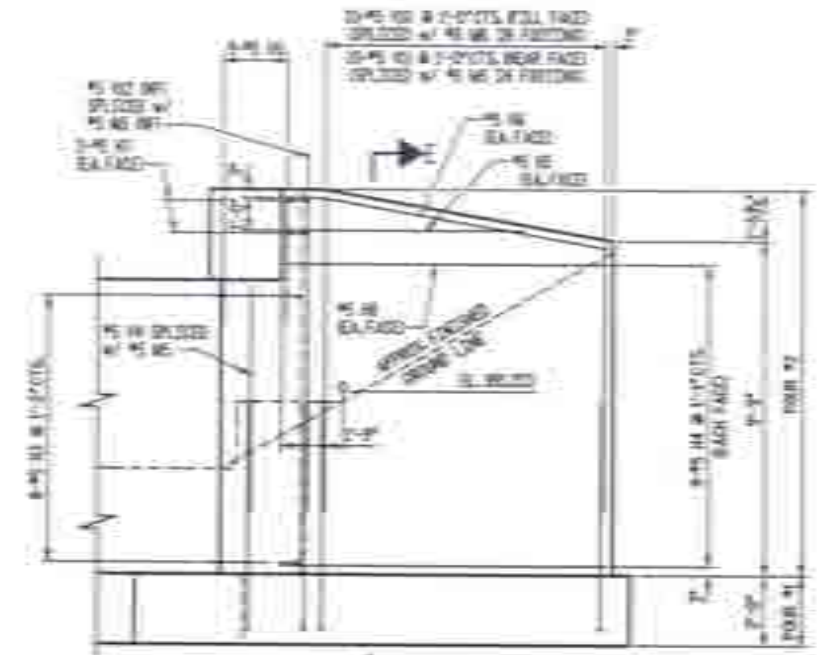
SECTION D-D



SECTION E-E



PLAN OF WING - W2



ELEVATION OF WING - W2

NOTE:
 REINFORCES TIE FACE
 REINFORCES NEAR FACE

PROJECT NO: 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

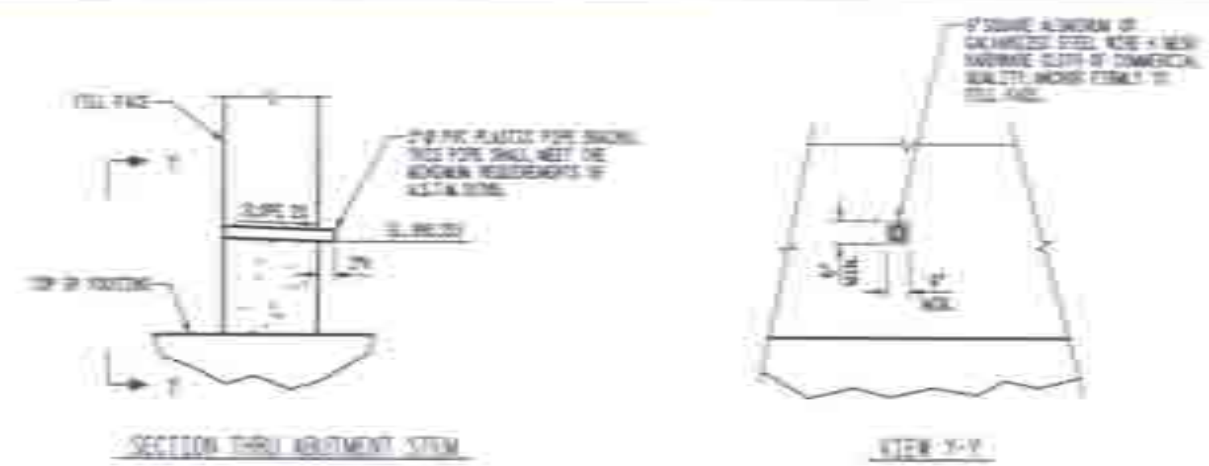
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 N.C. HIGHWAY DEPARTMENT
 CAST-IN-PLACE
 ABUTMENT NO. 2
 WINGWALL DETAILS
 55' SPAN WITH APPROACH SLAB
 29'-10" CLEAR RDWY - 90° SKEW

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Division of Kiewit Construction Co.
 10000 WOODLAWN DRIVE, SUITE 100
 RALEIGH, NC 27615



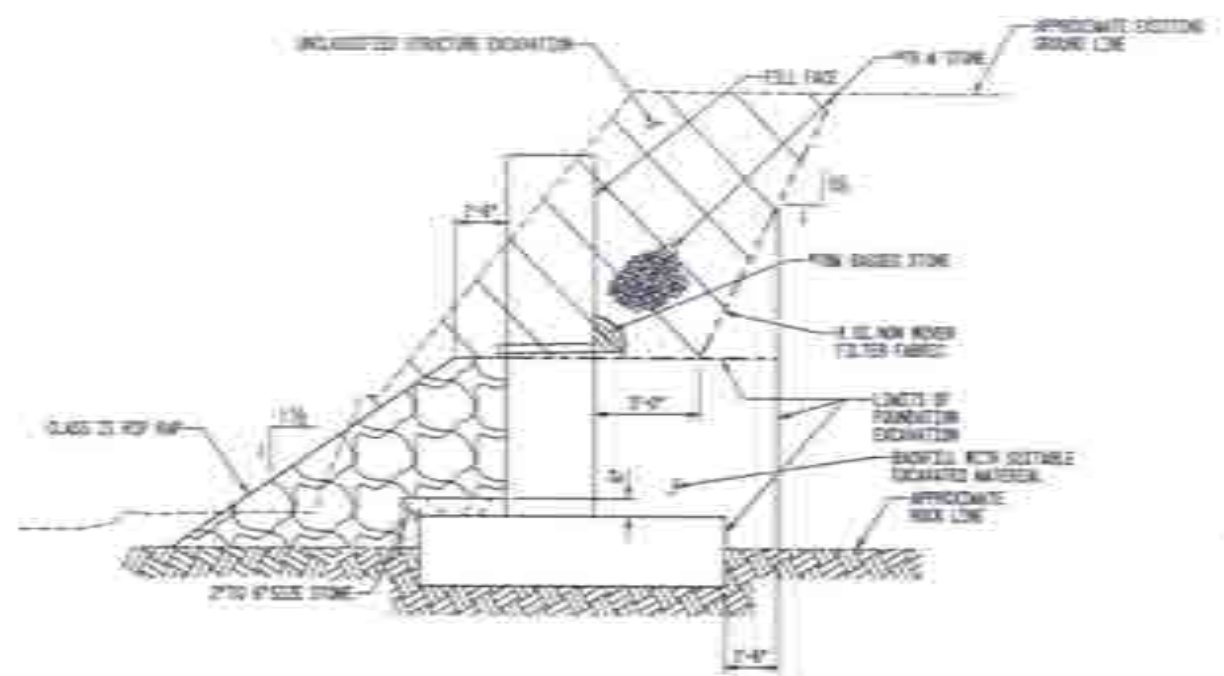
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NOT TO SCALE

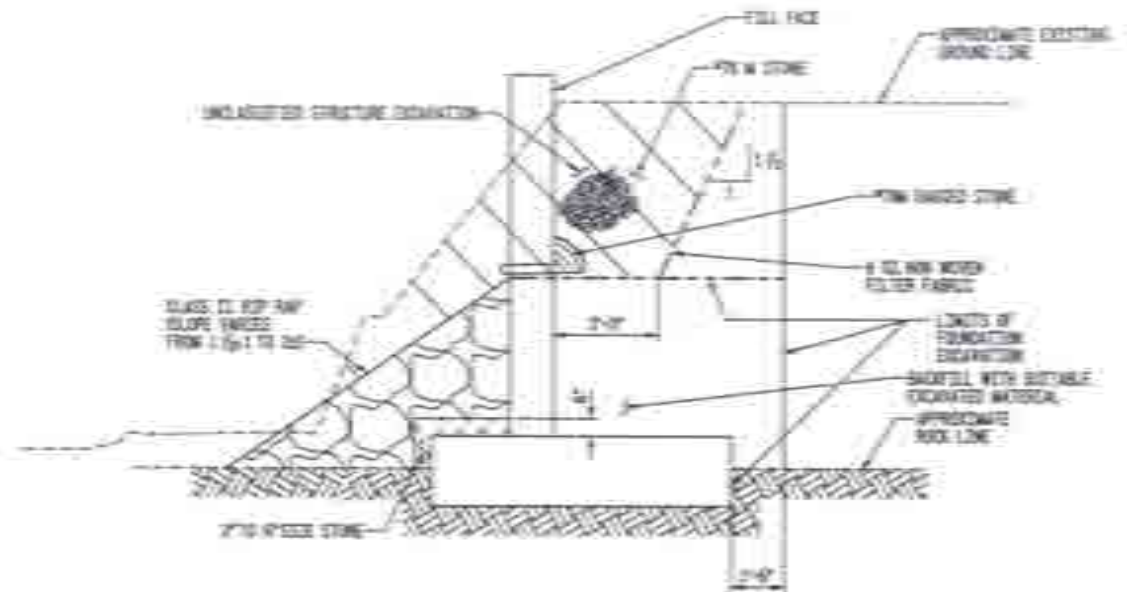


NOTE:
 NO SEPARATE PAYMENT WILL BE MADE FOR FORMWORK AND INSTALLING THE PVC PLASTIC PIPE BRACKLE, ANCHOR CLOTH AND FACTORING. THE EXPOSED COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SUBSTRUCTURE STEM.

PIPE DRAIN DETAILS



EXCAVATION AND EMBANKMENT AT ABUTMENT



EXCAVATION AND EMBANKMENT AT WINGS

NOTES FOR SUBSTRUCTURE SCOUR PROTECTION

SUBSTRUCTURE SCOUR PROTECTION SHALL BE PROVIDED AS INDICATED ON THE PLANS. THE TWO TO SIX INCH SIZE STONE SHALL BE PLACED AFTER FOOTING FORMWORK HAS BEEN REMOVED AND WHILE THE EXCAVATION IS SHALLOW.

THE TWO TO SIX INCH SIZE SCOUR PROTECTION STONE SHALL BE HARD AND DURABLE IN NATURE, WHILE NO SPECIFIC ORIGINATION IS REQUIRED. THE VARIOUS SIZES OF STONE SHALL BE REASONABLY EQUALLY DISTRIBUTED WITHIN THE REQUIRED SIZE RANGE. THE STONE SHALL BE ESSENTIALLY CIRCULAR IN SHAPE.

THE COST OF THE WORK INCLUDING THE TWO TO SIX INCH SIZE STONE, #10M BAGGED STONE MATERIALS, EQUIPMENT, TOOLS, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR PLACEMENT OF SUBSTRUCTURE. CLASS II RIP RAP SHALL BE PAID FOR AT THE UNIT PRICE BID FOR CLASS II RIP RAP PER TON. UNCLASSIFIED STRUCTURE EXCAVATION AND FOUNDATION EXCAVATION COSTS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR EXCAVATION AND EMBANKMENT.

