BRIDGE & APPROACHES - PPCB
IBRC-C008(39)--8E-08
LETTING DATE 4-18-2006

CONVENTIONAL SIGNS

- DIVIDED HIGHWAY
- PAVED ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTH ROAD
- INTERSTATE HIGHWAY
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE LIMIT LINE
- TOWNSHIP LINE
- SECTION LINE

Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

SECONDARY ROAD SYSTEM

BOONE COUNTY

BRIDGE & APPROACHES - PPCB

ON 120th ST OVER SQUAW CREEK

Office Copy 2/20/06

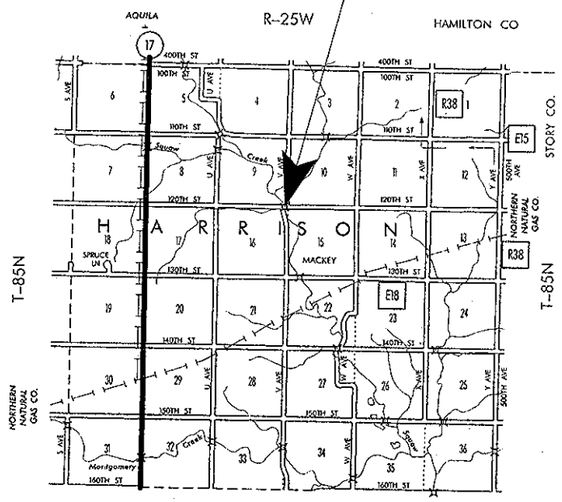
	TOTAL SHEETS
	38
PROJECT NUMBER	
IBRC-C008(39)--8E-08	
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

VALUE ENGINEERING SAVES. REFER TO THE GENERAL NOTES IN THESE PLANS.

INDEX OF SHEETS

DESIGN NO. 106



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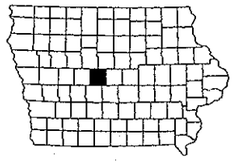


LOCATION MAP

ALL WORKING DRAWINGS INCLUDED SHOP DRAWINGS AND FALSEWORK DRAWINGS WILL BE REVIEWED BY:

IOWA DOT - OFFICE OF BRIDGES AND STRUCTURES
800 LINCOLN WAY
AMES, IA 50010

STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET C.01

REVISIONS

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — STUART S NIELSEN 14852 — IOWA

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.

Signature Stuart S. Nielsen Date 2/20/06

Stuart S. Nielsen
Printed or Typed Name

My license renewal date is December 31 2006

Pages or sheets covered by this seal: SHEETS 15 THRU 21 OF 38

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	JAMES S. NELSON	STRUCTURAL DESIGN
1	STUART S. NIELSEN	STRUCTURAL DESIGN
C.01	DAVID T. ANTHONEY	ROADWAY DESIGN

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — James S. Nelson 16032 — IOWA

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.

Signature James S. Nelson Date 2/20/06

James S. Nelson
Printed or Typed Name

My license renewal date is December 31, 2007

Pages or sheets covered by this seal: SHEETS 1 THRU 14 AND 22 THRU 23 OF 38

BOONE COUNTY

BOONE COUNTY - DESIGN NO. 106

PROJECT DIRECTORY NAME: W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120 th St Over Squaw Creek

DESIGN TEAM JSN/DAW | ENGLISH | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 30101 | BOONE COUNTY | PROJECT NUMBER IBRC-C008(39)--8E-08 | SHEET NUMBER 1

