

CONVENTIONAL SIGNS

CITY LIMITS	
STATE OR COUNTY LINES	
SECTION LINES	
FENCE LINES	
RIGHT OF WAY LINES	
GUARD RAIL	
TRAVELED WAY	
BASE OR SURVEY LINE	
RAILROADS	
PRESENT TILE DRAINS	
PROPOSED TILE DRAINS	
PIPE LINE	
CULVERTS	
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES	
PRIMARY ROAD NUMBERS	
U.S. ROAD NUMBERS	
INTERSTATE ROAD NUMBERS	

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLAN & PROFILE OF PROPOSED IMPROVEMENT
ON THE

FARM TO MARKET SYSTEM
CRAWFORD COUNTY
PROJECT NO. LSN-220-BB--73-24
DESIGN FOR 243'-0" X 30'-0" PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

SCALES
PLAN 1 INCH = 100 FT.
PROFILE HOR. 1 INCH = 100 FT. VERT. 1 INCH = 10 FT.

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1972 SHALL
APPLY TO WORK ON THIS PROJECT, PLUS
CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA		1972	1	2

INDEX OF SHEETS

SHEET NO 1	TITLE PAGE, INCLUDING CONVENTIONAL SIGNS, LAYOUT, AND MILEAGE SUMMARY
2	DETAILS

MILEAGE SUMMARY
246'-0" = 0.04659 MI.



PROJECT NO. LSN-220-BB--73-24 SEC. 10		STA. 12+50.50 UNION TOWNSHIP			
243'-0" X 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE					
ITEM NO.	ITEM	ESTIMATE OF QUANTITIES			
		ABUTMENTS	PIERS	SUPERSTRUCTURE	TOTALS
1	STRUCTURAL CONCRETE	① 273 C.Y.	② 174.2 + 48.5 C.Y.	262.9 C.Y.	438.7 C.Y.
2	REINFORCING STEEL		21,552 + 7,272 L.B.	66,161 L.B.	83,433 L.B.
3	PRETENSIONED PRESTRESSED CONCRETE BEAMS 15-C80			15	15
4	CRESOTED PILES 60 @ 30'		1,800 L.F.		1,800 L.F.
5	STEEL H PILE FURNISH 14 @ 65'	910 L.F.			910 L.F.
6	IOBP42 DRIVE 14 @ 65'	910 L.F.			910 L.F.
7	ALUMINUM RAILING			493.0 L.F.	493.0 L.F.
8	EXCAV. CLASS 10 CHANNEL				1,830 C.Y.
9	EXCAV. CLASS 20	92 C.Y.			92 C.Y.
10	EXCAV. CLASS 21		208 C.Y.		208 C.Y.
11	GRANULAR BACKFILL	86 C.Y.			86 C.Y.
12	4" φ TILE SUBDRAIN	132 L.F.			132 L.F.
	REMOVAL OF EXISTING STRUCTURE				BY OTHERS

IOWA STATE HIGHWAY COMMISSION STANDARDS REQUIRED (MAY BE OBTAINED @ STOREROOM)		
STANDARD	DATE ISSUED	LATEST REVISION
H16-70	JUNE 1969	JUNE 1969
H16-1-70	JUNE 1969	JUNE 1969
H16-2-70	JUNE 1969	JUNE 1969
H16-3-70	JUNE 1969	JUNE 1969
H16-10-70	JUNE 1969	JUNE 1969
H16-11-70	JUNE 1969	JUNE 1969
H16-16-70	NOV. 1970	NOV. 1970
H16-18-70	NOV. 1970	NOV. 1970

1- THE FLOOR, CURBS, AND WING POSTS, 262.9 CU. YDS., ARE TO BE CLASS "D" CONCRETE. THE REMAINING 175.8 CU. YDS. IS TO BE CLASS "C" CONCRETE.
① ADD 0.6 CU. YDS. TO THICKEN STEPS, FOR SUPERELEVATING TOP OF ABUTMENTS.
② ADD 0.7 CU. YDS. TO THICKEN STEPS, FOR SUPERELEVATING TOP OF PIERS.

NOTE: BRIDGE CONTRACTOR TO COORDINATE HIS WORK WITH GRADING CONTRACTOR TO EXPEDITE ENTIRE PROJECT.

BRIDGE SIGN ASSEMBLY NOTE: THIS BRIDGE WILL REQUIRE BRIDGE SIGN ASSEMBLIES (FURNISHED AND PLACED BY OTHERS) IN ACCORDANCE WITH SECTION 2C-5 OF I.S.H.C. "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," DATED 1963. APPROVED

IN.R.C. NO. 72-61 DATE APRIL 15, 1972

STA. 12+50.50 @ 243'-0" X 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE.

John Hildebrandt

Merrill Arnold

W. O. Stulck

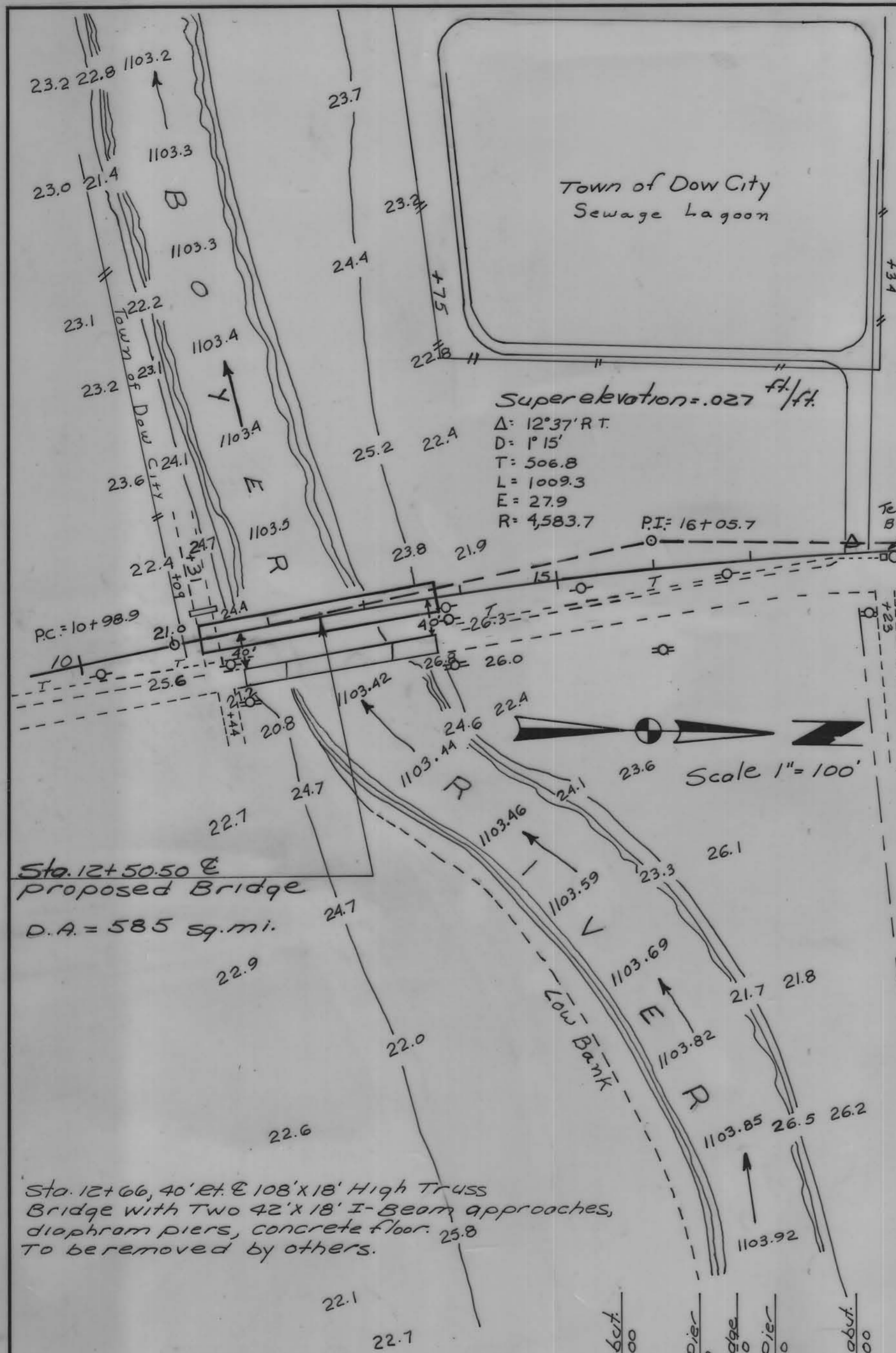
Harold Luller

Clarence Stammer
BOARD OF SUPERVISORS

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer and a Civil Surveyor, under the laws of the State of Iowa.
Signed: *H. Dale Wight* Date: *May 4 1972*
H. DALE WIGHT, P. E. & L. S. Iowa, Reg. No. 5798

APPROVED
Thomas E. De Witte 5-31-72
DEPUTY CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER DATE



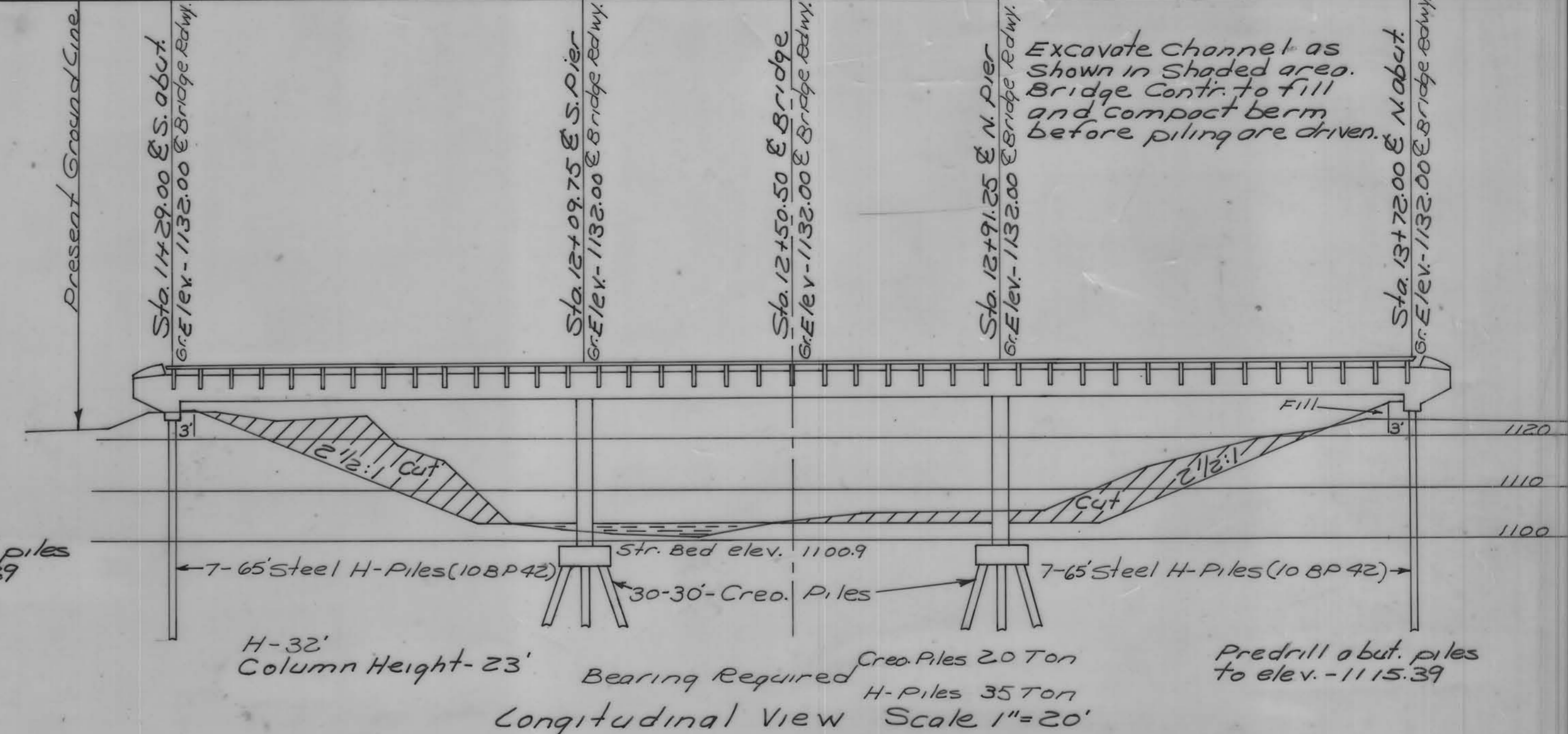
Surf. Elev. 1105.35 C-6692
1.5' Ice and Water
10.0 Sand
12.0 Coarse Sand ~ occ. Boulders
17.0 Gravelly Sand
5.0 Shale
Sta. 12+91 Rt. 20'

Surf. Elev. 1103.98 C-6693
1.5' Ice and Water
8.5 Soft Sandy clay
10.0 Coarse Sand ~ occ. Boulders
18.5 Gravelly Sand
3.0 Shale
Sta. 12+05 Lt. 5'

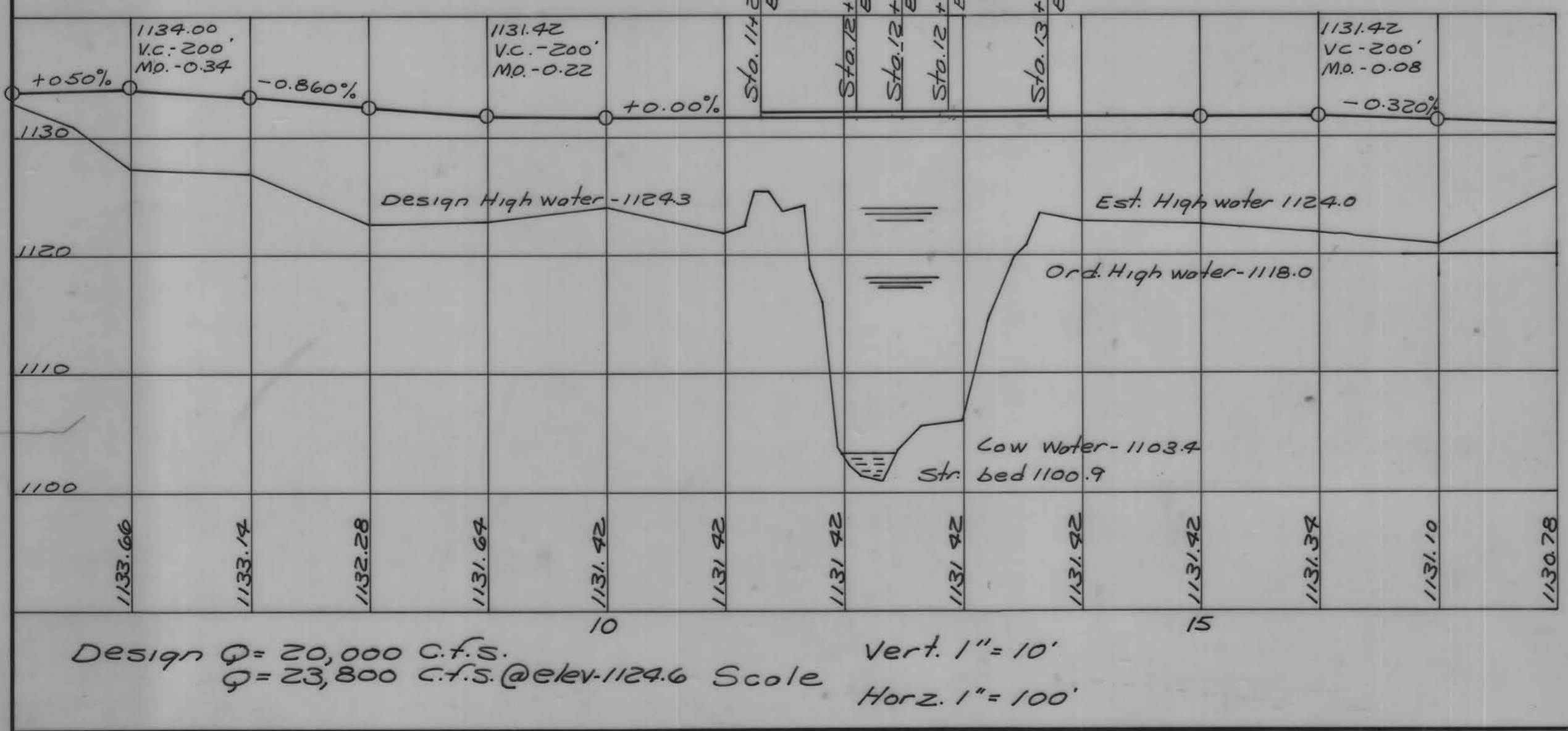
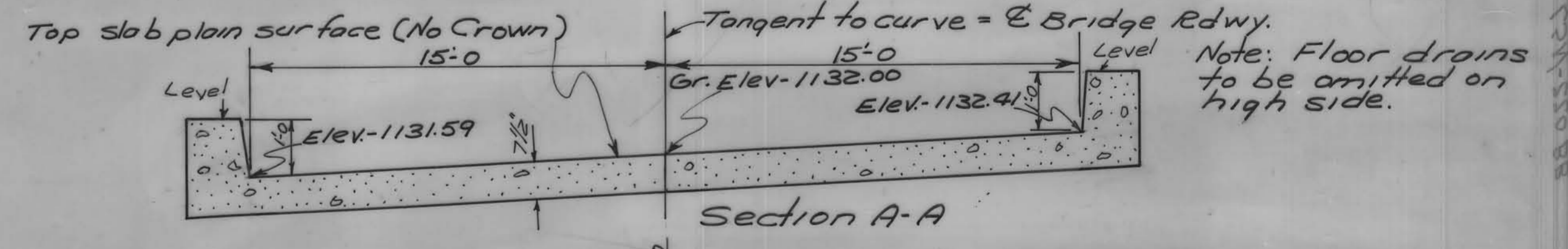
Surf. Elev. 1125.28 C-6690
3.0 Stiff silty clay fill
19.0 Stiff sandy silty clay
6.0 Stiff sandy clay
3.0 Sand and Gravel
7.0 Coarse Sand ~ occ. Boulder
2.15 Gravelly Sand ~ occ. clay layer
Sta. 11+29 Rt. 15'

Surf. Elev. 1121.28 C-6691
6.0 Soft sandy silty clay
14.0 Stiff sandy silty clay
2.0 Sand
8.0 Coarse Sand ~ occ. Boulders
2.0 Boulders
7.0 Coarse Sand ~ occ. Boulders
18.0 Gravelly sand ~ occ. Clay Layer
2.5 Shale
Sta. 13+72 Lt. 5'

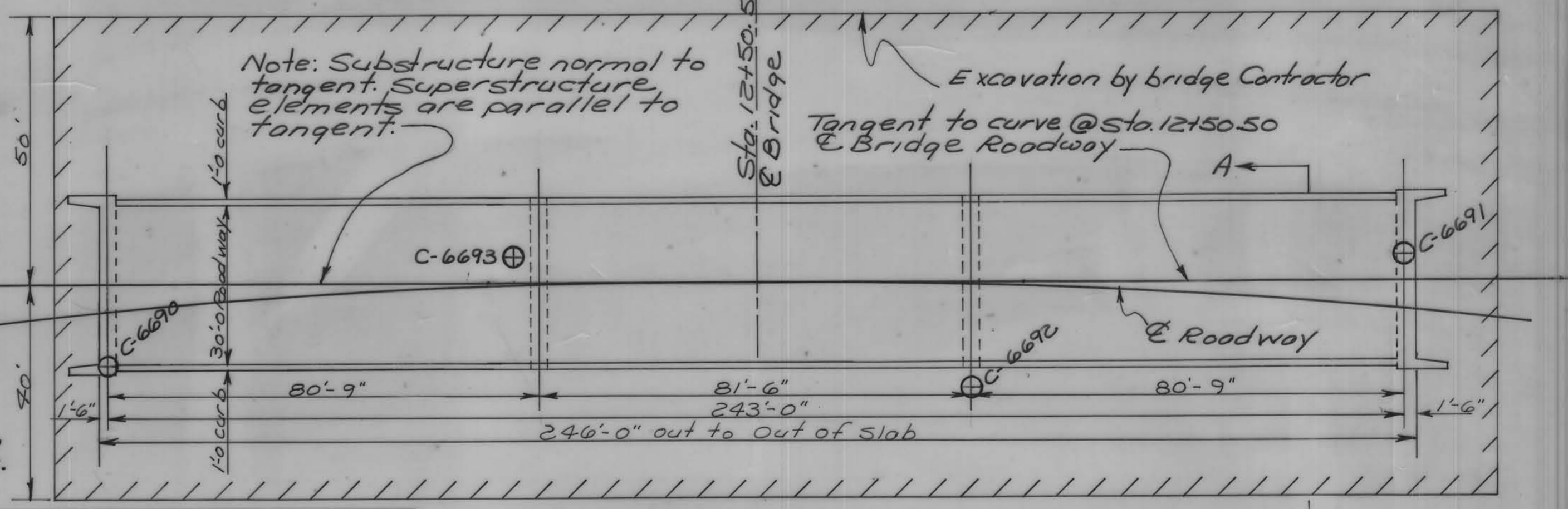
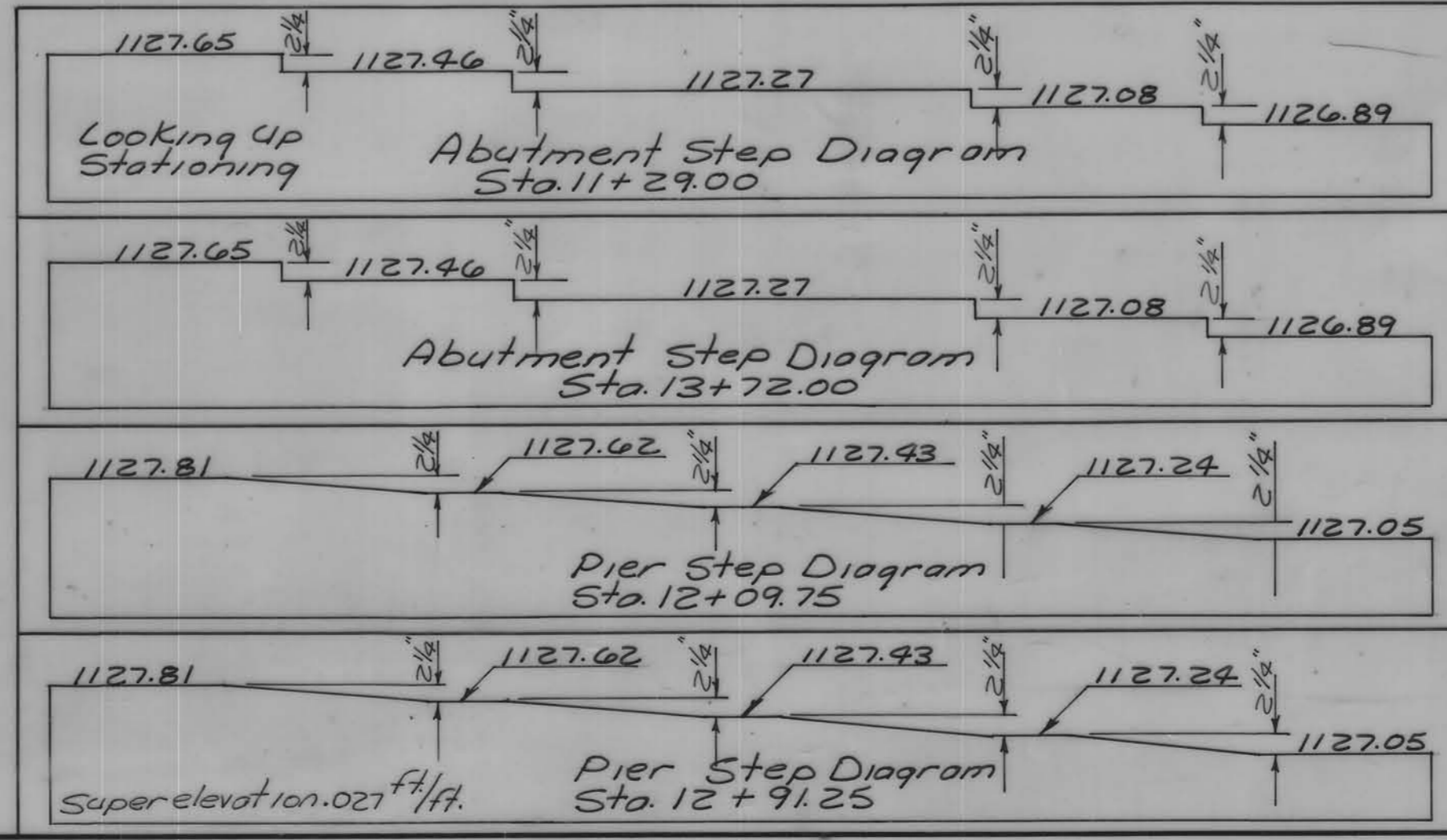
Sounding Data. Dated: 2-18-72



Sta. 11+29.00 @ S. abut. Piling cut off - 1125.39
 Sta. 12+09.75 @ S. Pier Piling cut off - 1096.05
 Sta. 12+91.25 @ N. Pier Piling cut off - 1096.05
 Sta. 13+72.00 @ N. abut. Piling cut off - 1125.39



Bridge designed 0'-7" higher than grade to meet future paving plans.



Plan View Scale 1" = 20'

LOCATION
 SEC. 10-82-40 OVER
 BOYER RIVER
 DESIGN FOR
 243'-0" x 30'-0" PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE
 ALUMINUM HANDRAILS
 STUB ABUTMENTS AND TEE PIERS
 STA. 12+50.50 PROJ. NO. LSN-220-BB-73-24
 CRAWFORD COUNTY

BRIDGE REHABILITATION

PROJECT NO. FM-24(30)--55-24

CRAWFORD COUNTY

LETTING DATE : OCTOBER 1, 1993

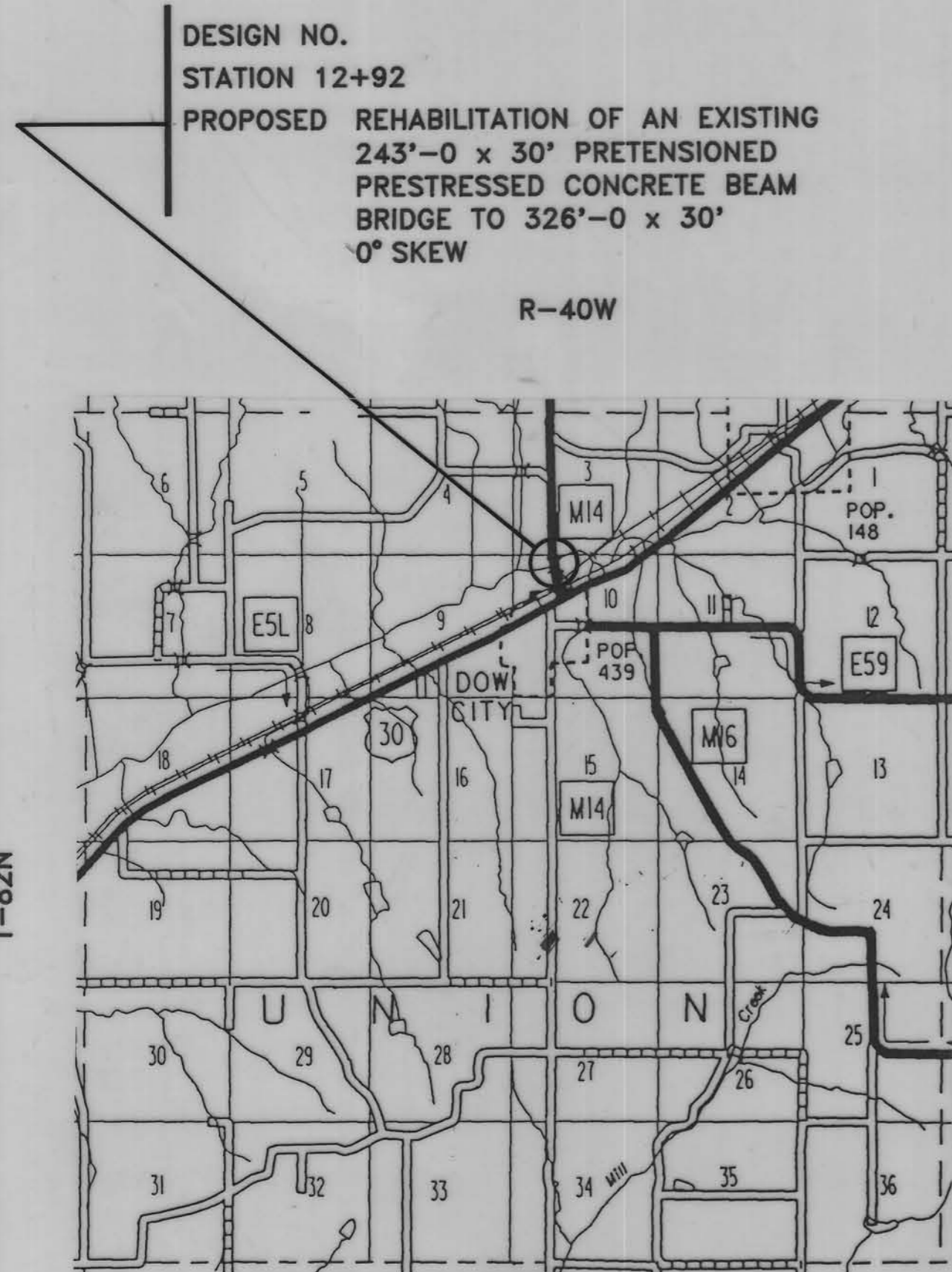
STANDARD ROAD PLANS

THE FOLLOWING STANDARD ROAD PLANS SHALL BE CONSIDERED APPLICABLE TO CONSTRUCTION WORK ON THIS PROJECT.

IDENT.	DATE	IDENT.	DATE	IDENT.	DATE
RE-2A	2-17-87	RE-68	8-8-89		
RE-2B	10-2-90	RE-69	8-8-89		
RE-7	4-28-92				
RE-12A	10-11-88	RH-50	6-15-93		
RE-12B	1-9-90	RH-51	2-23-93		
RE-47	11-10-87	RH-52	9-29-92		
RE-48A	6-15-93				
RE-52	2-23-93	RL-1	4-23-82		
RE-65	1-7-92	RL-11	10-11-88		

PROJECT TRAFFIC CONTROL PLAN

THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08, 1992 SPECIFICATIONS PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES AND LAYOUTS SHALL BE AS PROVIDED FOR BY SUPPLEMENTAL SPECIFICATIONS FOR TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS, SPECIFICATION 5055 AND THE IOWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.



PROJECT LOCATION
SCALE 1" = 1 MILE



IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division
PLANS OF PROPOSED IMPROVEMENT ON THE
FARM TO MARKET SYSTEM
CRAWFORD COUNTY
BRIDGE REHABILITATION

THE STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, SERIES OF 1992, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS, SHALL APPLY TO WORK ON THIS PROJECT.

PROJECT NO. FM-24(30)--55-24
FHWA NO. 126951

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6. NORTH ABUTMENT DETAILS
7. MODIFIED ABUTMENT/PIER DETAILS
8. SUPERSTRUCTURE DETAILS
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10. SUPERSTRUCTURE DETAILS
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12. BEAM DETAILS
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14. MODIFIED BARRIER RAIL DETAILS
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TOTAL ESTIMATED QUANTITIES
DIVISION I - 326'-0x30' P.P.C.B. BRIDGE REHABILITATION
DIVISION II - SLOPE PROTECTION

NO.	ITEM	UNIT	DIV. I				DIV. II
			ABUT.	ABUT./PIER	SUPERST.	TOTAL	
1	CONCRETE, STRUCTURAL	CU.YDS.	18.3	186.6	143.4	348.3	-
2	STEEL, REINFORCING - UNCOATED	LBS.	1,282	7,068	451	8,801	-
3	STEEL, REINFORCING - EPOXY COATED	LBS.	1,136	615	28,507	30,258	-
4	STEEL, STRUCTURAL	LBS.	-	924	91	1,015	-
5	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, ERECT, AS PER PLAN	ONLY	-	-	5	5	-
6	PILING, STEEL BEARING HP 10x42, DRIVE 8 @ 70'	LIN.FT.	560	-	-	560	-
7	PILING, STEEL BEARING HP 12x74, DRIVE 7 @ 70'	LIN.FT.	-	490	-	490	-
8	EXCAVATION, CLASS 10, CHANNEL	CU.YDS.	-	-	-	7,674	-
9	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CU.YDS.	-	-	-	60	-
10	EXCAVATION, CLASS 20	CU.YDS.	43	-	-	43	-
11	EXCAVATION, CLASS 21	CU.YDS.	-	46	-	46	-
12	REVTMENT, CLASS 'E' RIP-RAP	TONS	-	-	-	2,207	-
13	FABRIC, ENGINEERING	SQ.YDS.	-	-	-	2,228	-
14	REMOVALS, AS PER PLAN	L.S.	-	-	-	LUMP SUM	-
15	PREBORED HOLES, AS PER PLAN, 8 @ 8'	LIN.FT.	64	-	-	64	-
16	TRAFFIC CONTROL	L.S.	-	-	-	LUMP SUM	-
17	SAFETY CLOSURES	ONLY	-	-	-	2	-
18	GUARDRAIL, FORMED STEEL THRIE BEAM	LIN.FT.	-	-	-	62.5	-
19	GUARDRAIL, FORMED STEEL BEAM	LIN.FT.	-	-	-	75	-
20	GUARDRAIL, POST, BEAM	ONLY	-	-	-	24	-
21	GUARDRAIL, END ANCHORAGES, BEAM, RE-52	ONLY	-	-	-	2	-
22	GUARDRAIL, END ANCHORAGES, BEAM, RE-69	ONLY	-	-	-	2	-
23	OBJECT MARKERS, TYPE 3	ONLY	-	-	-	2	-
24	OBJECT MARKERS, TYPE 2, AS PER PLAN	ONLY	-	-	-	4	-
25	MOBILIZATION	L.S.	-	-	-	LUMP SUM	-
26	DELINEATORS, SINGLE WHITE	ONLY	-	-	-	7	-
27	BRIDGE APPROACH, REINFORCED, AS PER PLAN	SQ.YDS.	-	-	-	66.7	-
28	BRIDGE APPROACH, NON-REINFORCED, AS PER PLAN	SQ.YDS.	-	-	-	48.9	-
29	PAVEMENT REMOVAL	SQ.YDS.	-	-	-	301	-
30	PAVEMENT MARKINGS	STA.	-	-	-	5.23	-
SCS-1	CLEARING AND GRUBBING	L.S.	-	-	-	LUMP SUM	-
SCS-2	SEEDING AND MULCHING	L.S.	-	-	-	LUMP SUM	-
SCS-3	EXCAVATION	L.S.	-	-	-	LUMP SUM	-
SCS-4	EARTH FILL	L.S.	-	-	-	LUMP SUM	-
SCS-5	LOOSE ROCK RIP-RAP	TONS	-	-	-	7,520	-
SCS-6	GEOTEXTILE	SQ.YDS.	-	-	-	6,957	-

SEE SHEET 4 FOR ESTIMATE REFERENCE INFORMATION

DRAWING APPROVAL

ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY CALHOUN-BURNS AND ASSOCIATES, INC.

ADDRESS : 1801 FULLER ROAD, P.O. BOX 65859
WEST DES MOINES, IOWA 50265
TELEPHONE : (515) 224-4344

THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.

MILEAGE SUMMARY
STA.11+27.50 TO STA.14+96.50 = 369.00 L.F. = 0.0699 MILES
1988, TRAFFIC COUNT = 460 V.P.D.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED

H. Dale Wight 9-21-93
CRAWFORD COUNTY ENGINEER DATE

Le Roy d. Hancock
John P. Hawler
Eileen Heister
Trigil E. Anderson

BOARD OF SUPERVISORS DATE

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

SIGNATURE: *Gordon E. Burns*
NAME: GORDON E. BURNS, P.E.
DATE: 9-20-93 REG. NO. 3803
MY REGISTRATION EXPIRES DECEMBER 31, 1994.

DEPARTMENT OF TRANSPORTATION
IOWA

Highway Division

AUTHORIZED FOR LETTING

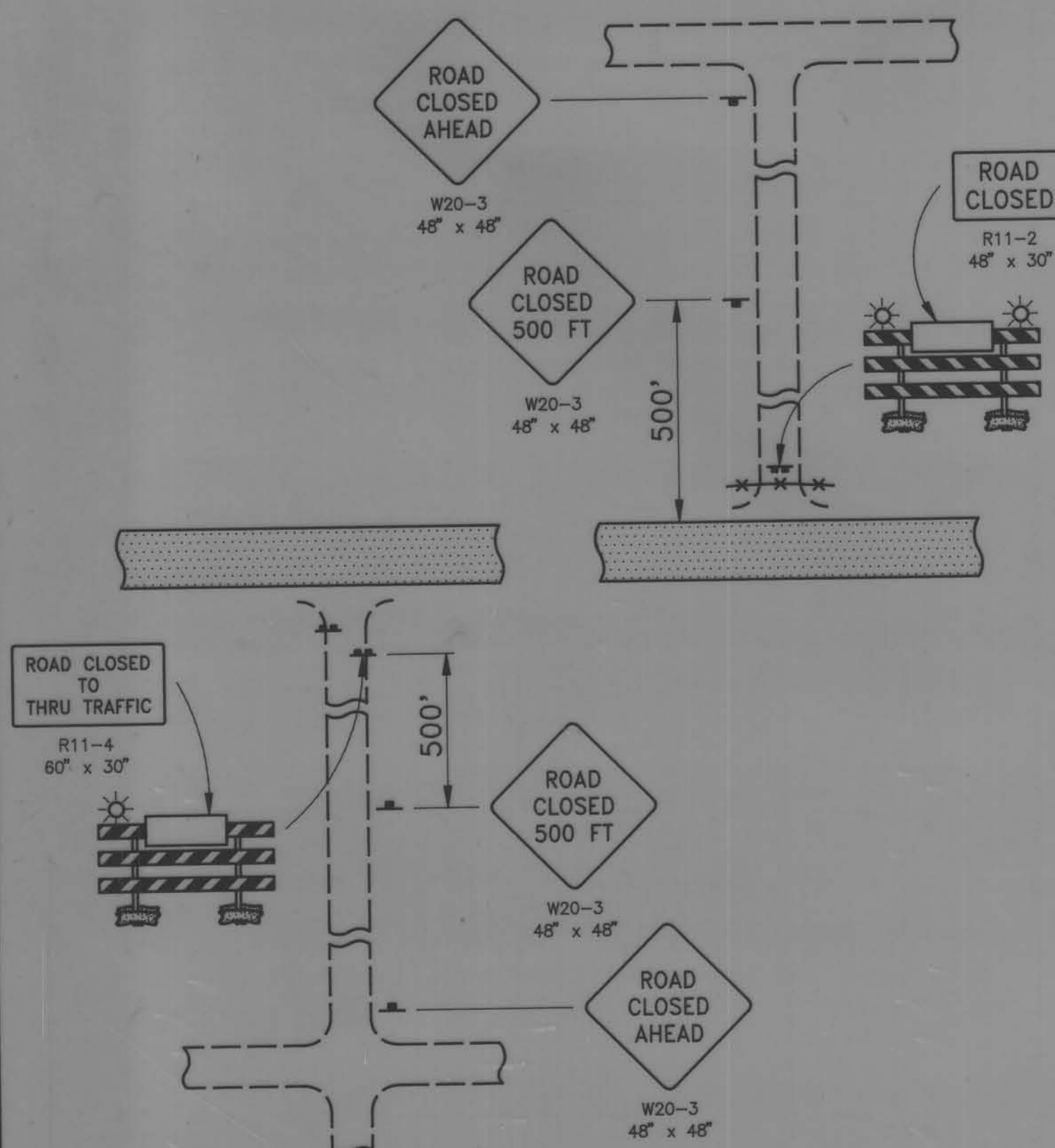
DEPUTY CHIEF ENGINEER DATE

IOWA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

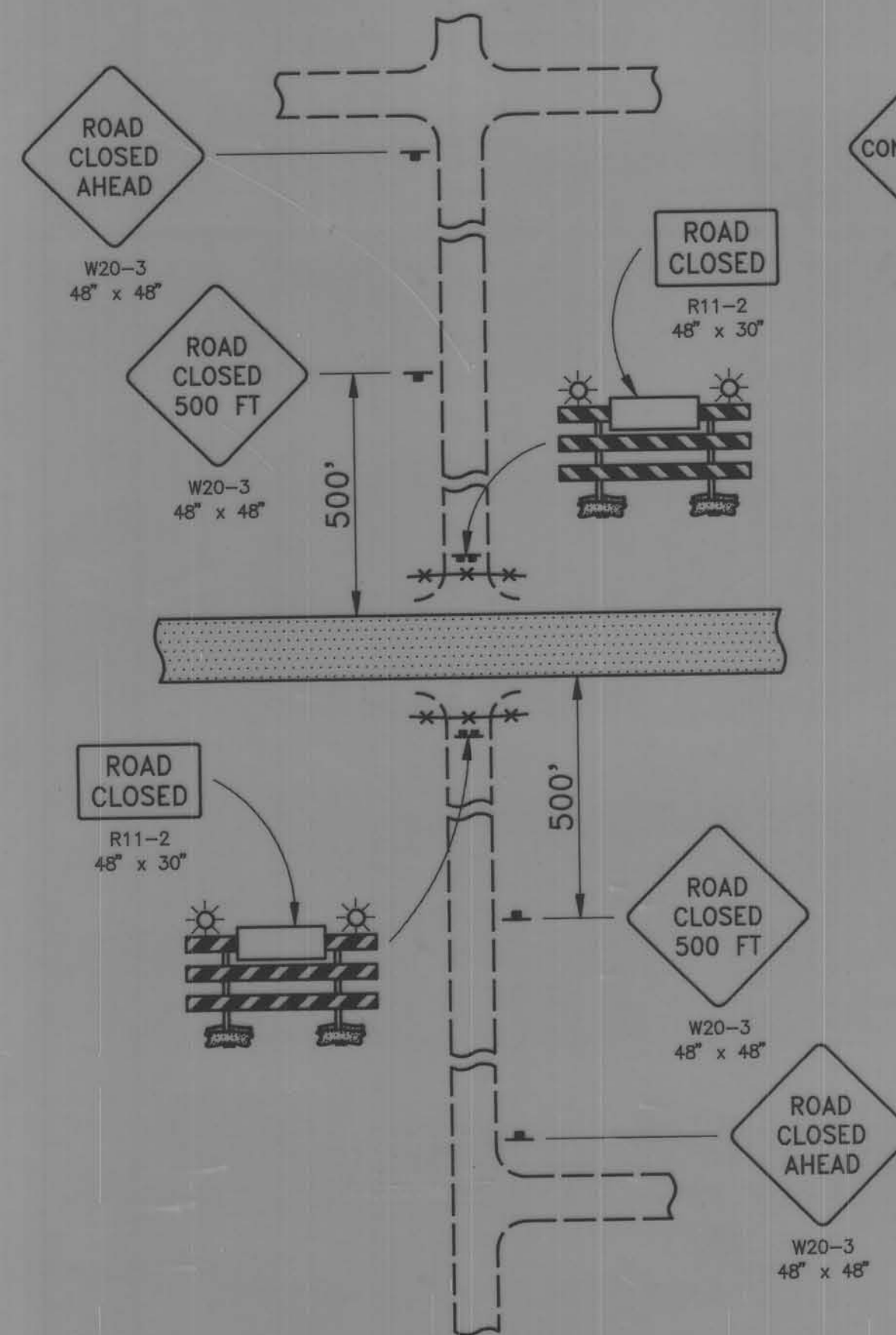
ACCEPTED FOR LETTING

DISTRICT LOCAL SYSTEMS ENGR. DATE

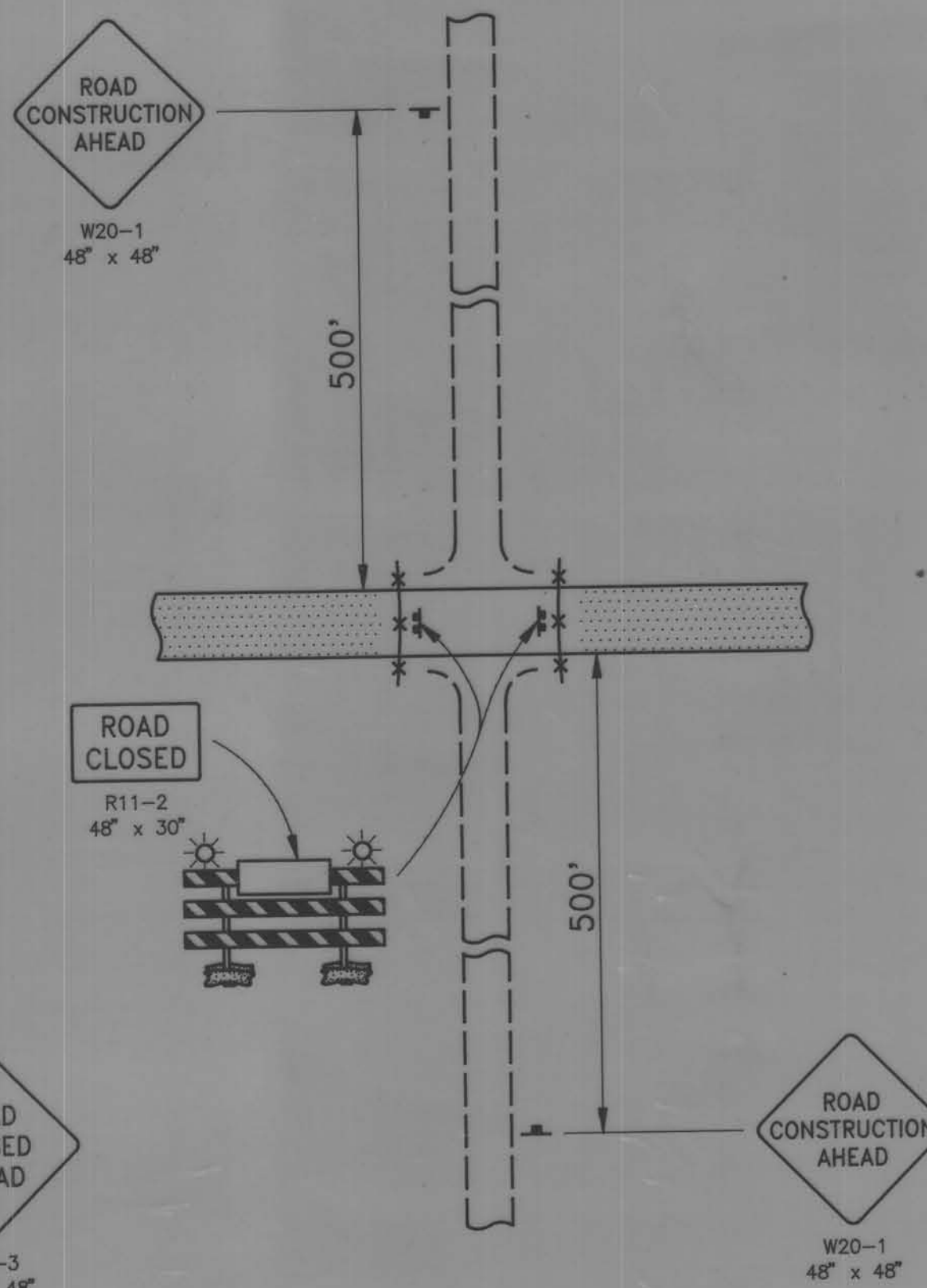
SITUATION 2 No access to project.