PROJECT NO: 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BALDWIN
 CAST-IN-PLACE
 ABUTMENT NO. 2
 ABUTMENT DETAILS
 55' SPAN WITH APPROACH SLAB
 29'-10" CLEAR RDWY - 90° SKEW

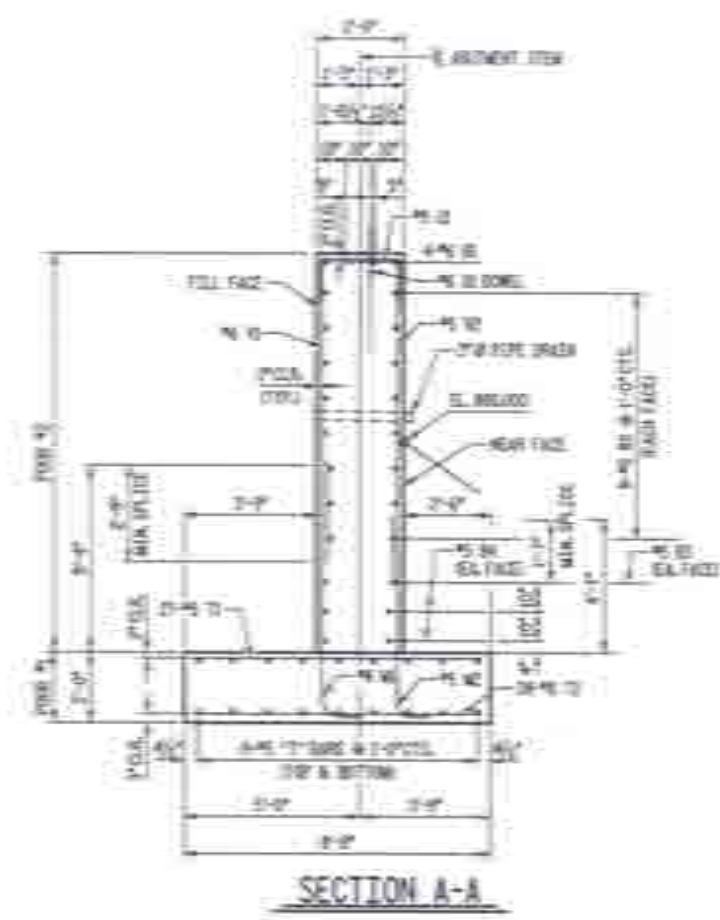
KO & ASSOCIATES, P.C.
 CONSULTING ENGINEERS
 4000 W. GARDNER BLVD., SUITE 200
 CHARLOTTE, N.C. 28207
 (704) 582-1100



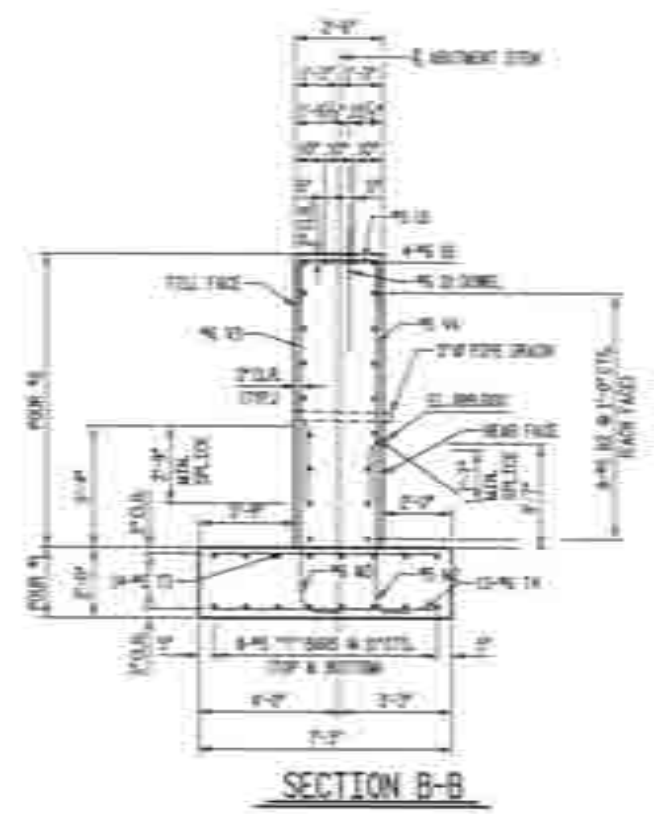
NOT TO SCALE

REVISIONS		DATE
NO.	BY	DATE
1		
2		

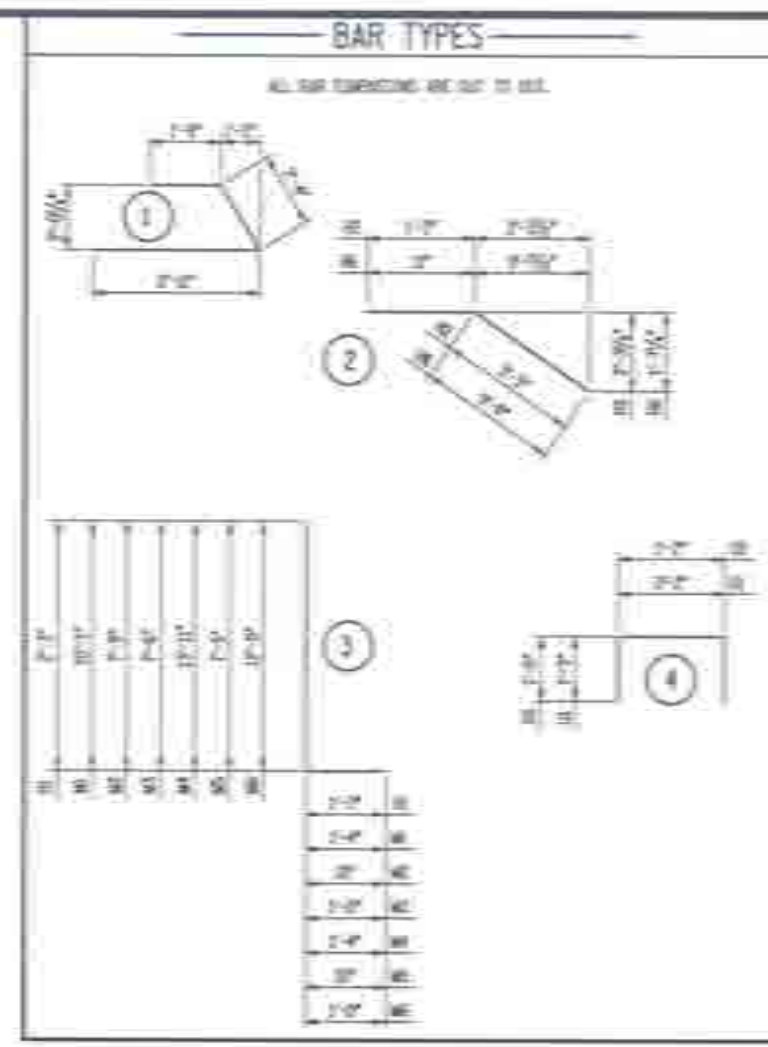
SEARCHED BY: B.L. GARDNER DATE: 03/07/04
 CHECKED BY: J.L. BRIDGEMAN DATE: 03/07/04



