

STANDARD ROAD PLANS
STANDARD ROAD PLANS ARE LISTED ON SHEET 55.

SECTION 404 PERMIT AND CONDITIONS
281-1
MODIFIED
CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14. NATIONWIDE PERMIT 14 CONDITIONS CAN BE FOUND AT <http://www.mvr.usace.army.mil/Missions/Regulatory/Permits/>. THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

THIS PROJECT IS COVERED BY IOWA DNR FLOODPLAIN CONSTRUCTION PERMIT NO. FP 2025-0251FP-01, DATED: 03-27-2025

MILEAGE SUMMARY			
SEC.	LOCATION	LIN.FT.	MILES
	SOUTH AVE. STA. 4+75.00 TO STA. 8+35.00	360.00	0.0682
	130TH ST. STA. 106+80.00 TO STA. 109+75.00	295.00	0.0559
I	BRIDGE AT STA. 6+65.00	227.10	0.0430
II	TOTAL NET LENGTH OF PROJECT (GRADING AND PCC PAVING)	427.90	0.0810



PLANS OF PROPOSED IMPROVEMENT ON THE
URBAN ROAD SYSTEM

HARDIN COUNTY

CITY OF IOWA FALLS

PROJECT NO. BRS-3720(616)--60-42

BRIDGE REPLACEMENT - PPCB

IN THE CITY OF IOWA FALLS, ON SOUTH AVE,
OVER IOWA RIVER, S17 T89 R20

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2602 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SECTION I - BRIDGE

SECTION II - GRADING & PCC PAVING

2021, TRAFFIC COUNT = 1,060 V.P.D. (SOUTH AVE.)

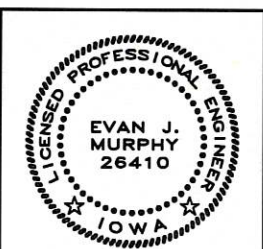
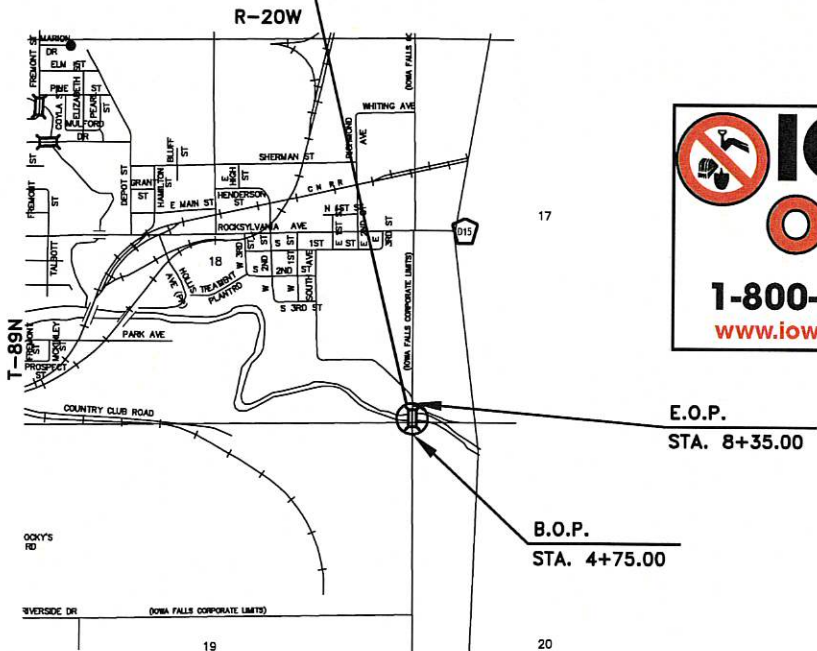
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
7	DAVID LOGEMANN	SOUNDING
13	MARK C. CURRIE	STRUCTURAL DESIGN

UTILITY CONTACTS				
COMPANY	UTILITY	CONTACT	PHONE #	
MEDIACOM	COMMUNICATIONS	BRIAN KADNER	845-544-9656	bkadner@mediacomcc.com
CENTURYLINK	COMMUNICATIONS	SADIE HULL	918-547-0147	sadie.hull@lumen.com

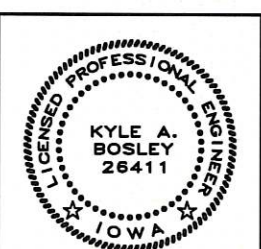
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- 28.-29. NORTH ABUTMENT BACKFILL DETAILS
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B.O.P. STA. 4+75.00
E.O.P. STA. 8+35.00
FHWA NO. 176590
STATION 6+65.00
PROPOSED 224'-0" x 40'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
15' SKEW, LT. AHEAD



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
Evan J. Murphy, P.E. DATE: 3/10/2026
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2027.
PAGES OR SHEETS COVERED BY THIS SEAL: 9-12, 27, 33 & 51 of 63



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
Kyle A. Bosley, P.E. DATE: 3-10-2026
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2027.
PAGES OR SHEETS COVERED BY THIS SEAL: 1-6, 30-32, 34-50, 52-63 OF 63

DRAWING APPROVAL
ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE SUBMITTED TO AND APPROVED BY THE CONTRACTOR, WHO SHALL STAMP, CERTIFY OR PROVIDE OTHER SUCH EVIDENCE ON THE DRAWINGS THAT THEY HAVE RECEIVED CONTRACTOR APPROVAL. THE APPROVED DRAWINGS SHALL THEN BE SUBMITTED TO CALHOUN-BURNS AND ASSOCIATES, FOR REVIEW AND APPROVAL.
ADDRESS : 6775 VISTA DRIVE
WEST DES MOINES, IOWA 50266
TELEPHONE : (515) 224-4344
FAX : (515) 224-1385
SHOP DRAWINGS SHALL BE INDEPENDENT DRAWINGS WITH ADEQUATE DIMENSIONING FOR FABRICATION OF INDIVIDUAL PIECES OF EACH COMPONENT. PHOTOCOPIES OF PLAN DRAWINGS AND NON-CONTRACTOR APPROVED PLANS WILL BE REJECTED.
THESE DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. BRIDGES AND STRUCTURES BUREAU.

APPROVED
HARDIN COUNTY ENGINEER
DATE 3-15-26
BOARD OF SUPERVISORS
DATE

CITY OF IOWA FALLS, IOWA
MAYOR MICHAEL R. EMERSON
COUNCIL DAVE HENRY
STEVE KLEIN
ROGER NISSLY
BRUCE THIES
GUMARO VALENCIA
CITY MANAGER KACI ELKIN
APPROVED: MAYOR
ATTEST: CITY MANAGER
MICHAEL R. EMERSON
KACI ELKIN

TOTAL ESTIMATED QUANTITIES : 224'-0 x 40'-0 P.P.C.B.									
REF. NO.	CODE NO.	ITEM	UNIT	SECTION I - BRIDGE				SECTION II -GRADING	TOTAL
				2 ABUTS	2 PIERS	SUPER	SUBTOTAL	SUBTOTAL	
1	2101-0850001	CLEARING AND GRUBBING	ACRE	-	-	-	-	0.2	0.2
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	-	-	-	-	510	510
3	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	-	-	-	-	6,099	6,099
4	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	-	-	-	4,180	-	4,180
5	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	-	-	-	-	600	600
6	2115-0100000	MODIFIED SUBBASE	CY	-	-	-	-	210	210
7	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	-	-	-	-	200	200
8	2123-7450020	SHOULDER FINISHING, EARTH	STA	-	-	-	-	5.9	5.9
9	2213-7100400	RELOCATION OF MAIL BOXES	EACH	-	-	-	-	1	1
10	2301-0685550	BRIDGE APPROACH PAVEMENT, AS PER PLAN	SY	-	-	-	-	427.7	427.7
11	2301-1033080	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.	SY	-	-	-	-	1,034.6	1,034.6
12	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	-	-	-	-	15	15
13	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	-	-	-	1	-	1
14	2402-0425040	FLOODED BACKFILL	CY	1,559	-	-	1,559	55	1,614
15	2402-2720000	EXCAVATION, CLASS 20	CY	1,711	-	-	1,711	-	1,711
16	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	-	-	-	-	145	145
17	2402-2721000	EXCAVATION, CLASS 21	CY	1,086	348	-	1,434	-	1,434
18	2402-2722000	EXCAVATION, CLASS 22	CY	457	207	-	664	-	664
19	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	670.7	231.2	316.6	1,218.5	-	1,218.5
20	2404-7775000	REINFORCING STEEL	LB	85,132	39,790	-	124,922	-	124,922
21	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	24,257	-	95,532	119,789	-	119,789
22	2407-0562855	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB55	EACH	-	-	5	5	-	5
23	2407-0562870	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB70	EACH	-	-	5	5	-	5
24	2407-0562895	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTB95	EACH	-	-	5	5	-	5
25	2408-7800000	STRUCTURAL STEEL	LB	-	-	7,544	7,544	-	7,544
26	2414-6424124	CONCRETE OPEN RAILING, TL-4	LF	-	-	541.2	541.2	-	541.2
27	2416-0100018	APRONS, CONCRETE, 18 IN. DIA.	EACH	-	-	-	-	2	2
28	2416-1240018	CULVERT, 3000D CONCRETE ROADWAY PIPE, 18 IN. DIA.	LF	-	-	-	-	68	68
29	2501-0201057	PILES, STEEL, HP 10 X 57 ; 17 @ 35'	LF	595	-	-	595	-	595

REF. NO. ESTIMATE REFERENCE INFORMATION

1.

SEE SITUATION PLAN, SHEET 4, AND PLAN AND PROFILE, SHEETS 57-58 FOR LIMITS. SELECTIVE CLEARING WILL BE REQUIRED ON THIS PROJECT. ALL DESIRABLE TREES OUTSIDE THE CONSTRUCTION AREA WILL BE SAVED. TREES AND SHRUBS WITHIN THE CONSTRUCTION LIMITS THAT DO NOT HINDER CONSTRUCTION SHALL BE SAVED UNLESS DIRECTED BY THE ENGINEER TO BE REMOVED.
2.

SEE TABULATION CBA-101 ON SHEET 56 FOR BREAKDOWN OF EXCAVATION QUANTITIES. TYPE "A" COMPACTION WILL BE REQUIRED. EXCEPT WHERE NOTED OTHERWISE ON THE PLANS, ALL ENTRANCE AND ROADWAY CULVERTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AS PART OF "EXCAVATION, CLASS 10, ROADWAY AND BORROW". MOISTURE SHALL BE APPLIED, AS NECESSARY, TO THE CONSTRUCTION AREA TO PREVENT THE SPREAD OF DUST NEAR RESIDENTIAL AREAS AND INDIVIDUAL HOMES. REFER TO ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS. IN FILL AREAS, THE EXISTING SLOPES SHALL BE CUT INTO STEPS PER 2107.03.C.2 OF THE STANDARD SPECIFICATION. THIS WORK IS INCIDENTAL TO "EXCAVATION, CLASS 10, ROADWAY AND BORROW". INCLUDES COST OF NECESSARY OBLITERATION OF ROADBED TO FACILITATE PROPOSED CONSTRUCTION.
3.

SEE TABULATION CBA-101 ON SHEET 56 FOR BREAKDOWN OF EXCAVATION QUANTITIES. INCLUDES ALL COST TO REMOVE UNSUITABLE OR EXCESS MATERIAL FROM SITE. THE UNSUITABLE OR EXCESS MATERIAL SHALL BE WASTED AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER.
4.

SEE TABULATION CBA-101 ON SHEET 56 FOR BREAKDOWN OF EXCAVATION QUANTITIES. INCLUDES COSTS TO CLEAR THE CHANNEL TO THE SHAPE, DEPTH, AND EXTENT SHOWN IN THE "LONGITUDINAL SECTION ALONG CENTERLINE OF ROADWAY" AND THE LIMITS SHOWN ON THE SITUATION PLAN, SHEET 4. INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.
5.

IN ORDER TO MEET NPDES PERMIT REQUIREMENTS TOPSOIL STRIP, SALVAGE AND SPREAD SHALL BE REQUIRED ON THIS PROJECT. QUANTITY PERTAINS TO WORK WITHIN THE PROJECT LIMITS. SIX INCHES OF TOPSOIL SHALL BE STRIPPED FROM WITHIN THE PROJECT LIMITS AND SPREAD UNIFORMLY (6" TARGET WITH 4" MIN. DEPTH) OVER ALL AREAS THAT ARE NOT COVERED BY PAVEMENT OR GRANULAR MATERIAL. AREAS SHALL BE UNDERCUT PRIOR TO PLACING TOPSOIL. CROSS-SECTIONS SHOW FINISHED GRADELINE.
6.

SEE TYPICAL SECTIONS CBA-500 AND CBA-616 ON SHEET 54.
7.

SEE TYPICAL SECTION CBA-641 ON SHEET 54.
8.

INCLUDES ALL WORK NECESSARY TO CONSTRUCT AND SHAPE SHOULDER AREAS. SEE TYPICAL SECTION CBA-641 ON SHEET 54.
9.

ALL MAIL BOXES IN CONFLICT WITH CONSTRUCTION OPERATIONS SHALL BE REMOVED TO A LOCATION APPROVED BY THE LOCAL POSTMASTER AND SHALL BE REINSTALLED AT PROJECT COMPLETION. THE ENGINEER WILL MEASURE BY COUNT EACH MAILBOX MOVED AND REINSTALLED TO THEIR CURRENT LOCATION AND THE CONTRACTOR SHALL BE PAID THE PRICE BID PER EACH.

10.

SEE TABULATION 112-6 ON SHEET 55 AND DETAILS ON SHEETS 52-53. COARSE AGGREGATE DURABILITY SHALL BE CLASS 3 OR BETTER. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE PER SECTION 2301 OF THE STANDARD SPECIFICATION. CERTIFIED PLANT INSPECTION IS REQUIRED. REINFORCING STEEL SHALL BE EPOXY COATED.
11.

SEE TYPICAL SECTION CBA-616 ON SHEET 54, AND DETAILS ON SHEET 53. DO NOT SKEW TRANSVERSE JOINTS. "CD" JOINTS ARE REQUIRED. CERTIFIED PLANT INSPECTION IS REQUIRED. ALL LONGITUDINAL PAVEMENT JOINTS SHALL BE CLEANED AND SEALED. SAWCUT WIDTH SHALL BE AS SHOWN ON IDOT STANDARD ROAD PLAN PV-101. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY.
12.

SEE TABULATION 102-3 ON SHEET 56.
13.

THE EXISTING BRIDGE AT STATION 7+00, 31' LEFT IS A 167'-6 x 20' PRETENSIONED PRESTRESSED BEAM BRIDGE WITH CONCRETE STUB ABUTMENTS, CONCRETE DIAPHRAGM PIERS AND A CONCRETE DECK BUILT IN 1957. AN INSPECTION FOR THE PRESENCE OF ASBESTOS CONTAINING MATERIALS WAS COMPLETED AND NO SUSPECT MATERIALS WERE FOUND. IF ADDITIONAL MATERIALS SUSPECTED OF CONTAINING ASBESTOS ARE DISCOVERED DURING DEMOLITION OF THE BRIDGE, WORK SHALL BE STOPPED IMMEDIATELY AND THE ENGINEER NOTIFIED. THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING STRUCTURE. ALL SALVAGEABLE MATERIAL AND UNSALVAGEABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. THE EXISTING STRUCTURE SHALL BE REMOVED TO AN ELEVATION AT LEAST 1 FOOT BELOW FINISHED GROUNDLINE AND TO THE EXTENT THAT IT WILL NOT INTERFERE WITH THE NEW CONSTRUCTION. BROKEN CONCRETE FROM THE EXISTING BRIDGE WITH SIMILAR GRADATION TO CLASS 'E' REVETMENT MAY BE PLACED ON THE BANKS OUTSIDE THE LIMITS SHOWN FOR CLASS 'E' REVETMENT, AS DIRECTED BY THE ENGINEER. ALL REINFORCING SHALL BE CUT OFF FLUSH WITH THE CONCRETE. H.M.A. MATERIAL IS SPECIFICALLY EXCLUDED. ALTERNATELY, THE CONTRACTOR MAY DISPOSE OF THE BROKEN CONCRETE OFF SITE AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER. SEE HAZARDOUS MATERIALS NOTES ON SHEET 5 FOR PAINT SCRAPE SAMPLE RESULTS.
14.

SEE TABULATION 104-3 ON SHEET 55. QUANTITY SHALL INCLUDE FLOODABLE BACKFILL REQUIRED BEHIND THE NORTH ABUTMENT AND WINGWALLS AS SHOWN ON THE NORTH ABUTMENT BACKFILL DETAILS, SHEETS 28-29. THE COST OF WATER REQUIRED FOR FLOODING AND ENGINEERING FABRIC FURNISHED BEHIND THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "FLOODED BACKFILL".
15.

QUANTITY IS BASED ON THE ASSUMPTION THAT CHANNEL EXCAVATION AND NECESSARY BERM CONSTRUCTION HAVE BEEN COMPLETED. INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.
16.

SEE TABULATION 104-3 ON SHEET 55.
- 17.-18.

QUANTITY IS BASED ON THE ASSUMPTION THAT CHANNEL EXCAVATION AND NECESSARY BERM CONSTRUCTION HAVE BEEN COMPLETED. INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.
19.

INCLUDES COST OF FURNISHING AND PLACING SUBDRAINS, PREFORMED JOINT MATERIAL, FLEXIBLE FOAM FILLER, 1/8" BUTYL RUBBER MEMBRANE, PVC PIPE IN WINGS AND CONCRETE SEALER ALONG EDGES OF DECK. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY. CERTIFIED PLANT INSPECTION IS REQUIRED. ARTICLE 2428 REGARDING BRIDGE DECK SMOOTHNESS DOES NOT APPLY TO THIS PROJECT.
- 20.-21.

ALL REINFORCING SHALL BE GRADE 60.
- 22.-24.

INCLUDES COST OF NEOPRENE BEARING MATERIAL, ANCHORED CURVED SOLE PLATES, COIL TIES AND COIL RODS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.
25.

INCLUDES WEIGHT OF STEEL DIAPHRAGMS, SEE SHEET 43. INCLUDES WEIGHT OF PINTLE PLATE ASSEMBLIES, SEE SHEET 33.
26.

CERTIFIED PLANT INSPECTION IS REQUIRED. INCLUDES COST OF CONCRETE SEALER. ALL STRUCTURAL CONCRETE FOR THE RAIL IS TO BE CLASS C; SUBSTITUTION OF CLASS D CONCRETE IS NOT ALLOWED. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY.
27.

SEE TABULATION 104-3 ON SHEET 55 AND STANDARD ROAD PLAN DR-201.
28.

SEE TABULATION 104-3 ON SHEET 55 AND STANDARD ROAD PLANS DR-101, DR-104 AND DR-601. ALL PIPE JOINTS SHALL BE TIED PER STANDARD ROAD PLAN DR-121.
29.

SEE PILE NOTES ON SHEET 5. INCLUDES COST OF DRIVING POINTS.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

QUANTITY SUMMARY

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

TOTAL ESTIMATED QUANTITIES : 224'-0 x 40'-0 P.P.C.B.									
REF. NO.	CODE NO.	ITEM	UNIT	SECTION I – BRIDGE				SECTION II –GRADING	TOTAL
				2 ABUTS	2 PIERS	SUPER	SUBTOTAL	SUBTOTAL	
30	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	–	–	–	–	182	182
31	2507-2638650	BRIDGE WING ARMORING – EROSION STONE	SY	30	–	–	30	–	30
32	2507-3250005	ENGINEERING FABRIC	SY	–	–	–	1,200	–	1,200
33	2507-6800061	REVTMENT, CLASS E	TON	–	–	–	800	–	800
34	2507-6875002	REVTMENT, REMOVE AND REPLACE	CY	–	–	–	90	–	90
35	2510-6745850	REMOVAL OF PAVEMENT	SY	–	–	–	–	1,685.1	1,685.1
36	2515-2475006	DRIVEWAY, P.C. CONCRETE, 6 IN.	SY	–	–	–	–	71.3	71.3
37	2515-6745600	REMOVAL OF PAVED DRIVEWAY	SY	–	–	–	–	71.3	71.3
38	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	–	–	–	–	1	1
39	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	–	–	–	–	15.97	15.97
40	2528-2518000	SAFETY CLOSURE	EACH	–	–	–	–	3	3
41	2528-8445110	TRAFFIC CONTROL	LS	–	–	–	–	1	1
42	2533-4980005	MOBILIZATION	LS	–	–	–	1	–	1
43	2599-9999005	WEEP HOLE ASSEMBLY, 4" DIA.	EACH	6	–	–	6	–	6
44	2599-9999020	POROUS BACKFILL	TON	755	–	–	755	–	755
45	2601-2634100	MULCHING	ACRE	–	–	–	–	1.4	1.4
46	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	–	–	–	–	0.5	0.5
47	2601-2636044	SEEDING AND FERTILIZING (URBAN)	ACRE	–	–	–	–	0.2	0.2
48	2601-2642100	STABILIZING CROP – SEEDING AND FERTILIZING	ACRE	–	–	–	–	0.5	0.5
49	2601-2642120	STABILIZING CROP – SEEDING AND FERTILIZING (URBAN)	ACRE	–	–	–	–	0.2	0.2
50	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	–	–	–	–	1	1
51	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	–	–	–	–	1	1

REF. NO. ESTIMATE REFERENCE INFORMATION

30. SEE TABULATION 110-7A ON SHEET 56.
31. SEE SHEET 51 FOR DETAILS. QUANTITY INCLUDES EROSION STONE ON THE SOUTH BERM.
32. SEE SITUATION PLAN, SHEET 4, AND PLAN AND PROFILE, SHEETS 57-58, FOR LIMITS.
ENGINEERING FABRIC SHALL BE LAPPED FOR FIELD SPLICING. THE LAPS SHALL BE A MINIMUM OF TWO FEET IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP. THE CONTRACTOR SHALL PROVIDE A MEANS TO SECURE THE LAP DURING THE PLACEMENT OF THE REVETMENT.
33. REVETMENT IS TO BE PLACED AT A THICKNESS OF 1'-6. SEE SITUATION PLAN, SHEET 4, AND PLAN AND PROFILE, SHEETS 57-58, FOR LIMITS.
34. THE UNIT PRICE BID FOR "REVTMENT, REMOVE AND REPLACE" SHALL INCLUDE THE COST OF LABOR, EQUIPMENT AND MATERIALS REQUIRED TO REMOVE REVETMENT FROM THE EXISTING BANKS, STOCKPILE IF NECESSARY, AND PLACE THE REVETMENT ON THE BANKS OUTSIDE THE LIMITS SHOWN FOR CLASS E REVETMENT. ANY PIECE GREATER THAN 3 FEET IN ANY DIRECTION SHALL BE BROKEN UP SUCH THAT ITS SIZE IS REDUCED TO LESS THAN 3 FEET IN ANY DIRECTION. HMA MATERIAL SHALL NOT BE PLACED WITHIN THE FLOODPLAIN. ANY REINFORCING SHALL BE CUT OFF FLUSH OR REMOVED. MATERIAL IS TO BE PLACED AT A THICKNESS OF 1'-6. SEE SITUATION PLAN, SHEET 4, AND PLAN AND PROFILE, SHEETS 57-58, FOR LIMITS.
THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE BY CUBIC YARD. PLAN QUANTITY WILL BE PAY QUANTITY.
35. SEE TABULATION 110-1 ON SHEET 55.
EXISTING PAVEMENT CONSISTS OF APPROXIMATELY 6 INCHES OF HMA.
IN ORDER TO AVOID ANY UNNECESSARY SURFACE BREAKS OR PREMATURE SPALLING, THE CONTRACTOR IS CAUTIONED TO EXERCISE EXTREME CARE WHEN PERFORMING ANY OF THE NECESSARY SAW CUTTING OPERATIONS FOR THE PROPOSED PAVEMENT REMOVAL. SAW CUTS ARE TO BE MADE AT THE STATION INDICATED OR AT THE NEAREST TRANSVERSE PAVEMENT JOINT, AS DIRECTED BY THE ENGINEER.
36. COARSE AGGREGATE DURABILITY SHALL BE 3 OR BETTER.
SEE TABULATION 102-3 ON SHEET 56.
37. SEE TABULATION 110-8 ON SHEET 56.
MATERIAL SHALL BE REMOVED FROM THE SITE AND SHALL BE WASTED AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER.
38. INCLUDES CONSTRUCTION SURVEY FOR BOTH SECTION I AND SECTION II.
THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING AN INDEPENDENT CHECK OF ALL CONSTRUCTION STAKES PLACED FOR THE PROJECT. THIS INDEPENDENT CHECK SHALL BE SUFFICIENT TO UNDERSTAND THE PLACEMENT AND INTENT OF THE STAKES.
SEE TABULATION CBA-300 ON SHEET 56, FOR FIELD TIES TO THE SITE SURVEY.
39. SEE TABULATION 108-22 ON SHEET 56.
ON ALL NEW OR RECONSTRUCTED PAVEMENTS, THE LOCATION OF "NO PASSING" ZONE LINES SHALL BE LOCATED IN THE FIELD. THE LOCATIONS OF THE PROPOSED "NO PASSING" ZONE LINES SHOWN ON THE PAVEMENT MARKING TABULATION IS FOR ESTIMATING QUANTITIES ONLY.
40. SEE TABULATION 108-13A ON SHEET 55.
41. SEE TRAFFIC CONTROL PLAN ON SHEET 55 AND NAVIGABLE WATER DETAILS ON SHEET 54.
42. INCLUDES MOBILIZATION FOR BOTH SECTION I AND SECTION II.
43. INCLUDES ALL COSTS OF LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO CONSTRUCT WEEP HOLES, AND INSTALL WEEP HOLE ASSEMBLIES IN THE NORTH ABUTMENT. SEE NORTH ABUTMENT BACKFILL DETAILS, SHEETS 28-29 FOR MORE INFORMATION.
PAYMENT WILL BE AT THE UNIT PRICE BID FOR EACH WEEP HOLE ASSEMBLY THAT IS INSTALLED. QUANTITY WILL BE EACH AND SHALL BE COUNTED BY THE ENGINEER.

44. QUANTITY SHALL INCLUDE POROUS BACKFILL REQUIRED BEHIND THE NORTH ABUTMENT AND WINGWALLS AS SHOWN ON THE NORTH ABUTMENT BACKFILL DETAILS, SHEETS 28-29.
POROUS BACKFILL SHALL MEET THE REQUIREMENTS OF SECTION 4131 OF THE STANDARD SPECIFICATIONS.
THE METHOD OF MEASUREMENT WILL BE COMPUTED FROM THE WEIGHTS OF INDIVIDUAL TRUCK LOADS, INCLUDING MOISTURE IN THE AGGREGATE AT TIME OF DELIVERY. MATERIAL PLACED OUTSIDE THE LIMITS SHOWN IN THE PLANS WILL NOT BE MEASURED. BASIS OF PAYMENT SHALL BE PER TON AT THE CONTRACT UNIT PRICE AND SHALL INCLUDE ALL MATERIAL, LABOR AND EQUIPMENT TO PLACE THE MATERIAL.
- 45.-51. THE CONTRACTOR IS TO RESHAPE, FERTILIZE, SEED AND MULCH ANY AREAS DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. THIS SHALL BE INCLUDED IN THE PRICES BID FOR "MULCHING", "SEEDING AND FERTILIZING (URBAN)" AND "SEEDING AND FERTILIZING (RURAL)". SEE POLLUTION PREVENTION PLAN, SHEET 6 FOR STABILIZING CROP REQUIREMENT.
"SEEDING AND FERTILIZING (URBAN)" IS TO BE USED FOR ALL DISTURBED AREAS NORTH OF 130TH STREET.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

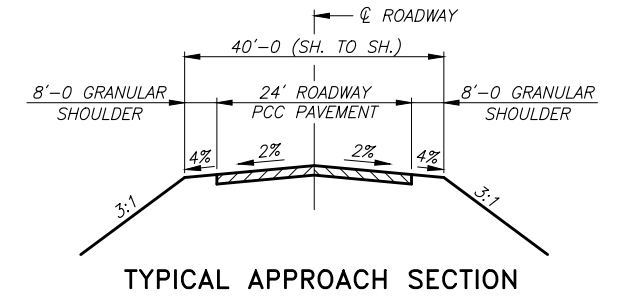
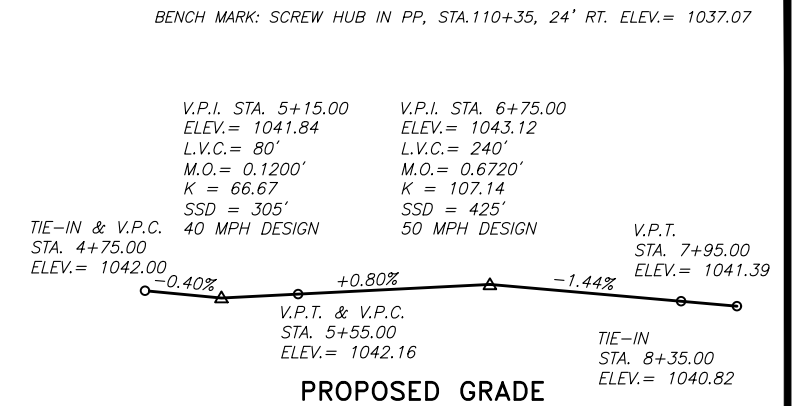
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

QUANTITY SUMMARY

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



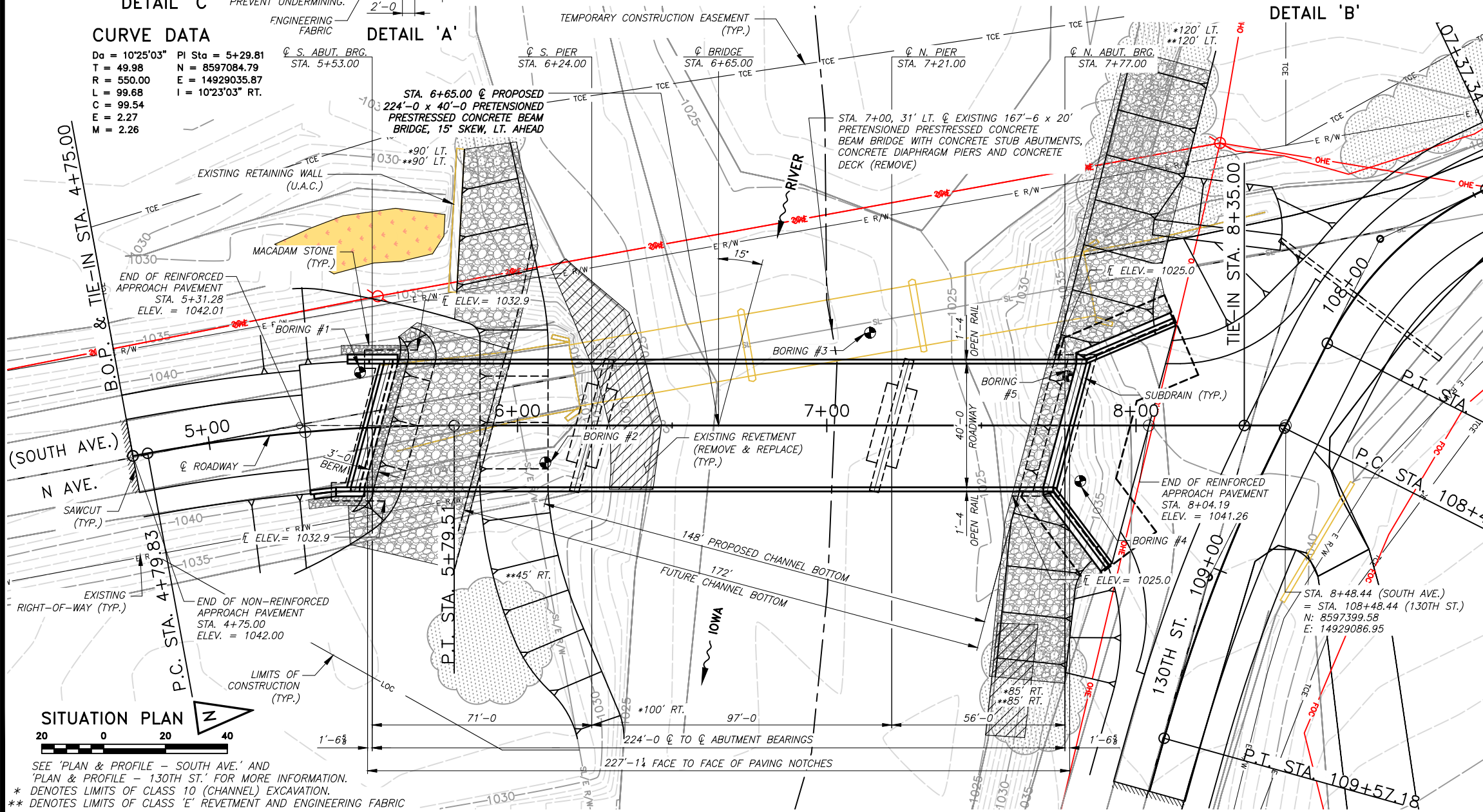
LOCATION
HARDIN COUNTY
T-89N, R-20W
SECTION 17
HARDIN TOWNSHIP
OVER IOWA RIVER

HYDRAULIC DATA

DRAINAGE AREA = 678 SQ. MI.
DESIGN DISCHARGE = 12,400 C.F.S.
DESIGN HIGH WATER ELEV. = 1034.9
MANNING SLOPE = 0.0018 FT./FT.
BRIDGE WATERWAY AREA = 1,761 SQ. FT.
DESIGN VELOCITY = 7.0 F.P.S.

Q25	=	10,500	C.F.S.	STAGE ELEV.	=	1034.2
Q50	=	12,400	C.F.S.	STAGE ELEV.	=	1034.9 (DESIGN)
Q100	=	14,500	C.F.S.	STAGE ELEV.	=	1035.6
Q200	=	16,800	C.F.S.	STAGE ELEV.	=	1036.3
Q500	=	19,300	C.F.S.	STAGE ELEV.	=	1036.9

EXT. H.W. ELEV. = UNKNOWN
ANTICIPATED Q200 SCOUR ELEV.= 1015.3
ANTICIPATED Q500 SCOUR ELEV.= 1015.3



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) & HIGH CONCRETE ABUTMENT (N.)	TEE PIERS
71'-0 & 56'-0 END SPANS	97'-0 INTERIOR SPAN

SITUATION PLAN

STATION 6+65.00
HARDIN COUNTY, IOWA

POLLUTION PREVENTION PLAN

THIS PROJECT IS REGULATED BY THE REQUIREMENTS OF THE IOWA DEPARTMENT OF NATURAL RESOURCES (DNR) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT NO. 2 OR AN IOWA DEPARTMENT OF NATURAL RESOURCES (DNR) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) INDIVIDUAL STORM WATER PERMIT. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF THIS PERMIT AND THE POLLUTION PREVENTION PLAN (PPP).

THIS BASE PPP INCLUDES INFORMATION ON ROLES AND RESPONSIBILITIES, PROJECT SITE DESCRIPTION, CONTROLS, MAINTENANCE PROCEDURES, INSPECTION REQUIREMENTS, NON-STORM WATER CONTROLS, POTENTIAL SOURCES OF OFF RIGHT-OF-WAY POLLUTION, AND DEFINITIONS. THIS PLAN REFERENCES OTHER DOCUMENTS RATHER THAN REPEATING THE INFORMATION CONTAINED IN THE DOCUMENTS. A COPY OF THIS BASE POLLUTION PREVENTION PLAN, AMENDED AS NEEDED DURING CONSTRUCTION, WILL BE READILY AVAILABLE FOR REVIEW.

ALL CONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT CONTROLS POLLUTANTS, MINIMIZES EROSION, AND PREVENTS SEDIMENTS FROM ENTERING WATERS OF THE STATE AND LEAVING THE HIGHWAY RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AND IMPLEMENTATION OF THE PPP FOR THEIR ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP.

I. ROLES AND RESPONSIBILITIES

- A. DESIGNER:
1. PREPARES BASE PPP INCLUDED IN THE PROJECT PLAN.
- B. OWNER
1. PREPARES NOTICE OF INTENT (NOI) SUBMITTED TO IOWA DNR.
2. IS SIGNATURE AUTHORITY ON THE BASE PPP.
- C. CONTRACTOR:
1. SIGNS A CO-PERMITTEE CERTIFICATION STATEMENT ADHERING TO THE REQUIREMENTS OF THE NPDES PERMIT AND THIS PPP. ALL CO-PERMITTEES ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE IOWA ADMINISTRATIVE CODE TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PPP.
2. DESIGNATES A WATER POLLUTION CONTROL MANAGER (WPCM), WHO HAS THE DUTIES AND RESPONSIBILITIES AS DEFINED IN SPECIFICATIONS SECTION 2602 OF THE STANDARD SPECIFICATIONS.
3. SUBMITS AN EROSION CONTROL IMPLEMENTATION PLAN (ECIP) AND ECIP UPDATES ACCORDING TO SPECIFICATIONS SECTION 2602 OF THE STANDARD SPECIFICATIONS.
4. INSTALLS AND MAINTAINS APPROPRIATE CONTROLS. THIS WORK MAY BE SUBCONTRACTED AS DOCUMENTED THROUGH SUBCONTRACTOR REQUEST FORMS (FORM 830231).
5. SUPERVISES AND IMPLEMENTS GOOD HOUSEKEEPING PRACTICES ACCORDING TO PARAGRAPH III, C, 2.
6. CONDUCTS JOINT REQUIRED INSPECTIONS OF THE SITE WITH INSPECTION STAFF. WHEN CONTRACTOR IS NOT MOBILIZED ON SITE, CONTRACTOR MAY DELEGATE THIS RESPONSIBILITY TO A TRAINED OR CERTIFIED SUBCONTRACTOR. CONTRACTING AUTHORITY ALSO MAY WAIVE JOINT INSPECTION REQUIREMENT DURING WINTER SHUTDOWN. IN BOTH CIRCUMSTANCES, WPCM (OR TRAINED OR CERTIFIED DELEGATE FROM THE CONTRACTOR) IS STILL RESPONSIBLE TO REVIEW AND SIGN INSPECTION REPORTS.
7. COMPLIES WITH TRAINING AND CERTIFICATION REQUIREMENTS OF SECTION 2602 OF THE STANDARD SPECIFICATIONS.
8. SUBMITS AMENDED PPP SITE MAP ACCORDING TO SECTION 2602 OF THE STANDARD SPECIFICATIONS.
- D. SUBCONTRACTORS:
1. SIGN A CO-PERMITTEE CERTIFICATION STATEMENT ADHERING TO THE REQUIREMENTS OF THE NPDES PERMIT AND THIS PPP IF RESPONSIBLE FOR SEDIMENT OR EROSION CONTROLS; INVOLVED IN LAND DISTURBING ACTIVITIES; OR PERFORMING WORK THAT IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP. SUBCONTRACTED WORK ITEMS ARE IDENTIFIED IN SUBCONTRACTOR REQUEST FORMS (FORM 830231). ALL CO-PERMITTEES ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE IOWA ADMINISTRATIVE CODE TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PPP.
2. IMPLEMENT GOOD HOUSEKEEPING PRACTICES ACCORDING TO PARAGRAPH III, C, 2.
- E. RCE/PROJECT ENGINEER:
1. IS PROJECT STORM WATER MANAGER.
2. TAKES ACTIONS NECESSARY TO ENSURE COMPLIANCE WITH STORM WATER REQUIREMENTS INCLUDING, WHERE APPROPRIATE, ISSUING STOP WORK ORDERS, AND DIRECTING ADDITIONAL INSPECTIONS AT CONSTRUCTION PROJECT SITES THAT ARE EXPERIENCING PROBLEMS WITH ACHIEVING PERMIT COMPLIANCE.
3. ORDERS THE TAKING OF MEASURES TO CEASE, CORRECT, PREVENT, OR MINIMIZE THE CONSEQUENCES OF NON-COMPLIANCE WITH THE STORM WATER REQUIREMENTS OF THE APPLICABLE PERMIT.
4. SUPERVISES ALL WORK NECESSARY TO MEET STORM WATER REQUIREMENTS AT THE PROJECT, INCLUDING WORK PERFORMED BY CONTRACTORS AND SUBCONTRACTORS.
5. REQUIRES EMPLOYEES, CONTRACTORS, AND SUBCONTRACTORS TO TAKE APPROPRIATE RESPONSIVE ACTION TO COMPLY WITH STORM WATER REQUIREMENTS, INCLUDING REQUIRING ANY SUCH PERSON TO CEASE OR CORRECT A VIOLATION OF STORM WATER REQUIREMENTS, AND TO ORDER OR RECOMMEND SUCH OTHER ACTIONS AS NECESSARY TO MEET STORM WATER REQUIREMENTS.
6. IS FAMILIAR WITH THE PROJECT PPP AND STORM WATER SITE MAP.
7. IS THE POINT OF CONTACT FOR THE PROJECT FOR REGULATORY OFFICIALS, INSPECTOR, CONTRACTORS, AND SUBCONTRACTORS REGARDING STORM WATER REQUIREMENTS.
8. IS SIGNATURE AUTHORITY ON NOTICE OF DISCONTINUATION.
9. MAINTAINS AN UP-TO-DATE RECORD OF CONTRACTORS, SUBCONTRACTORS, AND SUBCONTRACTED WORK ITEMS THROUGH SUBCONTRACTOR REQUEST FORMS (FORM 830231).
10. MAKES INFORMATION TO DETERMINE PERMIT COMPLIANCE AVAILABLE TO THE DNR UPON THEIR REQUEST.
- F. INSPECTOR:
1. UPDATES PPP THROUGH FIELDBOOK ENTRIES AND STORM WATER SITE INSPECTION REPORTS IF THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE WHICH HAS A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS FROM THE PROJECT.
2. MAKES INFORMATION TO DETERMINE PERMIT COMPLIANCE AVAILABLE TO THE DNR UPON THEIR REQUEST.
3. CONDUCTS JOINT REQUIRED INSPECTIONS OF THE SITE WITH THE CONTRACTOR/SUBCONTRACTOR.
4. COMPLETES AN INSPECTION REPORT AFTER EACH INSPECTION.
5. IS SIGNATURE AUTHORITY ON STORM WATER INSPECTION REPORTS.

II. PROJECT SITE DESCRIPTION

- A. THIS POLLUTION PREVENTION PLAN (PPP) IS FOR THE CONSTRUCTION OF A 224'-0" X 40'-0" PRETENSIONED PRESTRESSED CONCRETE BRIDGE ON SOUTH AVE OVER THE IOWA RIVER IN THE CITY OF IOWA FALLS, IOWA.
- B. THIS PPP COVERS APPROXIMATELY 2.2 ACRES WITH AN ESTIMATED 2.2 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 2.2 ACRES DISTURBED.
- C. THE PPP IS LOCATED IN AN AREA OF ONE SOIL ASSOCIATION(S) (CLARION-NICOLLET-WEBSTER). THE ESTIMATED WEIGHTED AVERAGE RUNOFF COEFFICIENT NUMBER FOR THIS PPP AFTER COMPLETION WILL BE 0.38.
- D. STORM WATER SITE MAP - MULTIPLE SOURCES OF INFORMATION COMPRISE THE BASE STORM WATER SITE MAP INCLUDING:
1. DRAINAGE PATTERNS – SITUATION PLAN AND PLAN AND PROFILE.
2. PROPOSED SLOPES – CROSS SECTIONS.
3. AREAS OF SOIL DISTURBANCE – CONSTRUCTION LIMITS SHOWN ON SITUATION PLAN AND PLAN AND PROFILE.
4. LOCATION OF STRUCTURAL CONTROLS – TABULATIONS.
5. LOCATIONS OF NON-STRUCTURAL CONTROLS – TABULATIONS.
6. LOCATIONS OF STABILIZATION PRACTICES – GENERALLY WITHIN CONSTRUCTION LIMITS SHOWN ON SITUATION PLAN AND PLAN AND PROFILE.

7. SURFACE WATERS (INCLUDING WETLANDS) – PROJECT LOCATION MAP AND SITUATION PLAN AND PLAN AND PROFILE.
8. LOCATIONS WHERE STORM WATER IS DISCHARGED – SITUATION PLAN AND PLAN AND PROFILE.
- E. THE BASE STORM WATER SITE MAP IS AMENDED BY CONTRACT MODIFICATIONS AND PROGRESS PAYMENTS (FIELDBOOK ENTRIES) OF COMPLETED EROSION CONTROL WORK. ALSO, DUE TO PROJECT PHASING, EROSION AND SEDIMENT CONTROLS SHOWN ON PROJECT PLANS MAY NOT BE INSTALLED UNTIL NEEDED, BASED ON SITE CONDITIONS. FOR EXAMPLE, SILT FENCE DITCH CHECKS WILL TYPICALLY NOT BE INSTALLED UNTIL THE DITCH HAS BEEN INSTALLED. INSTALLED LOCATIONS WILL BE DOCUMENTED BY FIELDBOOK ENTRIES AND AMENDED PPP SITE MAP.
- F. RUNOFF FROM THIS WORK WILL FLOW INTO THE IOWA RIVER.

III. CONTROLS

- A. THE CONTRACTOR'S ECIP SPECIFIED IN ARTICLE 2602.03 OF THE STANDARD SPECIFICATIONS FOR ACCOMPLISHMENT OF STORM WATER CONTROLS SHOULD CLEARLY DESCRIBE THE INTENDED SEQUENCE OF MAJOR ACTIVITIES AND FOR EACH ACTIVITY DEFINE THE CONTROL MEASURE AND THE TIMING DURING THE CONSTRUCTION PROCESS THAT THE MEASURE WILL BE IMPLEMENTED.
- B. PRESERVE VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION.
- C. SECTIONS 2601 AND 2602 OF THE STANDARD SPECIFICATIONS DEFINE REQUIREMENTS TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES. ACTUAL QUANTITIES USED AND INSTALLED LOCATIONS MAY VARY FROM THE BASE PPP AND AMENDMENT OF THE PLAN WILL BE DOCUMENTED VIA FIELDBOOK ENTRIES, AMENDED PPP SITE MAP, OR BY CONTRACT MODIFICATION. ADDITIONAL EROSION AND SEDIMENT CONTROL ITEMS MAY BE REQUIRED AS DETERMINED BY THE INSPECTOR AND/OR CONTRACTOR DURING STORM WATER SITE INSPECTIONS. IF THE WORK INVOLVED IS NOT APPLICABLE TO ANY CONTRACT ITEMS, THE WORK WILL BE PAID FOR ACCORDING TO ARTICLE 1109.03 PARAGRAPH B OF THE STANDARD SPECIFICATIONS.
1. EROSION AND SEDIMENT CONTROLS
- a. STABILIZATION PRACTICES
- 1) SITE PLANS WILL ENSURE THAT EXISTING VEGETATION OR NATURAL BUFFERS ARE PRESERVED WHERE ATTAINABLE AND DISTURBED PORTIONS OF THE SITE WILL BE STABILIZED.
- 2) INITIALIZE STABILIZATION OF DISTURBED AREAS IMMEDIATELY AFTER CLEARING, GRADING, EXCAVATING, OR OTHER EARTH DISTURBING ACTIVITIES HAVE:
- a) PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR
- b) TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS.
- 3) STAGED PERMANENT AND/OR TEMPORARY STABILIZING SEEDING AND MULCHING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE COMPLETED. INCOMPLETE AREAS SHALL BE STABILIZED ACCORDING TO PARAGRAPH III, C, 1, a, 2, b ABOVE.
- 4) PERMANENT AND TEMPORARY STABILIZATION PRACTICES TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION LOCATED IN THE PLANS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE PRACTICES TO BE USED ON THIS PROJECT ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION.
- 5) PRESERVATION OF EXISTING VEGETATION WITHIN RIGHT-OF-WAY OR EASEMENTS WILL ACT AS VEGETATIVE BUFFER STRIPS.
- 6) PRESERVATION OF TOPSOIL: BID ITEMS TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION LOCATED IN THE PLANS. ADDITIONAL INFORMATION MAY BE FOUND IN TABULATIONS OF THE PLANS OR IS REFERENCED IN STANDARD SECTION 2105 OF THE STANDARD SPECIFICATIONS.
- b. STRUCTURAL PRACTICES
- 1) STRUCTURAL PRACTICES WILL BE IMPLEMENTED TO DIVERT FLOWS FROM EXPOSED SOILS AND DETAIN OR OTHERWISE LIMIT RUNOFF AND THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE. ADDITIONALLY, STRUCTURAL PRACTICES MAY INCLUDE: SILT BASINS THAT PROVIDE 3600 CUBIC FEET OF STORAGE PER ACRE DRAINED OR EQUIVALENT SEDIMENT CONTROLS, OUTLET STRUCTURES THAT WITHDRAW WATER FROM SURFACE WHEN DISCHARGING BASINS, AND CONTROLS TO DIRECT STORM WATER TO VEGETATED AREAS.
- 2) STRUCTURAL PRACTICES TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION, AS WELL AS ALL OTHER ITEM SPECIFIC TABULATIONS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE PRACTICES TO BE USED ON THIS PROJECT CAN BE FOUND IN THE PLANS OR ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION.
- c. STORM WATER MANAGEMENT
- 1) MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES THAT WILL OCCUR AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED. THIS MAY INCLUDE VELOCITY DISSIPATION DEVICES AT DISCHARGE LOCATIONS AND ALONG LENGTH OF OUTFALL CHANNEL AS NECESSARY TO PROVIDE A NON-EROSION VELOCITY FLOW FROM STRUCTURE TO WATER COURSE. IF INCLUDED WITH THIS PROJECT, THESE ITEMS ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION, AS WELL AS ALL OTHER ITEM SPECIFIC TABULATIONS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE PRACTICES TO BE USED ON THIS PROJECT ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION. THE INSTALLATION OF THESE DEVICES MAY BE SUBJECT TO SECTION 404 OF THE CLEAN WATER ACT.
2. OTHER CONTROLS
- a. CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTES SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENTAL LAWS, RULES AND REGULATIONS, THE MORE RESTRICTIVE APPLICABLE LAWS, RULES OR REGULATIONS SHALL APPLY.
- 1) VEHICLE ENTRANCES AND EXITS - CONSTRUCT AND MAINTAIN ENTRANCES AND EXITS TO PREVENT TRACKING OF SEDIMENTS ONTO ROADWAYS.
- 2) MATERIAL DELIVERY, STORAGE AND USE - IMPLEMENT PRACTICES TO PREVENT DISCHARGE OF CONSTRUCTION MATERIALS DURING DELIVERY, STORAGE, AND USE.
- 3) STOCKPILE MANAGEMENT - INSTALL CONTROLS TO REDUCE OR ELIMINATE POLLUTION OF STORM WATER FROM STOCKPILES OF SOIL AND PAVING.
- 4) WASTE DISPOSAL - DO NOT DISCHARGE ANY MATERIALS, INCLUDING BUILDING MATERIALS, INTO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.
- 5) SPILL PREVENTION AND CONTROL - IMPLEMENT CHEMICAL SPILL AND LEAK PREVENTION AND RESPONSE PROCEDURES TO CONTAIN AND CLEAN-UP SPILLS AND PREVENT MATERIAL DISCHARGES TO THE STORM DRAIN SYSTEM AND WATERS OF THE STATE.
- 6) CONCRETE RESIDUALS AND WASHOUT WASTES - WASTE SHALL NOT BE DISCHARGED TO A SURFACE WATER AND IS NOT ALLOWED TO ADVERSELY AFFECT A WATER OF THE STATE. DESIGNATE TEMPORARY CONCRETE WASHOUT FACILITIES FOR RINSING OUT CONCRETE TRUCKS. PROVIDE DIRECTIONS TO TRUCK DRIVERS WHERE DESIGNATED WASHOUT FACILITIES ARE LOCATED. DESIGNATED WASHOUT AREAS SHOULD BE LOCATED AT LEAST 50 FEET AWAY FROM STORM DRAINS, STREAMS OR OTHER WATER BODIES. CARE SHOULD BE TAKEN TO ENSURE THESE FACILITIES DO NOT OVERFLOW DURING STORM EVENTS.
- 7) CONCRETE GROOVING/GRINDING SLURRY – DO NOT DISCHARGE SLURRY TO A WATERBODY OR STORM DRAIN. SLURRY MAY BE APPLIED ON FORESLOPES OR REMOVED FROM THE PROJECT.
- 8) VEHICLE AND EQUIPMENT STORAGE AND MAINTENANCE AREAS - PERFORM ON SITE FUELING AND MAINTENANCE IN ACCORDANCE WITH ALL ENVIRONMENT LAWS SUCH AS PROPER STORAGE OF ONSITE FUELS AND PROPER DISPOSAL OF USED ENGINE OIL OR OTHER FLUIDS ON SITE. EMPLOY WASHING PRACTICES THAT PREVENT CONTAMINATION OF SURFACE AND GROUND WATER FROM WASH WATER. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.