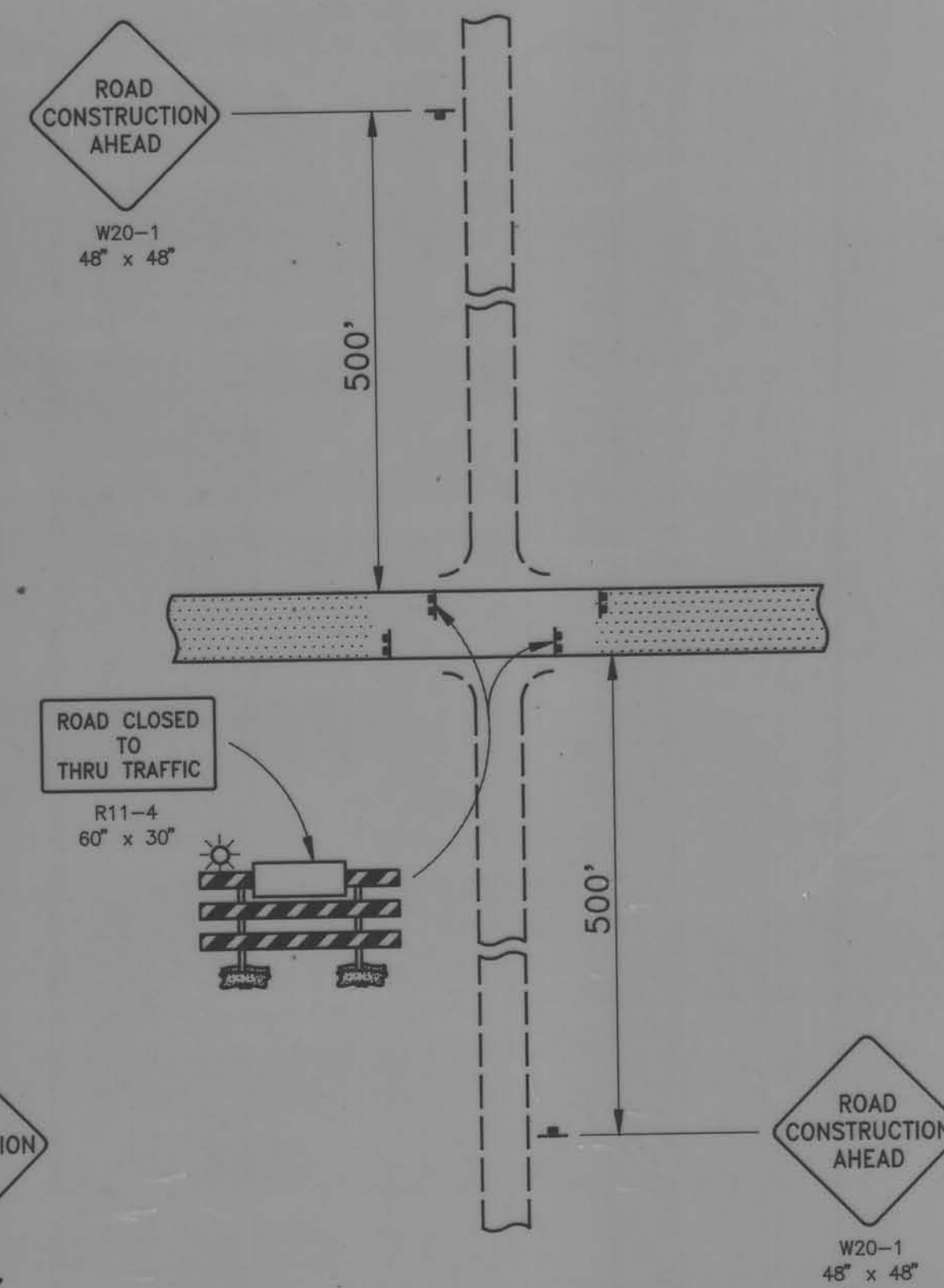
SITUATION 4 No access to project.



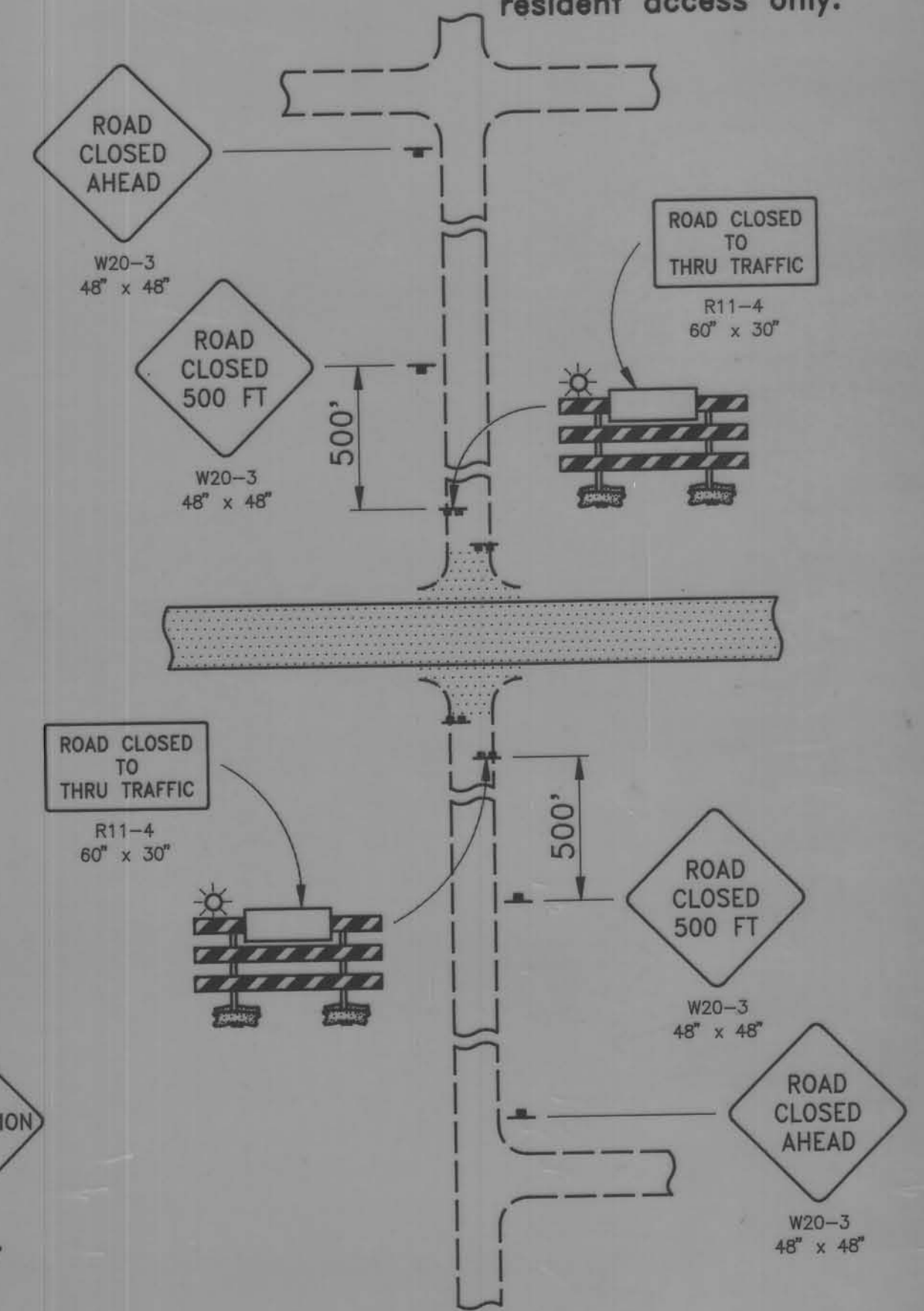
SITUATION 5 Public cross-traffic maintained. No access to project.



SITUATION 6 Public cross-traffic maintained. Contractor and resident access.

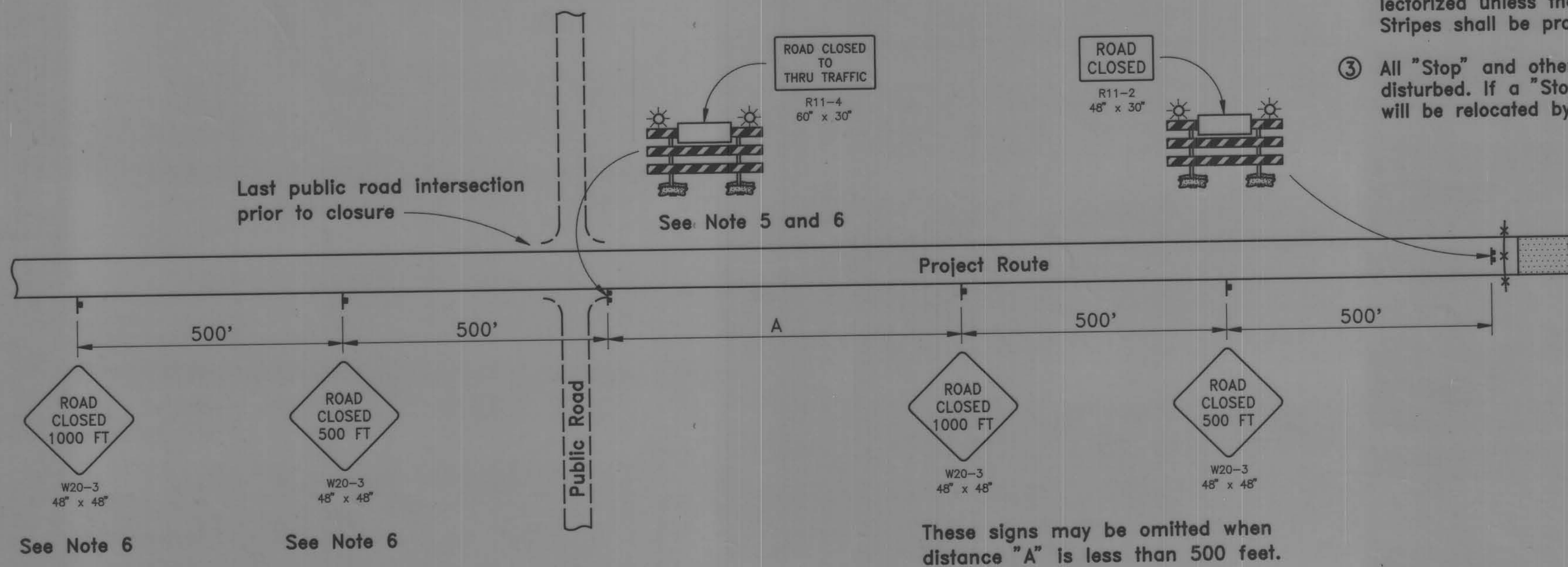


SITUATION 7 No public access. Contractor and resident access only.



SITUATION 3 No public access. Contractor and resident access only.

SITUATION 1 Project route closure.



GENERAL NOTES

- ① SITUATION 1 illustrates traffic control necessary to close the project route. SITUATION 2 through 7 are for signing of sideroads based on existing agreements and field conditions and will be selected by the engineer in charge of construction.
- ② Type "A" Flashing Warning Lights shall be visible to both directions of traffic. The backside of the type III barricades shall be fully reflectorized unless there is no access permitted beyond the barricade. Stripes shall be properly sloped down towards the traffic side.
- ③ All "Stop" and other regulatory signs on the sideroads are not to be disturbed. If a "Stop" or other regulatory sign must be removed, it will be relocated by the Contracting Authority.

- ④ This layout does not include barricades as may be required by Section 2518 of the Standard Specifications.
- ⑤ In Situation 1, when distance "A" is less than 500 feet the barricade should be placed in the middle of the traffic lane approaching the work area. In this case, Note 2 shall apply, the barricade may be omitted if the distance to the work area is less than 400 feet.
- ⑥ In Situation 1, if the intersection is the point of detour these two signs and barricade will become the responsibility of the contracting authority and may be modified by the contracting authority to fit detour signing.

LEGEND

- † Traffic Sign
- † Type III Barricade (Type "A" Low Intensity Flashing Warning Light Required for Nighttime Use)
- ☼ Type "A" Low Intensity Flashing Warning Light
- ▨ Work Area
- Slat Fence Barricade or Orange Plastic Safety Fence

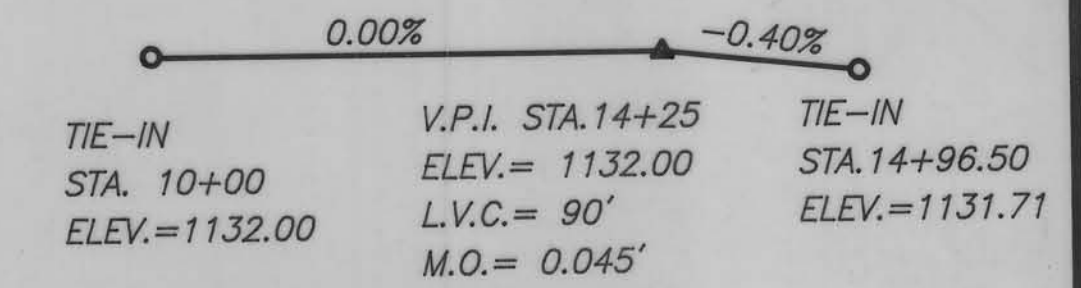
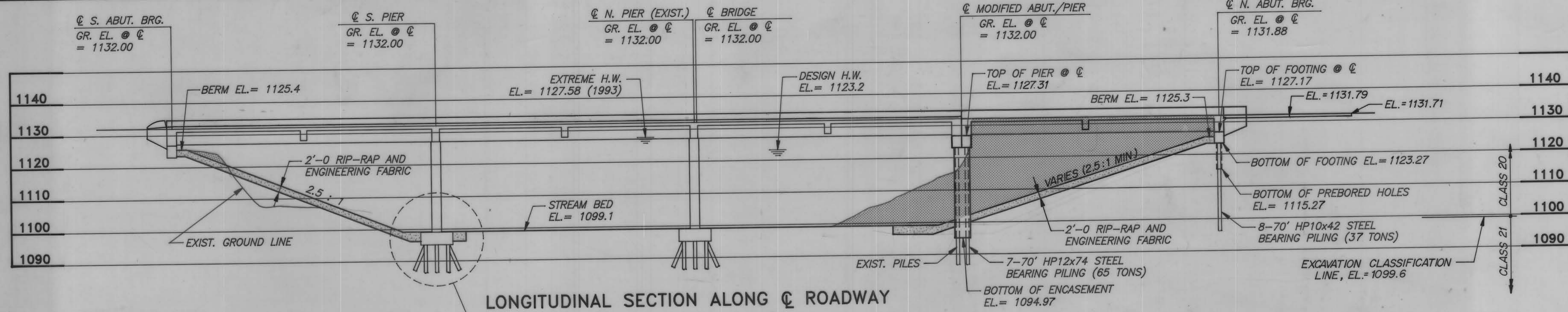
IOWA D.O.T. STANDARD DETAIL SHEET 520-26

SIGNING FOR TEMPORARY ROAD CLOSURES IN RURAL AREAS (PROJECT ROUTE CLOSED TO TRAFFIC)

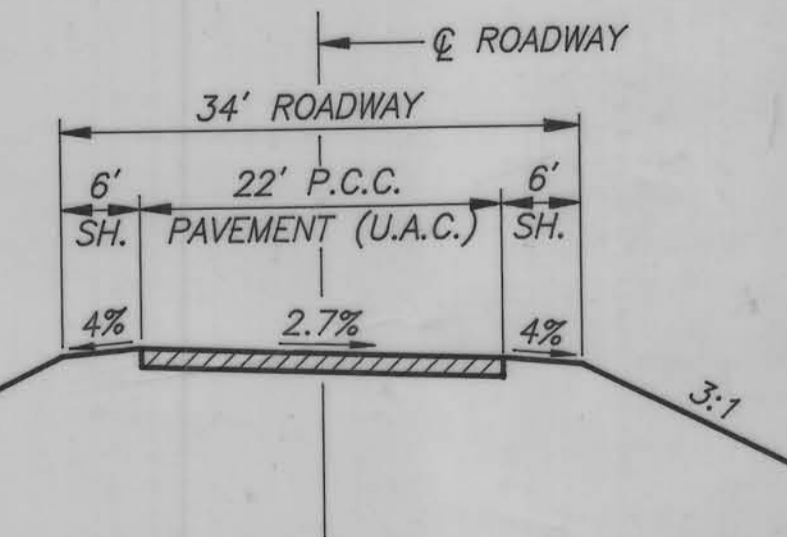
CRAWFORD COUNTY,

IOWA

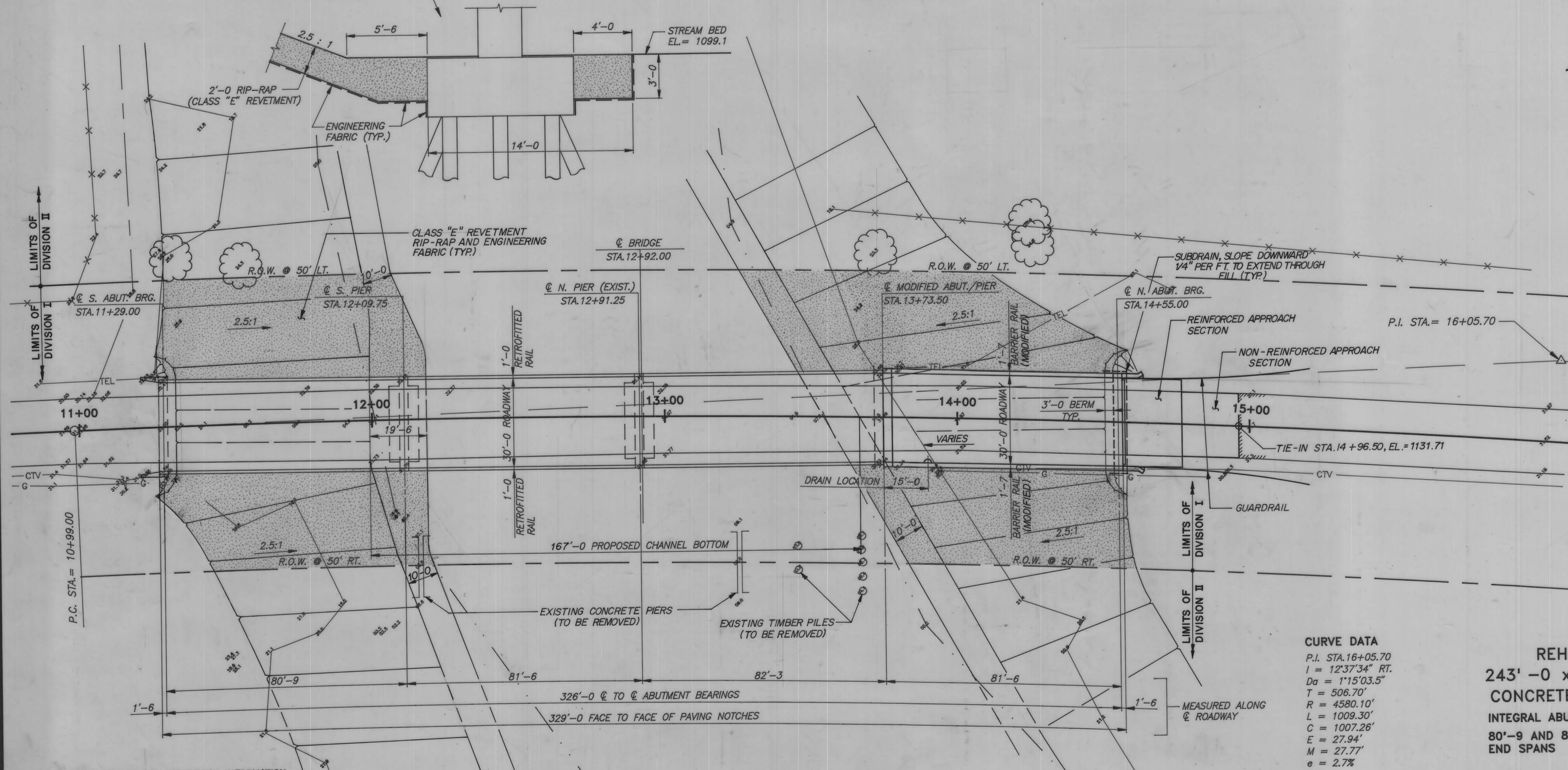
SHEET 2 OF 19



PROPOSED GRADE



TYPICAL APPROACH SECTION



LOCATION
CRAWFORD COUNTY
T-82N, R-40W
SECTION 10
UNION TOWNSHIP
OVER BOYER RIVER

HYDRAULIC DATA
DRAINAGE AREA = 585 SQ. MI.
DESIGN DISCHARGE = 22,900 C.F.S.
DESIGN HIGH WATER EL. = 1123.2
MANNING SLOPE = 0.000816 FT./FT.
BRIDGE WATERWAY AREA = 5,313 SQ. FT.
DESIGN VELOCITY = 4.3 F.P.S.
Q25 = 19,500 C.F.S. STAGE EL. = 1122.5
Q50 = 22,900 C.F.S. STAGE EL. = 1123.2 (DESIGN)
Q100 = 24,900 C.F.S. STAGE EL. = 1123.9
Q500 = 32,500 C.F.S. STAGE EL. = 1127.1
EXT. H.W. EL. = 1127.58 (1993)

CURVE DATA
P.I. STA. 16+05.70
I = 12°37'34" RT.
Da = 1'15"03.5"
T = 506.70'
R = 4580.10'
L = 1009.30'
C = 1007.26'
E = 27.94'
M = 27.77'
e = 2.7%

REHABILITATION OF AN EXISTING 243'-0" x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326'-0" x 30' INTEGRAL ABUTMENTS
TEE & ENCASED PIERS
80'-9" AND 81'-6" END SPANS
81'-6" AND 82'-3" INTERIOR SPANS

SITUATION PLAN

STATION 12+92
CRAWFORD COUNTY, IOWA
0° SKEW
SHEET 3 OF 19

SEE SHEET 18 FOR ADDITIONAL INFORMATION INCLUDING LIMITS OF CHANNEL EXCAVATION AND CLASS "E" REVETMENT LIMITS FOR DIVISION II.

SITUATION PLAN
SCALE 1" = 20'

CONCRETE REMOVAL

CONCRETE SHALL BE REMOVED TO NEAT LINES AS SHOWN IN DETAILS. ALL SUCH REMOVALS SHALL BE TO NEAT SAW CUTS TO PROVIDE CLEAN STRAIGHT SURFACES AT INTERFACES BETWEEN NEW CONCRETE AND REMAINING CONCRETE.

ALL CONCRETE REMOVAL SHALL BE DONE IN A MANNER WHICH WILL PREVENT ANY DAMAGE TO THE EXISTING STRUCTURE THAT REMAINS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE CAUSED AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE AS DIRECTED BY THE ENGINEER. ANY EXISTING REINFORCING STEEL WHICH IS EXPOSED DURING REMOVAL OPERATIONS IS TO BE CAREFULLY PROTECTED, CLEANED AND INCORPORATED INTO NEW CONSTRUCTION UNLESS NOTED OTHERWISE. ALL COSTS OF CONCRETE REMOVAL, SAW CUTTING, AND CLEANING REBARS SHALL BE INCLUDED IN THE PRICED BID FOR "REMOVALS, AS PER PLAN".

DRILLED-IN DOWELS

EPOXY ADHESIVE FOR BONDING DOWELS IN DRILLED HOLES SHALL BE IN ACCORDANCE WITH MATERIALS I.M. 491.11, AND SHALL BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE SUPPLIER'S TECHNICAL REPRESENTATIVE AND THE ENGINEER TO REVIEW THE MANUFACTURER'S RECOMMENDATIONS PRIOR TO CONSTRUCTION.

DRILLED HOLES FOR DOWELS SHALL BE 1/8 INCH LARGER IN DIAMETER THAN THE DIAMETER OF THE BAR. WHERE NOT SHOWN ON THE PLANS, THE MINIMUM EMBEDMENT DEPTH IS 10 TIMES THE BAR DIAMETER.

INSTALLATION PROCEDURE:

- BLOW HOLE CLEAN USING OIL-FREE COMPRESSED AIR.
 - PLACE EPOXY TO PREDETERMINED DEPTH IN HOLE, AND INSERT CLEAN BAR, WORKING BACK AND FORTH, UP AND DOWN, TO ENSURE COMPLETE EMBEDMENT AND COATING.
 - POSITION BAR IN CENTER OF HOLE WITH TEMPLATE UNTIL EPOXY SETS.
- COST OF ALL LABOR AND MATERIALS TO DRILL HOLES AND EMBED BARS WILL BE INCLUDED IN THE PRICE BID FOR "STEEL, REINFORCING, EPOXY COATED" AND NO SEPARATE PAYMENT WILL BE MADE.

ITEM ESTIMATE REFERENCE INFORMATION

- 301.2 C.Y. OF STRUCTURAL CONCRETE IS TO BE CLASS "C". 47.1 C.Y. OF STRUCTURAL CONCRETE IS TO BE CLASS "D" FOR RAILS, SEE SHEETS 14 AND 15. INCLUDES COST OF LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO INSTALL SUBDRAINS, AND POROUS AND GRANULAR BACKFILL AND APPLY EPOXY BONDING AGENT TO CONCRETE. WINTER WORK WILL BE REQUIRED ON THIS PROJECT. NO FREE TIME WILL BE ALLOWED AFTER NOVEMBER 15, 1993.
- INCLUDES COST OF DRILLING AND EPOXYING DOWELS AS SHOWN ON SHEETS 7, 8, 9, 10 AND 15.
- INCLUDES COST OF LABOR, MATERIAL, AND EQUIPMENT FOR INSTALLING DIAGONAL BRACING AND ALL FIELD WELDING PER PLAN. ALSO INCLUDES WEIGHT OF FLOOR DRAIN. SEE SHEETS 3, 5, 7 AND 9.
- SEE SHEETS 10, 12 AND 13 AND THE GENERAL NOTES, SHEET 4. TO BE FURNISHED BY CRAWFORD COUNTY.
- SEE GENERAL NOTES, SHEET 4. TO BE FURNISHED BY CRAWFORD COUNTY.
- INCLUDES 3% FOR SHRINKAGE.
- SEE SHEET 3 FOR LIMITS.
- SEE SHEETS 3, 7, 8 AND THE GENERAL AND CONCRETE REMOVAL NOTES, SHEET 4.
- SEE GENERAL NOTES, SHEET 4.
- SEE TABULATIONS, SHEET 17.
- SEE SHEETS 3 AND 16.
- SEE TABULATIONS, SHEET 17.
- FOR ADDITIONAL INFORMATION CONTACT:
WILLIAM IRELAND
SOIL CONSERVATION SERVICE
ATLANTIC ENGINEERS
707 POPLAR STREET, SUITE A
ATLANTIC, IOWA 50022-1616
TELEPHONE (712) 243-2699

EPOXY BONDING CONCRETE

NEW CONCRETE SHALL BE BONDED TO EXISTING CONCRETE WITH AN EPOXY BONDING AGENT AS SPECIFIED IN MATERIALS I.M. 491.11.

EPOXY BONDING AGENT SHALL BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. EPOXY SHALL NOT BE APPLIED BY SPRAY METHODS, AND NO SOLVENT SHALL BE ADDED TO THE EPOXY ADHESIVE.

THE SUPPLIER OF THE ADHESIVE SHALL SUBMIT TO THE ENGINEER A CERTIFIED TEST REPORT COVERING EACH LOT OF THE ADHESIVE SHIPPED TO THE PROJECT. THE TEST REPORT SHALL CERTIFY THAT THE COMPOSITION AND PROPERTIES OF THE ADHESIVE ARE IN ACCORDANCE WITH THESE PLANS AND IT SHALL GIVE THE ACTUAL VALUES OF THE MECHANICAL PROPERTIES OF THE MATERIAL IN THE PARTICULAR LOT.

THE SURFACE OF THE OLD CONCRETE TO WHICH NEW CONCRETE IS TO BE BONDED SHALL BE CLEANED BY SANDBLASTING AFTER REMOVAL OF CONCRETE AS SHOWN ON THE PLANS, SO THAT ALL FOREIGN MATERIAL, LOOSE AND UNSOUND CONCRETE IS REMOVED AND ONLY SOUND CONCRETE REMAINS. WASHING WITH FRESH WATER WILL BE REQUIRED AS NECESSARY TO REMOVE DUST AND SMALL PARTICLES NOT REMOVED BY OTHER CLEANING METHODS.

WHEN ALL FREE WATER HAS DRIED FROM THE AREA TO BE BONDED, EPOXY ADHESIVE SHALL BE APPLIED BY BRUSH TO A 20 MIL THICKNESS MINIMUM. THE EPOXY SURFACE SHALL APPEAR SHINY AND SHALL BE TACKY JUST BEFORE NEW CONCRETE IS PLACED AGAINST IT. IF THE CONCRETE HAS ABSORBED THE ADHESIVE, AS EVIDENCED BY A DULL APPEARANCE, APPLY ANOTHER COAT. THE NEW CONCRETE SHALL THEN BE PLACED WHILE THE EPOXY REMAINS TACKY.

THE EPOXY BONDING AGENT IS TO BE APPLIED TO CONCRETE THAT IS FREE OF ALL DUST, OIL, DEBRIS OR OTHER FOREIGN MATERIAL. ANY MATERIAL THAT INHIBITS THE ABILITY TO BOND SHALL BE REMOVED BY OIL FREE AIR COMPRESSORS OR LIGHT SANDBLASTING PRIOR TO PLACEMENT OF EPOXY BONDING AGENT. STANDING WATER PUDDLES ARE TO BE REMOVED. A DAMP CONDITION OF SURFACE IS ACCEPTABLE PRIOR TO APPLICATION.

THE EPOXY BONDING AGENT SHALL BE APPLIED BY HEAVY DUTY BRUSHES. THE EPOXY BONDING AGENT SHALL BE APPLIED AT A RATE OF 9 SQUARE YARDS PER GALLON (APPROXIMATELY 80 SQUARE FEET/GALLON). THE MINIMUM BUILDUP IS TO BE 20 MIL.

PRIOR TO PLACING THE EPOXY, THE INSPECTOR, CONTRACTOR AND SUPPLIER'S REPRESENTATIVE SHALL MEET TO DETERMINE THE FINAL RATE OF APPLICATION. A WET FILM THICKNESS GAUGE SHALL BE EMPLOYED AT RANDOM INTERVALS TO ENSURE A MINIMUM BUILDUP OF 20 MILS.

THE EPOXY BONDING AGENT MIGHT LOSE TACK AFTER APPROXIMATELY 3 HOURS AT 70 DEGREES F.

COST OF LABOR AND MATERIALS TO APPLY EPOXY BONDING AGENT WILL BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE" AND NO SEPARATE PAYMENT WILL BE MADE.

SPECIFICATIONS

DESIGN: AASHTO SERIES OF 1992.
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SERIES OF 1992, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

DESIGN STRESSES

DESIGN STRESSES

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1992:

CONCRETE	SECTION 8 f'c = 3,500 PSI
REINFORCING STEEL	SECTION 8
ASTM A615	GRADE 60, F _s = 24,000 PSI
PRESTRESSING STEEL	SEE BEAM DETAIL SHEETS 12 AND 13
PRESTRESSED CONCRETE	SEE BEAM DETAIL SHEETS 12 AND 13
STRUCTURAL STEEL	SECTION 10
ASTM A36	F _s = 20,000 PSI

GENERAL NOTES

IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS TO REPAIR AND REMODEL AN EXISTING 243'-0 x 30' THREE-SPAN I.H.C. STANDARD H16-70 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE, BUILT IN 1972 AS PROJECT NO. LSN-220-BB-73-24, I.H.C. FILE NO. 24612. PLANS ARE AVAILABLE AT THE CRAWFORD COUNTY ENGINEER'S OFFICE. THE EXISTING BRIDGE WAS DESIGNED FOR H20-44 LIVE LOAD. THE NEW AND REMODELED ELEMENTS ARE DESIGNED FOR HS20-44 LIVE LOAD. ALL NEW AND EXISTING ELEMENTS ARE DESIGNED FOR AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE AND CAN CARRY IOWA LEGAL TRUCKS AT OR BELOW THE OPERATING STRESS LEVEL OF 0.75 FY. THE EXISTING BRIDGE IS STRAIGHT, BUT SUPERELEVATED TO ACCOMMODATE A 1°15' HORIZONTAL CURVE.

INCLUDED IN THE INTENT OF THESE PLANS AND SPECIFICATIONS IS THE EXCAVATION AND RESHAPING OF THE CHANNEL SCOUR, THE PLACEMENT OF ENGINEERING FABRIC AND RIP-RAP, THE CONVERSION OF THE NORTH ABUTMENT (CONCRETE INTEGRAL TYPE) TO A FULLY-ENCASED CONCRETE PILE BENT PIER, THE CONSTRUCTION OF A CONCRETE INTEGRAL ABUTMENT, THE PLACEMENT OF FIVE (5) EIGHTY-FOOT (80') IDOT STANDARD LXC PRETENSIONED PRESTRESSED CONCRETE BEAMS, THE PLACEMENT OF A REINFORCED CONCRETE DECK AND DIAPHRAGMS ON THE NEW SPAN ONLY, THE CONSTRUCTION OF NON-STANDARD CONCRETE BARRIER RAILS ON THE NEW SPAN AND THE RETROFITTING OF THE EXISTING RAILS BY REMOVING THE EXISTING ALUMINUM RAILS AND POSTS AND EXTENDING THE EXISTING ONE FOOT (1') HIGH CURBS VERTICALLY WITH DOWELED-IN CONCRETE, THE PLACEMENT OF REINFORCED APPROACH PAVEMENT, AND THE INSTALLATION OF APPROACH GUARDRAIL AND OBJECT MARKERS.

THE CONTRACTOR SHALL VERIFY DIMENSIONS AND ELEVATIONS IN THE FIELD PRIOR TO BEGINNING WORK, AND AGAIN PRIOR TO EACH CRITICAL STEP THROUGHOUT THE PROJECT. ANY DIMENSIONS OR ELEVATIONS WHICH ARE FOUND TO DIFFER FROM THOSE SHOWN ON THESE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WORK INCORRECTLY INSTALLED DUE TO HIS FAILURE TO VERIFY DIMENSIONS AND ELEVATIONS IN THE FIELD. THE COST OF THESE FIELD VERIFICATIONS IS TO BE INCIDENTAL TO CONSTRUCTION. NO DIRECT PAYMENT WILL BE MADE.

THE CONCRETE MASONRY AND RUBBLE REMOVED FROM THE BRIDGE SHALL BE DISPOSED OF OFF THE HIGHWAY RIGHT-OF-WAY ON A WASTE AREA PROVIDED BY THE BRIDGE CONTRACTOR. THE WASTE MATERIAL MUST NOT CREATE AN UNSIGHTLY CONDITION WHEN VIEWED FROM PUBLIC HIGHWAYS. THE COST OF WASTING CONCRETE MASONRY AND RUBBLE IS TO BE INCLUDED IN THE BID ITEM "REMOVALS, AS PER PLAN". NO PAYMENT WILL BE MADE FOR OVERHAUL. ALL HANDRAIL, POSTS, BOLTS, AND APPURTENANCES SHALL REMAIN THE PROPERTY OF CRAWFORD COUNTY. THESE ITEMS SHALL BE STACKED IN NEAT PILES WITHIN THE HIGHWAY RIGHT-OF-WAY AND WILL BE REMOVED FROM THE SITE BY CRAWFORD COUNTY. ALL REMAINING UNUSED PORTIONS OF THE STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

ALL EXISTING REINFORCING EXPOSED WHEN REMOVING OLD CONCRETE IS TO BE CLEANED AND STRAIGHTENED WHERE NECESSARY AND BONDED INTO THE NEW CONSTRUCTION, UNLESS NOTED OTHERWISE.

ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH 3/4" DRESSED AND BEVELED STRIP. THE MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED. THE REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

ALL REINFORCING BARS SHALL BE GRADE 60.
WATER REDUCING ADMIXTURES SHALL NOT BE USED FOR CONCRETE PLACED ON THIS PROJECT.

THE BRIDGE CONTRACTOR IS TO BACKFILL THE ABUTMENTS AND LEVEL AND SHAPE THE BERMS, SHOULDERS AND FORESLOPES TO DIMENSIONS AND ELEVATIONS SHOWN.

ALL BACKFILL BEHIND THE ABUTMENTS BETWEEN THE WINGS SHALL BE POROUS AND GRANULAR BACKFILL AS NOTED. THE REMAINDER OF THE ABUTMENT EXCAVATION SHALL BE BACKFILLED WITH SOIL.

THE LUMP SUM BID FOR "REMOVALS, AS PER PLAN" SHALL INCLUDE THE REMOVAL AND DISPOSAL OF PORTIONS OF THE EXISTING STRUCTURE AS SHOWN ON THE PLANS IN ACCORDANCE WITH SECTION 2403 OF THE STANDARD SPECIFICATIONS. WHERE PLANS REQUIRE THE REMOVAL OF EXISTING CONCRETE, IT SHALL BE DONE CAREFULLY AT THE LINES INDICATED ON THE PLANS. THIS ITEM SHALL ALSO INCLUDE THE COMPLETE REMOVAL OF TWO (2) OLD CONCRETE PIER REMNANTS AND SEVEN (7) TIMBER PILES LOCATED APPROXIMATELY 50' UPSTREAM.

BONDING NEW CONCRETE TO OLD CONCRETE SHALL BE DONE IN ACCORDANCE WITH SECTION 2403.14 OF THE STANDARD SPECIFICATIONS, EXCEPT AS PROVIDED ELSEWHERE FOR EPOXY BONDING.