SECTION A-A



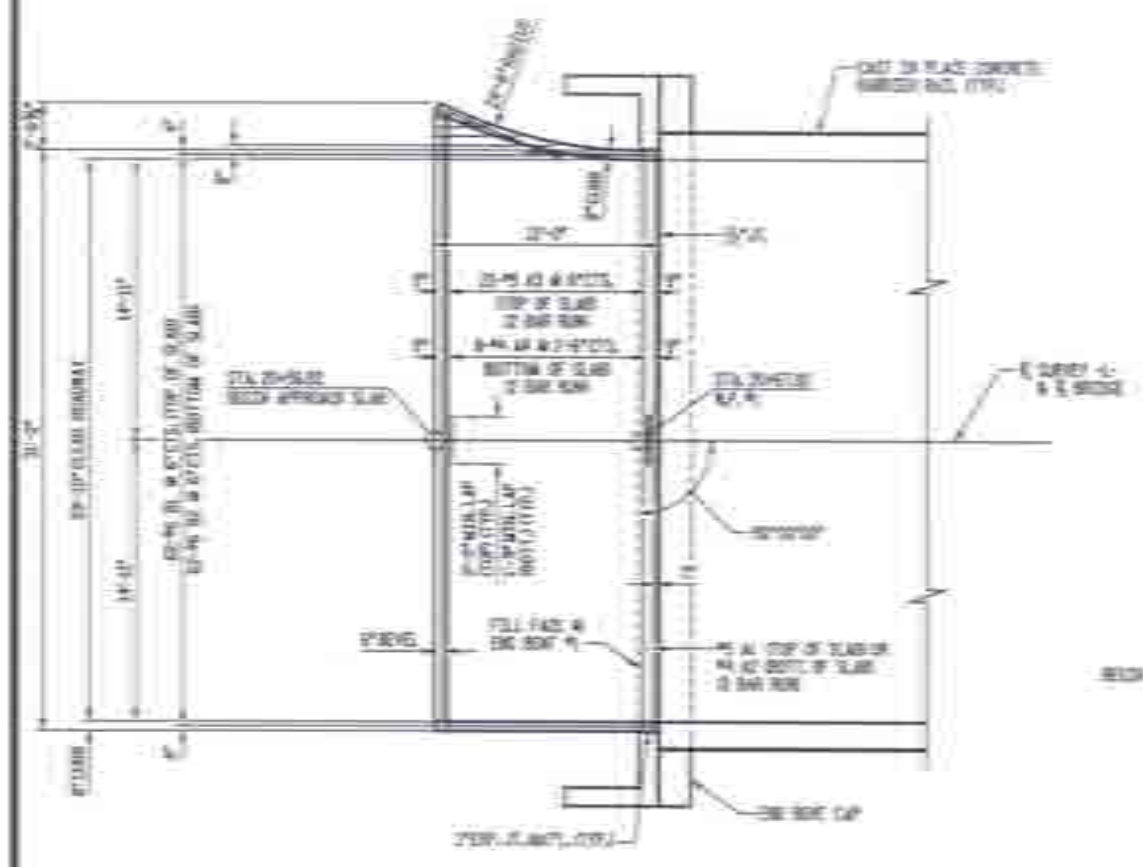
SECTION B-B



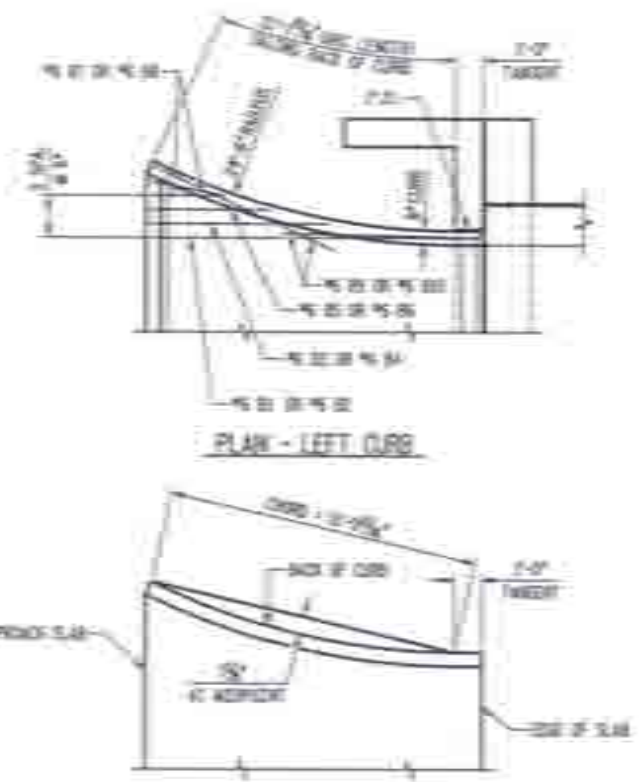
BILL OF MATERIAL

ABUTMENT NO. 2

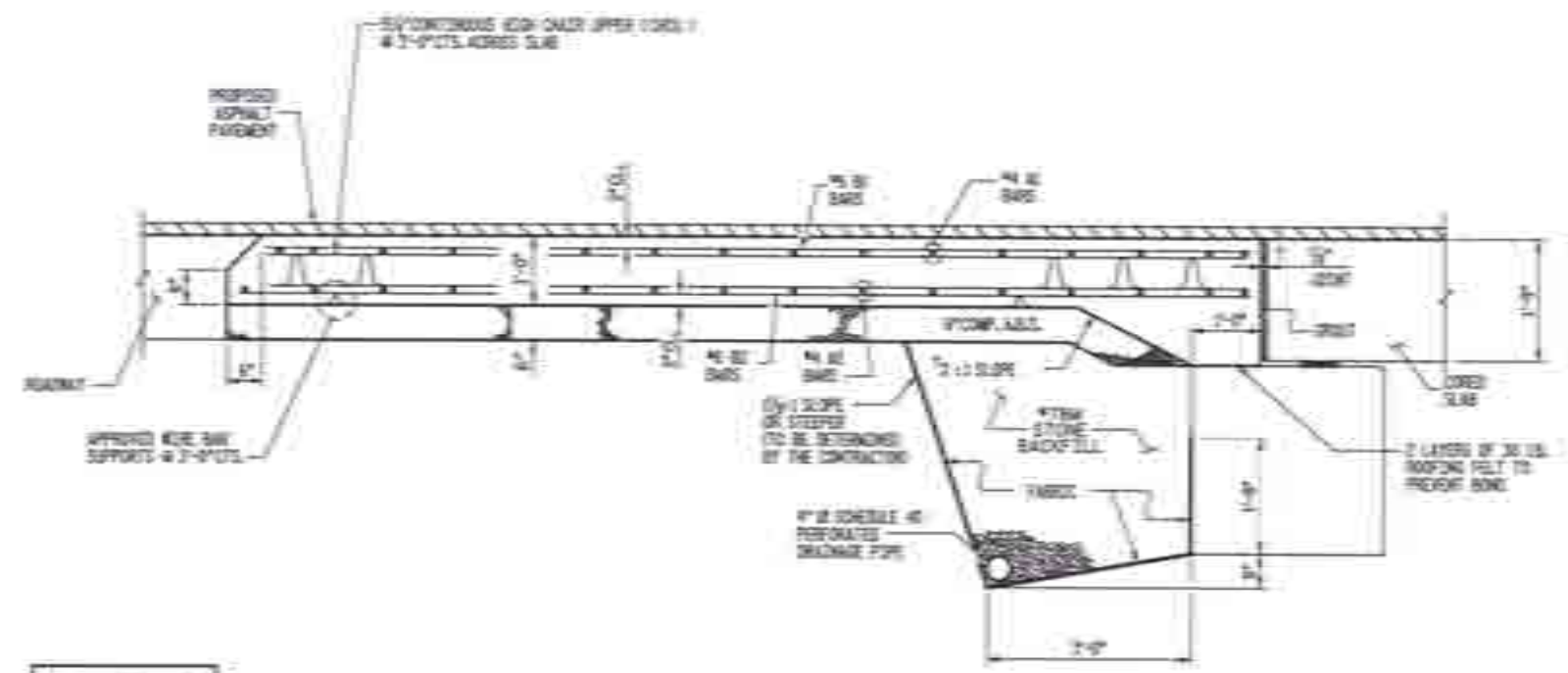
BAR NO.	NO.	SIZE	TYPE	LENGTH	NO. OF	BAR NO.	NO.	SIZE	TYPE	LENGTH	NO. OF	WEIGHT
1	1	#6	STR	27'-0"	201	11	#5	STR	11'-0"	119	8'-0"	132
2	2	#6	STR	27'-0"	423	12	#5	STR	11'-0"	139	8'-0"	472
3	1	#6	STR	24'-0"	15	13	#4	STR	8'-0"	278	4'-0"	76
4	1	#6	STR	24'-0"	33	14	#6	STR	21'-0"	278	2'-0"	132
5	2	#6	STR	24'-0"	30	15	#4	STR	21'-0"	278	2'-0"	362
6	2	#6	STR	24'-0"	30	16	#6	STR	21'-0"	278	2'-0"	339
7	1	#6	STR	24'-0"	11	17	#4	STR	21'-0"	278	2'-0"	107
8	1	#6	STR	24'-0"	30	18	#6	STR	21'-0"	278	2'-0"	338
9	1	#6	STR	24'-0"	30	19	#4	STR	21'-0"	278	2'-0"	338
10	1	#6	STR	24'-0"	30	20	#6	STR	21'-0"	278	2'-0"	338
11	1	#6	STR	24'-0"	30	21	#4	STR	21'-0"	278	2'-0"	338
12	1	#6	STR	24'-0"	30	22	#6	STR	21'-0"	278	2'-0"	338
13	1	#6	STR	24'-0"	30	23	#4	STR	21'-0"	278	2'-0"	338
14	1	#6	STR	24'-0"	30	24	#6	STR	21'-0"	278	2'-0"	338
15	1	#6	STR	24'-0"	30	25	#4	STR	21'-0"	278	2'-0"	338
16	1	#6	STR	24'-0"	30	26	#6	STR	21'-0"	278	2'-0"	338
17	1	#6	STR	24'-0"	30	27	#4	STR	21'-0"	278	2'-0"	338
18	1	#6	STR	24'-0"	30	28	#6	STR	21'-0"	278	2'-0"	338
19	1	#6	STR	24'-0"	30	29	#4	STR	21'-0"	278	2'-0"	338
20	1	#6	STR	24'-0"	30	30	#6	STR	21'-0"	278	2'-0"	338
21	1	#6	STR	24'-0"	30	31	#4	STR	21'-0"	278	2'-0"	338
22	1	#6	STR	24'-0"	30	32	#6	STR	21'-0"	278	2'-0"	338
23	1	#6	STR	24'-0"	30	33	#4	STR	21'-0"	278	2'-0"	338
24	1	#6	STR	24'-0"	30	34	#6	STR	21'-0"	278	2'-0"	338
25	1	#6	STR	24'-0"	30	35	#4	STR	21'-0"	278	2'-0"	338
26	1	#6	STR	24'-0"	30	36	#6	STR	21'-0"	278	2'-0"	338
27	1	#6	STR	24'-0"	30	37	#4	STR</				



PLAN OF APPROACH SLAB AT END BENT #1



CURB DETAILS AT END BENT #1



SECTION THRU SLAB AT END BENT #1

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABILO, 4" DRAINAGE PIPE AND 4" STONE BACKFILL SEE ROADWAY STANDARD DRAWING.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO INSTALLATION OF CURED SLAB.

FABRIL SHALL BE TYPE 1 ENGINEERING FABRIL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 206.

4" STONE BACKFILL SHALL BE SELECT MATERIAL SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 206.

4" STONE BACKFILL IS TO BE CONTIGUOUS ALONG FULL FACE OF THE BENT CAP FROM INSIDE SIDE TO OUTSIDE SIDE OF APPROACH SLAB.

FOR THE 4" DRAINAGE PIPE DETAILS, SEE ROADWAY STANDARD DRAWING.

AREA BETWEEN THE ROADWAY AND APPROACH SLAB SHALL BE GRADED TO MATCH THE HIGHER AND FROM THE FULL FACE OF THE BRIDGE AND SHALL BE PAVED.

THE 4" COMP. ASP. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF BENT SIDE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE 1-CLASS ASPHALT CONCRETE BASE COURSE OR LESS IF 4" COMP. ASP. OF 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 4" TYPE 1-CLASS ASPHALT CONCRETE BASE COURSE OR LESS IF 4" COMP. ASP. OF 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 FORMED TO A SMOOTH SURFACE AND A LAYER OF 20 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 CUREING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CURB SLAB WITH SHEETS".

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

APPROACH SLAB FINISH IS NOT SHOWN.

BILL OF MATERIAL					
APPROACH SLAB AT END BENT #1					
NO.	QTY.	SIZE	TYPE	LENGTH	WEIGHT
#41	1	%	270	12'-0"	12
#42	2	%	270	12'-0"	24
#43	4	%	270	12'-0"	48
#44	2	%	270	12'-0"	24
#45	60	%	270	12'-0"	648
#46	60	%	270	12'-0"	648
#47	1	%	270	12'-0"	12
#48	1	%	270	12'-0"	12
#49	2	%	270	12'-0"	24
#50	1	%	270	12'-0"	12
#51	2	%	270	12'-0"	24
#52	1	%	270	12'-0"	12
REINFORCING STEEL					
				LB.	124
8-GYFT COATED REINFORCING STEEL					
				LB.	124
CLASS A CONCRETE QUANTITY					
YIELD	SLAB	C.Y.		6.1	
YIELD	CURB	C.Y.		3.1	
TOTAL CLASS A CONCRETE				C.Y.	9.2