W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C00039.dgn 080106S000

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	DIVISION 1	DIVISION 2	AS BUILT QUANTITY
1	2301-9091100	LONGITUDINAL GROOVING IN CONCRETE	SY	560.000		
2	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS		1.000	
3	2402-2720000	EXCAVATION, CLASS 20	CY	116.600		
4	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	56.800		
5	2404-7775000	REINFORCING STEEL	LB	15,019.000		
6	2407-0580146	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, SLXA46	EA	8.000		
7	2407-0580155	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, SLXA55	EA	4.000		
8	2408-7800000	STRUCTURAL STEEL	LB	2942.600		
9	2414-6424120	CONCRETE OPEN RAILING	LF	337.600		
10	2501-5425057	PILES, DRIVE STEEL BEARING, HP 10x57	LF	575.000		
11	2501-5550057	PILES, FURNISH STEEL BEARING, HP 10x57	LF	575.000		
12	2501-5610116	PILES, FURNISH STEEL PIPE, 16" (P10A TYPE1)	LF	810.000		
13	2501-5620116	PILES, DRIVE STEEL PIPE, 16" (P10A TYPE1)	LF	810.000		
14	2501-6335010	PREBORED HOLES	LF	50.000		
15	2506-4984000	FLOWABLE MORTAR	CY	5.000		
16	2508-0991000	PAINTING OF STRUCTURAL STEEL	LS	1.000		
17	2533-4980005	MOBILIZATION	LS	1.000		
18	2599-9999005	PRECAST POST-TENSIONED SLAB PANELS (INTERIOR)	EA	32.000		
19	2599-9999005	PRECAST POST-TENSIONED SLAB PANELS (END)	EA	4.000		
20	2599-9999005	PRECAST ABUTMENT FOOTING	EA	2.000		
21	2599-9999005	PRECAST PIER CAP	EA	2.000		

ESTIMATE REFERENCE INFORMATION:

ITEM NO.

1 LONGITUDINAL GROOVING IS INTENDED TO CLEAN UP THE SURFACE OF THE DECK , REMOVE RIDGES IN THE CONCRETE POURS, AND ROUGHEN THE DRIVING SURFACE. SEE LONGITUDINAL GROOVING NOTES DESIGN SHEET NO. 15.

4 INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL AND SUBDRAIN OUTLETS AT ABUTMENTS. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED.

6 & 7 INCLUDES PIER AND ABUTMENT BEARING MATERIAL AND COIL RODS. GRADATION OF COARSE AGGREGATES FOR PRESTRESSED CONCRETE BRIDGE UNITS SHALL MEET THE REQUIREMENTS OF SECTION 4115 CLASS 3 DURABILITY. GRADATION OF THE COARSE AGGREGATE SHALL MEET THE REQUIREMENTS OF SECTION 2407.02A. INCLUDES FURNISHING AND INSTALLING 2"Φ VENT HOLES. NON-STANDARD BEAMS WITH HIGHER THAN USUAL CONCRETE STRENGTHS REVISED STRAND AND REINFORCING PATTERNS AND NO EPOXY STEEL ARE REQUIRED FOR THIS BRIDGE.

12 INCLUDES CONCRETE FILLING OF PIPE PILES

16 THE PAINT SYSTEM FOR PAINTING THE OUTSIDE OF THE PIPE PILING SHALL BE A SHOP APPLIED ZINC SILICATE SYSTEM IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FINISH COAT (TOP COAT) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE PRIMER COAT AND FINISH COAT SHALL BE APPLIED TO THE TOP 25' OF THE PIPE PILING.

18 THIS ITEM INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE INTERIOR PRECAST PANELS. INCLUDING TRANSVERSE CONCRETE (5.8 CY), $\frac{5}{8}$"Φ TRANSVERSE BACKING ROD (562 LF), LEVELING DEVICES, AND CLOSURE POUR CONCRETE (4.2 CY).

19 THIS ITEM INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE END PRECAST PANELS INCLUDING ALL WORK INVOLVED IN INSTALLING THE 0.6" DIA. 270-LL POST TENSIONING STRANDS (7408 LF), BEAM P.T. CONCRETE (14.1 CY), DEBONDING SHIELDING, AND REQUIRED POST TENSION END ANCHORAGES.