THE CONTRACTOR'S WORK AND MATERIAL STORAGE AREA SHALL BE LOCATED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL SHAPE, FERTILIZE AND SEED THE CONTRACTOR'S AREA IN ORDER TO RETURN IT TO ITS ORIGINAL CONDITION. PAYMENT FOR THIS WORK SHALL BE INCLUDED WITH THE PRICE BID FOR "REMOVALS, AS PER PLAN" BID ITEM. AREAS OUTSIDE THE CONTRACTOR'S AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED TO THEIR ORIGINAL CONDITION AS DETERMINED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE AUTHORIZED FOR THIS WORK.

GENERAL NOTES - CONT'D.

THE CONTRACTOR SHALL VISIT THE CONSTRUCTION SITE TO ENSURE THAT HE IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. SHOULD ANY UTILITIES BE FOUND, THEY SHALL BE PROTECTED IN PLACE AND THE ENGINEER IMMEDIATELY NOTIFIED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

CLASS 20 AND CLASS 21 EXCAVATION FOR THE ABUTMENT AND PIER IS BASED ON THE ASSUMPTION THAT THE CHANNEL EXCAVATION AND THE NECESSARY BEHM CONSTRUCTION HAS BEEN COMPLETED.

SEEDING, FERTILIZING, AND MULCHING OF ALL DISTURBED AREAS FOLLOWING THE COMPLETION OF WORK ON THIS PROJECT SHALL BE DONE AS DIRECTED BY THE ENGINEER.

SEED MIXTURE: FESCUE, KY. .31 @ 75%, REED CANARYGRASS @ 25%

SEEDING RATE: 3 LBS. PER 1,000 SQ. FT.

FERTILIZER: 15-15-15 OR EQUIVALENT COMBINED COMMERCIAL FERTILIZER

FERTILIZER RATE: 15 LBS. PER 1,000 SQ. FT.

THE PREPARATION OF THE SEEDBED AND THE FURNISHING AND APPLICATION OF SEED AND FERTILIZER TO ALL DISTURBED AREAS ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL TO WORK ON THIS PROJECT, AND NO EXTRA COMPENSATION WILL BE ALLOWED.

THE BRIDGE CONTRACTOR IS TO INSTALL A SUBDRAIN BEHIND THE NEW ABUTMENT AS DETAILLED. THE SUBDRAIN SHALL MEET THE REQUIREMENTS FOR TYPES PERMITTED IN SECTION 4143.01C. WHEN THE SUBDRAIN IS INSTALLED USING FLEXIBLE TUBING OR SHORT LENGTHS OF CONCRETE OR CLAY TILE, THE ENDS SHALL CONSIST OF 6' LENGTHS OF CORRUGATED METAL PIPE (CMP) THAT PROTRUDE A MINIMUM THROUGH THE FORESLOPE. THE CONNECTION BETWEEN THE FLEXIBLE TUBING OR TILE AND THE CMP CAN BE MADE WITH A REDUCER COUPLING OR BY EXTENDING THE FLEXIBLE TUBING OR TILE INTO THE CMP A MINIMUM OF 6 INCHES AND PACKING THE OPEN SPACE BETWEEN THE PIPES WITH GROUT. A REMOVABLE 3/8" MESH GALVANIZED SCREEN, OR OTHER APPROVED RODENT GUARD, IS TO BE FASTENED TO THE END OF EACH OUTLET PIPE. THE COST OF SUBDRAIN, INCLUDING ALL MATERIALS, LABOR AND EXCAVATION NECESSARY FOR ITS INSTALLATION, SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE, STRUCTURAL".

CULVERTS SHALL BE INSTALLED, AS REQUIRED, IN ANY TEMPORARY CROSSING TO CARRY LOW STREAM FLOWS. THE CONTRACTOR SHALL REMOVE ANY TEMPORARY CROSSING PRIOR TO COMPLETION OF THE PROJECT. THE COST OF INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY CROSSINGS SHALL BE INCIDENTAL TO THE PROJECT.

IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THIS PROJECT, THE OFFICE OF PROJECT PLANNING (IDOT) MUST BE CONTACTED IMMEDIATELY SO THE PROPER AUTHORITIES CAN BE NOTIFIED ACCORDING TO THE EXISTING FEDERAL REGULATIONS AND STATE PROCEDURES. ADDITIONALLY, IT SHOULD BE NOTED THAT FINDINGS AND RECOMMENDATIONS FOR CLEARANCE OR FURTHER TESTING CANNOT BE CONSIDERED FINAL UNTIL CONCURRENCE IS RECEIVED FROM THE STATE HISTORIC PRESERVATION OFFICER. PHONE: OFFICE OF PROJECT PLANNING - (515) 239-1215.

THE CONTRACTOR SHOULD NOTE THAT THE PRESTRESSED CONCRETE BEAMS AND ALL STEEL BEARING PILING ARE TO BE FURNISHED BY CRAWFORD COUNTY AND ARE TO BE AVAILABLE AT THE SITE FOR ERECTION AND DRIVING, RESPECTIVELY. ALL COSTS TO ERECT THE BEAMS AND DRIVE THE PILING ARE TO BE INCLUDED IN ITEM NOS. 5, 6 & 7, AS SHOWN IN THE "TOTAL ESTIMATED QUANTITIES" ON SHEET 1. BEAM BEARING MATERIAL AND COIL RODS WILL BE FURNISHED WITH THE PRESTRESSED CONCRETE BEAMS.

THE BRIDGE CONTRACTOR IS 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 3 AND THE "SITE MAP", SHEET 18. THIS WORK WILL BE PAID FOR AS "EXCAVATION, CLASS 10, CHANNEL". EXCESS "EXCAVATION, CLASS 10, CHANNEL" NOT REQUIRED IN CONSTRUCTION OF FILL OR WASTED IS TO BE STOCK PILED ON THE AREA SHOWN ON SHEET 17 OR IN AN APPROVED LOCATION AND IN A MANNER AS DIRECTED BY THE COUNTY ENGINEER.

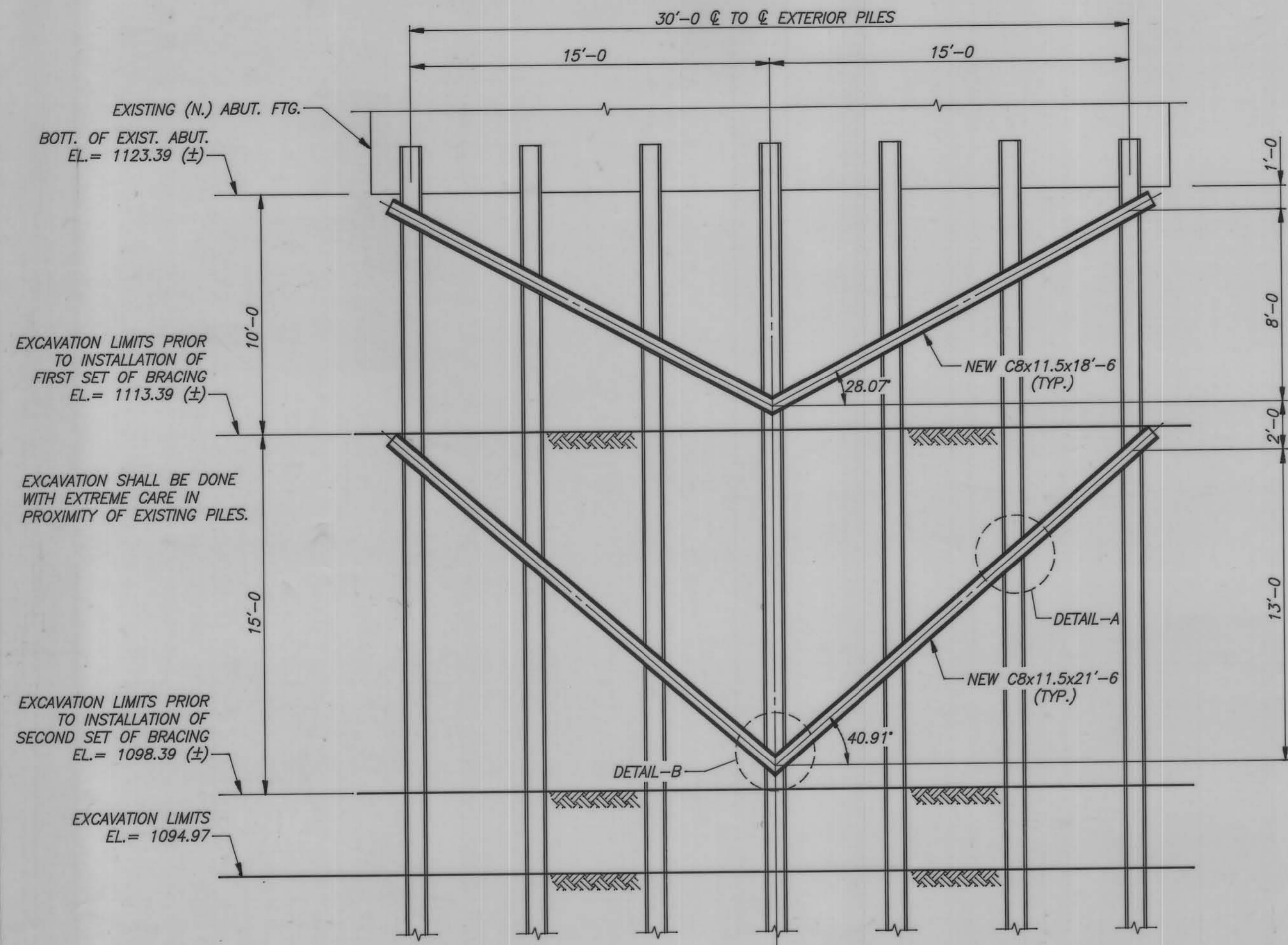
THE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. MINIMUM DIAMETER OF THE HOLES SHALL BE 18 INCHES. HOLES SHALL BE BORED TO ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE" ON SHEET 3. HOLES SHALL BE FILLED WITH A NATURAL BENTONITE SLURRY. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING. FOR HOLES DRILLED IN NONCOLLAPSING SOILS THE BENTONITE SLURRY MAY BE PLACED AFTER PILES ARE DRIVEN; IN COLLAPSING SOILS THE BENTONITE SLURRY SHALL BE PLACED AT THE TIME THE HOLE IS DRILLED. THE COST OF FURNISHING AND PLACING THE BENTONITE SLURRY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "PREBORED HOLES, AS PER PLAN".

REHABILITATION OF AN EXISTING
243'-0 x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE TO 326'-0 x 30'
INTEGRAL ABUTMENTS TEE & ENCASED PIERS
80'-9 AND 81'-6 81'-6 AND 82'-3
END SPANS INTERIOR SPANS

GENERAL NOTES

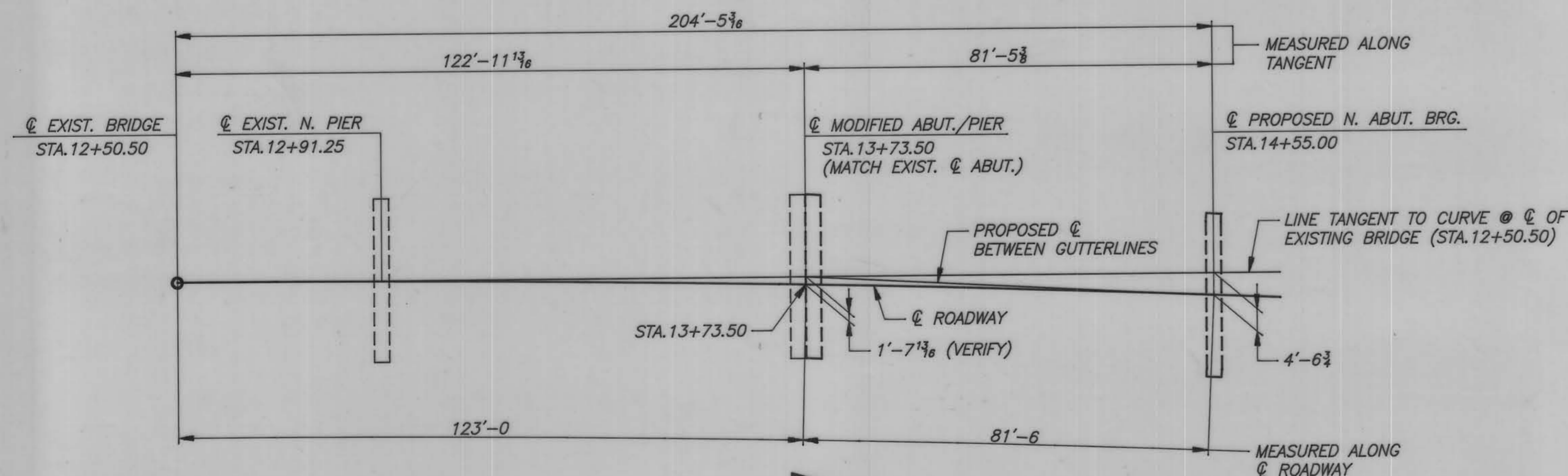
STATION 12+92
CRAWFORD COUNTY,

0' SKEW
IOWA
SHEET 4 OF 19



BRACING ELEVATION
(LOOKING SOUTH)

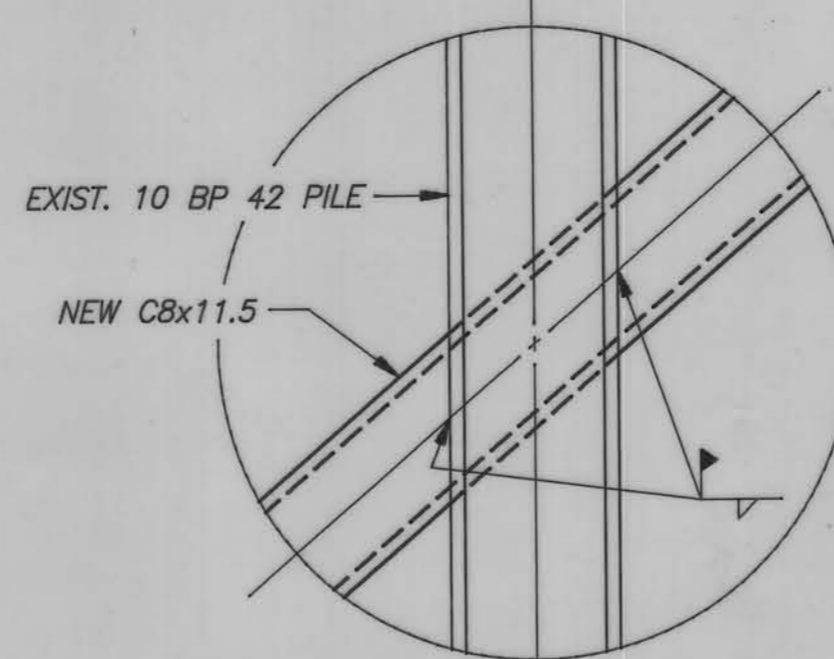
NOTE : C8x11.5 BRACING TO BE PLACED ON NORTH SIDE OF EXISTING PILES ONLY.



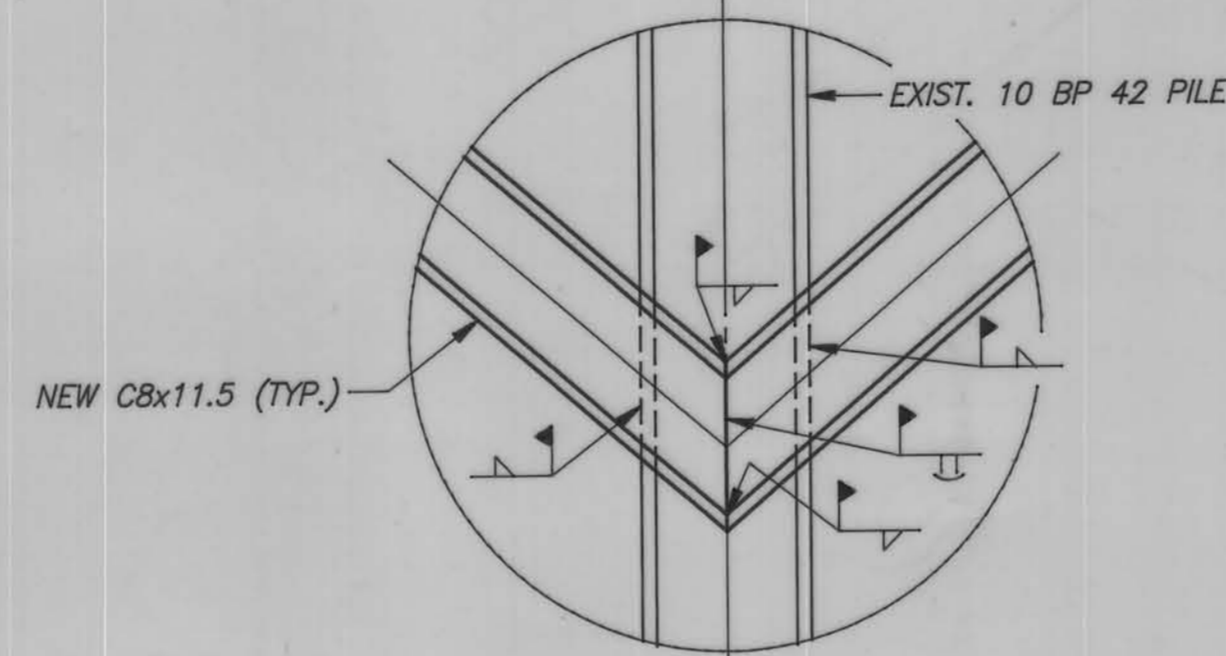
STAKING DIAGRAM
SCALE 1" = 20'

CURVE DATA

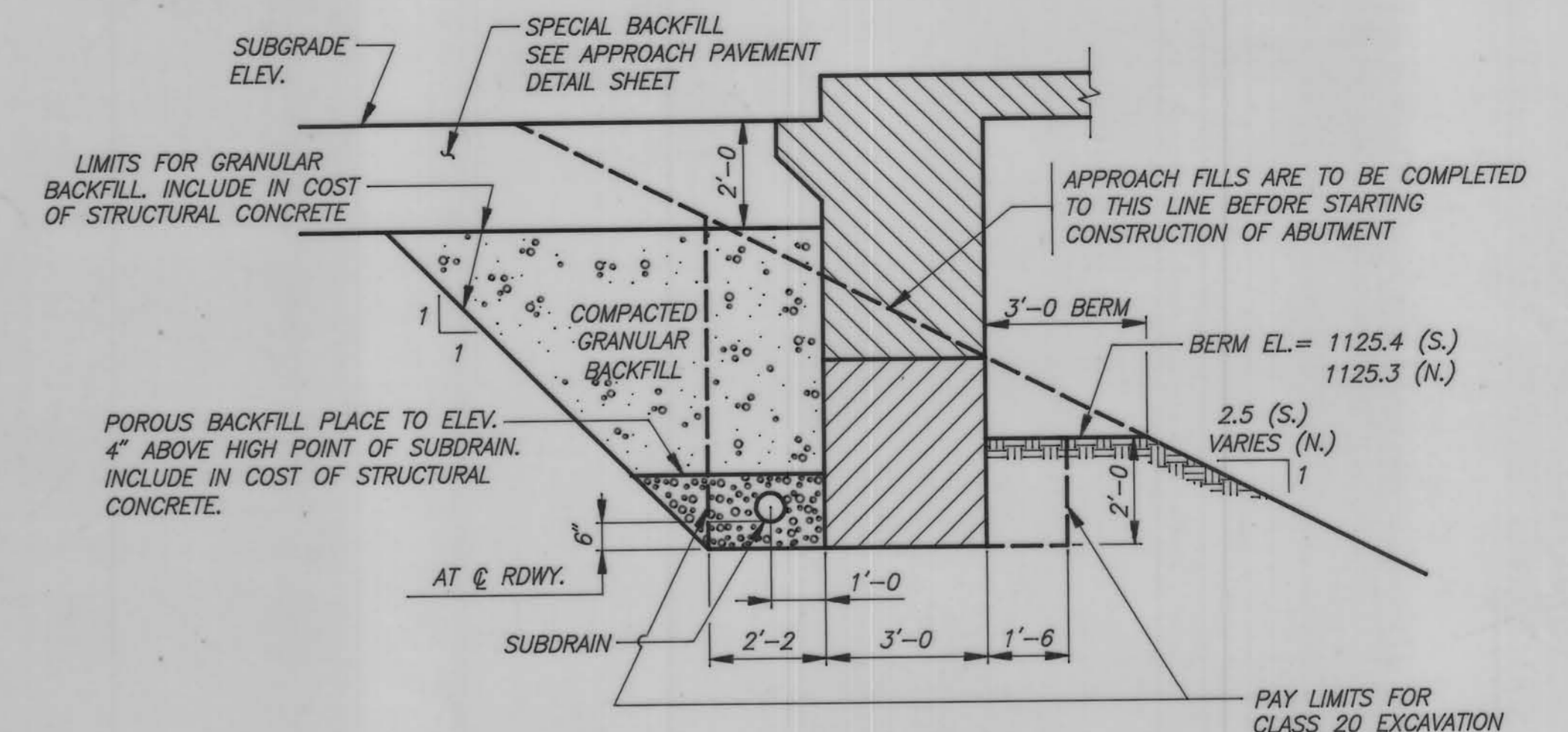
P.I. STA.16+05.70
I = 12°37'34" RT.
Da = 1'15"03.5"
T = 506.70'
R = 4580.10'
L = 1009.30'
C = 1007.26'
E = 27.94'
M = 27.77'
e = 2.7%



DETAIL-A
(LOOKING NORTH)



DETAIL-B

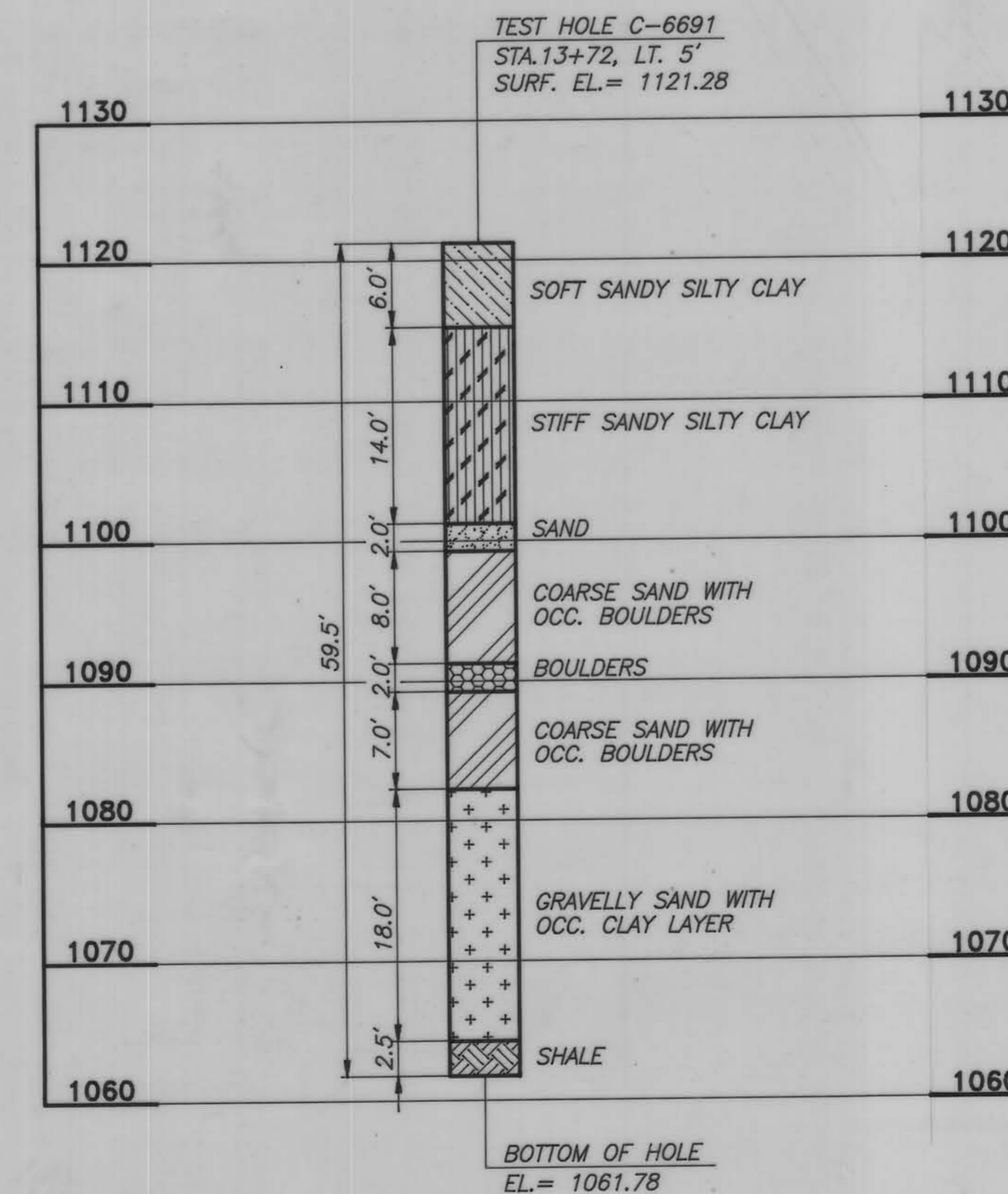


GRANULAR BACKFILL DETAIL

SEE SITUATION PLAN SHEET 3, FOR LAYOUT OF SUBDRAIN.

GENERAL NOTE

SHIMMING MAY BE NEEDED TO STIFFEN PILING IN OLD ABUTMENT WHEN WELDING CROSS-BRACES. OLD ABUTMENT MAY NOT BE IN STRAIGHT ALIGNMENT. FURNISHING AND PLACING OF SHIMMING MATERIAL SHALL BE CONSIDERED INCIDENTAL TO ITEM NO. 4, STRUCTURAL STEEL.



SOUNDING DATA

SCALE : 1" = 10'
DATED : 02-18-72

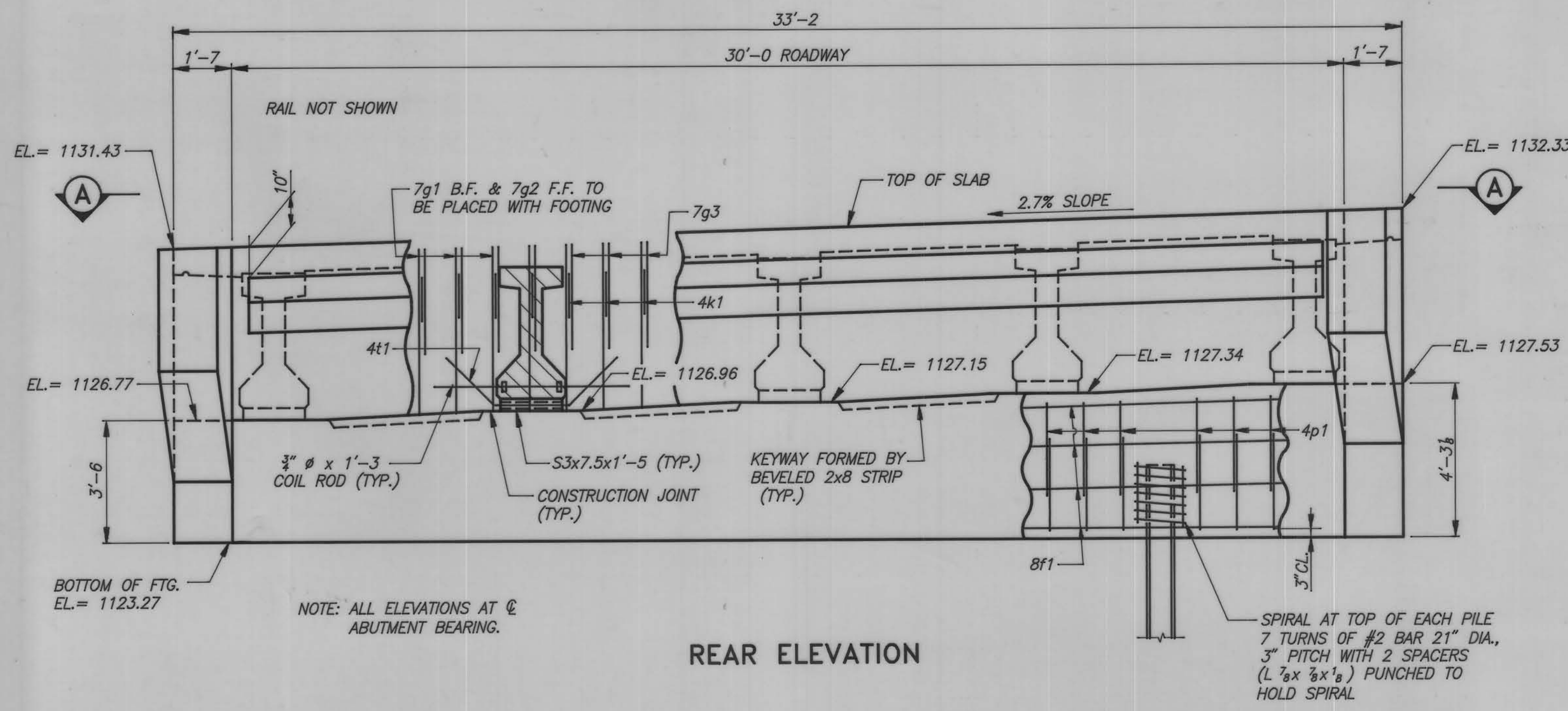
**REHABILITATION OF AN EXISTING
243'-0" x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE TO 326'-0" x 30'
INTEGRAL ABUTMENTS TEE & ENCASED PIERS
80'-9" AND 81'-6" 81'-6" AND 82'-3"
END SPANS INTERIOR SPANS**

**STAKING DIAGRAM, SOUNDING DATA
AND MISC. DETAILS**

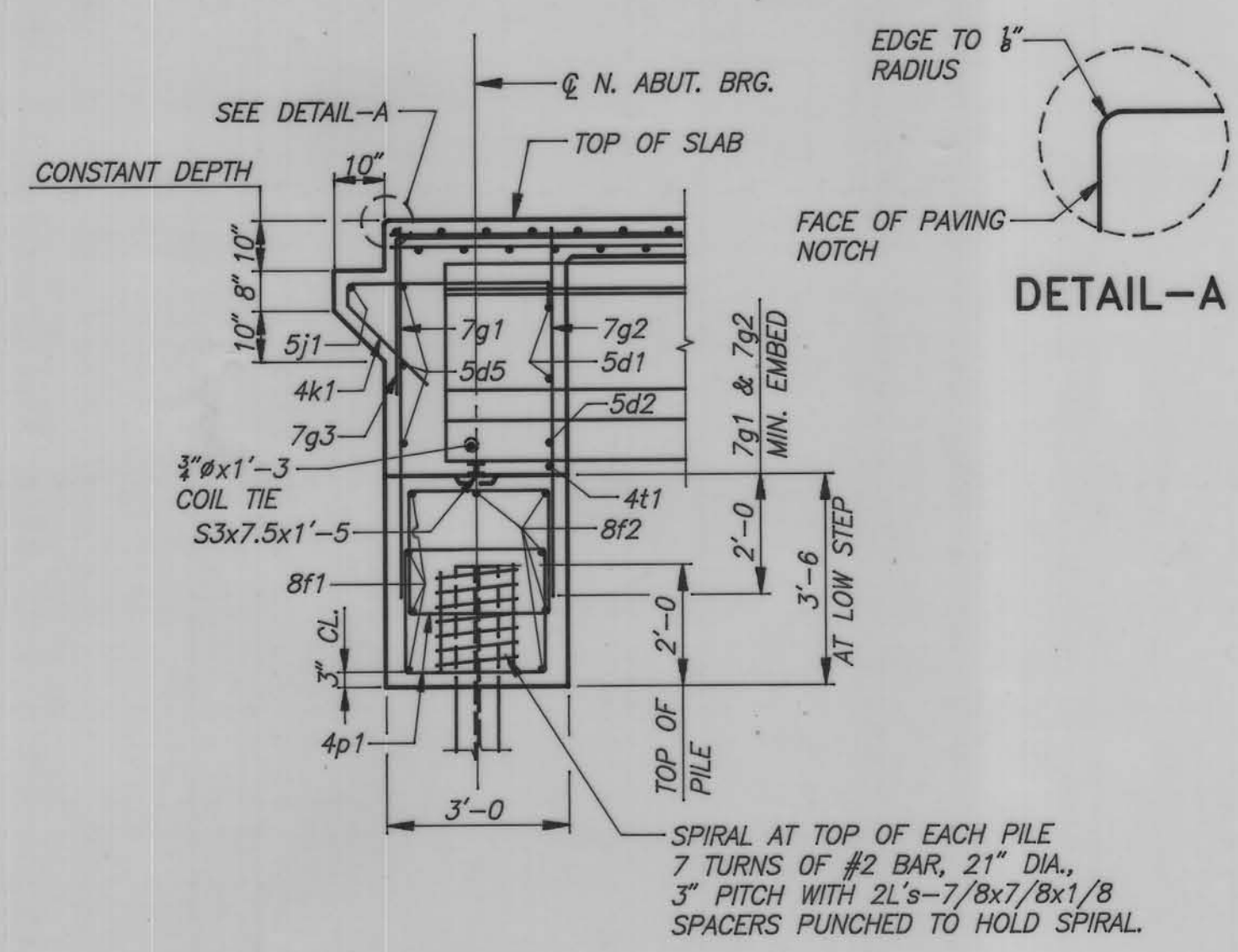
STATION 12+92
CRAWFORD COUNTY,

0° SKEW
IOWA

SHEET 5 OF 19

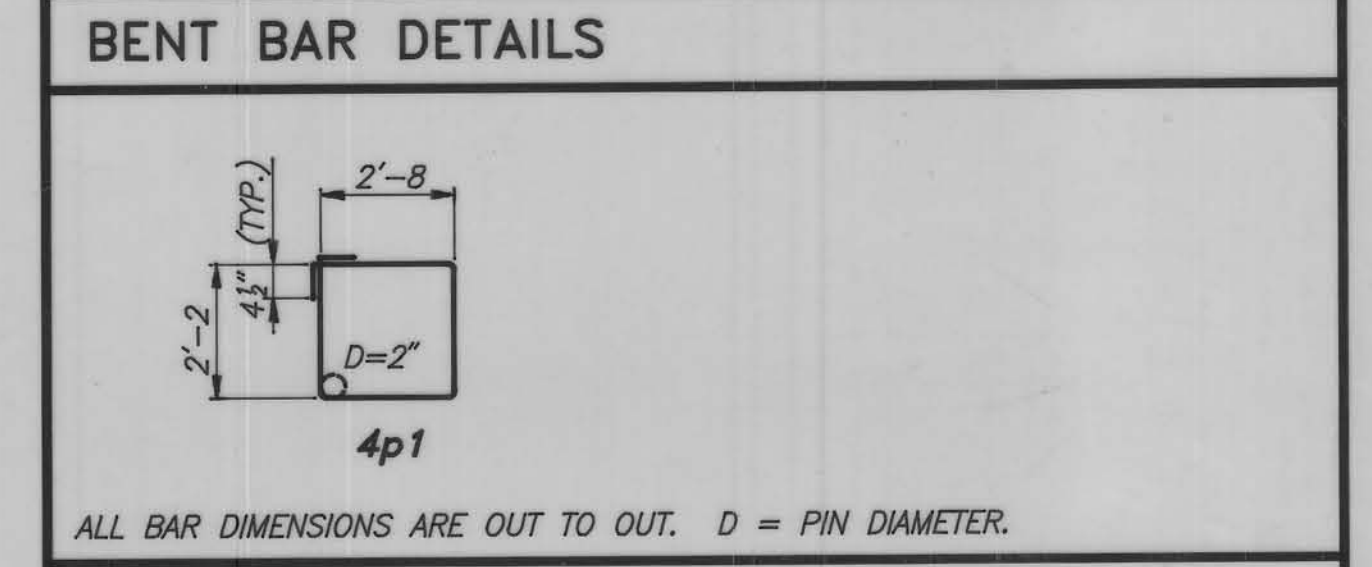


REAR ELEVATION



SECTION B-B

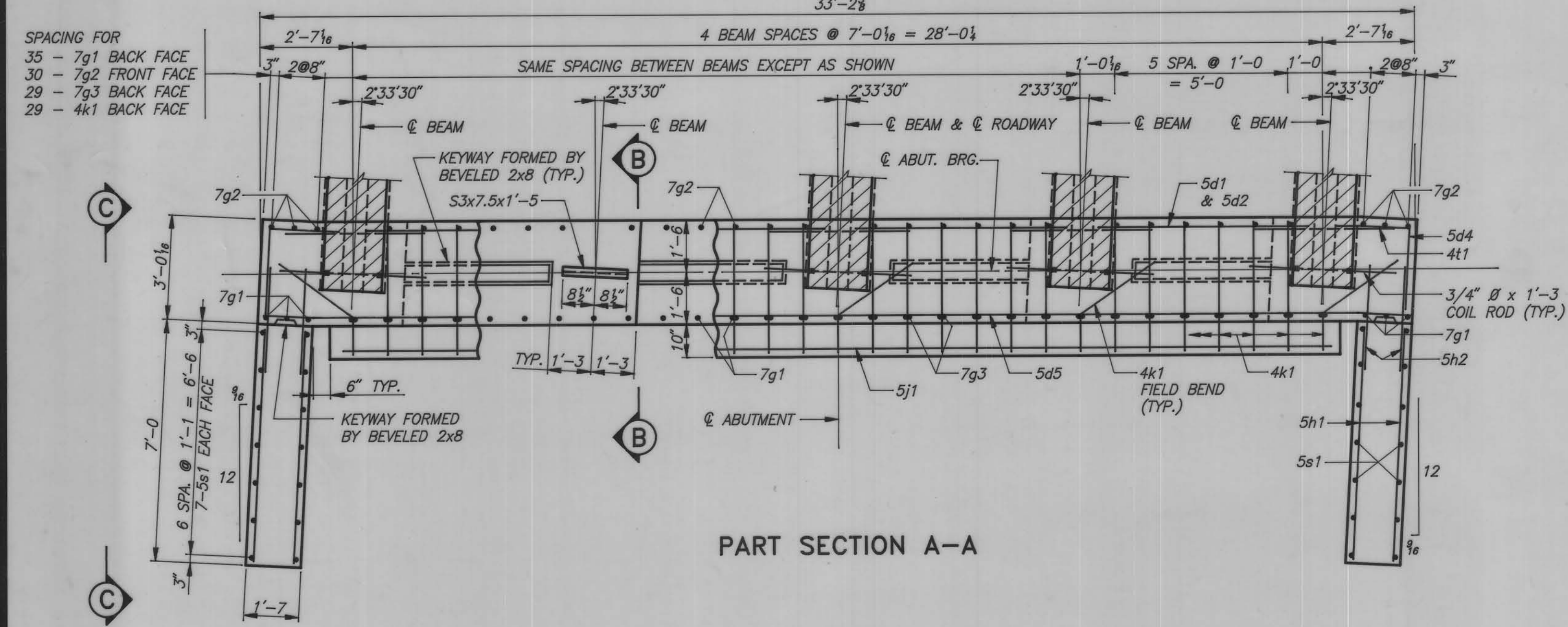
REINFORCING BAR LIST - N. ABUTMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8f1	ABUT. FOOTING, LONGITUDINAL	—	4	32'-10	351
8f2	ABUT. FOOTING, LONGITUDINAL	—	5	32'-10	438
7g1	ABUT. VERTICAL, B.F.	—	35	6'-6	465
7g2	ABUT. VERTICAL, F.F.	—	30	6'-6	399
5h1	ABUT. WING, HORIZONTAL	—	24	6'-8	167
5h2	ABUT. TO WING, DOWEL, HORIZ.	—	24	3'-0	75
4p1	ABUT. HOOPS	□	46	10'-5	320
5s1	WING, VERTICAL	—	28	VARIES	131
	PILE SPIRAL - #2 BAR	—	8	38'-6	51
	SPIRAL SPACERS - LxWxh @ 0.70	—	16	1'-10	21
UNCOATED TOTAL (LBS.)					1,282
EPOXY COATED TOTAL (LBS.)					1,136



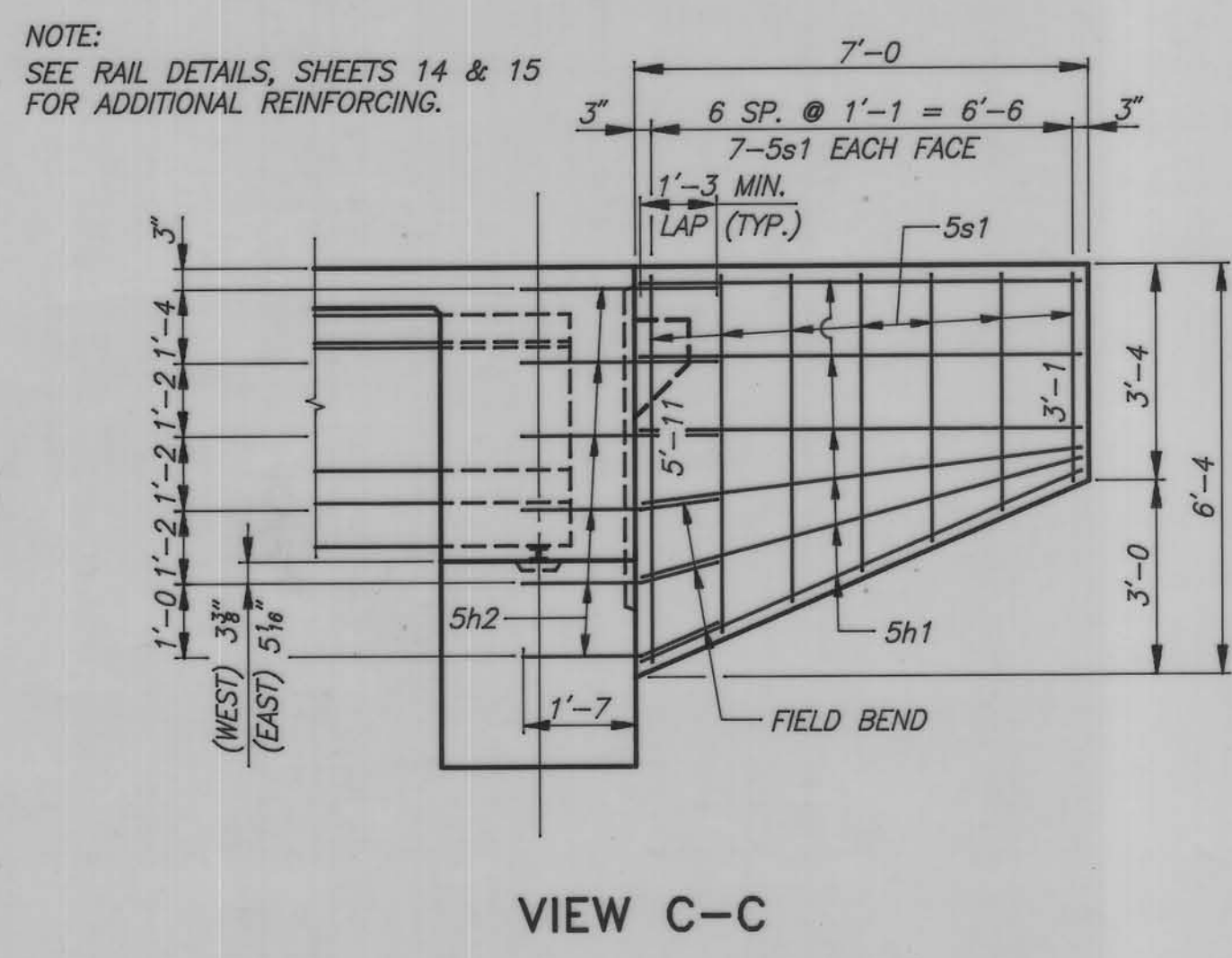
BENT BAR DETAILS

CONCRETE PLACEMENT QUANT. - N. ABUT.		
LOCATION	UNIT	QUANTITY
FOOTING	CU.YDS.	14.3
WINGS 2 @ 1.98 CU.YDS./WING	CU.YDS.	4.0
TOTAL	CU.YDS.	18.3

ESTIMATED QUANTITIES - N. ABUTMENT		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE	CU.YDS.	18.3
REINFORCING STEEL-UNCOATED	LBS.	1,282
REINFORCING STEEL-EPOXY COATED	LBS.	1,136
HP 10x42 STEEL BEARING PILING, DRIVE 8 @ 70'	LIN.FT.	560
EXCAVATION, CLASS 20	CU.YDS.	43
PREBORED HOLES, AS PER PLAN, 8 @ 8'	LIN.FT.	64



PART SECTION A-A



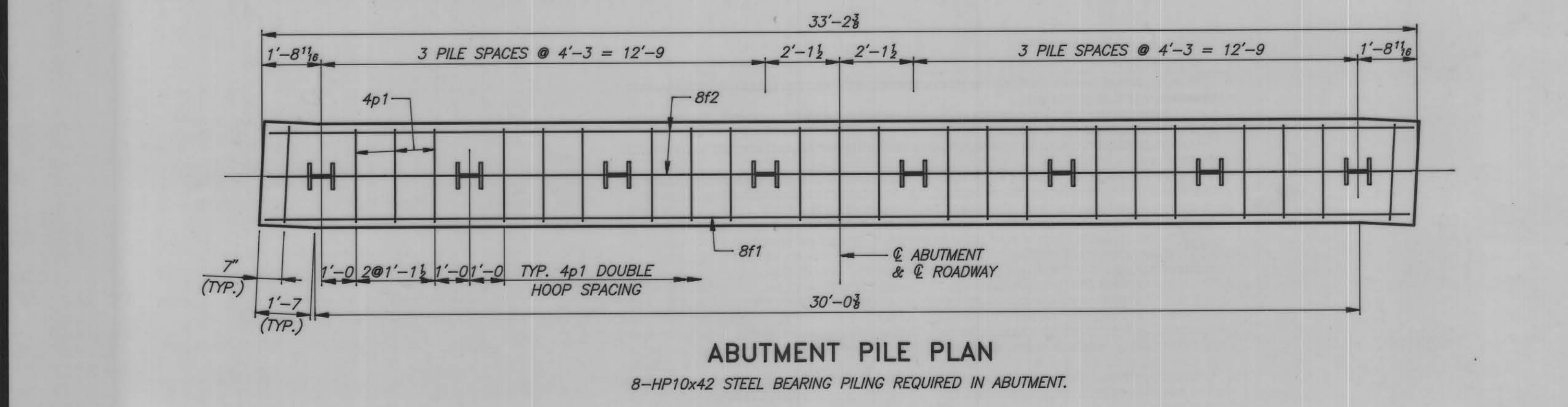
VIEW C-C

ABUTMENT NOTES

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED 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. REINFORCING STEEL IS TO BE SECURELY TIED IN PLACE BEFORE CONCRETE IS PLACED.
 CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2x8'S.
 HP 10x42 STEEL BEARING PILING SHALL BE DRIVEN TO A MINIMUM OF 37 TONS BEARING VALUE PER PILE.
 ALL BACKFILL BETWEEN THE ABUTMENT WINGS IS TO BE GRANULAR AND POROUS BACKFILL (SEE SHEET 5). THE REMAINDER OF THE ABUTMENT EXCAVATION IS TO BE BACKFILLED WITH SOIL.