- 9) LITTER MANAGEMENT - ENSURE EMPLOYEES PROPERLY DISPOSE OF LITTER. MINIMIZE EXPOSURE OF TRASH IF EXPOSURE TO PRECIPITATION OR STORM WATER WOULD RESULT IN A DISCHARGE OF POLLUTANTS.
- 10) DEWATERING – PROPERLY TREAT WATER TO REMOVE SUSPENDED SEDIMENT BEFORE IT RE-ENTERS A WATERBODY OR DISCHARGES OFF-SITE. MEASURES ARE ALSO TO BE TAKEN TO PREVENT SCOUR EROSION AT DEWATERING DISCHARGE POINT.
3. APPROVED STATE OR LOCAL PLANS
- DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

IV. MAINTENANCE PROCEDURES

THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. THIS SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

V. INSPECTION REQUIREMENTS

- A. INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY AT LEAST ONCE EVERY SEVEN CALENDAR DAYS. STORM WATER SITE INSPECTIONS WILL INCLUDE:
1. DATE OF THE INSPECTION.
2. SUMMARY OF THE SCOPE OF THE INSPECTION.
3. NAME AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION.
4. REVIEW OF EROSION AND SEDIMENT CONTROL MEASURES WITHIN DISTURBED AREAS FOR THE EFFECTIVENESS IN PREVENTING IMPACTS TO RECEIVING WATERS.
5. MAJOR OBSERVATIONS RELATED TO THE IMPLEMENTATION OF THE PPP.
6. IDENTIFICATION OF CORRECTIVE ACTIONS REQUIRED TO MAINTAIN OR MODIFY EROSION AND SEDIMENT CONTROL MEASURES.
- B. INCLUDE STORM WATER SITE INSPECTION REPORTS IN THE AMENDED PPP. INCORPORATE ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DETERMINED AS A RESULT OF THE INSPECTION. IMMEDIATELY BEGIN CORRECTIVE ACTIONS ON ALL DEFICIENCIES FOUND WITHIN 3 CALENDAR DAYS OF THE INSPECTION AND COMPLETE WITHIN 7 CALENDAR DAYS FOLLOWING THE INSPECTION. IF IT IS DETERMINED THAT MAKING THE CORRECTIONS LESS THAN 72 HOURS AFTER THE INSPECTION IS IMPRACTICABLE, IT SHOULD BE DOCUMENTED WHY IT IS IMPRACTICABLE AND INDICATE AN ESTIMATED DATE BY WHICH THE CORRECTIONS WILL BE MADE.

VI. NON-STORM WATER DISCHARGES

THIS INCLUDES SUBSURFACE DRAINS (I.E. LONGITUDINAL AND STANDARD SUBDRAINS) AND SLOPE DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF HEADWALLS OR BLOCKS, CLASS A STONE, EROSION STONE OR OTHER APPROPRIATE MATERIALS. THIS ALSO INCLUDES UNCONTAMINATED GROUNDWATER FROM DEWATERING OPERATIONS, WHICH WILL BE CONTROLLED AS DISCUSSED IN SECTION III OF THE PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

SILTS, SEDIMENT, AND OTHER FORMS OF POLLUTION MAY BE TRANSPORTED ONTO HIGHWAY RIGHT-OF-WAY (ROW) AS A RESULT OF A STORM EVENT. POTENTIAL SOURCES OF POLLUTION LOCATED OUTSIDE HIGHWAY ROW ARE BEYOND THE CONTROL OF THIS PPP. POLLUTION WITHIN HIGHWAY ROW WILL BE CONVEYED AND CONTROLLED PER THIS PPP.

VIII. DEFINITIONS


- A. BASE PPP - INITIAL POLLUTION PREVENTION PLAN.
- B. AMENDED PPP – BASE PPP AMENDED DURING CONSTRUCTION. MAY INCLUDE PLAN REVISIONS OR CONTRACT MODIFICATIONS FOR NEW ITEMS. STORM WATER SITE INSPECTION REPORTS, FIELDBOOK ENTRIES MADE BY THE INSPECTOR, AMENDED PPP SITE MAP BY THE CONTRACTOR, ECIP, NOI, CO-PERMITTEE CERTIFICATIONS, AND SUBCONTRACTOR REQUEST FORMS. ITEMS AMENDING THE PPP ARE STORED ELECTRONICALLY AND ARE READILY AVAILABLE UPON REQUEST.
- C. FIELDBOOK ENTRIES – THIS CONTAINS THE INSPECTOR'S DAILY DIARY AND BID ITEM POSTINGS.
- D. CONTROLS - METHODS, PRACTICES, OR MEASURES TO MINIMIZE OR PREVENT EROSION, CONTROL SEDIMENTATION, CONTROL STORM WATER, OR MINIMIZE CONTAMINANTS FROM OTHER TYPES OF WASTE OR MATERIALS. ALSO CALLED BEST MANAGEMENT PRACTICES (BMPs).
- E. SIGNATURE AUTHORITY - REPRESENTATIVE AUTHORIZED TO SIGN VARIOUS STORM WATER DOCUMENTS.

CERTIFICATION STATEMENT

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.



SIGNATURE



PRINTED OR TYPED NAME

POLLUTION PREVENTION PLAN

HARDIN COUNTY,

IOWA



CALHOUN-BURNS & ASSOCIATES, CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50266 (515) 224-4344


JOB NO. 2023205


DESIGNED BY : KLS
DRAWN BY : LUF
CHECKED BY : KAB


HARDIN COUNTY

PROJECT NO. BRS-3720(616)--60-42

SHEET 6 OF 63

BORING LOG NO. 1				STATION 5+50, 18'LT				CBA Job No.: 2023205				Project No.: 251155			
Project: N Avenue Bridge over Iowa River Section 17, Hardin Township Hardin County, Iowa								Client: Calhoun-Burns and Associates 6775 Vista Drive West Des Moines, IA 50266							
Surface Elevation: 1041.3'								Date Drilled: 4/1/2025				Drilling Method: 4" CFA			
Datum: Site Survey								Drilling Depth, ft.: 38.5				Page: 1 of 1			
Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf	Material Description*				Graphic Log	USCS	Water Level Depth	Elevation ft.
040	0							Very dark brown and brown sandy lean clay, trace gravel, moist				CL			
		1	SSA	6	17.5			FILL							
032	8							Red-brown sand after 8'					10.8		
		2	SSA	9	-							SC	1030.5		
		3	ST		17.8	109	4000**	Very dark gray clayey fine to medium sand, moist With gravel and saturated after 13.5'							
024	16							GRANULAR ALLUVIUM (Gravely Sand)							
		4	SSA	26											
016	24														
		5	SSA	28	12.3										
		6	SSA	24				Dark gray silty fine sand after 30' With gravel after 32'				SM	33.5		
008	32							Brown-gray sandstone with limestone stringers throughout, damp					1007.8		
		7	SSA	50/1"				BEDROCK					38.5		
		8	SSA	50/1"				End of Boring					1002.8		
000	40														
992	48														
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.															
Water Level Observation															
Time: at completion hrs. days															
Depth to water: 16CW ft. ft. ft.															
ALLENDER BUTZKE ENGINEERS, INC.								Geotechnical - Environmental - Construction Q.C.							

BORING LOG NO. 2		STATION 6+09, 12'RT		CBA Job No.: 2023205		Project No.: 251155						
Project: N Avenue Bridge over Iowa River Section 17, Hardin Township Hardin County, Iowa				Client: Calhoun-Burns and Associates 6775 Vista Drive West Des Moines, IA 50266								
Surface Elevation: 1036.7' Datum: Site Survey				Date Drilled: 4/1/2025 Drilling Depth, ft.: 42.3		Drilling Method: HSA Page: 1 of 1						
Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf	Material Description*	Graphic Log	USCS	Water Level Depth	Elevation ft.
032	0							Very dark gray lean to fat clay, moist		CL-CH		
		1	SSA	9	20.6			POSSIBLE FILL				
	8							Very dark brown clayey fine to medium sand, moist		SC	9.5	
024		2	SSA	4	18.8							1027.2
		3	SSA	20	9.6			Brown coarse sand with gravel, saturated after 14.5'		SP		
	16							GRANULAR ALLUVIUM (Clayey Sand)				
		4	SSA	12	14.2							
		5	SSA	59	8.8			Brown-gray fractured sandstone, damp			1011.7	
	24							WEATHERED BEDROCK			28.5	
008		6	SSA	50/1"	9.8			Brown-gray sandstone with interbedded limestone stringers throughout, damp				1008.2
		CR1	NX		2.9	156	8140psi	Core Run #1 (28.5' to 32.3') Recovery = 98%, RQD = 56%				
					6.8	146	4000psi	Core Run #2 (32.3' to 42.3') Recovery = 100%, RQD = 91%				
			CR2	NX		9.0	140	9520psi				
	40				7.8	145	6360psi	BEDROCK Light gray after 35.5'			42.3	
992								End of Boring			994.4	
	48											
984												
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.												
Water Level Observation												
Time: at completion hrs. days												
Depth to water: ft. ft. ft.												
ALLENDER BUTZKE ENGINEERS, INC.								Geotechnical - Environmental - Construction Q.C.				

BORING LOG NO. 3		STATION 7+14, 30'LT		CBA Job No.: 2023205		Project No.: 251155						
Project: N Avenue Bridge over Iowa River Section 17, Hardin Township Hardin County, Iowa				Client: Calhoun-Burns and Associates 6775 Vista Drive West Des Moines, IA 50266								
Surface Elevation: 1042.5' Datum: Site Survey				Date Drilled: 4/2/2025 Drilling Depth, ft.: 42		Drilling Method: HSA Page: 1 of 1						
Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf	Material Description*	Graphic Log	USCS	Water Level Depth	Elevation ft.
040	0							Reinforced PCC Bridge Deck (7"±)			0.6	
	8							Air				1041.9
032												
	16											
024												
	24	1	SSA	49	7.9			Brown fractured limestone, damp WEATHERED BEDROCK			25	
016											1017.5	
	32	CR1	NX		5.7	145	7800psi	Dark brown sandstone with interbedded limestone stringers throughout, damp Core Run #1 (30' to 32') Recovery = 83%, RQD = 35% Core Run #2 (32' to 42') Recovery = 100%, RQD = 80% BEDROCK Gray after 36'			29	1013.5
008					4.1	152	9640psi					
	40	CR2	NX		6.0	145	7780psi					
000					7.4	138	5490psi	End of Boring			42	
	48										1000.5	
992												
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.												
Water Level Observation								ALLENDER BUTZKE ENGINEERS, INC.				
Time: at completion hrs. days								Geotechnical - Environmental - Construction Q.C.				
Depth to water: ft. ft. ft.												

SOUNDING DATA

(SEE "SITUATION PLAN", SHEET 4, FOR BORING LOCATIONS)

	I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
	DATE: 4/1/26
	DAVID LOGEMANN, P.E.
	MY LICENSE RENEWAL DATE IS DECEMBER 31, 2027.
	PAGES OR SHEETS COVERED BY THIS SEAL: 7 & 8 OF 63

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE


SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS


TEE PIERS
97'-0 INTERIOR SPAN

SOUNDING DATA

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

BORING LOG NO. 5 STATION				7+78, 16'LT		CBA Job No.: 2023205		Project No.: 251155			
Project: N Avenue Bridge over Iowa River				Client: Calhoun-Burns and Associates							
Section 17, Hardin Township				6775 Vista Drive							
Hardin County, Iowa				West Des Moines, IA 50266							
Surface Elevation: 1033.7'				Date Drilled: 4/3/2025		Drilling Method: 4" CFA					
Datum: Site Survey				Drilling Depth, ft.: 19.1		Page: 1 of 1					
Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf	Material Description *	Graphic Log	USCS	Water Level Depth Elevation ft.
1032	0							Overburden Soils			
	8										
1024											
	16							WEATHERED BEDROCK			15
1016		1 SSA		150	13.5			Brown sandstone with interbedded limestone stringers throughout, damp BEDROCK			1018.7
		2 SSA		50/0.3"	-						18
											1015.7
											19.1
	24							End of Boring			1014.6
1008											
	32										
1000											
	40										
992											
	48										
984											
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.											
Water Level Observation											
Time: at completion hrs. days											
Depth to water: 10 ft. ft. ft.											
ALLENDER BUTZKE ENGINEERS, INC.											
Geotechnical - Environmental - Construction Q.C.											

BORING LOG NO. 4 STATION				7+82, 18'RT				CBA Job No.: 2023205				Project No.: 251155					
Project: N Avenue Bridge over Iowa River Section 17, Hardin Township Hardin County, Iowa								Client: Calhoun-Burns and Associates									
								6775 Vista Drive									
								West Des Moines, IA 50266									
Surface Elevation: 1031.9'								Date Drilled: 4/3/2025				Drilling Method: 4" CFA					
Datum: Site Survey								Drilling Depth, ft.: 32.5				Page: 1 of 1					
Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf	Material Description *						Graphic Log	USCS	Water Level Depth Elevation ft.	
	0							Dark brown sandy lean clay, moist									
		1 SSA		6	26.6			POSSIBLE FILL									
								Trace gravel after 6'						7			
1024	8	2 SSA		7				Brown-gray silty fine to medium sand, saturated				SM		1024.9			
								GRANULAR ALLUVIUM (Silty Sand)						14			
1016	16	3 SSA		73	15.2 19.4			Brown-gray silty fine to coarse sand, saturated				SM		1017.9			
		4 SSA		50/1"	8.0			GRANULAR ALLUVIUM (Granular Material)						18			
		CR1 NX			5.2	146	9510psi	Brown-gray sandstone with interbedded limestone stringers throughout, damp Core Run #1 (19' to 22.5') Recovery = 100%, RQD = 82% Gray after 21' Core Run #2 (22.5' to 32.5') Recovery = 99%, RQD = 94%						1013.9			
1008	24				3.6	158	13310psi										
		CR2 NX			3.3	149	6820psi										
1000	32				6.9	143	4600psi	BEDROCK									
								Light gray after 28'						32.5			
								End of Boring						999.4			
992	40																
984	48																
*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.																	
Water Level Observation																	
Time: at completion hrs. days																	
Depth to water: 7 ft. ft. ft.																	
ALLENDER BUTZKE ENGINEERS, INC.								Geotechnical - Environmental - Construction Q.C.									

SOUNDING DATA

(SEE "SITUATION PLAN", SHEET 4, FOR BORING LOCATIONS)

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

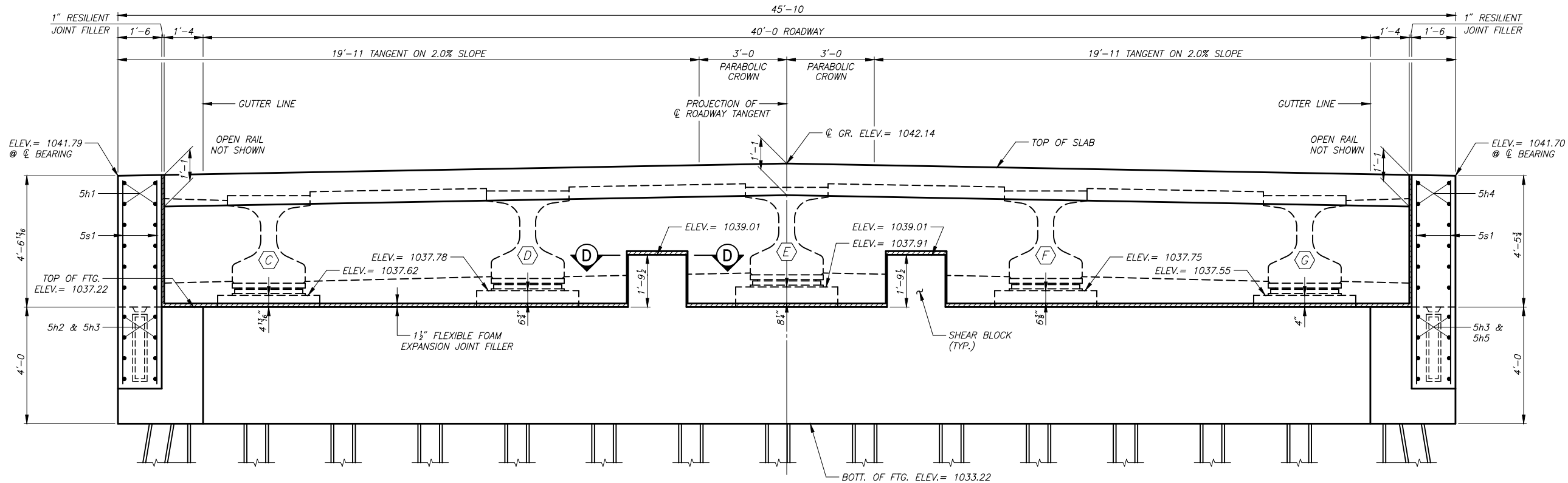
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

SOUNDING DATA

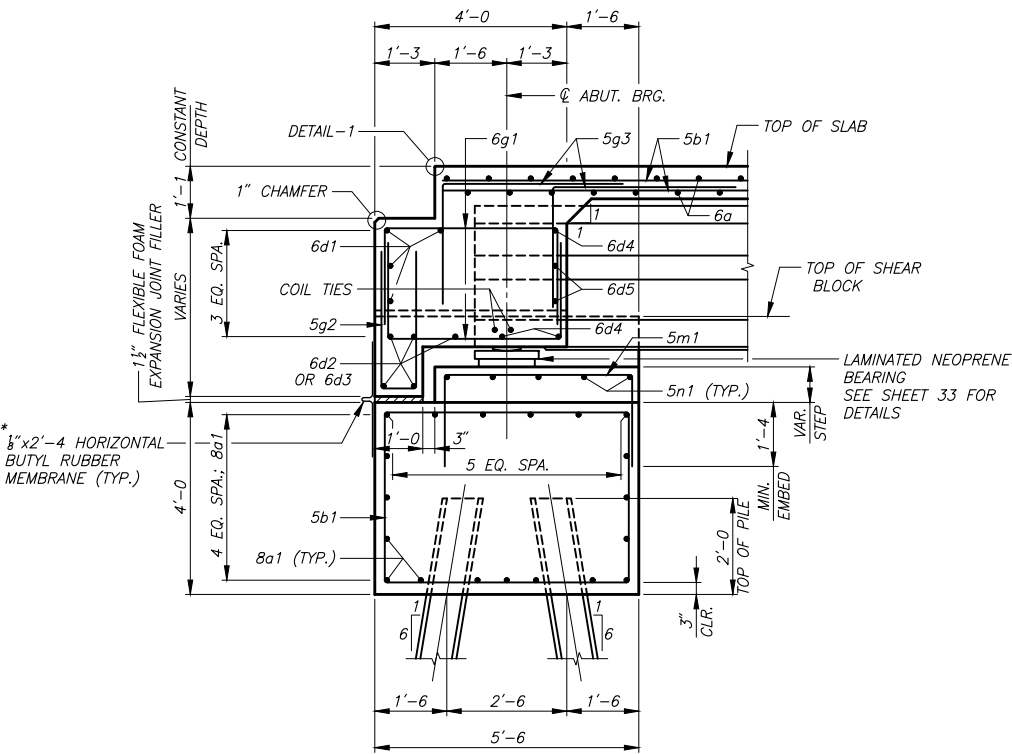
STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



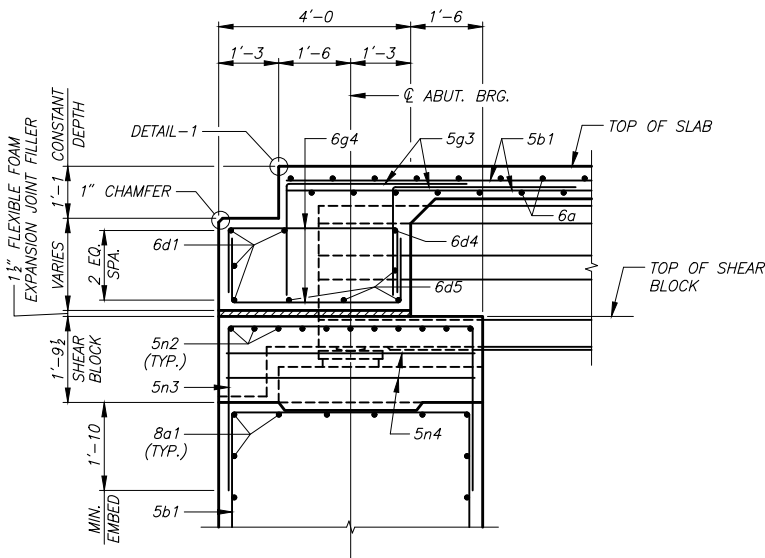
REAR ELEVATION
(LOOKING NORTH)

NOTES: 1. SEE SHEET 9 FOR SOUTH ABUTMENT PLAN AND SHEET 11 FOR SECTION D-D.
2. BUTYL RUBBER MEMBRANES AND SHEAR BLOCK CONSTRUCTION JOINTS NOT SHOWN FOR CLARITY.



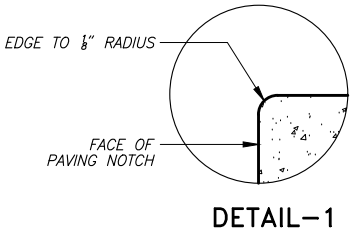
SECTION A-A

* HORIZONTAL BUTYL RUBBER MEMBRANE SHALL BE CENTERED AND FASTENED TO THE CONCRETE ON BOTH SIDES OF THE JOINT WITH AN APPROVED WATERPROOF ADHESIVE.



SECTION B-B
(AT SHEAR BLOCK)

NOTE: BUTYL RUBBER MEMBRANES NOT SHOWN.



NOTE: 'PT' OF HORIZONTAL CURVE LIES ON BRIDGE. LOCATION OF SOUTH ABUTMENT IS BASED ON A PROJECTION OF THE TANGENT. SEE STAKING DIAGRAM, SHEET 5, FOR ADDITIONAL INFORMATION.

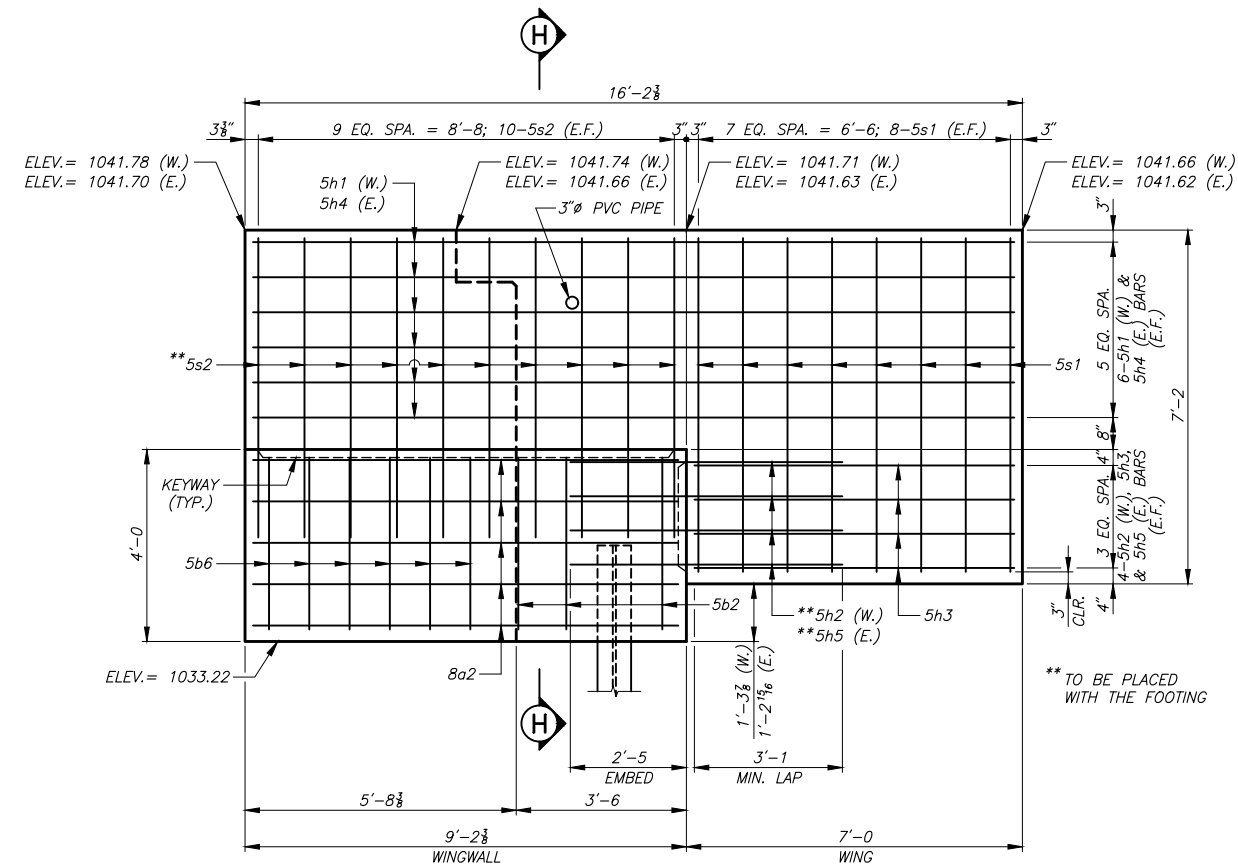
224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

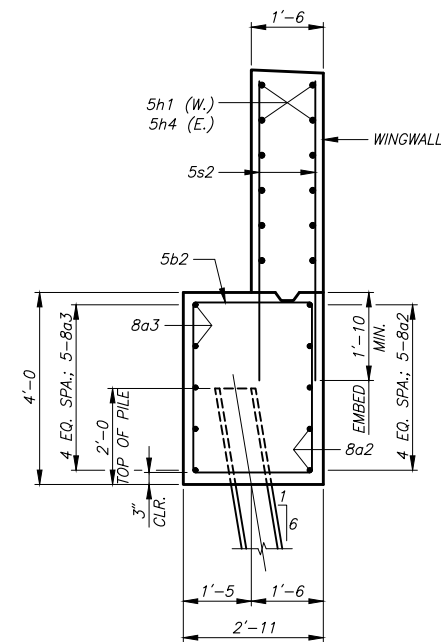
SOUTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,
15' SKEW, LT. AHEAD
IOWA

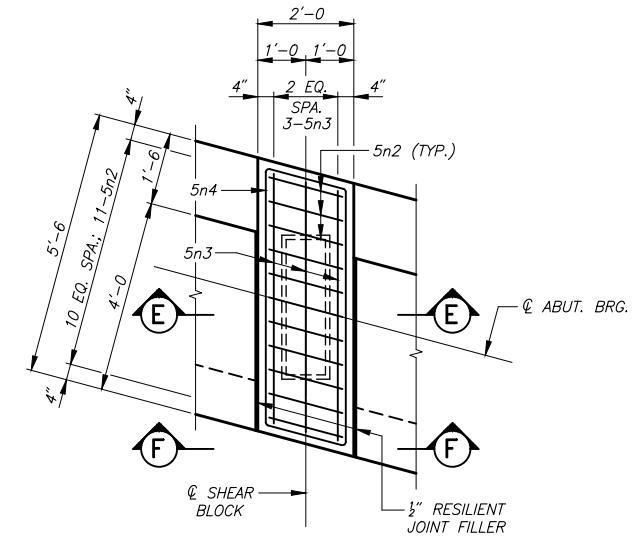


VIEW C-C

NOTES: 1. ELEVATIONS AND VERTICAL DIMENSIONS SHOWN ARE AT OUTSIDE FACE.
2. FOOTING BARS 8a1 AND 5b3 NOT SHOWN FOR CLARITY.

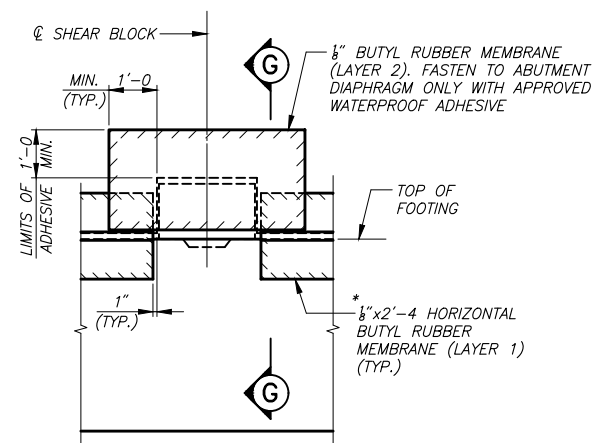


SECTION H-H

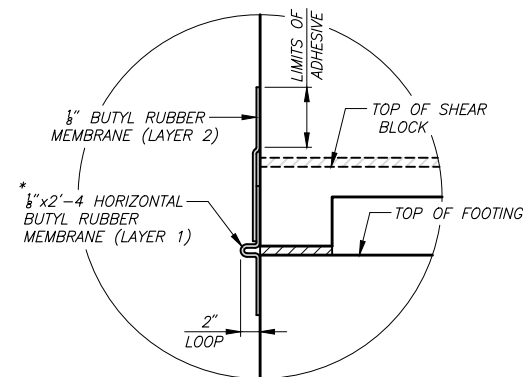


SECTION D-D

NOTE: ABUTMENT DIAPHRAGM REINFORCING AND BUTYL RUBBER MEMBRANES NOT SHOWN FOR CLARITY.

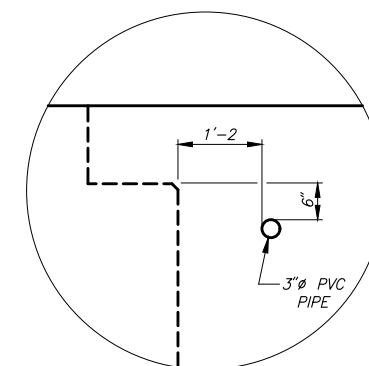


SECTION F-F



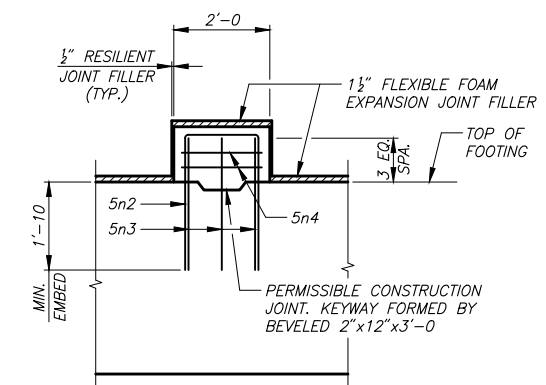
SECTION G-G

* HORIZONTAL BUTYL RUBBER MEMBRANE SHALL BE CENTERED AND FASTENED TO THE CONCRETE ON BOTH SIDES OF THE JOINT WITH AN APPROVED WATERPROOF ADHESIVE.



PVC PIPE LOCATION

NOTE: PLUG 3"Ø PVC PIPE WITH EXPANDING FOAM PRIOR TO BACKFILLING BEHIND ABUTMENT.



SECTION E-E

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

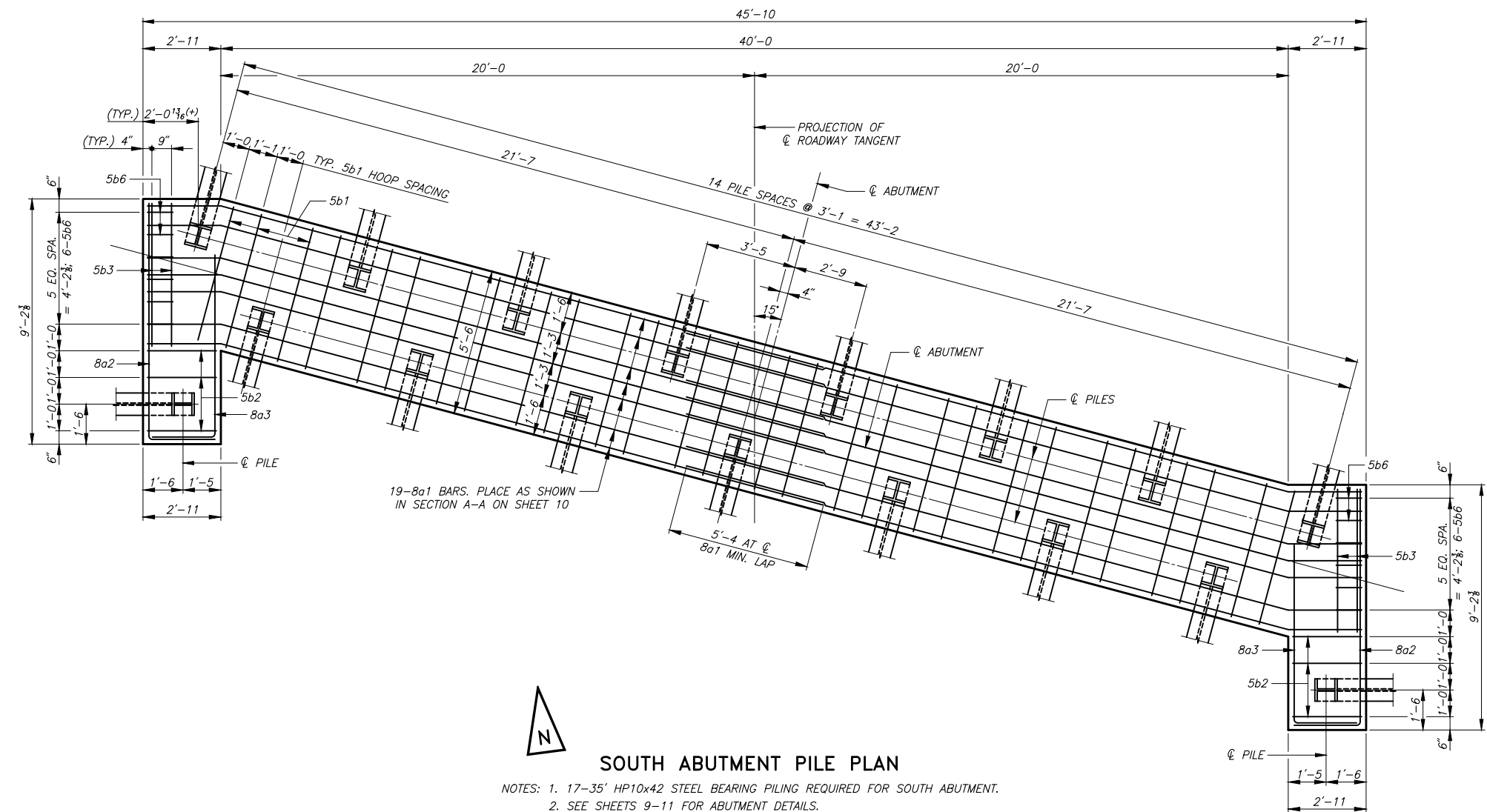
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0" & 56'-0" END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

SOUTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA

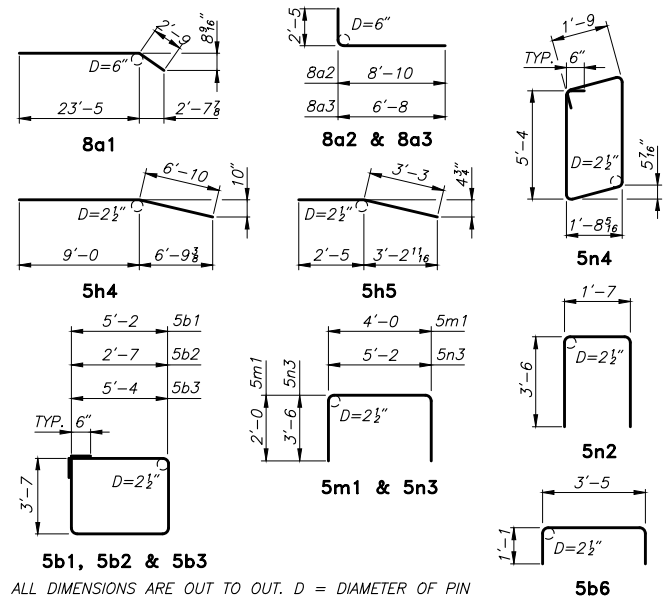


NOTE: 'PT' OF HORIZONTAL CURVE LIES ON BRIDGE. LOCATION OF SOUTH ABUTMENT IS BASED ON A PROJECTION OF THE TANGENT. SEE STAKING DIAGRAM, SHEET 5, FOR ADDITIONAL INFORMATION.

SOUTH ABUTMENT NOTES

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
ALL REINFORCING STEEL TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.
ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.
CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 6'S.
IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK AND BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE CONTRACTOR AT NO EXTRA COST.
ALL FORMWORK BETWEEN TOP OF ABUTMENT FOOTING AND ABUTMENT DIAPHRAGM SHALL BE REMOVED.
THE COST OF RESILIENT JOINT FILLER, FLEXIBLE FOAM EXPANSION JOINT FILLER, BUTYL RUBBER MEMBRANE AND PVC PIPE IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".
DIMENSIONS SHOWN ON PILING LAYOUT ARE AT BOTTOM OF FOOTING. BATTER PILES IN THE DIRECTION SHOWN.
SEE PILE NOTES ON SHEET 5 FOR ADDITIONAL INFORMATION.

BENT BAR DETAILS



REINFORCING BAR LIST - SOUTH ABUTMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
△ 8a1	FOOTING LONGITUDINAL	—	38	26'-2	2,655
△ 8a2	FOOTING EXTENSION	—	10	11'-3	300
△ 8a3	FOOTING EXTENSION	—	10	9'-1	243
△ 5b1	FOOTING HOOPS	□	28	18'-6	540
△ 5b2	FOOTING EXTENSION HOOPS	□	6	13'-4	83
△ 5b3	FOOTING HOOPS	□	4	18'-10	79
△ 5b6	FOOTING ENDS	□	12	5'-7	70
△ 5h1	WINGWALL HORIZONTAL	—	12	15'-10	198
△ 5h2	FOOTING EXTENSION HORIZONTAL	—	8	5'-8	47
△ 5h3	WING HORIZONTAL	—	16	6'-8	111
△ 5h4	WINGWALL HORIZONTAL	—	12	15'-10	198
△ 5h5	FOOTING EXTENSION HORIZONTAL	—	8	5'-8	47
△ 5m1	BEAM STEPS TRANSVERSE	□	25	8'-0	209
△ 5n1	BEAM STEPS LONGITUDINAL	—	25	3'-3	85
△ 5n2	SHEAR BLOCK	□	22	8'-7	197
△ 5n3	SHEAR BLOCK	□	6	12'-2	76
△ 5n4	SHEAR BLOCK	□	4	15'-2	63
△ 5s1	WING VERTICAL	—	32	6'-9	225
△ 5s2	WINGWALL VERTICAL	—	40	6'-3	261

△ EPOXY COATED EPOXY COATED TOTAL (LBS.) 5,687

CONCRETE PLACEMENT QUANTITIES - S. ABUT.

LOCATION	QUANTITY
FOOTING, STEPS AND SHEAR BLOCKS	44.6
WING AND WINGWALL 2 @ 5.1 C.Y.	10.2
TOTAL (CU.YDS.)	54.8

ESTIMATED QUANTITIES - SOUTH ABUTMENT

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	54.8
REINFORCING STEEL - EPOXY COATED	LBS.	5,687
EXCAVATION, CLASS 20	CU.YDS.	135
PILES, STEEL, HP10x57; 17 @ 35'	L.F.	595

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

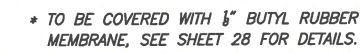
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN


SOUTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



- NOTES: 1. SEE SHEET 14 FOR NORTH ABUTMENT REINFORCING DETAIL PLAN.
2. SEE SHEET 15 FOR NORTH ABUTMENT CAP PLAN.
3. SEE SHEET 16 FOR NORTH ABUTMENT REAR ELEVATION.
4. SEE SHEET 20 FOR SECTION A-A & SECTION B-B.
5. SEE SHEET 24 FOR VIEW C-C & SHEET 25 VIEW D-D.
6. SEE SHEET 21 FOR SECTION E-E.
7. SEE SHEET 22 THRU 25 FOR WALL PLAN DETAILS.
8. SEE SHEET 17 FOR FOOTING DETAILS.



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED
 BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM
 A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE
 STATE OF IOWA.

 MARK C. CURRIE, P.E.

DATE: 4/20/26

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2027 .

PAGES OR SHEETS COVERED BY THIS SEAL:
SHEETS 13-26, 28 & 29

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

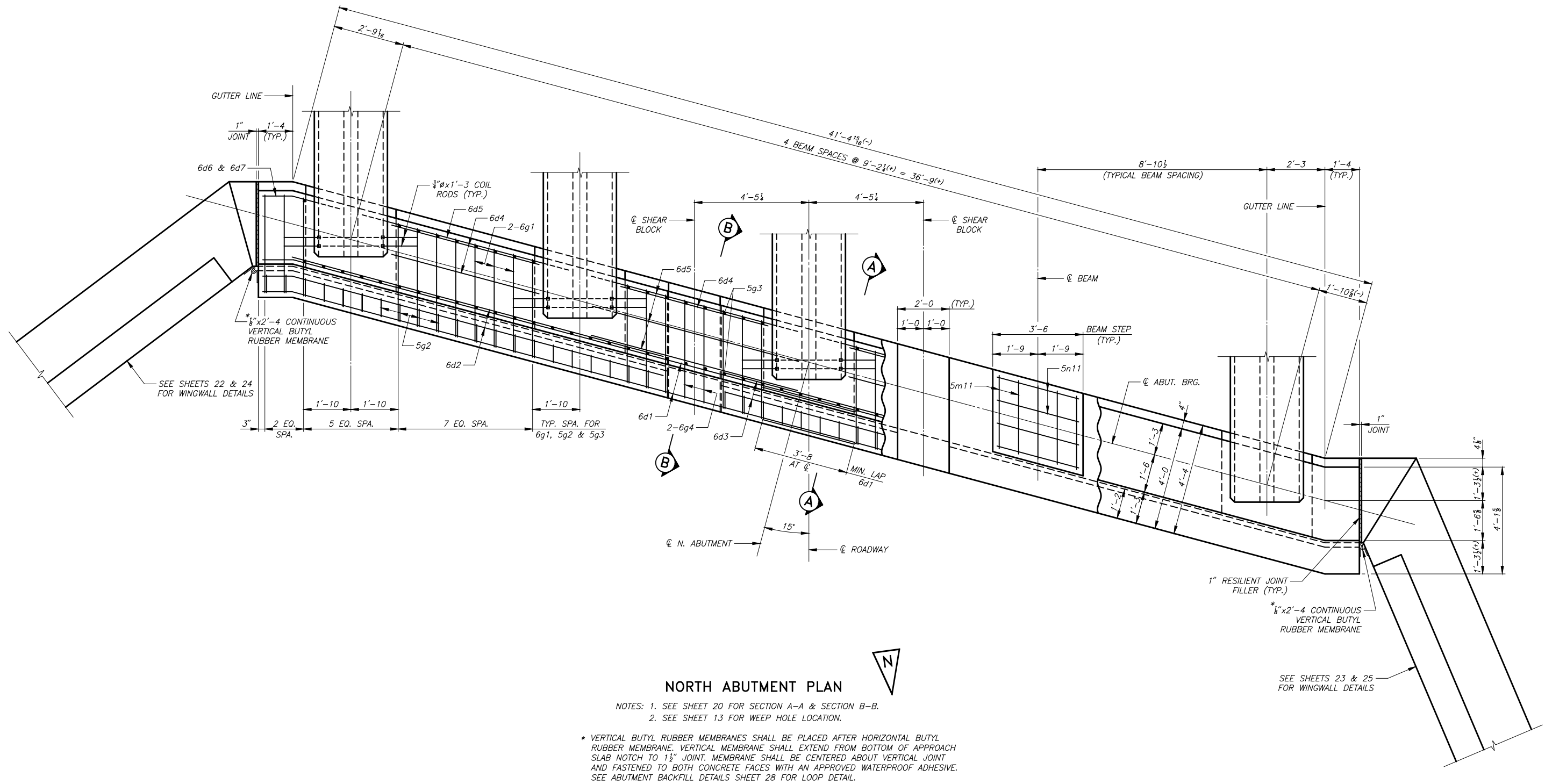
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

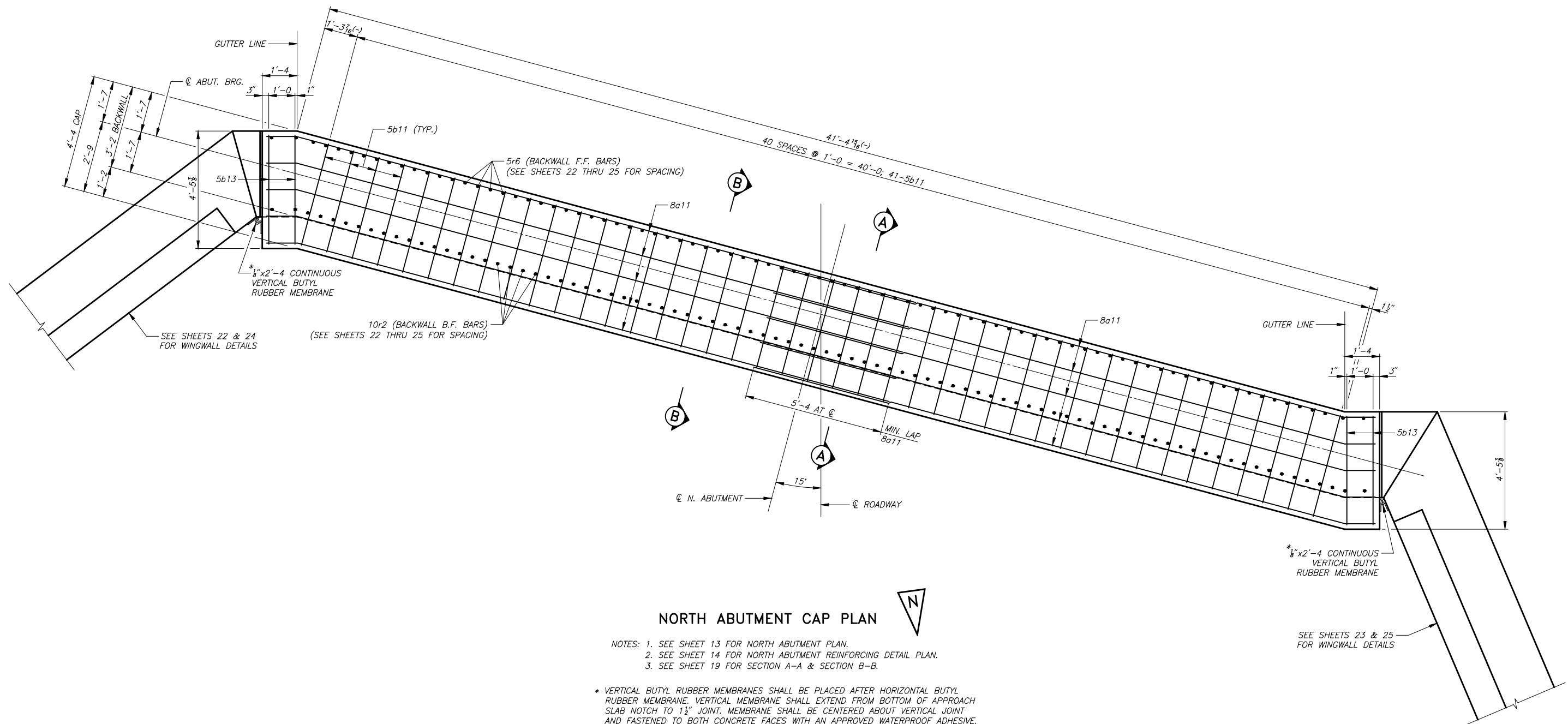
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



NORTH ABUTMENT CAP PLAN

- NOTES: 1. SEE SHEET 13 FOR NORTH ABUTMENT PLAN.
2. SEE SHEET 14 FOR NORTH ABUTMENT REINFORCING DETAIL PLAN.
3. SEE SHEET 19 FOR SECTION A-A & SECTION B-B.