20 THIS ITEM INCLUDES ALL COSTS FOR FURNISHING AND PLACING THE PRECAST ABUTMENT FOOTING INCLUDING (QUANTITIES FOR ONE FOOTING) 14.0 C.Y. STRUCTURAL CONCRETE (BRIDGE), 3171 LBS. REINFORCING STEEL, MECHANICAL SPLICERS, 18.2 L.F. OF 21"Φ CMP, AND 1.6 C.Y. STRUCTURAL CONCRETE (MISC.) TO BACKFILL THE PILE VOID. INCLUDES THE COST OF TEMPORARILY BLOCKING THE ABUTMENT FOOTINGS UNTIL THE CONCRETE BACKFILL IN THE PILE VOID HAS OBTAINED THE REQUIRED STRENGTH. THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT WILL BE FOR EACH PRECAST ABUTMENT FOOTING FURNISHED AND PLACED.

21 THIS ITEM INCLUDES ALL COSTS FOR FURNISHING AND PLACING THE PRECAST PIER CAP INCLUDING (QUANTITIES FOR ONE CAP) 11.3 C.Y. STRUCTURAL CONCRETE (BRIDGE), 2732 LBS. REINFORCING STEEL, 28.5 L.F. OF 21"Φ CMP, AND 2.5 C.Y. STRUCTURAL CONCRETE (MISC.) TO BACKFILL THE PILE VOID. INCLUDES THE COST OF SHORING REQUIRED TO SUPPORT THE PIER CAPS UNTIL THE CONCRETE BACKFILL IN THE PILE VOID HAS OBTAINED THE REQUIRED STRENGTH. THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT WILL BE FOR EACH PRECAST PIER CAP FURNISHED AND PLACED.

NOTE:

DIVISION 1 PAID FOR 100% WITH IBRC FUNDS.

DIVISION 2 PAID FOR 80% WITH HBRC FUNDS AND 20% LOCAL FUNDS.

SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 1996.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT AND SPECIAL PROVISIONS FOR PRECAST POST-TENSIONED SLAB PANELS

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3,500 PSI.

PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 11.

PRECAST CONCRETE ABUTMENT FOOTING AND PRECAST CONCRETE PIER CAP IN ACCORDANCE WITH SECTION 8, f'c = 5,000 PSI.

FULL DEPTH PRECAST DECK PANELS, SEE DESIGN SHEET 15.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

GENERAL NOTES:

THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 76' x 18' MARSH RAINBOW ARCH BRIDGE CONSTRUCTED IN 1917. NO KNOWN COPIES OF THE ORIGINAL PLANS EXIST. THE EXISTING BRIDGE SUPERSTRUCTURE CONSISTS OF A STEEL TRUSS ARCH, STEEL HANGERS AND STEEL FLOOR BEAMS ALL ENCASED IN CONCRETE. THE INTENT IS TO REPLACE THE EXISTING STRUCTURE WITH AN IBRC ACCELERATED BRIDGE CONSTRUCTED WITH PRECAST ABUTMENT FOOTINGS, PRECAST PIER CAPS, PPC BEAMS AND FULL-DEPTH PRECAST DECK PANELS POST-TENSIONED.

THE LUMP SUM BID FOR REMOVAL OF EXISTING BRIDGE SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVING THE EXISTING 76' x 18' MARSH RAINBOW ARCH BRIDGE.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE SPECIFICATIONS.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

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

THIS BRIDGE IS DESIGNED FOR HS20-44 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.15 -- VALUE ENGINEERING INCENTIVE PROPOSAL. A PAMPHLET AND CONCEPTUAL PROPOSAL FORM WILL BE AVAILABLE AT THE PRECONSTRUCTION CONFERENCE.