REHABILITATION OF AN EXISTING
 243'-0 x 30' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE TO 326'-0 x 30'
 INTEGRAL ABUTMENTS TEE & ENCASED PIERS
 80'-9 AND 81'-6 81'-6 AND 82'-3
 END SPANS INTERIOR SPANS

NORTH ABUTMENT DETAILS
 STATION 12+92 0° SKEW
 CRAWFORD COUNTY, IOWA
 SHEET 6 OF 19



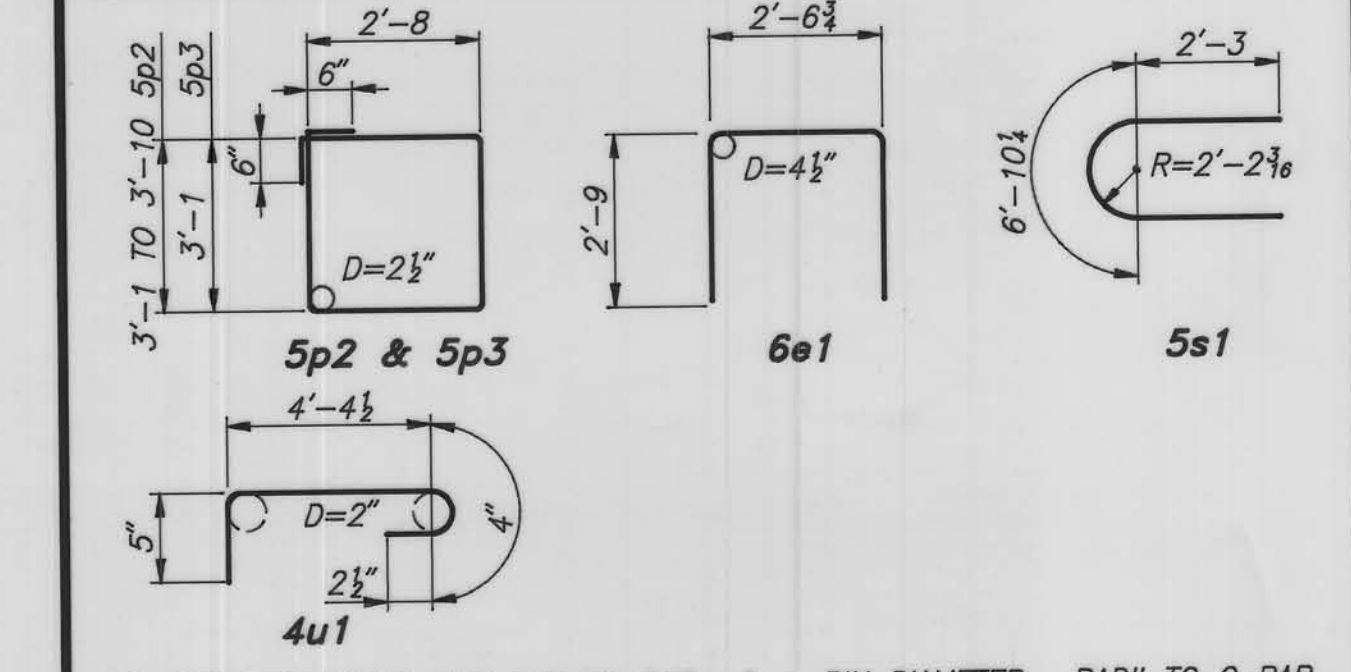
ABUTMENT PILE PLAN

REINFORCING BAR LIST - MOD. ABUT./PIER

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b3	CAP, DOWELS	—	48	3'-0"	150
6c1	CAP, LONGITUDINAL	—	12	32'-10"	592
6e1	CAP, ENDS	—	8	8'-1"	97
7g1	CAP, VERTICAL, BACK FACE	—	35	6'-6"	465
7g2	CAP, VERTICAL, FRONT FACE	—	30	6'-6"	399
5p2	CAP, HOOPS	—	23	VARIABLE	318
5p3	CAP, HOOPS, ENDS	—	3	12'-6"	39
5r1	WALL, HORIZONTAL	—	58	30'-0"	1,815
5s1	WALL, ENDS	—	58	11'-5"	691
5t2	WALL, VERTICAL	—	26	30'-4"	823
5t3	WALL, VERTICAL	—	36	28'-1"	1,054
4u1	WALL, TIES	—	348	5'-4"	1,240
				UNCOATED TOTAL (LBS.)	7,068
				EPOXY COATED TOTAL (LBS.)	615

△ DENOTES EPOXY COATED BAR

BENT BAR DETAILS



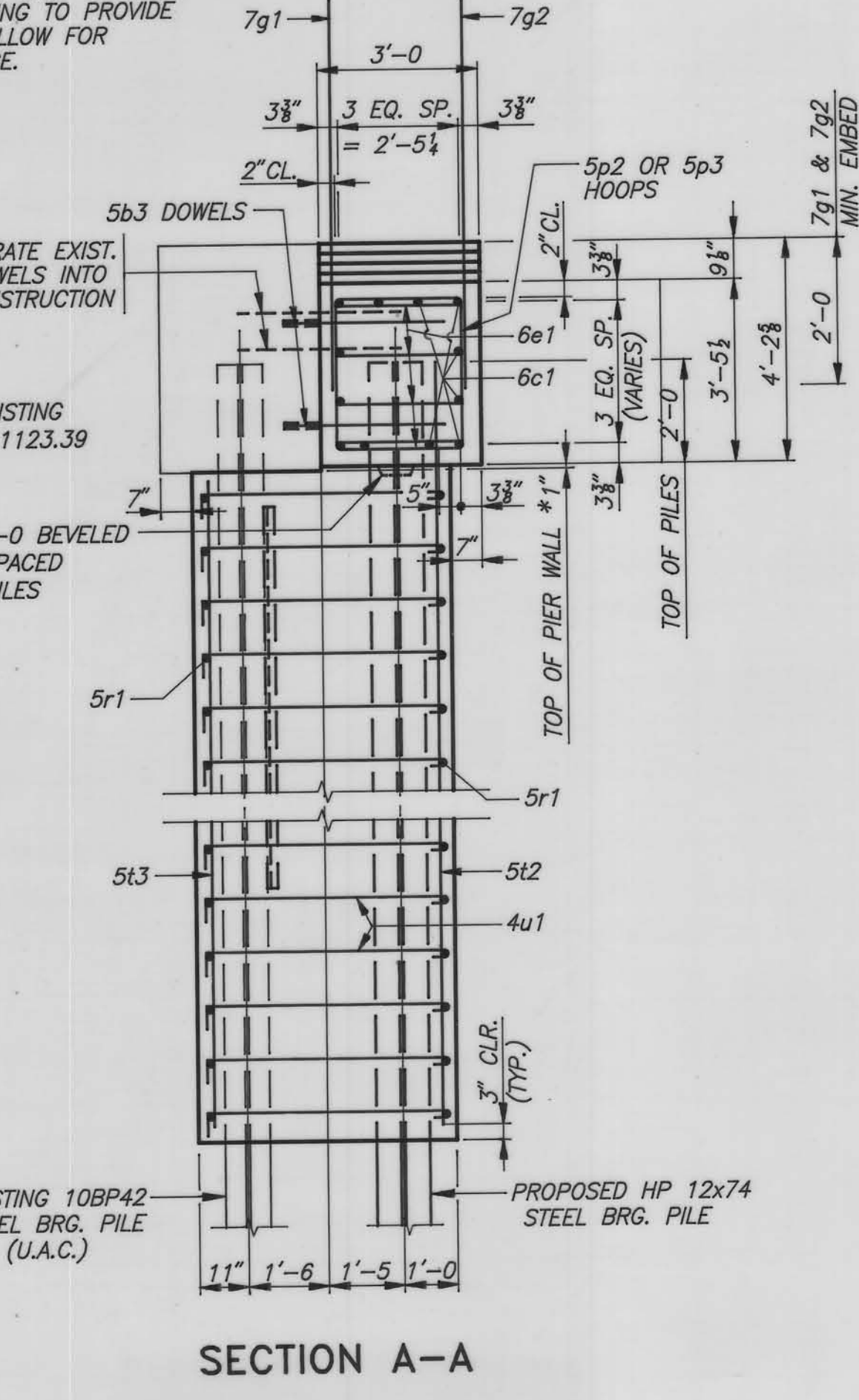
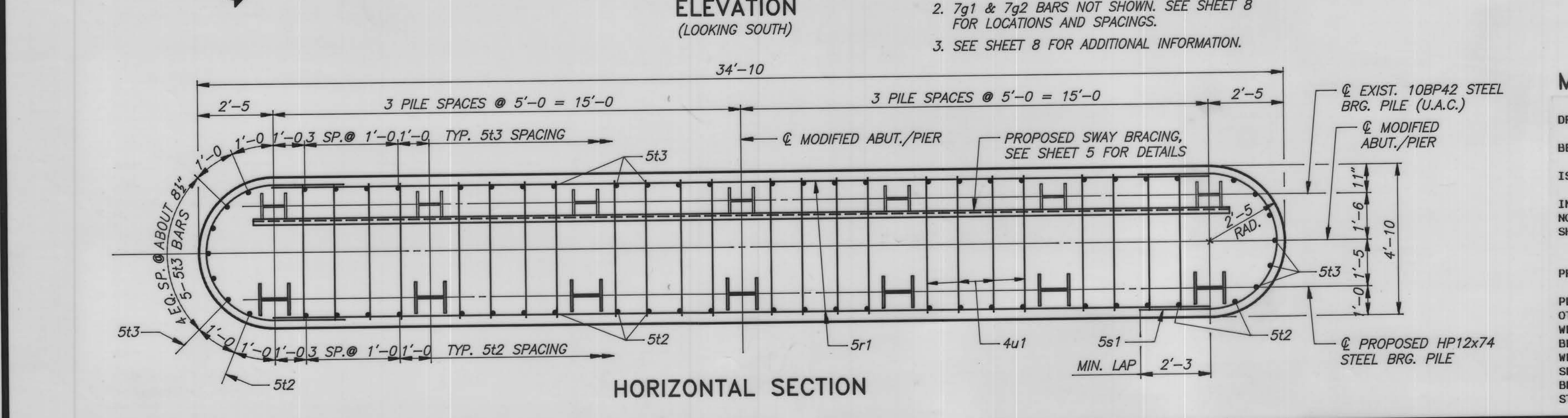
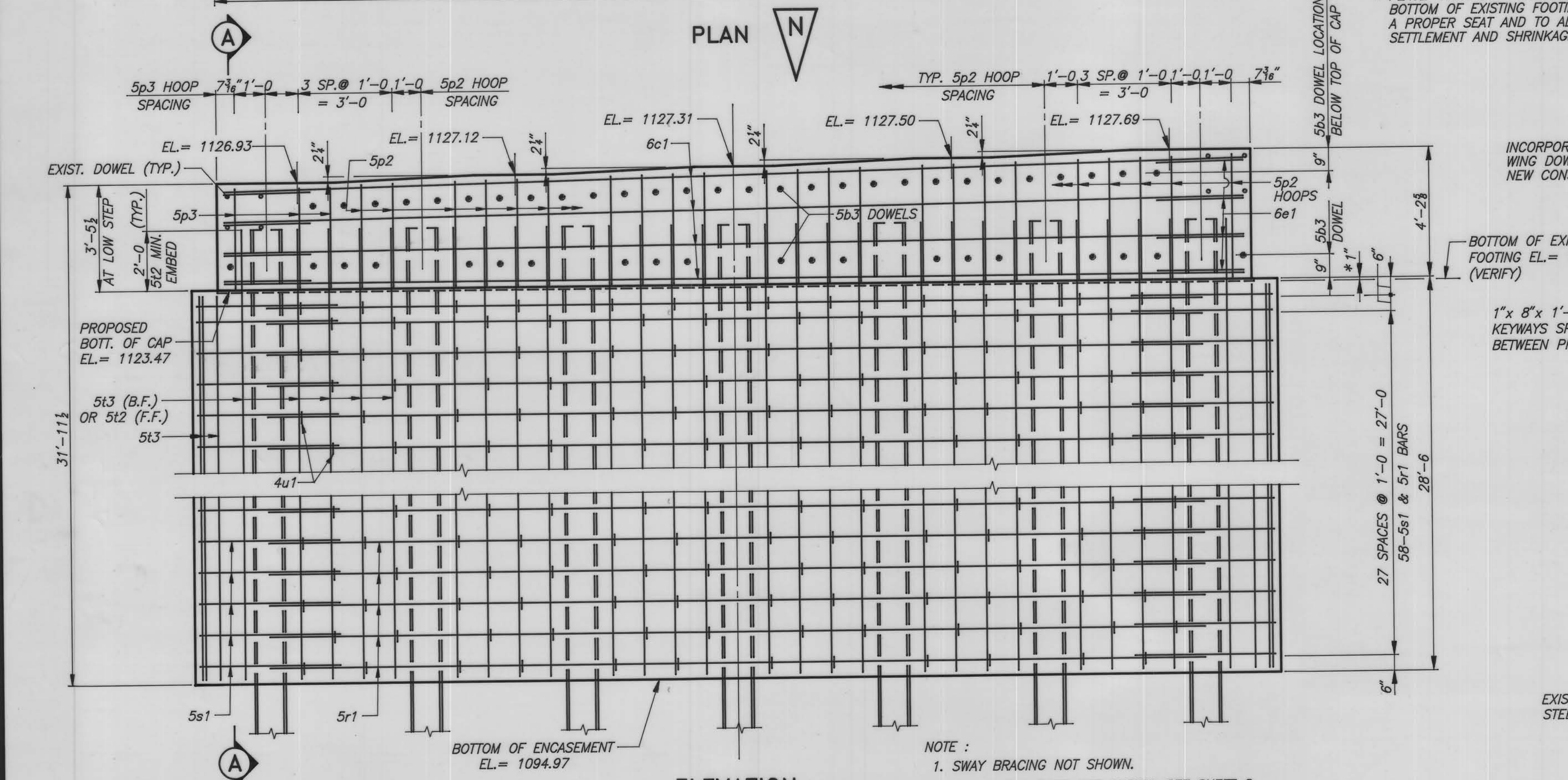
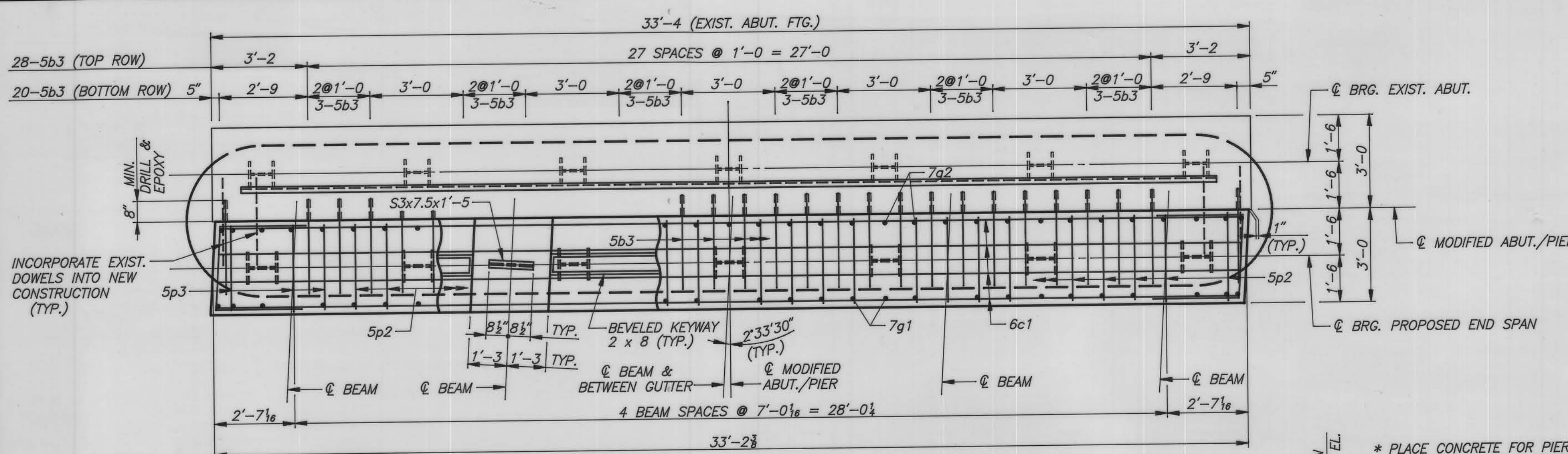
ALL BAR DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER. RADII TO C. OF BAR

CONCRETE PLACEMENT QUANT. - MOD. ABUT./PIER

LOCATION	UNIT	QUANTITY
PIER CAP	CU.YDS.	14.2
PIER WALL	CU.YDS.	172.4
TOTAL	CU.YDS.	186.6

ESTIMATED QUANTITIES - MOD. ABUT./PIER

ITEM	UNIT	QUANTITY
CONCRETE, STRUCTURAL	CU.YDS.	186.6
STEEL, REINFORCING - UNCOATED	LBS.	7,068
STEEL, REINFORCING - EPOXY COATED	LBS.	615
STEEL, STRUCTURAL	LBS.	924
HP 12x74 STEEL BRG. PILING, DRIVE 7 @ 70'	LIN.FT.	490
CLASS 21 EXCAVATION	CU.YDS.	46.0

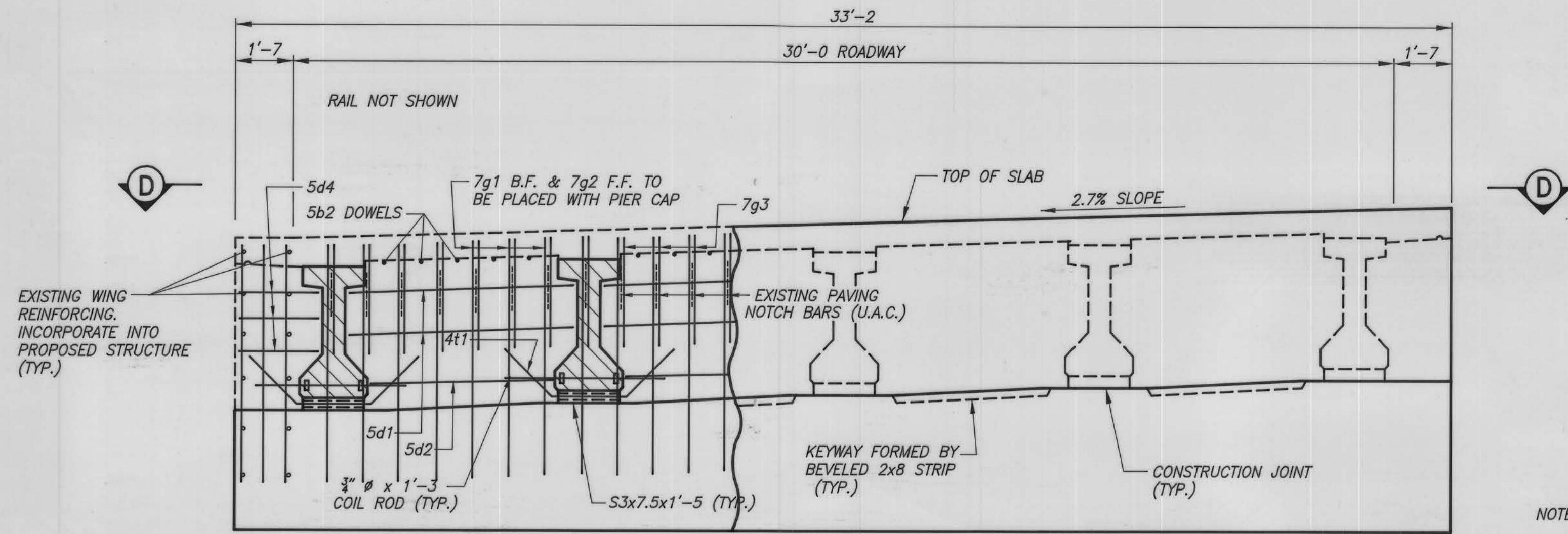


MODIFIED ABUTMENT/PIER NOTES

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED 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. ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE THE CONCRETE IS PLACED. EPOXY BOND IS TO BE APPLIED TO SURFACES WHERE NEW AND EXISTING CONCRETE INTERFACE. EPOXY GROUT AND DOWELS SHALL BE INSTALLED ACCORDING TO PROCEDURES NOTED ON SHEET 4, BEFORE NEW CONCRETE IS PLACED. THE COST OF SETTING DOWELS SHALL BE INCLUDED IN PRICE BID FOR "STEEL, REINFORCING, EPOXY COATED". EXISTING DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. HP12x74 STEEL BEARING PILES ARE TO BE DRIVEN TO FULL PENETRATION, IF PRACTICABLE, BUT TO NOT LESS THAN 65 TONS BEARING CAPACITY PER PILE. DIAGONAL BRACING IS TO BE WELDED TO THE EXISTING PILES, AS SHOWN ON THE PLANS. THE DESIGN DRAWINGS INDICATE AWS PREQUALIFIED WELDED JOINTS, AND UNLESS OTHERWISE NOTED, THE DESIGN JOINT DETAILS ARE FOR MANUAL SHIELDED METAL ARC WELDING. ALTERNATE JOINT DETAILS MAY BE SUBMITTED FOR APPROVAL. ALL WELDS TO BE 1/4" FILLET WELDS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE BY WELDERS CERTIFIED IN THE POSITIONS REQUIRED AND IN ACCORDANCE WITH CURRENT SPECIFICATIONS. COST OF LABOR, MATERIAL AND EQUIPMENT FOR INSTALLING DIAGONAL BRACING AND FIELD WELDING SHALL BE INCLUDED IN THE BID PRICE FOR "STEEL, STRUCTURAL".

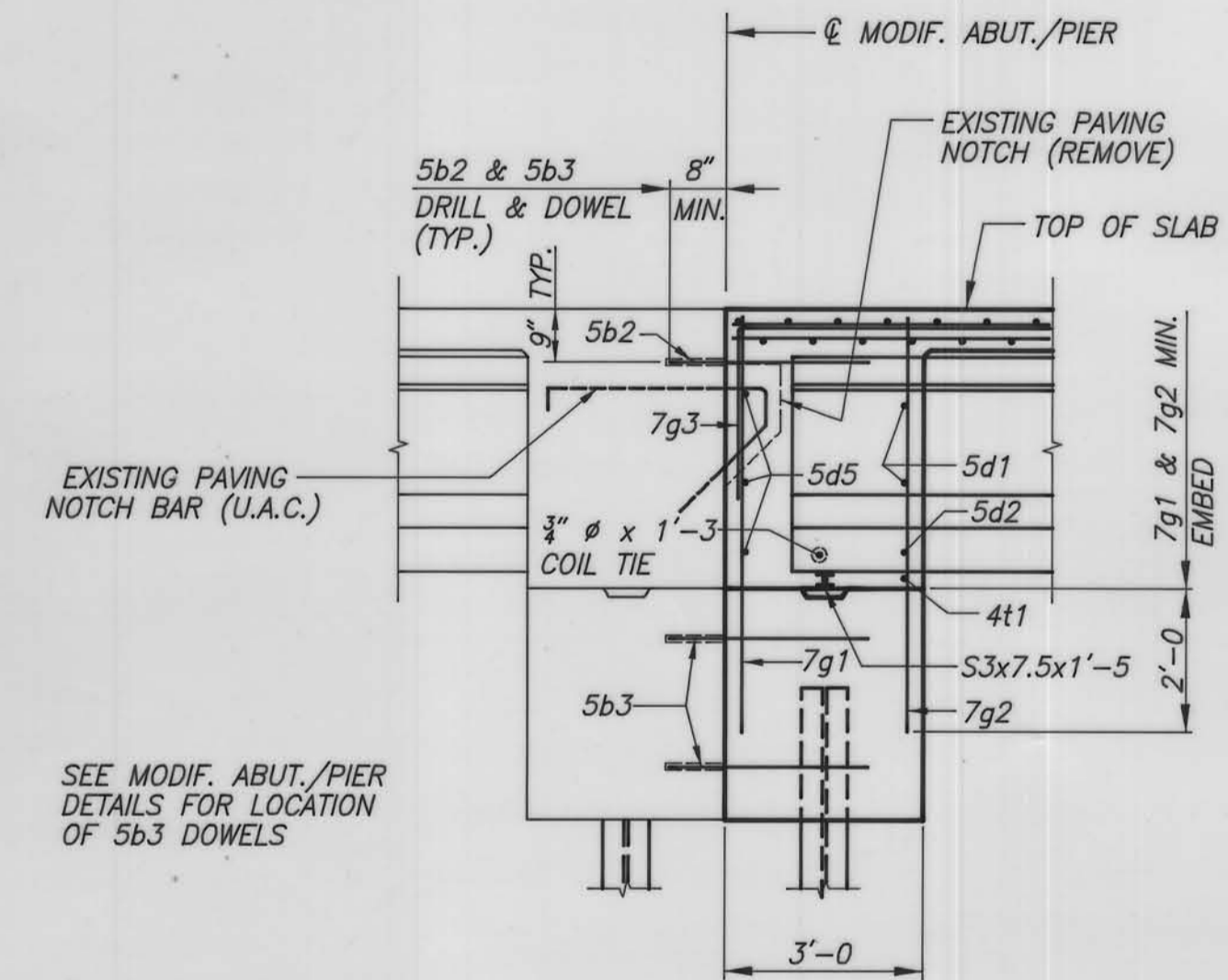
REHABILITATION OF AN EXISTING 243'-0" x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326'-0" x 30' INTEGRAL ABUTMENTS AND ENCASED PIERS
 80'-9" AND 81'-6" END SPANS
 81'-6" AND 82'-3" INTERIOR SPANS

MODIFIED ABUTMENT / PIER DETAILS
 STATION 12+92
 CRAWFORD COUNTY, IOWA
 SHEET 7 OF 19

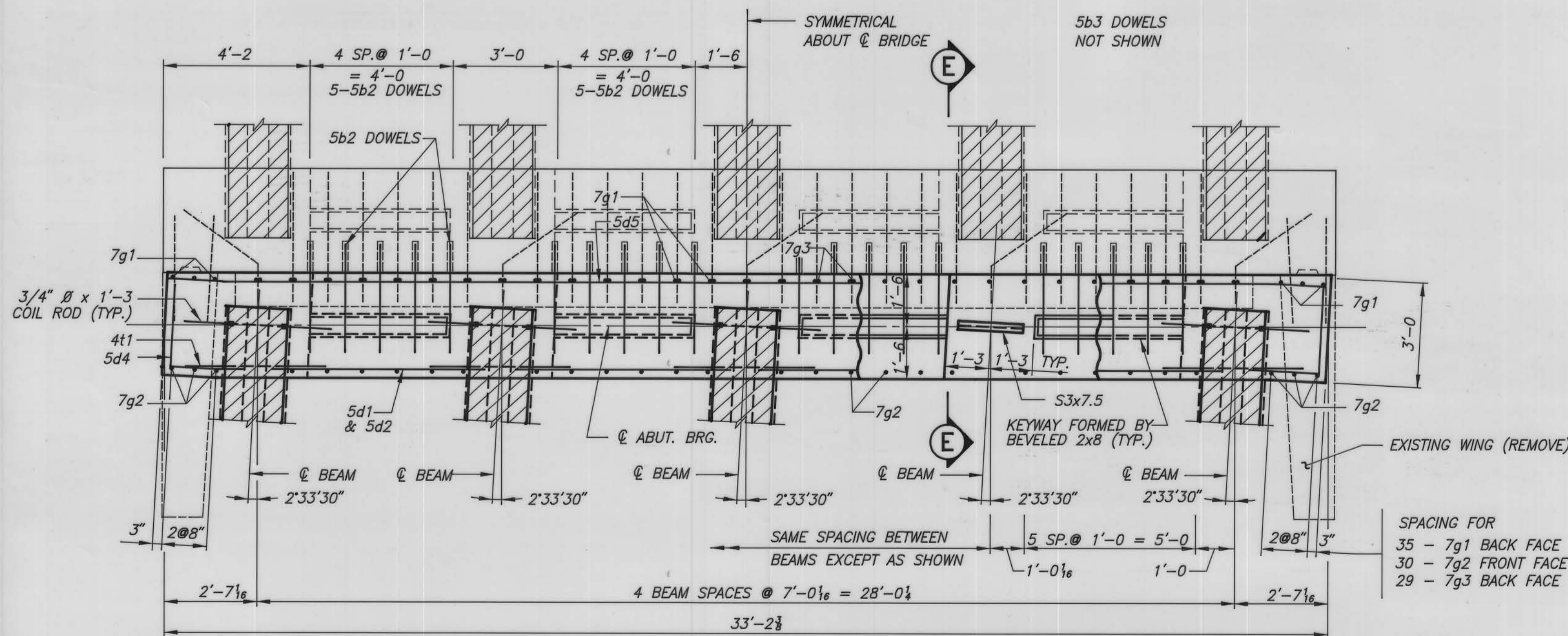


REAR ELEVATION

NOTE: SEE SHEET 7 FOR ADDITIONAL INFORMATION



SECTION E - E



PART SECTION D - D

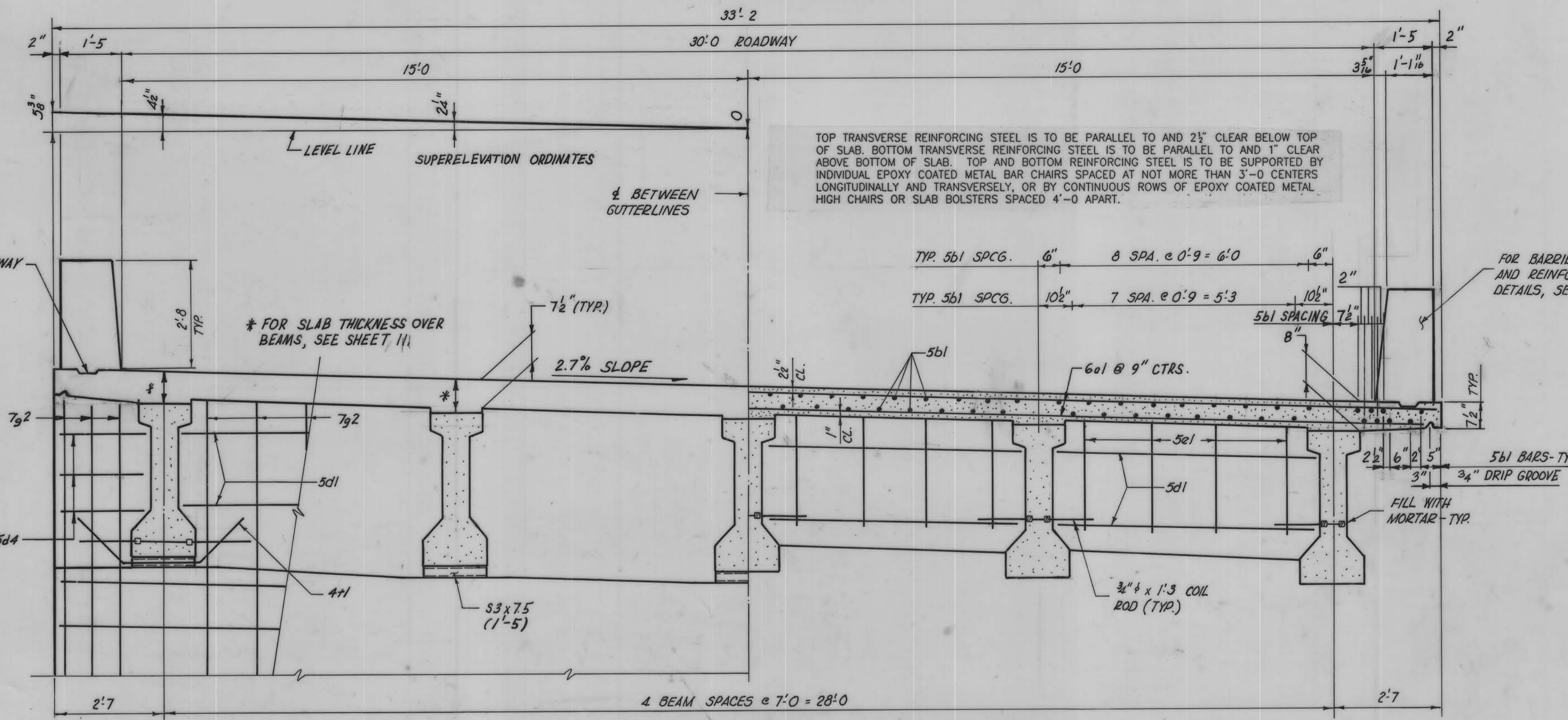
REHABILITATION OF AN EXISTING
 243'-0" x 30' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE TO 326'-0" x 30'
 INTEGRAL ABUTMENTS
 80'-9" AND 81'-6" TEE & ENCASED PIERS
 END SPANS 81'-6" AND 82'-3" INTERIOR SPANS

SUPERSTRUCTURE DETAILS

STATION 12+92 0° SKEW
 CRAWFORD COUNTY, IOWA
 SHEET 8 OF 19

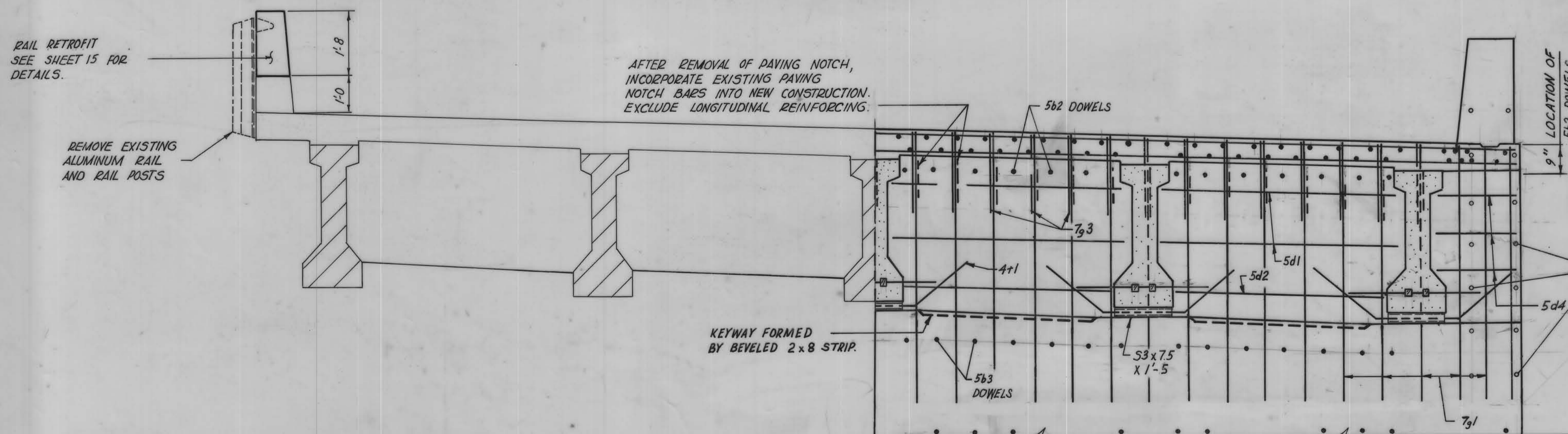
SUPERSTRUCTURE NOTES

SLAB THICKNESS INCLUDES 1/2" INTEGRAL WEARING SURFACE.
 ALL EXPOSED CORNERS OF 90 DEGREES OR SHARPER ARE TO BE FORMED WITH A 3/4" DRESSED AND BEVELED STRIP. CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING BARS ARE TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED ON EPOXY COATED METAL BAR CHAIRS BEFORE CONCRETE IS PLACED.
 ALL BEAMS ARE TO BE SET VERTICAL.
 FORMS FOR THE SLAB AND RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED BEAMS.
 TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2 1/2" CLEAR ABOVE BOTTOM OF SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR BELOW TOP OF SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL EPOXY COATED METAL BAR CHAIRS SPACED AT 1' NOT MORE THAN 3'-0" CENTERS LONGITUDINALLY OR TRANSVERSELY OR BY CONTINUOUS ROWS OF EPOXY COATED METAL HIGH CHAIRS OR SLAB BOLSTERS SPACED AT 4'-0" APART.
 THE PIER, INTERMEDIATE AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHIC WITH THE FLOOR SLAB AS SHOWN.
 ALL REINFORCING IS TO BE GRADE 60.
 UNIT PRICE FOR STRUCTURAL STEEL INCLUDES WEIGHT OF STEEL FLOOR DRAIN. SEE SHEET 9.