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 APPROACH SLAB
 AT END BENT NO. 1
 29'-10" CLEAR ROADWAY
 90° SKEW

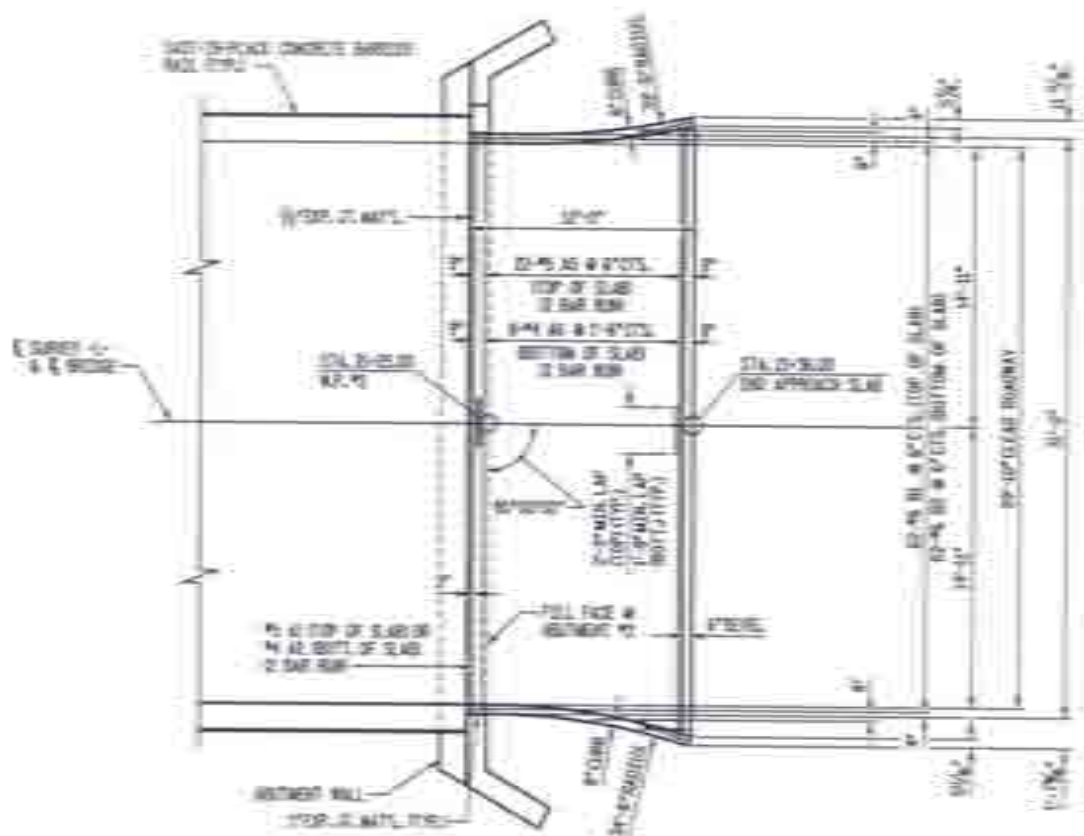
KO & ASSOCIATES, P.C.
 Consulting Engineers
 11700 N. 15th Street, Suite 200
 Charlotte, NC 28205
 (704) 585-1170



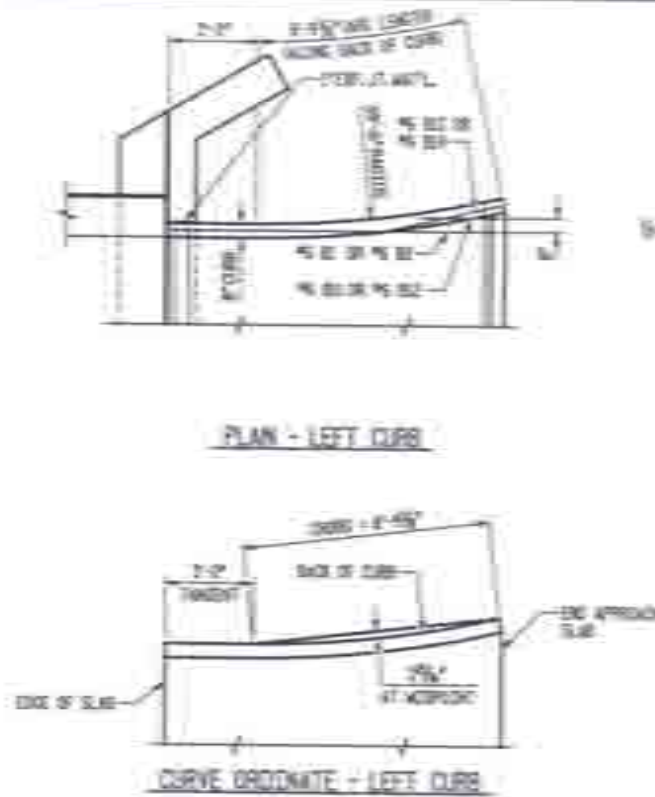
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NOT TO SCALE

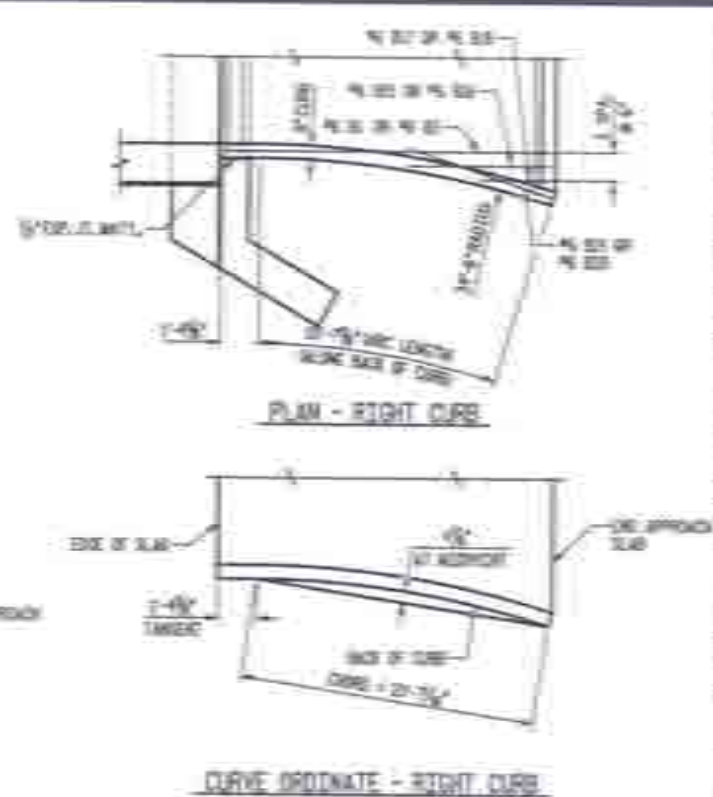
DATE: 10-1-09
 DRAWN: J. H. HARRISON
 CHECKED: J. H. HARRISON
 APPROVED: J. H. HARRISON



PLAN OF APPROACH SLAB AT ABUTMENT #2

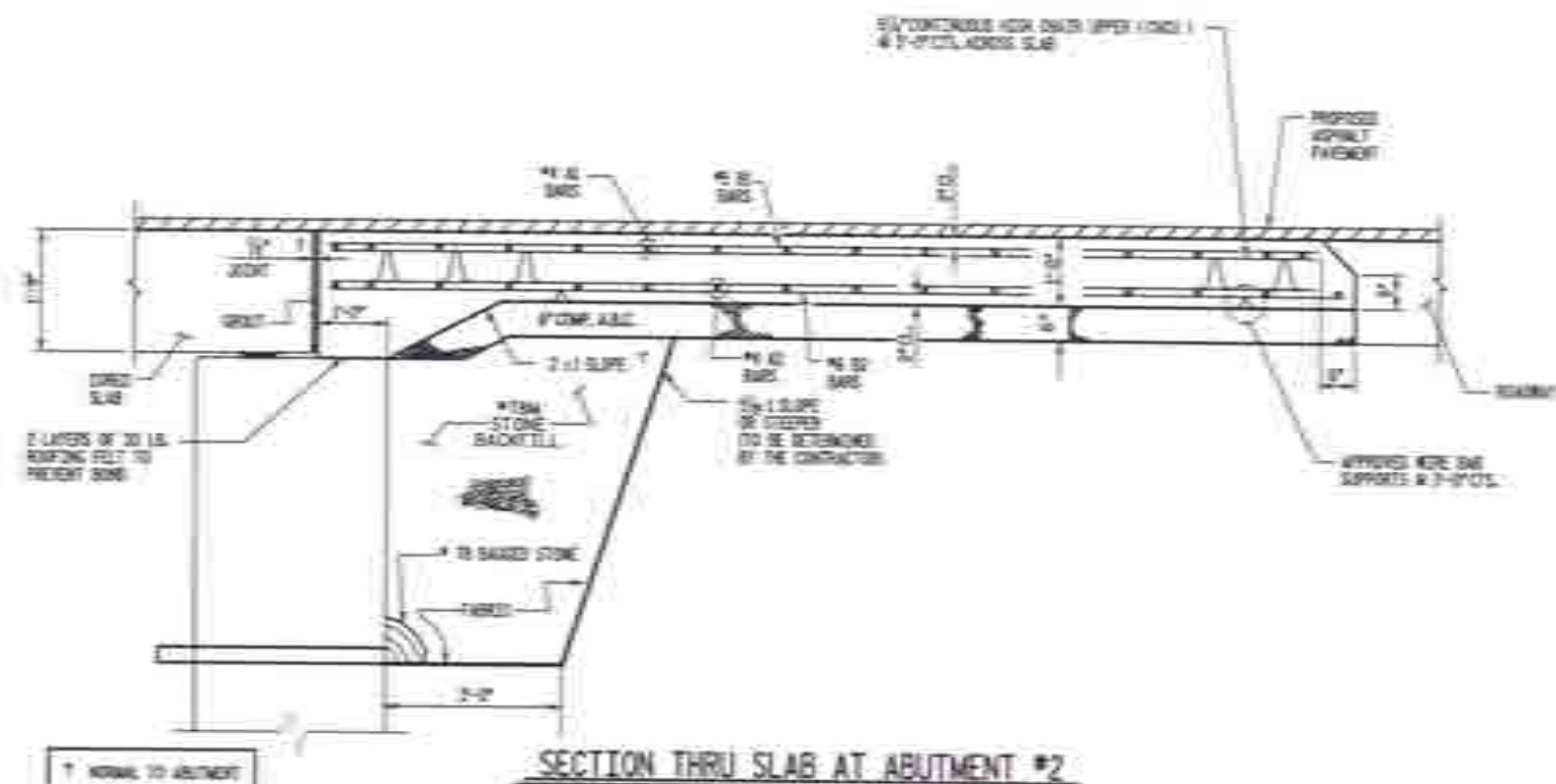


CURB DETAILS AT ABUTMENT #2



CURB ORDNATE - RIGHT CURB

BILL OF MATERIAL					
APPROACH SLAB AT ABUTMENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
#4	1	#4	STR	30'-0"	32
#4	1	#4	STR	30'-4"	32
#4	4	#4	STR	17'-0"	83
#4	5	#4	STR	27'-2"	105
#4	12	#4	STR	21'-2"	108
#4	12	#4	STR	21'-4"	108
#4	1	#4	STR	2'-4"	4
#4	1	#4	STR	2'-0"	4
#4	1	#4	STR	4'-4"	7
#4	1	#4	STR	4'-0"	7
#4	1	#4	STR	2'-2"	4
#4	1	#4	STR	2'-2"	4
#4	1	#4	STR	4'-0"	7
#4	1	#4	STR	2'-2"	4
REINFORCING STEEL				1.0	1.07
#4 EIGHT COATED REINFORCING STEEL				1.0	1.08
CLASS AA CONCRETE BEDDING					
FORM 1 SLAB				0.1	0.1
FORM 2 CURB				0.1	0.1
TOTAL CLASS AA CONCRETE				0.2	0.2



SECTION THRU SLAB AT ABUTMENT #2

NOTES

- FOR BRIDGE APPROACH FILL INCLUDING FURFILL, #4 BRONAGE PIPE, AND #10 STONE BACKFILL, SEE ROADWAY STANDARD DRAWINGS.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO INSTALLATION OF CURB SLAB.
- FURFILL SHALL BE TYPE 1 ENGINEERING FURFILL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 208.
- #10 STONE BACKFILL (CLASS II SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 208.
- #10 STONE BACKFILL IS TO BE CONTIGUOUS ALONG FILL FACE OF AND SEAT 1/4" FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE #4 BRONAGE PIPE (SIZES), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE FURFILLED.
- THE #4 COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH SIDE OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE #1 TYPE 2 SLURRY WALL CONCRETE BASE COURSE IN LIEU OF #4 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 #1 CLASS #4 CONCRETE BASE IN LIEU OF #4 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 SOILING. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.
- FOR JOINT DETAILS SEE "PRESTRESSED CONCRETE USED SLAB UNIT" SHEETS.
- THE JOINT AT THE ABUTMENT SHALL BE GRATED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLAB.
- APPROACH SLAB DRAINING IS NOT REQUIRED.