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE CONTRACTING AUTHORITY.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 2. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

ALL COARSE AGGREGATE FOR STRUCTURAL CONCRETE SHALL BE CRUSHED LIMESTONE

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	BAR DESIGNATION
3	10
4	13
5	16
6	19
7	22
8	25
9	29
10	32
11	36

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

GENERAL NOTES & QUANTITIES

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER IBRC-C008(39)--8E-08 | SHEET NUMBER 2

14-MAR-2006 13:52 snielse W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C00039.dgn 080106S001

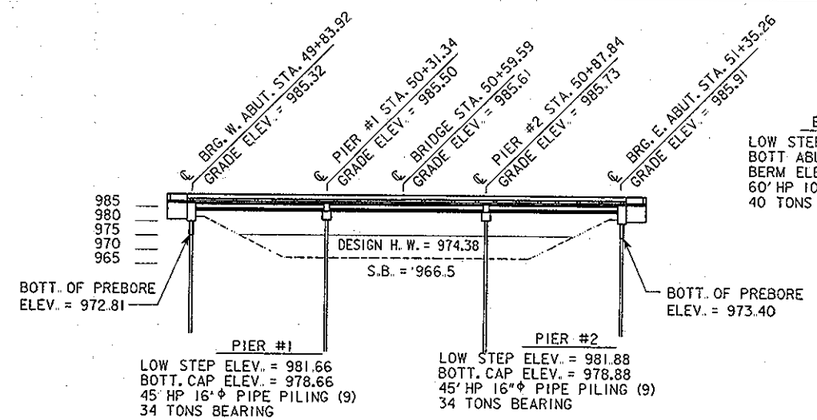
BENCH MARK: 50+11, 7' LT., NW CORNER HANDRAIL, ELEV. = 982.17

PROFILE GRADE
BRIDGE

VPI STA. = 49+30.00
ELEV. = 985.11

G1 = +0.3892

VPI STA. = 51+35.60
ELEV. = 985.91



WEST ABUTMENT
LOW STEP ELEV. = 981.31
BOTT ABUT. ELEV. = 977.81
BERM ELEV. = 979.81
55' HP 10x57 PILING (5)
40 TONS BEARING

EAST ABUTMENT
LOW STEP ELEV. = 981.90
BOTT ABUT. ELEV. = 978.40
BERM ELEV. = 980.40
60' HP 10x57 PILING (5)
40 TONS BEARING