* VERTICAL BUTYL RUBBER MEMBRANES SHALL BE PLACED AFTER HORIZONTAL BUTYL RUBBER MEMBRANE. VERTICAL MEMBRANE SHALL EXTEND FROM BOTTOM OF APPROACH SLAB NOTCH TO 1½" JOINT. MEMBRANE SHALL BE CENTERED ABOUT VERTICAL JOINT AND FASTENED TO BOTH CONCRETE FACES WITH AN APPROVED WATERPROOF ADHESIVE. SEE ABUTMENT BACKFILL DETAILS SHEET 28 FOR LOOP DETAIL.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

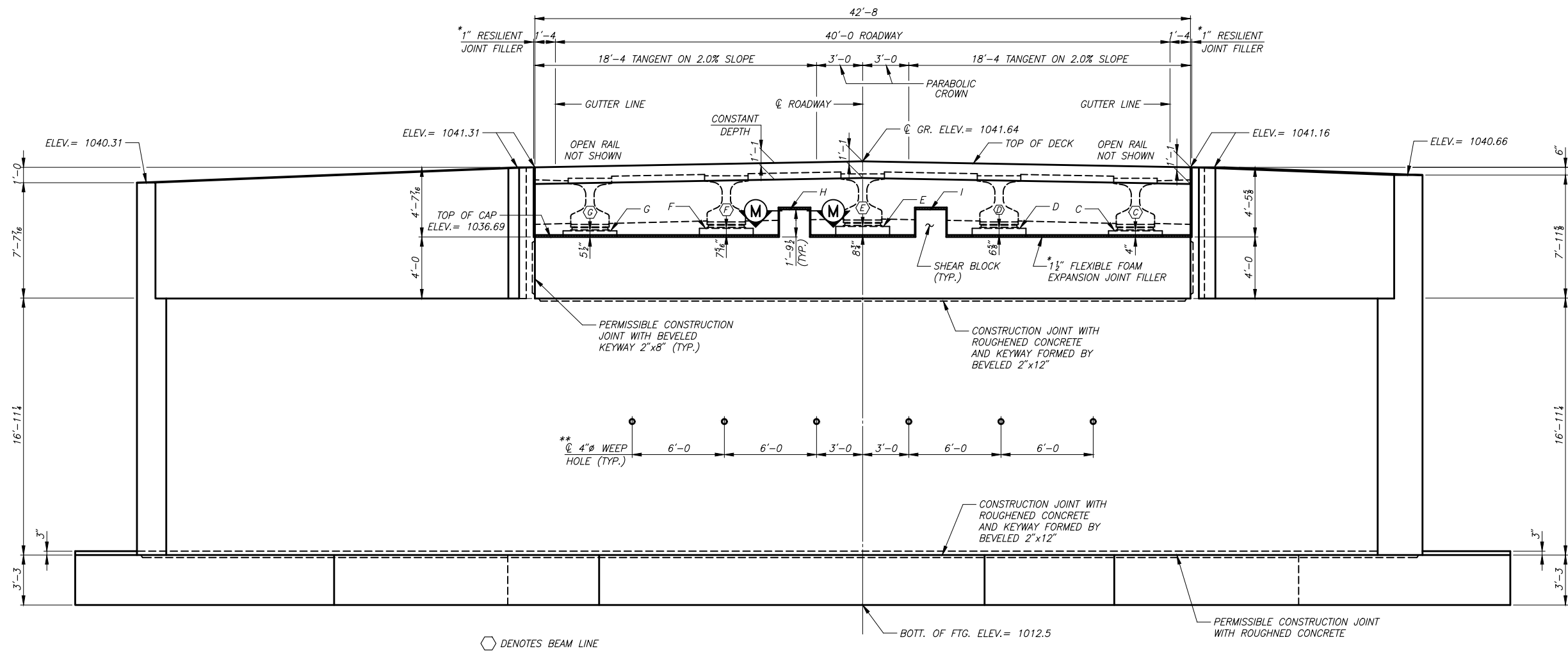
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY, IOWA

15' SKEW, LT. AHEAD
IOWA



REAR ELEVATION
(LOOKING SOUTH)

- NOTES: 1. SEE SHEET 13 FOR NORTH ABUTMENT PLAN.
2. SEE SHEETS 22 THRU 25 FOR WINGWALL DETAILS.
3. SEE SHEET 21 FOR SECTION M-M.

* TO BE COVERED WITH 1/8" BUTYL RUBBER
MEMBRANE, SEE SHEET 28 FOR DETAILS.

** ADJUST WEEP HOLE LOCATIONS TO
CLEAR REINFORCING BARS.

ELEVATION TABLE						
ELEV. C	ELEV. D	ELEV. E	ELEV. F	ELEV. G	ELEV. H	ELEV. I
1037.02	1037.24	1037.42	1037.30	1037.15	1038.42	1038.42

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

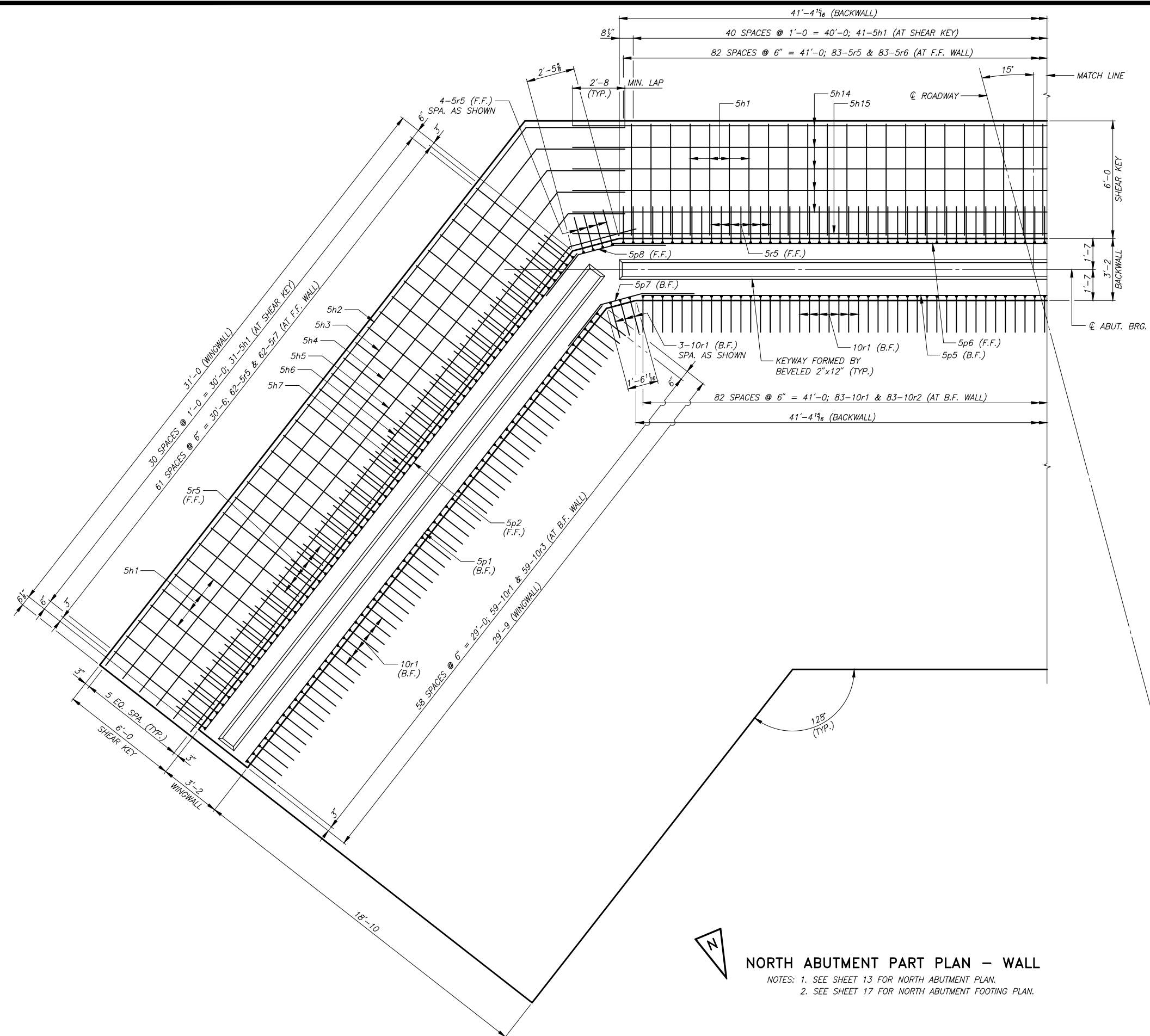
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY, IOWA

15' SKEW, LT. AHEAD
IOWA



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

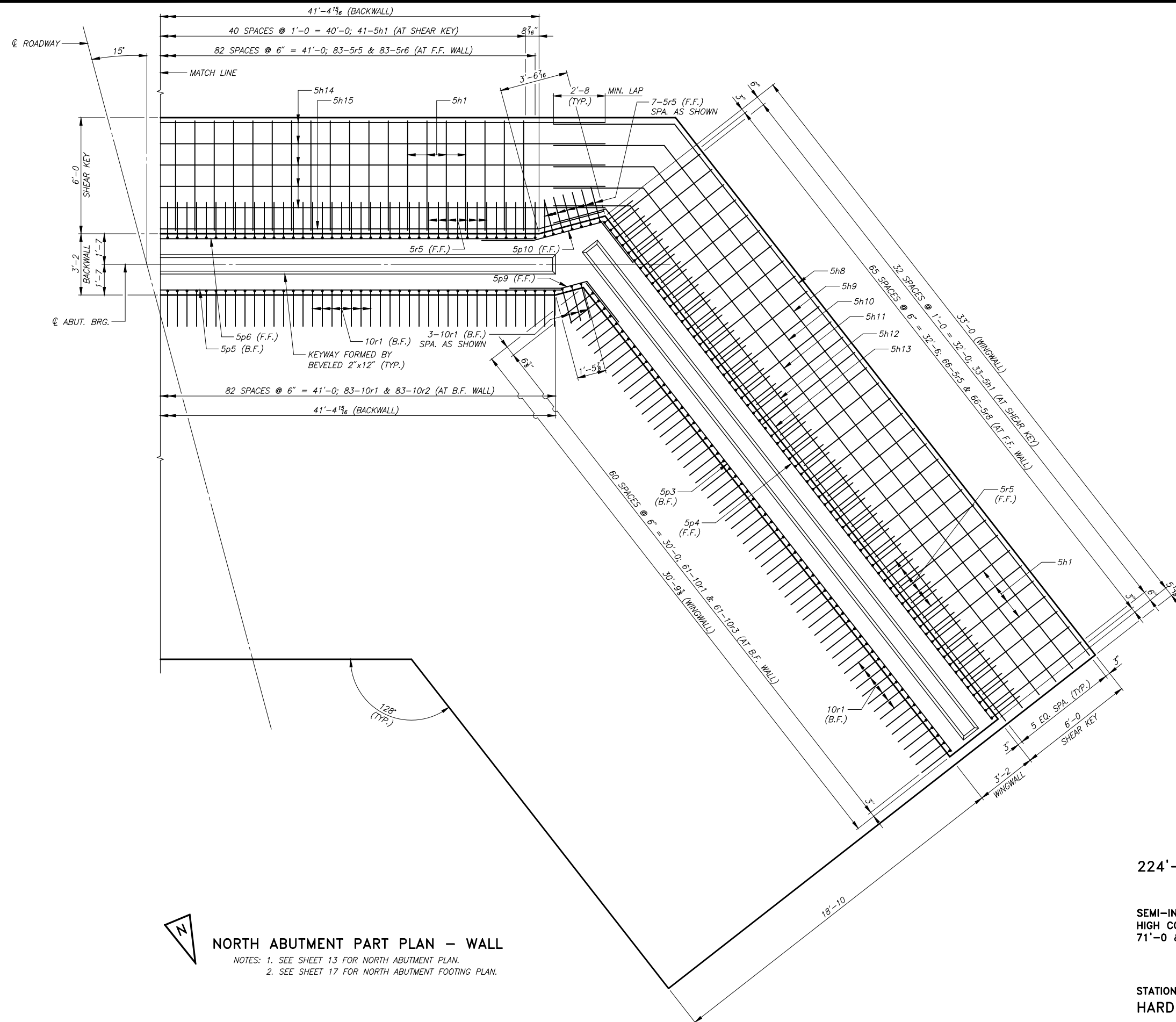
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA



NORTH ABUTMENT PART PLAN - WALL

NOTES: 1. SEE SHEET 13 FOR NORTH ABUTMENT PLAN.
2. SEE SHEET 17 FOR NORTH ABUTMENT FOOTING PLAN.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

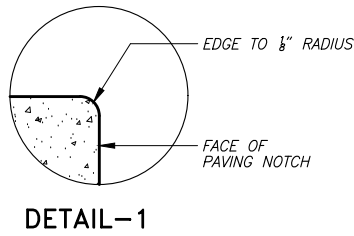
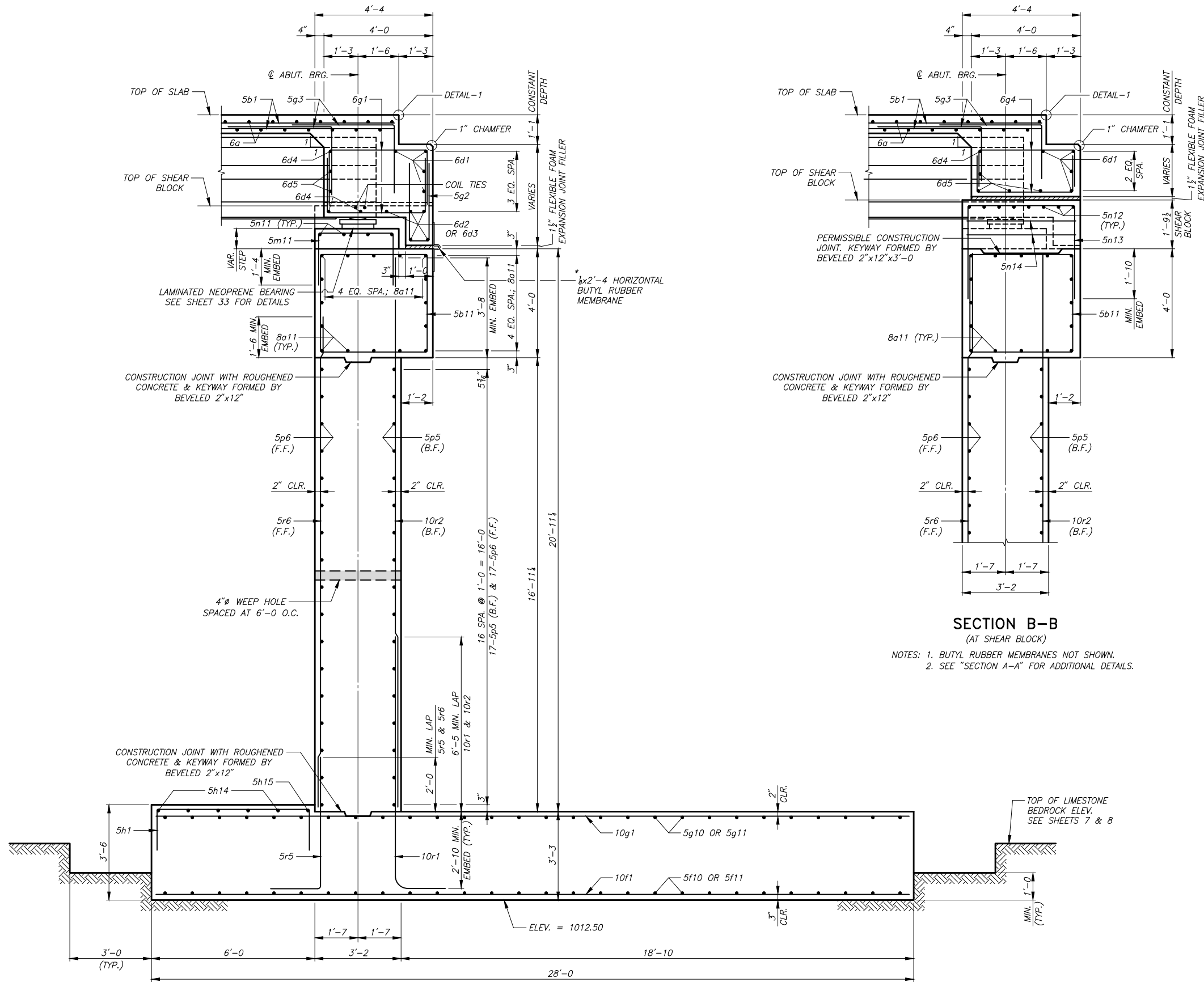
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



SECTION B-B
(AT SHEAR BLOCK)

NOTES: 1. BUTYL RUBBER MEMBRANES NOT SHOWN.
2. SEE "SECTION A-A" FOR ADDITIONAL DETAILS.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

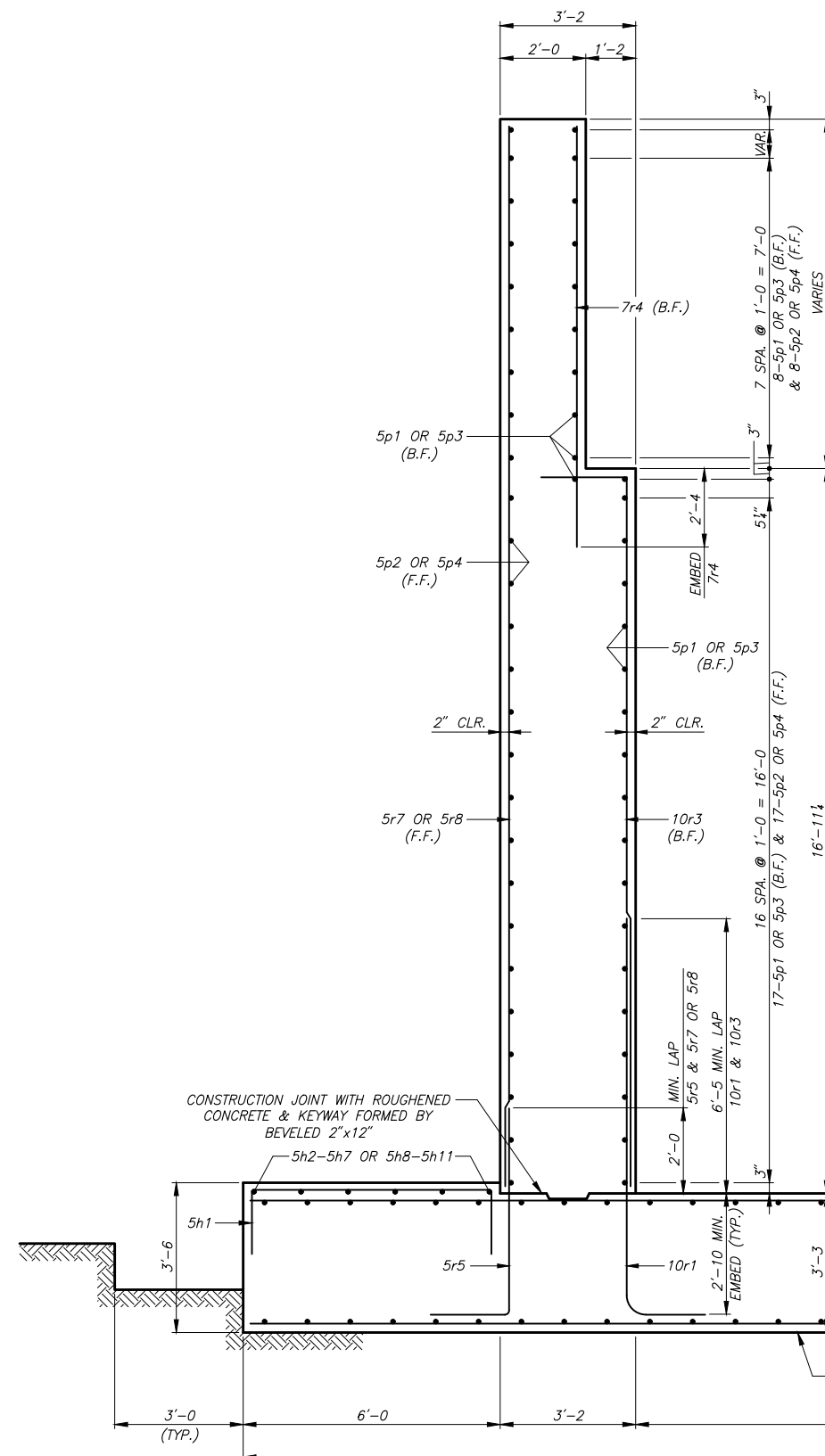
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

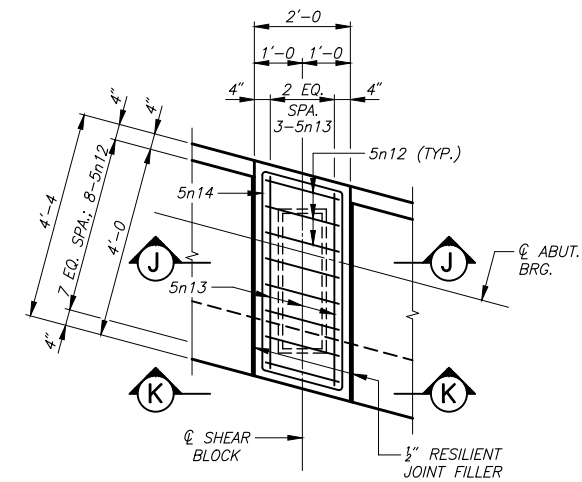
NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY, IOWA

15' SKEW, LT. AHEAD
IOWA

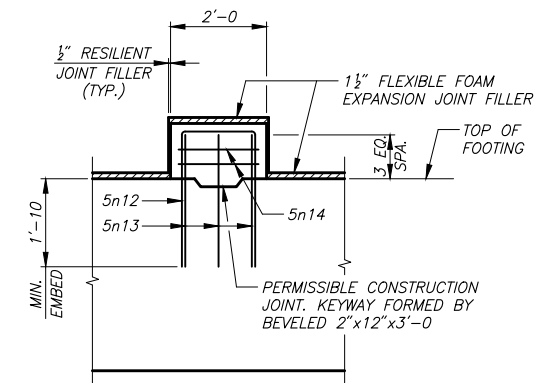


SECTION E-E
(TYPICAL WINGWALL SECTION)

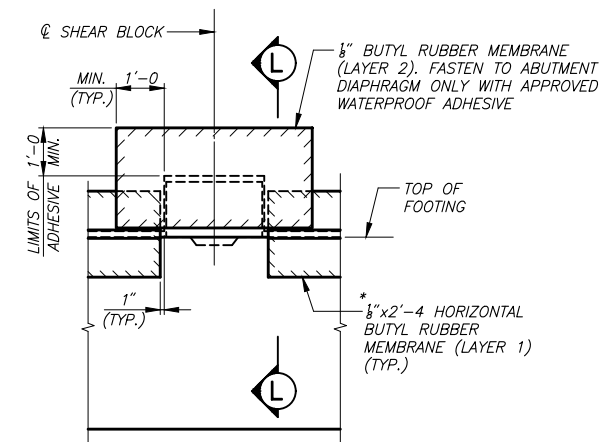


SECTION M-M

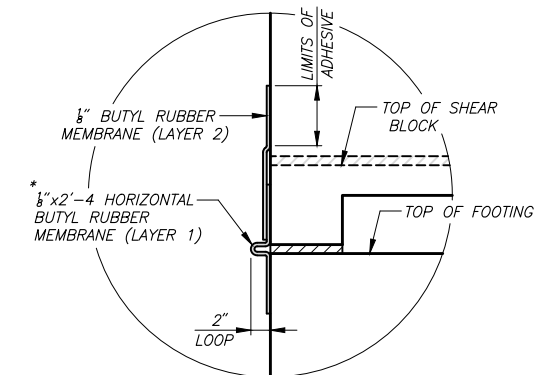
NOTE: ABUTMENT DIAPHRAGM REINFORCING AND BUTYL RUBBER MEMBRANES NOT SHOWN FOR CLARITY.



SECTION J-J



SECTION K-K



SECTION L-L

* HORIZONTAL BUTYL RUBBER MEMBRANE SHALL BE CENTERED AND AND FASTENED TO THE CONCRETE ON BOTH SIDES OF THE JOINT WITH AN APPROVED WATERPROOF ADHESIVE.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

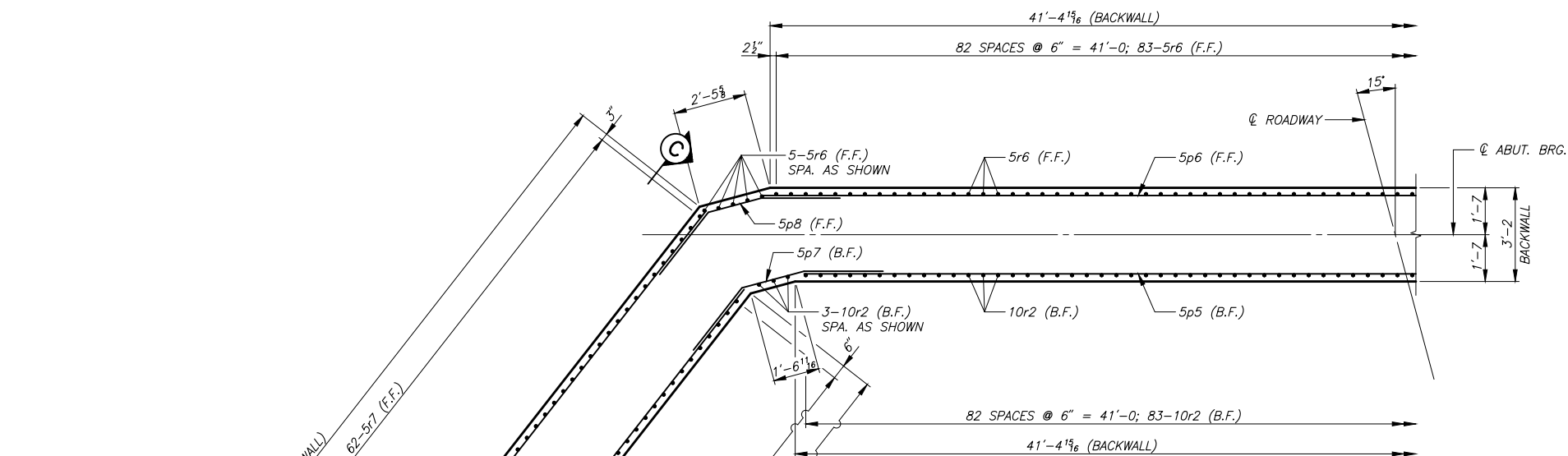
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

NORTH ABUTMENT DETAILS

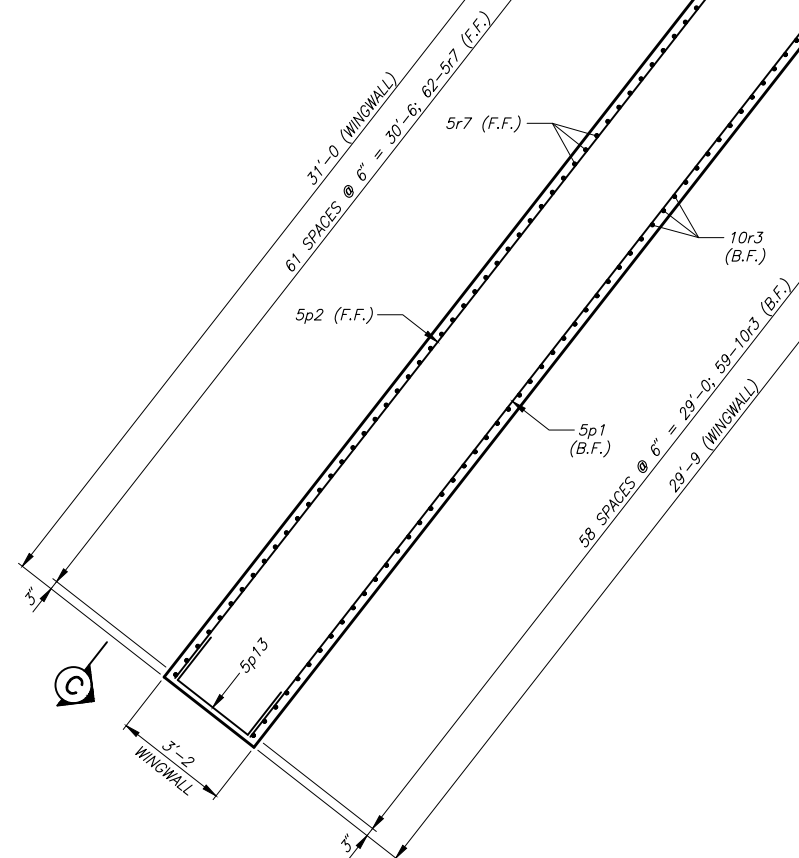
STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA



SECTION G-G

NOTES: 1. SEE SHEET 13 FOR NORTH ABUTMENT PLAN.
2. SEE SHEET 24 FOR VIEW C-C.



SECTION F-F

NOTES: 1. SEE SHEET 13 FOR NORTH ABUTMENT PLAN.
2. SEE SHEET 24 FOR VIEW C-C.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

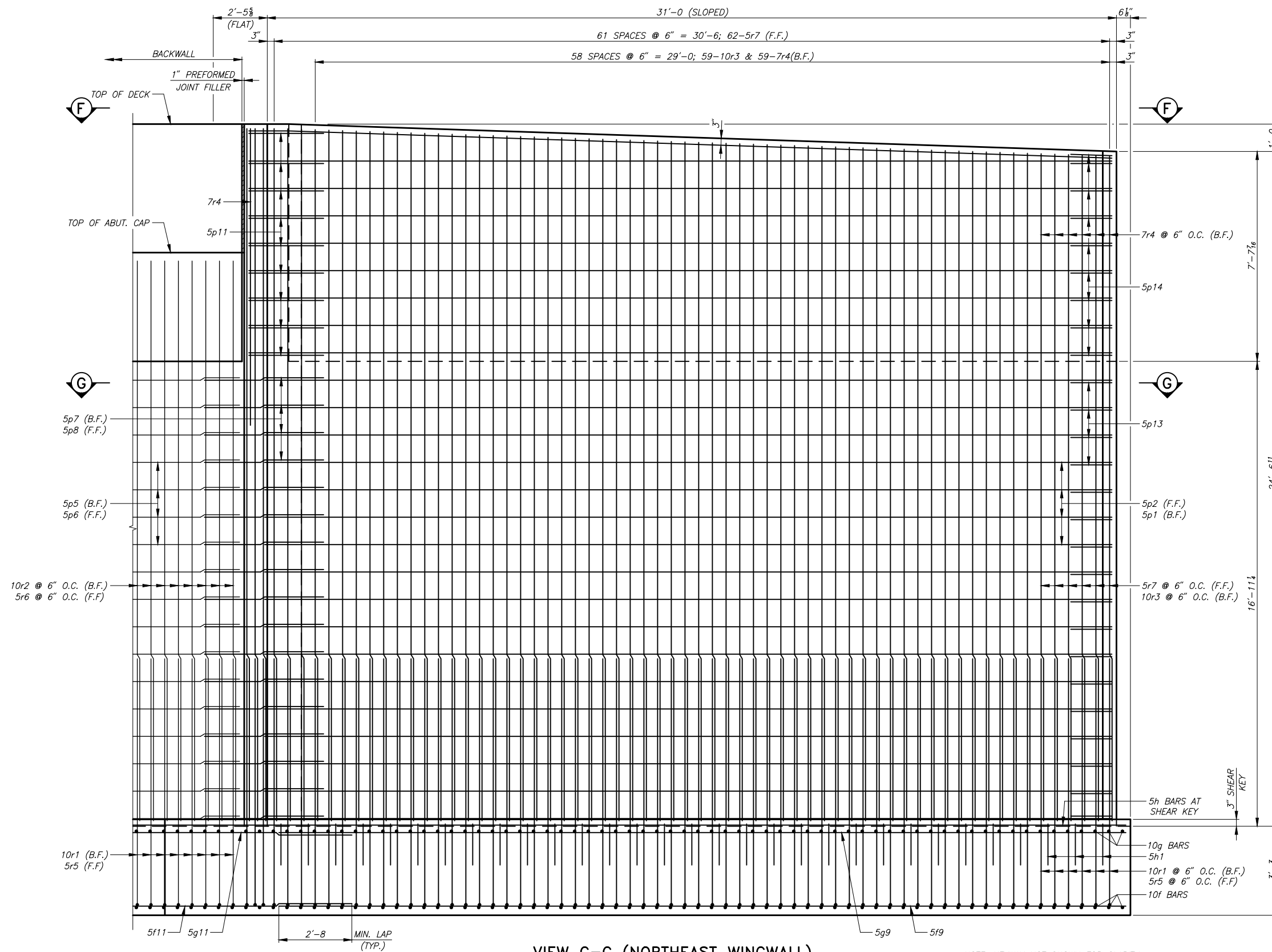
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



VIEW C-C (NORTHEAST WINGWALL)

NOTE: SEE SHEET 22 FOR SECTION F-F & SECTION G-G.

NOTE: KEYWAY NOT SHOWN FOR CLARITY.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

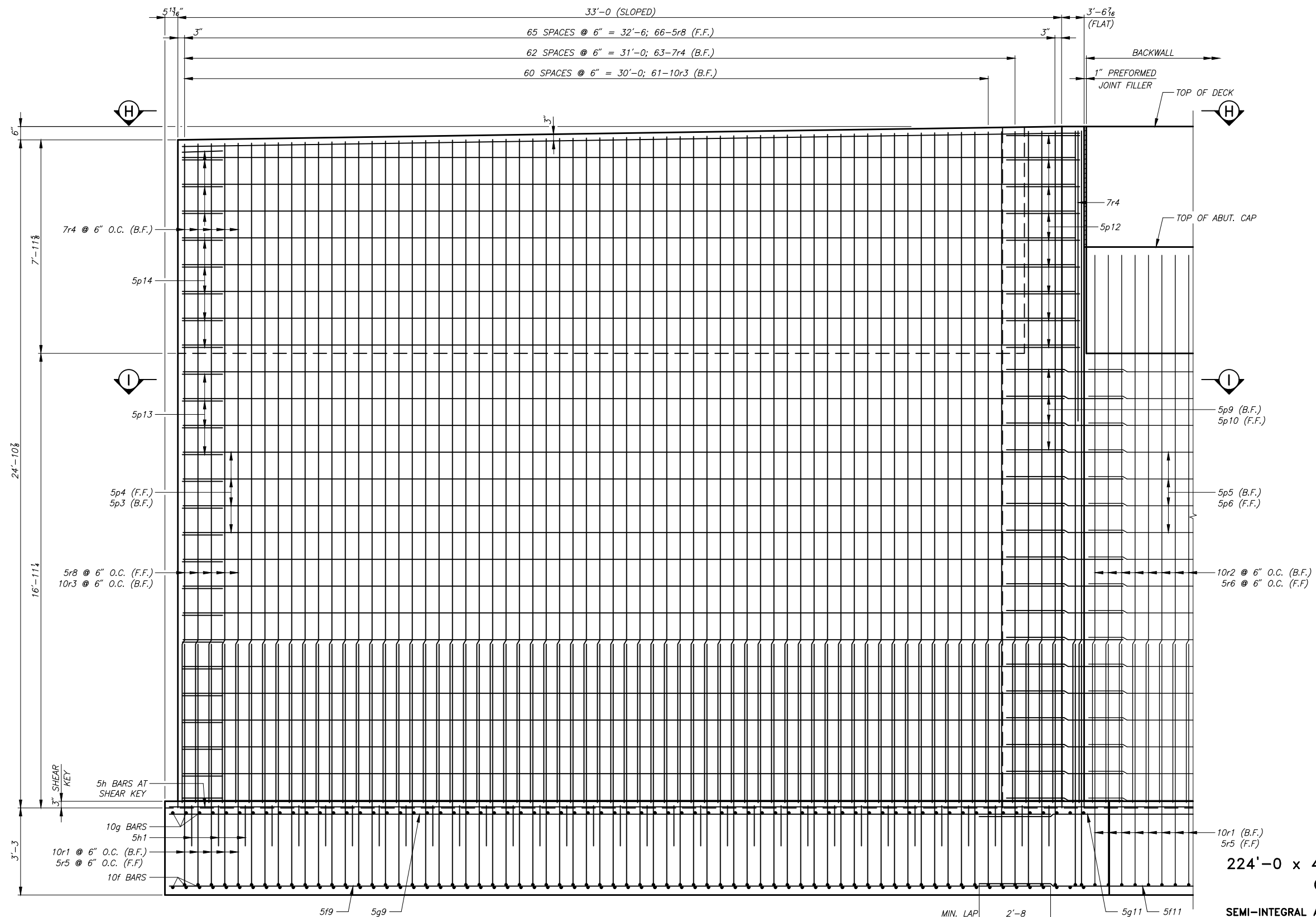
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



VIEW D-D (NORTHWEST WINGWALL)

NOTE: SEE SHEET 23 FOR SECTION G-G & SECTION H-H.

MIN. LAP
(TYP.) 2'-8"

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

NORTH ABUTMENT NOTES

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING STEEL TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.

ALL REINFORCING STEEL IS TO BE GRADE 60.

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¾" DRESSED AND BEVELED STRIP.

CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 8'S UNLESS NOTED OTHERWISE.

THE FOOTING SHALL BE FOUNDED IN SOLID LIMESTONE BEDROCK AS DETAILED IN THE PLANS. THE FOUNDATION ROCK SHALL HAVE A MINIMUM LRFD NOMINAL BEARING RESISTANCE OF 30 KIPS PER SQUARE FOOT (ALLOWABLE SERVICE LOAD BEARING VALUE OF AT LEAST 10 KIPS PER SQUARE FOOT). THE FOOTING IS DESIGNED TO MINIMIZE UPLIFT.

EXCAVATION FOR THE ABUTMENT FOOTING AND PLACEMENT OF ABUTMENT FOOTING CONCRETE ARE TO BE PERFORMED IN AS DRY OF CONDITIONS AS PRACTICABLE, USING COFFERDAMS, PUMPS, OR OTHER SUITABLE MEASURES TO ASSURE SUCH CONDITIONS IN ACCORDANCE WITH SECTION 2405 AND SUPPLEMENTAL SPECIFICATIONS. THE COST OF ALL ABUTMENT EXCAVATION AND DEWATERING IS TO BE INCLUDED IN THE BID FOR "EXCAVATION, CLASS 22". THE NEW ABUTMENT FOOTING SHALL BE KEYED A MINIMUM OF 1'-0 INTO SOUND BEDROCK. THE FINAL 1'-0 OF BEDROCK EXCAVATION IS TO BE NEAT LINES AS SHOWN IN THE PLANS.

THE CONTRACTOR AND ENGINEER ARE TO VERIFY THAT THE BEDROCK IS LOCATED AS SHOWN ON THE SOUNDING DATA DETAILED ON THE PLANS. DIFFERENCES WHICH CAUSE CHANGES IN BOTTOM OF FOOTING ELEVATIONS MAY BE CAUSE FOR DESIGN CHANGES. THE ENGINEER WILL RETAIN A QUALIFIED GEOTECHNICAL ENGINEER FOR REVIEW. AFTER EXCAVATING TO WITHIN 6" OF THE DESIGN FOOTING ELEVATION, AT LEAST TWO (2) PROBE HOLES ARE TO BE DRILLED BY THE CONTRACTOR INTO ROCK AT THE BASE OF THE FOOTING EXCAVATION UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER. THE PROBE HOLES SHOULD EXTEND AT LEAST 3'-6 INTO THE ROCK. IF LAYERS UNABLE TO WITHSTAND THE DESIGN BEARING ARE ENCOUNTERED WITHIN THE PROBE LIMITS, THE FOOTING MAY NEED TO BE LOWERED TO SUITABLE BEDROCK. THE PROBE HOLES SHALL BE GROUTED BY THE CONTRACTOR AFTER THE GEOTECHNICAL ENGINEER HAS COMPLETED VERIFICATION OF THE BEARING CAPACITY. COST OF DRILLING THE PROBE HOLES AND GROUTING, INCLUDING EQUIPMENT AND ALL LABOR IS TO BE INCLUDED IN PRICE BID FOR "EXCAVATION, CLASS 22".

REINFORCING BAR LIST – NORTH ABUTMENT						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
Δ 5p1	WALL, HORIZONTAL, BACK FACE	—	28	29'-9	869	
Δ 5p2	WALL, HORIZONTAL, FRONT FACE	—	26	30'-9	834	
Δ 5p3	WALL, HORIZONTAL, BACK FACE	—	28	30'-8	896	
Δ 5p4	WALL, HORIZONTAL, FRONT FACE	—	26	32'-8	886	
Δ 5p5	WALL, HORIZONTAL, BACK FACE	—	17	41'-5	734	
Δ 5p6	WALL, HORIZONTAL, FRONT FACE	—	17	41'-5	734	
Δ 5p7	WALL, HORIZONTAL, BACK FACE	↘	17	7'-1	126	
Δ 5p8	WALL, HORIZONTAL, FRONT FACE	↗	17	7'-8	136	
Δ 5p9	WALL, HORIZONTAL, BACK FACE	↘	17	7'-0	124	
Δ 5p10	WALL, HORIZONTAL, FRONT FACE	↗	17	8'-8	154	
Δ 5p11	WALL, HORIZONTAL	↗	9	6'-11	65	
Δ 5p12	WALL, HORIZONTAL	↘	9	8'-1	76	
Δ 5p13	WALL, END	⌊	34	5'-7	198	
Δ 5p14	WALL, END	⌊	18	4'-5	83	
NON-COATED TOTAL (LBS.)					85,132	
Δ EPOXY COATED					EPOXY COATED TOTAL (LBS.) 18,570	

CONCRETE PLACEMENT QUANT. – NORTH ABUT.		
LOCATION	UNIT	QUANTITY
FOOTING	CU.YDS.	331.7
BACKWALL / WINGWALL	CU.YDS.	253.4
CAP	CU.YDS.	30.8
TOTAL	CU.YDS.	615.9
ESTIMATED QUANTITIES – NORTH ABUTMENT		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	615.9
REINFORCING STEEL	LBS.	85,132
REINFORCING STEEL, EPOXY COATED	LBS.	18,570
EXCAVATION, CLASS 20	CU.YDS.	1,576
EXCAVATION, CLASS 21	CU.YDS.	1,086
EXCAVATION, CLASS 22	CU.YDS.	457
POROUS BACKFILL	TONS	755
FLOODED BACKFILL	CU.YDS.	1,559

REINFORCING BAR LIST – NORTH ABUTMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
Δ 8a11	CAP LONGITUDINAL	—	32	24'-8	2,108
Δ 5b11	CAP HOOPS	⊠	41	16'-2	691
Δ 5b13	CAP HOOPS	⊠	4	16'-6	69
Δ 5m11	BEAM STEPS TRANVERSE	⌊	25	6'-10	178
Δ 5n11	BEAM STEPS LONGITUDINAL	—	20	2'-10	59
Δ 5n12	SHEAR BLOCK	⌊	16	8'-7	143
Δ 5n13	SHEAR BLOCK	⌊	6	11'-0	69
Δ 5n14	SHEAR BLOCK	⌊	4	12'-9	53
10f1	FOOTING, BOTTOM, TRANSVERSE	—	141	27'-8	16,786
10f2	FOOTING, BOTTOM, TRANSVERSE	—	52	12'-7	2,816
10f3	FOOTING, BOTTOM, TRANSVERSE	—	4	17'-5	300
10f4	FOOTING, BOTTOM, TRANSVERSE	—	24	20'-5	2,108
10f5	FOOTING, BOTTOM, TRANSVERSE	—	4	24'-8	425
10f6	FOOTING, BOTTOM, TRANSVERSE	—	12	24'-6	1,265
10f7	FOOTING, BOTTOM, TRANSVERSE	—	4	27'-8	476
10f8	FOOTING, BOTTOM, TRANSVERSE	—	4	27'-6	473
5f9	FOOTING, BOTTOM, LONGITUDINAL	—	56	VARIES	1,426
5f10	FOOTING, BOTTOM, LONGITUDINAL	—	28	VARIES	930
5f11	FOOTING, BOTTOM, LONGITUDINAL	↘	56	13'-2	769
10g1	FOOTING, TOP, TRANSVERSE	—	141	27'-8	16,786
10g2	FOOTING, TOP, TRANSVERSE	—	52	12'-7	2,816
10g3	FOOTING, TOP, TRANSVERSE	—	4	17'-5	300
10g4	FOOTING, TOP, TRANSVERSE	—	24	20'-5	2,108
10g5	FOOTING, TOP, TRANSVERSE	—	4	24'-8	425
10g6	FOOTING, TOP, TRANSVERSE	—	12	24'-6	1,265
10g7	FOOTING, TOP, TRANSVERSE	—	4	27'-8	476
10g8	FOOTING, TOP, TRANSVERSE	—	4	27'-6	473
5g9	FOOTING, BOTTOM, LONGITUDINAL	—	56	VARIES	1,426
5g10	FOOTING, BOTTOM, LONGITUDINAL	—	28	VARIES	930
5g11	FOOTING, BOTTOM, LONGITUDINAL	↘	56	13'-2	769
5h1	FOOTING SHEAR KEY, TRANSVERSE	⌊	105	8'-8	949
5h2	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	40'-0	42
5h3	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	38'-10	41
5h4	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	37'-10	39
5h5	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	36'-8	38
5h6	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	35'-8	37
5h7	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	34'-4	36
5h8	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	41'-3	43
5h9	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	40'-1	42
5h10	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	39'-0	41
5h11	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	37'-11	40
5h12	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	36'-11	39
5h13	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	36'-1	38
5h14	FOOTING SHEAR KEY, LONGITUDINAL	—	5	47'-3	246
5h15	FOOTING SHEAR KEY, LONGITUDINAL	↘	1	47'-5	49
10r1	WALL, VERTICAL, BACK FACE	⌊	209	11'-5	10,267
10r2	WALL, VERTICAL, BACK FACE	—	89	20'-8	7,915
10r3	WALL, VERTICAL, BACK FACE	⌊	120	18'-9	9,682
Δ 7r4	WALL, VERTICAL, BACK FACE	—	136	10'-10	3,011
Δ 5r5	WALL, VERTICAL, FRONT FACE	⌊	222	5'-10	1,351
Δ 5r6	WALL, VERTICAL, FRONT FACE	—	83	18'-6	1,602
Δ 5r7	WALL, VERTICAL, FRONT FACE	—	62	VARIES	1,606
Δ 5r8	WALL, VERTICAL, FRONT FACE	—	66	VARIES	1,715

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

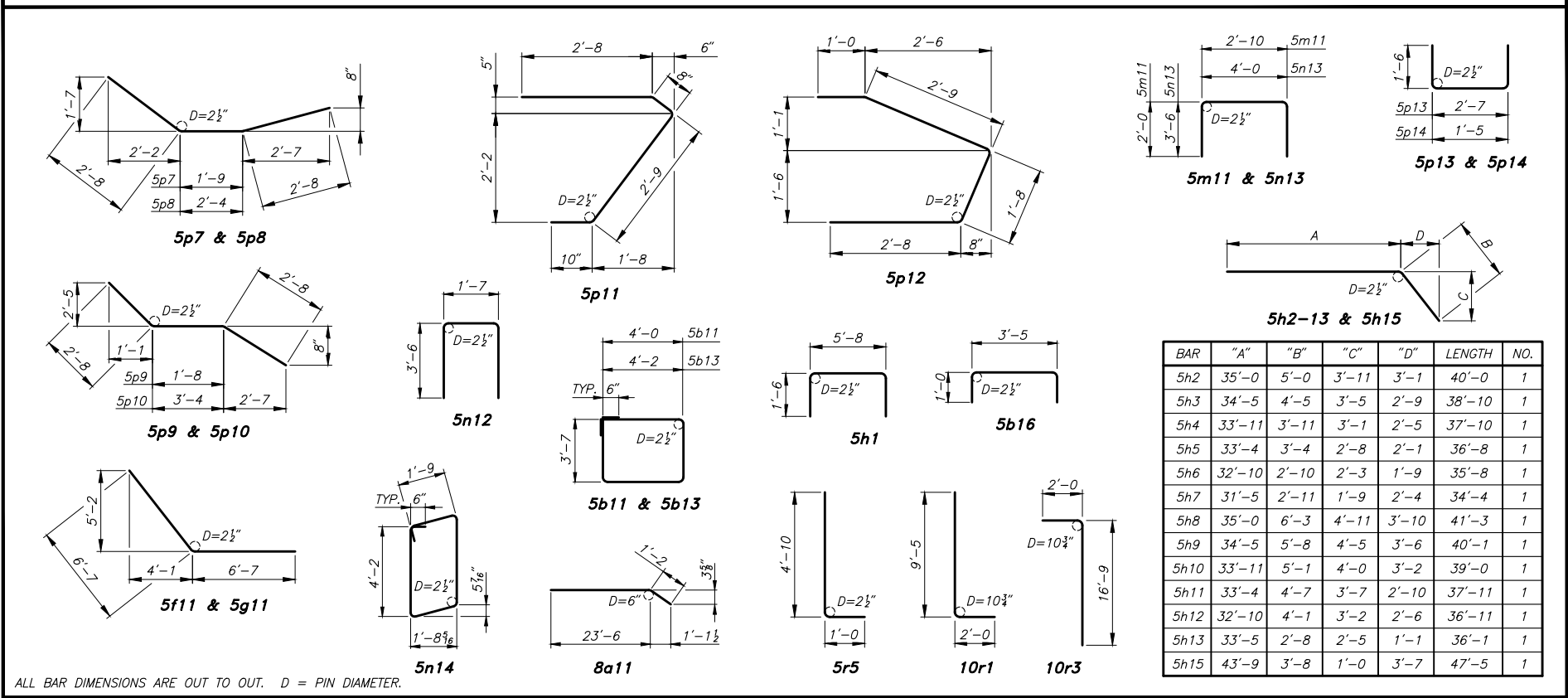
TEE PIERS
97'-0 INTERIOR SPAN

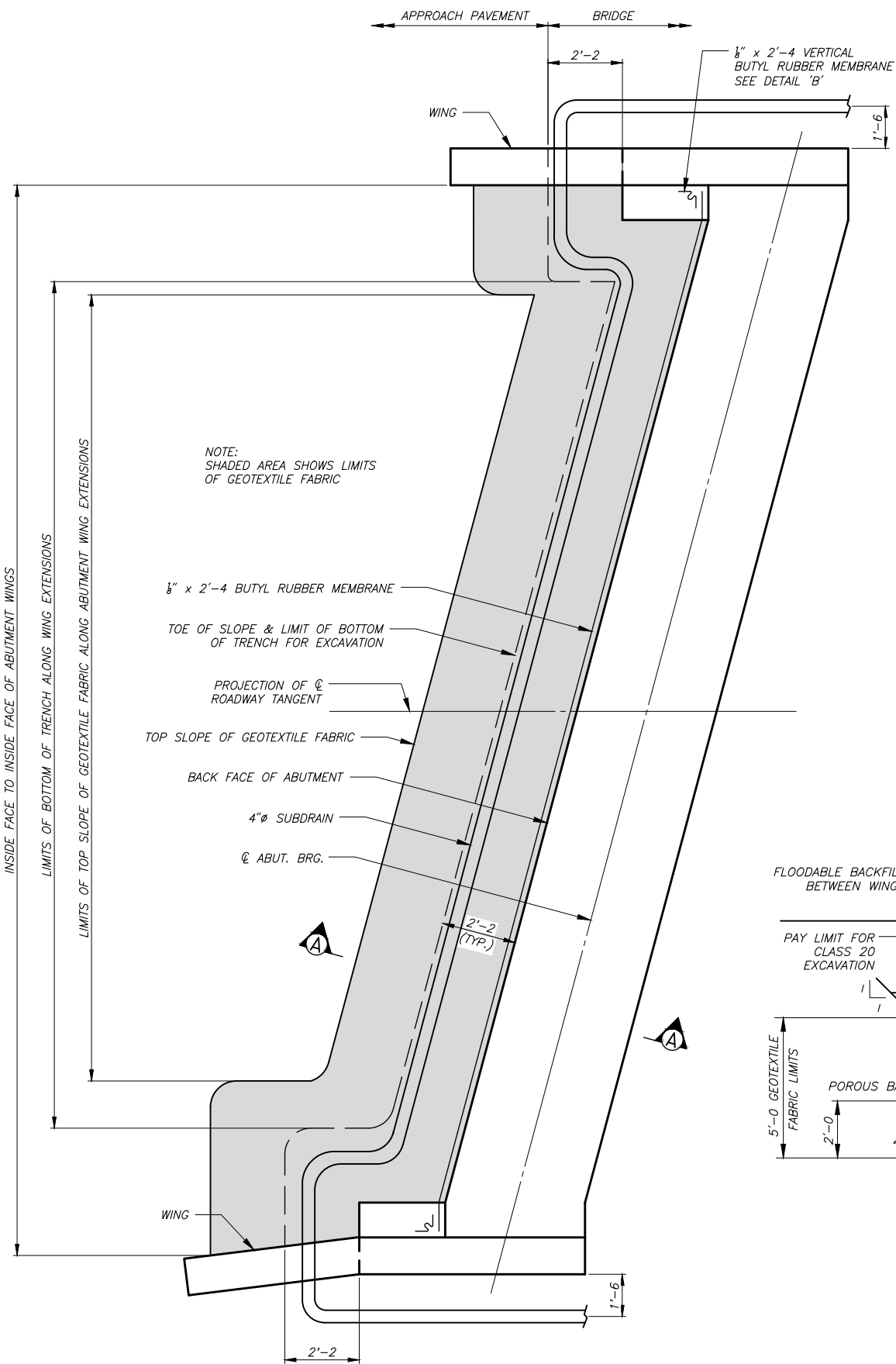
NORTH ABUTMENT DETAILS

STATION 6+65.00
HARDIN COUNTY,

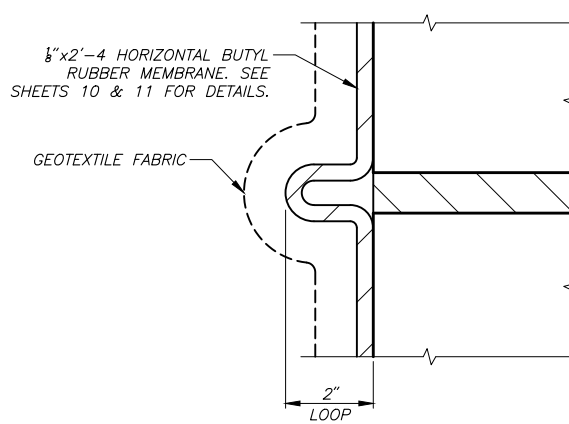
15' SKEW, LT. AHEAD
IOWA

BENT BAR DETAILS

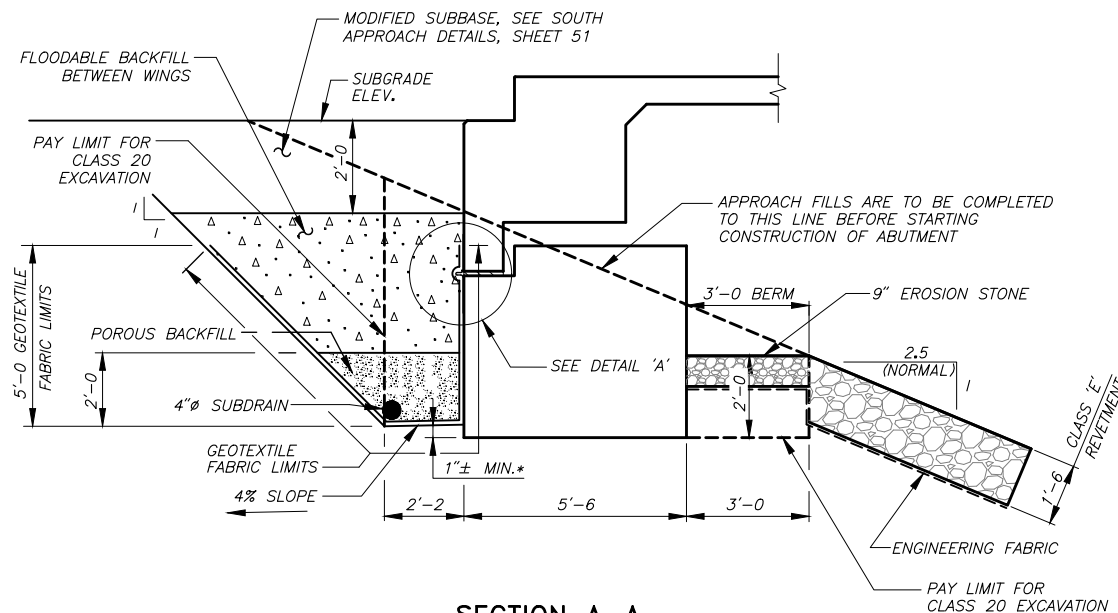




SOUTH ABUTMENT PLAN

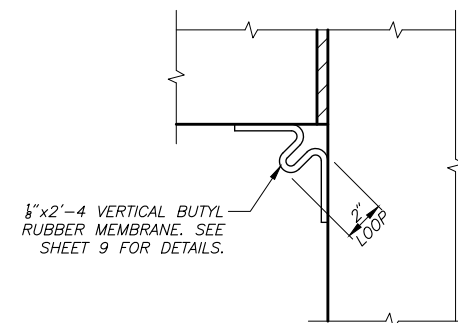


DETAIL 'A'



SECTION A-A
GRANULAR BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WINGS.
*DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.