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALPH
 APPROACH SLAB
 AT ABUTMENT NO. 2
 29'-10" CLEAR ROADWAY
 90° SKEN

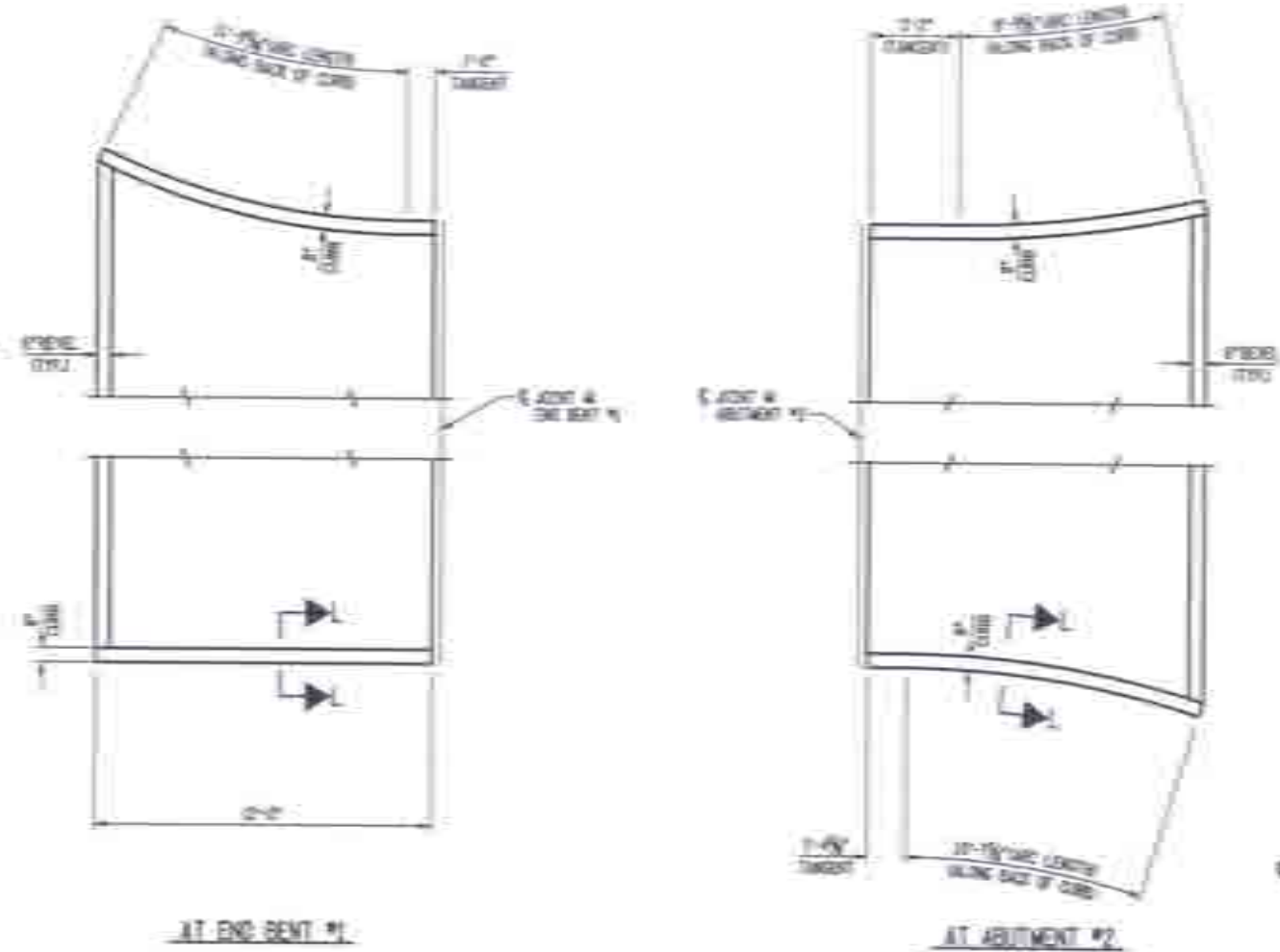
KO & ASSOCIATES, P.C.
 Consulting Engineers
 615 West 10th Street, Suite 200
 Winston-Salem, NC 27101
 703-733-1111



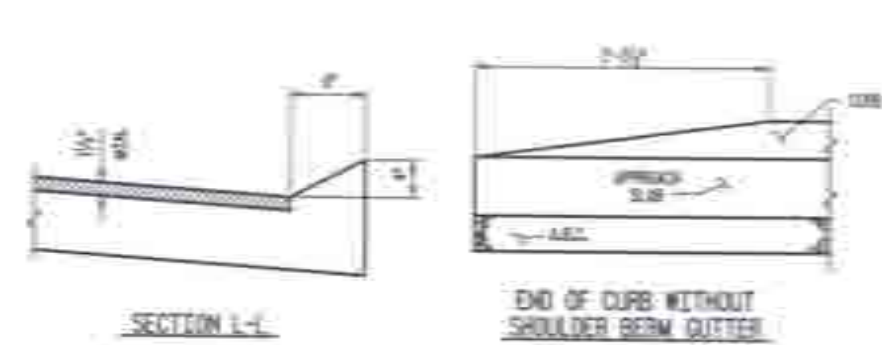
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NOT TO SCALE

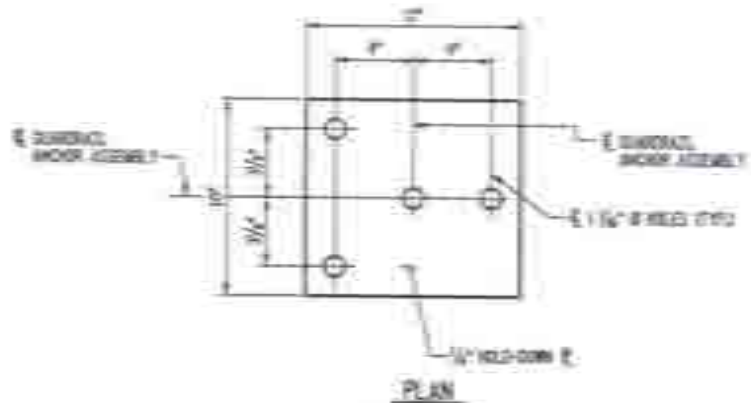
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 CHECKED BY: J. H. HARRIS



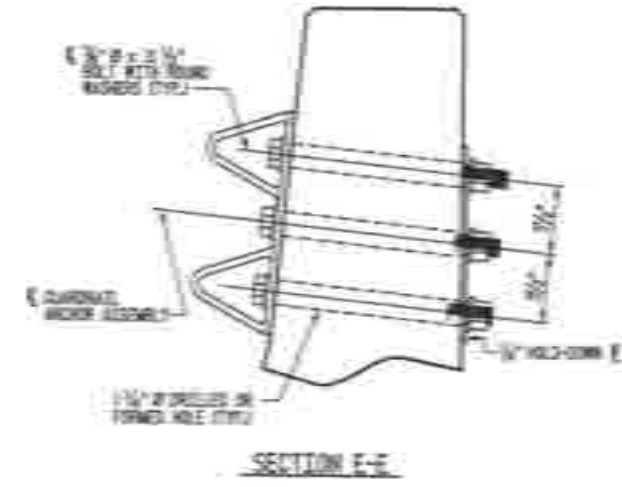
PLAN



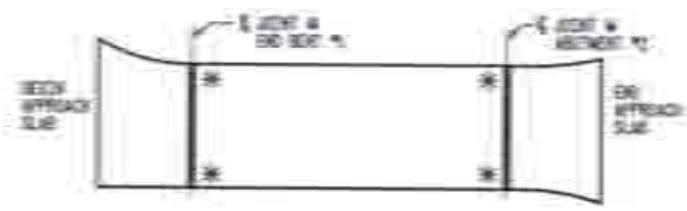
CURB DETAILS



PLAN



GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/2" WELD BERM PLATE AND 4 - 1/2" W BARS WITH WELDS AND WAGERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M201 GRADE 50. AFTER FABRICATION THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M201.

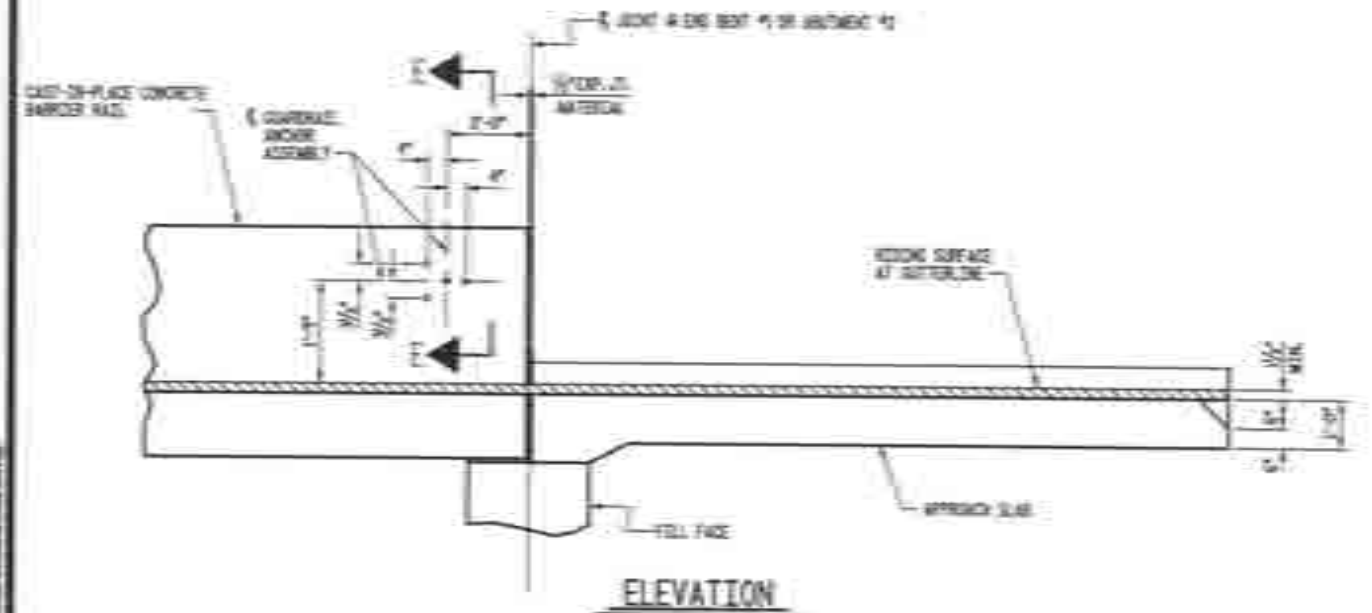
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS, NUTS AND WAGERS SHALL BE GALVANIZED AT THE CONTRACTOR'S OPTION. STRUCTURAL STEEL, BOLTS, NUTS AND WAGERS MAY BE USED AS AN ALTERNATE FOR THE 1/2" GALVANIZED BOLTS, NUTS AND WAGERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS, NUTS AND WAGERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE EST FOR STEEL BERM GUARDRAIL.