PIER #1
LOW STEP ELEV. = 981.66
BOTT. CAP ELEV. = 978.66
45' HP 16"Φ PIPE PILING (9)
34 TONS BEARING

PIER #2
LOW STEP ELEV. = 981.88
BOTT. CAP ELEV. = 978.88
45' HP 16"Φ PIPE PILING (9)
34 TONS BEARING

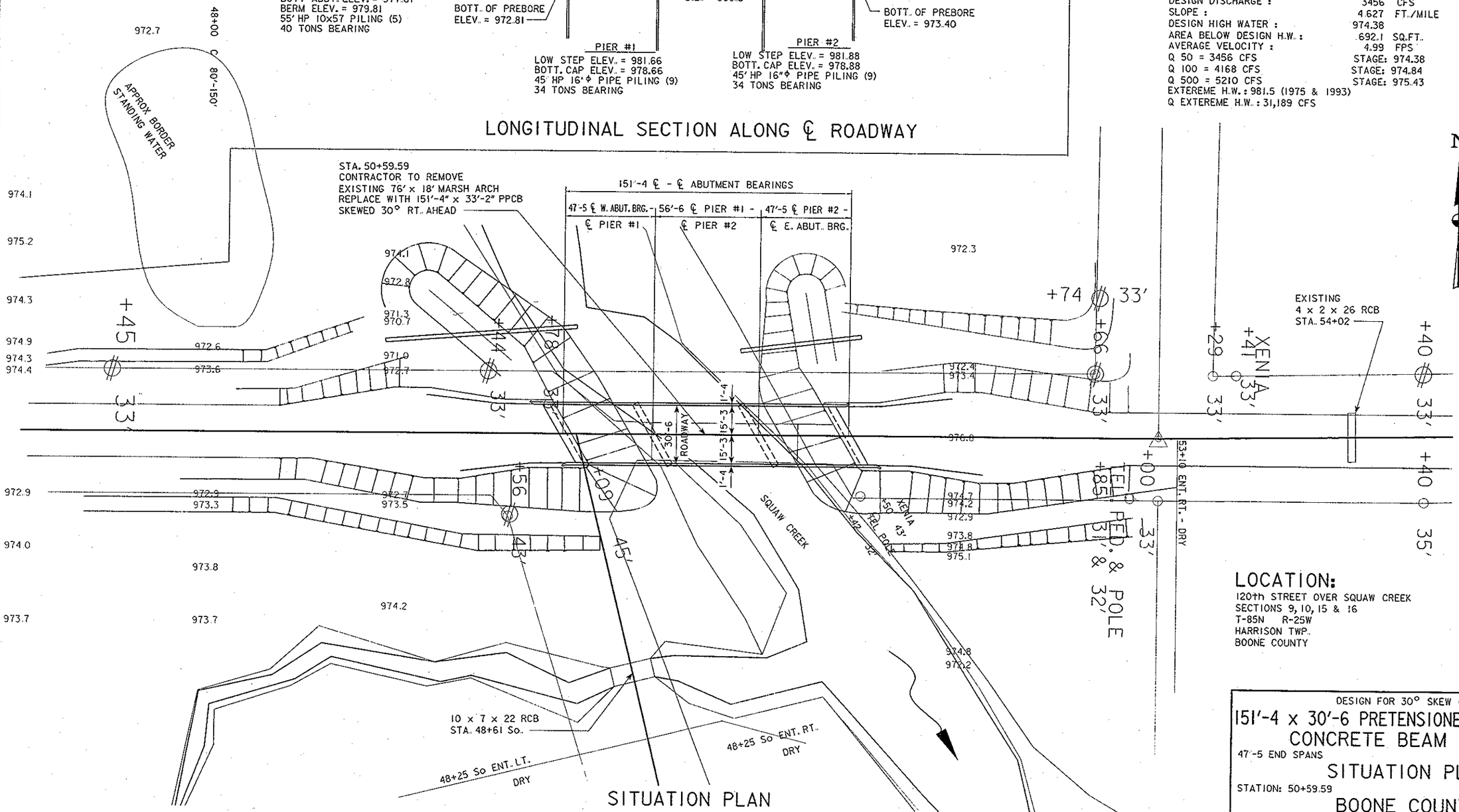
LONGITUDINAL SECTION ALONG ℄ ROADWAY

HYDRAULICS

DRAINAGE AREA :	88.0	SQ. MILES
DESIGN DISCHARGE :	3456	CFS
SLOPE :	4.627	FT./MILE
DESIGN HIGH WATER :	974.38	
AREA BELOW DESIGN H.W. :	692.1	SQ.FT.
AVERAGE VELOCITY :	4.99	FPS
Q 50 = 3456 CFS	STAGE:	974.38
Q 100 = 4168 CFS	STAGE:	974.84
Q 500 = 5210 CFS	STAGE:	975.43