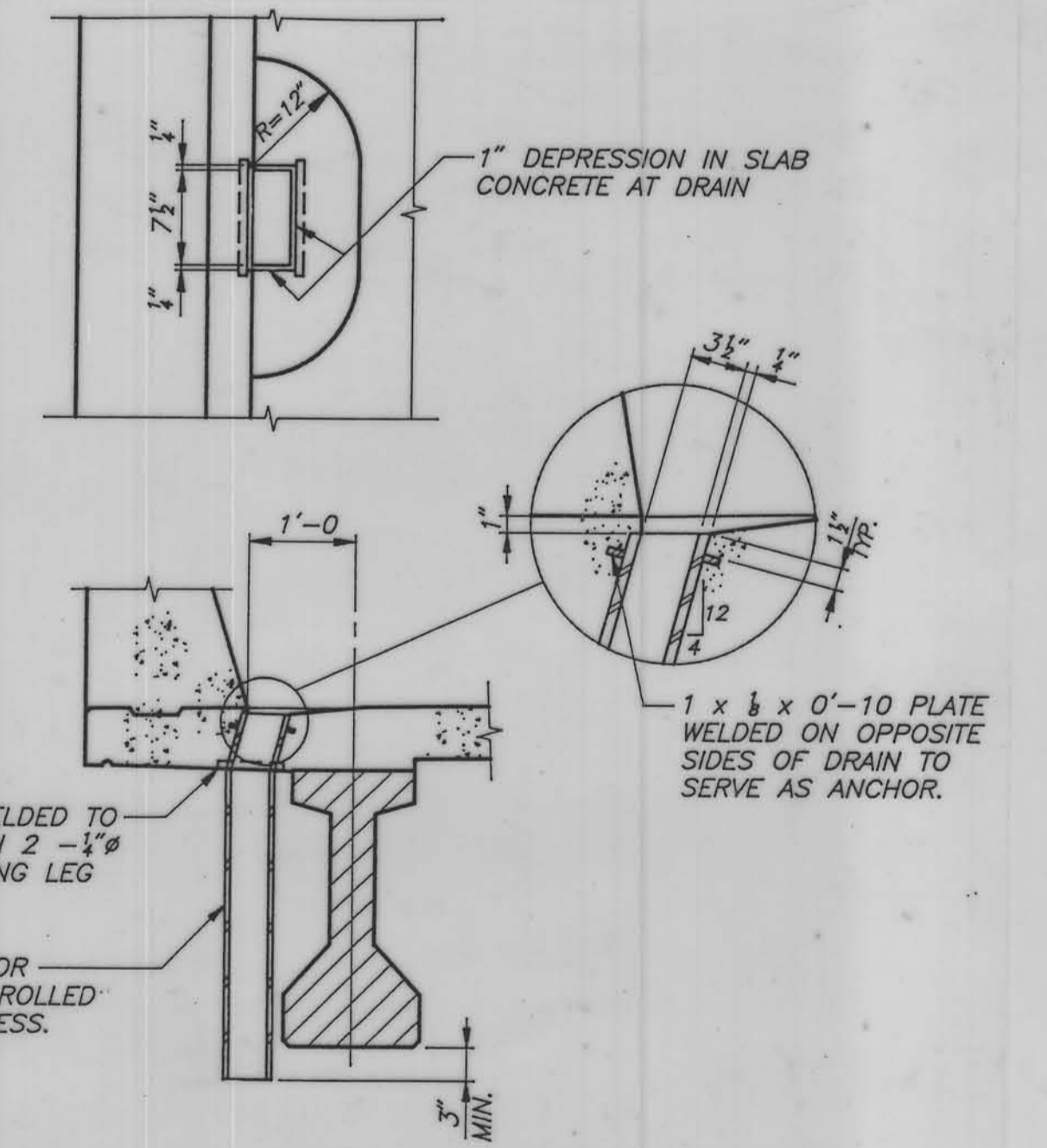
HALF SECTION NEAR NEW NORTH ABUTMENT

HALF INTERMEDIATE SECTION AT NEW END SPAN



HALF SECTION THROUGH EXISTING ROADWAY

HALF SECTION AT MODIFIED ABUTMENT / PIER (LOOKING SOUTH)



DECK DRAIN DETAILS

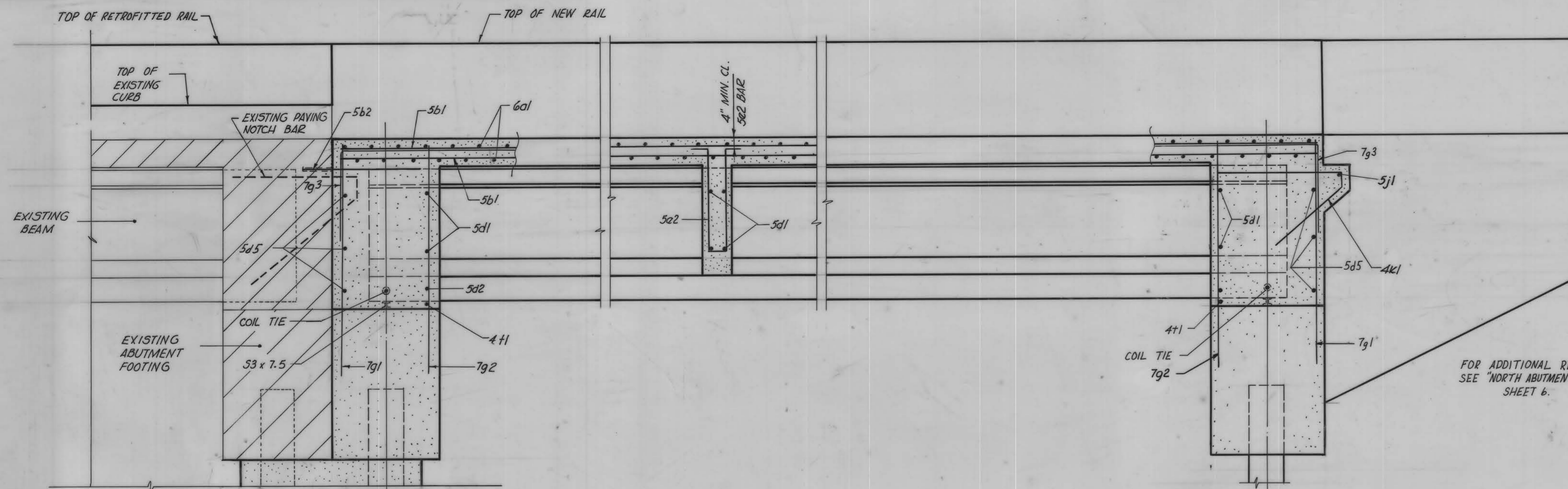
NOTE:
 DRAIN IS TO BE GALVANIZED AFTER FABRICATION. 1 DRAIN REQUIRED.
 SEE "SITUATION PLAN" SHEET 2 FOR LOCATION
 WEIGHT = 91 LBS. PER DRAIN, AND IS INCLUDED IN THE QUANTITY FOR "STRUCTURAL STEEL".
 WEIGHT IS BASED ON ROLLED TUBE.

REHABILITATION OF AN EXISTING
 243'-0 x 30' PRESTRESSED CONCRETE BEAM BRIDGE TO 326'-0 x 30'
 INTEGRAL ABUTMENTS TEE & ENCASED PIERS
 80'-9 AND 81'-6 81'-6 AND 82'-3
 END SPANS INTERIOR SPANS

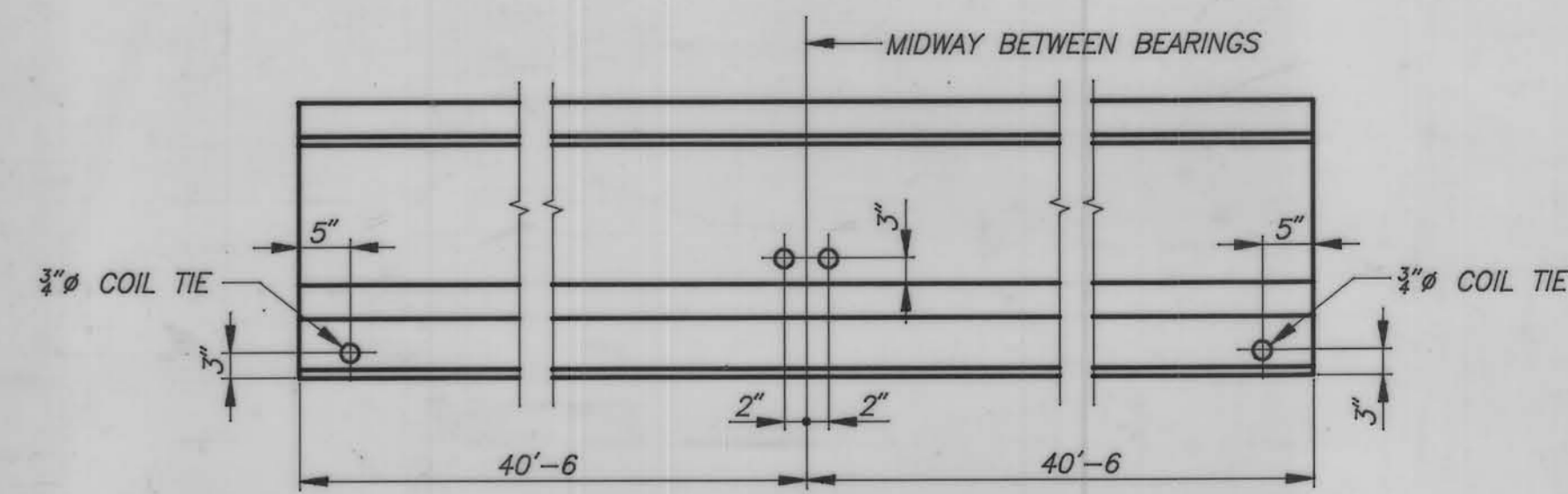
SUPERSTRUCTURE DETAILS

STATION 12+92
 CRAWFORD COUNTY,

0° SKEW
 IOWA
 SHEET 9 OF 19

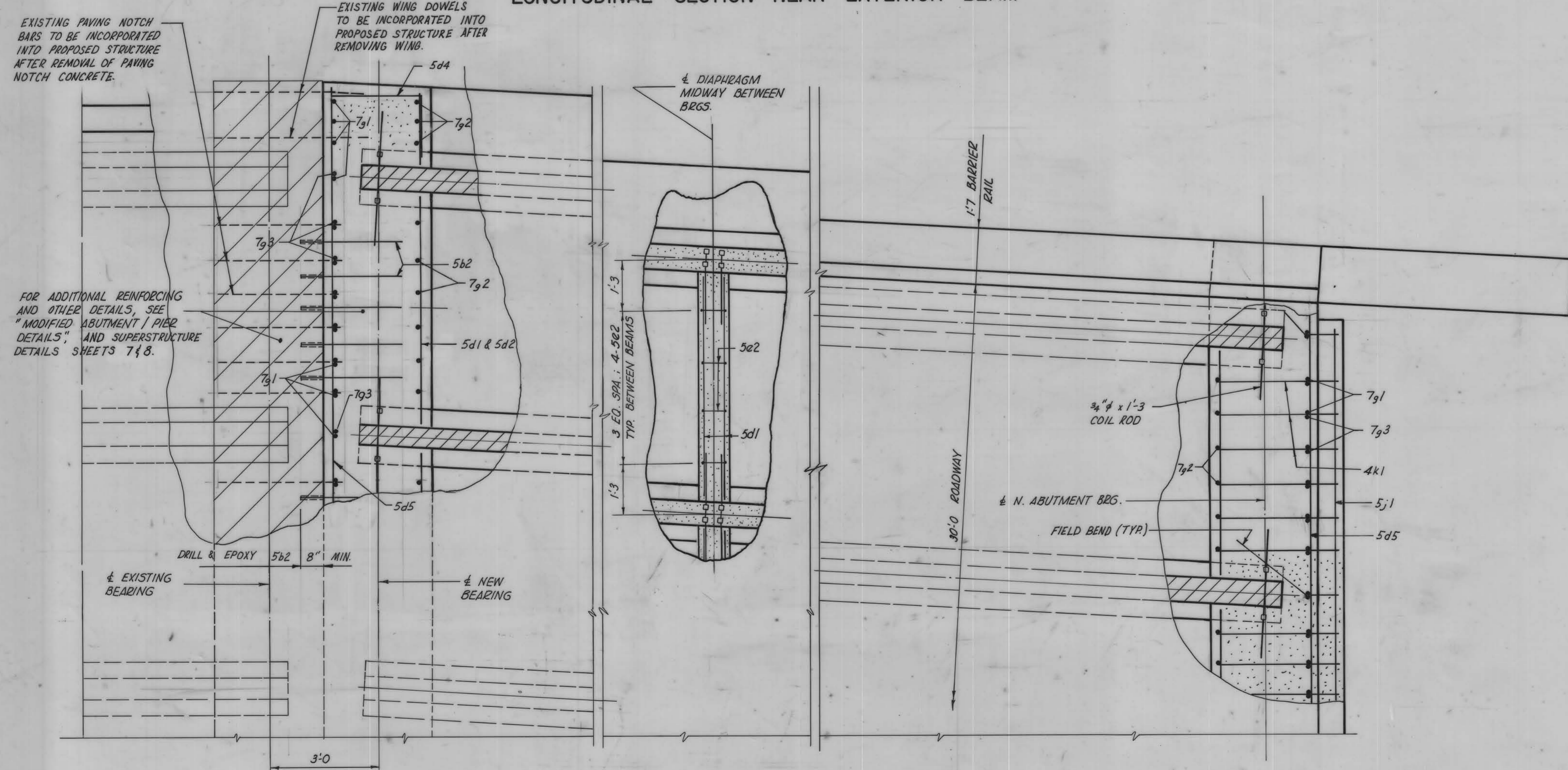


LONGITUDINAL SECTION NEAR EXTERIOR BEAM



LOCATION OF BEAM COIL TIES

FOR ADDITIONAL REINFORCING, SEE "NORTH ABUTMENT DETAILS" SHEET 6.



PART PLAN

REHABILITATION OF AN EXISTING
 243' -0 x 30' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGE TO 326' -0 x 30'
 INTEGRAL ABUTMENTS TEE & ENCASED PIERS
 80'-9 AND 81'-6 81'-6 AND 82'-3
 END SPANS INTERIOR SPANS

SUPERSTRUCTURE DETAILS

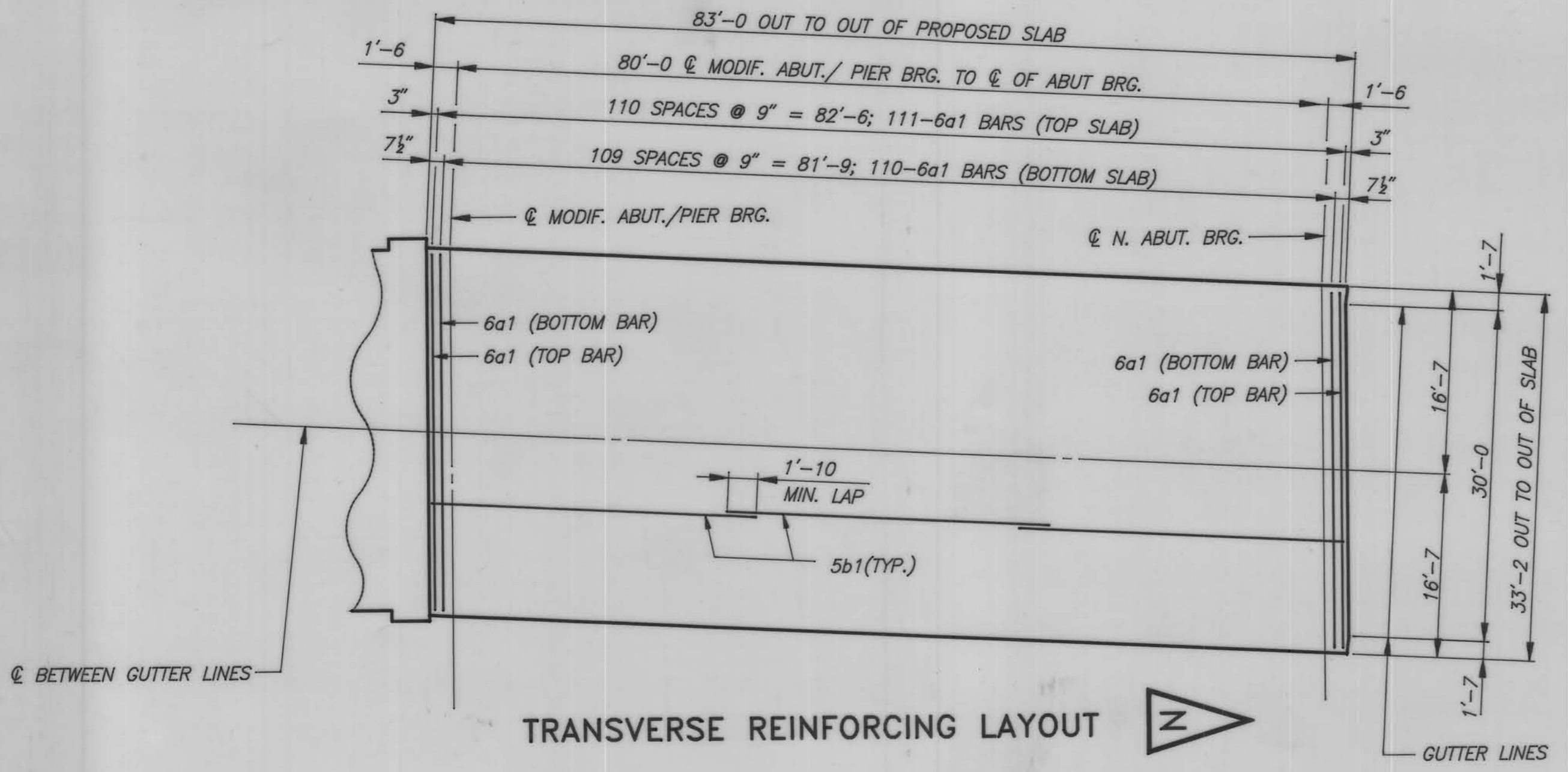
STATION 12+92
 CRAWFORD COUNTY,

0° SKEW
 IOWA
 SHEET 10 OF 19

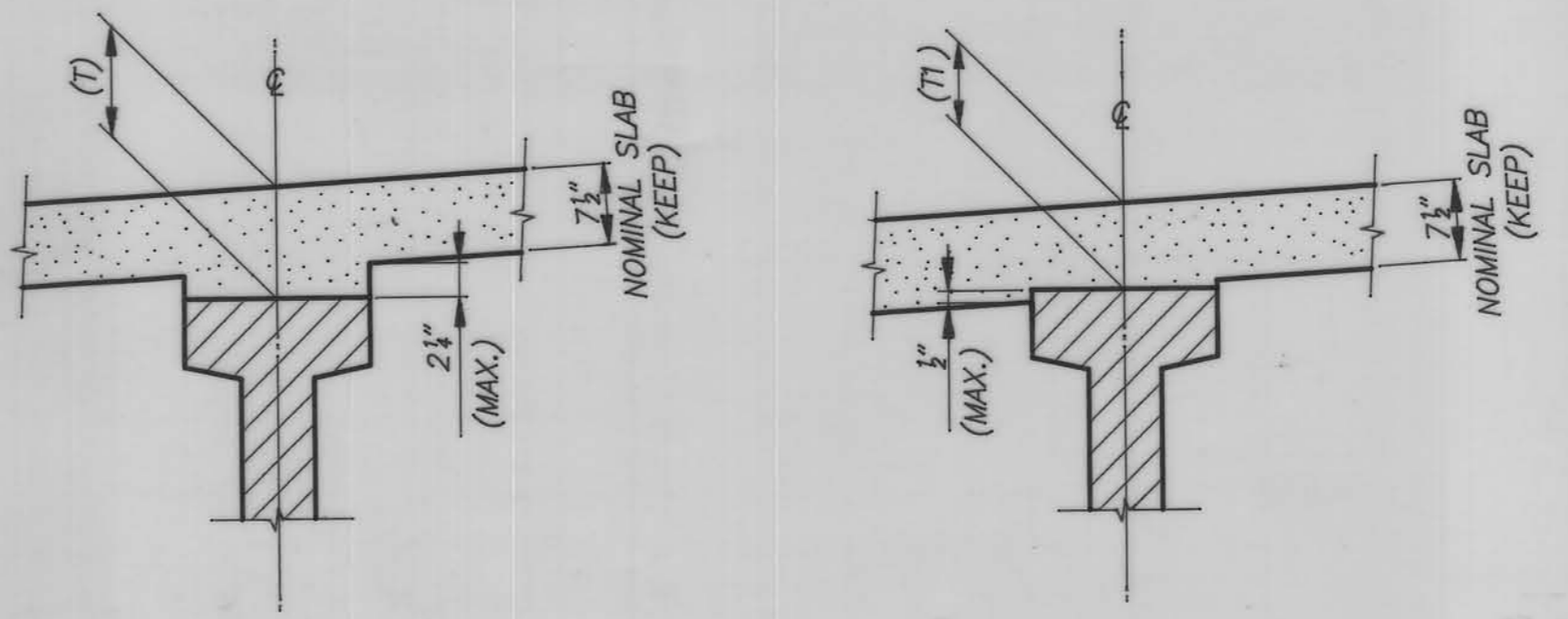
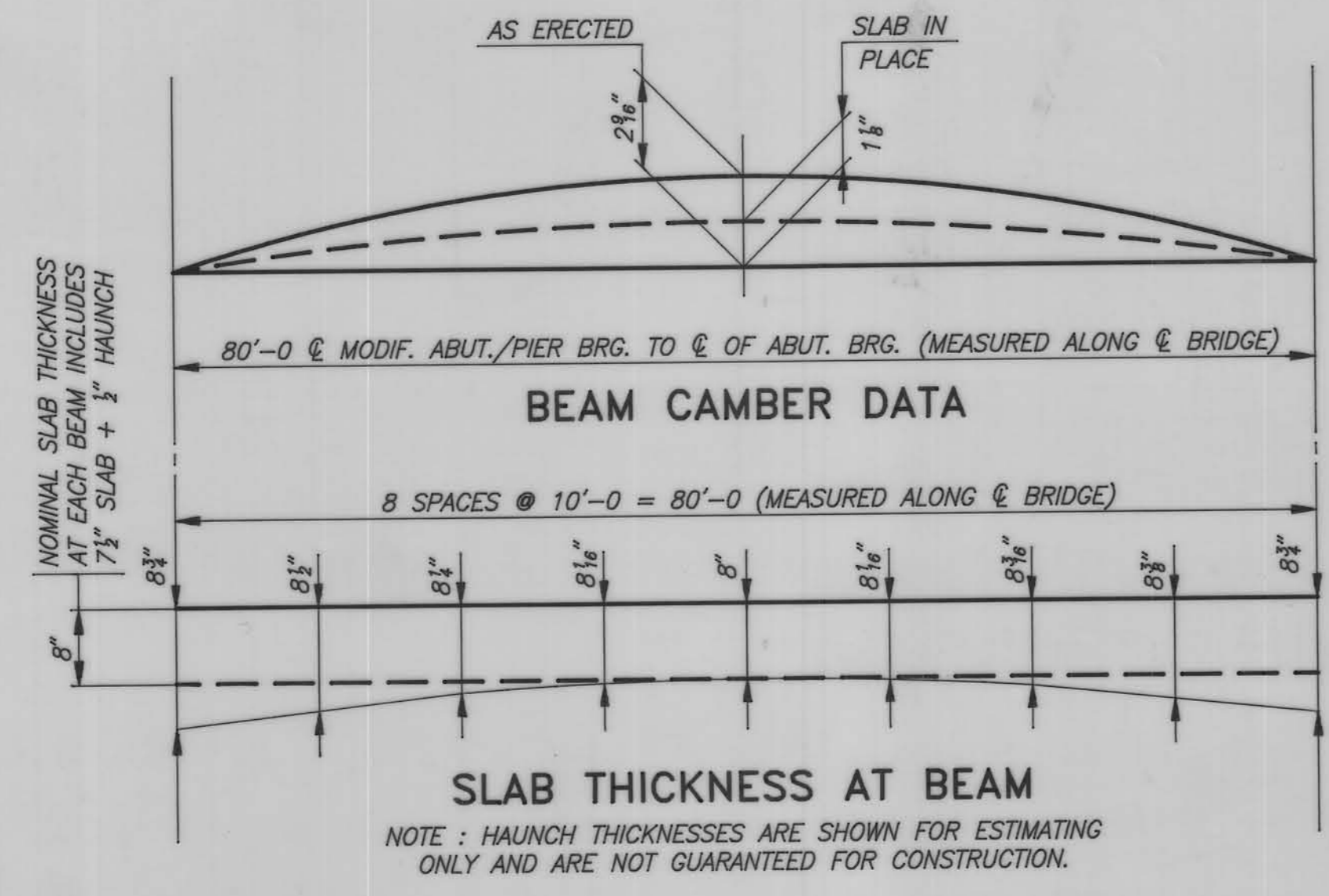
CONC.PLACEMENT QUANT.-SUPERSTRUCTURE	
LOCATION	QUANTITY
SLAB, ABUT./PIER DIAPHRAGMS & INTERMEDIATE DIAPHRAGMS	96.3
RAIL, MODIFIED BARRIER	22.5
RAIL, RETROFITTED	24.6
TOTAL (CU.YDS.)	143.4

ESTIMATED QUANTITIES-SUPERSTRUCTURE		
ITEM	UNIT	QUANTITY
CONCRETE, STRUCTURAL	CU.YDS.	143.4
STEEL, REINFORCING-UNCOATED	LBS.	451
STEEL, REINFORCING-EPOXY COATED	LBS.	28,507
PRET. PREST. CONC. BEAMS, ERECT, AS PER PLAN	LUMP SUM	5
STEEL, STRUCTURAL	LBS.	91

REINFORCING BAR LIST-SUPERSTRUCTURE					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	SLAB, TRANS., TOP & BOTTOM	—	221	32'-10"	10,899
5b1	SLAB, LONGIT., TOP & BOTTOM	—	252	28'-10"	7,578
5b2	PIER DIAPHRAGM, DOWELS	—	20	3'-0"	63
5d1	DIAPHRAGMS, LONGIT.	—	32	6'-2"	206
5d2	DIAPHRAGMS, LONGIT.	—	8	5'-2"	43
5d4	PIER & ABUT. DIAPHRAGMS, ENDS	—	12	4'-5"	55
5d5	PIER & ABUT. DIAPH., LONGIT., B.F.	—	6	32'-10"	205
5e2	INTERMED. DIAPH., HOOPS	U	16	7'-0"	117
7g3	PIER & ABUT. DIAPH., VERT., B.F.	—	58	14'-10"	1,758
5j1	PAVING NOTCH, LONGITUDINAL	—	1	28'-8"	30
4k1	PAVING NOTCH, TRANSVERSE	—	29	6'-1"	118
4t1	ABUTMENT DIAPH. HORIZ. F.F.	—	10	4'-6"	30
	MODIF. BARRIER RAIL, SEE SHT. 14				2,864
	RETROFITTED RAIL, SEE SHEET 15				4,992
				SUPERSTRUCTURE, UNCOATED TOTAL (LBS.)	451
				△ EPOXY COATED SUPERSTRUCTURE, EPOXY COATED TOTAL (LBS.)	28,507

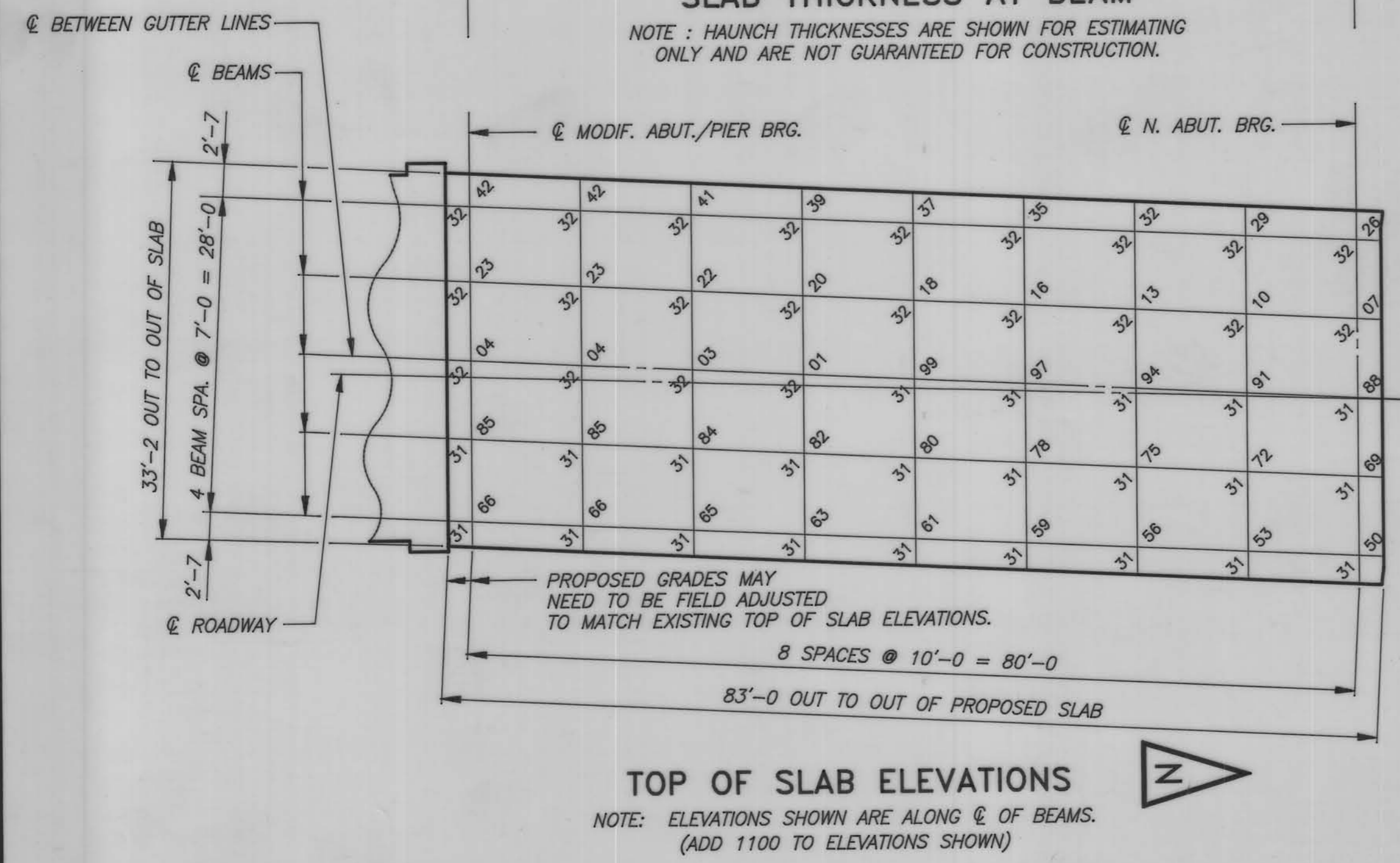


TRANSVERSE REINFORCING LAYOUT

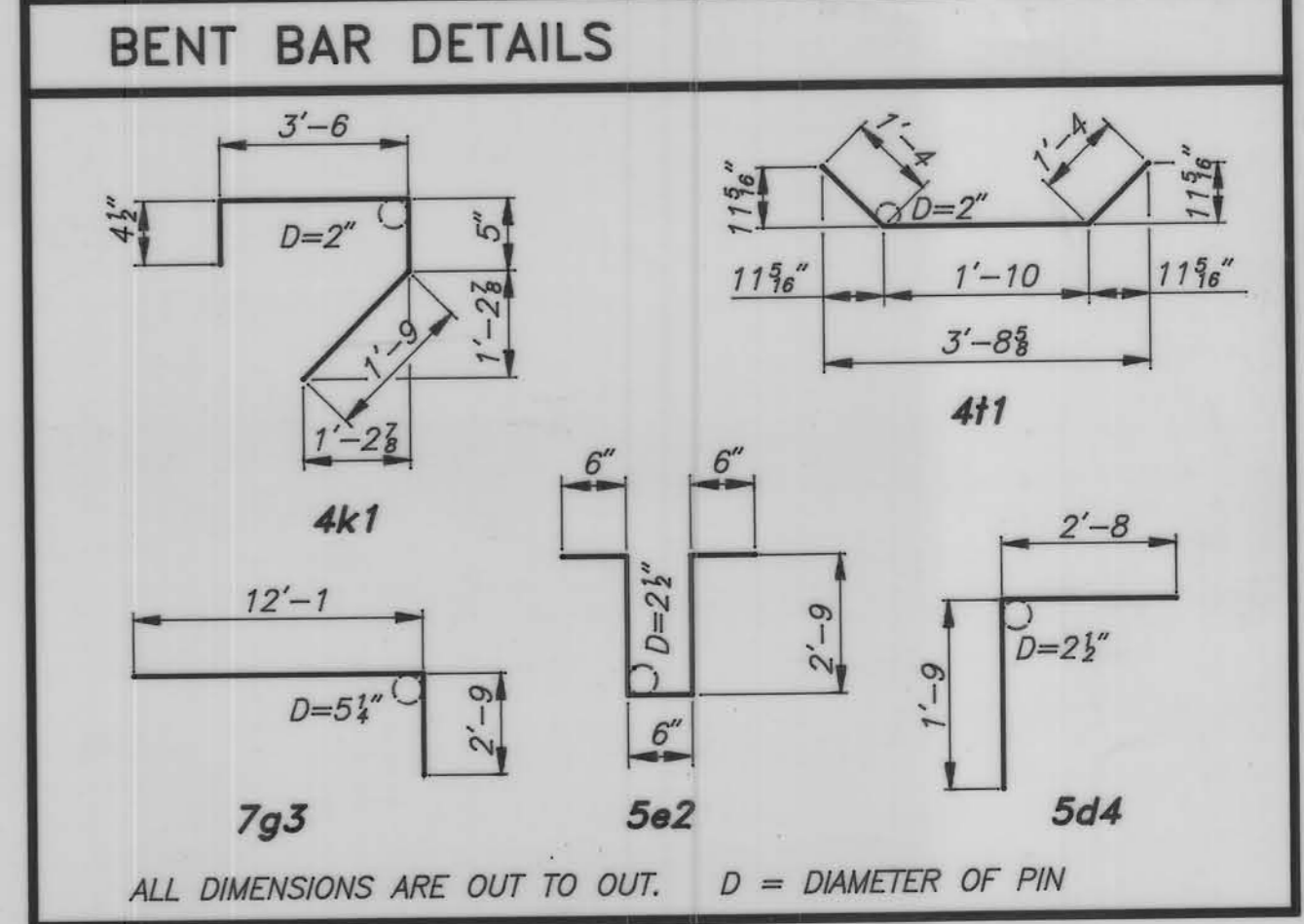


SLAB THICKNESS DETAILS

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 1/4", THE GRADE LINE IS TO BE REVISED. THE ABOVE DIAGRAMS DO NOT APPLY TO THE CANTILEVERED SLAB SIDE OF THE EXTERIOR BEAM.



TOP OF SLAB ELEVATIONS

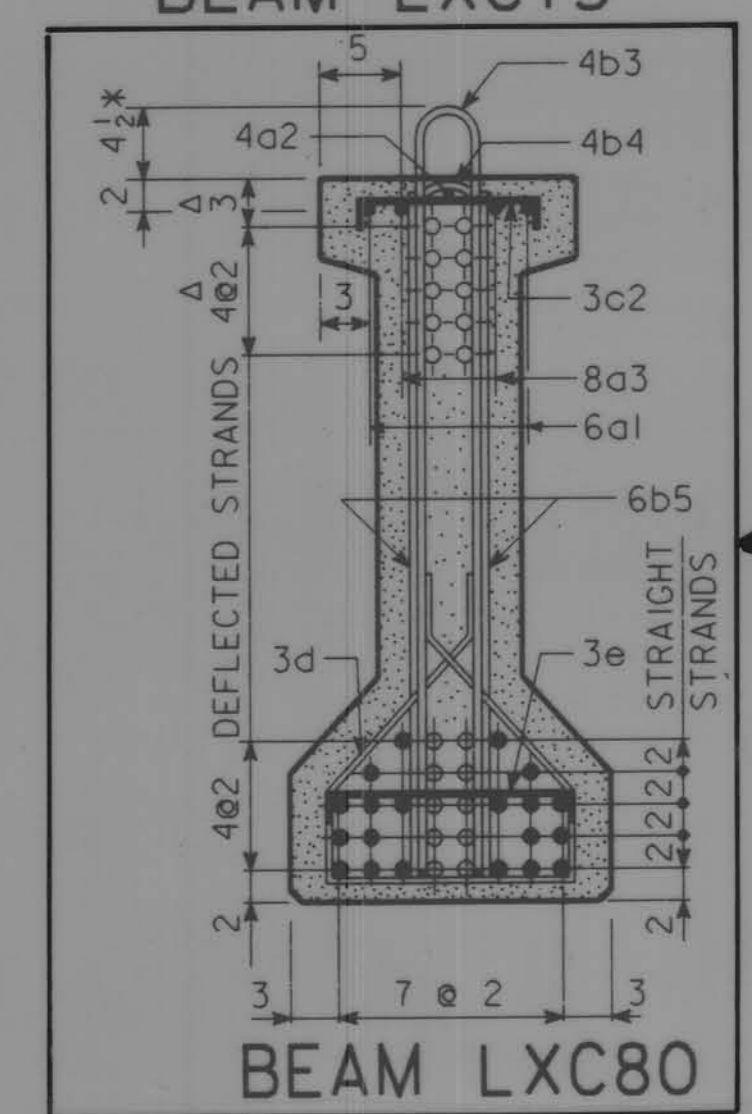
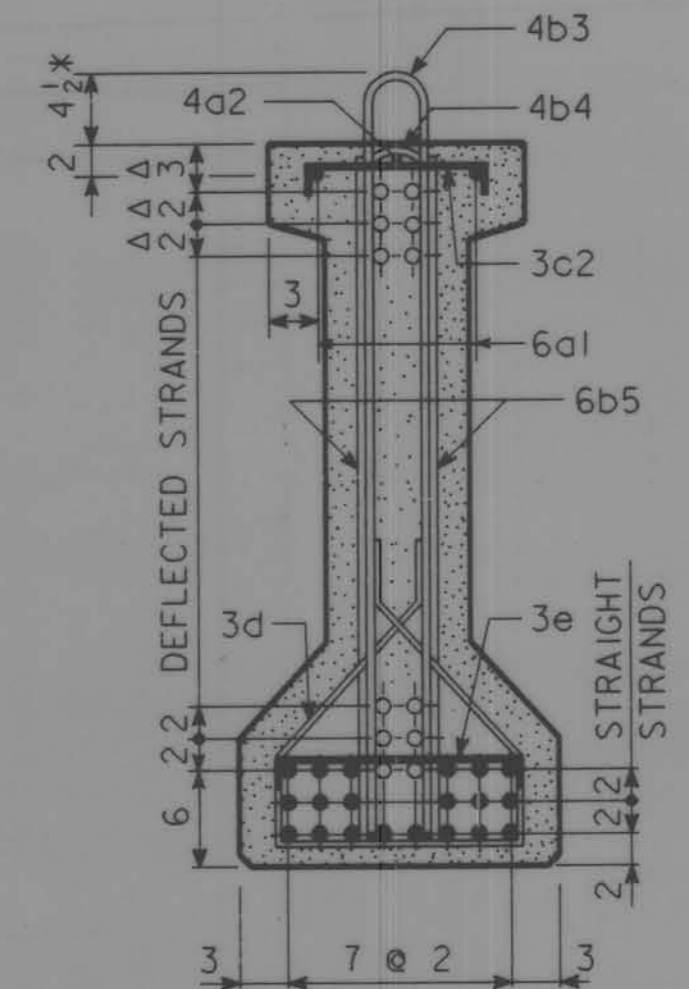
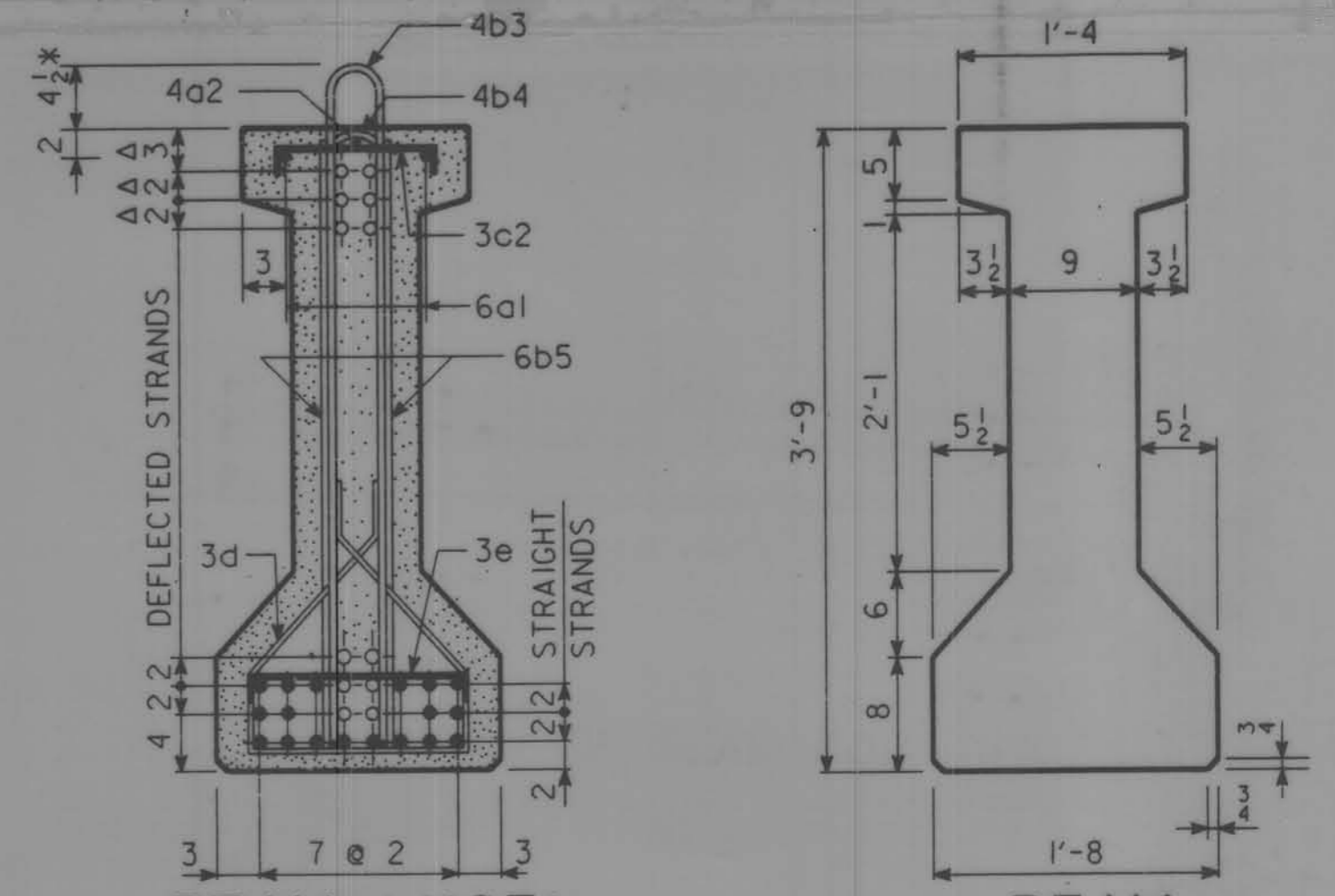
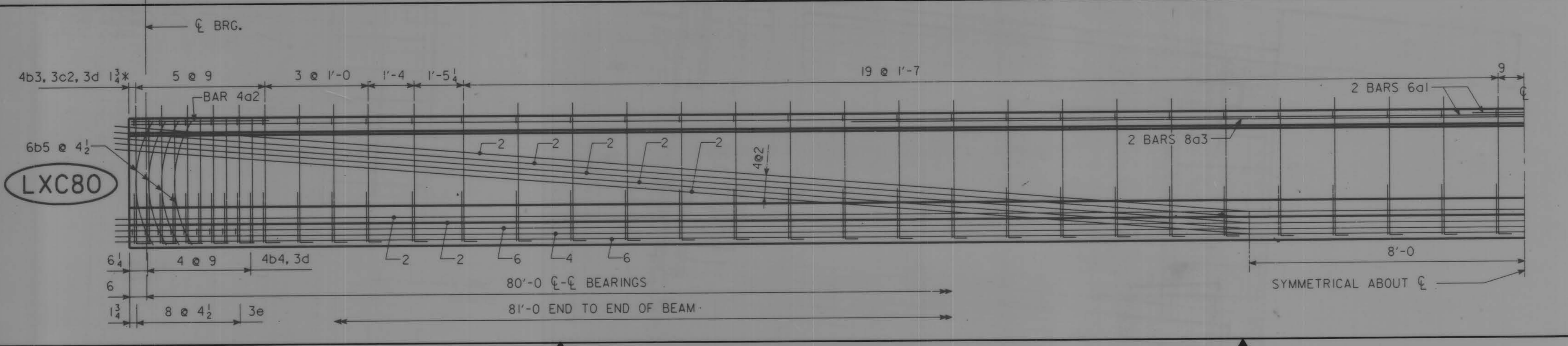
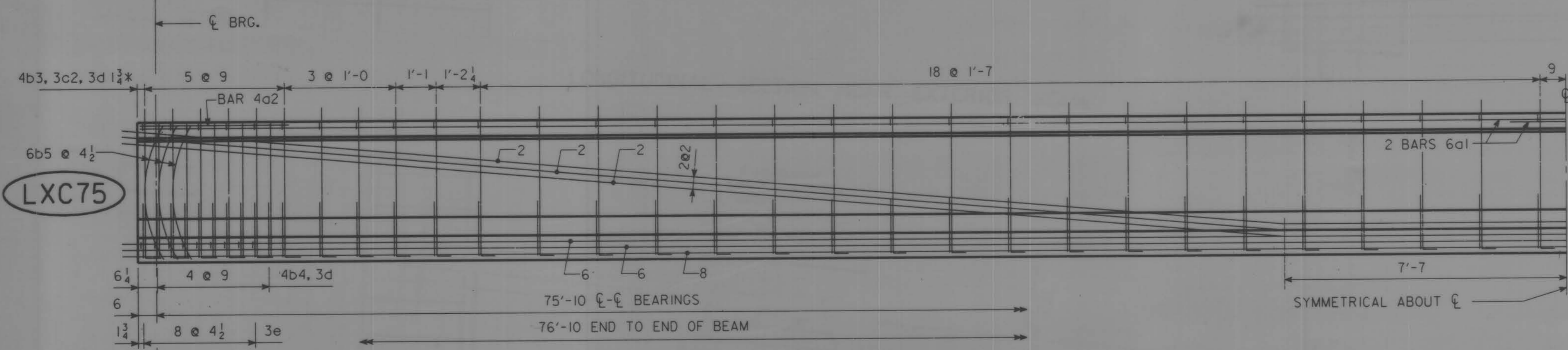
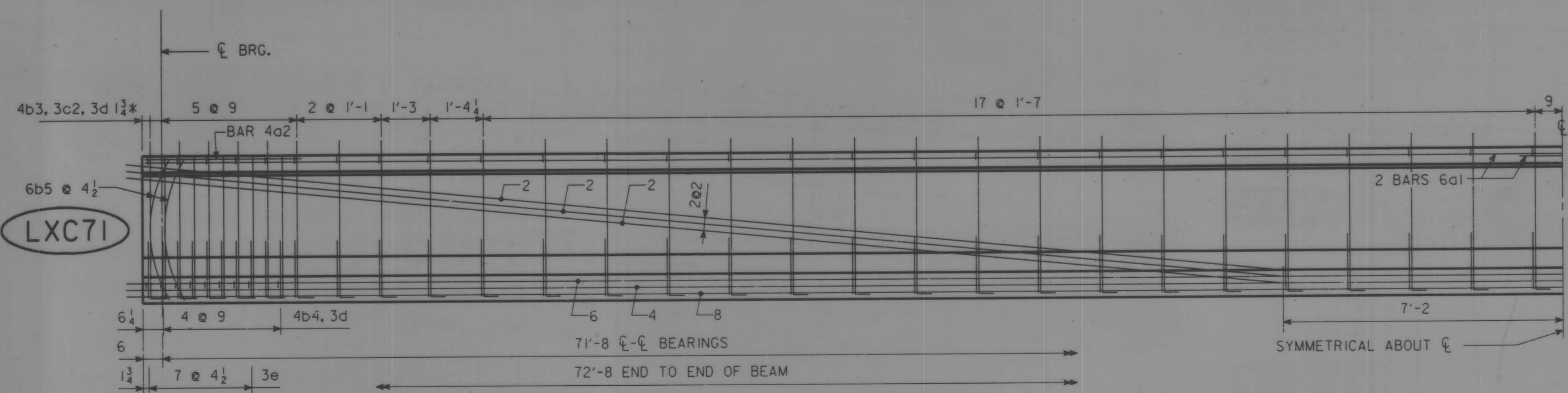


REHABILITATION OF AN EXISTING
243'-0" x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE TO 326'-0" x 30'
INTEGRAL ABUTMENTS TEE & ENCASED PIERS
80'-9" AND 81'-6" 81'-6" AND 82'-3"
END SPANS INTERIOR SPANS

SUPERSTRUCTURE DETAILS

STATION 12+92 0° SKEW
CRAWFORD COUNTY, IOWA
SHEET 11 OF 19

NOTE: DIMENSIONS FOR THE LOCATION OF THE DEFLECTED STRANDS ARE AT \bar{C} BEAM AND END OF BEAM.