DETAIL 'B'

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

SOUTH ABUTMENT BACKFILL DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

ABUTMENT BACKFILL PROCESS

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WING WALLS, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 3 FEET HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "GRANULAR BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED. THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, GEOTEXTILE FABRIC, BUTYL RUBBER MEMBRANES AND WATERPROOF ADHESIVE FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".

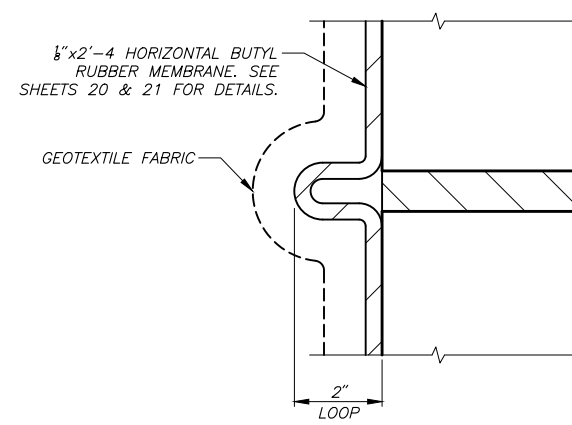
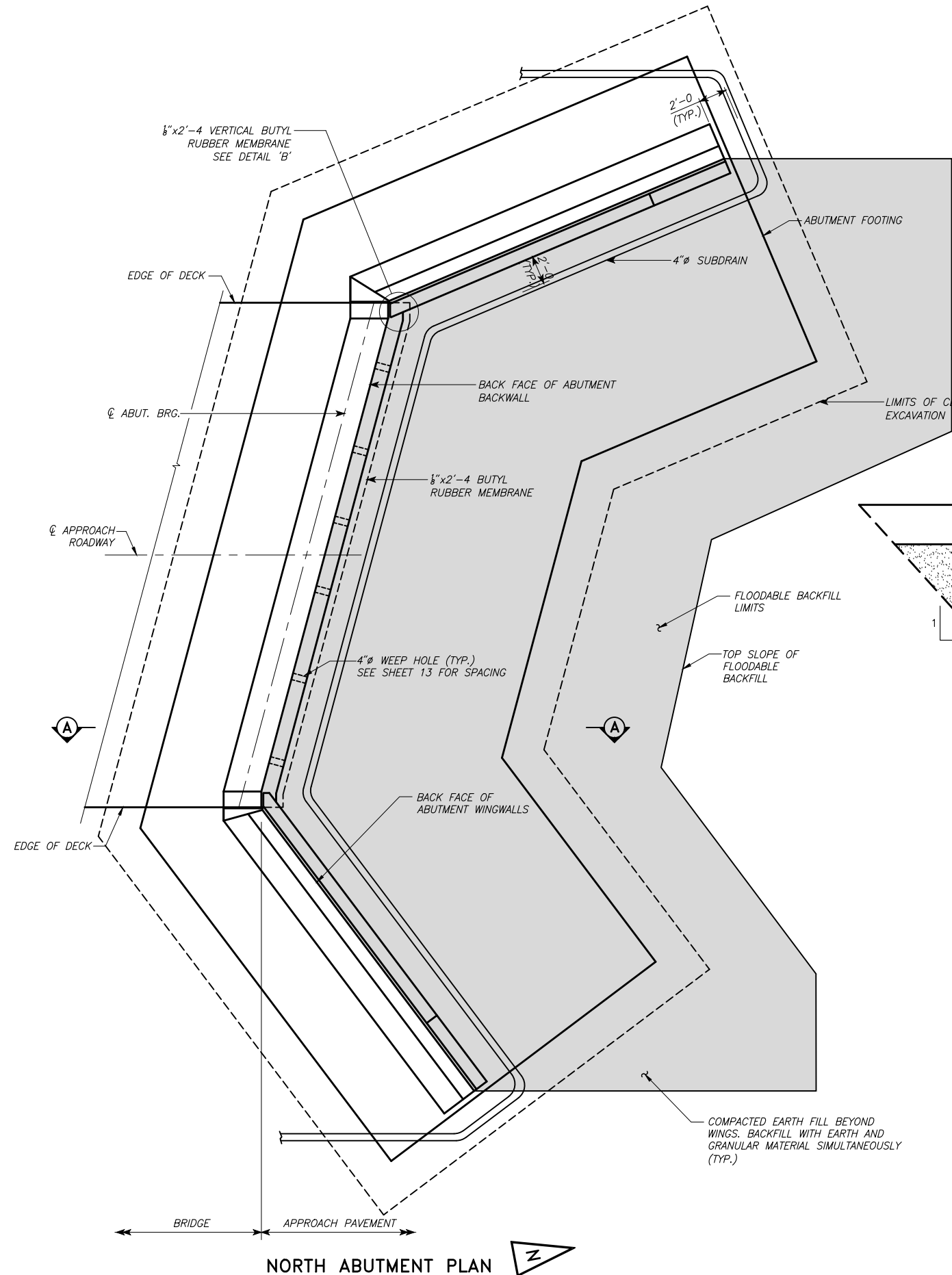
NOTES:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM CENTERLINE APPROACH ROADWAY WHEN OUTLETTING BOTH SIDES OF THE ABUTMENT.

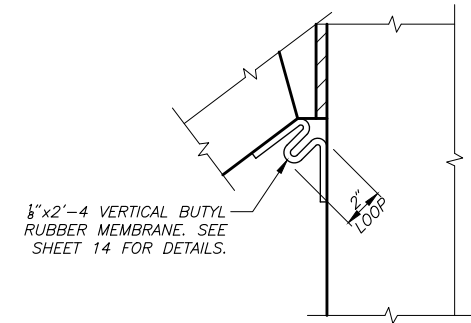
THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01.B.6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

SEE SITUATION PLAN, SHEET 4, FOR ADDITIONAL INFORMATION.

SEE SOUTH SUBDRAIN AND WING ARMORING DETAILS, SHEET 51, FOR ADDITIONAL INFORMATION.

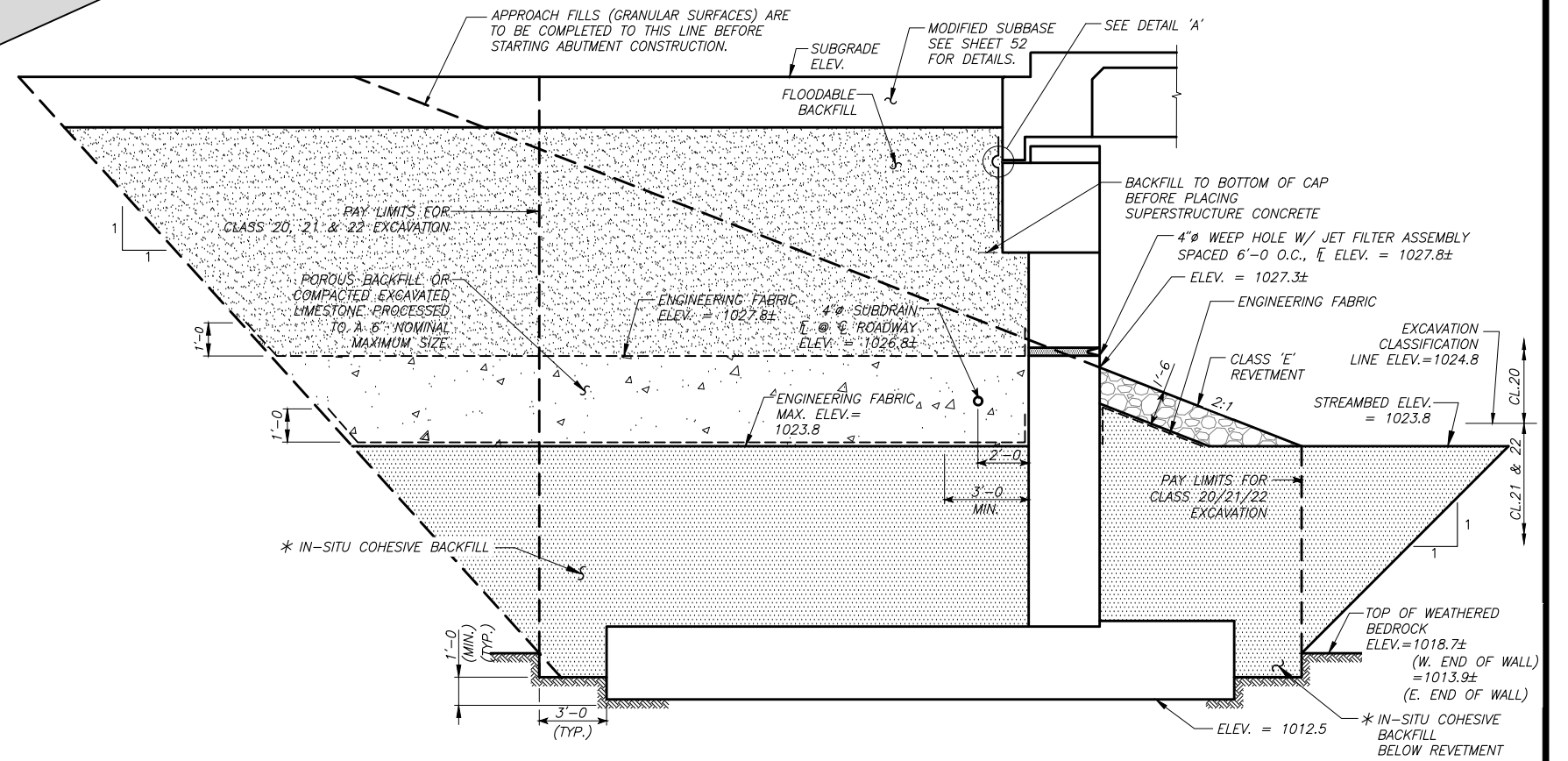


DETAIL 'A'



DETAIL 'B'

NOTE: BUTYL RUBBER MEMBRANE NOT SHOWN



SECTION A-A
NORTH ABUTMENT BACKFILL DETAILS

NOTE: SUBDRAIN SHALL BE PLACED AT A 2% SLOPE TO DRAIN AND OUTLET AT EACH END. SEE "SITUATION PLAN", SHEET 4 FOR ADDITIONAL INFORMATION.

* IN-SITU COHESIVE BACKFILL
TO BE PLACED ON BOTH SIDES
OF THE WALL PRIOR TO REMAINING
BACKFILL BEING PLACED BEHIND WALL.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

NORTH ABUTMENT BACKFILL DETAILS

STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA

ABUTMENT BACKFILL PROCESS

THE LOWER EXCAVATION LIMITS REQUIRED FOR CONSTRUCTION OF THE NORTH ABUTMENT SHALL BE INTO SANDSTONE BEDROCK AS REQUIRED PER THE ABUTMENT DETAILS AS SHOWN IN THESE PLANS.

AFTER CONSTRUCTION OF THE ABUTMENTS, PROCESSED EXCAVATED BROKEN LIMESTONE AND POROUS BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE DETAILS LISTED IN THESE PLANS. THE POROUS BACKFILL SHALL BE SHAPED PRIOR TO PLACEMENT OF THE SUBDRAIN TO ALLOW A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. ONCE THE SUBDRAIN SHAPING IS COMPLETED, THE SUBDRAIN SHALL BE PLACED. ADDITIONAL POROUS BACKFILL SHALL BE PLACED ON TOP OF THE SUBDRAIN UP TO THE SPECIFIED ELEVATION IN THESE PLANS. THE POROUS BACKFILL SHALL BE LEVELED AND COMPACTED WITH VIBRATORY EQUIPMENT IN 8" LIFTS. SEE "WEEP HOLE NOTES" FOR INFORMATION ABOUT THE INSTALLATION OF WEEP HOLES AT THE NORTH ABUTMENT. ENGINEERING FABRIC IS TO BE PLACED AT THE TOP OF THE POROUS BACKFILL. THE FABRIC IS INTENDED TO BE INSTALLED AS A SEPARATION BARRIER BETWEEN POROUS BACKFILL AND FLOODABLE BACKFILL AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WINGWALLS, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THESE PLANS. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. ENGINEERING FABRIC SHALL BE PER SECTION 4196 OF THE STANDARD SPECIFICATIONS.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UP TO THE BOTTOM OF THE CAPS. THE SUPERSTRUCTURE CONSTRUCTION SHALL BE COMPLETED PRIOR TO PLACING THE LAST LAYER OF FLOODABLE BACKFILL AND MODIFIED SUBBASE. NON-PAVED SURFACES SHALL BE COVERED WITH 2' OF EARTH COVER.

WATER REQUIRED FOR FLOODING, SUBDRAINS, AND ENGINEERING FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF SUBDRAINS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "POROUS BACKFILL".

THE COST OF WATER REQUIRED FOR FLOODING AND ENGINEERING FABRIC FURNISHED BEHIND THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR "FLOODED BACKFILL".

SUBDRRAIN NOTES

THESE PLAN SHEETS SHOW DETAILS FOR PLACING SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND ITS PLACEMENT LOCATION. THE CONTRACTOR IS TO ENSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO ENSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS.

1. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF 1'-0 INTO THE METAL OUTLET PIPE).
2. INSERT 1'-0 OF THE 4"Ø SUBDRAIN INTO THE 6"Ø METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION) AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

SEE SITUATION PLAN, SHEET 4 FOR SUBDRAIN OUTLET ELEVATIONS.

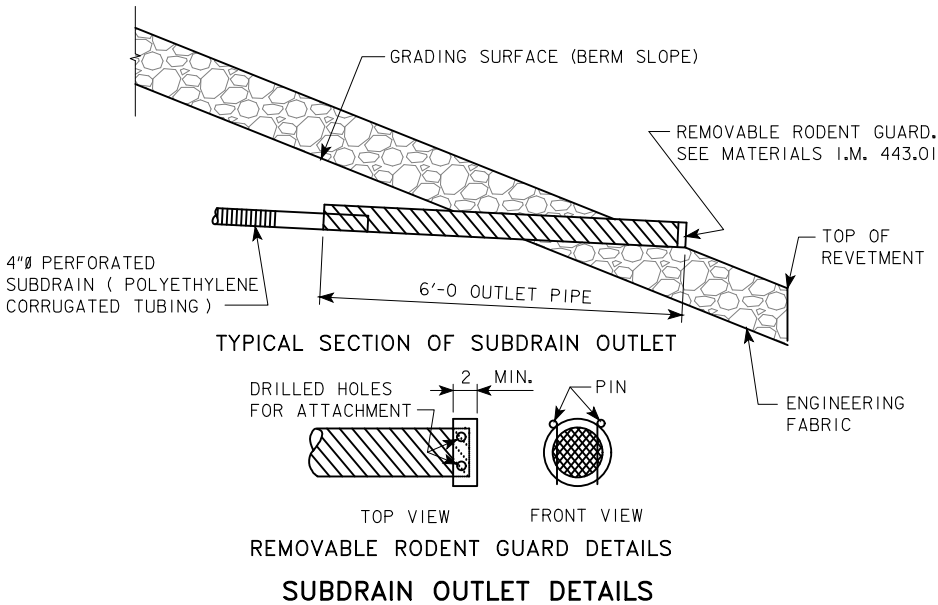
WEEP HOLE NOTES

4" DIAMETER WEEP HOLES SHALL BE CAST FULL-DEPTH INTO THE NORTH ABUTMENT BACKWALL USING 4" DIAMETER PVC PIPE AT THE SPECIFIED ELEVATION SHOWN IN THESE PLANS. HORIZONTAL SPACING OF THE WEEP HOLES SHALL BE AS SHOWN ON SHEET 14. 4" DIAMETER WEEP HOLE ASSEMBLIES SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. WEEP HOLE FILTERS SHALL NOT CONTAIN A BACKFLOW PREVENTION MECHANISM. CONTRACTOR IS RESPONSIBLE TO PROTECT AND PREVENT DAMAGE TO THE WEEP HOLES DURING BACKFILLING OPERATIONS.

FOLLOWING INSTALLATION OF THE WEEP HOLE ASSEMBLIES, POROUS BACKFILL SHALL BE HAND-PLACED INTO THE REMAINING WEEP HOLE VOID AND HAND-TAMPED. BACKFILLING OPERATIONS MAY THEN CONTINUE UP TO AND ABOVE THE WEEP HOLES.

THE COST OF FURNISHING AND INSTALLING THE WEEP HOLE ASSEMBLIES AND PVC PIPE WEEP HOLES SHALL BE INCLUDED IN THE PRICE BID FOR "WEEP HOLE ASSEMBLY, 4" DIA.".

WEEP HOLE ASSEMBLIES SHALL BE PROVIDED BY JET FILTER SYSTEM, LLC. THE WEEP HOLE ASSEMBLIES SHALL BE 4" DIAMETER WITH A STAINLESS STEEL HOUSING AND A FILTER MEDIA TO ALLOW FREE FLOW OF WATER. THE JET FILTER SYSTEM CONTACT SHALL BE DAVID HEILMAN, WHO CAN BE REACHED AT PHONE NUMBER: 800-475-2029.



A CHECK SHALL BE MADE AT THE SUBDRAIN OUTLET TO ENSURE THAT IT IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

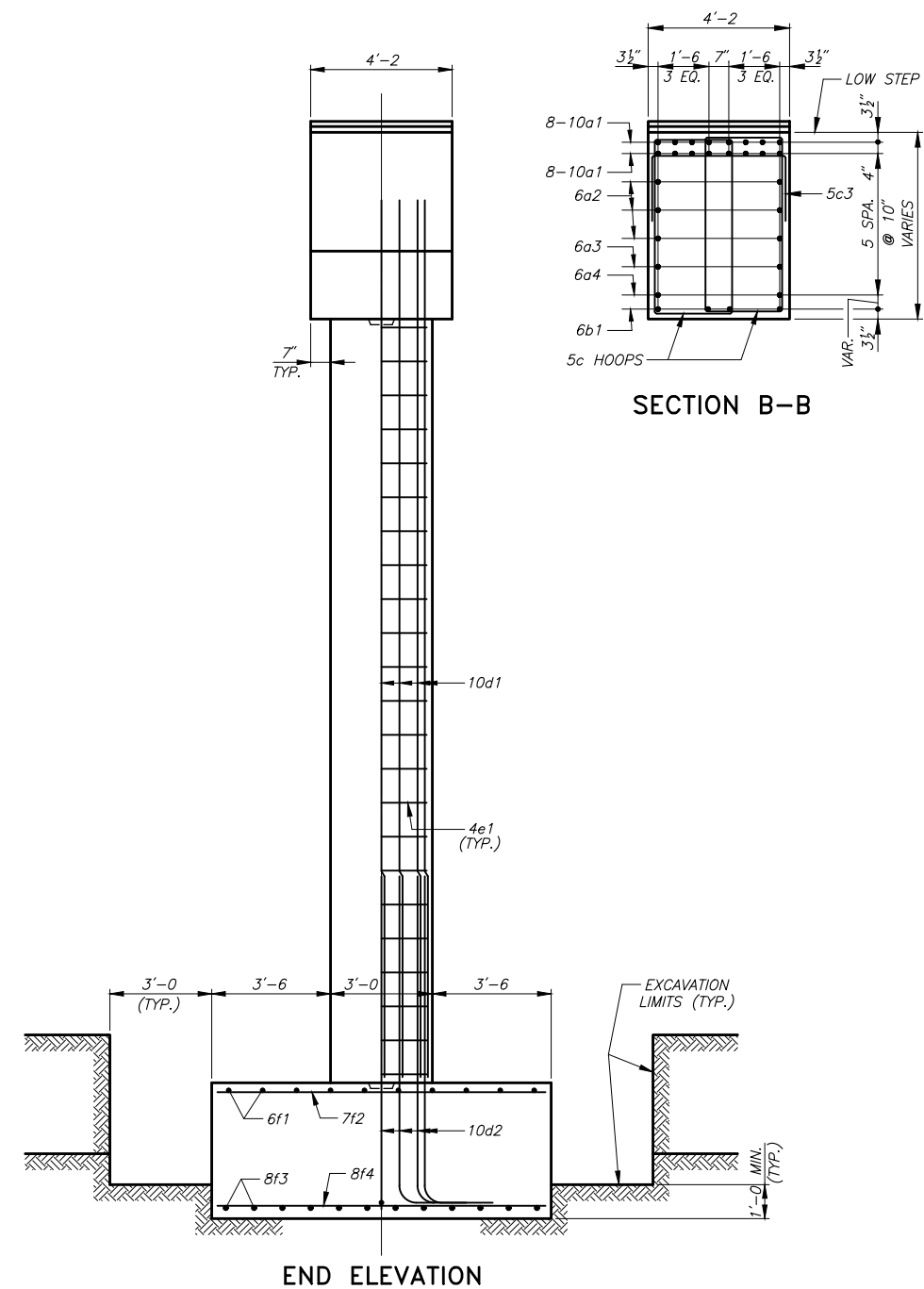
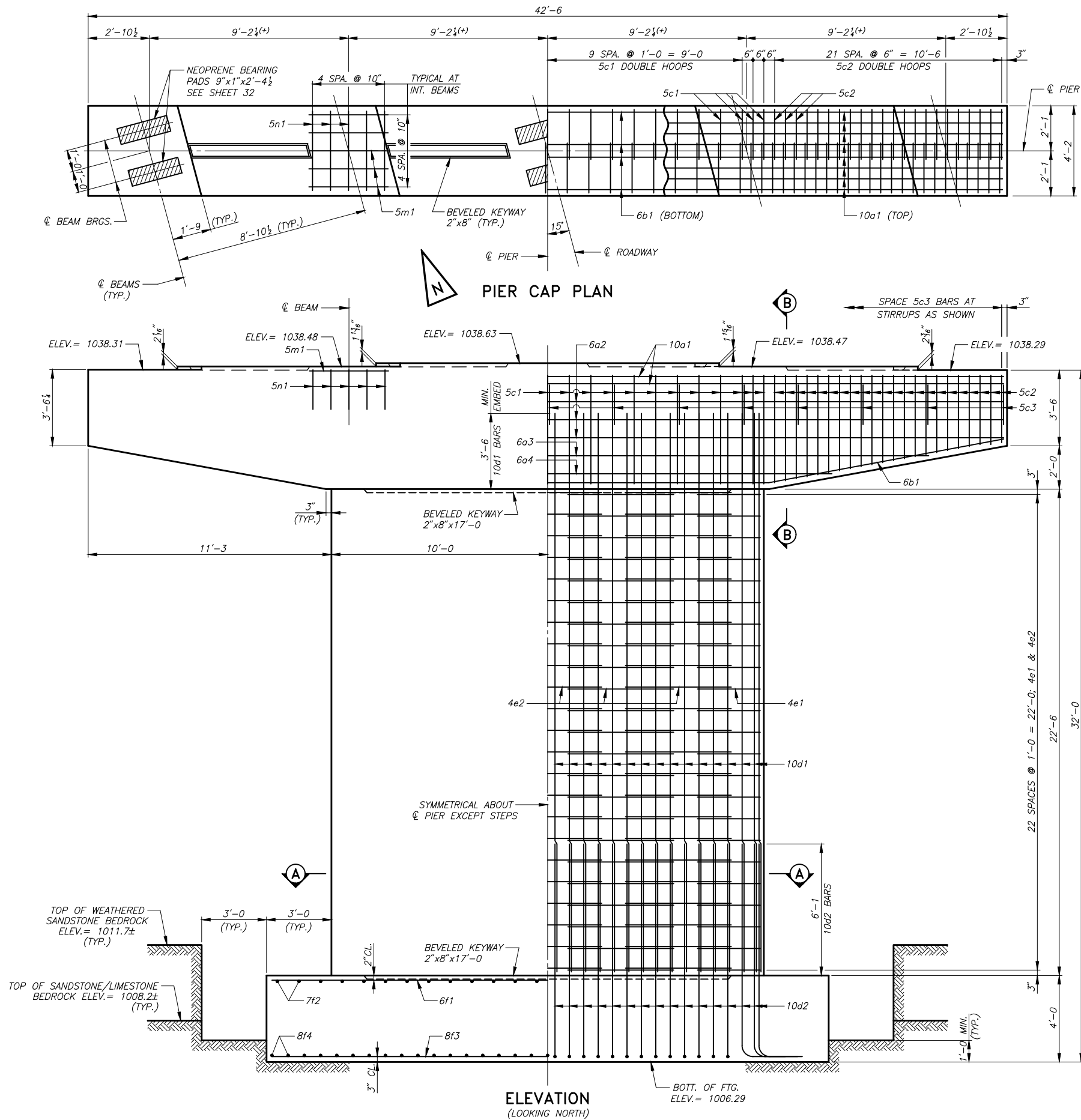
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH ABUTMENT BACKFILL DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



NOTE: SEE SHEET 31 FOR SECTION A-A & FOOTING PLAN.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

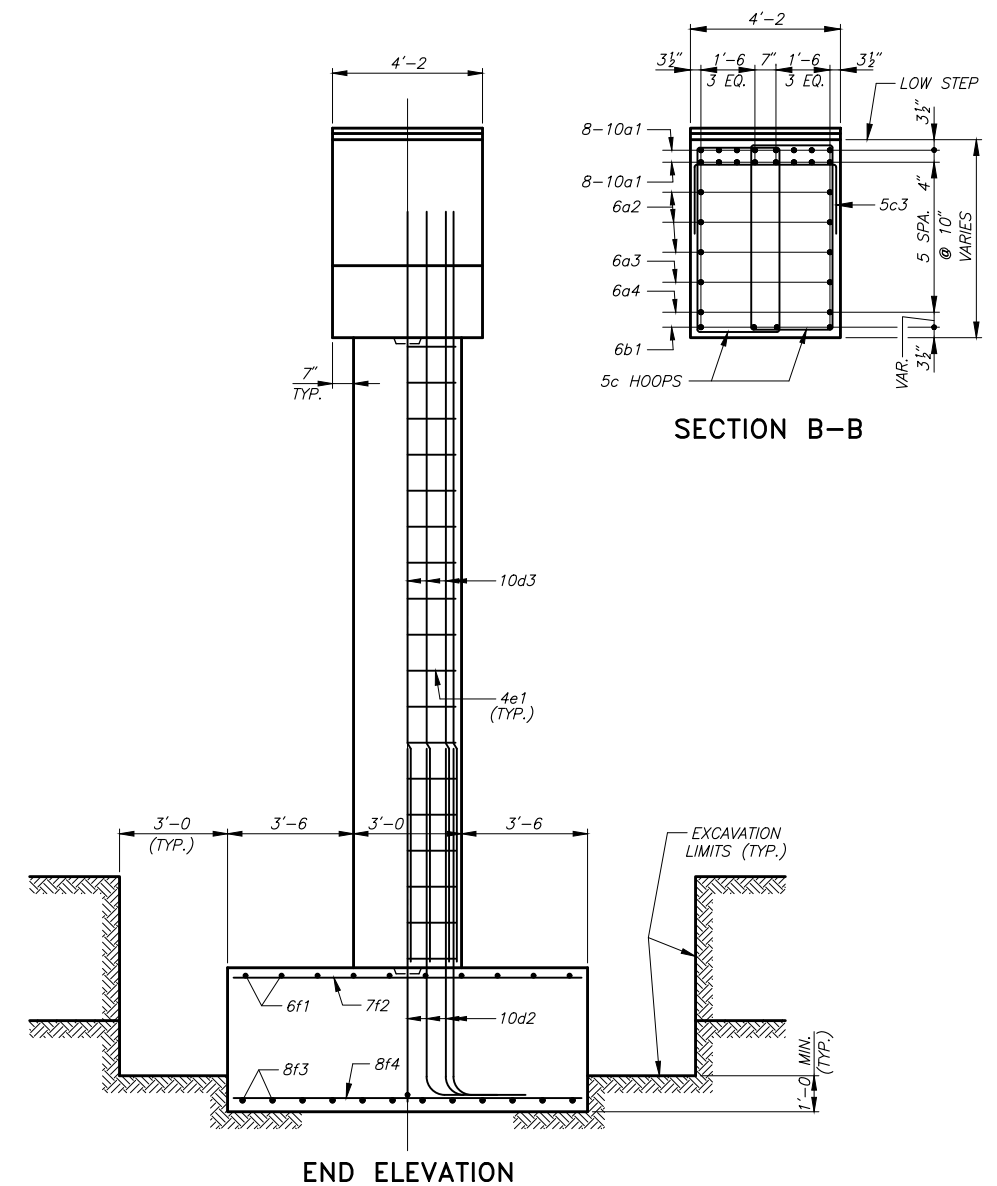
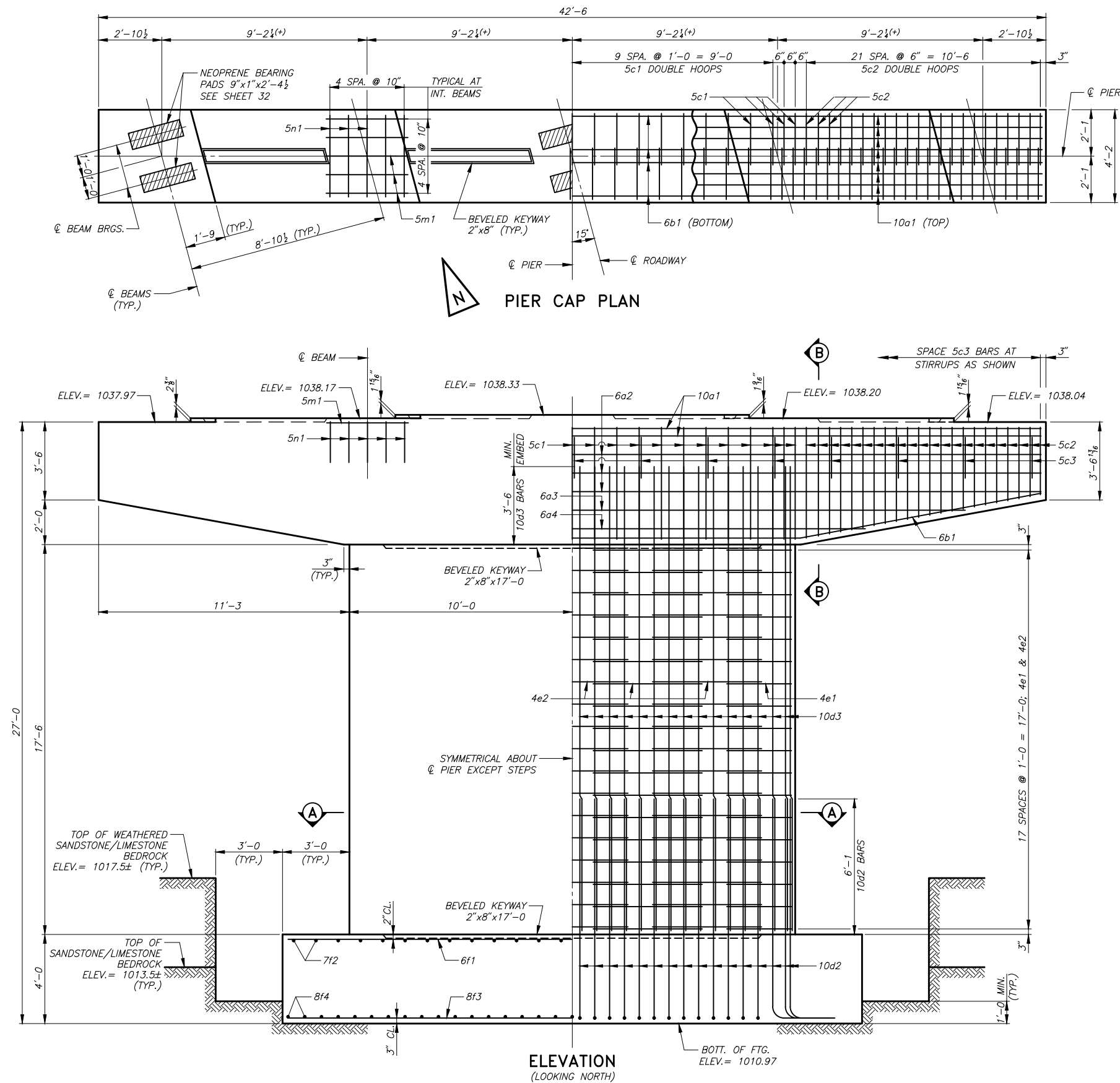
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

SOUTH PIER DETAILS

STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA



NOTE: SEE SHEET 31 FOR SECTION A-A & FOOTING PLAN.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

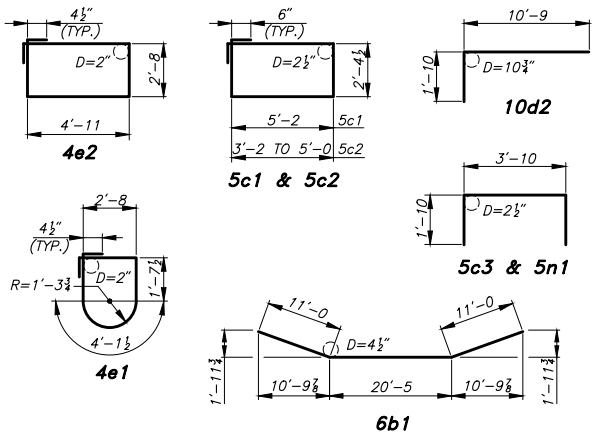
NORTH PIER DETAILS

STATION 6+65.00 15' SKEW, LT. AHEAD
HARDIN COUNTY, IOWA

REINFORCING BAR LIST – SOUTH PIER					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	CAP, LONGITUDINAL, TOP		16	41'-2"	2,834
6a2	CAP, LONGITUDINAL, SIDES		6	41'-2"	371
6a3	CAP, LONGITUDINAL, SIDES		2	35'-3"	106
6a4	CAP, LONGITUDINAL, SIDES		2	26'-3"	79
6b1	CAP, LONGITUDINAL, BOTTOM		4	42'-5"	255
5c1	CAP, HOOPS		46	16'-1"	772
5c2	CAP, HOOPS, ENDS		88	VARIES	1,278
5c3	CAP, TIES		15	7'-6"	117
10d1	COLUMN, VERTICAL		62	27'-0"	7,203
10d2	COLUMN, VERTICAL, DOWELS		62	12'-7"	3,357
4e1	COLUMN, HOOPS, ENDS		46	10'-10"	333
4e2	COLUMN, HOOPS		115	15'-11"	1,223
6f1	FOOTING, LONGITUDINAL, TOP		10	25'-8"	386
7f2	FOOTING, TRANSVERSE, TOP		26	9'-8"	514
8f3	FOOTING, LONGITUDINAL, BOTTOM		12	25'-8"	822
8f4	FOOTING, TRANSVERSE, BOTTOM		35	9'-8"	904
5m1	PIER CAP STEP, LONGITUDINAL		15	3'-10"	60
5n1	PIER CAP STEP, TRANSVERSE		15	7'-6"	117

TOTAL (LBS.) 20,731

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D=DIAMETER OF PIN RADII ARE TO C.C. BAR.

CONC. PLACEMENT QUANT. – SOUTH PIER

LOCATION	QUANTITY
FOOTING	38.5
COLUMN	48.4
CAP	34.0
TOTAL (CU.YDS.)	120.9

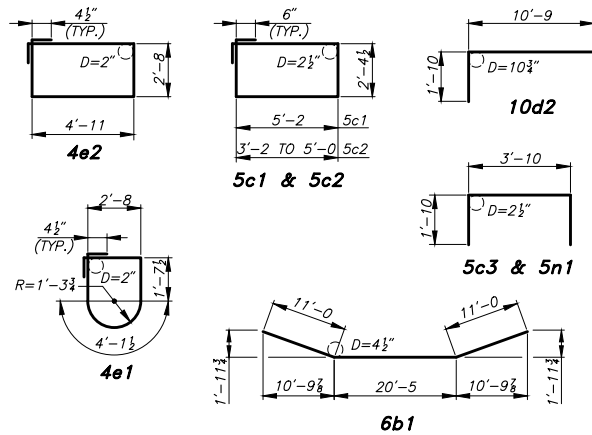
ESTIMATED QUANTITIES – SOUTH PIER

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	120.9
REINFORCING STEEL	LBS.	20,731
EXCAVATION, CLASS 21	CU.YDS.	229
EXCAVATION, CLASS 22	CU.YDS.	93

REINFORCING BAR LIST – NORTH PIER					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	CAP, LONGITUDINAL, TOP		16	41'-2"	2,834
6a2	CAP, LONGITUDINAL, SIDES		6	41'-2"	371
6a3	CAP, LONGITUDINAL, SIDES		2	35'-3"	106
6a4	CAP, LONGITUDINAL, SIDES		2	26'-3"	79
6b1	CAP, LONGITUDINAL, BOTTOM		4	42'-5"	255
5c1	CAP, HOOPS		46	16'-1"	772
5c2	CAP, HOOPS, ENDS		88	VARIES	1,278
5c3	CAP, TIES		15	7'-6"	117
10d2	COLUMN, VERTICAL, DOWELS		62	12'-7"	3,357
10d3	COLUMN, VERTICAL		62	22'-0"	5,869
4e1	COLUMN, HOOPS, ENDS		36	10'-10"	261
4e2	COLUMN, HOOPS		90	15'-11"	957
6f1	FOOTING, LONGITUDINAL, TOP		10	25'-8"	386
7f2	FOOTING, TRANSVERSE, TOP		26	9'-8"	514
8f3	FOOTING, LONGITUDINAL, BOTTOM		12	25'-8"	822
8f4	FOOTING, TRANSVERSE, BOTTOM		35	9'-8"	904
5m1	PIER CAP STEP, LONGITUDINAL		15	3'-10"	60
5n1	PIER CAP STEP, TRANSVERSE		15	7'-6"	117

TOTAL (LBS.) 19,059

BENT BAR DETAILS



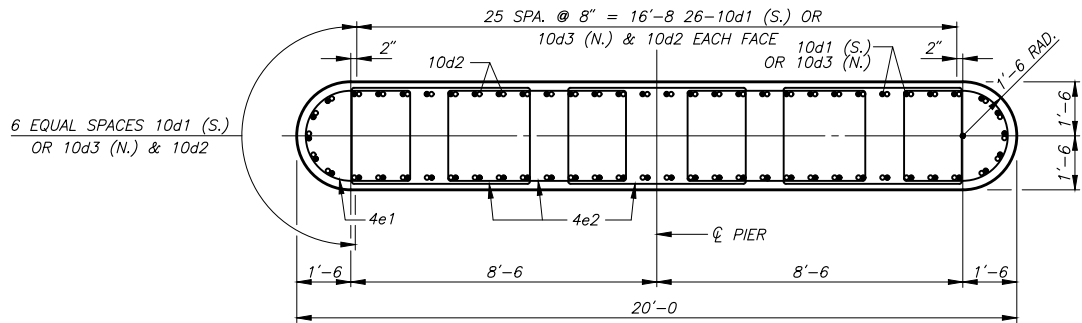
ALL DIMENSIONS ARE OUT TO OUT. D=DIAMETER OF PIN RADII ARE TO C.C. BAR.

CONC. PLACEMENT QUANT. – NORTH PIER

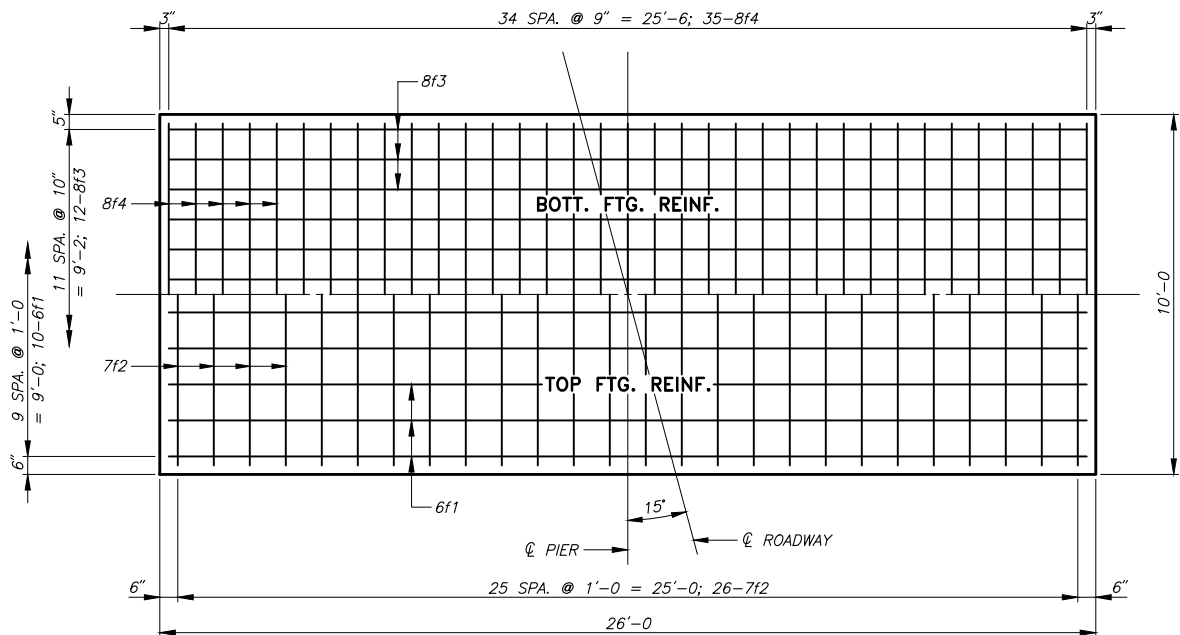
LOCATION	QUANTITY
FOOTING	38.5
COLUMN	37.6
CAP	34.2
TOTAL (CU.YDS.)	110.3

ESTIMATED QUANTITIES – NORTH PIER

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	110.3
REINFORCING STEEL	LBS.	19,059
EXCAVATION, CLASS 21	CU.YDS.	119
EXCAVATION, CLASS 22	CU.YDS.	114



SECTION A-A



FOOTING PLAN

PIER NOTES

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
ALL REINFORCING STEEL TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.

- ALL REINFORCING STEEL IS TO BE GRADE 60.
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¼" DRESSED AND BEVELED STRIP.
CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 8'S.
FORMS FOR PIER CAPS MAY BE REMOVED WITH THE APPROVAL OF THE ENGINEER WHEN THE FOLLOWING TWO CONDITIONS HAVE BEEN MET:
- PIER CAP CONCRETE HAS BEEN IN PLACE FOR A MINIMUM OF 2 CALENDAR DAYS EXCLUDING DAYS THAT THE CONCRETE SURFACE IS SUBJECTED TO TEMPERATURES AT OR BELOW 40° F AND
 - THE PIER CAP CONCRETE COMPRESSIVE STRENGTH IS AT LEAST 2500 PSI.
- MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 2500 PSI SHALL BE VERIFIED BY FLEXURAL STRENGTH ACCORDING TO MATERIALS I.M. 316 WITH A MINIMUM FLEXURAL STRENGTH OF 450 PSI OR BY THE MATURITY METHOD ACCORDING TO MATERIALS I.M. 383. CURING OF PIER CAP CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PIER CAP CONCRETE SHALL BE SUBJECTED TO EXTERIOR LOADS IN ACCORDANCE WITH ARTICLE 2403.03, N, 2 OF THE STANDARD SPECIFICATIONS.