EXTEREME H.W. : 981.5 (1975 & 1993)
Q EXTEREME H.W. : 31,189 CFS

STA. 50+59.59
CONTRACTOR TO REMOVE
EXISTING 76' x 18' MARSH ARCH
REPLACE WITH 151'-4" x 33'-2" PPCB
SKEWED 30° RT. AHEAD



SITUATION PLAN

LOCATION:
120th STREET OVER SQUAW CREEK
SECTIONS 9, 10, 15 & 16
T-85N R-25W
HARRISON TWP.
BOONE COUNTY

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

SITUATION PLAN

STATION: 50+59.59

FEBRUARY, 2006

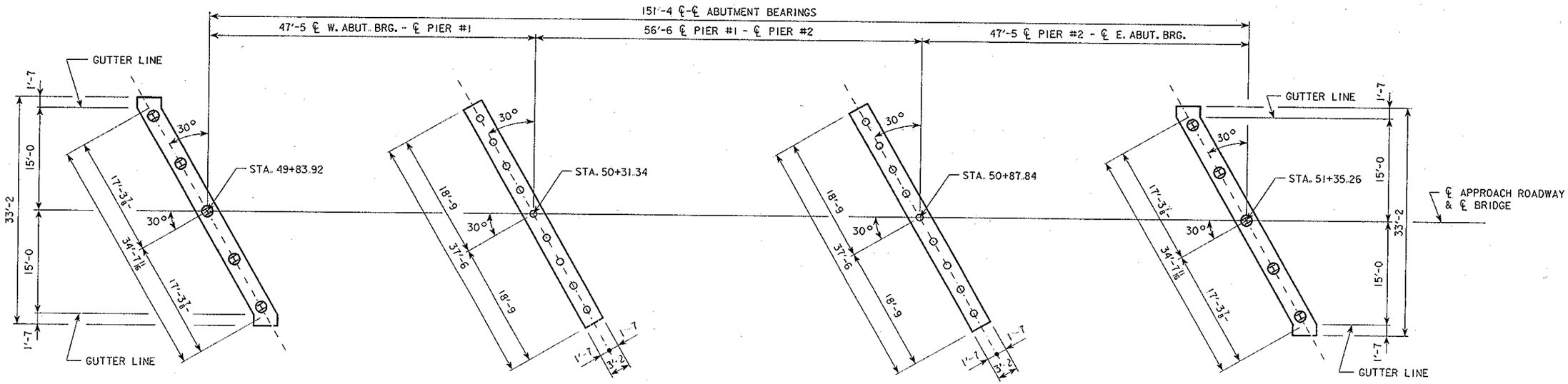
BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 3



STAKING DIAGRAM

N

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

STAKING DIAGRAM

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

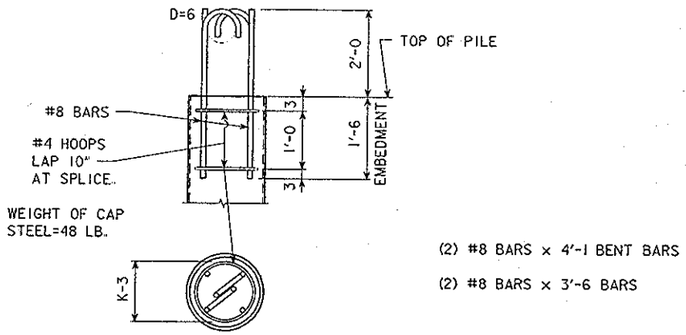
DESIGN SHEET NO. 3 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 4

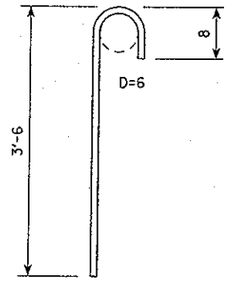
20-FEB-2006 14:06 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C00039.dgn 080106S003