BEAM
LXC71 - LXC80
A = 564.5 in.²
Y_b = 20.23 in.
I = 116,354 in.⁴

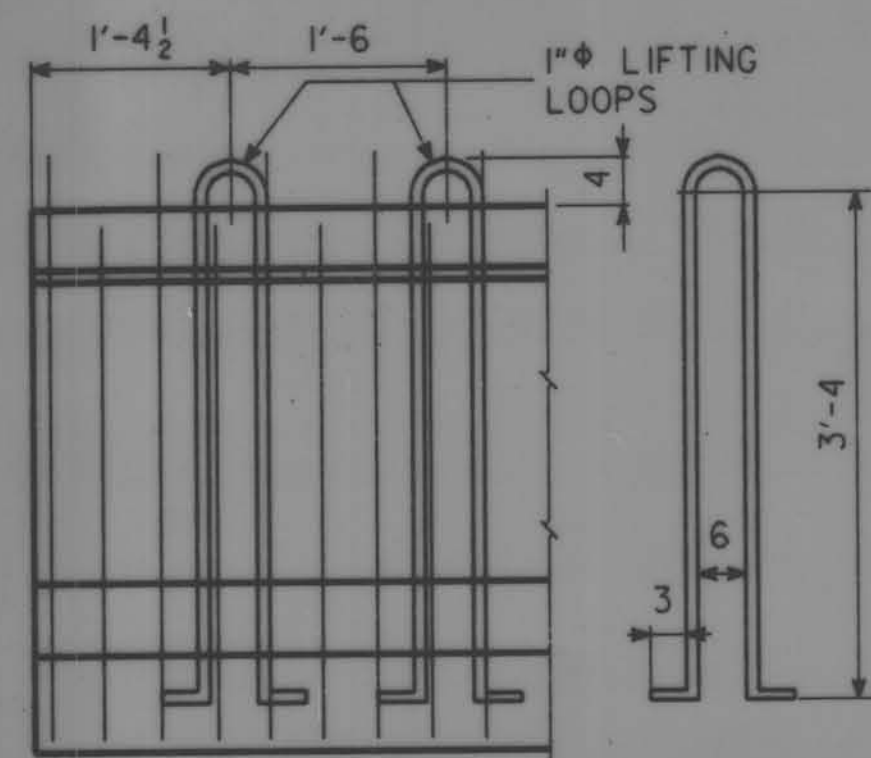
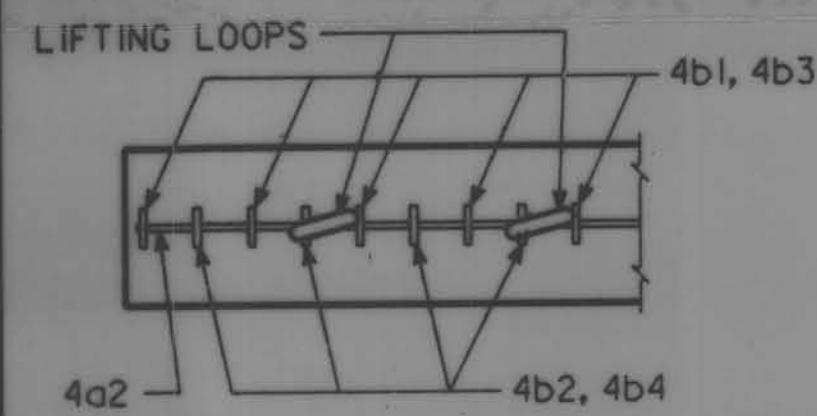
NOTE: BARS 6b5 AND 3d ARE TO BE PLACED IN PAIRS.
○ DEFLECTED STRANDS
* KEEP
△ DIMENSIONS AT END OF BEAM.

REHABILITATION OF AN EXISTING
243'-0 x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE TO 326'-0 x 30'
INTEGRAL ABUTMENTS TEE & ENCASED PIERS
80'-9 AND 81'-6 81'-6 AND 82'-3
END SPANS INTERIOR SPANS

BEAM DETAILS

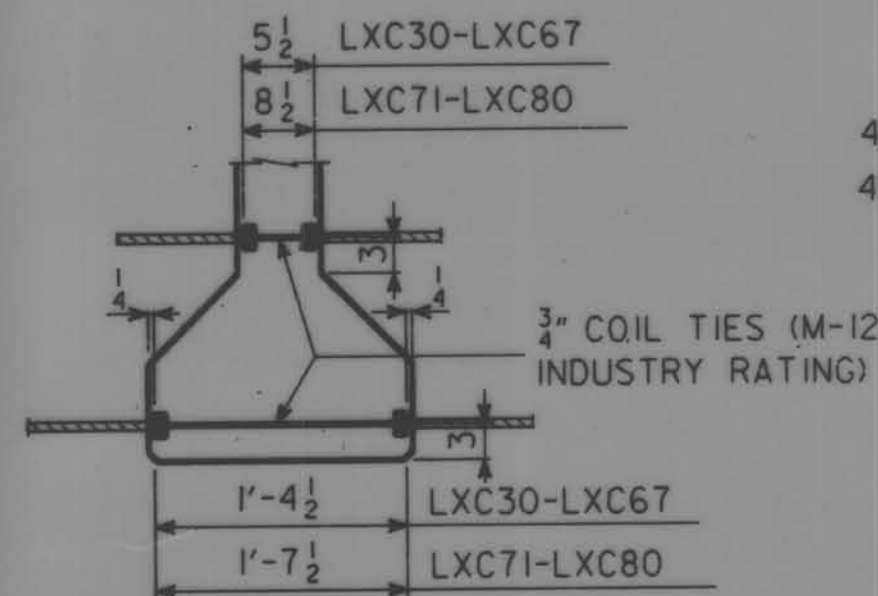
STATION 12+92
CRAWFORD COUNTY,

0° SKEW
IOWA

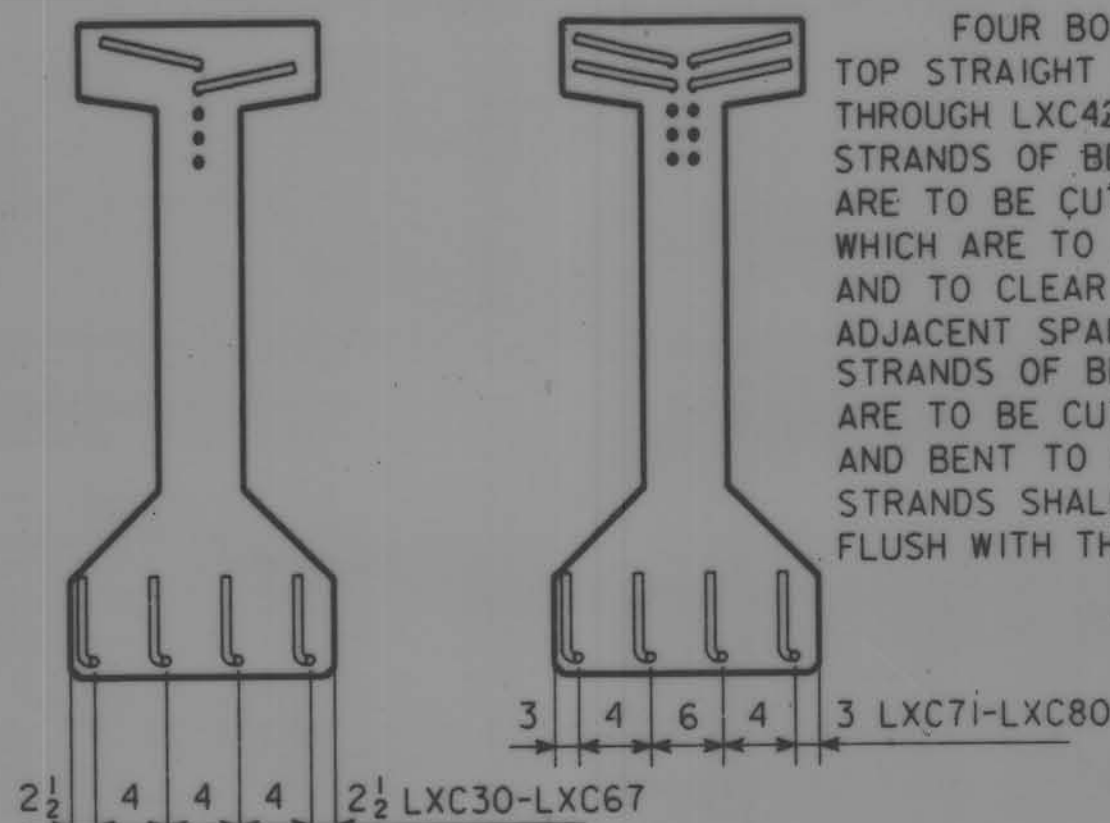


LIFTING LOOP DETAIL

ALTERNATE TYPES MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. LIFTING LOOPS ARE TO BE STRUCTURAL GRADE.

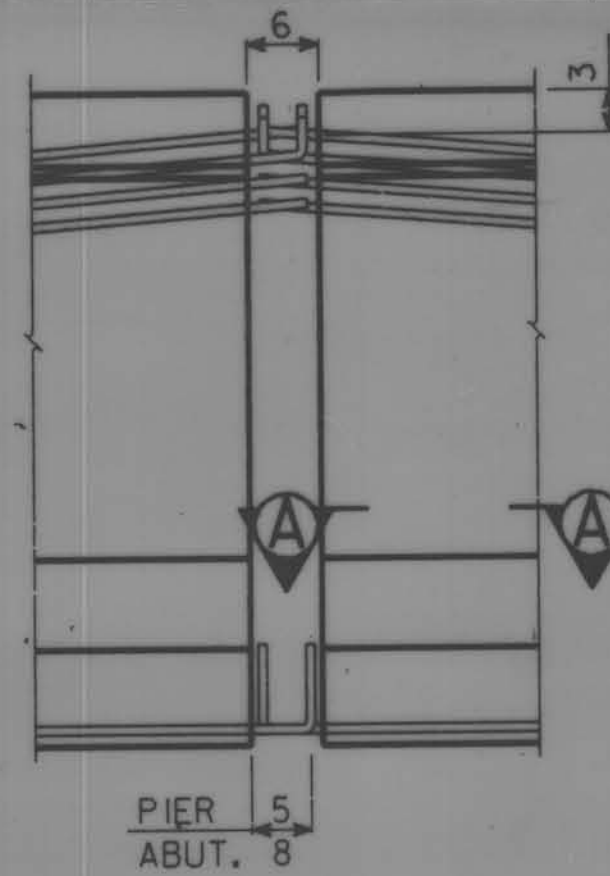


COIL TIE DETAIL



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

BEAM "N"	
LXC46-LXC55	3
LXC59-LXC80	4



SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1989:
 REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
 CONCRETE IN ACCORDANCE WITH SECTION 9, $f'_c = 5000$ psi.
 PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, $f'_s = 270,000$ psi.

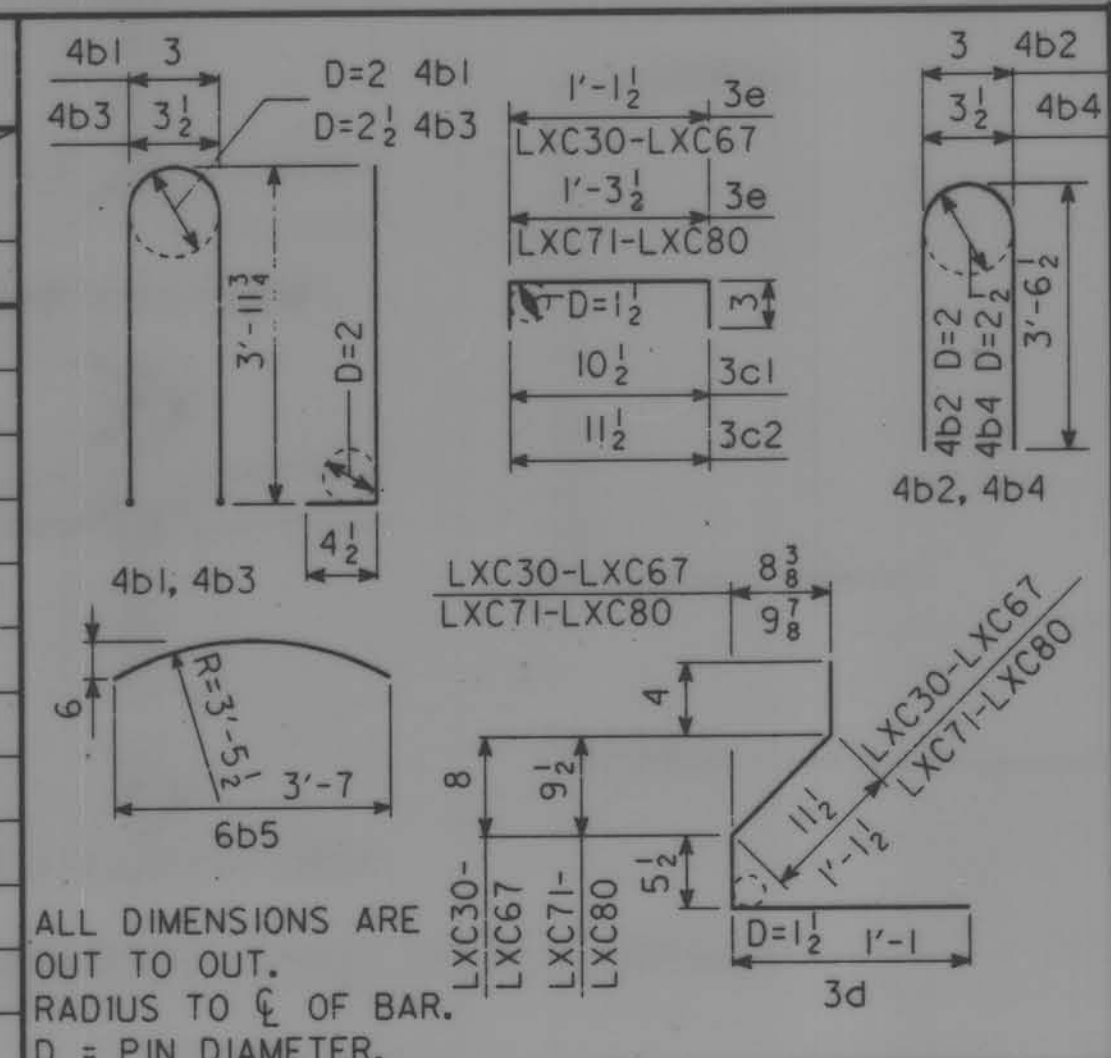
SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
 DESIGN: A.A.S.H.T.O., SERIES OF 1989, WITH MINOR MODIFICATIONS.

* WHERE DEFLECTING STRANDS INTERFERE WITH PLACEMENT, SOME IN-PLACE BENDING MAY BE NECESSARY.

REINFORCING BAR LIST

BEAM	SPAN	LXC30	LXC34	LXC38	LXC42	LXC46	LXC50	LXC55	LXC59	LXC63	LXC67	LXC71	LXC75	LXC80
BAR SHAPE	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.
6a1	2	2	2	2	4	4	4	4	4	4	4	4	4	4
4a2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8a3														
4b1	24	26	30	32	34	38	40	44	46	48	54	58	60	
4b2	2	2	4	4	4	6	6	6	8	10				
4b3														
4b4														
6b5														
3c1	24	26	30	32	34	38	40	44	46	48	54	58	60	
3c2														
*3d	52	56	68	72	76	88	92	100	108	116	128	136	140	
3e	6	6	6	8	8	8	12	14	14	18	16	18	18	



ALL DIMENSIONS ARE OUT TO OUT. RADIUS TO ϕ OF BAR. D = PIN DIAMETER.

LXC BEAM DATA

BEAM	SPAN LENGTH ϕ - ϕ BEARING	OVERALL BEAM LENGTH (L)	STRAND SIZE	NO. OF STRANDS		TOTAL INITIAL PRESTRESS KIPS	HOLD DOWN FORCE-KIPS	CAMBER (in.)		DEFLECTION (in.) Δ_D				PERMISSIBLE SPACING		WEIGHT (TONS)	CONCRETE (C, Y)	REINFORCING STEEL (#)
				STRAIGHT	DEFLECTED			AT RELEASE	AFTER LOSSES	IMMEDIATE (ELASTIC) Δ_I		TIME (PLASTIC) Δ_T		HS20 LOADING				
										CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.			
LXC30	30'-0	31'-0	1/2" ϕ	10	—	300	—	0.08	0.15	0.04	0.03	0.01	0.01	7'-6	7'-6	7.0	3.43	321
LXC34	34'-2	35'-2	1/2" ϕ	10	—	300	—	0.10	0.18	0.06	0.06	0.02	0.02	7'-6	7'-6	7.9	3.89	350
LXC38	38'-4	39'-4	1/2" ϕ	11	—	330	—	0.14	0.24	0.10	0.09	0.03	0.02	7'-6	7'-6	8.8	4.35	411
LXC42	42'-6	43'-6	1/2" ϕ	13	—	390	—	0.21	0.38	0.15	0.13	0.04	0.03	7'-6	7'-6	10.7	5.27	481
LXC46	46'-8	47'-8	1/2" ϕ	8	3	330	16.3	0.32	0.57	0.22	0.20	0.06	0.05	7'-6	7'-6	11.6	5.74	541
LXC50	50'-10	51'-10	1/2" ϕ	10	3	390	15.0	0.47	0.83	0.30	0.27	0.08	0.07	7'-6	7'-6	12.5	6.19	573
LXC55	55'-0	56'-0	1/2" ϕ	11	3	420	13.1	0.56	1.00	0.41	0.38	0.10	0.10	7'-6	7'-6	13.5	6.65	622
LXC59	59'-2	60'-2	1/2" ϕ	14	3	510	11.5	0.66	1.18	0.55	0.50	0.14	0.13	7'-6	7'-6	14.4	7.11	665
LXC63	63'-4	64'-4	1/2" ϕ	14	5	570	17.9	0.80	1.42	0.71	0.66	0.18	0.17	7'-6	7'-6	15.3	7.57	713
LXC67	67'-6	68'-6	1/2" ϕ	16	5	630	15.8	1.02	1.81	0.91	0.85	0.23	0.21	7'-6	7'-6	16.3	8.03	761
LXC71	71'-8	72'-8	1/2" ϕ	18	6	720	21.4	1.14	2.01	0.91	0.86	0.23	0.22	7'-6	7'-6	17.3	8.49	809
LXC75	75'-10	76'-10	1/2" ϕ	20	6	805.1	18.6	1.32	2.34	1.14	1.07	0.29	0.27	7'-6	7'-6	18.3	8.95	857
LXC80	80'-0	81'-0	1/2" ϕ	20	10	928.9	29.4	1.46	2.58	1.38	1.31	0.35	0.33	7'-6	7'-6	19.3	9.41	905

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB WEIGHT OF 757 #/FT. (8" SLAB AND 7'-6 BEAM SPACING) AND ONE CONCRETE DIAPHRAGM (2635 #) OR ONE STEEL DIAPHRAGM (285 #) AT ϕ OF SPAN. FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
 ② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
 TOTAL BEAM DEFLECTIONS AT ϕ OF SPAN, Δ_D , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
 (A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
 (B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
 (C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
 ③ TOTAL INITIAL PRESTRESS FOR LXC30 THRU LXC71 INCLUSIVE IS BASED ON 72.664% F_{su} , AND FOR LXC75 AND LXC80 ON 75% F_{su} . $F_{su} = 270$ ksi AND $A_s = 0.153$ sq. in.

NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LB. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
 HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.
 ALL PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS.
 TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND GIVEN A WOOD FLOAT FINISH.
 BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.
 BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.
 THE PORTIONS OF THE PRESTRESS BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.15 OF THE SPECIFICATIONS.

UNLESS OTHERWISE NOTED ALL BEAMS ARE TO BE INCREASED IN LENGTH BY .0005L TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.
 IF THE PRECAST PANEL OPTION IS ALLOWED AND USED FOR BRIDGE DECK FORMATION, TOP FLANGE FINISH SHALL BE MODIFIED AS PER DETAILS ON THE PRECAST PANEL SHEET.

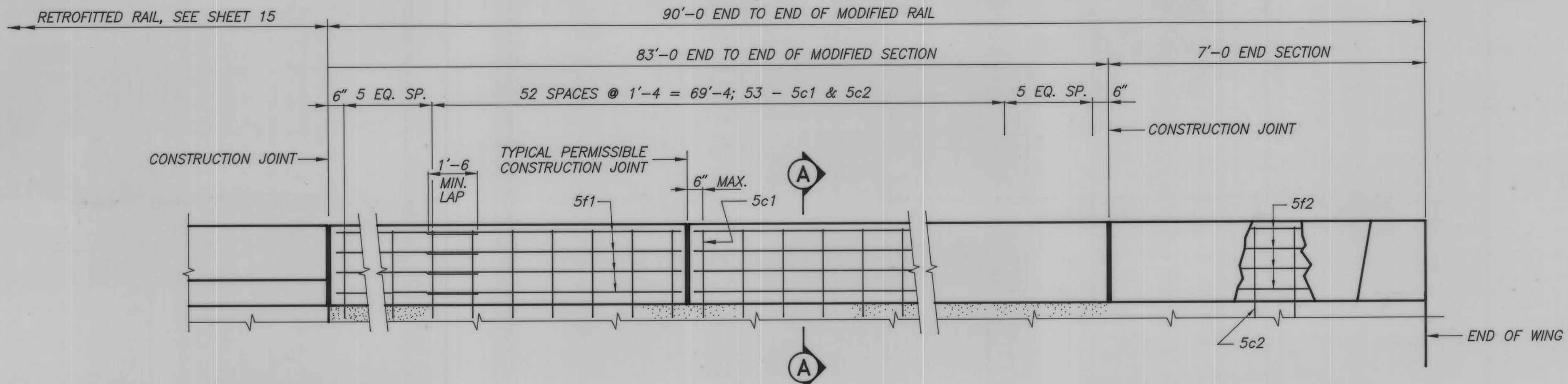
IF THE STEEL DIAPHRAGM OPTION IS ALLOWED AND USED, HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.

IF SOLE PLATE IS REQUIRED FOR BEARING, SOLE PLATE IS TO BE SET IN FORMS WHEN BEAM IS CAST AND FORMED OUT BELOW TO EXCLUDE CONCRETE AS DETAILED ON THE BEARING SHEET.

REHABILITATION OF AN EXISTING 243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326'-0 x 30' INTEGRAL ABUTMENTS
 TEE & ENCASED PIERS
 80'-9 AND 81'-6 END SPANS
 81'-6 AND 82'-3 INTERIOR SPANS

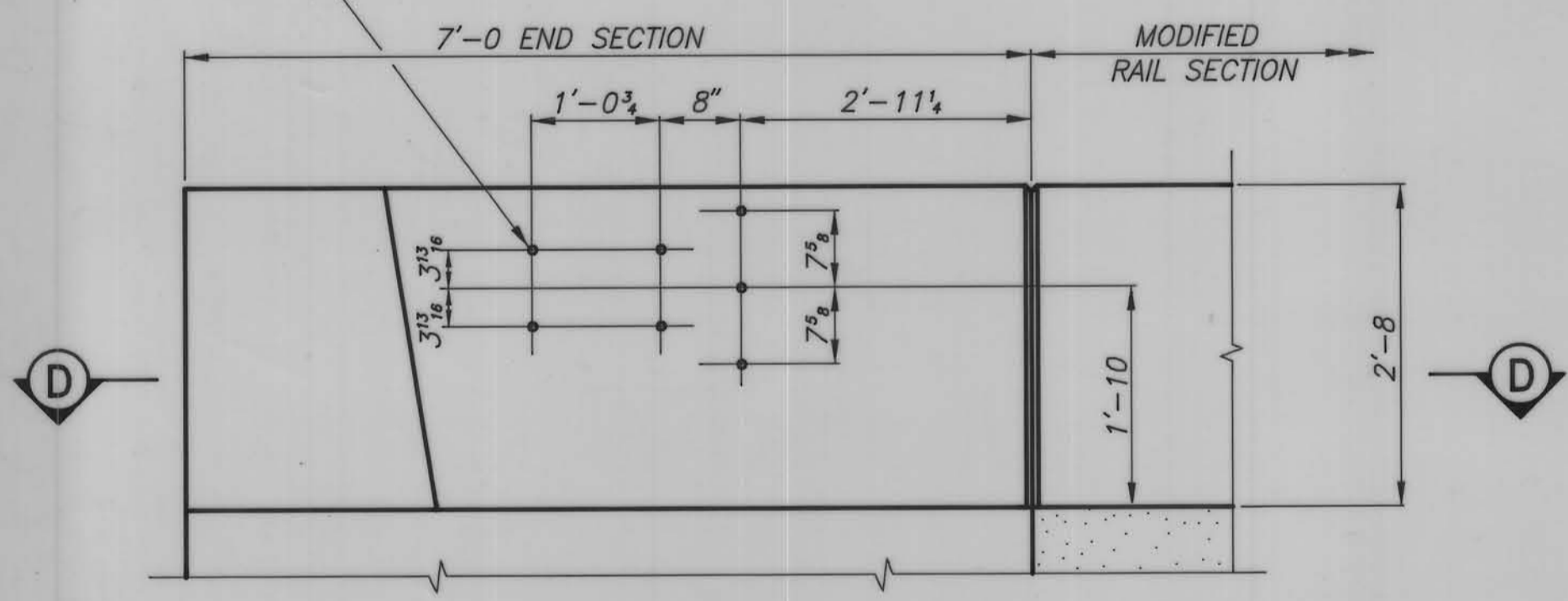
BEAM DETAILS

STATION 12+92
 CRAWFORD COUNTY, IOWA
 0° SKEW

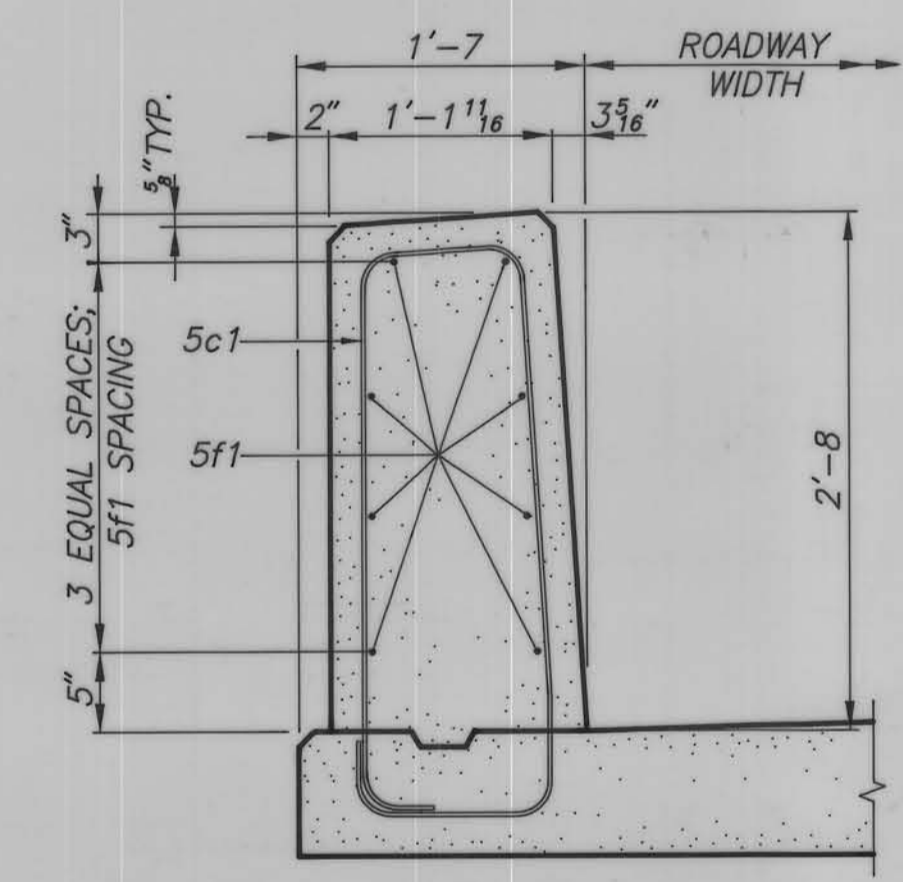


ELEVATION OF MODIFIED BARRIER RAIL LAYOUT

HOLES FOR 7/8" Ø BOLTS ARE TO BE FORMED WITH 1" Ø (NOMINAL I.D.) PLASTIC CONDUIT SLEEVES. THE SLEEVES SHALL BE SECURELY FIXED IN EXACT LOCATION AS SHOWN BEFORE CONCRETE IS POURED. COST OF SLEEVES TO BE INCLUDED IN PRICE BID FOR "CONCRETE, STRUCTURAL". BOLTS AND WASHERS TO BE FURNISHED BY CONTRACTOR INSTALLING GUARDRAIL.



PART ELEVATION



PART SECTION A - A

MODIFIED RAIL NOTES

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

THE MODIFIED RAIL MAY BE PLACED CONTINUOUSLY OR IN SECTIONS. THERE SHALL BE AT LEAST 20 FEET BETWEEN CONSTRUCTION JOINTS. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

THE JOINT SEALER SHALL CONFORM TO FEDERAL SPECIFICATION TT-S00230 OR TT-S00227 FOR TYPE II, CLASS A OR B.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL MODIFIED RAIL CONCRETE IS TO BE CLASS D.

PRICE BID FOR "CONCRETE, STRUCTURAL" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

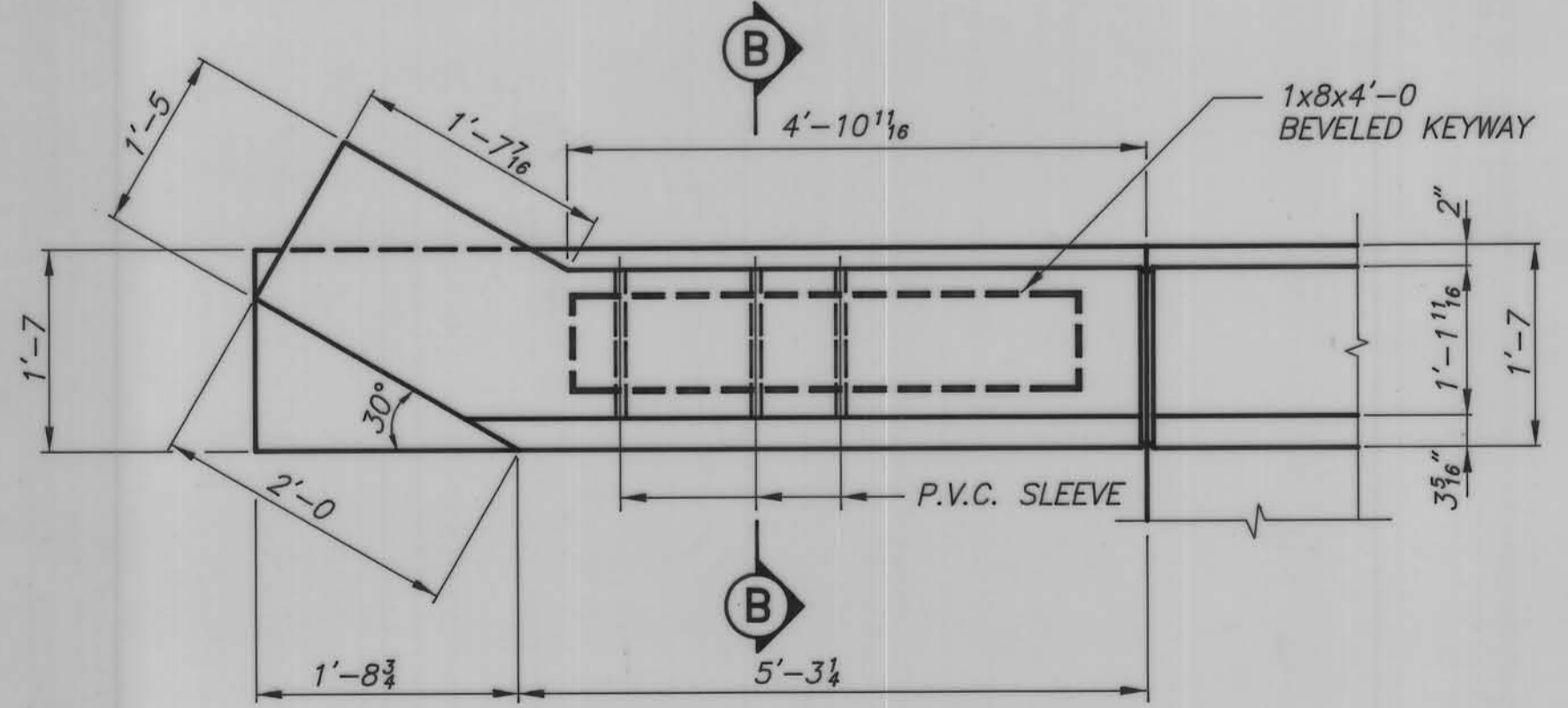
ALL MODIFIED RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

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

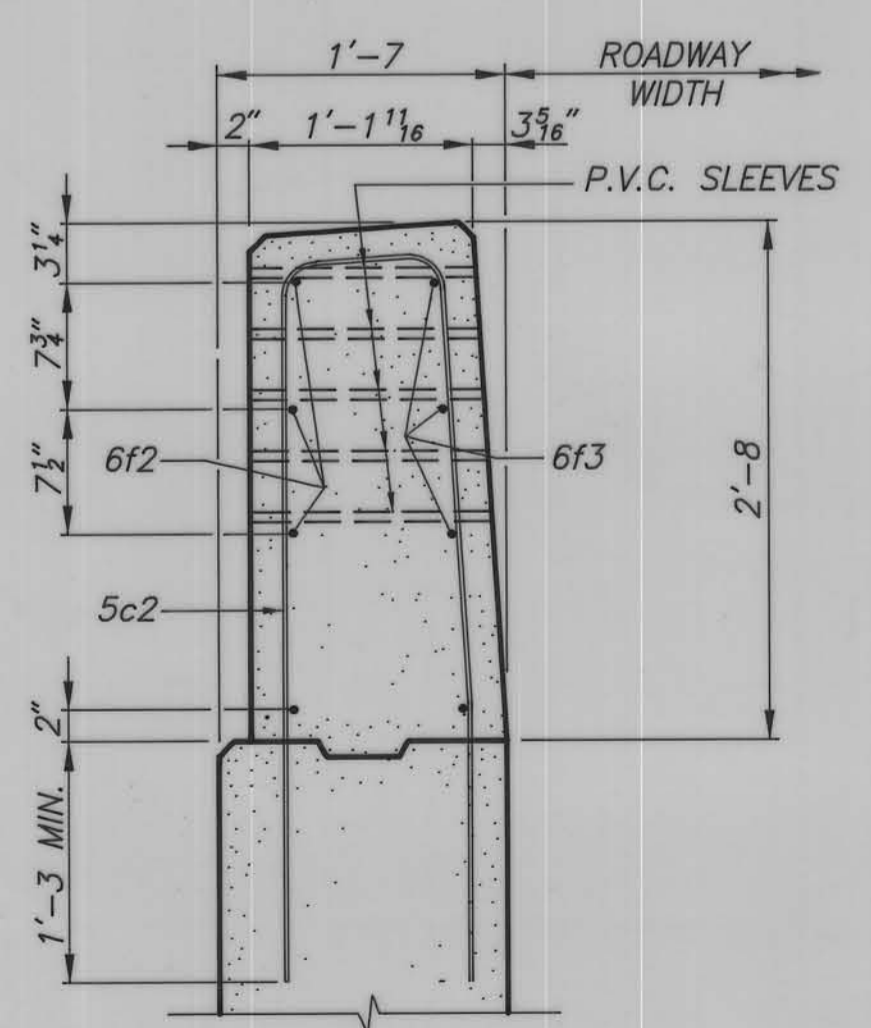
TOP OF THE MODIFIED RAIL IS TO BE PARALLEL TO THE THEORETICAL C GRADE.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

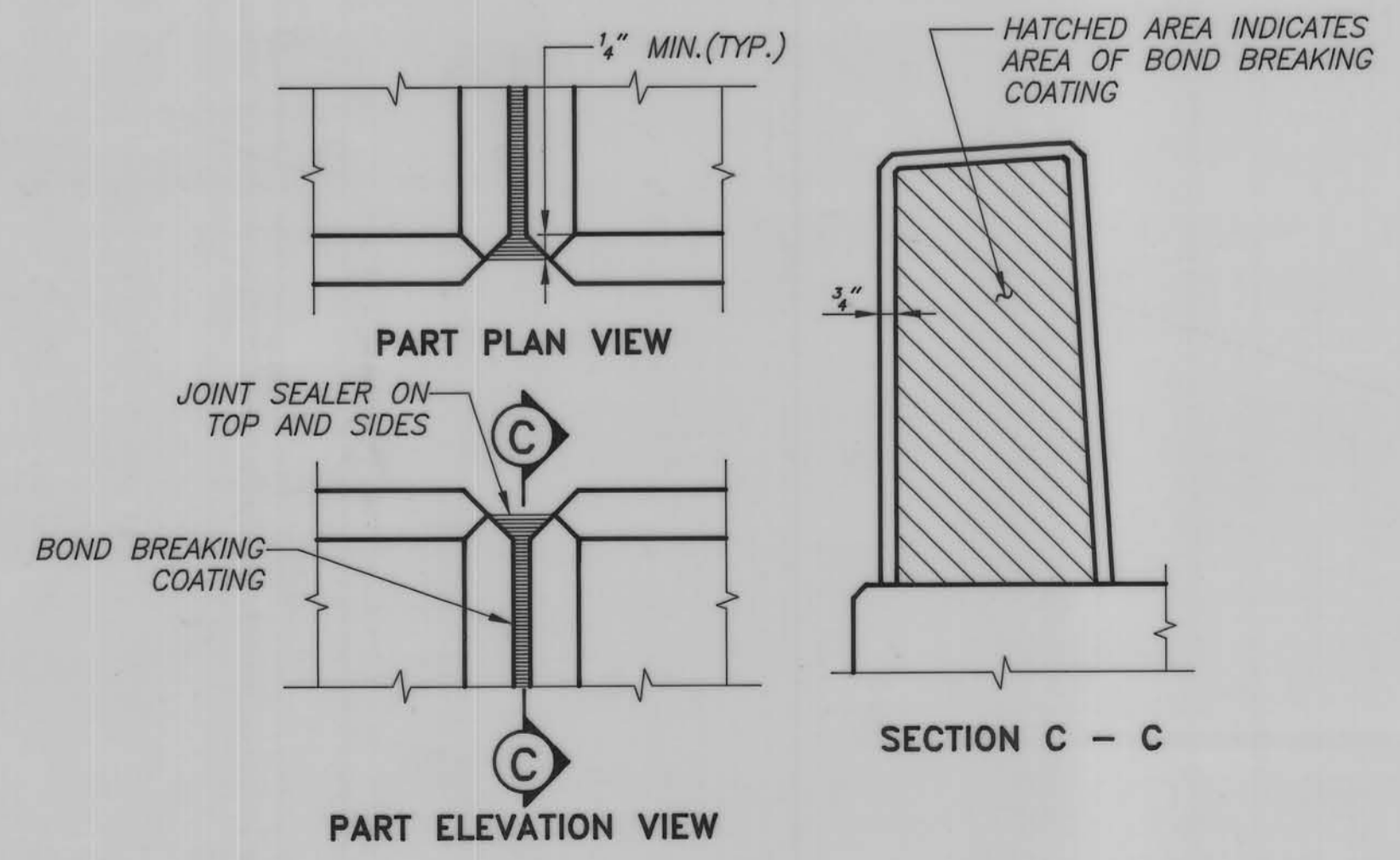
NOTE: CROSS SECTIONAL AREA OF ALL SECTIONS OF THE MODIFIED RAIL = 3.38 SQUARE FEET.