THE 1/2" WELLS SHALL BE FORMED OR DRILLED WITH A CORE BELL IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT THE BENT 1 AND ABUTMENT 2 WHERE THE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE CONCRETE GUARDRAIL.



ELEVATION

PROJECT NO. 33504
 COUNTY: IREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

APPROACH SLAB DETAILS
 29'-10" CLEAR ROADWAY
 90' SKER

KO & ASSOCIATES, P.C.
 Consulting Engineers
 1100 West 10th Street, Suite 100
 Raleigh, NC 27601



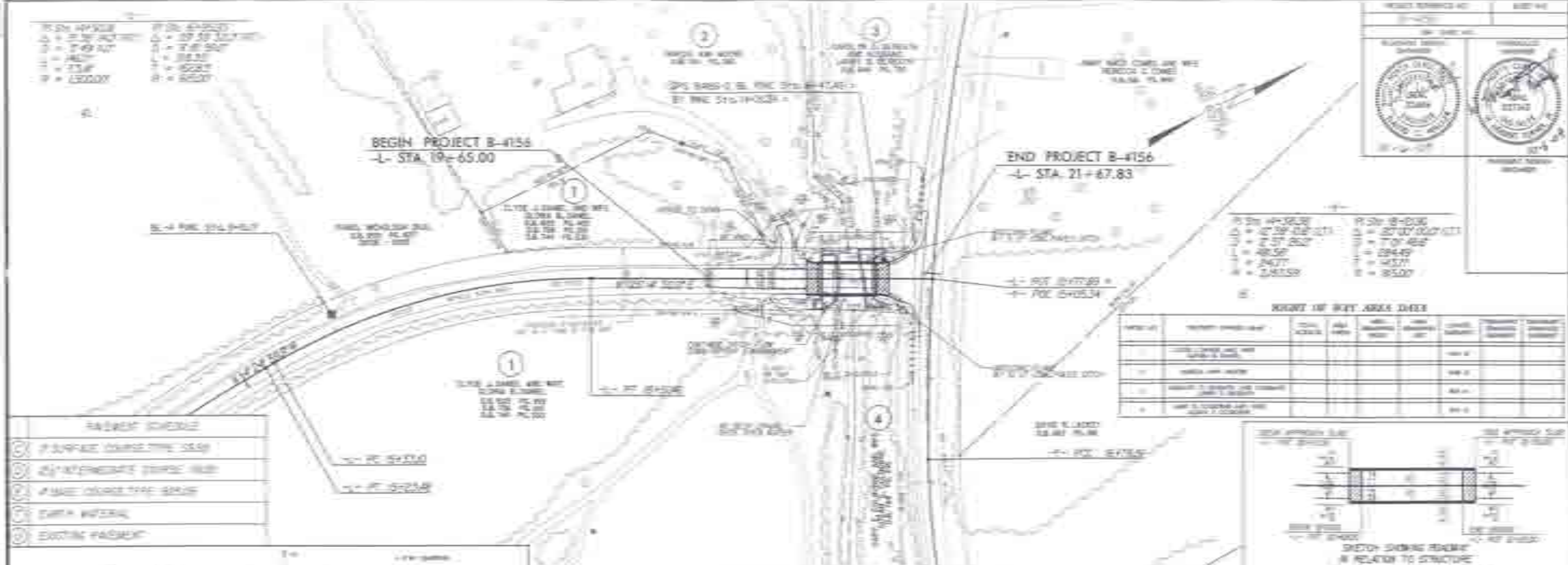
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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2			2		

NOT TO SCALE

DATE: 08-11-2009
 CHECKED BY: K. E. WOODRUFF
 DATE: 08-11-2009

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11.00	11.00
12.00	12.00
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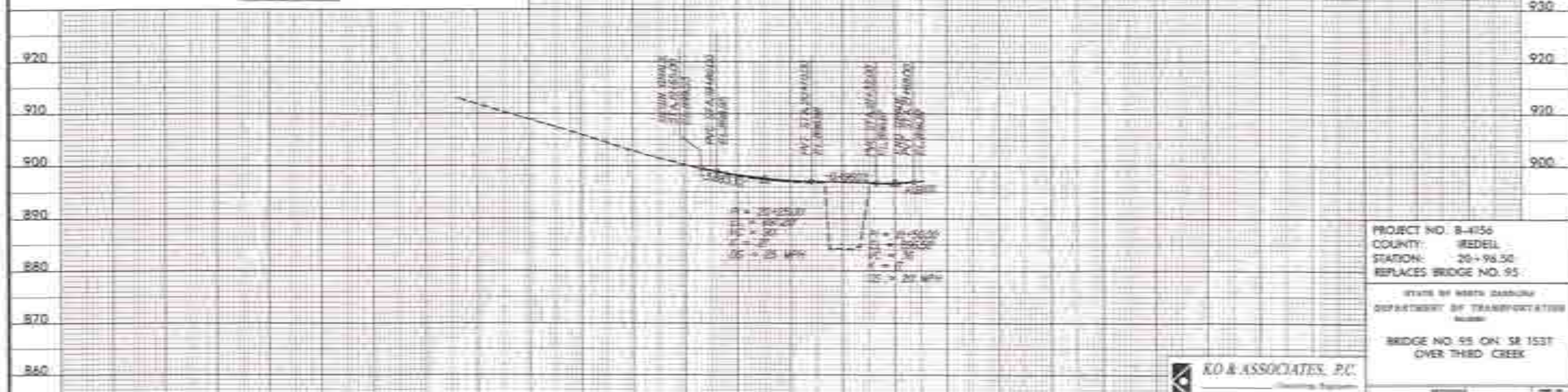
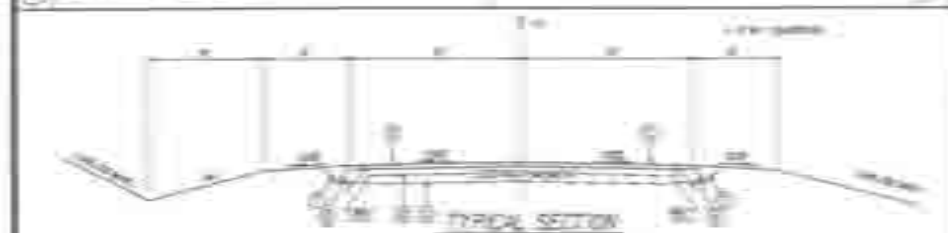
PROJECT NO. B-4156
 COUNTY: REDELL
 STATION: 20+98.50
 REPLACES BRIDGE NO. 95



RIGHT OF WAY AREA SHEET

NO.	DESCRIPTION	AREA	DATE
1	EXISTING RIGHT OF WAY	1.25	10/1/00
2	PROPOSED RIGHT OF WAY	1.25	10/1/00
3	ADDITIONAL RIGHT OF WAY	1.25	10/1/00
4	TOTAL RIGHT OF WAY	3.75	10/1/00

- RAISED BRIDGE**
- 1. SURFACE COURSE TYPE 1000
 - 2. INTERMEDIATE CURVE 1000
 - 3. PAVEMENT COURSE TYPE 1000
 - 4. CURVE MATERIAL
 - 5. EXISTING PAVEMENT



KO & ASSOCIATES, P.C.
 Consulting Engineers
 1000 North 10th Street, Suite 100
 Raleigh, NC 27601
 Phone: 919-876-1000
 Fax: 919-876-1001
 Website: www.koassoc.com

PROJECT NO. B-4156
 COUNTY: REDELL
 STATION: 20+98.50
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

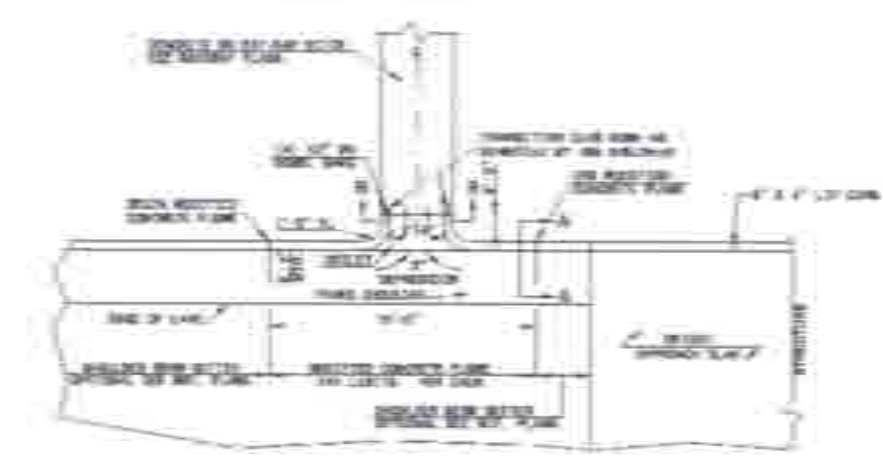
BRIDGE NO. 95 ON SR 1537
 OVER THIRD CREEK

DATE: 10/1/00
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 SCALE: 1" = 10'-0"

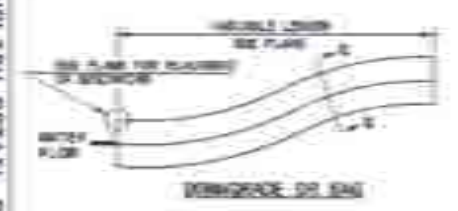
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLN07CH



PLAN VIEW



CROSS-SECTION A-A



CROSS-SECTION B-B



CROSS-SECTION C-C



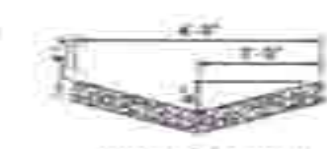
UP-GRADE FLOW DIVERSION EXAMPLES



DOWN-GRADE FLOW DIVERSION EXAMPLES



CROSS-SECTION D-D



CROSS-SECTION E-E

- NOTES:
1. CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM WATER IN ACCORDANCE WITH THIS DETAIL.
 2. CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DET. NO. 599-D.
 3. CONSTRUCT RIP-RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
 4. CONCRETE OR RIP-RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE WORKMAN PLAN. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DET. 578-D FOR ALL 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
 5. MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND COORDINATED WITH THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLN07CH