THE SOUTH PIER FOOTING SHALL BE FOUNDED IN SOLID SANDSTONE/LIMESTONE BEDROCK AS DETAILED IN THE PLANS. THE FOUNDATION ROCK SHALL HAVE A MINIMUM LRFD NOMINAL BEARING RESISTANCE OF 42 KIPS PER SQUARE FOOT (ALLOWABLE SERVICE LOAD BEARING VALUE OF AT LEAST 14 KIPS PER SQUARE FOOT). FOOTING DESIGNED TO MINIMIZE UPLIFT.

THE NORTH PIER FOOTING SHALL BE FOUNDED IN SOLID SANDSTONE/LIMESTONE BEDROCK AS DETAILED IN THE PLANS. THE FOUNDATION ROCK SHALL HAVE A MINIMUM LRFD NOMINAL BEARING RESISTANCE OF 42 KIPS PER SQUARE FOOT (ALLOWABLE SERVICE LOAD BEARING VALUE OF AT LEAST 14 KIPS PER SQUARE FOOT). FOOTING DESIGNED TO MINIMIZE UPLIFT.

EXCAVATION FOR PIER FOOTINGS AND PLACEMENT OF PIER FOOTING CONCRETE ARE TO BE PERFORMED IN AS DRY OF CONDITIONS AS PRACTICABLE, USING COFFERDAMS, PUMPS, OR OTHER SUITABLE MEASURES TO ASSURE SUCH CONDITIONS IN ACCORDANCE WITH SECTION 2405 AND SUPPLEMENTAL SPECIFICATIONS. THE COST OF ALL PIER EXCAVATION AND DEWATERING IS TO BE INCLUDED IN THE BID FOR "EXCAVATION, CLASS 21". THE NEW PIER FOOTING SHALL BE KEYED A MINIMUM OF 1'-0" INTO SOUND BEDROCK. THE FINAL 1'-0" OF BEDROCK EXCAVATION IS TO BE NEAT LINES AS SHOWN IN THE PLANS.

THE CONTRACTOR AND ENGINEER ARE TO VERIFY THAT THE BEDROCK IS LOCATED AS SHOWN ON THE SOUNDING DATA DETAILED ON THE PLANS. DIFFERENCES WHICH CAUSE CHANGES IN BOTTOM OF FOOTING ELEVATIONS MAY BE CAUSE FOR DESIGN CHANGES. THE ENGINEER WILL RETAIN A QUALIFIED GEOTECHNICAL ENGINEER FOR REVIEW. AFTER EXCAVATING TO WITHIN 6" OF THE DESIGN FOOTING ELEVATION, AT LEAST TWO (2) PROBE HOLES ARE TO BE DRILLED BY THE CONTRACTOR INTO ROCK AT THE BASE OF THE FOOTING EXCAVATION UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER. THE PROBE HOLES SHOULD EXTEND AT LEAST 3'-6" INTO THE ROCK. IF LAYERS UNABLE TO WITHSTAND THE DESIGN BEARING ARE ENCOUNTERED WITHIN THE PROBE LIMITS, THE FOOTING MAY NEED TO BE LOWERED TO SUITABLE BEDROCK. THE PROBE HOLES SHALL BE GROUTED BY THE CONTRACTOR AFTER THE GEOTECHNICAL ENGINEER HAS COMPLETED VERIFICATION OF THE BEARING CAPACITY. COST OF DRILLING THE PROBE HOLES AND GROUTING, INCLUDING EQUIPMENT AND ALL LABOR IS TO BE INCLUDED IN PRICE BID FOR "EXCAVATION, CLASS 22".

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

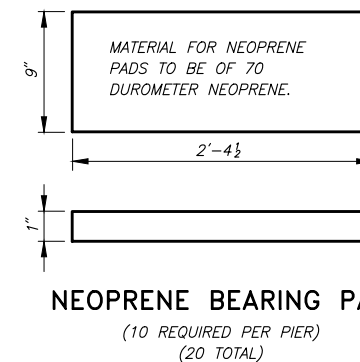
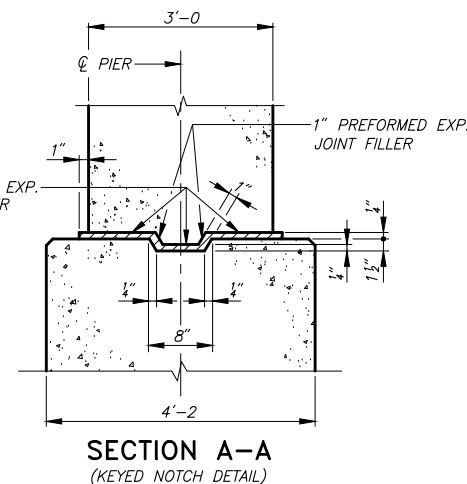
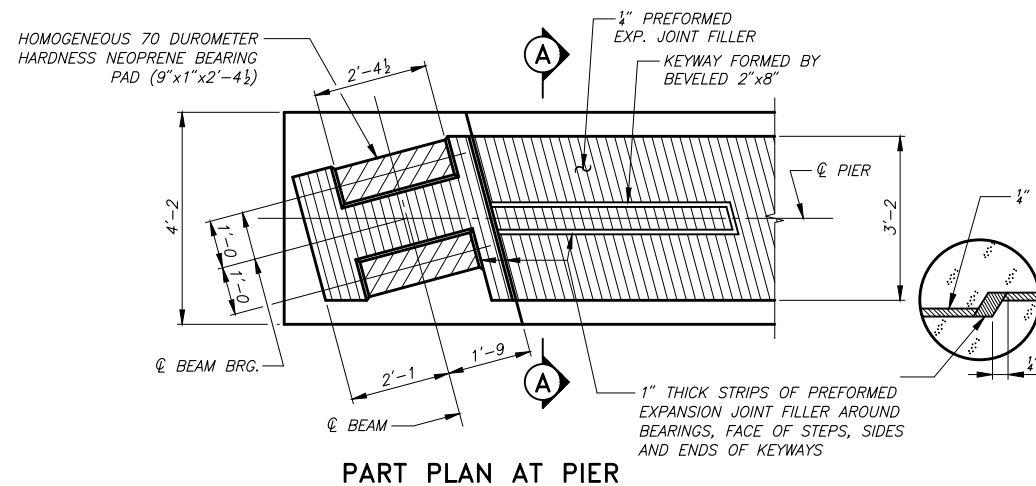
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

PIER DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



PIER BEARING NOTES

COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

ABUTMENT BEARING NOTES

SURFACES MARKED 'V' SHALL BE FINISHED ANSI 250.

PINLE PLATES AND PINLES ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY.

COST OF ANCHORED CURVED SOLE PLATES IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

COST OF NEOPRENE BEARING PADS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

THE SOLE PLATES AND PINTLE PLATES SHALL BE GALVANIZED. ALL WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACE OF THE PINTLE PLATE IN CONTACT WITH THE LAMINATED NEOPRENE PADS SHALL BE FREE OF PROJECTIONS DUE TO THE GALVANIZING.

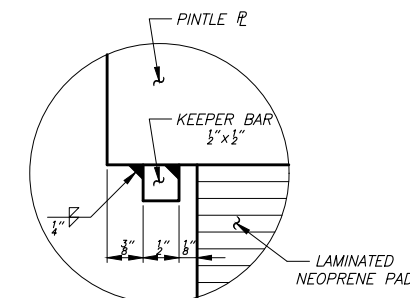
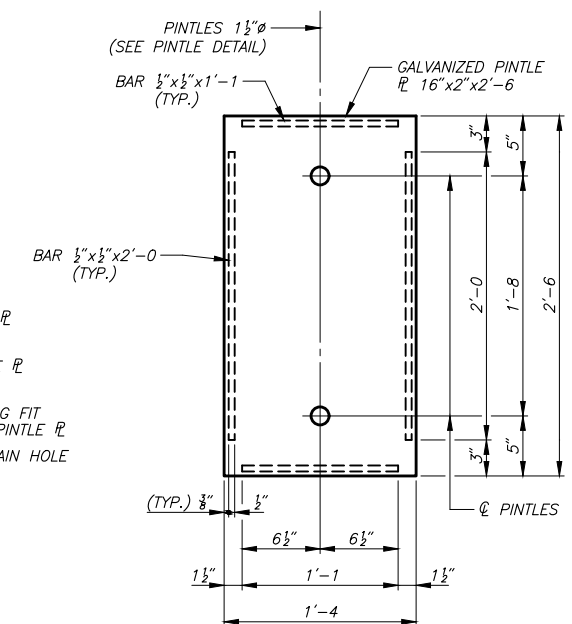
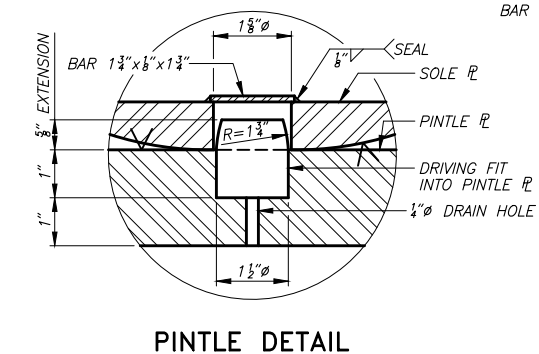
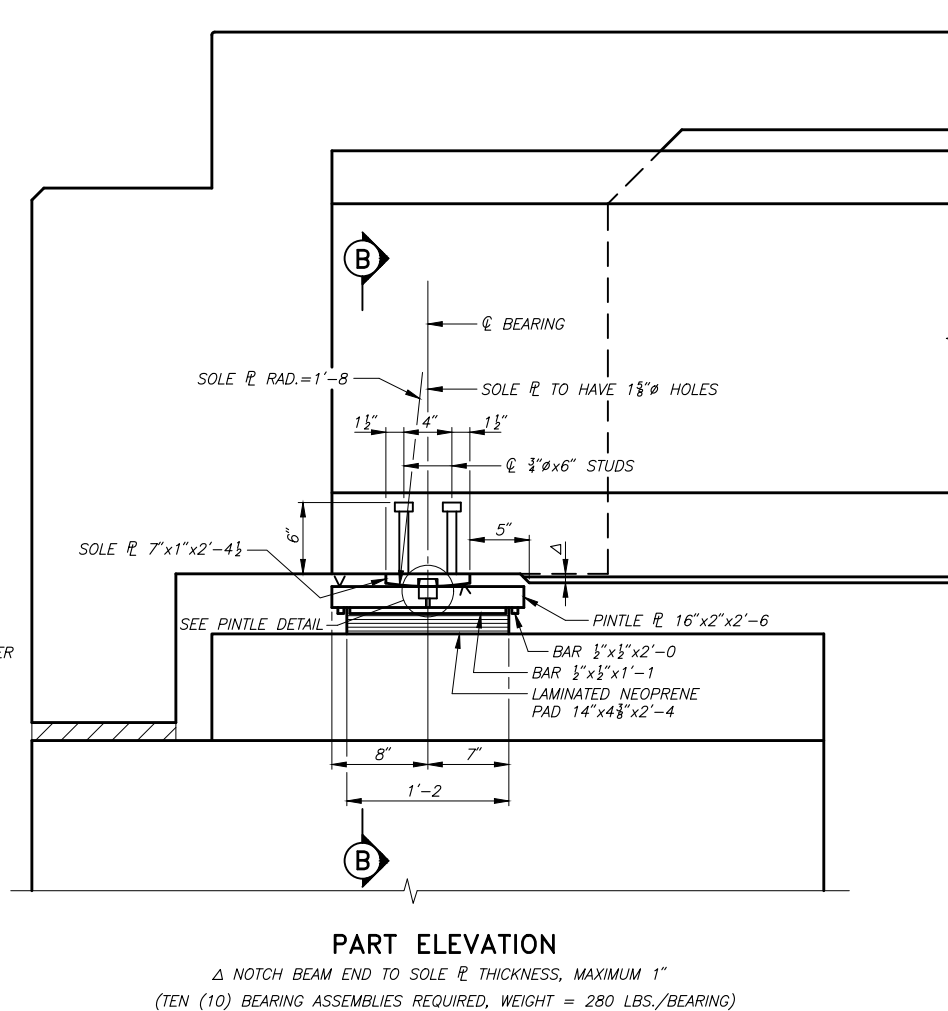
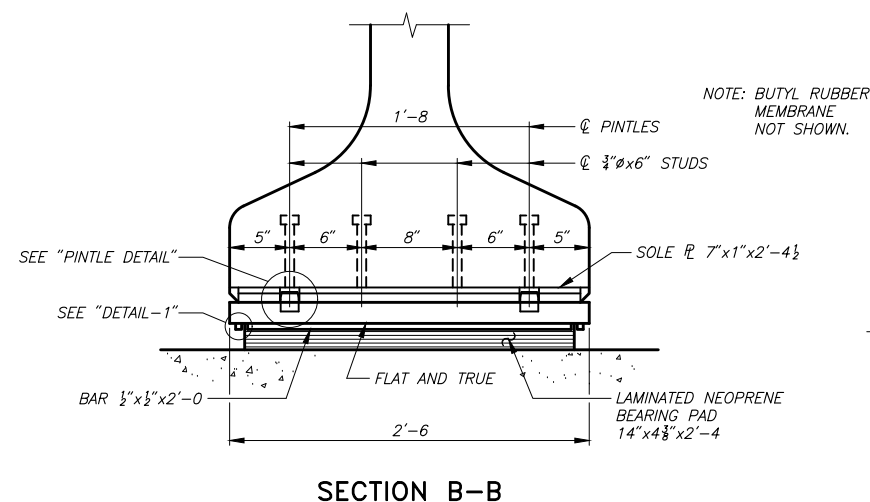
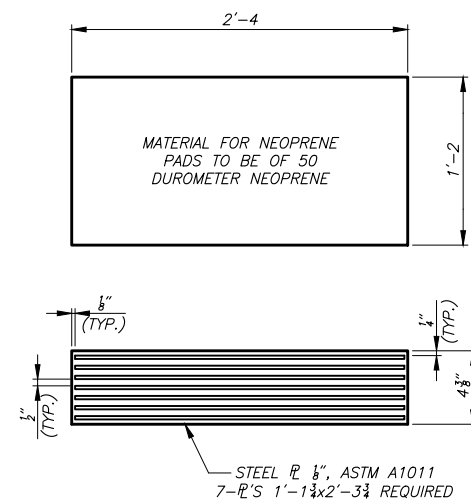
SOLE PLATES ARE TO BE SET IN FORMS WHEN BEAMS ARE CAST AND THE BOTTOM OF BEAMS FORMED OUT AS SHOWN TO EXCLUDE CONCRETE.

CURVED SOLE PLATES SHALL COMPLY WITH ONE OF THE FOLLOWING:

ASTM A514 GRADE B

ASTM A709 GRADE HPS 70W

KEEPER BARS AND PINTLE PLATES SHALL COMPLY WITH ASTM A709 GRADE 50.



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

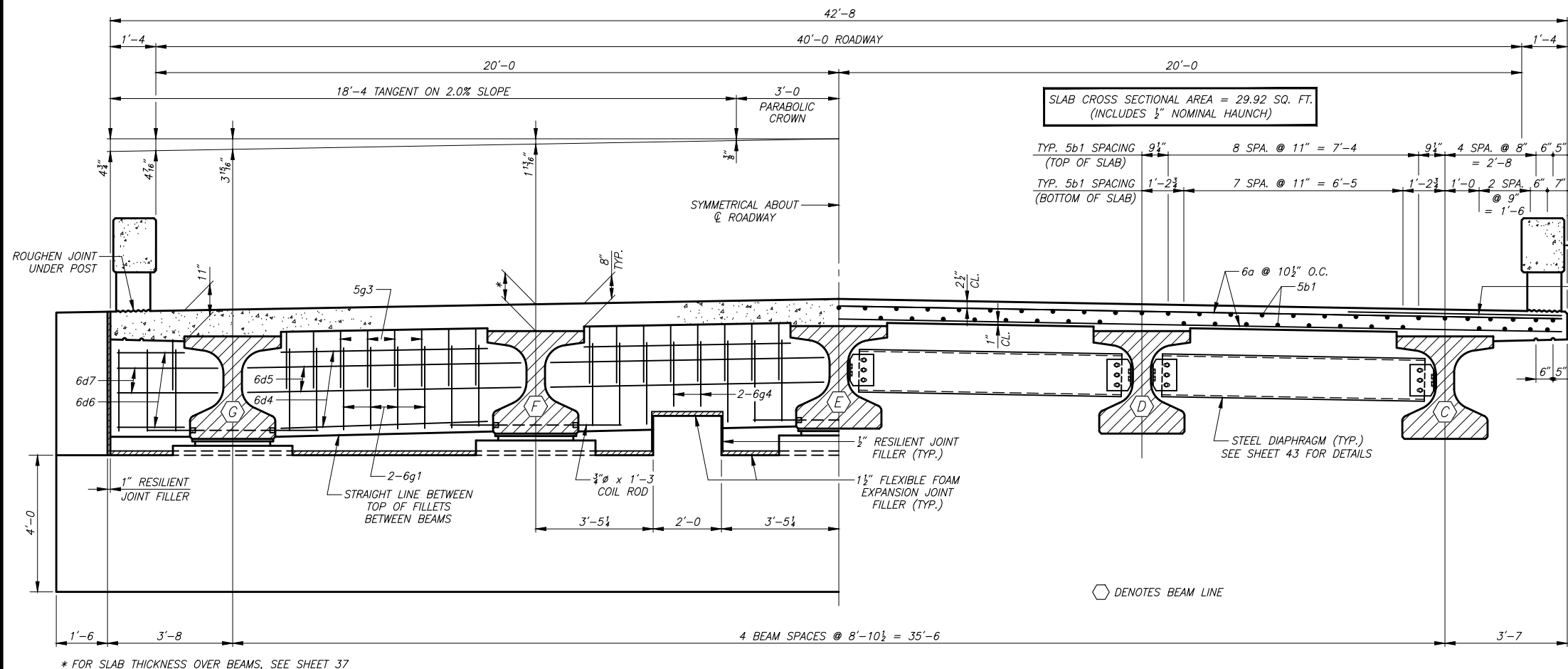
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

BEARING DETAILS

STATION 6+65.00
HARDIN COUNTY,

15° SKEW, LT. AHEAD
IOWA

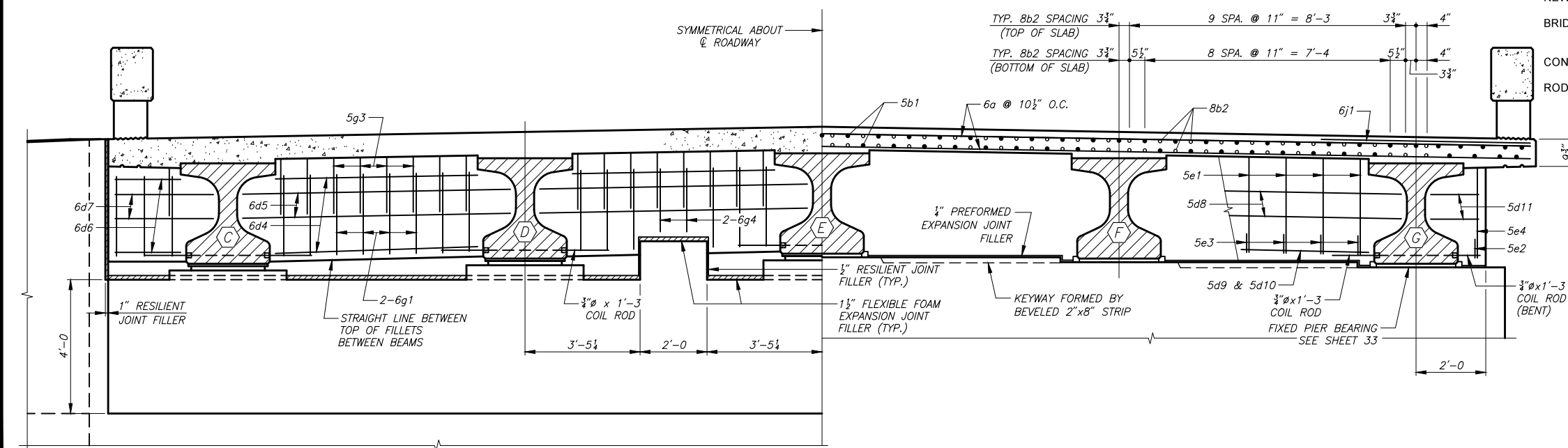


HALF SECTION NEAR SOUTH ABUTMENT

HALF SECTION NEAR MID SPAN

SUPERSTRUCTURE NOTES

THIS BRIDGE SUPERSTRUCTURE IS DESIGNED FOR HL93 LOADING PLUS AN ALLOWANCE OF 20 POUNDS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE. THE SLAB AS SHOWN INCLUDES A 1/2" INTEGRAL WEARING SURFACE. COST OF ALL RESILIENT JOINT FILLER AND FLEXIBLE FOAM EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". ALL EXPOSED CORNERS OF 90 DEGREES OR SHARPER ARE TO BE FORMED WITH A 3/4" DRESSED AND BEVELED STRIP. MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED. THE TOP MAT OF REINFORCING STEEL IS TO BE PARALLEL AND 2 1/2" CLEAR BELOW TOP OF SLAB. THE BOTTOM MAT OF REINFORCING STEEL IS TO BE PARALLEL AND 1" CLEAR ABOVE BOTTOM OF SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0" CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF HIGH CHAIRS OR SLAB BOLSTERS SPACED 4'-0" APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND SLAB BOLSTERS. ALL REINFORCING STEEL IS TO BE GRADE 60, EXCEPT FOR PRESTRESSED BEAMS. ALL NEW SUPERSTRUCTURE REINFORCING IS TO BE EPOXY COATED. THE PIER AND ABUTMENT DIAPHRAGMS ARE TO BE PLACED MONOLITHICALLY WITH THE BRIDGE SLAB. ALL BEAMS ARE TO BE SET VERTICAL. FORMS FOR THE SLAB AND RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS. NEOPRENE BEARING PADS, ANCHORED CURVED SOLE PLATES, COIL TIES AND COIL RODS ARE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".



HALF SECTION NEAR NORTH ABUTMENT

HALF SECTION NEAR PIER

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

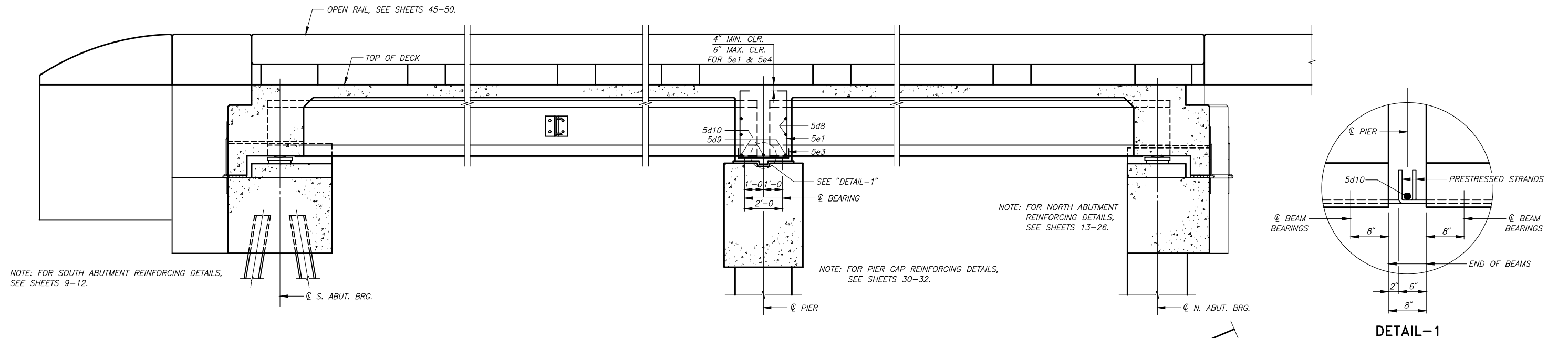
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71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

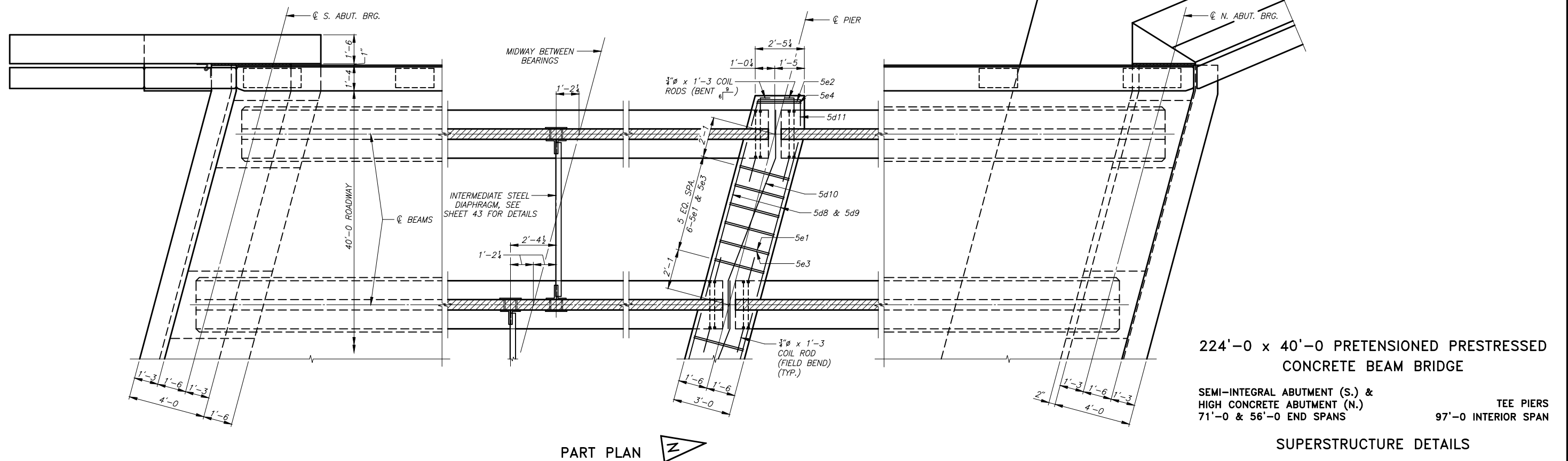
SUPERSTRUCTURE DETAILS

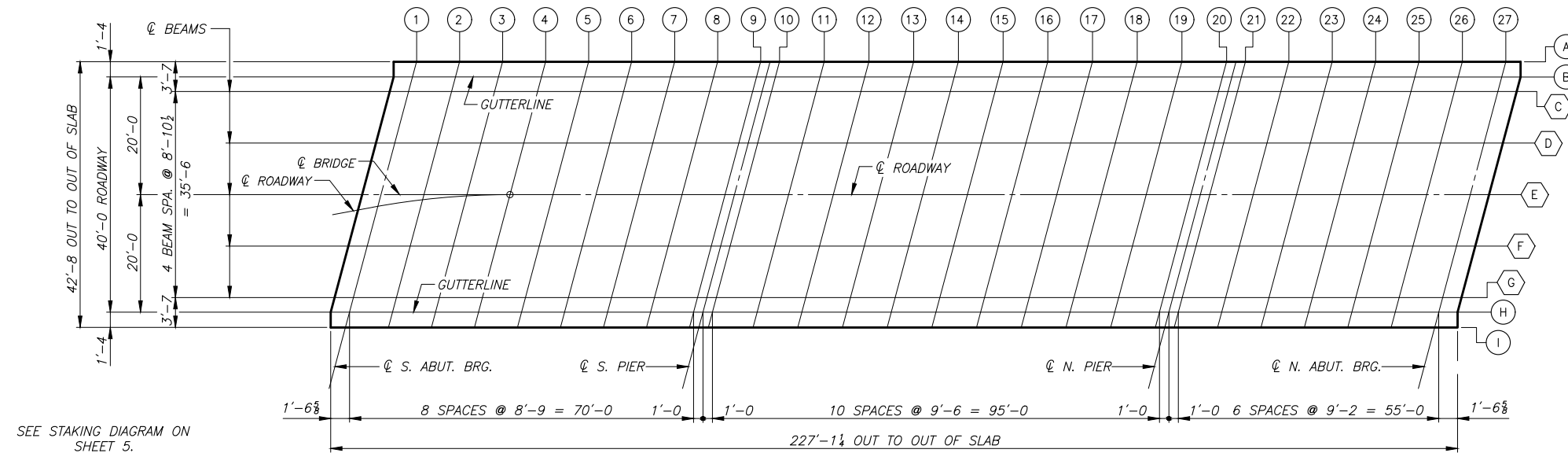
STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



LONGITUDINAL SECTION NEAR RAIL



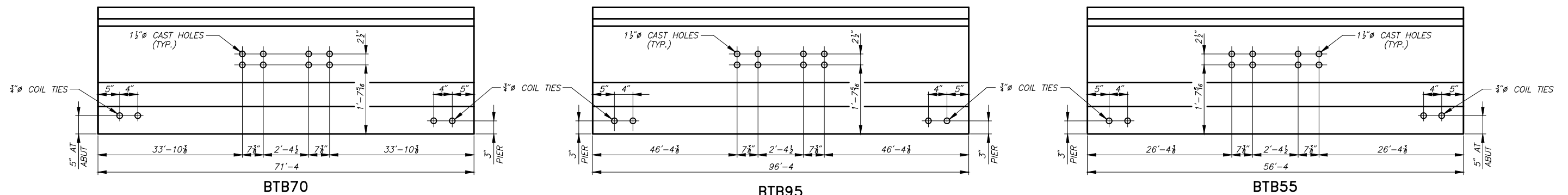


TOP OF SLAB ELEVATIONS

 INDICATES BEAM LINES

BRIDGE COORDINATES			
LOCATION	WEST EDGE OF DECK	C.L. APPROACH ROADWAY	EAST EDGE OF DECK
SOUTH ABUTMENT	N = 8597117.01 E = 14929019.48	N = 8597107.95 E = 14929039.63	N = 8597098.89 E = 14929059.77
SOUTH PIER	N = 8597187.09 E = 14929030.86	N = 8597178.03 E = 14929051.00	N = 8597168.97 E = 14929071.14
NORTH PIER	N = 8597282.84 E = 14929046.40	N = 8597273.78 E = 14929066.54	N = 8597264.72 E = 14929086.68
NORTH ABUTMENT	N = 8597338.12 E = 14929055.37	N = 8597329.56 E = 14929075.51	N = 8597320.00 E = 14929095.65

									Q. S. ABUT. BRG.									Q. S. BRG. S. PIER	Q. N. S. PIER									Q. S. BRG. N. PIER	Q. N. BRG. PIER									Q. N. ABUT. BRG.	
LOC.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	LOC.											
(A)	1041.79	1041.85	1041.91	1041.96	1042.00	1042.03	1042.06	1042.08	1042.10	1042.10	1042.10	1042.10	1042.09	1042.07	1042.04	1042.00	1041.95	1041.90	1041.84	1041.77	1041.75	1041.67	1041.59	1041.49	1041.39	1041.28	1041.16	(A)											
(B)	1041.82	1041.88	1041.94	1041.99	1042.03	1042.06	1042.09	1042.11	1042.13	1042.13	1042.13	1042.13	1042.12	1042.10	1042.07	1042.03	1041.99	1041.93	1041.87	1041.80	1041.78	1041.70	1041.62	1041.52	1041.42	1041.31	1041.20	(B)											
(C)	1041.85	1041.92	1041.97	1042.02	1042.07	1042.10	1042.13	1042.15	1042.17	1042.17	1042.17	1042.17	1042.16	1042.14	1042.11	1042.07	1042.03	1041.98	1041.91	1041.84	1041.83	1041.75	1041.66	1041.57	1041.47	1041.36	1041.24	(C)											
(D)	1042.01	1042.08	1042.14	1042.19	1042.23	1042.27	1042.30	1042.33	1042.34	1042.34	1042.34	1042.35	1042.35	1042.34	1042.32	1042.30	1042.26	1042.22	1042.17	1042.11	1042.04	1042.03	1041.95	1041.87	1041.78	1041.68	1041.57	1041.46	(D)										
(E)	1042.14	1042.21	1042.27	1042.33	1042.37	1042.41	1042.44	1042.47	1042.49	1042.49	1042.50	1042.50	1042.50	1042.48	1042.46	1042.42	1042.38	1042.33	1042.28	1042.21	1042.19	1042.12	1042.04	1041.95	1041.85	1041.75	1041.64	(E)											
(F)	1041.98	1042.04	1042.11	1042.16	1042.21	1042.25	1042.29	1042.31	1042.33	1042.34	1042.35	1042.35	1042.35	1042.33	1042.31	1042.28	1042.24	1042.20	1042.14	1042.08	1042.06	1041.99	1041.91	1041.82	1041.73	1041.63	1041.52	(F)											
(G)	1041.78	1041.85	1041.91	1041.97	1042.02	1042.06	1042.10	1042.13	1042.15	1042.15	1042.17	1042.17	1042.17	1042.16	1042.14	1042.11	1042.07	1042.03	1041.98	1041.91	1041.90	1041.83	1041.75	1041.67	1041.57	1041.47	1041.37	(G)											
(H)	1041.74	1041.80	1041.87	1041.92	1041.98	1042.02	1042.06	1042.09	1042.11	1042.11	1042.13	1042.13	1042.13	1042.12	1042.10	1042.07	1042.04	1041.99	1041.94	1041.88	1041.86	1041.79	1041.72	1041.63	1041.54	1041.44	1041.33	(H)											
(I)	1041.70	1041.77	1041.83	1041.89	1041.94	1041.99	1042.02	1042.05	1042.08	1042.08	1042.10	1042.10	1042.10	1042.10	1042.09	1042.07	1042.04	1042.01	1041.96	1041.91	1041.85	1041.84	1041.77	1041.69	1041.61	1041.51	1041.42	1041.31	(I)										

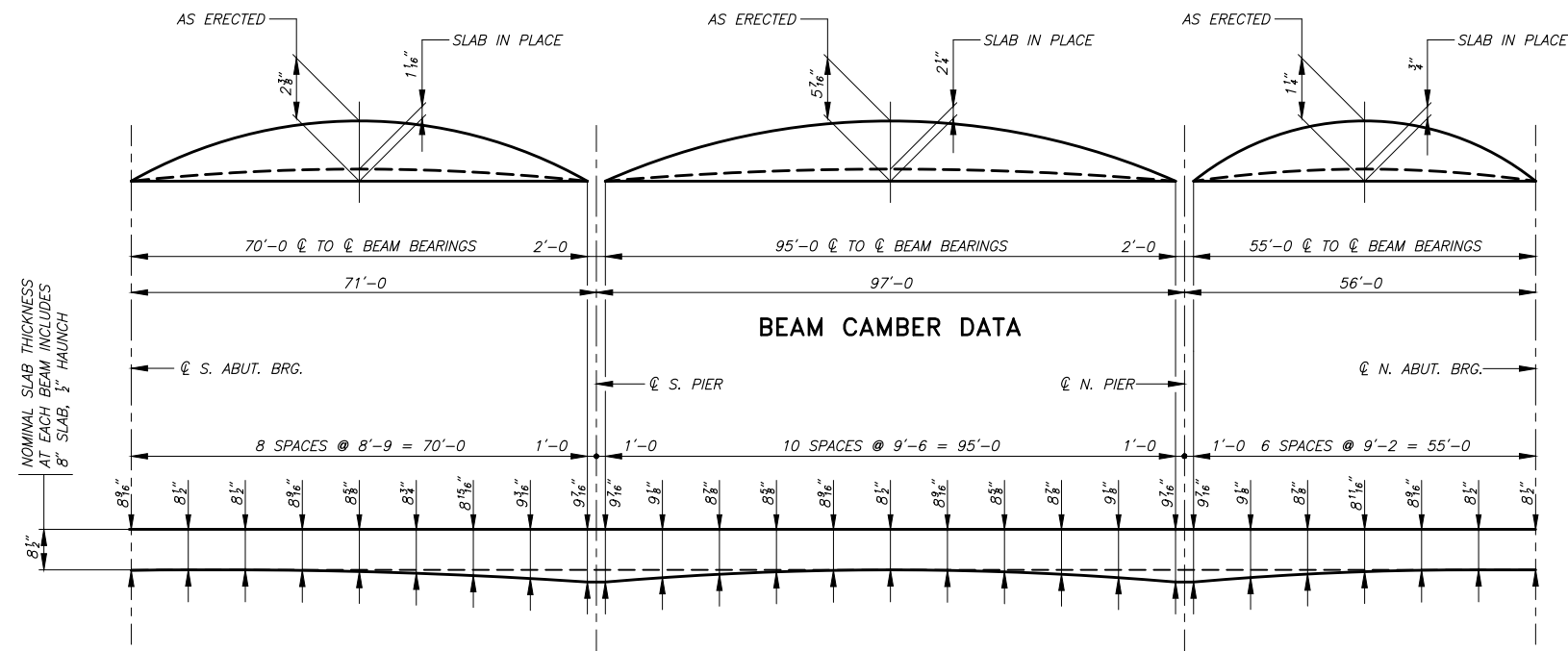


224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) & HIGH CONCRETE ABUTMENT (N.)	TEE PIERS
71'-0" & 56'-0" END SPANS	97'-0" INTERIOR SPAN

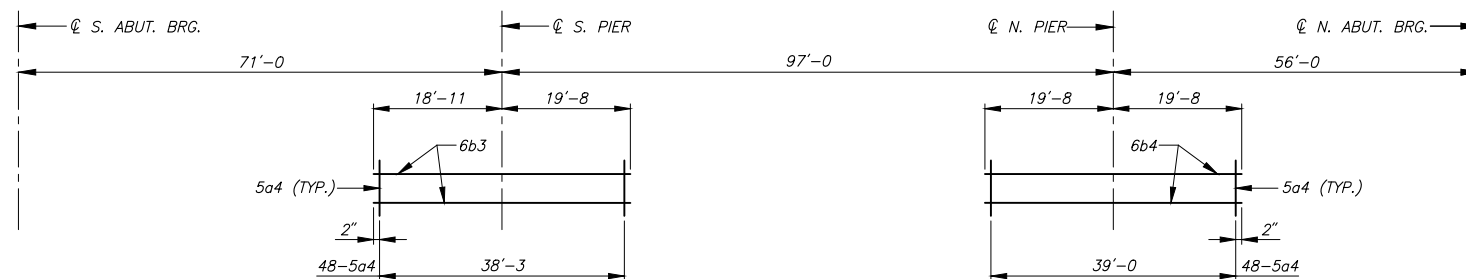
SUPERSTRUCTURE DETAILS

STATION 6+65.00
HARDIN COUNTY, IOWA



HAUNCH DIAGRAM AND SLAB THICKNESS AT BEAM (T)

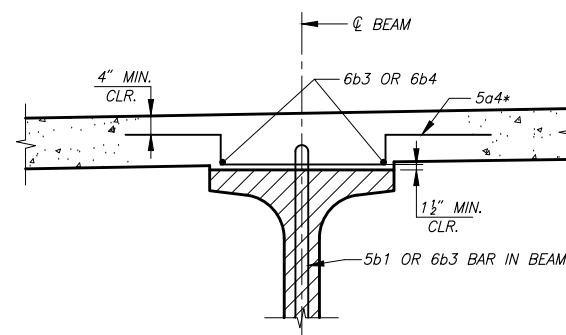
NOTE: HAUNCH THICKNESSES ARE SHOWN FOR ESTIMATING ONLY AND ARE NOT GUARANTEED FOR CONSTRUCTION.



HAUNCH REINFORCING LAYOUT

(TYPICAL EACH BEAM)

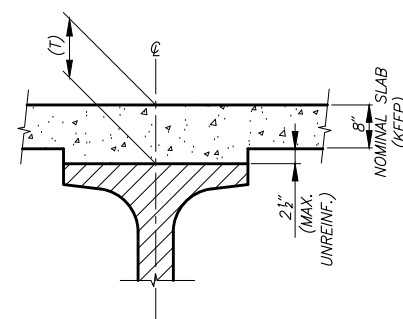
NOTE: 1-5a4 BAR IS TO BE PLACED ADJACENT TO 5b1 & 6b3 BEAM TIE BARS THAT EXTEND FROM THE BEAMS INTO SLAB IN THE AREA SHOWN.



SECTION THRU SLAB HAUNCH

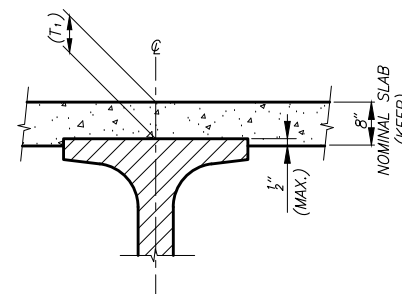
NOTE: TYPICAL EACH BEAM LINE WHERE HAUNCH EXCEEDS 2 1/2". SEE "HAUNCH REINFORCING LAYOUT" FOR PLACEMENT LOCATIONS.

* STIRRUPS MAY BE TILTED AS NEEDED TO PROVIDE NECESSARY CLEARANCES.



SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER REMAINING AFTER PLACING THE SLAB, BUT IS NOT GUARANTEED FOR CONSTRUCTION. IF BEAM IS UNDER CAMBERED, INCREASE SLAB THICKNESS (T) AT BEAMS TO COMPENSATE. IF BEAM IS OVER CAMBERED, THE SLAB THICKNESS (T) MAY BE DECREASED A MAXIMUM OF 1/2" EMBEDMENT AT THE BEAM (T1). IF MORE THAN 1/2" EMBEDMENT IS REQUIRED, OR IF THE HAUNCH EXCEEDS 2 1/2" AND IS NOT REINFORCED, THE GRADE LINE IS TO BE REVISED. THE ABOVE DIAGRAMS DO NOT APPLY TO THE CANTILEVERED SLAB SIDE OF THE EXTERIOR BEAM.



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

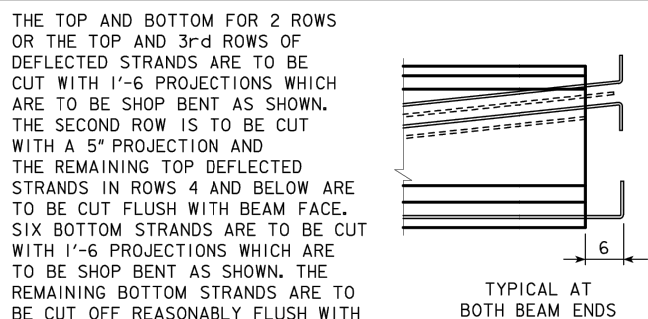
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

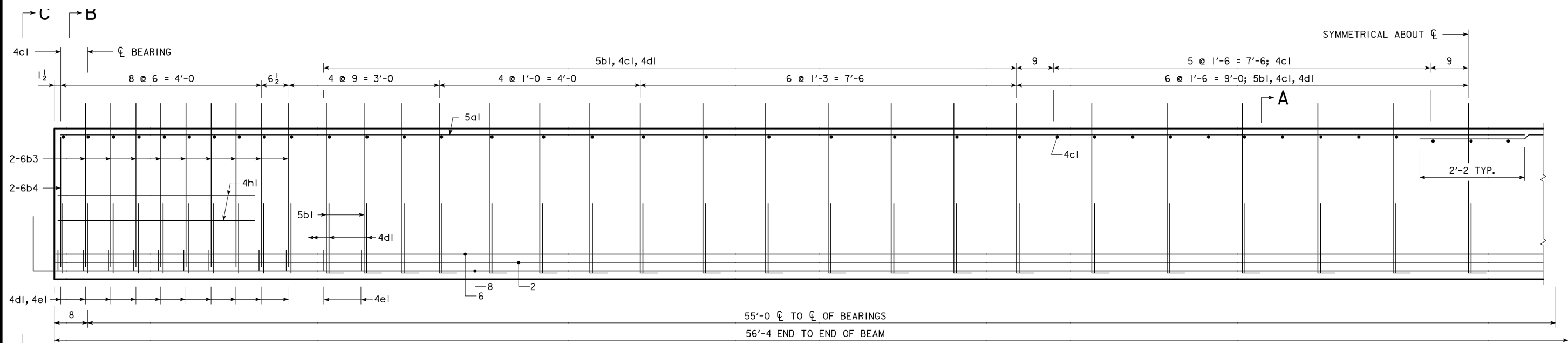
TEE PIERS
97'-0 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

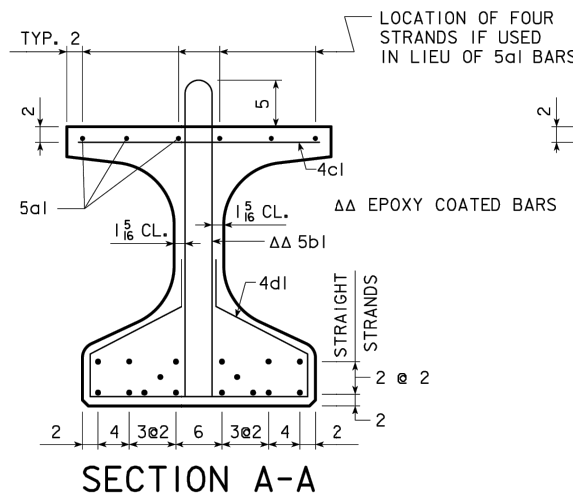




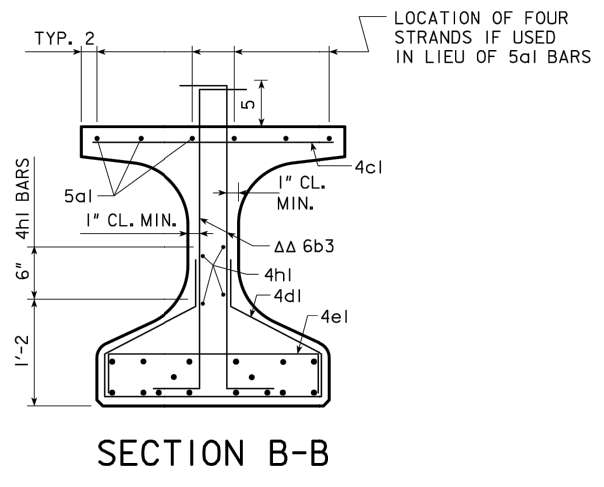
BTB55

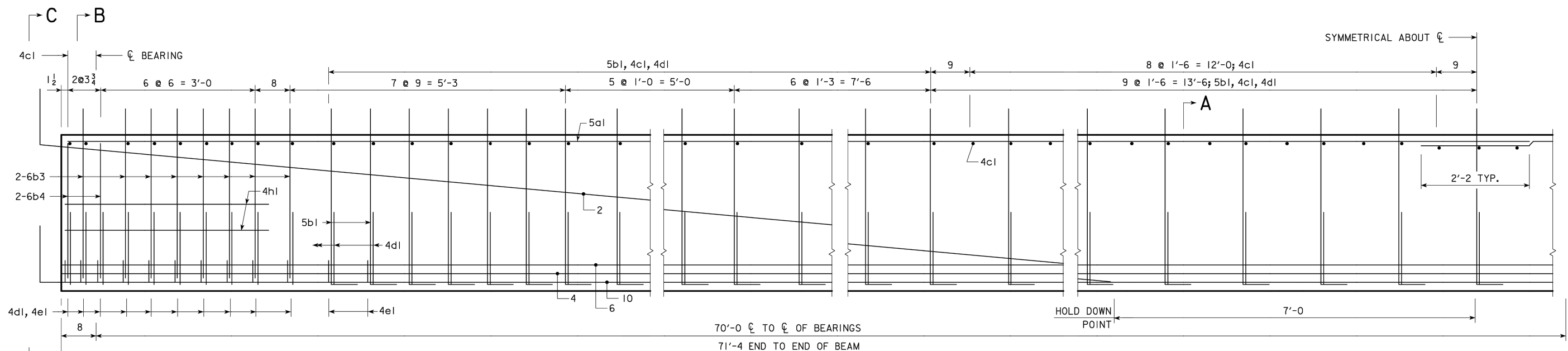
IDOT STANDARD SHEET 4756
ISSUED: 02/08

TOP FLANGE LONGITUDINAL BAR LAYOUT

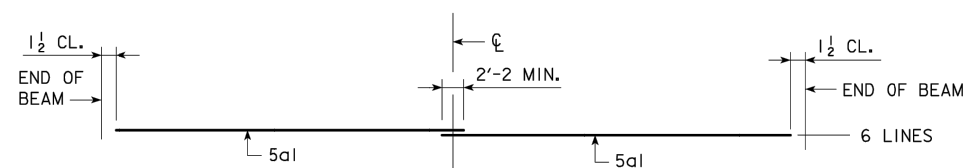


SECTION A-A (ALTERNATE)
SEE ALTERNATE BAR NOTE ON STANDARD SHEET 4750.

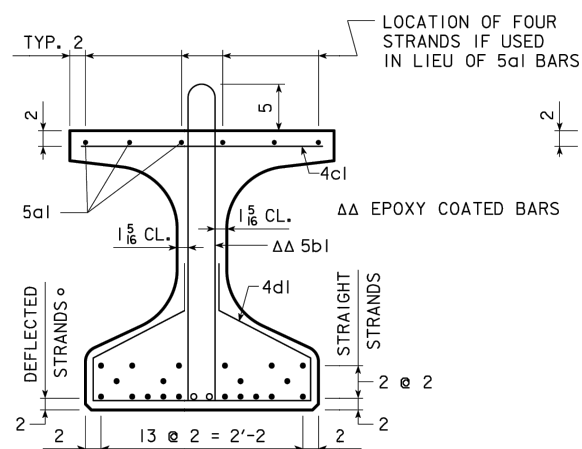




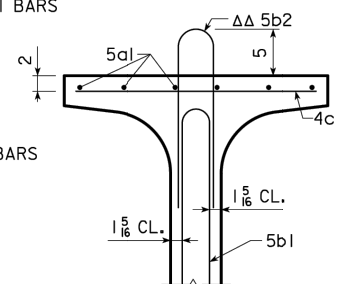
BTB70



TOP FLANGE LONGITUDINAL BAR LAYOUT

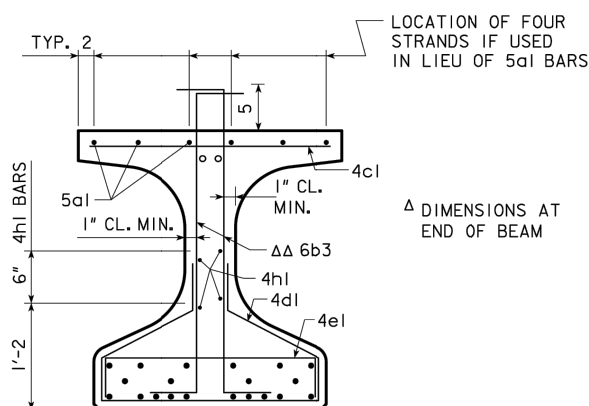


SECTION A-A

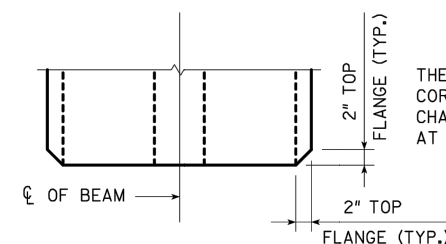


SECTION A-A
(ALTERNATE)

SEE ALTERNATE BAR NOTE ON
STANDARD SHEET 4750.