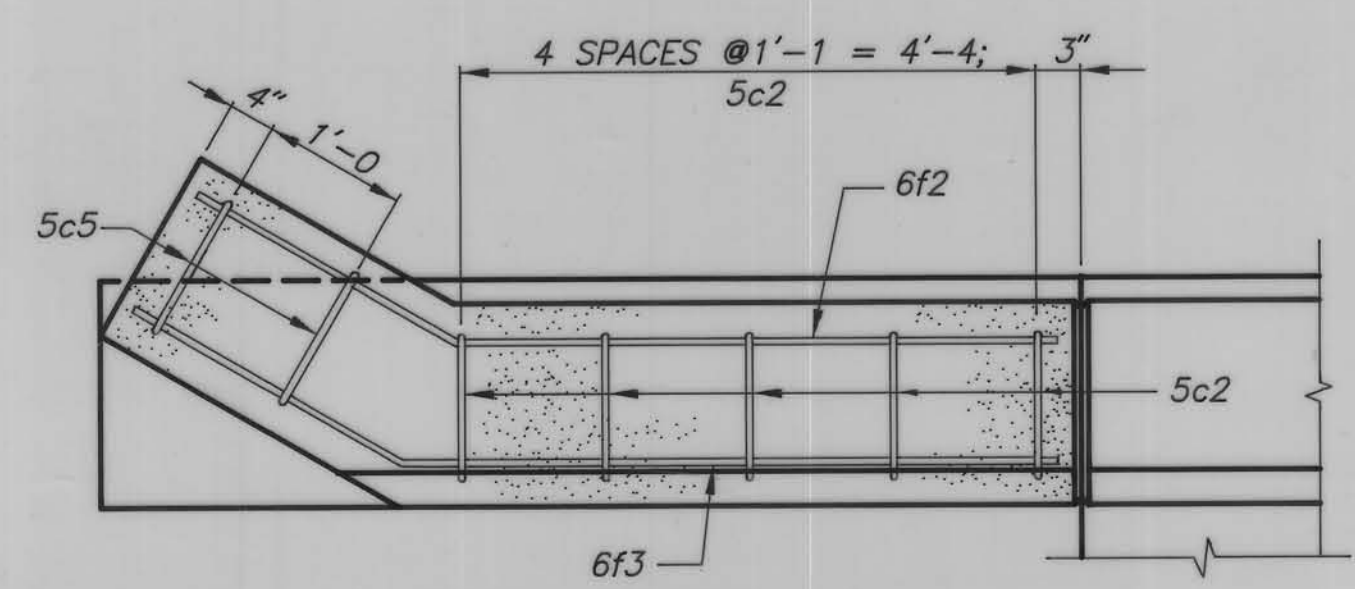
PART PLAN VIEW



PART SECTION B - B



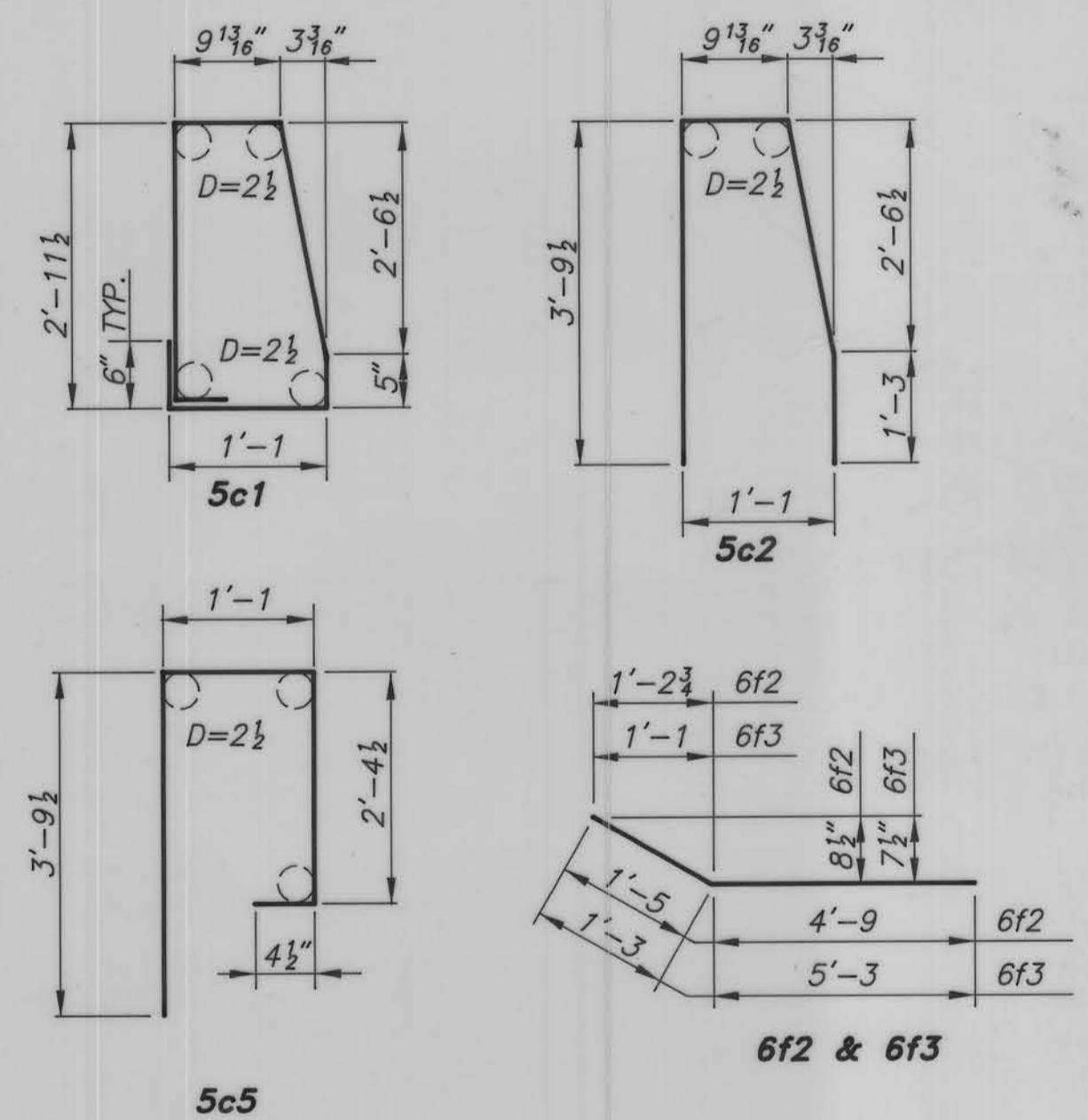
BARRIER RAIL JOINT DETAILS



PART SECTION D - D

REINFORCING STEEL - TWO RAILS							
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
MODIFIED SECTION	5c1	VERTICAL	∇	126	8'-10	1,161	
	5f1	LONGITUDINAL	—	48	28'-7	1,431	
2 MODIFIED END SECTIONS	5c2	VERTICAL	∇	10	8'-5	88	
	5c5	VERTICAL, END	∇	4	7'-8	32	
	6f2	LONGITUDINAL	∩	8	6'-2	74	
	6f3	LONGITUDINAL	∩	8	6'-6	78	
ALL REINFORCING EPOXY COATED							
INCLUDE WITH SUPERSTRUCTURE REINFORCING						TOTAL (LBS.)	2,864

BENT BAR DETAILS



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

CONC. PLACEMENT SUMMARY - TWO RAILS

SECTION	TOTAL
MODIFIED SECTION 166.0 L.F. @ 0.1251 C.Y. PER FT.	20.8
2 MODIFIED END SECTIONS @ 0.86 C.Y.	1.7
INCLUDE WITH SUPERSTRUCTURE CONCRETE	TOTAL (C.Y.)
	22.5

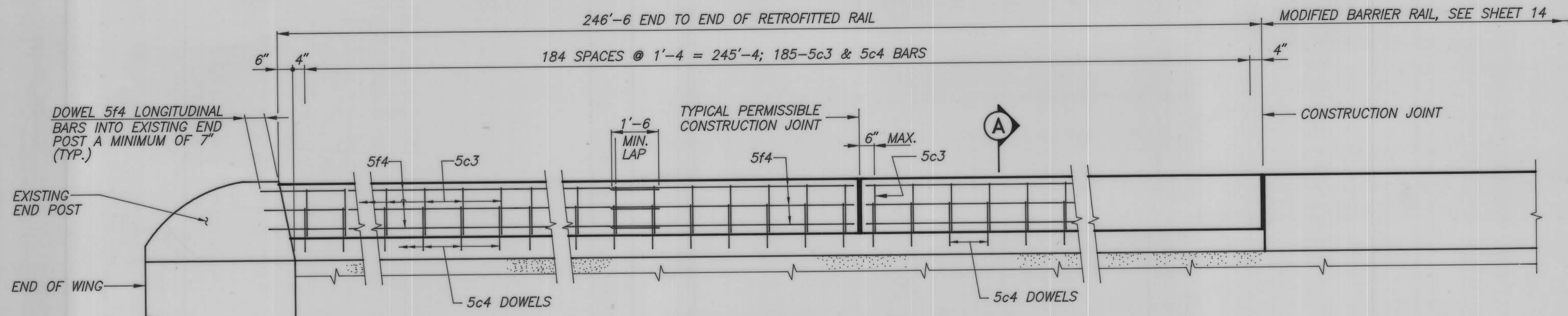
REHABILITATION OF AN EXISTING 243' -0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326' -0 x 30' INTEGRAL ABUTMENTS TEE & ENCASED PIERS 80'-9 AND 81'-6 81'-6 AND 82'-3 END SPANS INTERIOR SPANS

MODIFIED BARRIER RAIL DETAILS

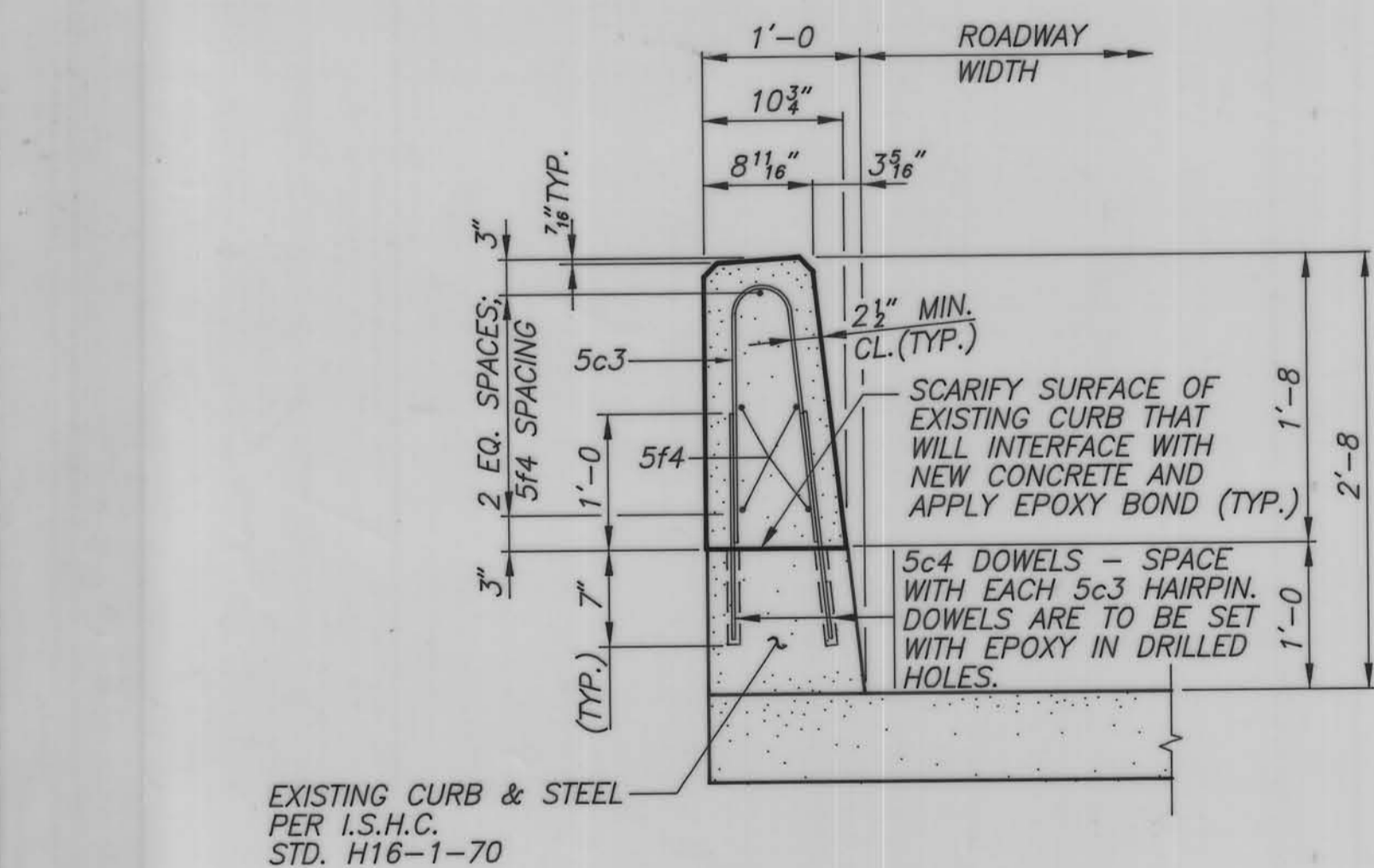
STATION 12+92 CRAWFORD COUNTY, IOWA

0° SKEW

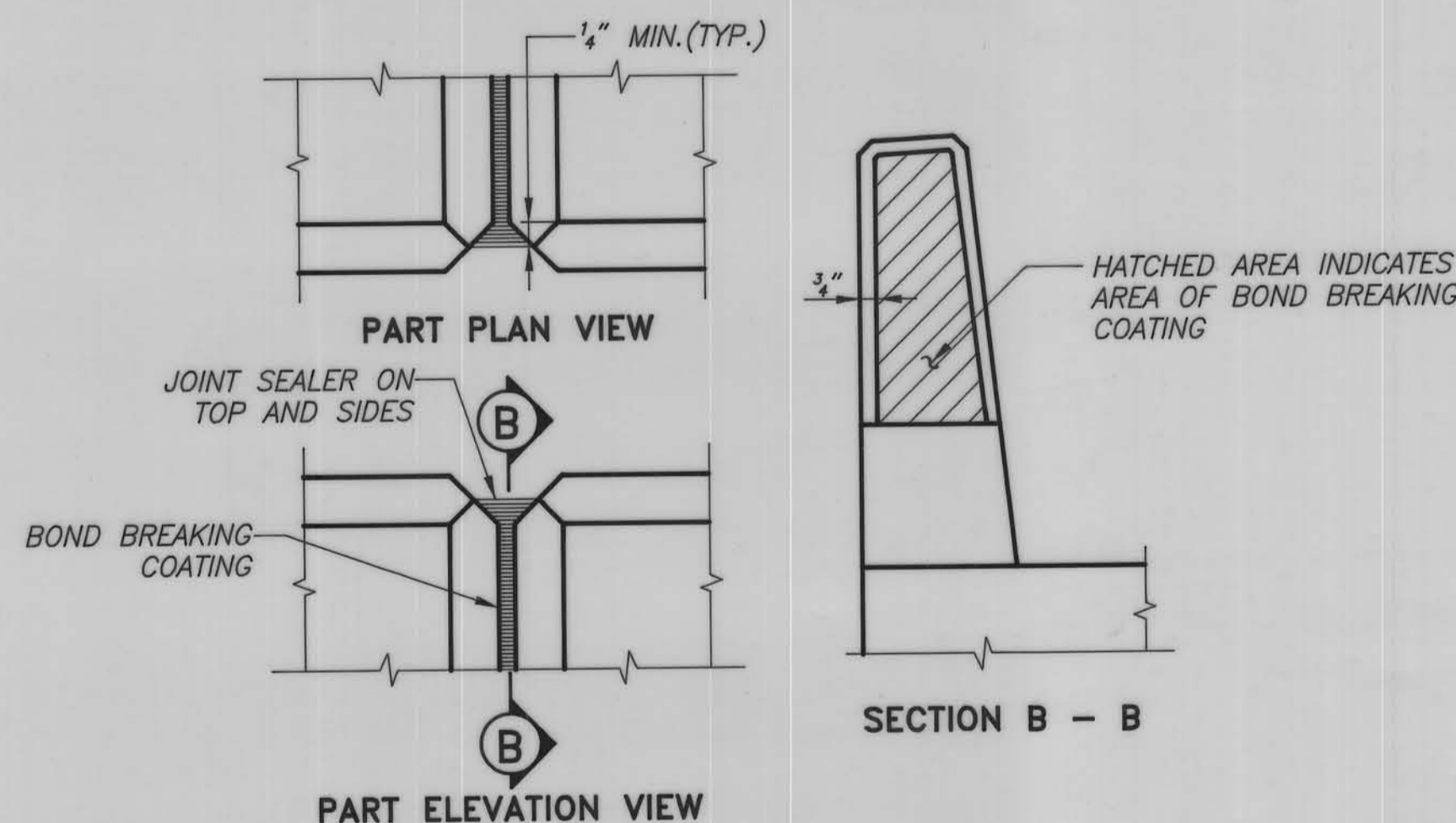
SHEET 14 OF 19



ELEVATION OF RETROFITTED RAIL LAYOUT
(LOOKING WEST)



PART SECTION A - A



RETROFITTED RAIL JOINT DETAILS

RETROFITTED RAIL NOTES

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

THE RETROFITTED RAIL MAY BE PLACED CONTINUOUSLY OR IN SECTIONS. THERE SHALL BE AT LEAST 20 FEET BETWEEN CONSTRUCTION JOINTS. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

THE JOINT SEALER SHALL CONFORM TO FEDERAL SPECIFICATION TT-S00230 OR TT-S00227 FOR TYPE II, CLASS A OR B.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL RETROFITTED RAIL CONCRETE IS TO BE CLASS D.

PRICE BID FOR "CONCRETE, STRUCTURAL" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ALL RETROFITTED RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

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

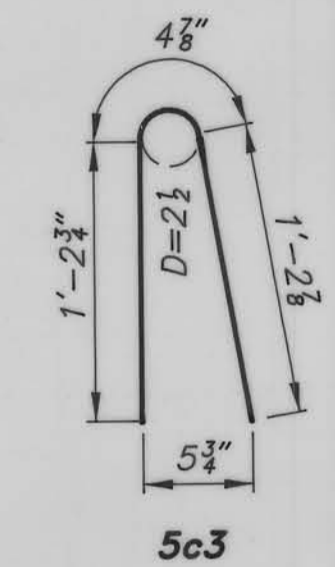
TOP OF THE RETROFITTED RAIL IS TO BE PARALLEL TO THE THEORETICAL G GRADE.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

NOTE:
CROSS SECTIONAL AREA OF ALL SECTIONS OF THE RETROFITTED RAIL = 1.35 SQUARE FEET.

REINFORCING STEEL - TWO RAILS						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
RETROFITTED SECTION	5c3	HAIRPINS, VERTICAL	Λ	370	2'-10"	1,093
	5c4	DOWELS, VERTICAL	—	740	1'-7"	1,222
	5f4	LONGITUDINAL	—	70	36'-8"	2,677
ALL REINFORCING EPOXY COATED						
INCLUDE WITH SUPERSTRUCTURE REINFORCING TOTAL (LBS.)						4,992

BENT BAR DETAILS



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

CONC. PLACEMENT SUMMARY - TWO RAILS

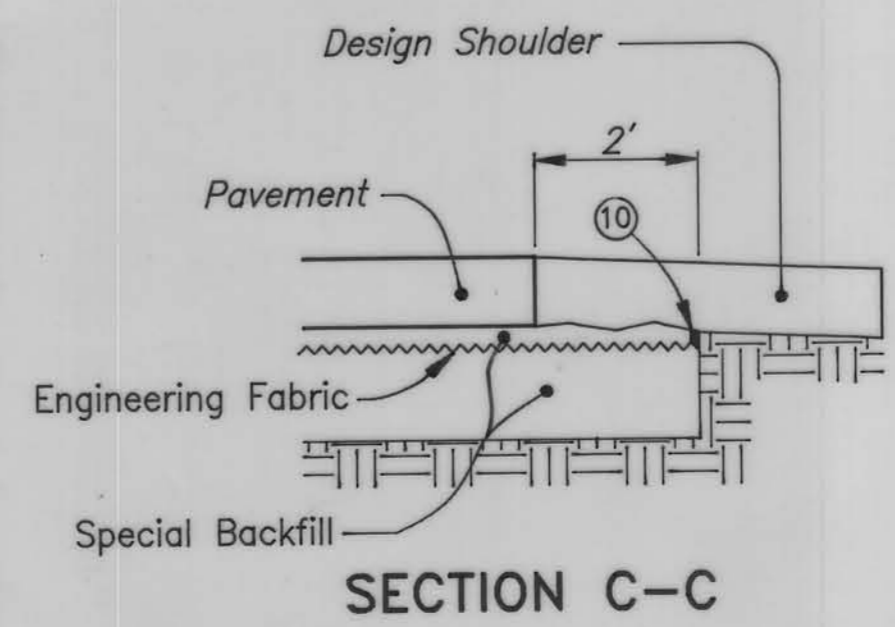
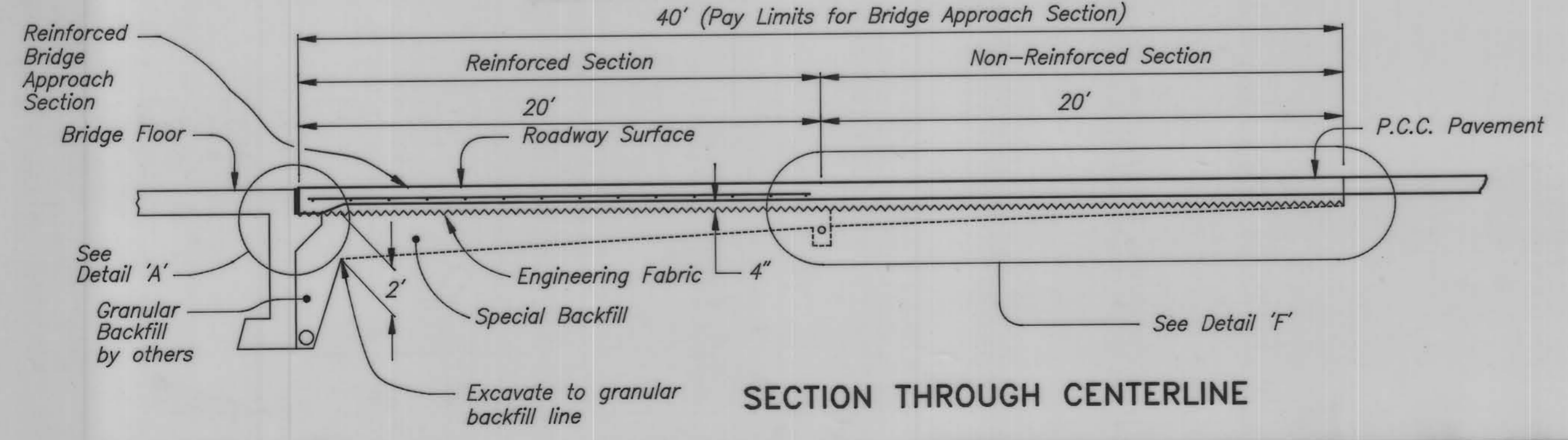
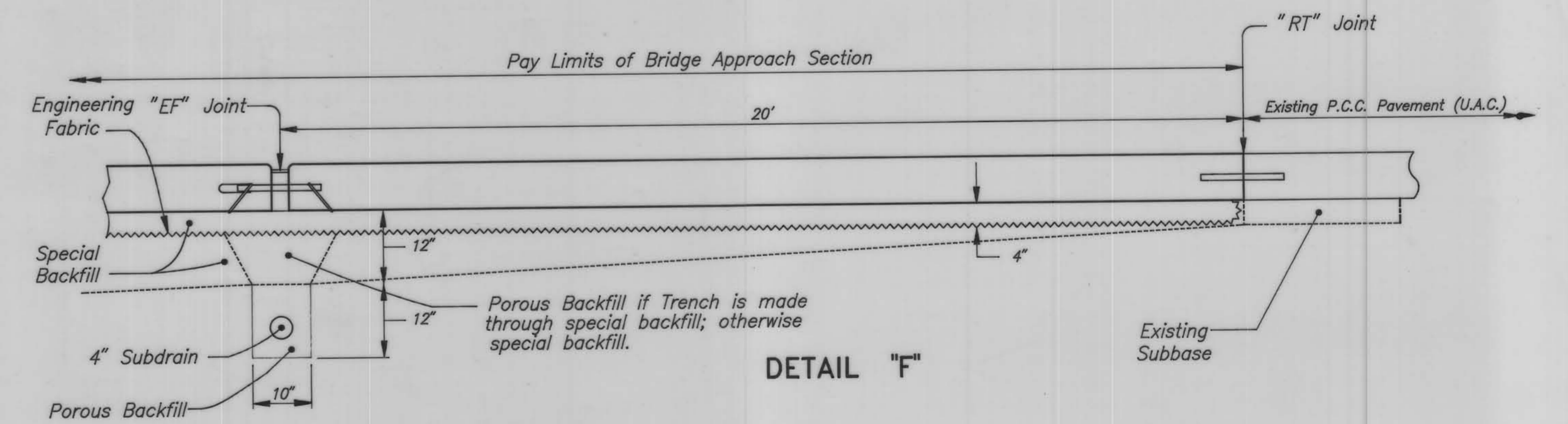
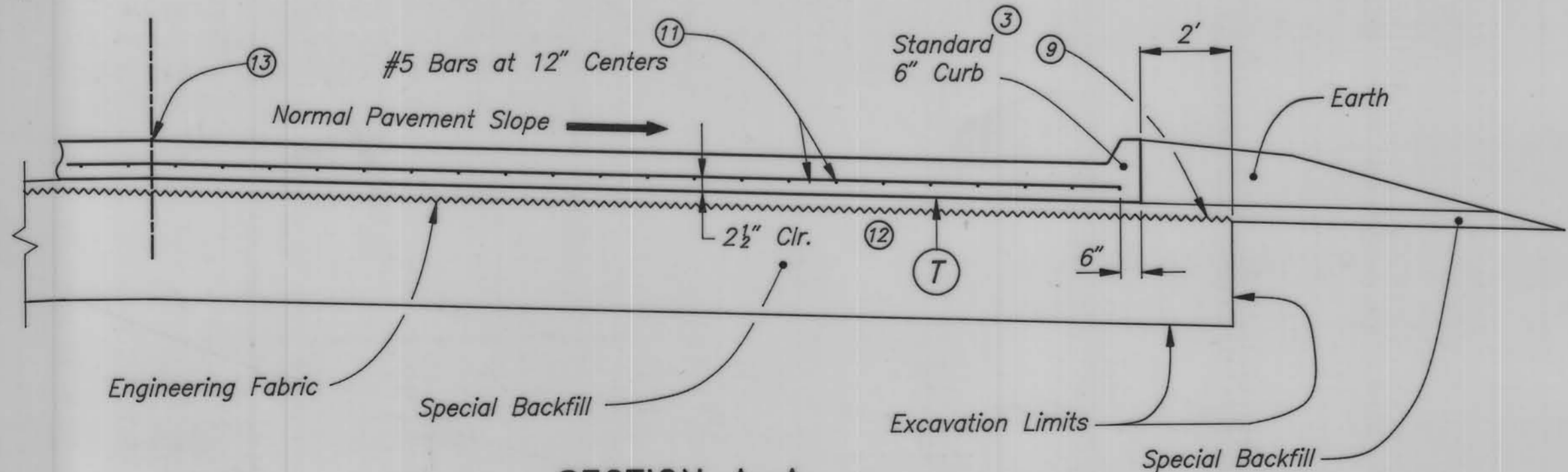
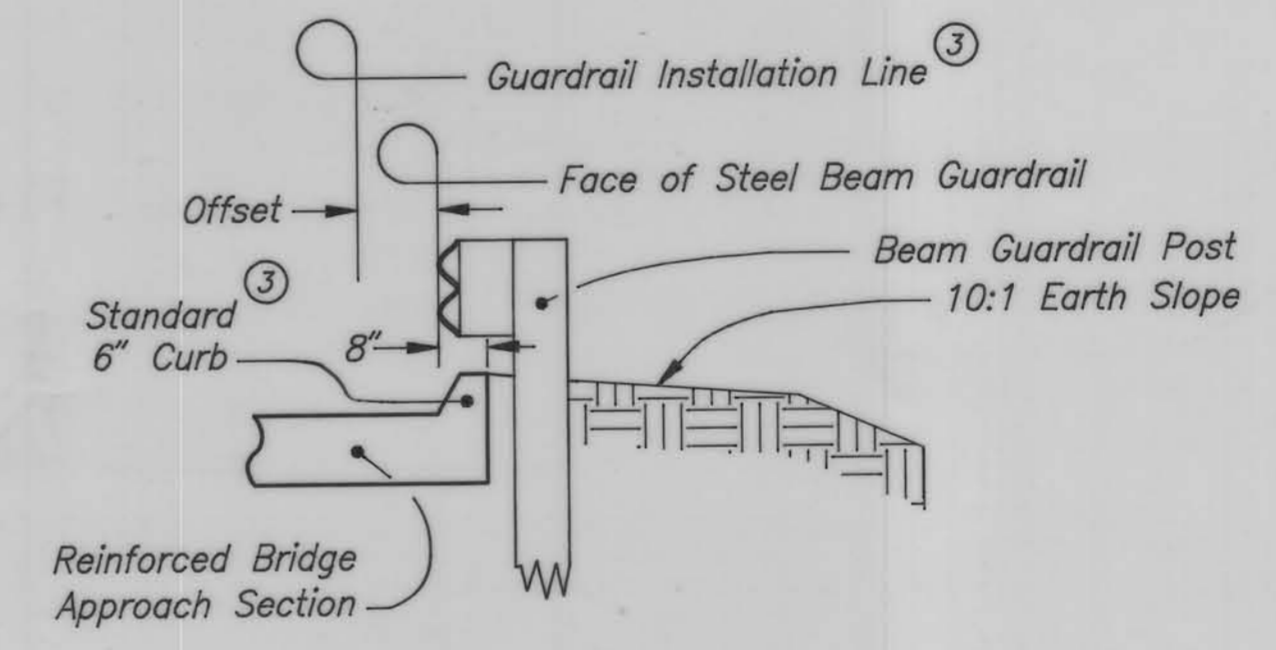
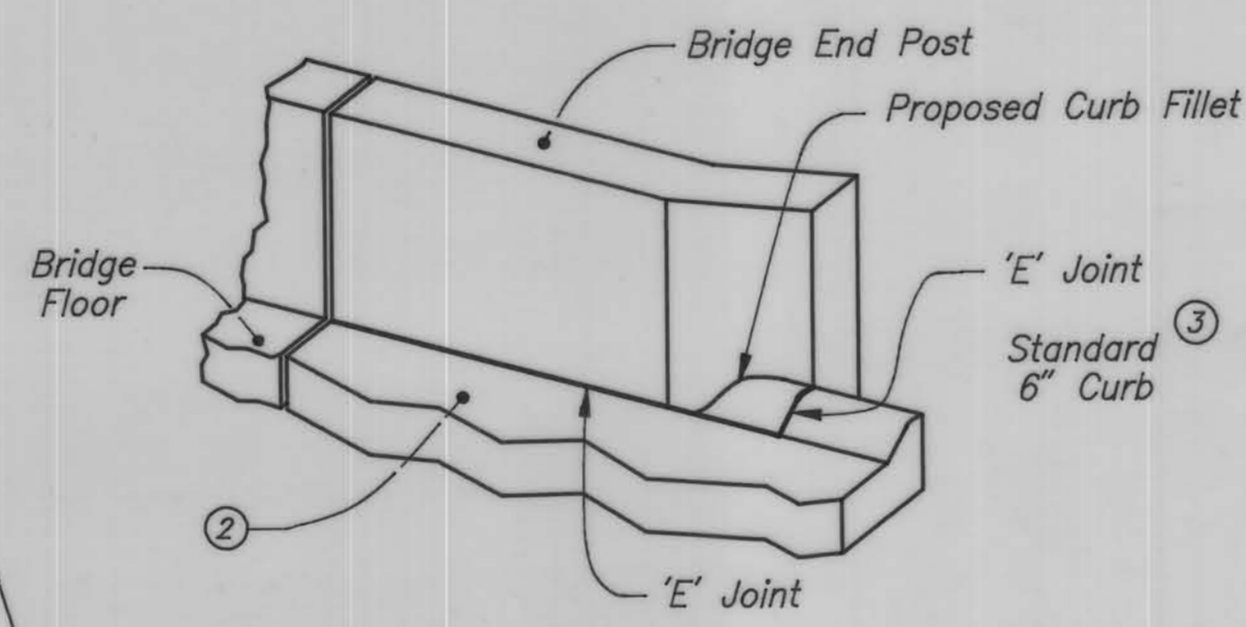
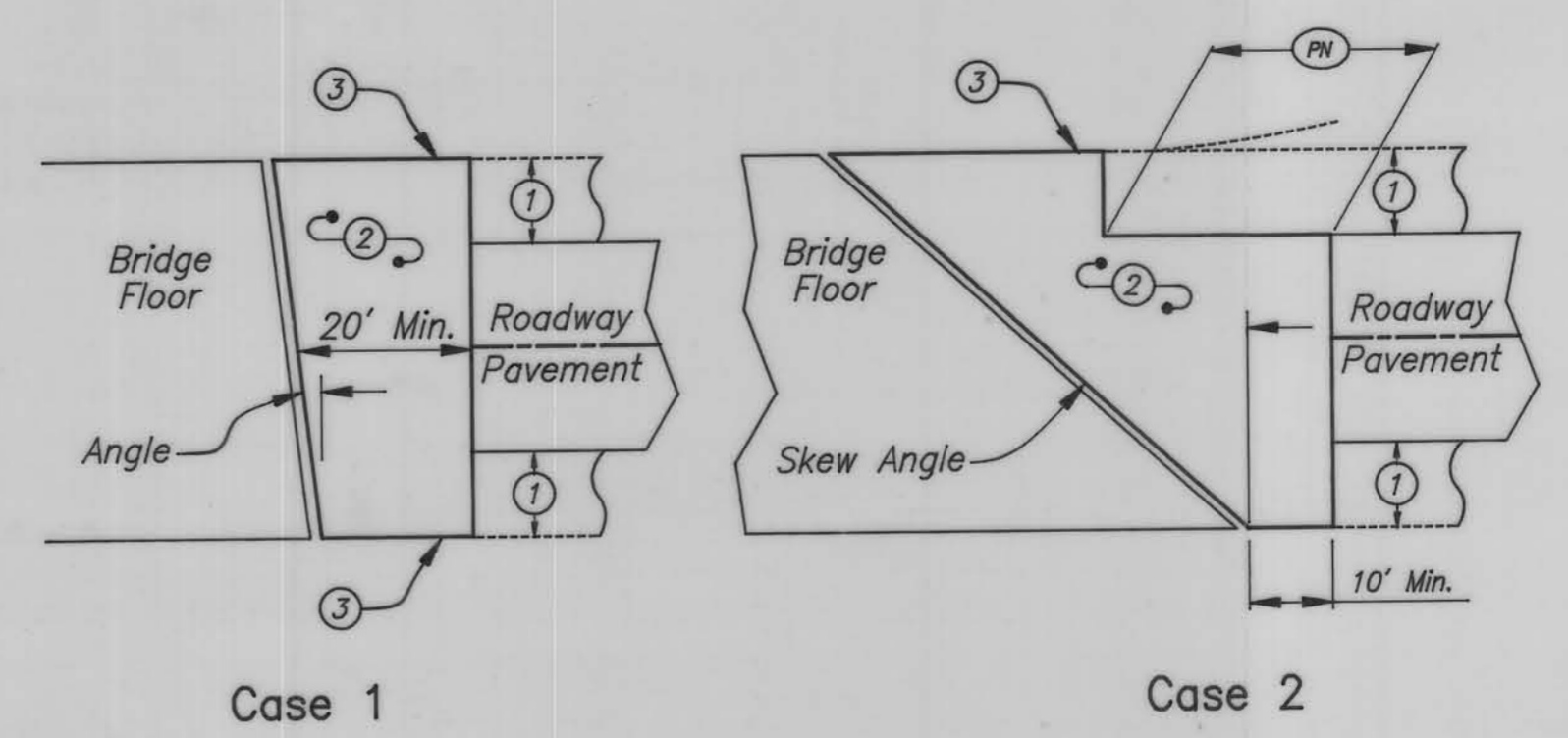
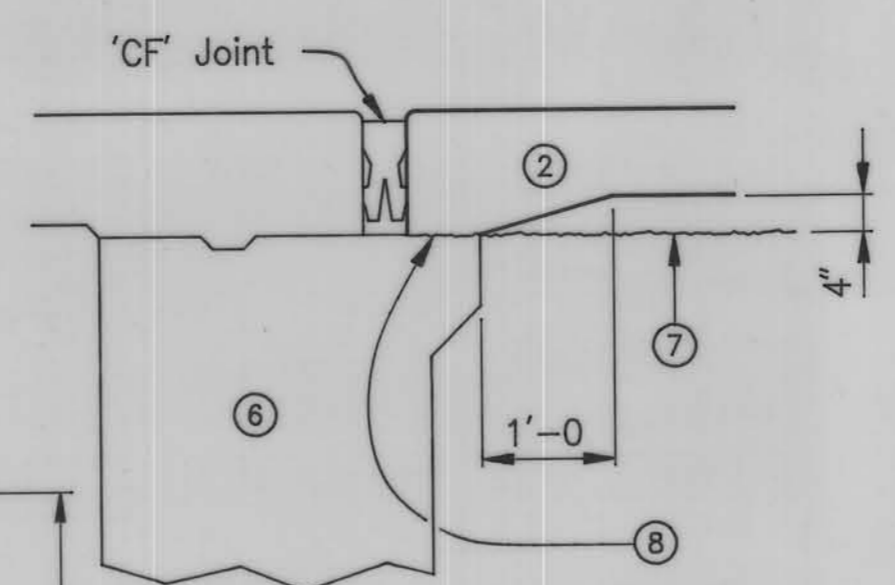
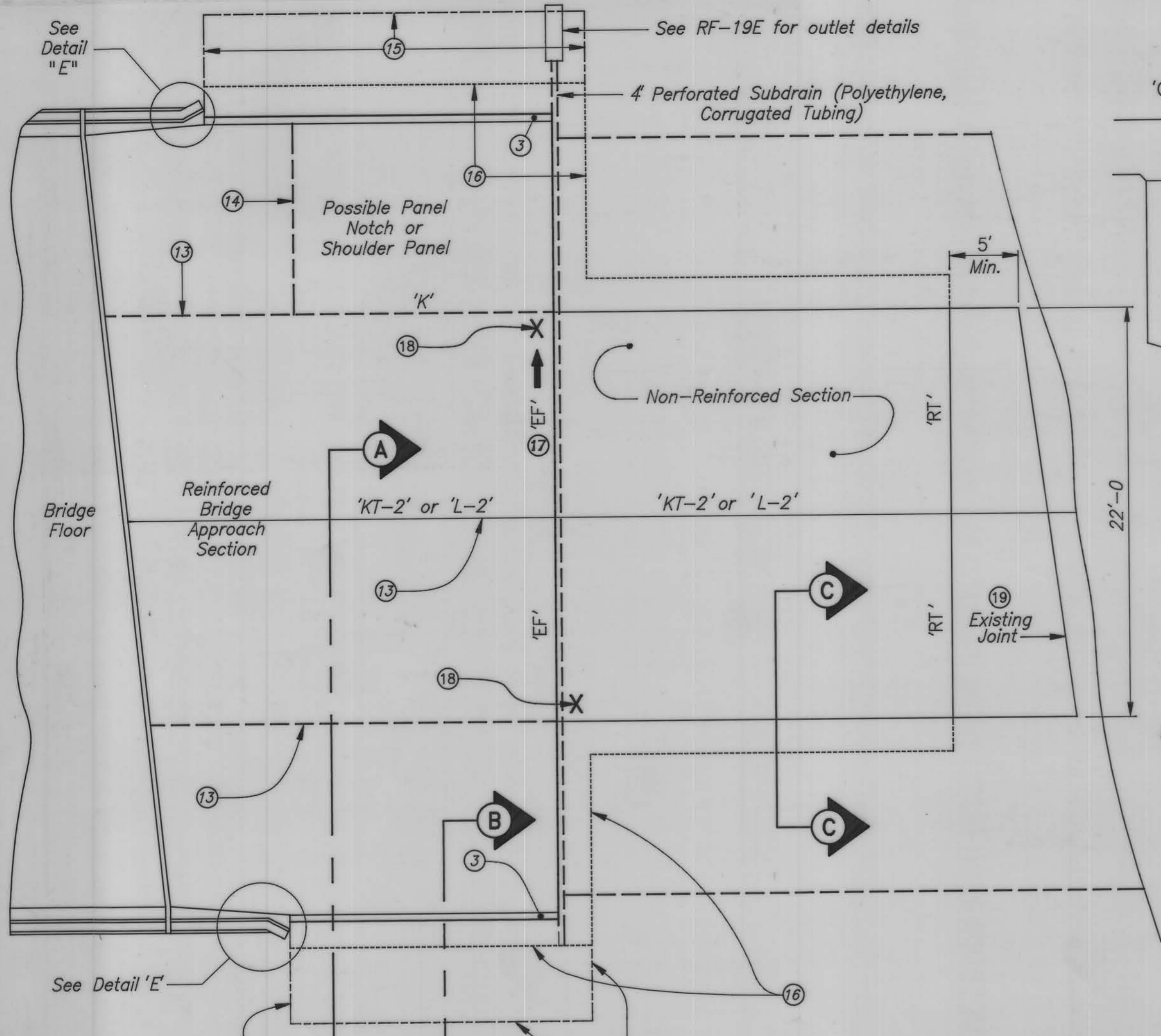
SECTION	TOTAL
RETROFITTED SECTION 493.0 L.F. @ 0.0500 C.Y. PER FT.	24.6
INCLUDE WITH SUPERSTRUCTURE CONCRETE TOTAL (C.Y.)	24.6

REHABILITATION OF AN EXISTING
243' -0 x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE TO 326' -0 x 30'
INTEGRAL ABUTMENTS TEE & ENCASED PIERS
80'-9 AND 81'-6 81'-6 AND 82'-3
END SPANS INTERIOR SPANS

RETROFITTED RAIL DETAILS

STATION 12+92
CRAWFORD COUNTY,

0° SKEW
IOWA
SHEET 15 OF 19



GENERAL NOTES

THE INTENT OF THIS SHEET IS TO DETAIL THE CONSTRUCTION OF A PCC BRIDGE APPROACH PAVEMENT.