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
7700 W. 10TH ST. SUITE 100
RALEIGH, N.C. 27617
TEL: 919-286-7100 FAX: 919-286-7101

MODIFIED CONCRETE FLUME

DESIGNED BY: L.L. SMITH
CHECKED BY: T.A. SMITH
DRAWN BY: J.C. SMITH
DATE: 11/15/07

PROJECT NO. 33504
COUNTY: IREDELL
STATION: 20+96.46
REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODIFIED CONCRETE FLUME
BRIDGE NO. 95 ON SR 1537
OVER THIRD CREEK
29'-10" CLEAR ROWY - 90° SKEW

REVISIONS						DATE
NO.	BY	DATE	NO.	BY	DATE	DATE
1			1			11/15/07
2			2			11/15/07



SECTION A-A



SECTION B-B
APPROACH SLAB CURB

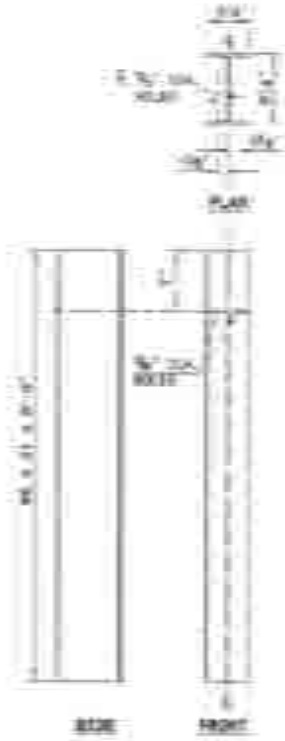


ELEVATION VIEW

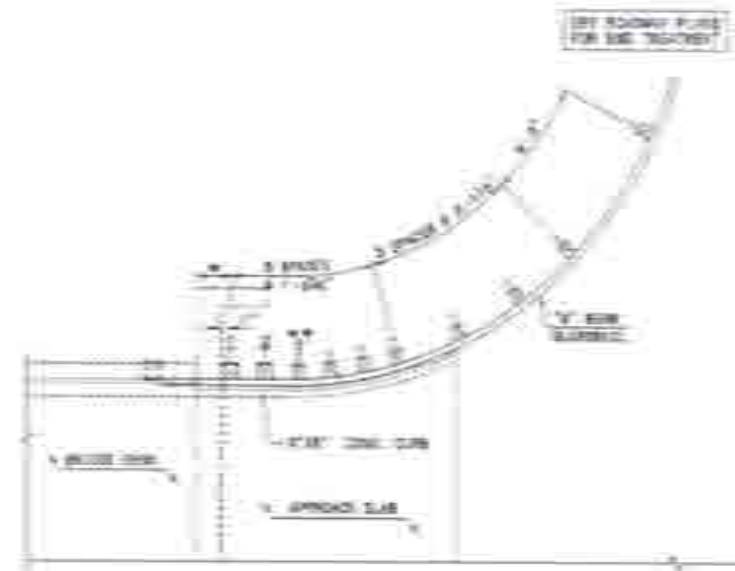
NOTE:
 **LOCATE POSTS AND BRACE POSTS 1 & 2 ON BENCH MARKS OR OTHER MARKS THAT ARE AT LEAST 1/4" OFF ALL SURFACES EXCEPT IN THE UNIFORMITY.
 THE DISTANCE FROM END OF BRACE POST TO CENTER LINE OF THE STEEL POST SHOULD BE 21 1/2" IF CONCRETE BACKFILL IS NOT PRESENT.
 **BRACE POSTS SHOULD BE 1/2" FROM THE TOP OF ADJACENT SURFACE (CONCRETE, ASPHALT, OR GUTTER).
 **NO BRACE POSTS WITHIN THE SPANNING ANCHOR UNIT LENGTH.
 LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 POSTS 1 AND 2 TO BE 3/4" X 4" X 12" LIME STEEL POST AND 3 & 4 3/4" X 4" X 12" WOOD BRACE POSTS.



8" X 8" X 14" ROUTED
WOOD OFFSET BLOCK



18" X 21" X 8'-0"
STEEL POST



PLAN VIEW

DESIGN SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN
 OFFICE: 800-222-4728 FAX: 910-222-4719
**GUARDRAIL ANCHOR UNIT
 TYPE B-83 SHOP CURVED**
 DESIGNED BY: J.C.S. DATE: 8-10-07
 CHECKED BY: J.C.S. DATE: 7-14-08
 DRAWN BY: J.C.S.

PROJECT NO. 33504
 COUNTY: TREDELL
 STATION: 20+96.46
 REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 Raleigh
 GUARDRAIL ANCHOR UNIT
 TYPE B-83 SHOP CURVED
 BRIDGE NO. 95 ON SR 1537
 OVER THIRD CREEK
 29'-10" CLEAR ROWY - 90° SKEW

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Division of K&H Group, Inc. Company
 200 S. WILSON ST. SUITE 200 WILSON, NC 27604
 (919) 233-4728



NOT TO SCALE

REVISIONS					
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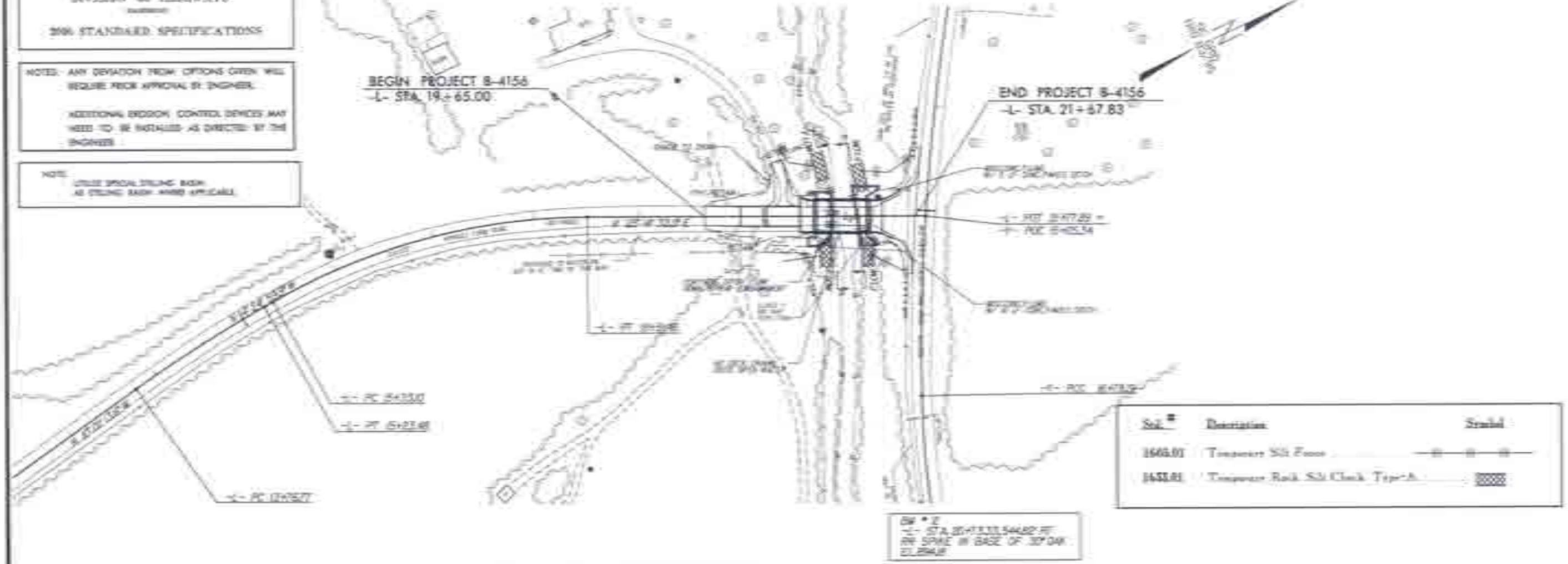
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21

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
2006 STANDARD SPECIFICATIONS

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.
ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

NOTE:
USE SPECIAL TILING BASK
AS TILING BASK WHEN APPLICABLE.

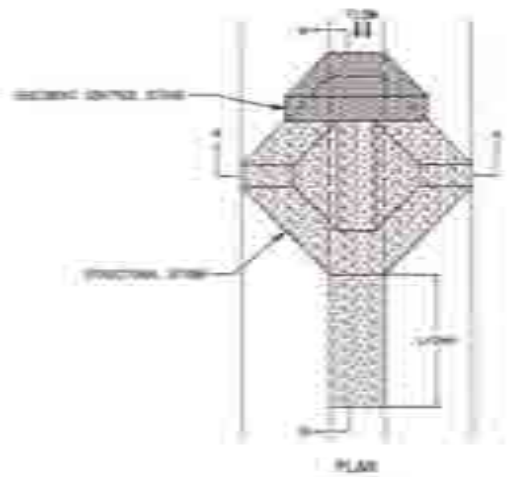
EROSION CONTROL PLAN



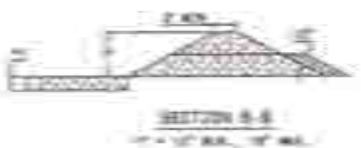
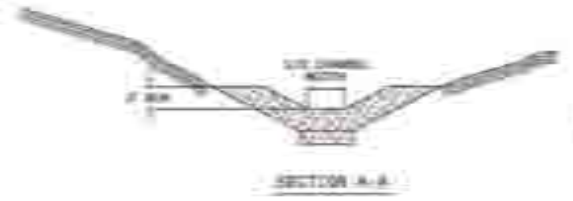
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HALEIGH, N.C.

EROSION CONTROL PLAN FOR
TEMPORARY ROCK SILT CHECK TYPE 'A'

1633.01



NOTE:
"STRUCTURAL STONE" SHALL BE "STONE" FOR
EROSION CONTROL, CLASS "B" AND SHALL BE
PAID FOR AT THE CONTRACT BID PRICE PER
TON.
"SEDIMENT CONTROL STONE" SHALL BE
NO. 5 OR NO. 12 STONE AND SHALL BE
PAID FOR AT THE CONTRACT BID PRICE
PER TON.



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

EROSION CONTROL PLAN FOR
TEMPORARY ROCK SILT CHECK TYPE 'A'

1633.01

EROSION CONTROL PLAN AND
DETAILS ARE PROVIDED BY
THE NCDOT ROADSIDE
ENVIRONMENTAL UNIT

PROJECT NO. 33504
COUNTY: IREDELL
STATION: 20+96.46
REPLACES BRIDGE NO. 95

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION HALEIGH			
BRIDGE NO. 95 ON SR 1537 OVER THIRD CREEK			
REVISIONS			
NO.	BY	DATE	DATE
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2			
SHEET NO.			18
TOTAL SHEETS			21

EROSION CONTROL PLAN

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
2006 STANDARD SPECIFICATIONS



Special Stilling Basins:

The work covered by this section consists of installing, placing, and opening a special-stilling basin(s) as directed by the Engineer. The special-stilling basin(s) shall be used to filter silt and sediment during the drilled pier operation, boring, excavation, or sheet piling construction.