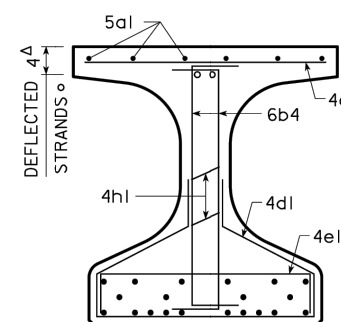


SECTION B-B



TOP VIEW

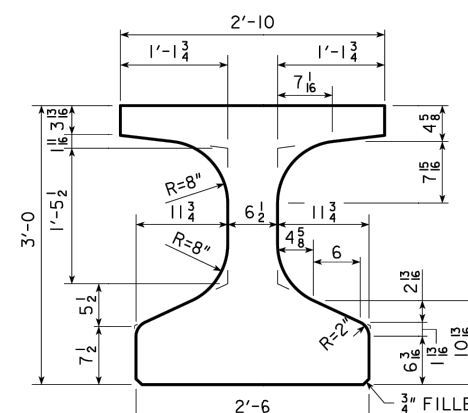
THE TOP FLANGE BEAM
CORNERS ARE TO BE
CHAMFERED 2" AS SHOWN
AT BOTH ENDS OF THE BEAM.



SECTION C-C

AREA = 631.7 in²
 $\bar{y}_b = 17.14$ in.
I = 99,980 in⁴

BEAM SECTION
PROPERTIES



BTB BEAM CROSS
SECTION

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

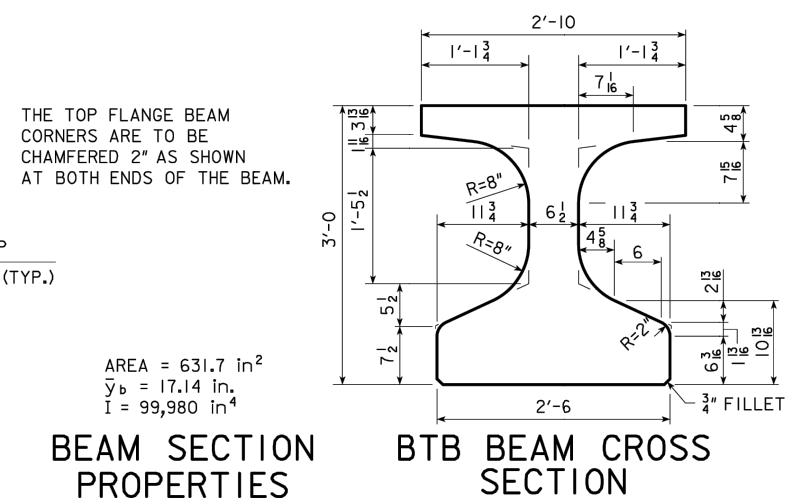
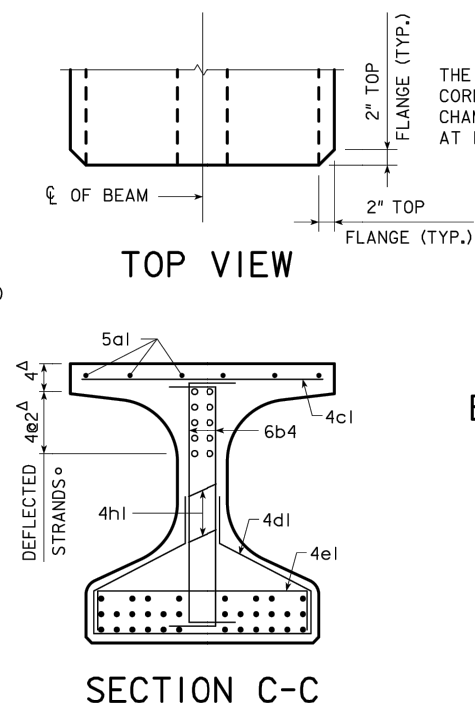
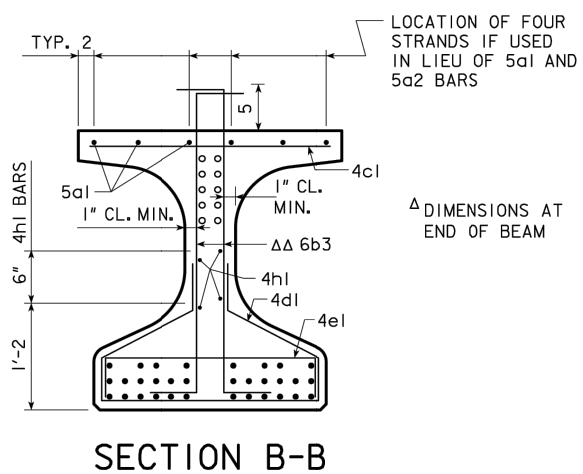
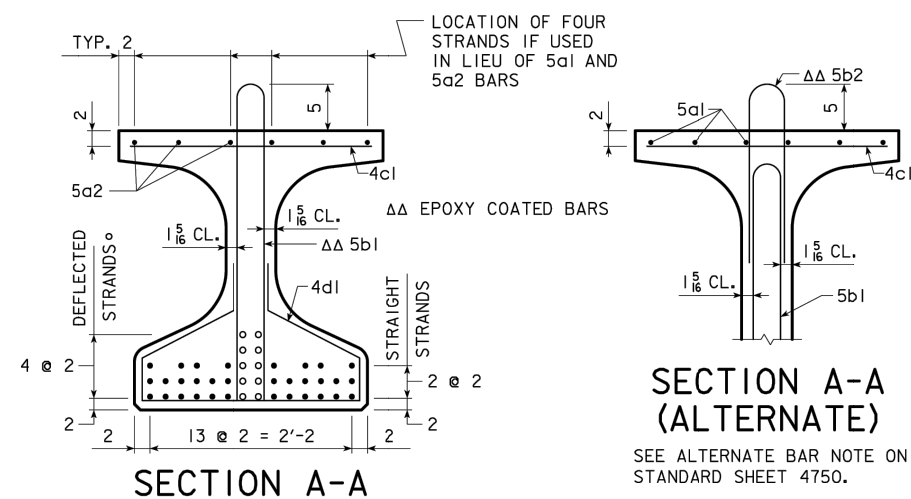
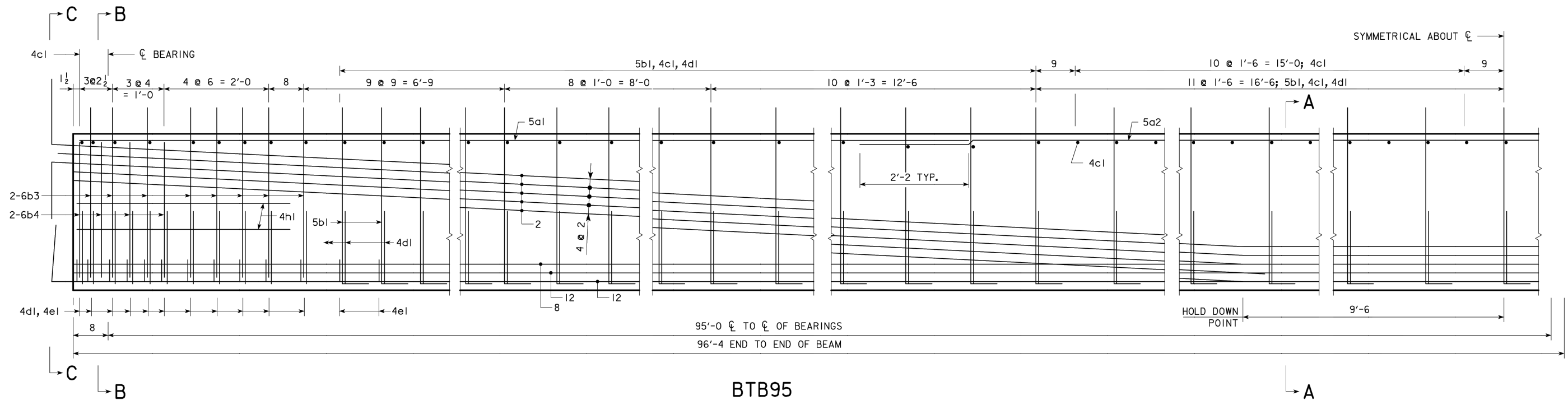
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

BEAM DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



BEAM SECTION PROPERTIES

224'-0" x 40'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

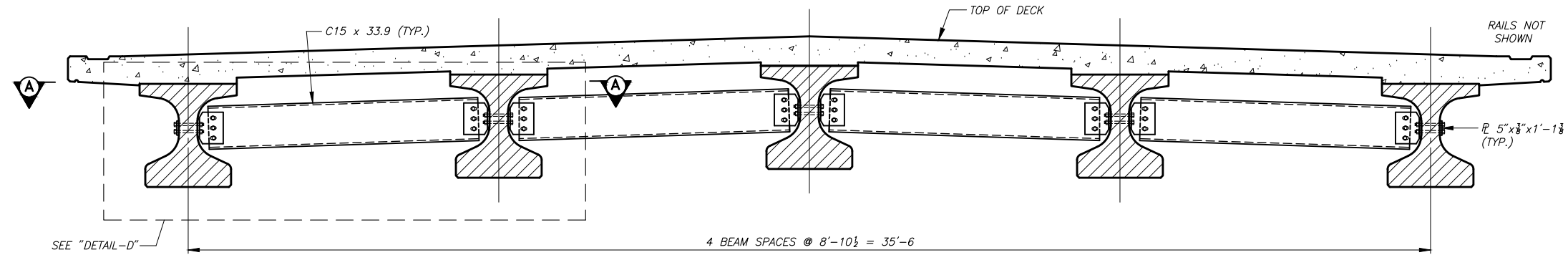
SEMI-INTEGRAL ABUTMENT (S.) & HIGH CONCRETE ABUTMENT (N.)
71'-0" & 56'-0" END SPANS

TEE PIERS
97'-0" INTERIOR SPAN

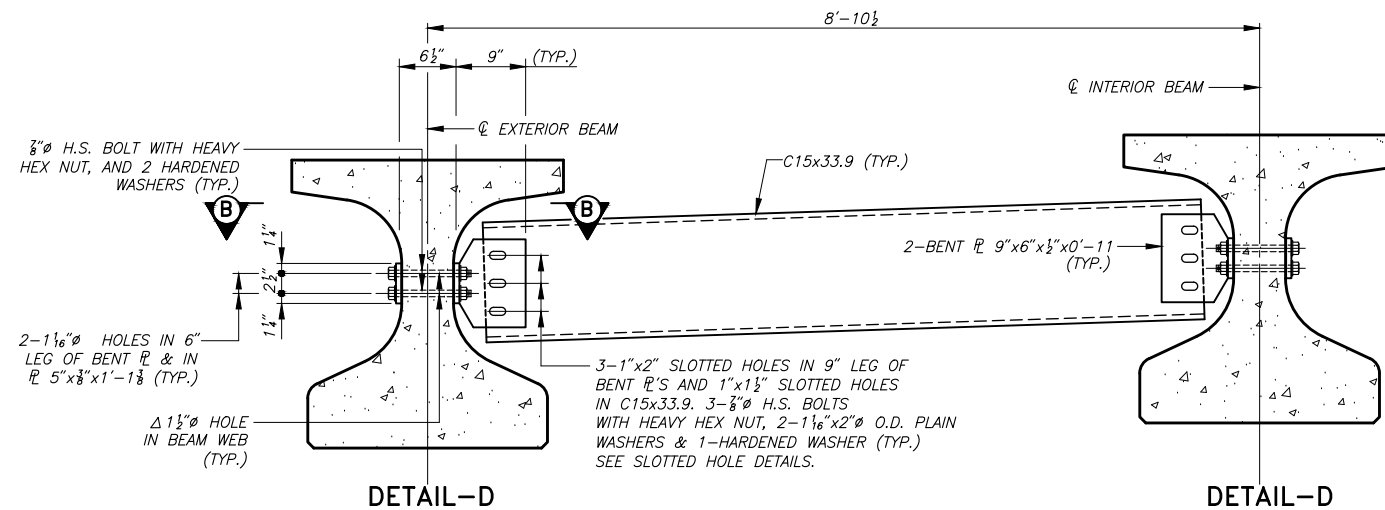
BEAM DETAILS

STATION 6+65.00
HARDIN COUNTY,

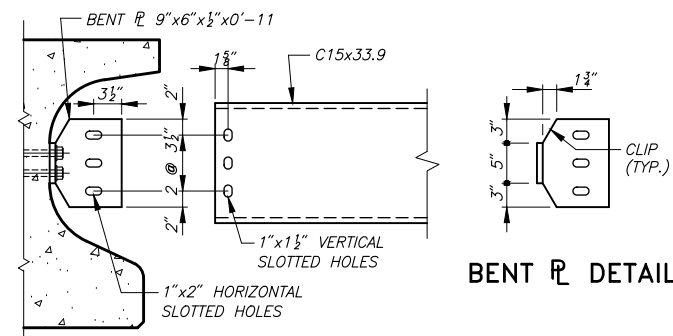
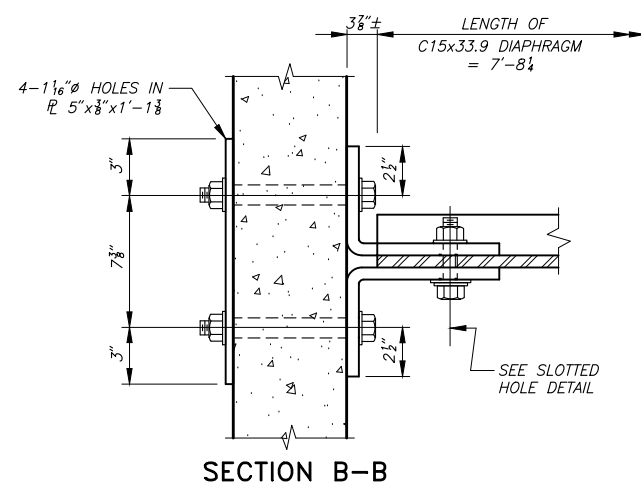
15' SKEW, LT. AHEAD
IOWA



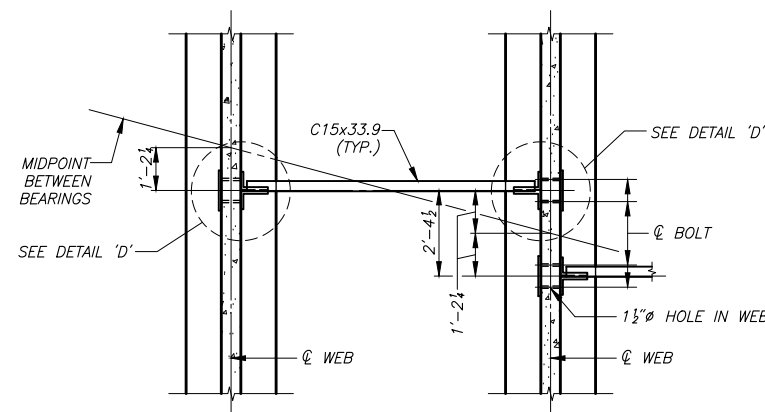
SECTION SHOWING INTERMEDIATE DIAPHRAGMS



Δ BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS.



BENT R DETAIL



PART SECTION A-A

BULB TEE "B" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL			
ONE BEAM DETAIL "D"		NO. OF BEAM CONNECTIONS	WEIGHT (LBS.)
BOLTS WITH NUTS & WASHERS = 9.6 LBS.		24	230
1-BACKING PL 5"x3"x1'-1 1/8" = 7.1 LBS.		24	170
2-BENT PL 9"x6"x1/2"x0'-11" = 46.8 LBS.		24	1,123
ONE DIAPHRAGM		NUMBER OF DIAPHRAGMS	WEIGHT (LBS.)
TS WITH NUTS & WASHERS = 7.8 LBS.		12	94
	LENGTH OF MEMBER		
33.9 LBS/FT.	7'-8 1/2"	12	3,127
INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.)			4,744

DIAPHRAGM NOTES

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
 SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.
 ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL."
 THE 1 1/2" DIAMETER HOLES FOR THE 7/8" DIAMETER H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.
 THE 7/8" DIAMETER H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.
 ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

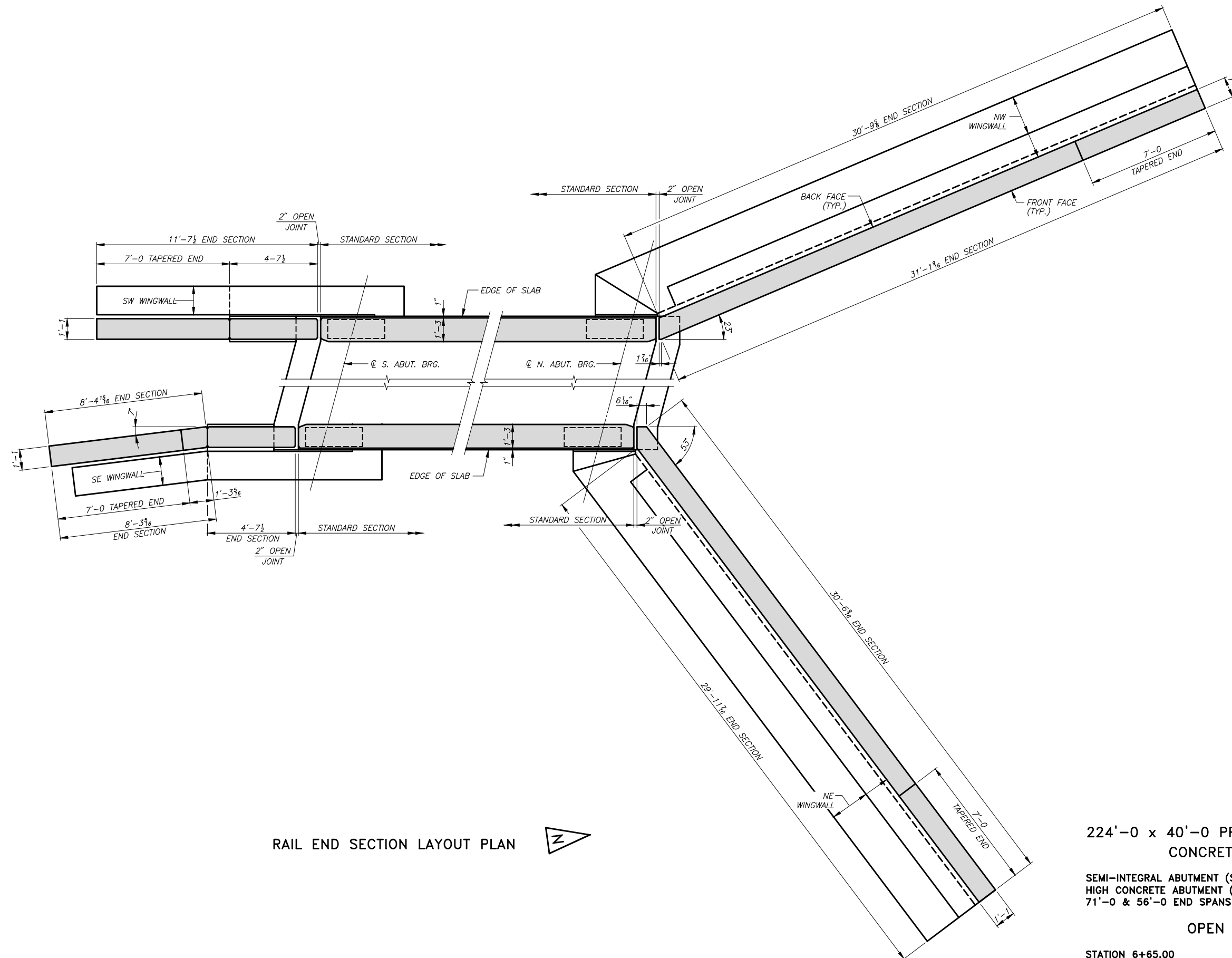
SEMI-INTEGRAL ABUTMENT (S.) &
 HIGH CONCRETE ABUTMENT (N.)
 71'-0 & 56'-0 END SPANS

TEE PIERS
 97'-0 INTERIOR SPAN

STEEL DIAPHRAGM DETAILS

STATION 6+65.00
 HARDIN COUNTY,

15' SKEW, LT. AHEAD
 IOWA



RAIL END SECTION LAYOUT PLAN



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

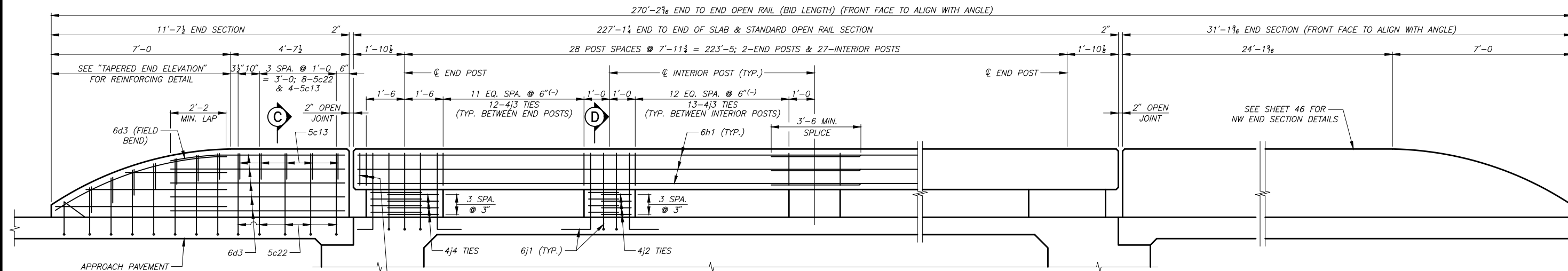
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

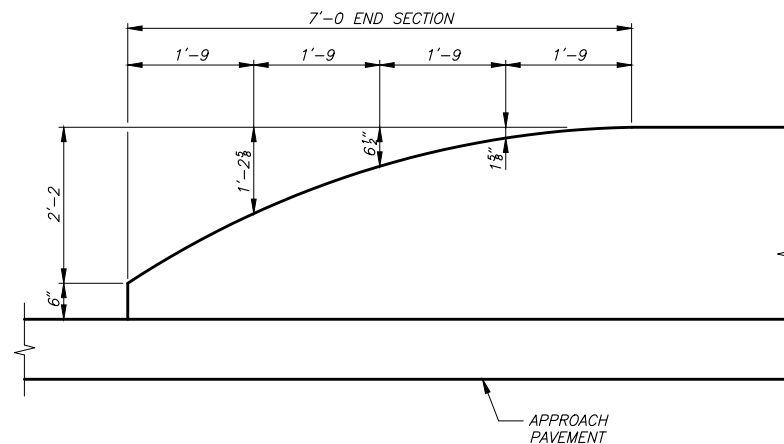
OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,

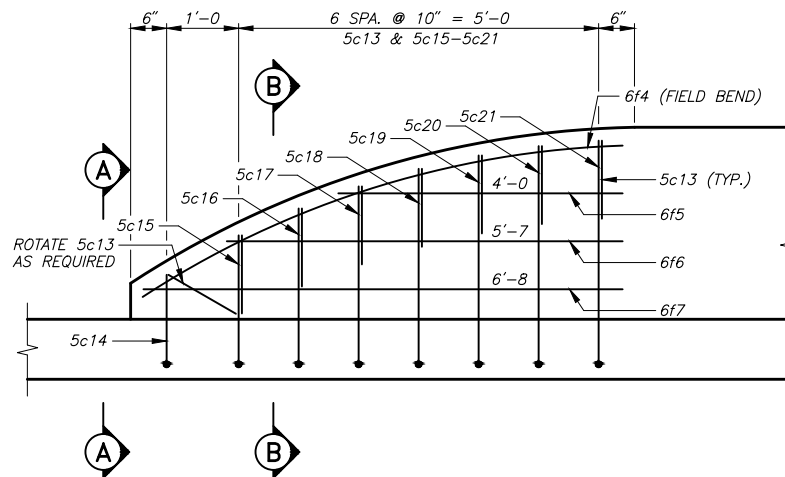
15' SKEW, LT. AHEAD
IOWA



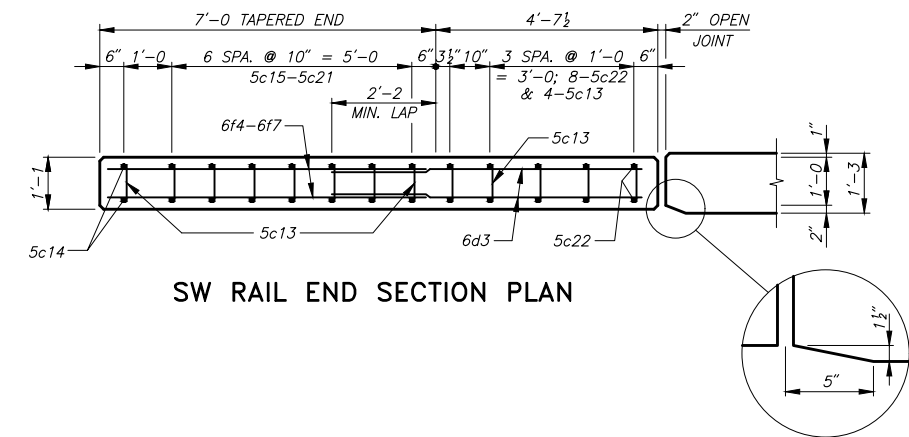
ELEVATION OF WEST OPEN RAIL
(LOOKING WEST)



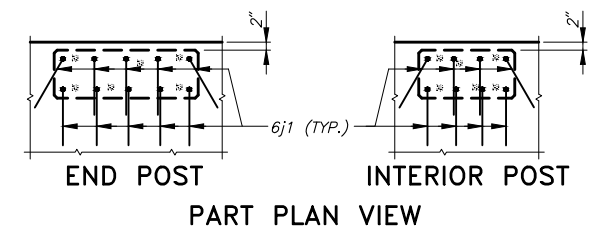
TAPERED END ELEVATION



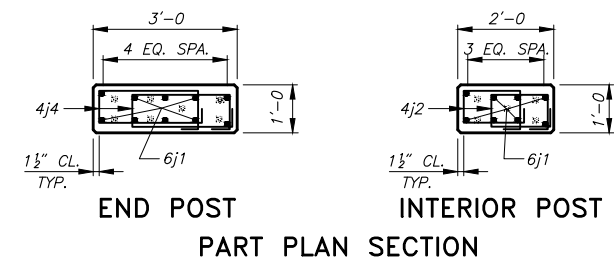
TAPERED END ELEVATION
(REINFORCING DETAIL)



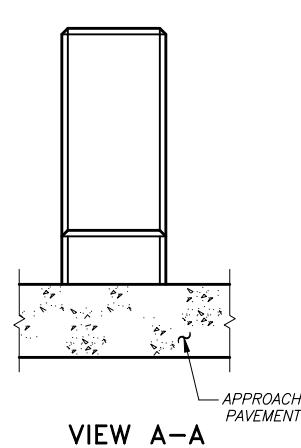
SW RAIL END SECTION PLAN



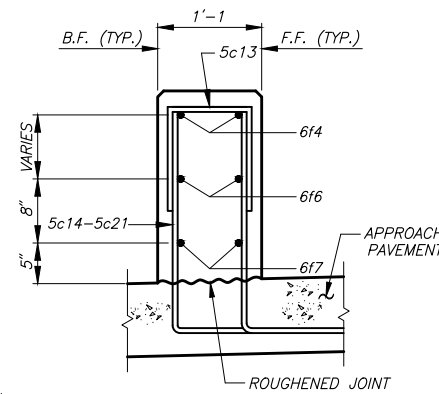
END POST INTERIOR POST
PART PLAN VIEW



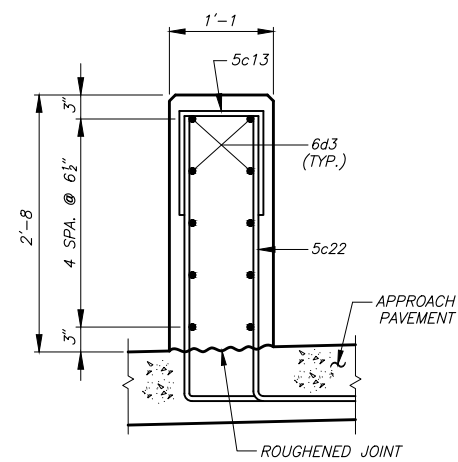
END POST INTERIOR POST
PART PLAN SECTION



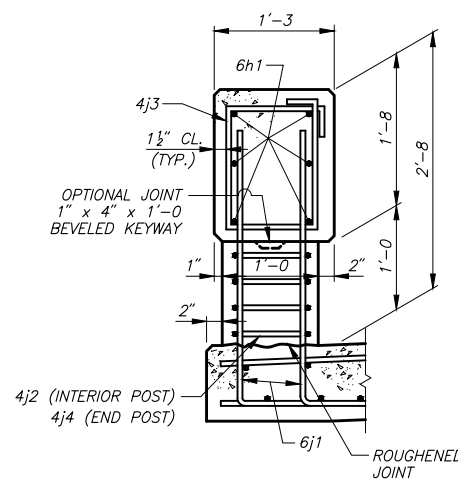
VIEW A-A



SECTION B-B



SECTION C-C



SECTION D-D

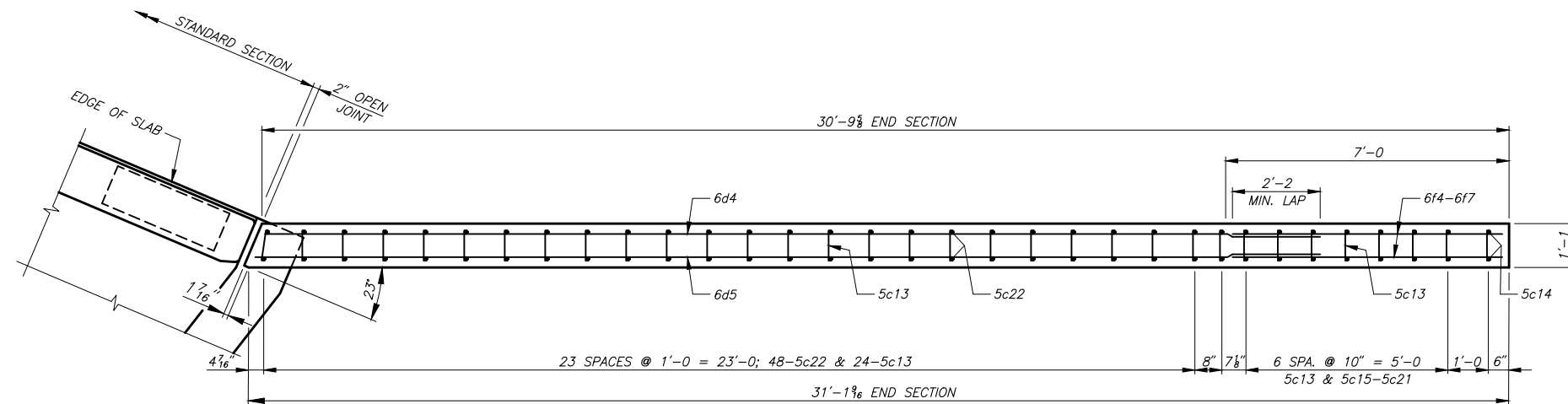
224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

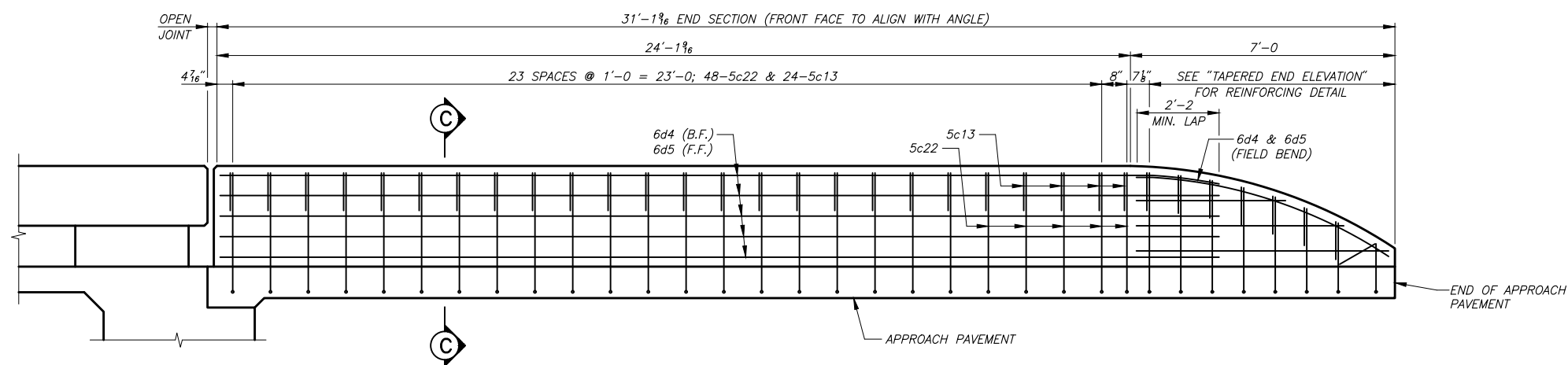
TEE PIERS
97'-0 INTERIOR SPAN

WEST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,
15' SKEW, LT. AHEAD
IOWA



NW RAIL END SECTION PLAN



NW RAIL END SECTION ELEVATION

NOTE: SEE SHEET 45 FOR SECTION C-C.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

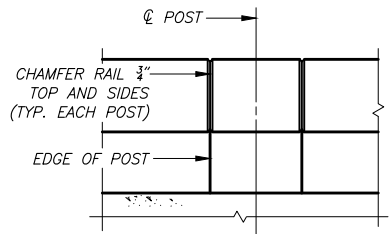
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

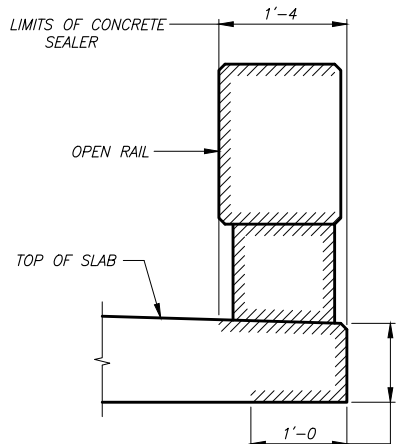
WEST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



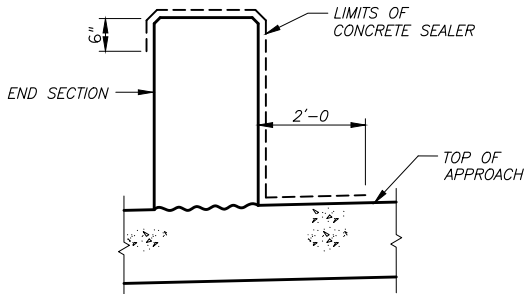
RAIL CHAMFER DETAIL



CONCRETE SEALER LIMITS FOR OPEN RAILS

CONCRETE SEALER SHALL BE APPLIED TO BOTH SIDES OF BRIDGE SLAB ON THE TOP, EDGE OF SLAB AND UNDER SLAB. THE CONCRETE SEALER SHALL ALSO BE APPLIED TO THE OPEN RAIL ON THE TOP, TRAFFIC FACE SIDE, BOTTOM OF RAIL, AND ON ALL SIDES OF THE OPEN RAIL POSTS.

THE CONCRETE SEALER LIMITS ARE SHOWN IN THE DETAIL AND SHALL APPLY TO THE FULL LENGTH OF BRIDGE. CONCRETE SEALER SHALL BE APPLIED IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS.



CONCRETE SEALER
LIMITS FOR END SECTIONS

THE CONCRETE SEALER SHALL BE APPLIED TO THE END SECTIONS ON THE TOP, TRAFFIC FACE SIDE, 6 INCHES ONTO THE BACK FACE OF RAIL, AND 2 FT. OF THE APPROACH GUTTERLINE.

THE CONCRETE SEALER LIMITS ARE SHOWN IN THE DETAIL AND SHALL APPLY TO THE FULL LENGTH END SECTIONS. CONCRETE SEALER SHALL BE APPLIED IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS.

CONCRETE PLACEMENT SUMMARY (WEST RAIL)		
SECTION	TOTAL	
STANDARD SECTION	17.5	
INTERIOR POSTS (27 @ 0.074 C.Y.)	2.0	
END POSTS (2 @ 0.111 C.Y.)	0.2	
SOUTHWEST END SECTION	1.0	
NORTHWEST END SECTION	3.1	
	TOTAL (C.Y.)	23.8
CONCRETE OPEN RAIL QUANTITIES (WEST RAIL)		
ITEM	UNIT	QUANTITY
CONCRETE OPEN RAILING, TL-4	L.F.	270.2

WEST OPEN RAIL NOTES

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

CONSTRUCTION JOINT BETWEEN THE APPROACH PAVEMENT AND RAIL IS TO BE ROUGHENED CONCRETE.

THE CONCRETE OPEN RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF OPEN RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT. PRICE BID FOR "CONCRETE OPEN RAILING, TL-4" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO CONSTRUCT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

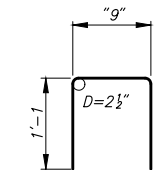
ALL OPEN RAIL REINFORCING STEEL IS TO BE EPOXY COATED GRADE 60 AND IS INCLUDED IN THE SUPERSTRUCTURE REINFORCING STEEL.

TOP OF OPEN RAIL IS TO BE PARALLEL TO THE THEORETICAL CENTERLINE GRADE.

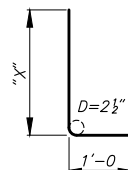
THE CAST-IN-PLACE OPEN RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED.

REINFORCING BAR LIST (WEST OPEN RAIL)						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
2 END SECTIONS	Δ 5c13	TOP, STIRRUPS		46	2'-11	140
	Δ 5c14-22	VERTICAL, DOWELS		92	SHOWN	360
	Δ 6d3	LONGITUDINAL		10	6'-10	103
	Δ 6d4	LONGITUDINAL		5	26'-1	196
	Δ 6d5	LONGITUDINAL		5	26'-5	198
	Δ 6f4	LONGITUDINAL, TOP		4	7'-0	42
	Δ 6f5	LONGITUDINAL		4	4'-0	24
	Δ 6f6	LONGITUDINAL		4	5'-7	34
STANDARD SECTION	Δ 6f7	LONGITUDINAL		4	6'-8	40
	Δ 6h1	RAIL, HORIZONTAL		42	35'-5	2,234
	Δ 6j1	RAIL POSTS, VERTICAL DOWELS		236	4'-0	1,418
	Δ 4j2	INTERIOR POSTS, HOOPS		216	4'-9	685
	Δ 4j3	OPEN RAIL, HOOPS		366	5'-5	1,325
	Δ 4j4	END POSTS, HOOPS		16	6'-7	70
Δ EPOXY COATED						
INCLUDE WITH SUPERSTRUCTURE REINFORCING					EPOXY COATED TOTAL (LBS.)	6,869

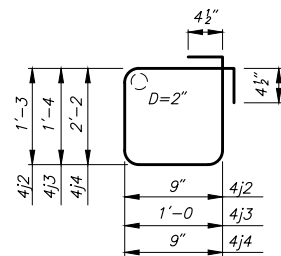
BENT BAR DETAILS



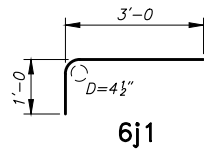
5c13



5c14-5c22



4j2, 4j3, 4j4



6j1

BAR	"X"	NO.	LENGTH
5c14	1'-1	4	2'-1
5c15	1'-8	4	2'-8
5c16	2'-0	4	3'-0
5c17	2'-4	4	3'-4
5c18	2'-7	4	3'-7
5c19	2'-9	4	3'-9
5c20	2'-11	4	3'-11
5c21	3'-0	4	4'-0
5c22	3'-0	60	4'-0

ALL BAR DIMENSIONS ARE OUT TO OUT. "D" = PIN DIAMETER

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

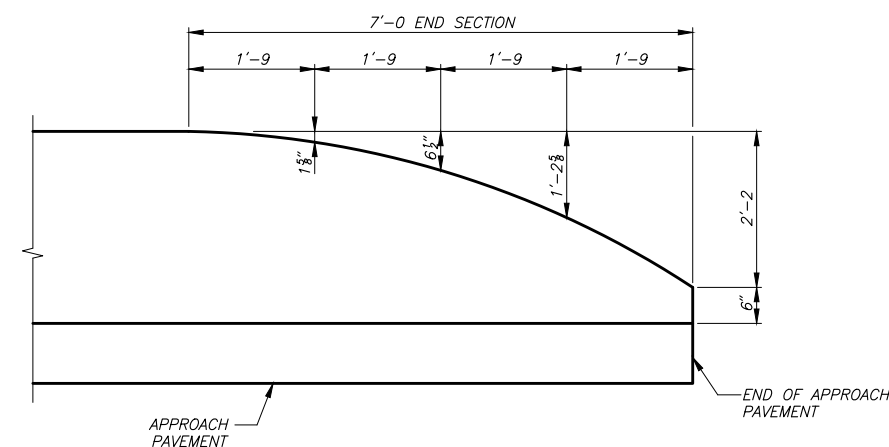
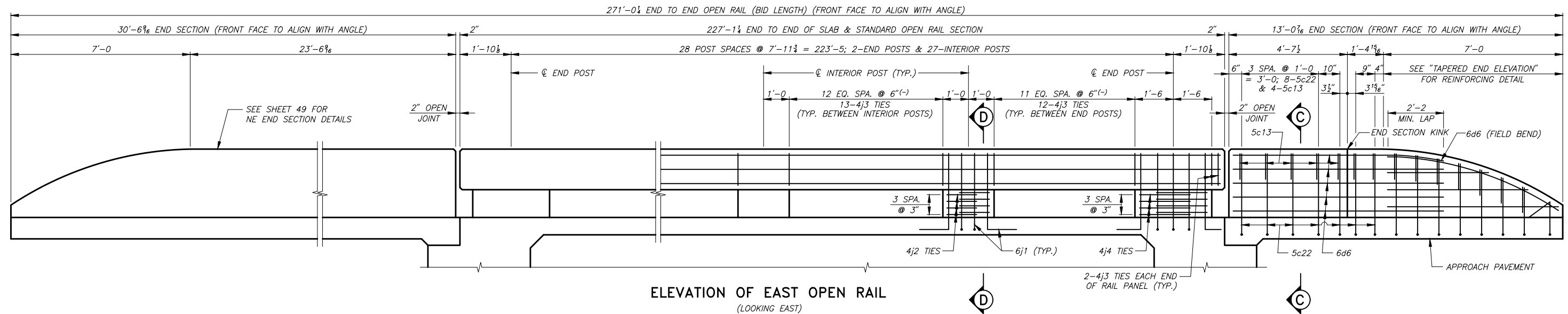
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

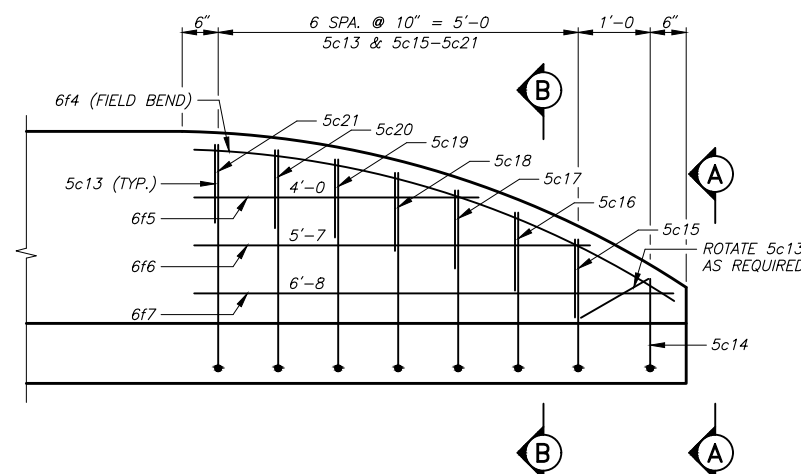
WEST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,

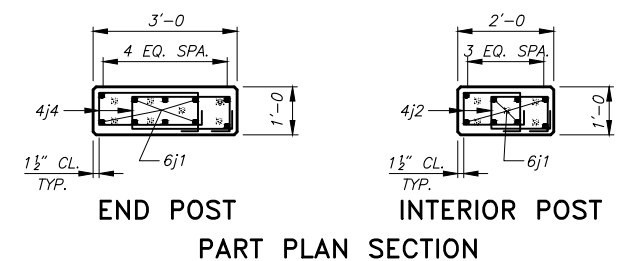
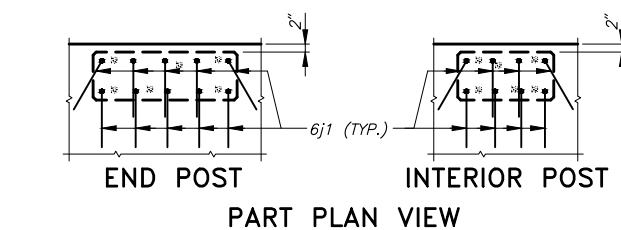
15' SKEW, LT. AHEAD
IOWA



TAPERED END ELEVATION



TAPERED END ELEVATION
(REINFORCING DETAIL)



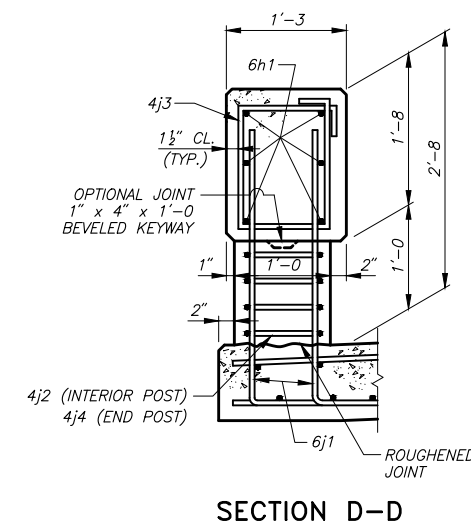
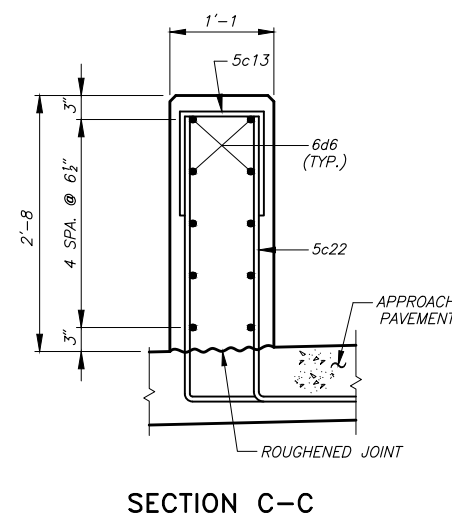
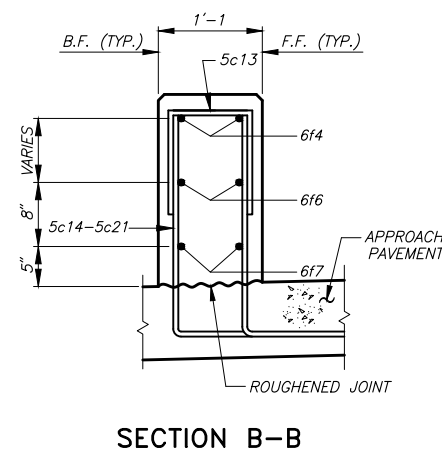
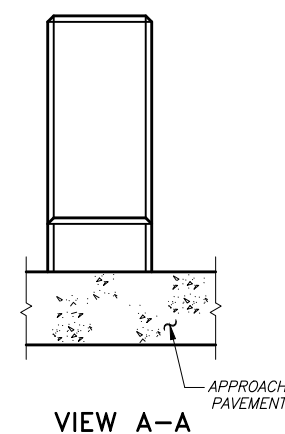
**224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE**

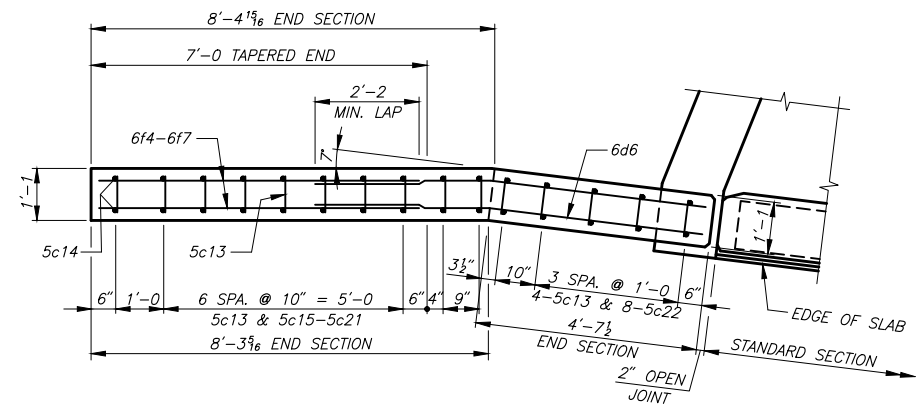
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

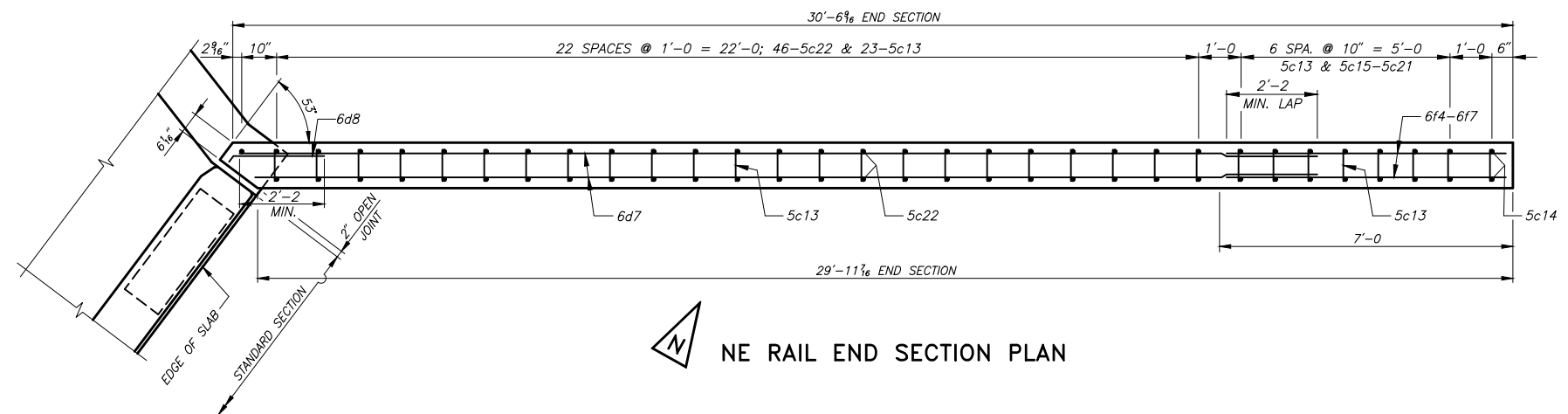
EAST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,
15' SKEW, LT. AHEAD
IOWA

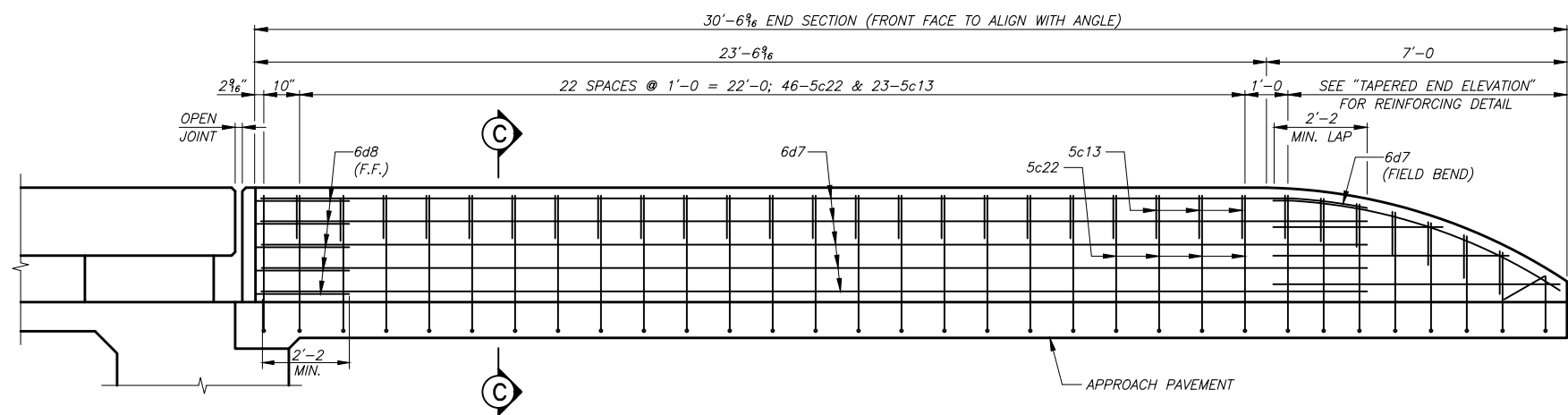




SE RAIL END SECTION PLAN
NOTE: SEE SHEET 48 FOR ELEVATION VIEW.