THE SUBGRADE SHALL BE EXCAVATED TO THE LIMITS SHOWN. A TRANSVERSE SUBDRAIN SHALL BE INSTALLED DIRECTLY BENEATH THE LOCATION OF THE PROPOSED 'EF' JOINT. THE EXCAVATION SHALL BE BACKFILLED WITH THE SPECIFIED MATERIAL AND AN APPROVED ENGINEERING FABRIC AS SPECIFIED IN SECTION 4196.01C SUBGRADE STABILIZATION INSTALLED AS SHOWN. THE ENGINEERING FABRIC SHALL BE SECURED TO THE TOP OF THE BRIDGE PAVING NOTCH AND EXTENDED AS SHOWN.

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

"BRIDGE APPROACH SECTION" SHALL BE MEASURED AND PAID FOR AS SPECIFIED IN SECTIONS 2301.34F AND 2301.35F. THE FOLLOWING ITEMS SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED IN THE PRICE BID FOR "BRIDGE APPROACH SECTION": 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. EXCAVATION FOR SPECIAL BACKFILL. FURNISHING AND INSTALLING SUBDRAIN. FURNISHING AND PLACING POROUS BACKFILL. FURNISHING AND INSTALLING SUBDRAIN OUTLET. FURNISHING AND INSTALLING ENGINEERING FABRIC. FURNISHING AND BACKFILLING WITH SPECIAL BACKFILL.

- DESIGN SHOULDER WIDTH.
- REINFORCED BRIDGE APPROACH SECTION.
- BUILD 6 INCH CURB TO END OF REINFORCED BRIDGE APPROACH SECTION. THE LOCATION OF THE GUARDRAIL DETERMINES THE LOCATION OF THE CURB. THE BACK OF CURB IS LOCATED 8 INCHES BACK OF THE FACE OF GUARDRAIL.
- OMIT
- OMIT
- BRIDGE ABUTMENT.
- ENGINEERING FABRIC.
- SECURE ENGINEERING FABRIC ON TOP OF PAVING NOTCH.
- EXTEND ENGINEERING FABRIC TO 2' OUTSIDE EDGE OF PAVEMENT.
- TRIM FABRIC TO EDGE OF EXCAVATION.
- ADD ONE ADDITIONAL #5 BAR PARALLEL TO SKEWED FACE WHEN SKEW ANGLE IS 30 DEGREES OR MORE.
- T=8"
- LONGITUDINAL JOINT: SINGLE POUR - NO JOINT. TWO POURS - USE 'K' JOINT.
- IF PN "PANEL NOTCH" USE 'RT' JOINT.
- LIMITS OF SPECIAL BACKFILL.
- EXCAVATION LIMITS 2 FEET OUTSIDE OF PAVEMENT EDGE.
- SLOPE SUBDRAIN TO DRAIN.
- AN "X" SHALL BE PLACED IN THE PLASTIC CONCRETE NEAR THE "EF" JOINT AT THE OUTSIDE EDGE OF PAVEMENT.
- "CD" JOINTS REQUIRED UP TO 300' EACH WAY FROM REINFORCED BRIDGE APPROACH SECTION.

REHABILITATION OF AN EXISTING 243' -0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326' -0 x 30' INTEGRAL ABUTMENTS TEE & ENCASED PIERS 80'-9 AND 81'-6 81'-6 AND 82'-3 END SPANS INTERIOR SPANS

BRIDGE APPROACH DETAILS

STATION 12+92
CRAWFORD COUNTY, IOWA

9° SKEW
SHEET 16 OF 19

TABULATION OF STEEL BEAM GUARDRAIL FOR STANDARD ROAD PLANS RE-63, RE-65

NO.	STATION	STANDARD ROAD PLAN	CASE	FORMED STEEL BEAM GUARDRAIL						BEAM GUARDRAIL POSTS				POST & ADAPTOR RE-37	ANCHOR SYSTEM	REMARKS	
				A		H		T		WITH 8" x 8" SPACER BLOCKS		WITHOUT SPACER BLOCKS					
				"W" BEAM	THRIE BEAM	THRIE BEAM	THRIE BEAM	"W" BEAM	TOTAL "W" BEAM	TOTAL THRIE BEAM	10"x10" x6'-0	8"x8" x6'-6	8"x8" x6'-0				6"x8" x6'-0
				Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	No.	No.	No.				No.
1	14+60.50	RE-65	U	37.5							7	2				N.W. END	
2	14+61.84	RE-65	U		31.25						3		7	2			N.E. END
							31.25										

REMOVAL OF PAVEMENT			
STATION TO STATION	AREA Sq.Yds.	SAW CUT Lin.Ft.	REMARKS
13+73.50	14+96.50	301	22

TABULATION OF PAVEMENT MARKINGS			
LINE TYPE *	STATION TO STATION	SIDE	LENGTH Sta.
③ DOUBLE CENTER LINE	13+73.50 TO 14+96.50	-	2.46
⑦ EDGE LINE	13+73.50 TO 14+96.50	LT.	1.23
⑦ EDGE LINE	13+73.50 TO 14+96.50	RT.	1.23
② BROKEN @ ON P.C.C. PAVT.	13+73.50 TO 14+96.50	-	0.31
	TOTAL		5.23

* REFER TYP. DETAIL 9001

TRAFFIC CONTROL PLAN

THE PROJECT ROUTE WILL BE CLOSED TO TRAFFIC. TRAFFIC CONTROL ON THIS PROJECT SHALL BE IN ACCORDANCE WITH DETAIL SHEET 520-26. FOR ADDITIONAL COMPLIMENTARY INFORMATION, REFER TO SUPPLEMENTAL SPECIFICATION 5055 AND THE IOWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.

SLAT FENCE BARRICADES OR PLASTIC SAFETY FENCE SHALL BE PLACED ON BOTH SIDES OF THE BRIDGE SITE. IN ADDITION, A TYPE III BARRICADE SHALL BE PLACED IN ADVANCE OF THE SLAT FENCE OR PLASTIC SAFETY FENCE, A "ROAD CLOSED" SIGN (R-11-2, 48" X 30") SHALL BE PLACED ON EACH TYPE III BARRICADE ALONG WITH TWO TYPE "A" LOW INTENSITY FLASHING WARNING LIGHTS. THE "ROAD CLOSED" SIGN SHALL BE MOUNTED SUCH THAT NO PART OF THE BARRICADE IS COVERED.

CRAWFORD COUNTY MAINTENANCE SHALL SALVAGE ALL ROAD MARKERS AFTER ROAD IS CLOSED.

THE BID ITEM "TRAFFIC CONTROL" SHALL INCLUDE THE COST FOR ALL TRAFFIC CONTROL MEASURES REQUIRED OF THE CONTRACTOR EXCEPT FOR THOSE WHICH ARE SEPARATE BID ITEMS OR ARE INCIDENTAL TO OTHER BID ITEMS.

THE GUARDRAIL INSTALLATION MUST BE COMPLETED BEFORE THE ROAD IS OPENED TO TRAFFIC.

ALL CONTRACTOR FURNISHED TRAFFIC CONTROL AND FIXED, POST MOUNTED, TRAFFIC CONTROL SIGNS USED ON THIS PROJECT SHALL BE SHEETED WITH ENCAPSULATED LENS SHEETING.

TYPE C STEADY BURN WARNING LIGHTS ARE NOT REQUIRED FOR VERTICAL PANELS, BARRICADES, AND DRUMS WHEN THESE TRAFFIC CONTROL DEVICES ARE SHEETED WITH ENCAPSULATED LENS SHEETING.

TABULATION OF DELINEATORS AND OBJECT MARKERS							
Refer to Standard Road Plan RE-48A-B and RE-29C **Not a Bid Item							
LOCATION		DELINEATOR	OBJECT MARKER				REMARKS
STATION	TYPE	SINGLE WHITE D-1W NO.	TYPE 2 OM2-3YV NO.	TYPE 3		** OFFSET BRACKETS NO.	
				OM-3L NO.	OM-3R NO.		
12+92	1	7	4	1	1	-	N. END

TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS											
*Refer to Standard Road Plan RL-11 or Typical 4303 and 4306											
LOCATION POINT		TYPE	*DIMENSIONS			AC CLASS 10 (RDWY. & BORROW) EXCAV. Cu.Yds.	EMBANK. IN PLACE Cu.Yds.	PIPE			REMARKS
No.	Station		A / T Lin.Ft.	Y Lin.Ft.	Z Lin.Ft.			SIZE Inches	TYPE	LENGTH Lin.Ft.	
1	15+16.75	1	56.25	5.9	22.0	30	-	-	-	-	N.W. END
2	15+18.09	1	56.25	5.9	22.0	30	-	-	-	-	N.E. END

△ INCLUDES 35% FOR SHRINKAGE.

DETAIL 9001

STANDARD TYPES OF PAVEMENT MARKINGS

TABULATION OF SAFETY CLOSURES		
NO.	STATION	REMARKS
1	10+00	S. END
1	17+00	N. END

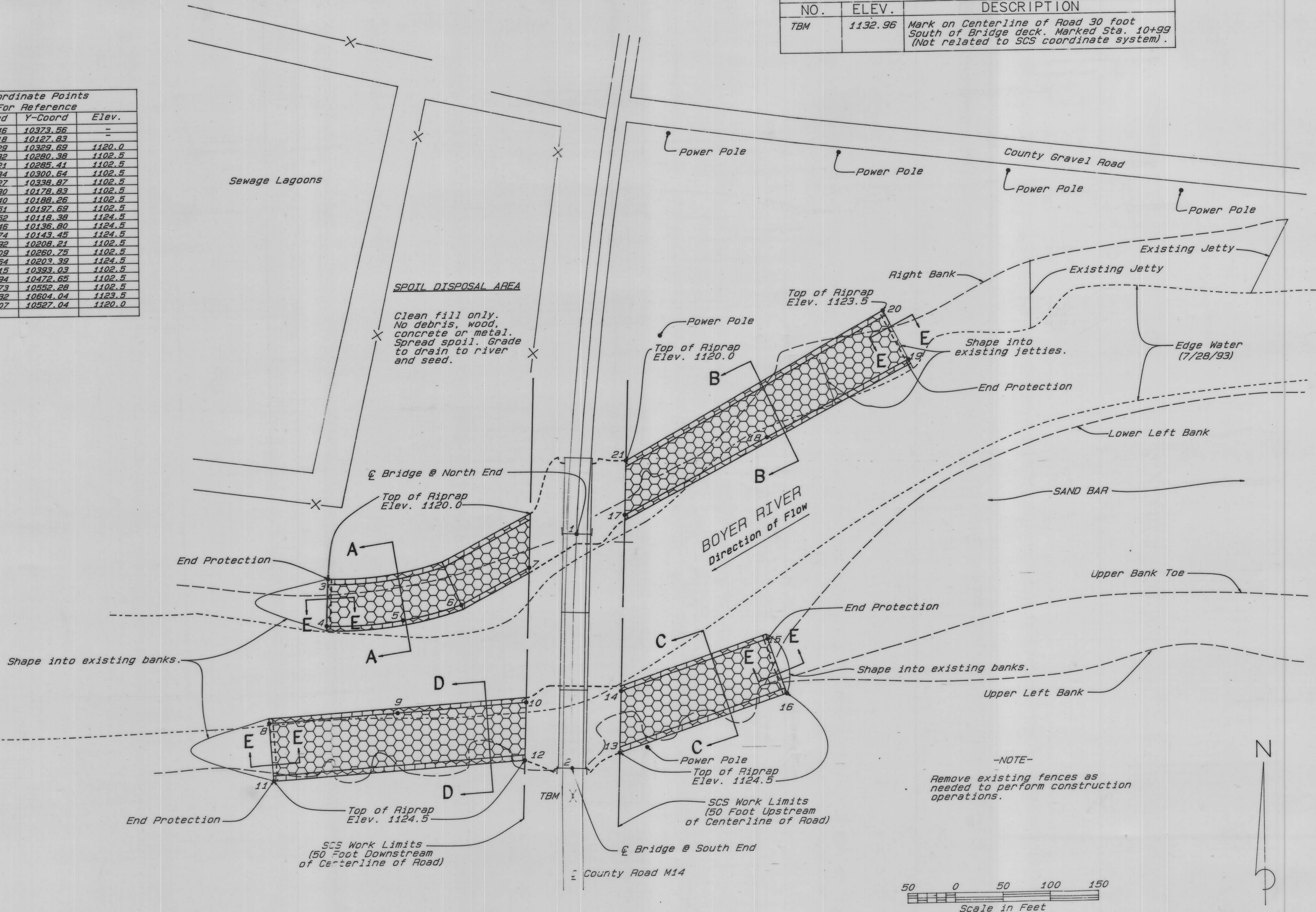
REHABILITATION OF AN EXISTING 243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE TO 326'-0 x 30' INTEGRAL ABUTMENTS TEE & ENCASED PIERS 80'-9 AND 81'-6 81'-6 AND 82'-3 END SPANS INTERIOR SPANS

TABULATIONS

STATION 12+92 CRAWFORD COUNTY, IOWA 0° SKEW SHEET 17 OF 19

Coordinate Points For Reference			
No.	X-Coord	Y-Coord	Elev.
1	10008.46	10373.56	-
2	10000.18	10127.83	-
3	9746.29	10329.69	1120.0
4	9744.32	10280.38	1102.5
5	9824.21	10285.41	1102.5
6	9885.34	10300.64	1102.5
7	9957.27	10338.87	1102.5
8	9682.30	10178.83	1102.5
9	9817.40	10188.26	1102.5
10	9952.51	10197.69	1102.5
11	9686.52	10118.38	1124.5
12	9950.46	10136.80	1124.5
13	10050.74	10143.45	1124.5
14	10052.92	10208.21	1102.5
15	10207.09	10260.75	1102.5
16	10226.64	10203.39	1124.5
17	10059.15	10393.03	1102.5
18	10208.94	10472.65	1102.5
19	10358.73	10552.28	1102.5
20	10332.32	10604.04	1123.5
21	10061.07	10527.04	1120.0

BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM	1132.96	Mark on Centerline of Road 30 foot South of Bridge deck. Marked Sta. 10+99 (Not related to SCS coordinate system).



-NOTE-
Remove existing fences as needed to perform construction operations.

Scale in Feet

M14/BOYER RIVER BRIDGE
SITE MAP

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

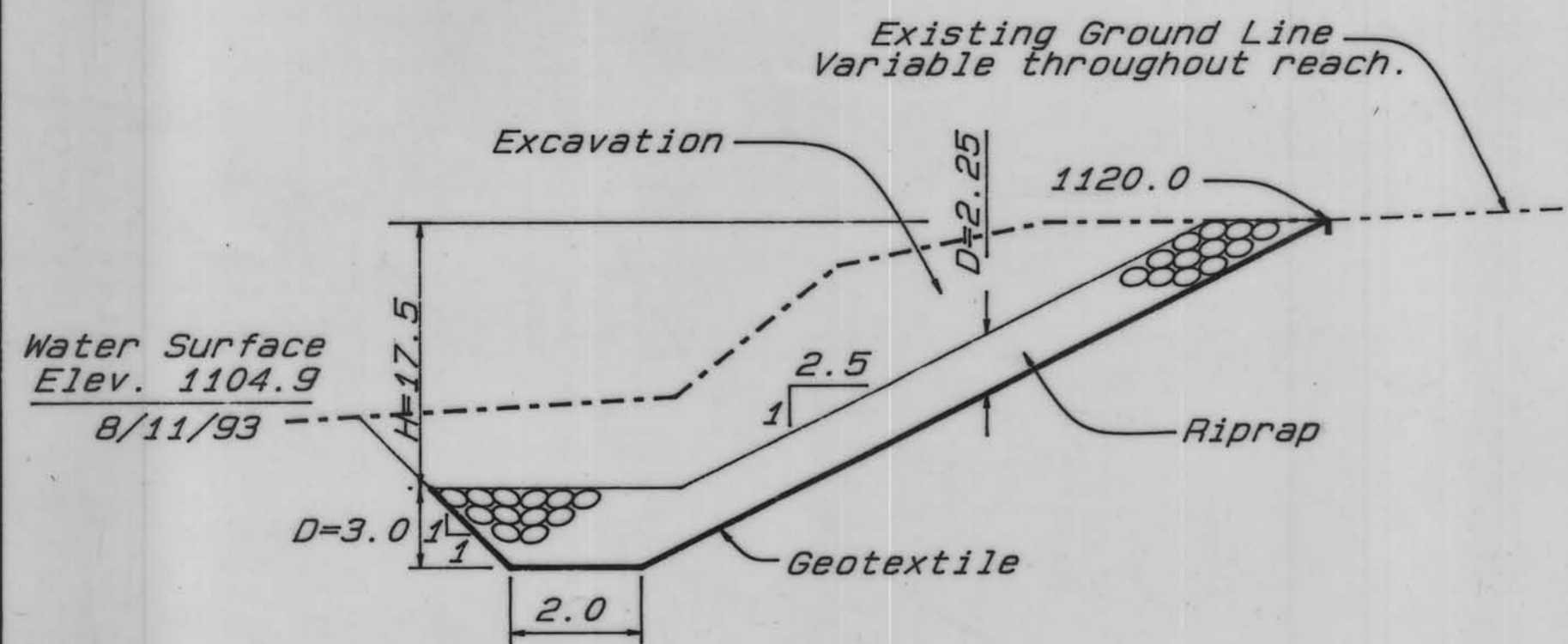
Engineering Job Class VII

EMP-IA-311-03

IOWA

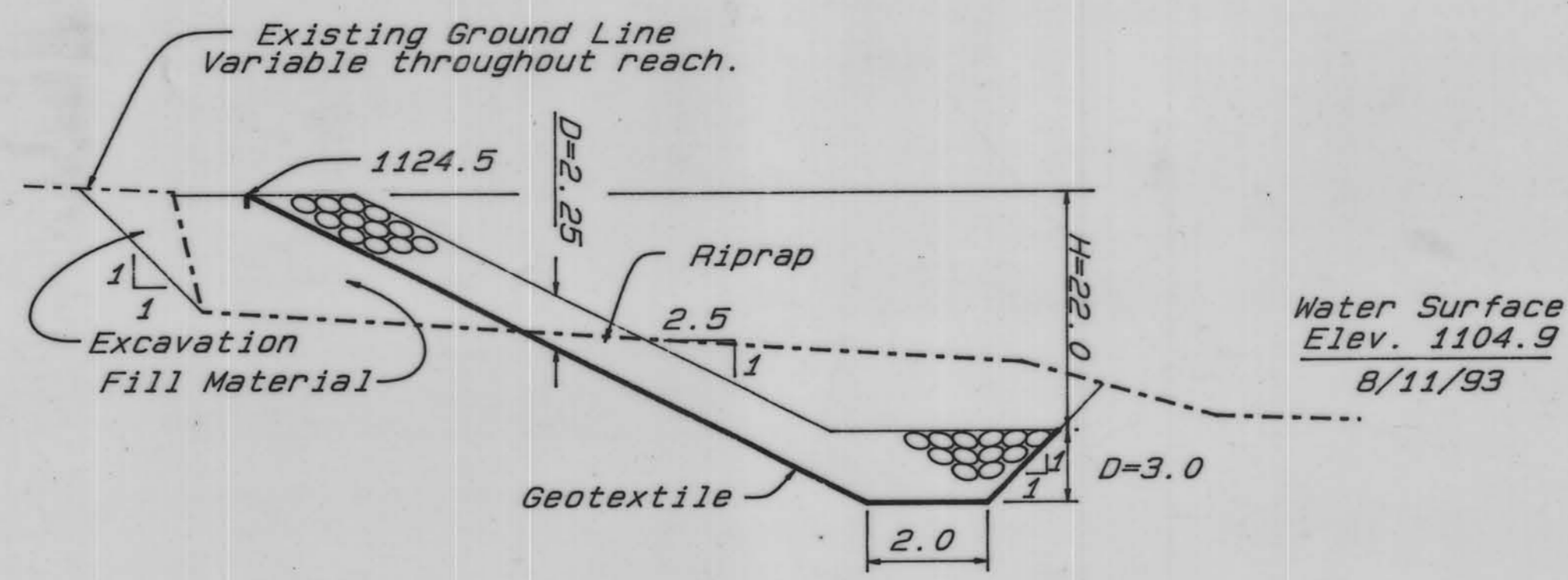
Designed By	William Ireland	Date	9/93
Drawn	Ronald E. Carper	Date	9/93
Traced	Paul J. Assman	Date	9/93
Checked		Date	
Approved By	State Conservation Engineer	Date	
Title	Michael C. Schmidt	Date	9/93
Title	Head of Engineering, Midwest NTC	Date	

DRAWING NO. _____
SHEET NO. 18 OF 19



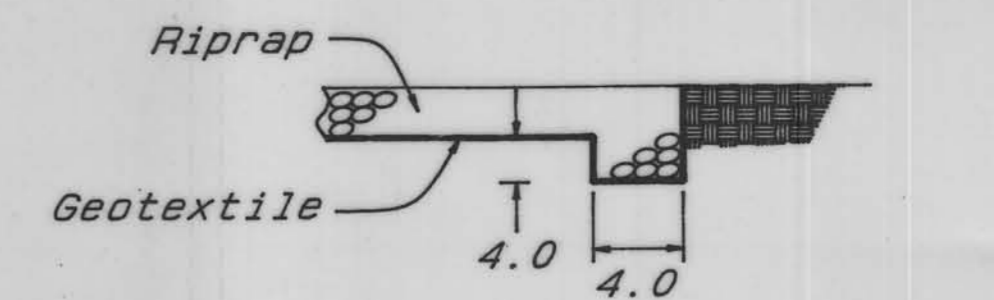
TYPICAL SECTION REACH A-A

Not to Scale

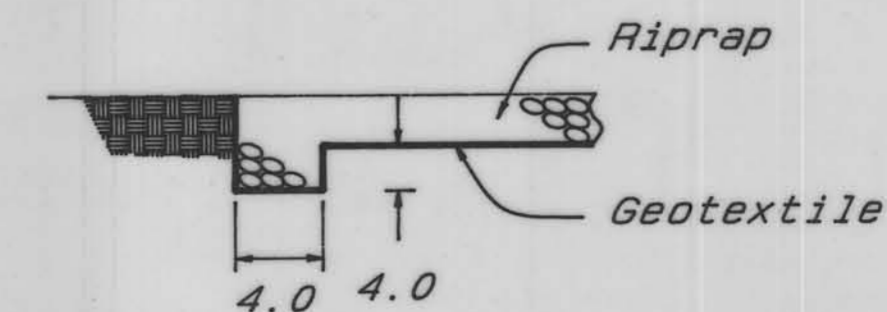


TYPICAL SECTION REACH D-D

Not to Scale



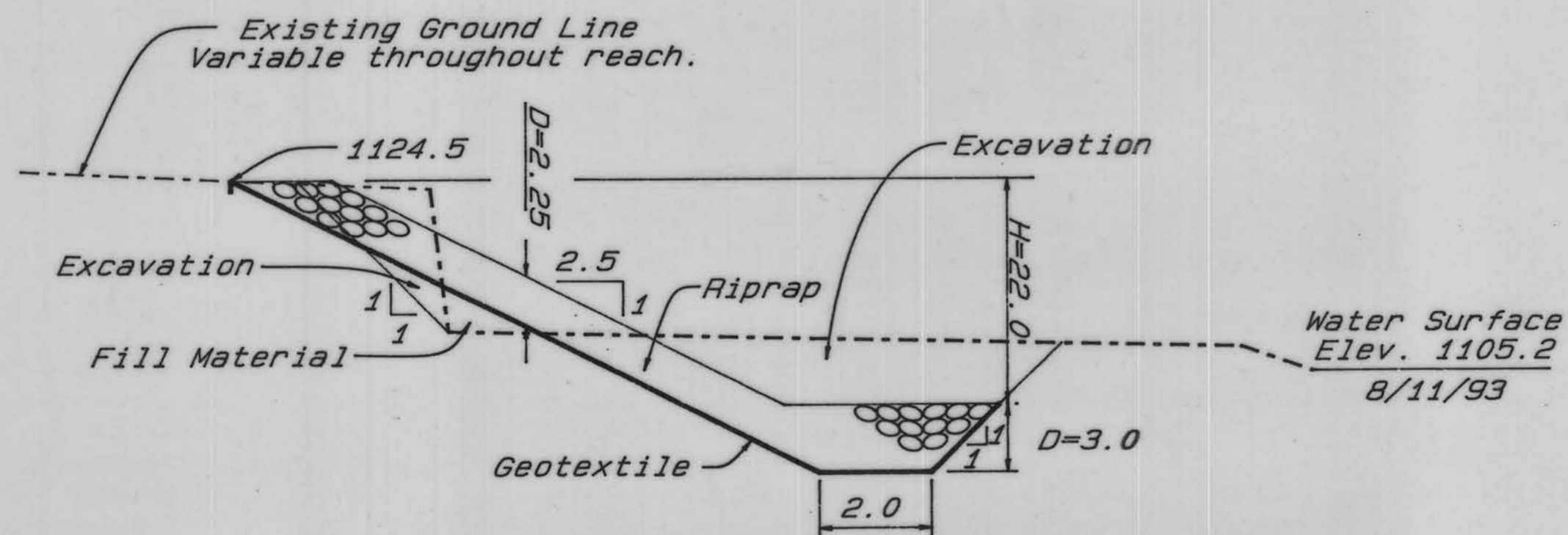
RIGHT END



LEFT END

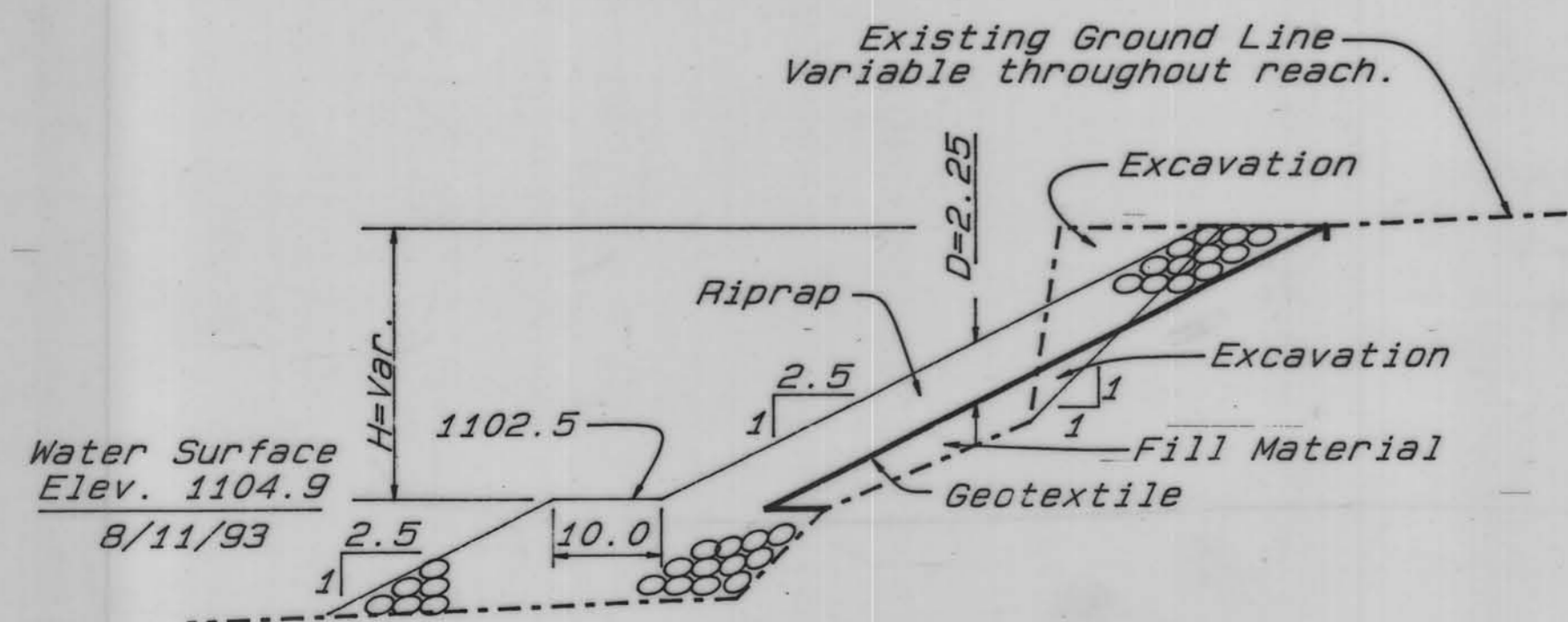
SECTION E-E

Not to Scale



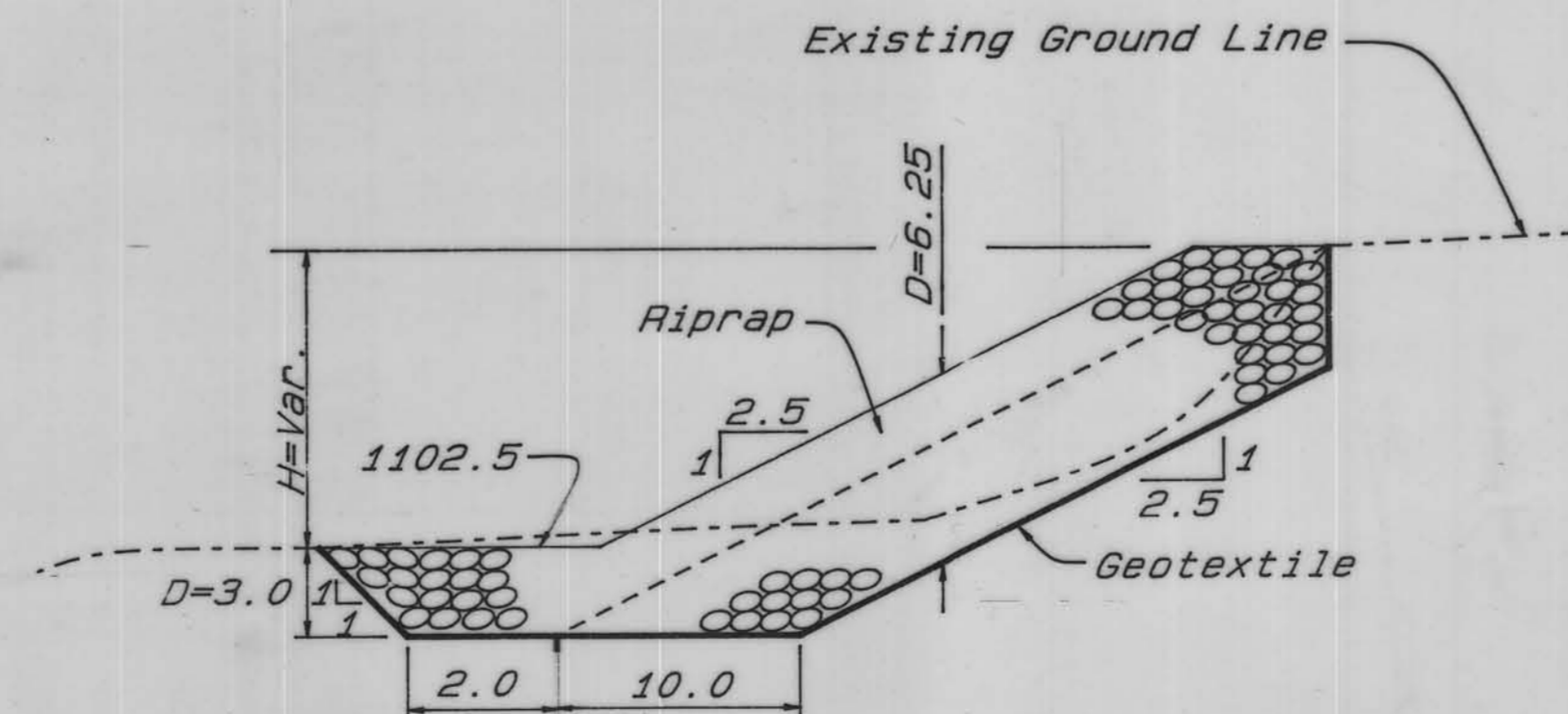
TYPICAL SECTION REACH C-C

Not to Scale



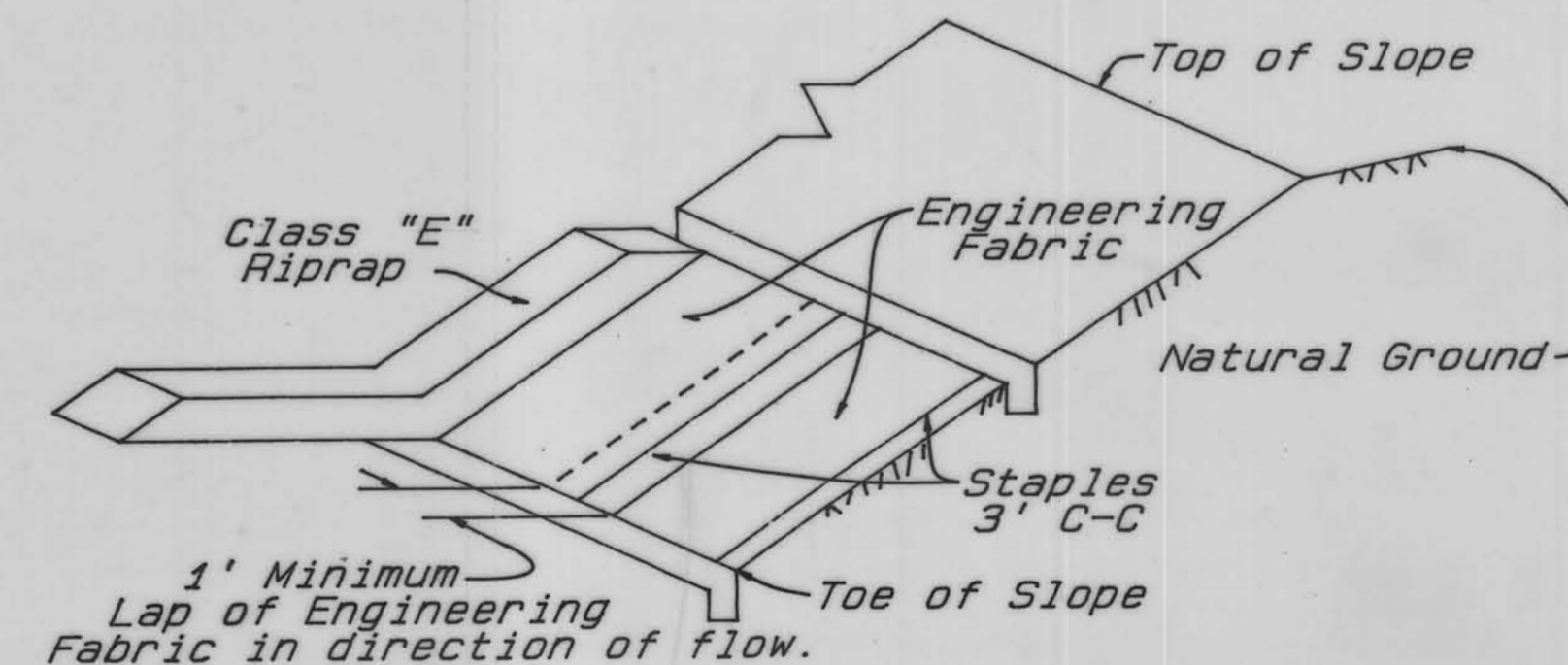
TYPICAL SECTION REACH B-B

Not to Scale



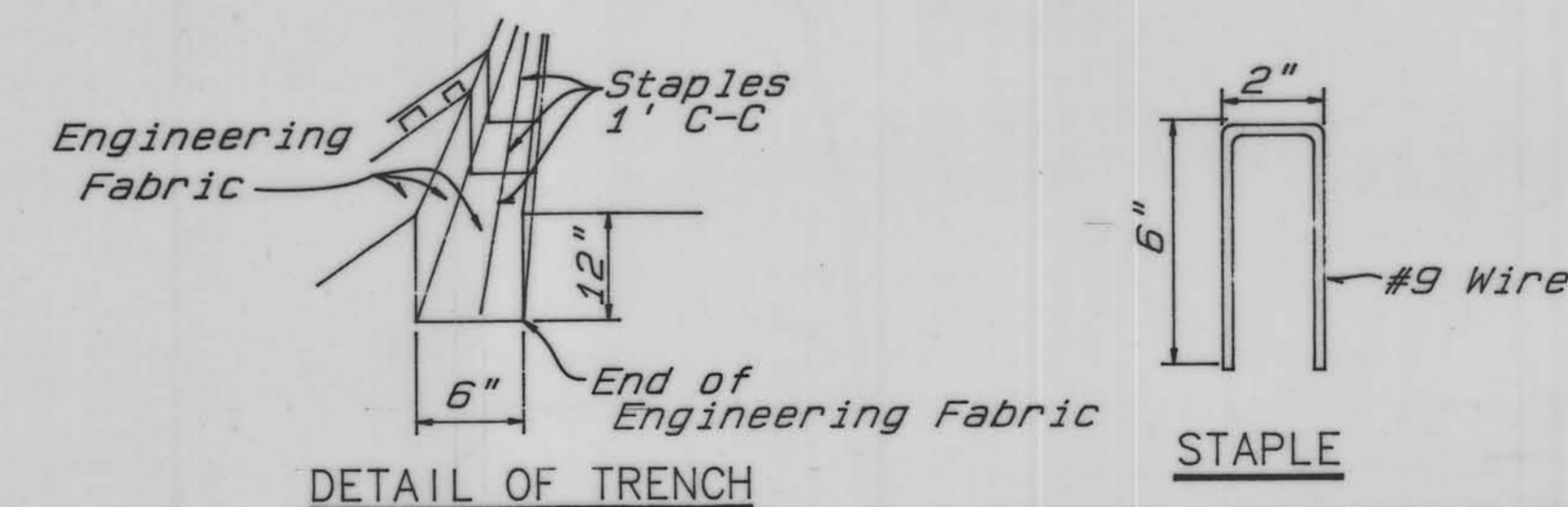
TYPICAL CROSS SECTION END PROTECTION

Not to Scale



Excavate 6"x12" trench along top of riprap. Place end of Engineering Fabric strips into trench with staples as shown. Backfill with the excavated material and compact. The engineer may permit the use of the wheels of pneumatic tired equipment for consolidating the trench backfill material.

DETAILS OF PLACEMENT OF ENGINEERING FABRIC



DETAIL OF TRENCH

Where public utility fixtures are shown or existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the owners of those utilities prior to the beginning of any construction. The contractor shall afford access to these facilities for necessary modification of services. Underground facilities, structures and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the contractor's responsibility to determine their existence and exact location and to avoid damage thereto. No claims for additional compensation will be allowed to the contractor for any interference or delay caused by such work.

Approved By	State Conservation Engineer	Date	9/93
Designed	William Ireland	Date	9/93
Drawn	Ronald E. Carper	Date	9/93
Traced	Paul J. Assman	Date	9/93
Checked	Paul J. Assman	Date	9/93
Title		Title	
Michael A. Swannell		Michael A. Swannell	
Head of Engineering, Midwest NTC		Head of Engineering, Midwest NTC	

**DETAILS AND CROSS SECTIONS
M14/BOYER RIVER BRIDGE**

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DRAWING NO.

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