The filter fabric shall meet the requirements of Section 202 for Type 2 Fabric.

Sediment control stone shall meet the requirements of Section 1025 and shall be placed according to the detail shown on the plans.

The special-stilling basin(s) shall be a water permeable fabric bag that has a top, left, and right side to sediment water. The bag shall be installed in a trench as shown on the plans. The bag shall be constructed such that it is possible to be used adjacent to the drilled pier operation, boring, excavation, or sheet piling construction.

The special-stilling basin(s) shall be a bag constructed to a minimum size of 12' x 12' made from a minimum 500 lb. 5 mil polypropylene or equivalent material for retaining silt and sediment. The bag shall be filled with a suitable needle punch geotextile fabric with a high strength thread. The fabric shall have a minimum width with strength as follows:

Test Method	Minimum Specification
ASTM D-4894	50 lbs

The fabric used to construct the bag shall be installed to provide resistance to ultra-violet degradation and meet the following specifications for low stress, strength, and permeability:

Property	Test Method	Units	Minimum Specification
Weight	ASTM D-2775	oz/yd ²	30.0
Grab tensile	ASTM D-4632	lb	500.0
Puncture	ASTM D-6552	lb	100.0
Flow rate	ASTM D-4495	gal/min/ft ²	80.0
Permeability	ASTM D-3995	sec	1.5
UV Resistance	ASTM D-4232	%	70.0

The Contractor shall install the special-stilling basin in accordance with the details in the plans and at locations as directed by the Engineer.

The special-stilling basin(s) shall be placed as the incoming water flows into and through the bag without causing erosion. The back or rear of the bag shall be tied off tightly to stop the water from flowing out of the bag without going through the walls.

The special-stilling basin(s) shall be replaced and disposed of when it is 3/4 full of sediment or when it is impractical for the bag to filter the sediment and pier according to flow rate. Prior approval from the Engineer must be received before removal and replacement.

The Contractor shall be responsible for providing a sufficient quantity of bags to contain all silt from sump effluent during the drilled pier operation, boring, excavation, or sheet piling construction.

The quantity of sediment control stone, filter fabric for drainage, and special-stilling basin(s) as measured above will be paid for at contract price for the various items. Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials, placing and maintaining the special-stilling basin(s), and removal and disposal of all accumulations and bags.

PROJECT NO. 33504
COUNTY: IREDELL
STATION: 20+96.46
REPLACES BRIDGE NO. 95

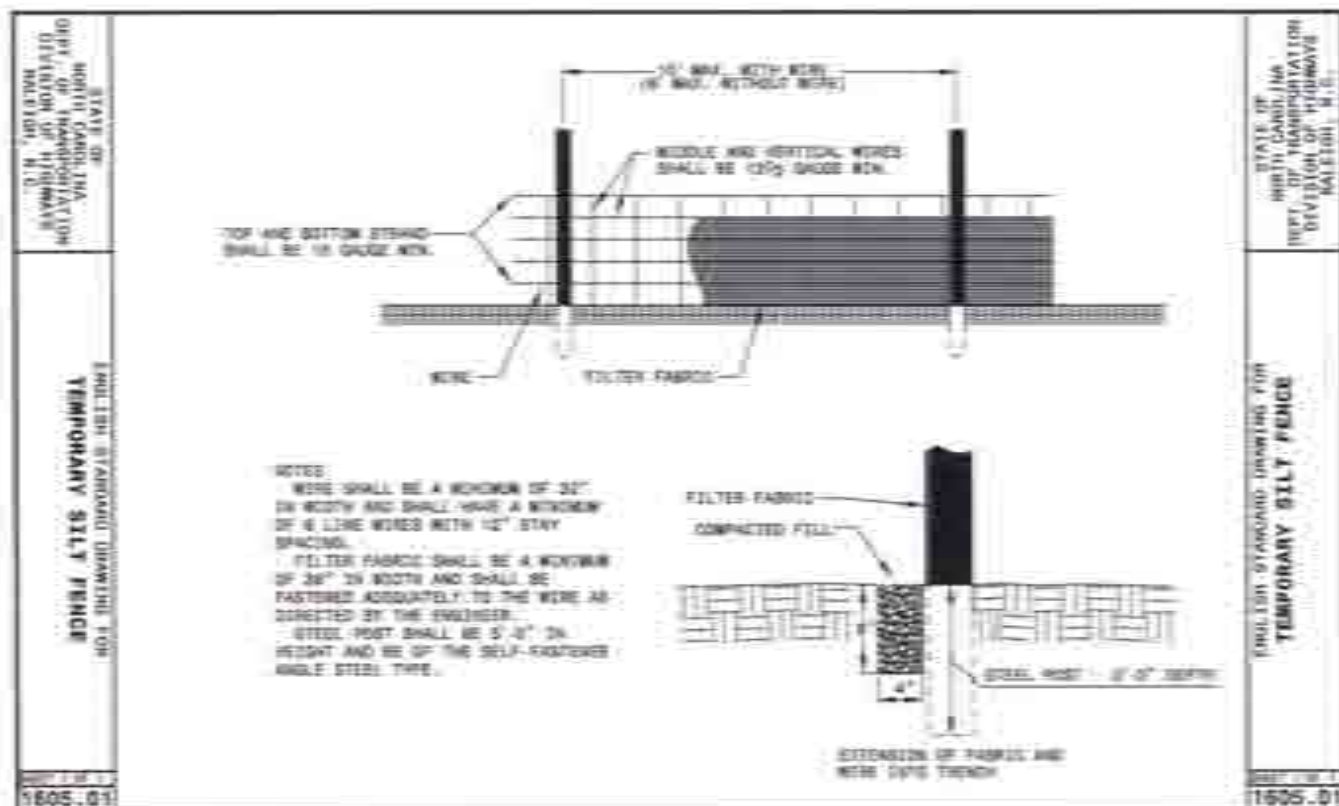
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 95 ON SR 1537
OVER THIRD CREEK

REVISIONS					DATE
NO.	BY	DATE	NO.	BY	DATE
1			1		
2			2		

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TOP AND BOTTOM STEEL WIRE SHALL BE 1/2 GAUGE WIRE.

MIDDLE WIRE HORIZONTAL WIRE SHALL BE 1/2 GAUGE WIRE.

NOTES:
WIRE SHALL BE A MINIMUM OF 30" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRE WITH 12" STAY SPACING.
FILTER FABRIC SHALL BE A MINIMUM OF 36" IN WIDTH AND SHALL BE FASTENED ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
STEEL POST SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENING ANGLE STEEL TYPE.

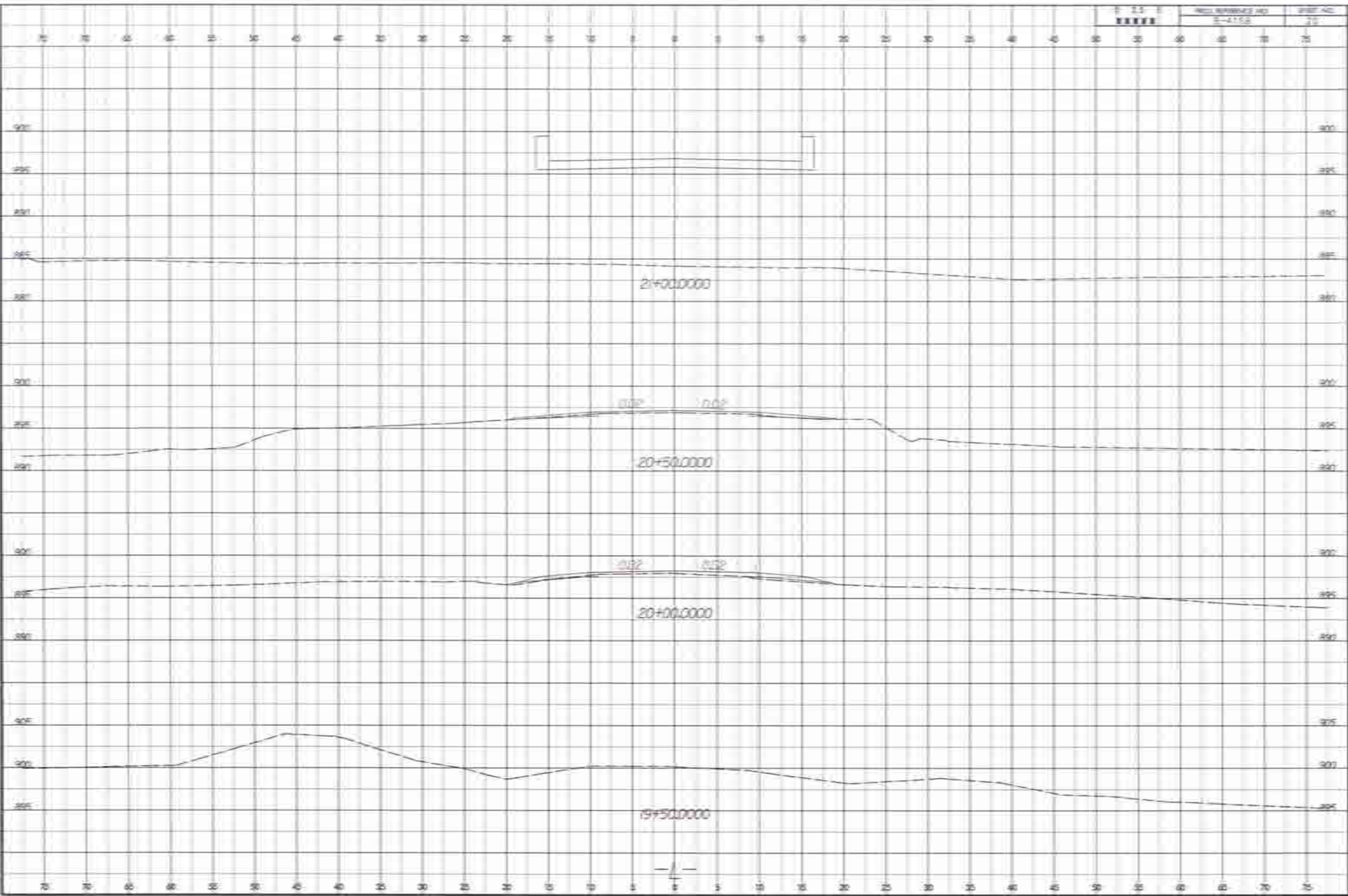
FILTED FABRIC
COMPACTED FILL

EXTENSION OF FABRIC AND WIRE INTO TRENCH

EROSION CONTROL PLAN AND DETAILS ARE PROVIDED BY THE NCDOT ROADSIDE ENVIRONMENTAL UNIT

1605.01

1605.01



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