NE RAIL END SECTION PLAN



NE RAIL END SECTION ELEVATION
NOTE: SEE SHEET 48 FOR SECTION C-C.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

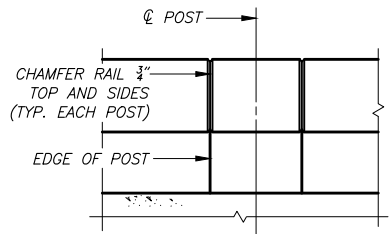
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

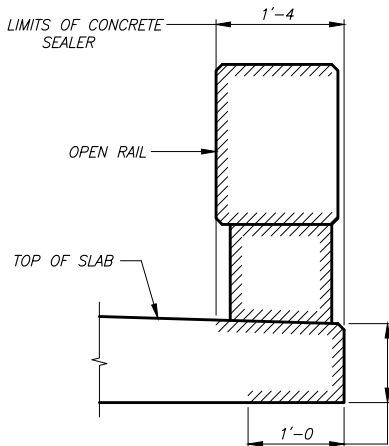
EAST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY, IOWA

15' SKEW, LT. AHEAD
IOWA



RAIL CHAMFER DETAIL



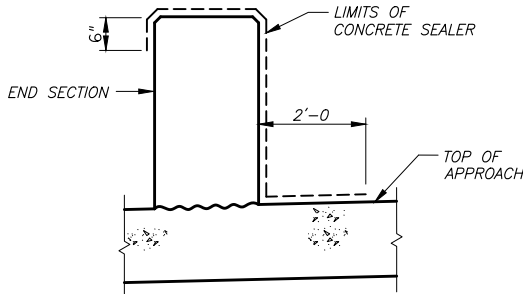
CONCRETE SEALER LIMITS FOR OPEN RAILS

CONCRETE SEALER SHALL BE APPLIED TO BOTH SIDES OF BRIDGE SLAB ON THE TOP, EDGE OF SLAB AND UNDER SLAB. THE CONCRETE SEALER SHALL ALSO BE APPLIED TO THE OPEN RAIL ON THE TOP, TRAFFIC FACE SIDE, BOTTOM OF RAIL, AND ON ALL SIDES OF THE OPEN RAIL POSTS.

THE CONCRETE SEALER LIMITS ARE SHOWN IN THE DETAIL AND SHALL APPLY TO THE FULL LENGTH OF BRIDGE. CONCRETE SEALER SHALL BE APPLIED IN ACCORDANCE WITH ARTICLE 2403.03, P, 3, OF THE STANDARD SPECIFICATIONS.

HE CONCRETE SEALER SHALL BE APPLIED TO THE END SECTIONS ON THE TOP, TRAFFIC FACE SIDE, 6 INCHES ONTO THE BACK FACE OF RAIL, AND 2 FT. OF THE APPROACH GUTTERLINE.

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CONCRETE PLACEMENT SUMMARY (EAST RAIL)

SECTION	TOTAL
STANDARD SECTION	17.5
INTERIOR POSTS (27 @ 0.074 C.Y.)	2.0
END POSTS (2 @ 0.111 C.Y.)	0.2
SOUTHEAST END SECTION	1.2
NORTHEAST END SECTION	3.1
TOTAL (C.Y.)	24.0

CONCRETE OPEN RAIL QUANTITIES (EAST RAIL)

ITEM	UNIT	QUANTITY
CONCRETE OPEN RAILING, TL-4	L.F.	271.0

EAST OPEN RAIL NOTES

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

CONSTRUCTION JOINT BETWEEN THE APPROACH PAVEMENT AND END SECTION IS TO BE ROUGHENED CONCRETE.

THE CONCRETE OPEN RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF OPEN RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT. PRICE BID FOR "CONCRETE OPEN RAILING, TL-4" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO CONSTRUCT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ALL OPEN RAIL REINFORCING STEEL IS TO BE EPOXY COATED GRADE 60 AND IS INCLUDED IN THE SUPERSTRUCTURE REINFORCING STEEL.

TOP OF OPEN RAIL IS TO BE PARALLEL TO THE THEORETICAL CENTERLINE GRADE.

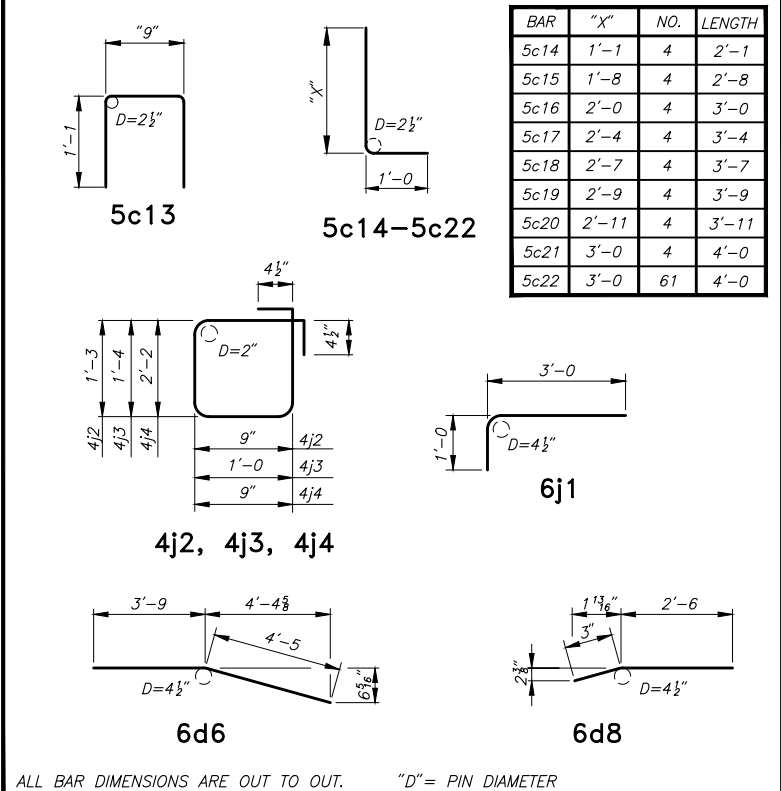
THE CAST-IN-PLACE OPEN RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED.

REINFORCING BAR LIST (EAST OPEN RAIL)

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
2 END SECTIONS	Δ 5c13	TOP, STIRRUPS	□	46	2'-11	140
	Δ 5c14-22	VERTICAL, DOWELS	□	93	SHOWN	364
	Δ 6d6	LONGITUDINAL	—	10	8'-2	123
	Δ 6d7	LONGITUDINAL	—	10	25'-5	382
	Δ 6d8	LONGITUDINAL	—	5	2'-9	21
	Δ 6f4	LONGITUDINAL, TOP	—	4	7'-0	42
	Δ 6f5	LONGITUDINAL	—	4	4'-0	24
	Δ 6f6	LONGITUDINAL	—	4	5'-7	34
	Δ 6f7	LONGITUDINAL	—	4	6'-8	40
STANDARD SECTION	Δ 6h1	RAIL, HORIZONTAL	—	42	35'-5	2,234
	Δ 6j1	RAIL POSTS, VERTICAL DOWELS	□	236	4'-0	1,418
	Δ 4j2	INTERIOR POSTS, HOOPS	□	216	4'-9	685
	Δ 4j3	OPEN RAIL, HOOPS	□	366	5'-5	1,325
	Δ 4j4	END POSTS, HOOPS	□	16	6'-7	70

Δ EPOXY COATED		
INCLUDE WITH SUPERSTRUCTURE REINFORCING	EPOXY COATED TOTAL (LBS.)	6,902

BENT BAR DETAILS



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

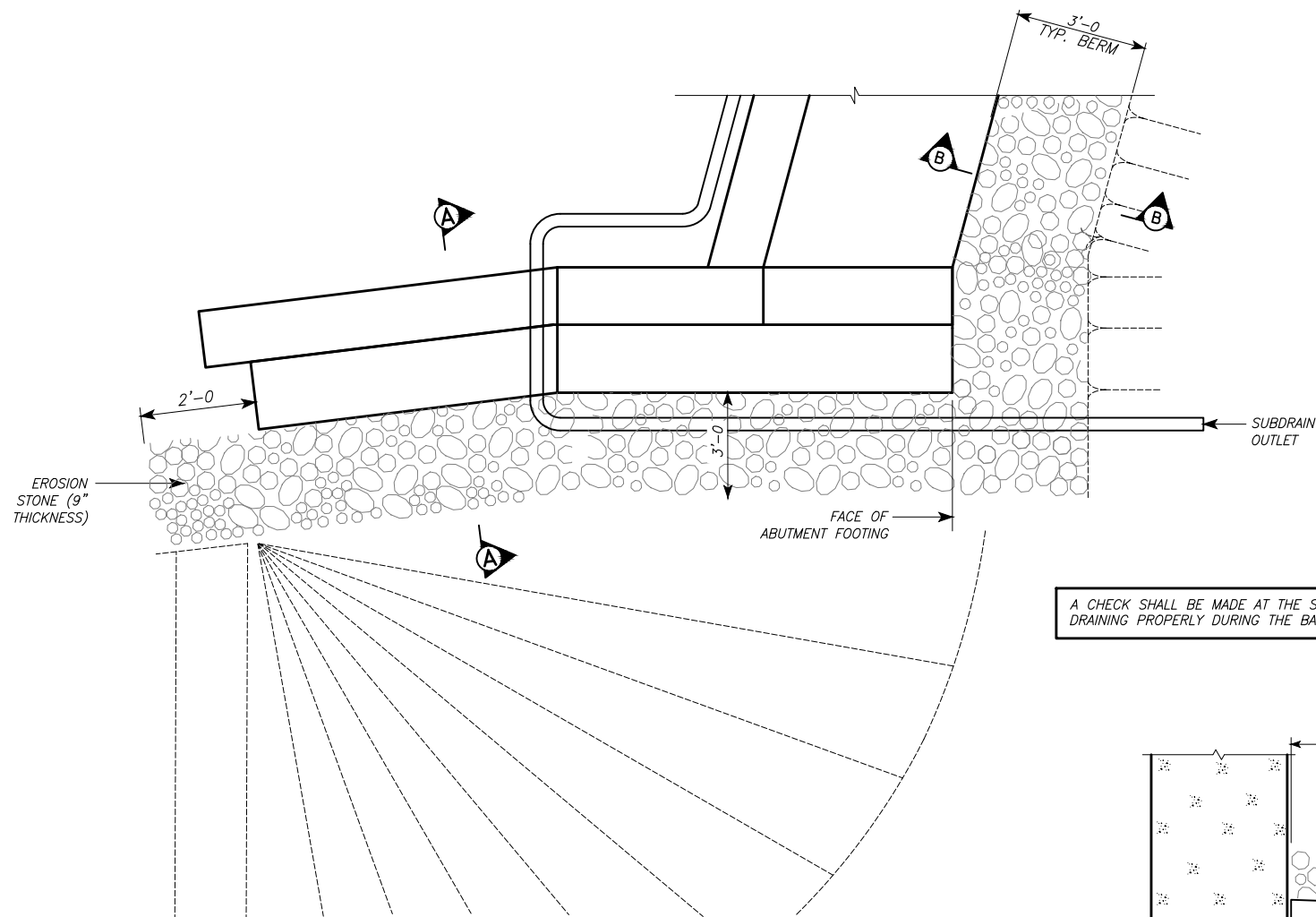
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

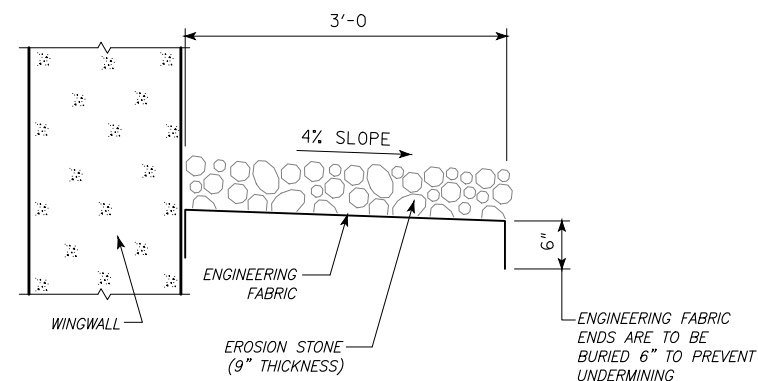
EAST OPEN RAIL DETAILS

STATION 6+65.00
HARDIN COUNTY,

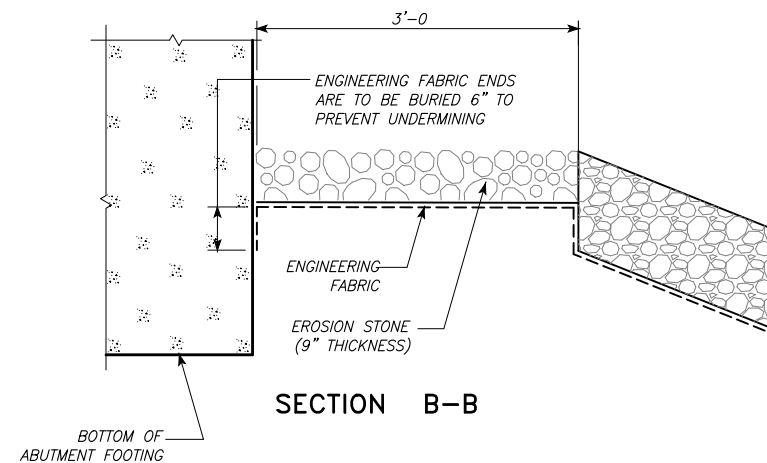
15' SKEW, LT. AHEAD
IOWA



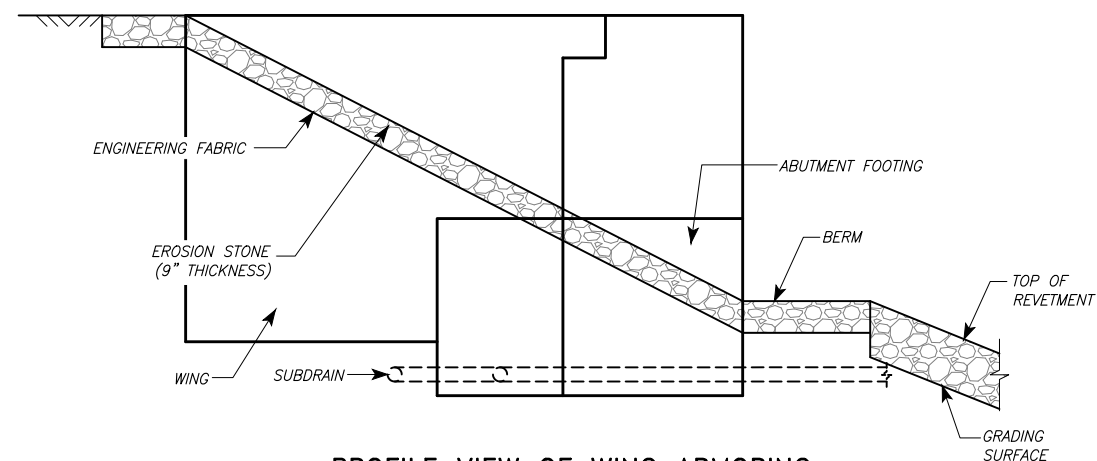
TOP VIEW OF WING ARMORING



SECTION A-A



SECTION B-B



PROFILE VIEW OF WING ARMORING

WING ARMORING NOTES

EROSION STONE SHALL BE PLACED ALONG THE SIDE OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A AND SECTION B-B. THIS IS TYPICAL AT EACH CORNER OF THE SOUTH ABUTMENT. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKE STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 9" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".

SUBDRAIN NOTES

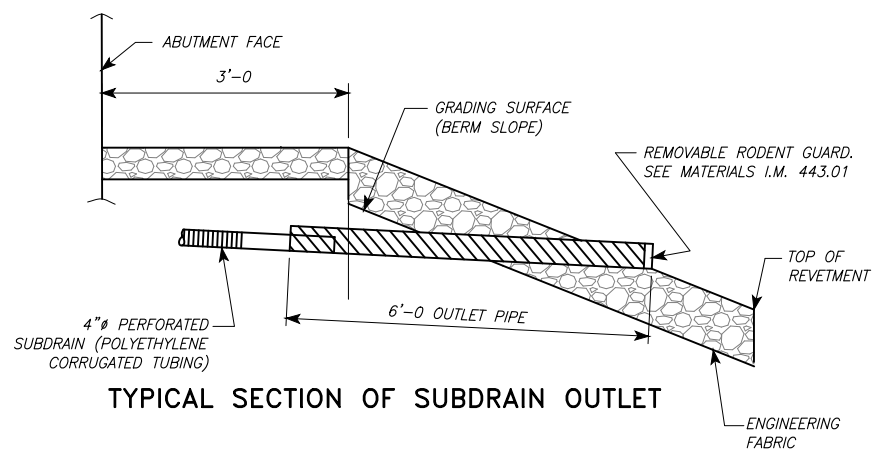
THIS PLAN SHEET SHOWS DETAILS FOR PLACING SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

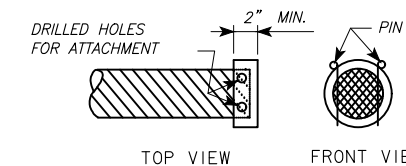
THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND ITS PLACEMENT LOCATION. THE CONTRACTOR IS TO ENSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO ENSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS.

1. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF 1'-0" INTO THE METAL OUTLET PIPE).
2. INSERT 1'-0" OF THE 4" SUBDRAIN INTO THE 6" METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE. SEE SITUATION PLAN, SHEET 4, FOR SUBDRAIN OUTLET ELEVATIONS.



TYPICAL SECTION OF SUBDRAIN OUTLET



REMOVABLE RODENT GUARD DETAILS

SUBDRAIN OUTLET DETAILS

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

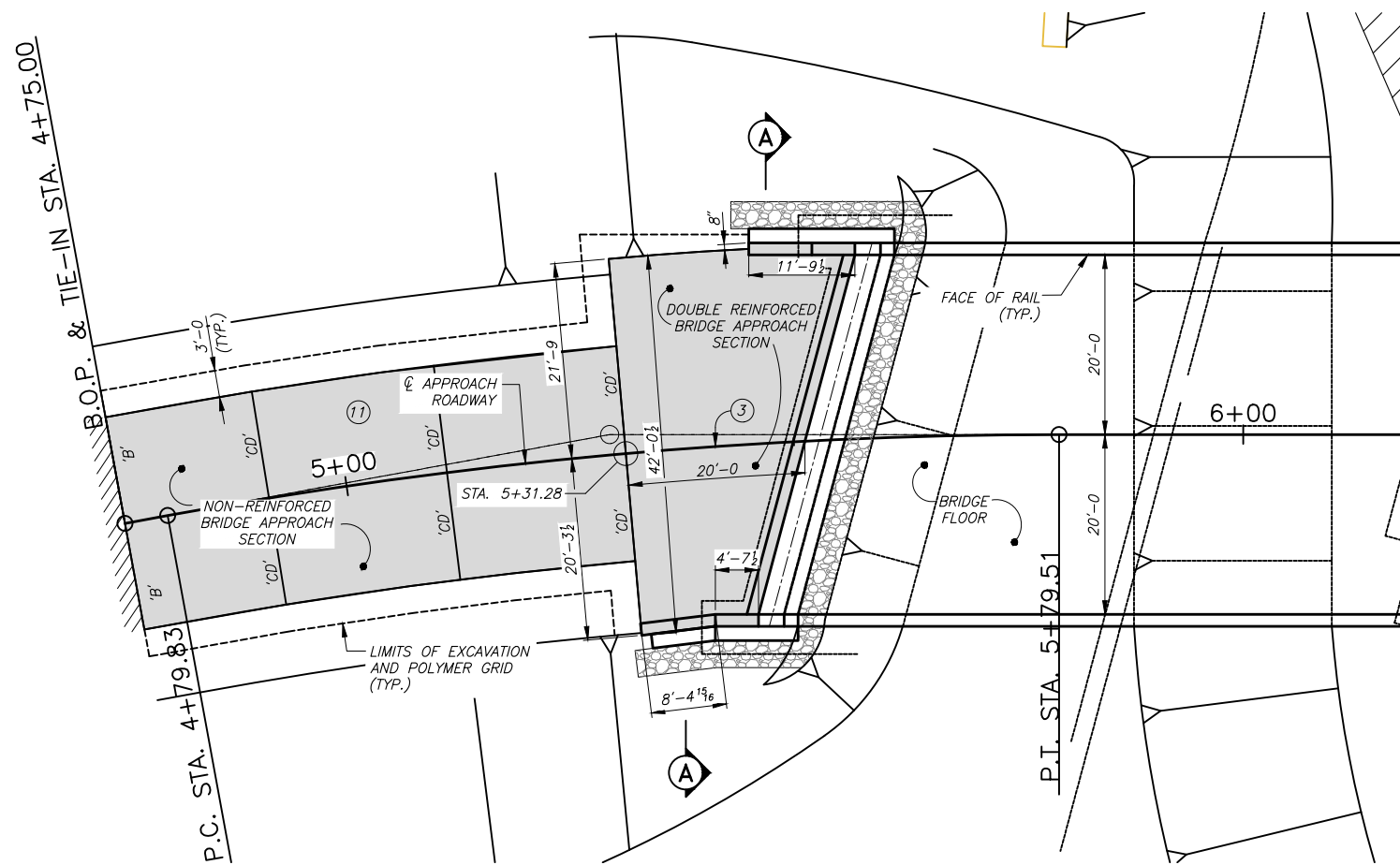
SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

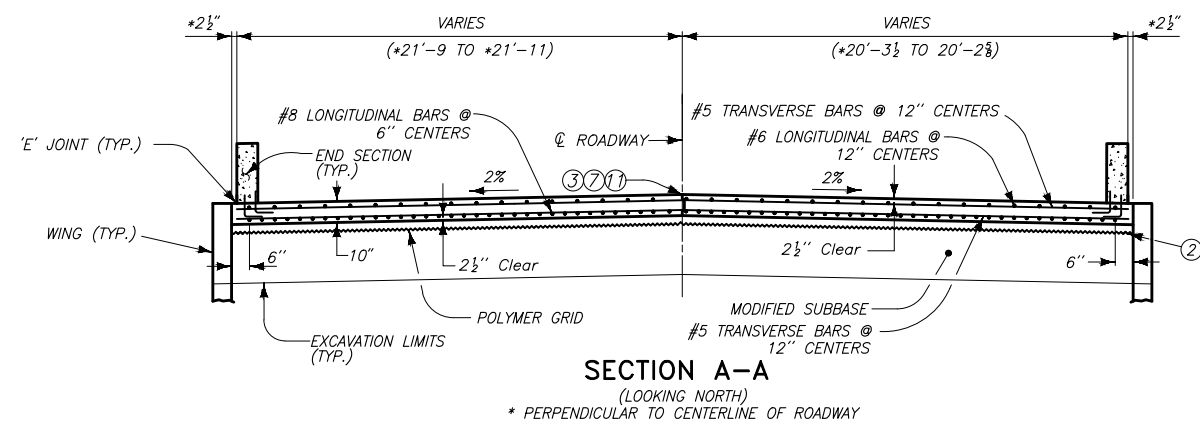
SOUTH SUBDRAIN & WING ARMORING DETAILS

STATION 6+65.00
HARDIN COUNTY,

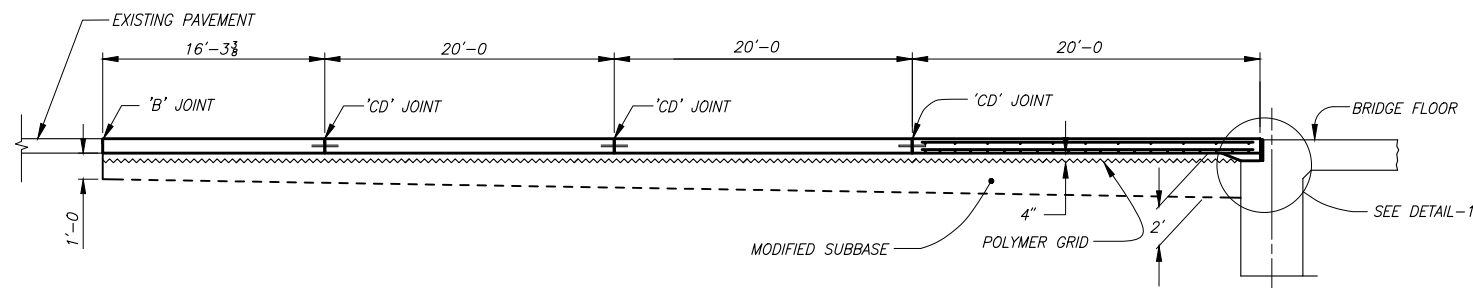
15' SKEW, LT. AHEAD
IOWA



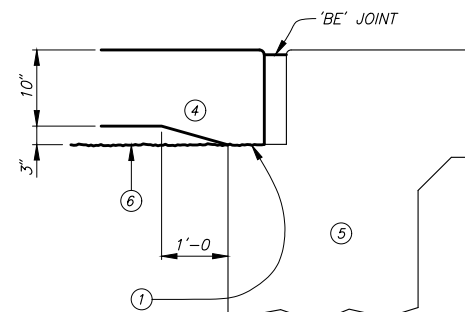
PLAN VIEW - SOUTH APPROACH



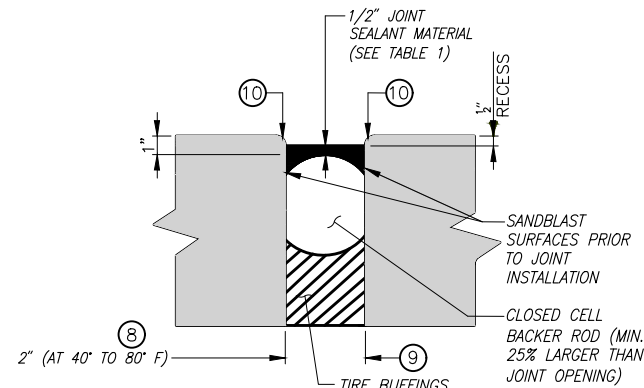
SECTION A-A
(LOOKING NORTH)
* PERPENDICULAR TO CENTERLINE OF ROADWAY



SECTION THROUGH CENTERLINE



DETAIL-1
MOVABLE ABUTMENT



'BE' JOINT DETAIL

SOUTH APPROACH PAVEMENT NOTES

THE INTENT OF THIS SHEET IS TO DETAIL THE CONSTRUCTION OF A P.C.C. BRIDGE APPROACH SECTION ABUTTING P.C.C. PAVEMENT.

THE SUBGRADE SHALL BE EXCAVATED TO THE LIMITS SHOWN. THE EXCAVATION SHALL BE BACKFILLED WITH THE SPECIFIED MATERIAL AND AN APPROVED POLYMER GRID, AS SPECIFIED IN SECTION 4196 OF THE CURRENT STANDARD SPECIFICATIONS AND INSTALLED AS SHOWN. THE POLYMER GRID SHALL BE SECURED TO THE TOP OF THE BRIDGE PAVING NOTCH AND EXTEND AS SHOWN.

A PORTION OF THE BRIDGE APPROACH PAVEMENT SECTION SHALL BE CONSTRUCTED OF REINFORCED P.C.C. WITH 6" INTEGRAL CURB; CONCRETE USED FOR CONSTRUCTION SHALL BE CLASS 'C'.

MATERIAL AND CONSTRUCTION METHODS USED SHALL BE IN ACCORDANCE WITH CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

"BRIDGE APPROACH PAVEMENT, AS PER PLAN" SHALL BE MEASURED AND PAID FOR AS SPECIFIED IN SECTION 2301 OF THE STANDARD SPECIFICATIONS. THE FOLLOWING ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED IN, THE PRICE BID FOR "BRIDGE APPROACH PAVEMENT, AS PER PLAN":

FURNISHING AND INSTALLING REINFORCING STEEL, TIE BARS AND DOWEL ASSEMBLIES.

PLACING, FINISHING, TEXTURING, TRANSVERSE GROOVING, CURING, ALL JOINT CONSTRUCTION AND ALL OTHER MATERIALS AND LABOR TO CONSTRUCT THE "BRIDGE APPROACH SECTION" AS DETAILED ON THIS SHEET.

FURNISHING AND INSTALLING POLYMER GRID.

FURNISHING AND BACKFILLING WITH MODIFIED SUBBASE

EXCAVATION FOR MODIFIED SUBBASE.

LEGEND

1. SECURE POLYMER GRID TO TOP OF PAVING NOTCH.
2. TRIM FABRIC TO EDGE OF EXCAVATION. EXTEND POLYMER GRID TO EDGE OF WINGWALL.
3. LONGITUDINAL JOINT: (PV-101)
 - SINGLE POUR - SAW CUT JOINT PER DETAIL B.
 - TWO POURS - USE 'BT-2' JOINT.
4. DOUBLE REINFORCED BRIDGE APPROACH SECTION.
5. BRIDGE ABUTMENT DIAPHRAGM
6. POLYMER GRID
7. SHIFT LONGITUDINAL BARS AS NEEDED TO MAINTAIN 2" CLEAR FROM LONGITUDINAL JOINT.
8. SETTING WIDTH NOTES:
 - WIDTH IS PERPENDICULAR TO ABUTMENT.
 - TEMPERATURE OF CONCRETE DECK ON THE UNDERSIDE OR SHADED PORTION OF THE DECK SHALL BE BETWEEN 40 TO 80 DEGREES FAHRENHEIT WHEN PLACING APPROACH SLAB CONCRETE
9. COMPACT TIRE BUFFINGS BY SPADING WITH A SQUARE-NOSE SHOVEL. TIRE BUFFINGS SHALL NOT BE LARGER THAN 1/2 INCH.
10. EDGE WITH 1/4 INCH TOOL FOR LENGTH OF JOINT INDICATED.
11. CROWN SHALL BE TRANSITIONED FROM CENTERLINE OF BRIDGE TO CENTERLINE OF ROADWAY OVER 20 FEET FROM END OF BRIDGE.

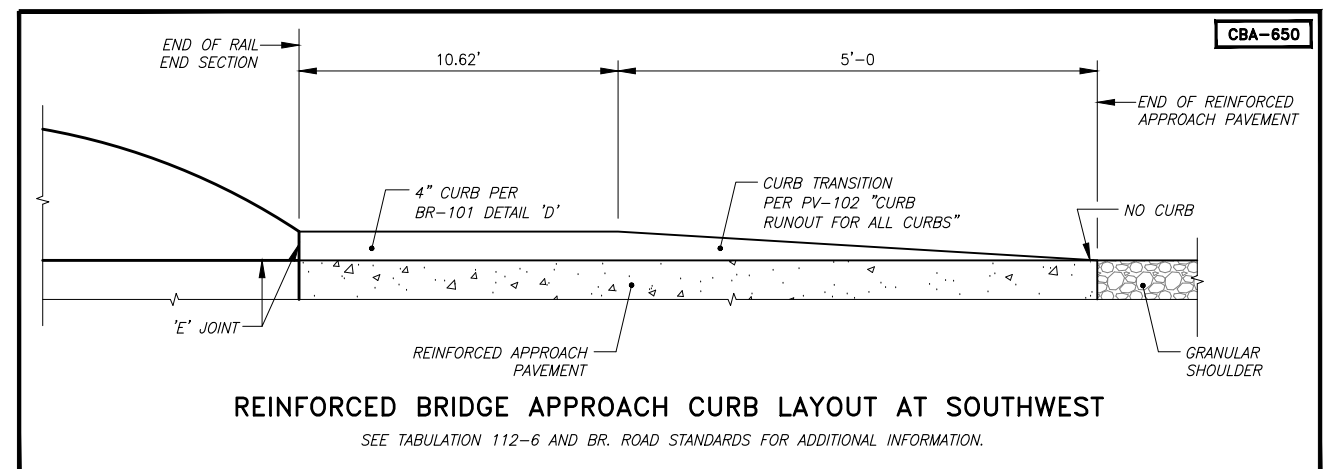


TABLE 1
APPROVED LIST OF SEALANT
DOW - DOWSIL 902 RCS
SIKA - SIKASIL 728 RCS
WATSON BOWMAN ACME - WABO SILICONESEAL
PECORA - 322FC

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)

71'-0 & 56'-0 END SPANS

TEE PIERS

97'-0 INTERIOR SPAN

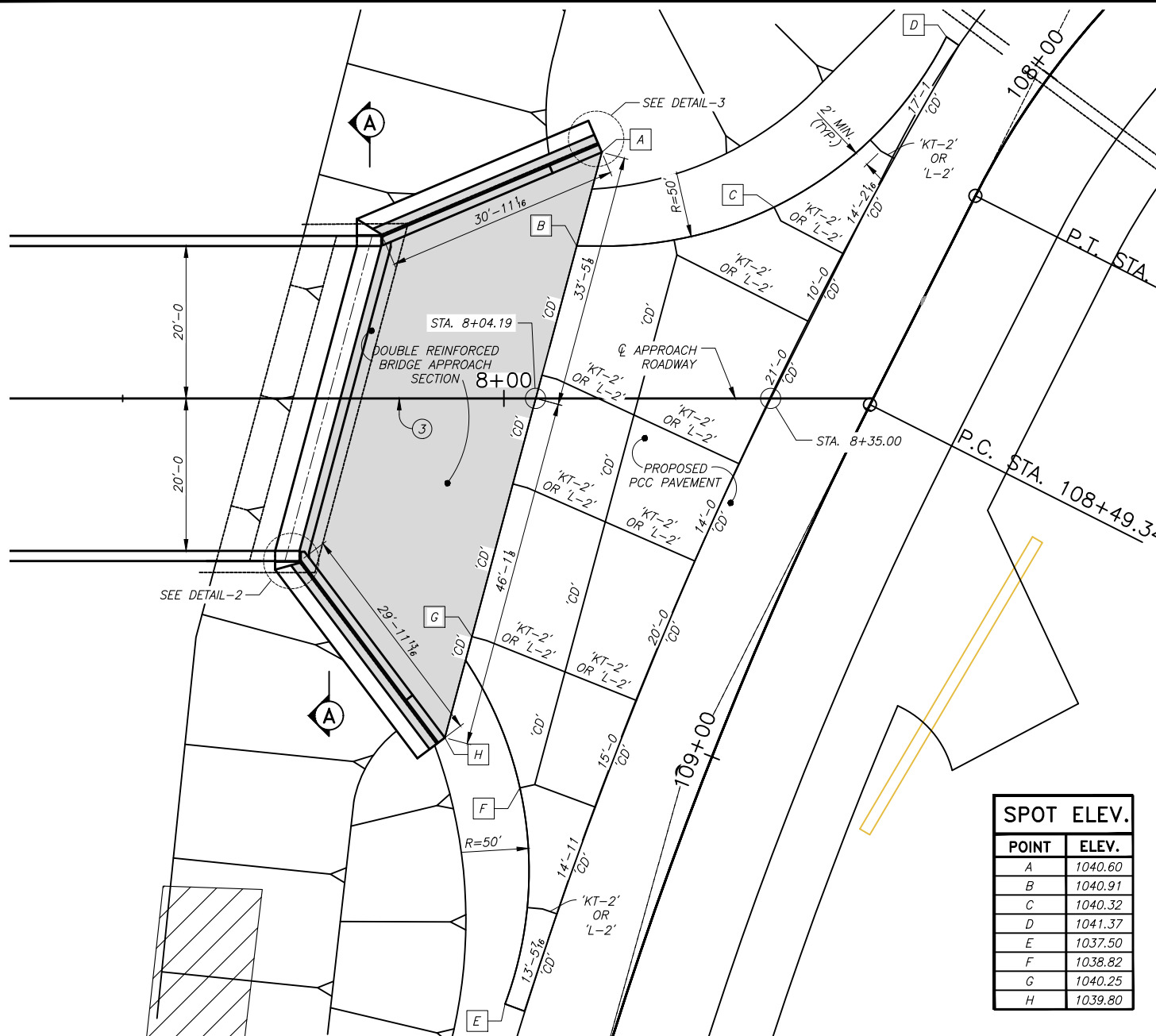
SOUTH APPROACH DETAILS

STATION 6+65.00

HARDIN COUNTY,

15' SKEW, LT. AHEAD

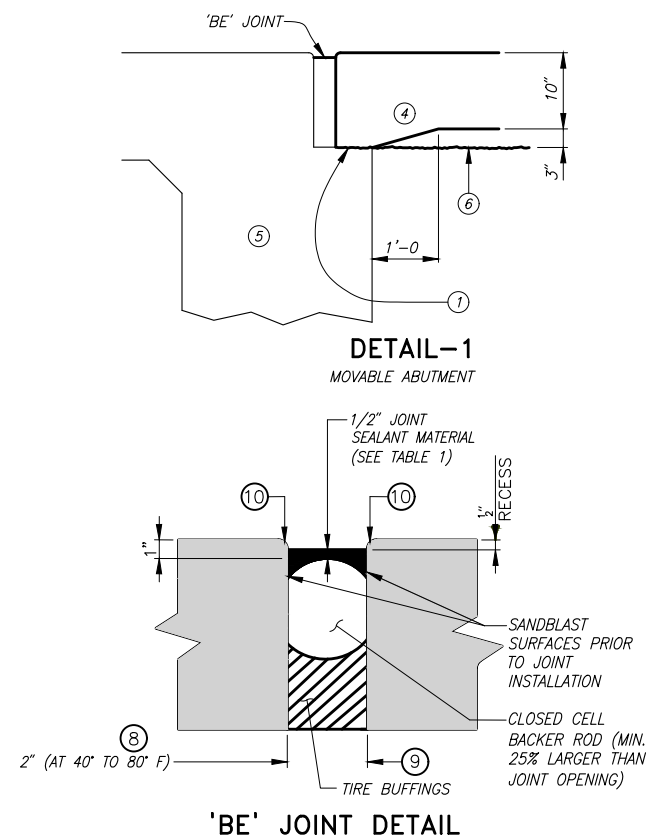
IOWA



PLAN VIEW - NORTH APPROACH

SPOT ELEV.	
POINT	ELEV.
A	1040.60
B	1040.91
C	1040.32
D	1041.37
E	1037.50
F	1038.82
G	1040.25
H	1039.80

TABLE 1	
APPROVED LIST OF SEALANT	
DOW	- DOWSIL 902 RCS
SIKA	- SIKASIL 728 RCS
WATSON BOWMAN ACME	- WABO SILICONESEAL
PECORA	- 322FC



NORTH APPROACH PAVEMENT NOTES

THE INTENT OF THIS SHEET IS TO DETAIL THE CONSTRUCTION OF A P.C.C. BRIDGE APPROACH SECTION ABUTTING P.C.C. PAVEMENT.

THE SUBGRADE SHALL BE EXCAVATED TO THE LIMITS SHOWN. THE EXCAVATION SHALL BE BACKFILLED WITH THE SPECIFIED MATERIAL AND AN APPROVED POLYMER GRID, AS SPECIFIED IN SECTION 4196 OF THE CURRENT STANDARD SPECIFICATIONS AND INSTALLED AS SHOWN. THE POLYMER GRID SHALL BE SECURED TO THE TOP OF THE BRIDGE PAVING NOTCH AND EXTEND AS SHOWN.

CONCRETE USED FOR CONSTRUCTION SHALL BE CLASS 'C'.

MATERIAL AND CONSTRUCTION METHODS USED SHALL BE IN ACCORDANCE WITH CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

"BRIDGE APPROACH PAVEMENT, AS PER PLAN" SHALL BE MEASURED AND PAID FOR AS SPECIFIED IN SECTION 2301 OF THE STANDARD SPECIFICATIONS. THE FOLLOWING ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED IN, THE PRICE BID FOR "BRIDGE APPROACH PAVEMENT, AS PER PLAN":

FURNISHING AND INSTALLING REINFORCING STEEL, TIE BARS AND DOWEL ASSEMBLIES.

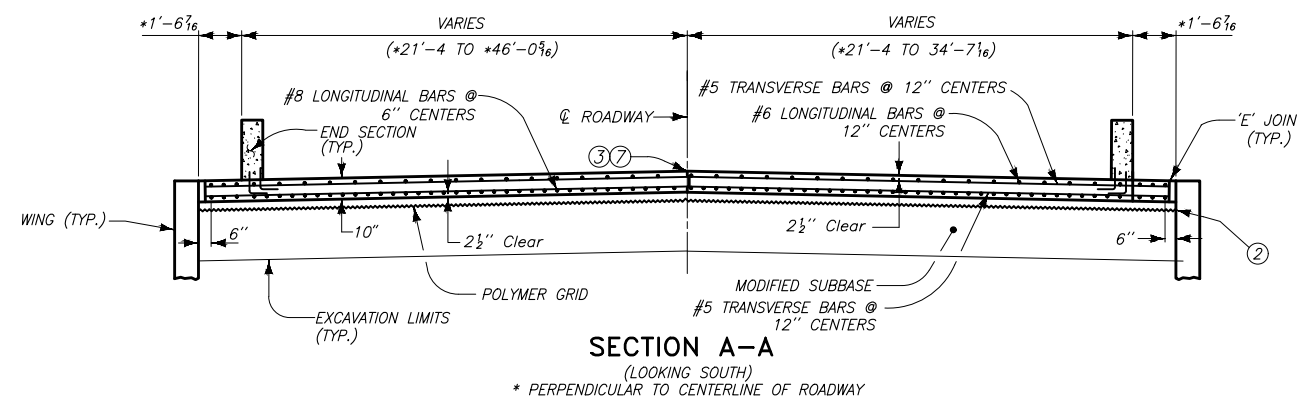
PLACING, FINISHING, TEXTURING, TRANSVERSE GROOVING, CURING, ALL JOINT CONSTRUCTION AND ALL OTHER MATERIALS AND LABOR TO CONSTRUCT THE "BRIDGE APPROACH SECTION" AS DETAILED ON THIS SHEET.

FURNISHING AND INSTALLING POLYMER GRID.

FURNISHING AND BACKFILLING WITH MODIFIED SUBBASE.

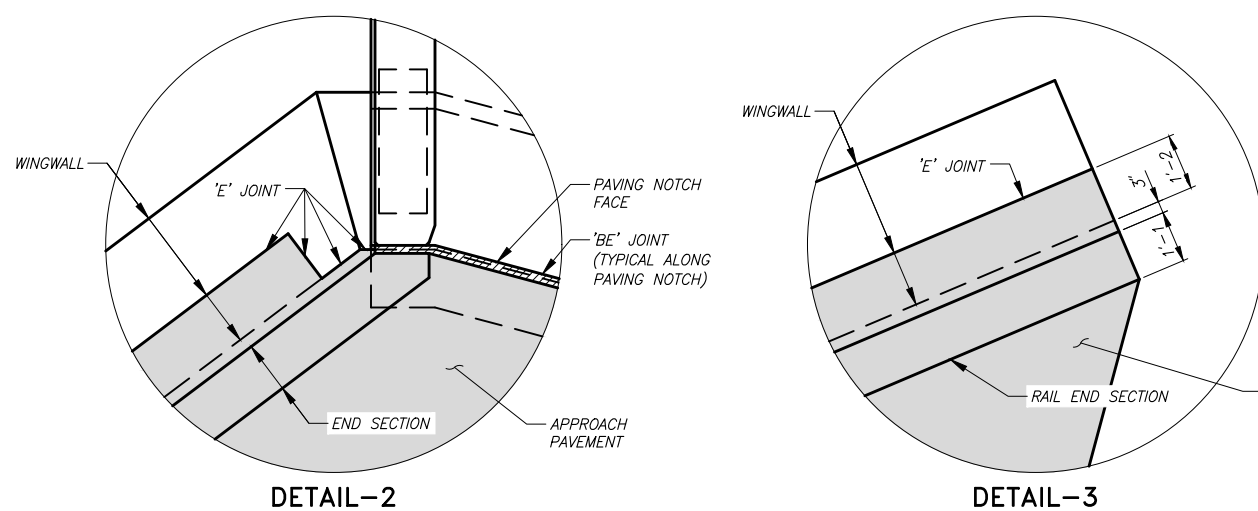
LEGEND

1. SECURE POLYMER GRID TO TOP OF PAVING NOTCH.
2. TRIM FABRIC TO EDGE OF EXCAVATION. EXTEND POLYMER GRID TO EDGE OF WINGWALL.
3. LONGITUDINAL JOINT: (PV-101)
 - SINGLE POUR - SAW CUT JOINT PER DETAIL B.
 - TWO POURS - USE 'BT-2' JOINT.
4. DOUBLE REINFORCED BRIDGE APPROACH SECTION.
5. BRIDGE ABUTMENT DIAPHRAGM
6. POLYMER GRID
7. SHIFT LONGITUDINAL BARS AS NEEDED TO MAINTAIN 2" CLEAR FROM LONGITUDINAL JOINT.
8. SETTING WIDTH NOTES:
 - WIDTH IS PERPENDICULAR TO ABUTMENT.
 - TEMPERATURE OF CONCRETE DECK ON THE UNDERSIDE OR SHADED PORTION OF THE DECK SHALL BE BETWEEN 40 TO 80 DEGREES FAHRENHEIT WHEN PLACING APPROACH SLAB CONCRETE
9. COMPACT TIRE BUFFINGS BY SPADING WITH A SQUARE-NOSE SHOVEL. TIRE BUFFINGS SHALL NOT BE LARGER THAN 1/2 INCH.
10. EDGE WITH 1/4 INCH TOOL FOR LENGTH OF JOINT INDICATED.



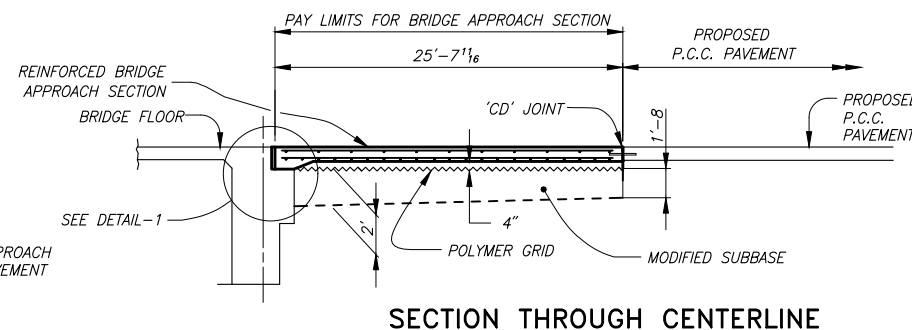
SECTION A-A

(LOOKING SOUTH)
* PERPENDICULAR TO CENTERLINE OF ROADWAY



DETAIL-2

DETAIL-3



SECTION THROUGH CENTERLINE

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)

71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

NORTH APPROACH DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA



NAVIGABLE WATER CONDITIONS

THE IOWA DNR HAS BEEN NOTIFIED THAT PADDLING ACCESS ON THE IOWA RIVER WILL BE INTERRUPTED DURING A PORTION OF THE CONSTRUCTION FOR THIS PROJECT. THE CONTRACTOR SHALL MEET THE FOLLOWING REQUIREMENTS:

1. INSTALL THE SIGNAGE SYSTEM AS DETAILED BELOW. SIGNS SHOULD BE PLACED PRIOR TO OBSTRUCTING THE RIVER AND BE REMOVED AFTER THE OBSTRUCTION IS REMOVED.
2. CONTRACTOR TO CONTACT JOHN WENCK AT JOHN.WENCK@DNR.IOWA.GOV NO LESS THAN ONE WEEK PRIOR TO PLACING AND REMOVING OBSTRUCTIONS IN CHANNEL.
3. CONTRACTOR SHALL COORDINATE SIGN PLACEMENT AND INSTALLATION WITH CONSERVATION OFFICER NATE CARR AT 515-238-2047 OR NATE.CARR@DNR.IOWA.GOV
4. CONTRACTOR TO REMOVE ALL CONSTRUCTION DEBRIS FROM RIVER CHANNEL.

ALL SIGNS SHALL USE COLOR CODING STYLE ACCORDING TO THE WATER TRAIL DEVELOPMENT MANUAL ((<https://www.iowadnr.gov/places-go/water-trails/water-trail-development#developingwater-trails-in-iowa>))

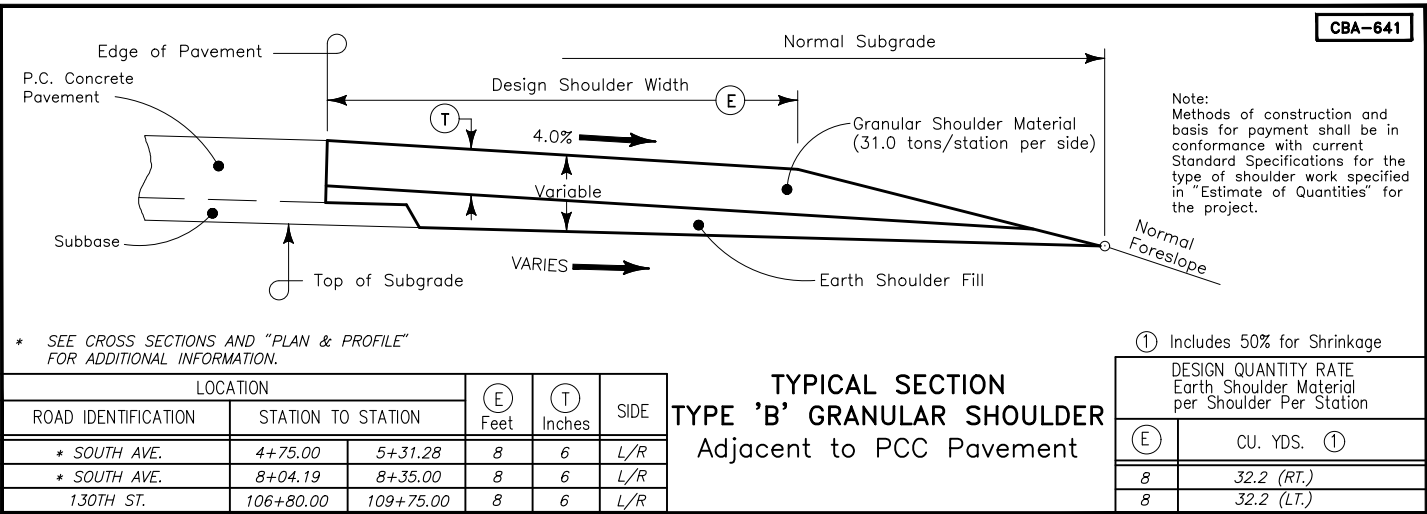
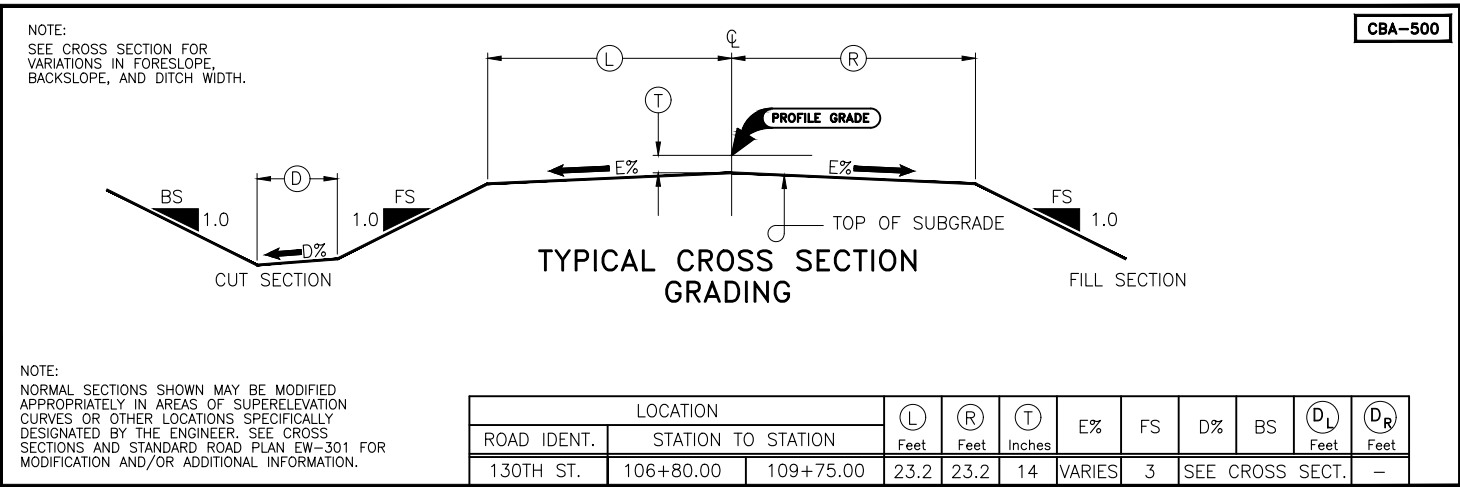
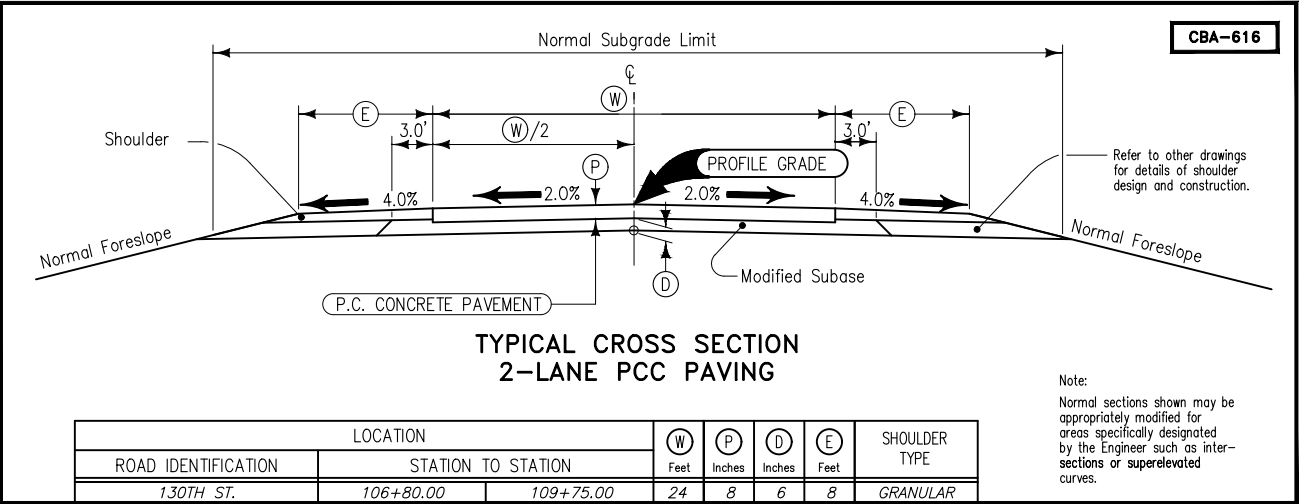
SIGN MOUNTING METHODS USED TO INSTALL TEMPORARY SIGNS SHALL BE AT THE DISCRETION OF APPLICANTS AND/OR THEIR CONTRACTORS AND ARE NOT TO BE CONSTRUED AS LIMITED TO IOWA DNR METHODS LISTED IN CHAPTER 6 OF DEVELOPING WATER TRAILS IN IOWA ([HTTPS://WWW.IOWADNR.GOV/PLACES-GO/WATER-TRAILS/WATER-TRAIL-DEVELOPMENT#DEVELOPING-WATER-TRAILS-IN-IOWA](https://www.iowadnr.gov/places-go/water-trails/water-trail-development#developingwater-trails-in-iowa))

MAINTENANCE OF PADDLE ROUTE SIGNAGE SHALL MEET THE SAME REQUIREMENTS AS ROADWAY TRAFFIC CONTROL PER STANDARD SPECIFICATIONS ARTICLES 2528.01C, 2528.02 AND 2528.03.

SIGNS SHALL BE MAINTAINED BY THE CONTRACTOR SO AS TO BE VISIBLE THROUGHOUT THE PERIOD THE CHANNEL IS OBSTRUCTED. WHEN OBSTRUCTIONS TO THE CHANNEL ARE NOT NEEDED FOR A PERIOD OF 30 DAYS OR GREATER, SIGNAGE SHOULD BE TEMPORARILY REMOVED.

LABOR, MATERIAL AND EQUIPMENT REQUIRED TO PLACE AND MAINTAIN SIGNAGE SHALL BE INCIDENTAL TO THE "TRAFFIC CONTROL" BID ITEM.

Sign # on Map	Quantity	Style	Minimum Letter Height	Language	Location Orientation
1	4	Red/Danger	4"	No Thru Traffic	At bridge site, opposite sides of the river, 1 pair facing upstream, 1 pair facing downstream; OR, 2 signs placed near center of channel 12 feet above regular water level, one facing upstream, one facing downstream.



224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

TYPICAL SECTIONS &
NAVIGABLE WATER DETAILS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

105_04
4/21/26

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
BR-101	04-21-26	Bridge Approach Section (General Details)
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	04-18-23	Connected Pipe Joints
DR-201	10-17-23	Concrete Aprons
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
EW-501	10-17-23	Rural Entrance
MI-210	10-21-25	PCC Driveways and Alleys
PM-110	10-15-24	Line Types
PM-120	10-15-24	Stop Lines and Islands
PV-101	01-01-26	Joints
PV-102	10-21-25	PCC Curb Details
PV-301	04-15-25	Superelevation Details Two Lane Roadway
TC-252	10-21-25	Routes Closed to Traffic

108_13A
3/27/25

SAFETY CLOSURES

Refer to Section 2528 of the Standard Specifications

Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
4+00.00	1		SOUTH AVE, S. END
106+50.00	1		130TH ST, W. END
110+50.00	1		130TH ST, E. END

112_06
2/22/24

BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

Line No.	Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Class 'A' * Crushed Stone Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
1.0	6+65.00	S	15.0		10.0	76.3	150.1		94.9									320.000	300.0		
2.0	6+65.00	N	15.0		10.0	25.6			182.7									235.000	185.0		
Total:							150.1		277.6												

104_03
3/18/24

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe
(3) Backfill according to DR-101

Drainage Area (ACRE)	Location	Type	Size (IN) (1)	Pipe Classification	Kind of Pipe (2)	Length New Const. (LF)	Length of total that is Trenchless	Bedding Class	Design Cover (H) (FT)	Camber* (DR-102) (FT)	Apron No. (IN)	Apron No. (OUT)	Apron Guard* (DR-213) (No.)	Elbow* (DR-141) (No.)	Diaphragm* (DR-501) (No.)	Tee Section* (DR-142) (No.)	"D" Section* (DR-141) (No.)	Reducer* (No.)	Type 'C' Conn.* (DR-122)	Type 'C' Conn.* (No.)	Connected Pipe Joint* (DR-121)	4" Perforated Subdrain* (FT)	Flow Line Elevation LT.	Flow Line Elevation RT.	Flow Line Elevation Other	Flow Line Elevation Other	Dimensions Lineal Feet Total (Left)	Dimensions Lineal Feet Total (Right)	Dimensions Lineal Feet Extensions	Dimensions Lineal Feet Extensions	Skew Ahead Degrees (Left)	Skew Ahead Degrees (Right)	Dike Location	Dike Station	Dike Elevation	Dike Type	Class 20 (CY)	Flowable Mortar	Floodable Backfill* (A)	Porous Backfill* (B)	Flooded Backfill (A+B)	Remarks
	108+00.00	DR-601	18.0	3000D	RCP	68.0		B	3.20		1	1									Type 2		1037.00	1035.90			32.00	36.00									145.0	10.0	40.0	5.0	45.0	

110_01
4/5/24

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5.

* Not a bid item.

Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	4+75.00	6+18.00	Both	HMA	361.7	23.3	SOUTH END, N. AVE
2.0	7+83.00	8+35.00	Both	HMA	271.3		NORTH END, N. AVE
3.0	106+80.00	109+75.00	Both	HMA	1052.1	48.0	130TH ST
Total:					1685.1		

TRAFFIC CONTROL PLAN

1. ROUTE WILL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC DURING CONSTRUCTION.
2. TRAFFIC CONTROL ON THE PROJECT SHALL BE IN ACCORDANCE WITH STANDARD ROAD PLAN TC-252.
3. TRAFFIC WILL BE MAINTAINED ON A DETOUR ROUTE. HARDIN COUNTY WILL PROVIDE, MAINTAIN AND REMOVE DETOUR ROUTE.
4. HARDIN COUNTY MAINTENANCE SHALL SALVAGE EXISTING ROAD MARKERS AFTER THE ROAD CLOSED.
5. PERMANENT REGULATORY SIGNS SHALL BE RESPONSIBILITY OF HARDIN COUNTY.

224'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) & HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

TABULATIONS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

CALHOUN-BURNS & ASSOCIATES, CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50266
(515) 224-4344

JOB NO. 2023205

DESIGNED BY : KLS
DRAWN BY : JML
CHECKED BY : KAB

HARDIN COUNTY

PROJECT NO. BRS-3720(616)--60-42

SHEET 55 OF 63

108.22
11/25/25

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.

*BCY4 - Place on the same side of the roadway to match existing markings near the project.

**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.

***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17

CBW6: Crosswalk Bar (White) @ 10.00

CLW6: Crosswalk Line (White) @ 2.00

DLW4: Dotted Line (White) @ 0.22

ELW6: Edge Line Right (White) @ 1.00

MNY6: Median Nose (Yellow) @ 1.00

RLY4: Ramp Edge Line Left (Yellow) @ 0.67

SPW4: Sloped Curb 4" (White) @ 2.16

STY6: Standard Curb 6" (Yellow) @ 2.03

BCY6: Broken Centerline (Yellow) @ 0.25

CHW8: Channelizing Line (White) @ 1.33

DCY4: Double Centerline (Yellow) @ 1.34

DLW6: Dotted Line (White) @ 0.33

ELY4: Edge Line Left (Yellow) @ 0.67

NPY4: No Passing Zone Line (Yellow) @ 0.84

RLY6: Ramp Edge Line Left (Yellow) @ 1.00

SPW6: Sloped Curb 6" (White) @ 2.28

YLW2: Yield Line (White) @ 1.15

BLC6: Broken Line Contrast (White/Black) @ 0.50

CHW10: Channelizing Line (White) @ 1.67

DCY6: Double Centerline (Yellow) @ 2.00

DLY4: Dotted Line (Yellow) @ 0.22

ELY6: Edge Line Left (Yellow) @ 1.00

NPY6: No Passing Zone Line (Yellow) @ 1.25

SLW2: Stop Line (White) @ 4.00

SPY4: Sloped Curb 4" (Yellow) @ 2.16

BLW4: Broken Lane Line (White) @ 0.17

CHY8: Channelizing Line (Yellow) @ 1.33

DDY4: Double Dotted Line (Yellow) @ 0.44

DLY6: Dotted Line (Yellow) @ 0.33

LDW8: Lane Drop (White) @ 0.33

RLW4: Ramp Edge Line Right (White) @ 0.67

SLW4: Solid Lane Line (White) @ 0.67

SPY6: Sloped Curb 6" (Yellow) @ 2.28

BLW6: Broken Lane Line (White) @ 0.25

CHY10: Channelizing Line (Yellow) @ 1.67

DDY6: Double Dotted Line (Yellow) @ 0.67

ELW4: Edge Line Right (White) @ 0.67

LDW10: Lane Drop (White) @ 0.42

RLW6: Ramp Edge Line Right (White) @ 1.00

SLW6: Solid Lane Line (White) @ 1.00

STW6: Standard Curb 6" (Yellow) @ 2.03

102.03
10/15/24

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.

(1) Refer to MI-210.

(2) Refer to EW-501.

(3) Refer to EW-501 or EW-502.

*Predetermined for access point not constructed with this project.

Line No.	Station	Side	Access Type	Descriptor	Case	Curb Type	Curb Length (1) (LF)	Width (FT)	PR (1) (2) (FT)	SR (2) (FT)	Pipe Culvert (H) (3) (FT)	Pipe Culvert Size (3) (IN)	Culvert Length (3) (LF)	Pipe Culvert Lt. (3) (LF)	Pipe Culvert Rt. (3) (LF)	Culvert Aprons (3) (No.)	Driveway Surface Type	Driveway Surface Area (SY)	Driveway Surfacing Material (TON)	Remarks
1.0	107+00.00	Left	C					VARIES		-							Granular		15.000	RESTORE SURFACE
2.0	108+75.00	Left	C					VARIES		-							PCC	71.3		REMOVE EXISTING PIPE

110.07A
8/15/22

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.

(2) Includes length of End Terminals and End Anchors.

Line No.	No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1.0	1	SB	5+56.00	6+16.00	Left	61.0
2.0	2	NB	5+61.00	6+20.00	Right	61.0
3.0	3	SB	7+83.00	8+41.00	Left	60.0
Total:						182

110.08
8/15/22

REMOVAL OF CONCRETE DRIVES

* Not a Bid Item.

Line No.	Station	Side	Area (SY)	Saw Cut* (LF)	Remarks
1.0	108+75.00	Left	71.3		HMA OF UNKNOWN THICKNESS

CBA-101

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION TYPE	RAW CUT	RAW FILL	WASTE **	USABLE CUT	SHRINKAGE FACTOR	FILL +35% SHRINKAGE	PAYMENT
	CY	CY	CY	CY		CY	QUANTITY CY
CLASS 10, ROADWAY AND BORROW	510	110	361	149	35%	149	510
CLASS 10, CHANNEL	4,180	480	3,532	648	35%	648	4,180
CLASS 20	1,711	983	728	1,327*	35%	1,327	1,711
CLASS 21	1,434	620	814	837*	35%	837	1,434
CLASS 22	664	0	664	0	35%	0	664
TOTALS			6,099	2,961		2,961	

* INCLUDES MATERIAL TO BACKFILL IN-SITU MATERIAL AT NORTH ABUTMENT AND PIERS.

** ASSUMES SOME MATERIAL WILL BE UNSUITABLE AND EXCESS AND WILL NEED TO BE WASTED OFF SITE.

SURVEY CONTROL POINTS

CBA-300

Description	Northing	Eastings	Approx. Station	Approx. Offset	Elevation
SCREW HUB IN PP	8597289.97	14929240.49	110+35	24' RT.	1037.07
ROW PIN	8597301.07	14929353.19	111+32	33' LT.	1033.27
CP #1, 3/4" REBAR	8597122.72	14929905.40	-	-	1032.33

224'-0 x 40'-0 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SEMI-INTEGRAL ABUTMENT (S.) &
HIGH CONCRETE ABUTMENT (N.)
71'-0 & 56'-0 END SPANS

TEE PIERS
97'-0 INTERIOR SPAN

TABULATIONS

STATION 6+65.00
HARDIN COUNTY,

15' SKEW, LT. AHEAD
IOWA

CBA

CALHOUN-BURNS & ASSOCIATES, CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50266

DESIGNED BY : KLS
DRAWN BY : JML
CHECKED BY : KAB

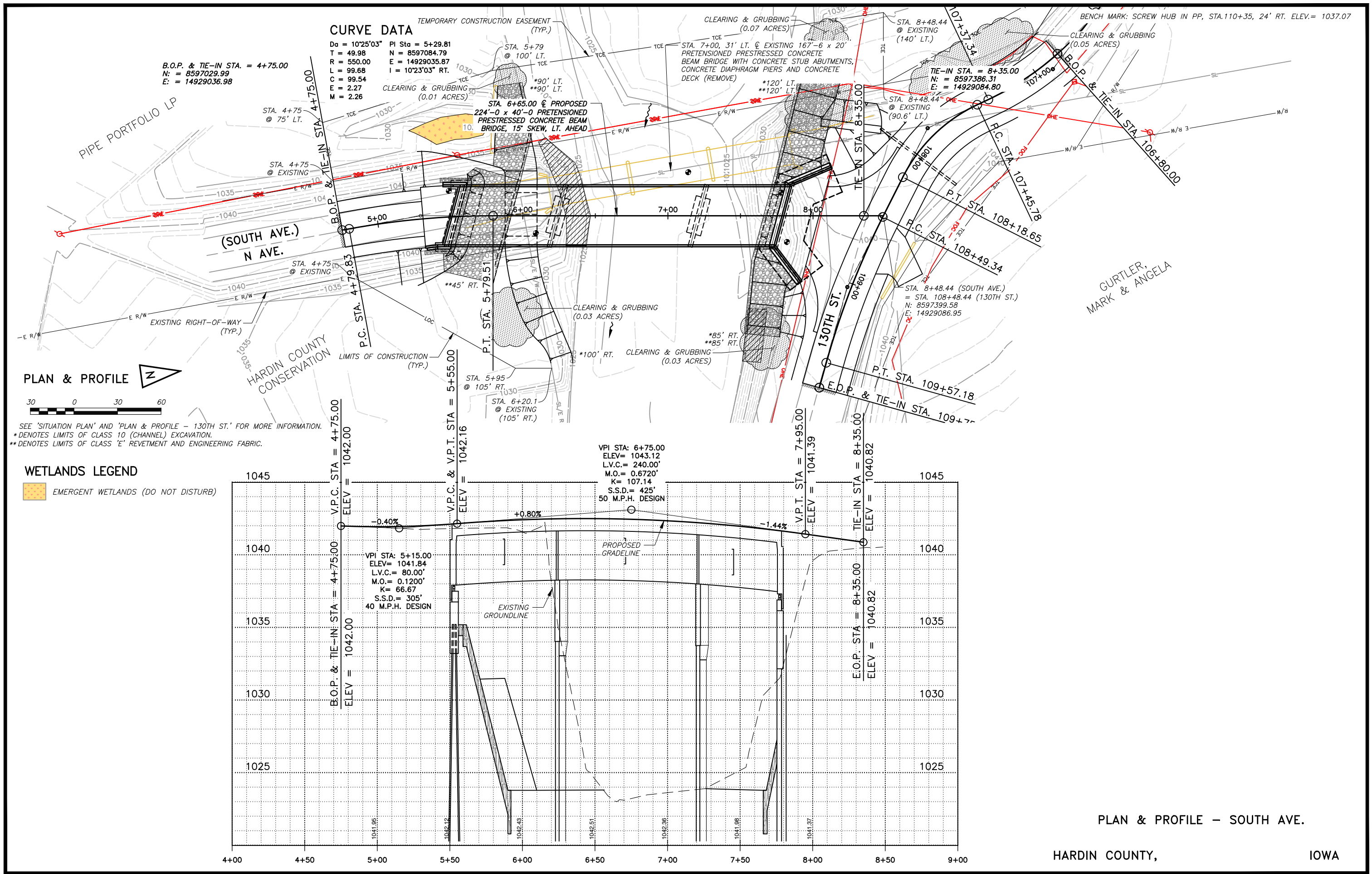
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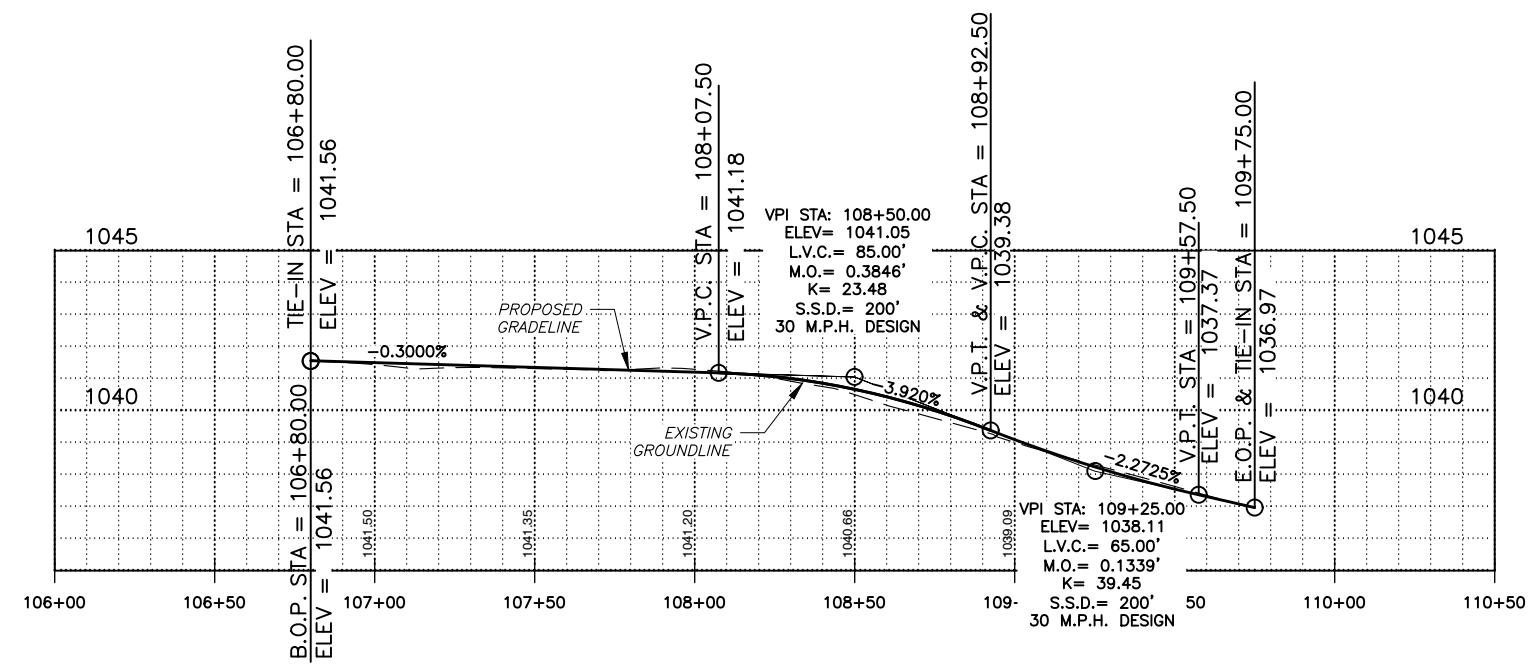
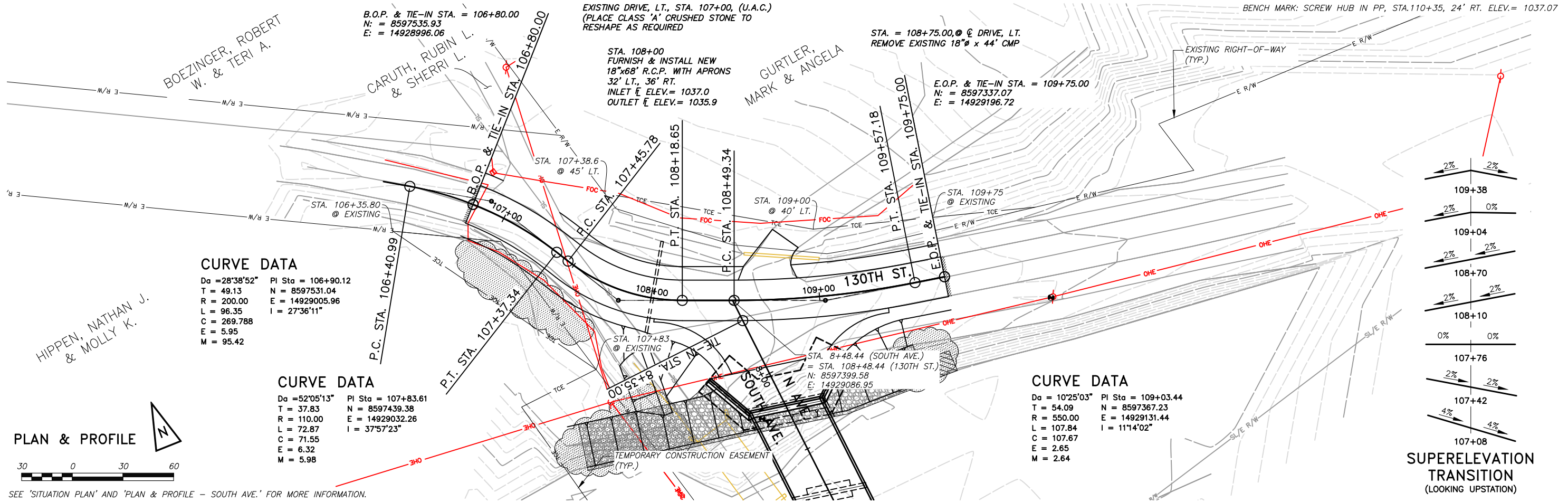
JOB NO. 2023205

HARDIN COUNTY

PROJECT NO. BRS-3720(616)--60-42

SHEET 56 OF 63

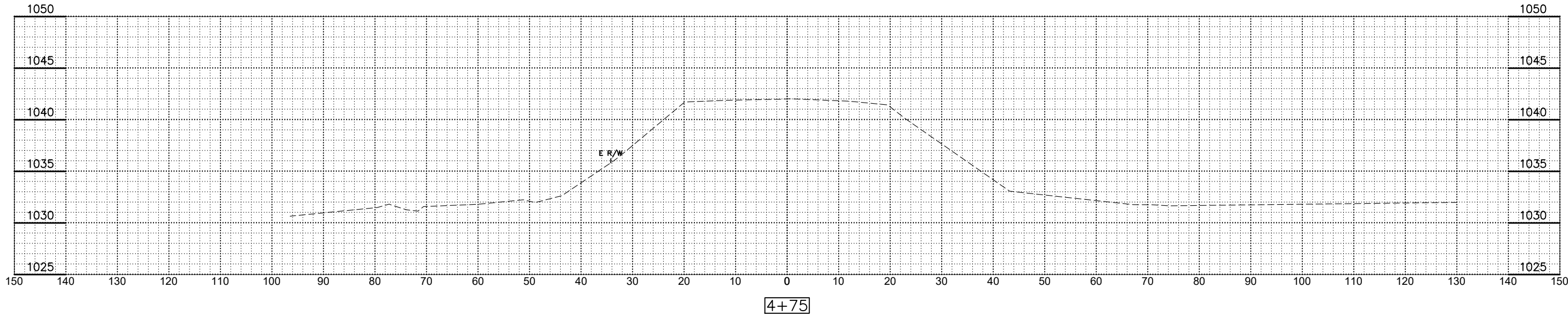
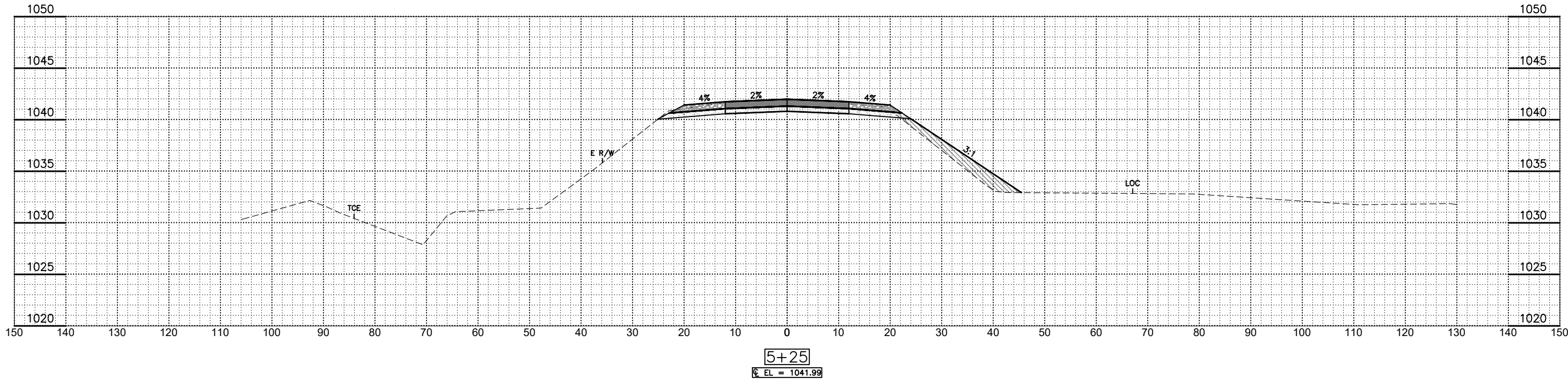




PLAN & PROFILE - 130TH ST.

HARDIN COUNTY,

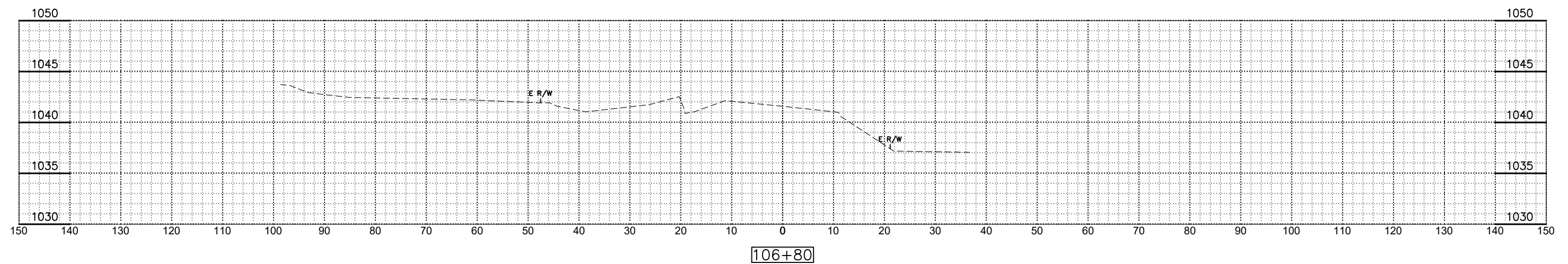
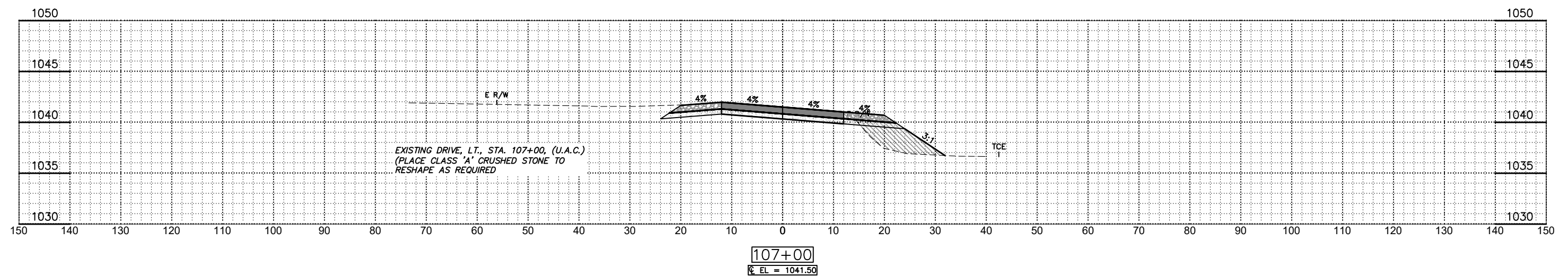
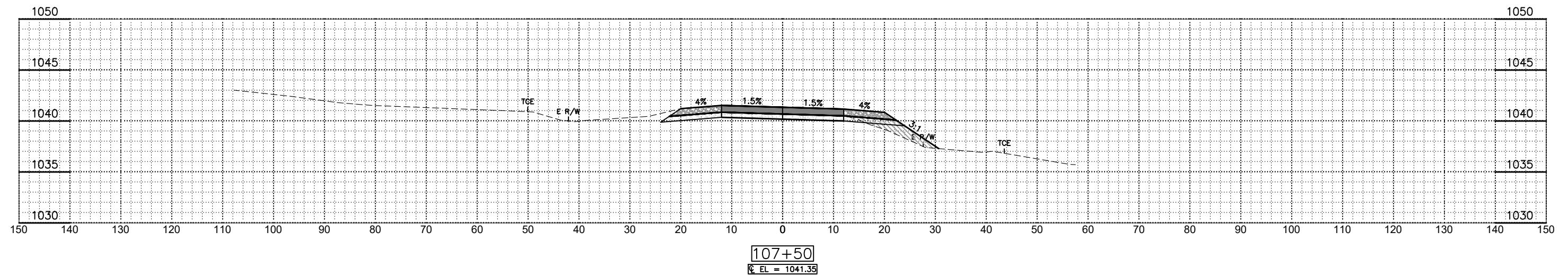
IOWA



CROSS SECTIONS – SOUTH AVE.

HARDIN COUNTY,

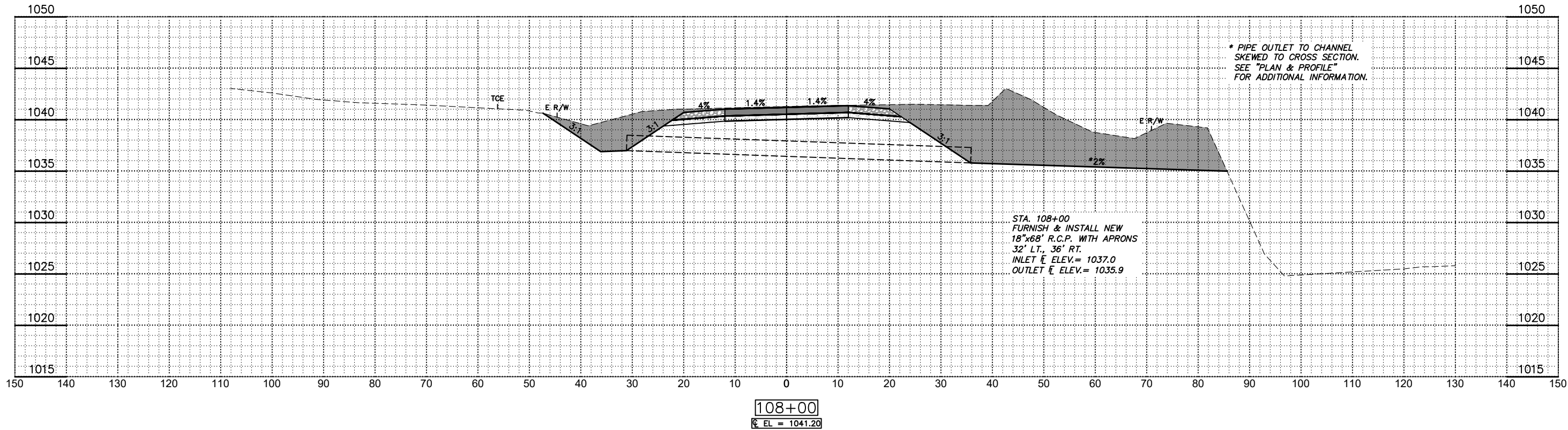
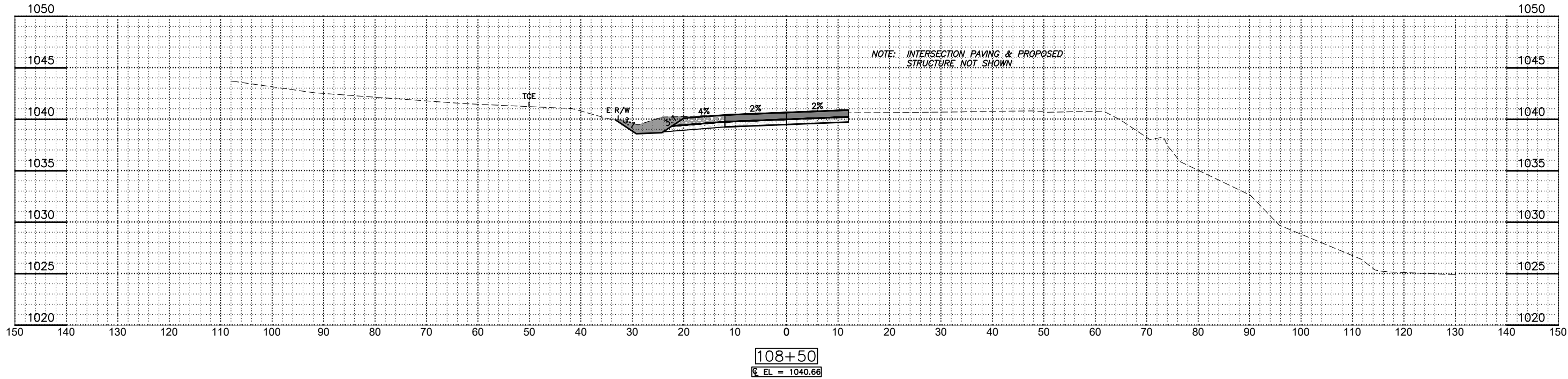
IOWA



CROSS SECTIONS - 130TH ST.

HARDIN COUNTY,

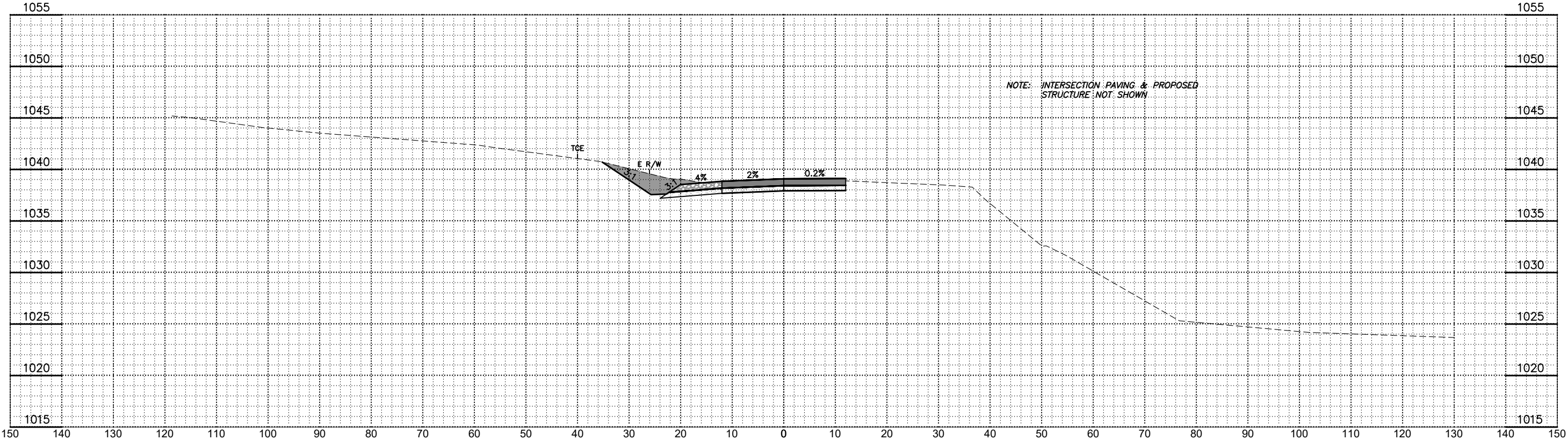
IOWA



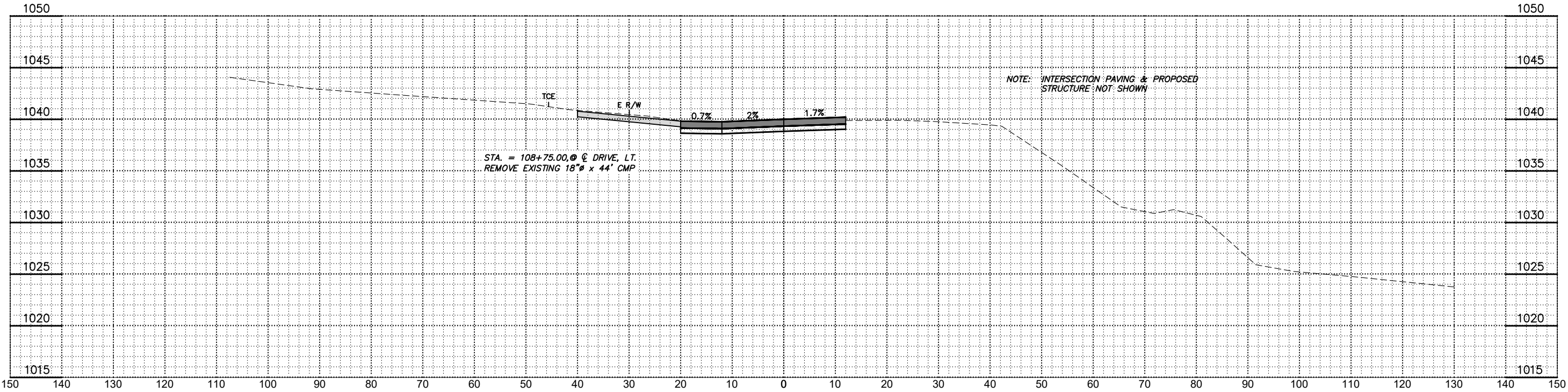
CROSS SECTIONS - 130TH ST.

HARDIN COUNTY,

IOWA



109+00
EL = 1039.09

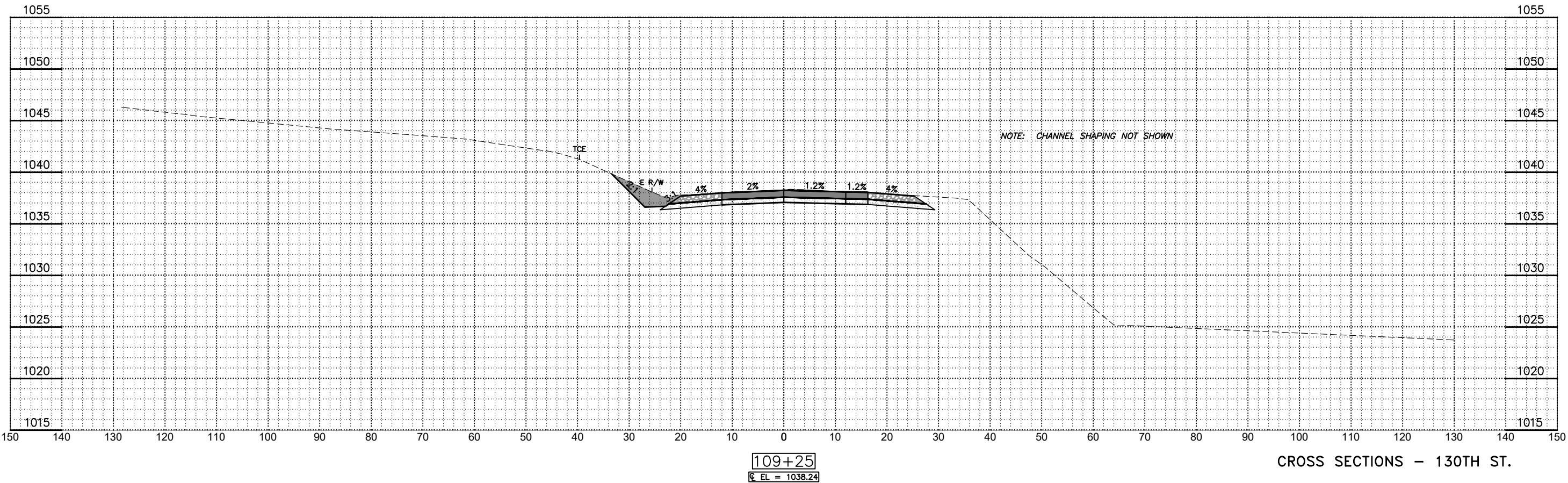
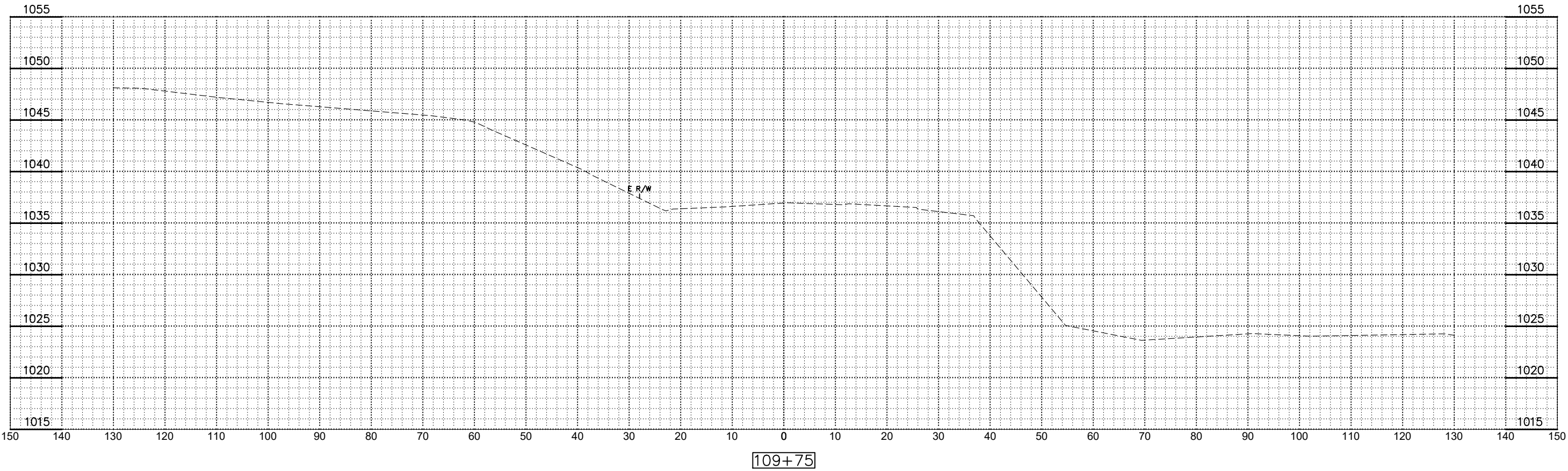


108+75
EL = 1040.00

CROSS SECTIONS - 130TH ST.

HARDIN COUNTY,

IOWA



CROSS SECTIONS - 130TH ST.

HARDIN COUNTY,

IOWA