CAST IN PLACE

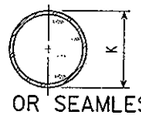


(2) #8 BARS x 4'-1 BENT BARS

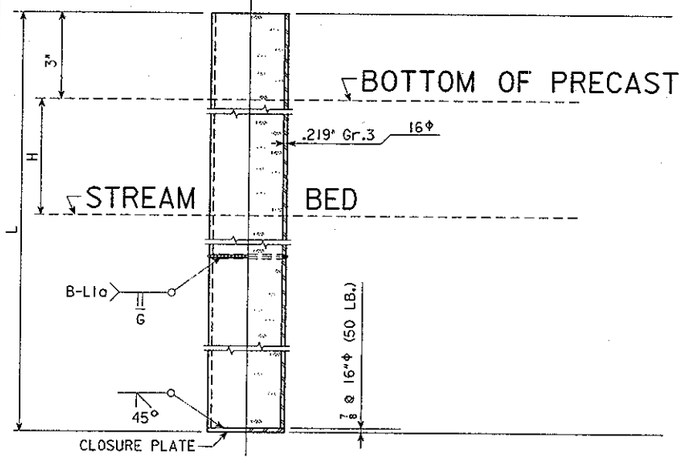
(2) #8 BARS x 3'-6 BARS



CAP STEEL DETAILS



SPIRAL WELDED OR SEAMLESS STEEL
PIPE ASTM A252 GR. 3



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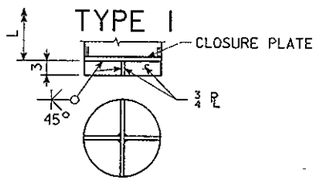


STEEL DRIVING POINTS

ASTM-A36

K DIMENSION				16Φ
H MAXIMUM FT.				22
SHELL ASTM A-252				GR. 3
CONCRETE (L=40') C.Y.				1.96
CONCRETE 1' CHANGE C.Y.				.0490
① WT. OF SHELL (L=40') LB.				1525
WT. OF SHELL 1' CHANGE LB.				36.87
f'c (PSI)				3500
BEARING VALUE				36T

① INCLUDES WEIGHT OF CLOSURE PLATE.

GENERAL NOTES:

EXCEPT AS NOTED ELSEWHERE, MATERIAL, CONSTRUCTION, DRIVING AND EXTENSIONS OR BUILD UPS WHEN NECESSARY SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS OF THE IOWA D.O.T. AND CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE.

COST OF ALL DRIVING POINTS AND CAP STEEL IS TO BE INCLUDED IN THE PRICE BID PER LINEAL FOOT FOR PILING.

SHELL THICKNESSES SHOWN ARE MINIMUM REQUIREMENTS. THE METHOD OF DRIVING STEEL SHELL PILES SHALL BE ADAPTED TO THE TYPE AND THICKNESS OF SHELL SPECIFIED. ANY SHELLS WHICH HAVE BEEN IMPROPERLY DRIVEN, BROKEN OR ARE OTHERWISE DEFECTIVE SHALL BE REMOVED AND REPLACED BY THE BRIDGE CONTRACTOR.

ALL CAST IN PLACE PILES SHALL HAVE A CLOSURE PLATE. DRIVING POINTS SHALL BE USED.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

TRESTLE PILE BENTS - P1OA

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

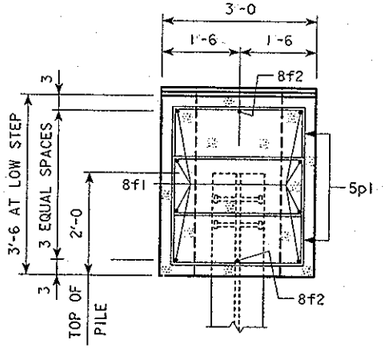
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 22 FILE NO. 30101 DESIGN NO. 106

REVISED: 8-1-96 : SPIRAL PITCH CHANGED FOR TYPE 2 PILE WEIGHTS CHANGED IN MATERIAL COMPONENTS BOX AND ENGLISH MISCELLANEOUS BRIDGES.DGN P1OA - THIS SHEET REISSUED 08-12-88.

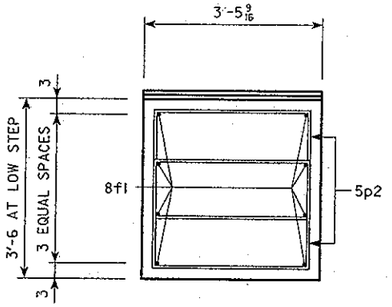
DESIGN TEAM JSN/DAW	MODIFIED STANDARD P1OA	BOONE COUNTY	PROJECT NUMBER BRC-C008(39)--8E-08	SHEET NUMBER 5

20-FEB-2006 14:06 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C000039.dgn 080106S004

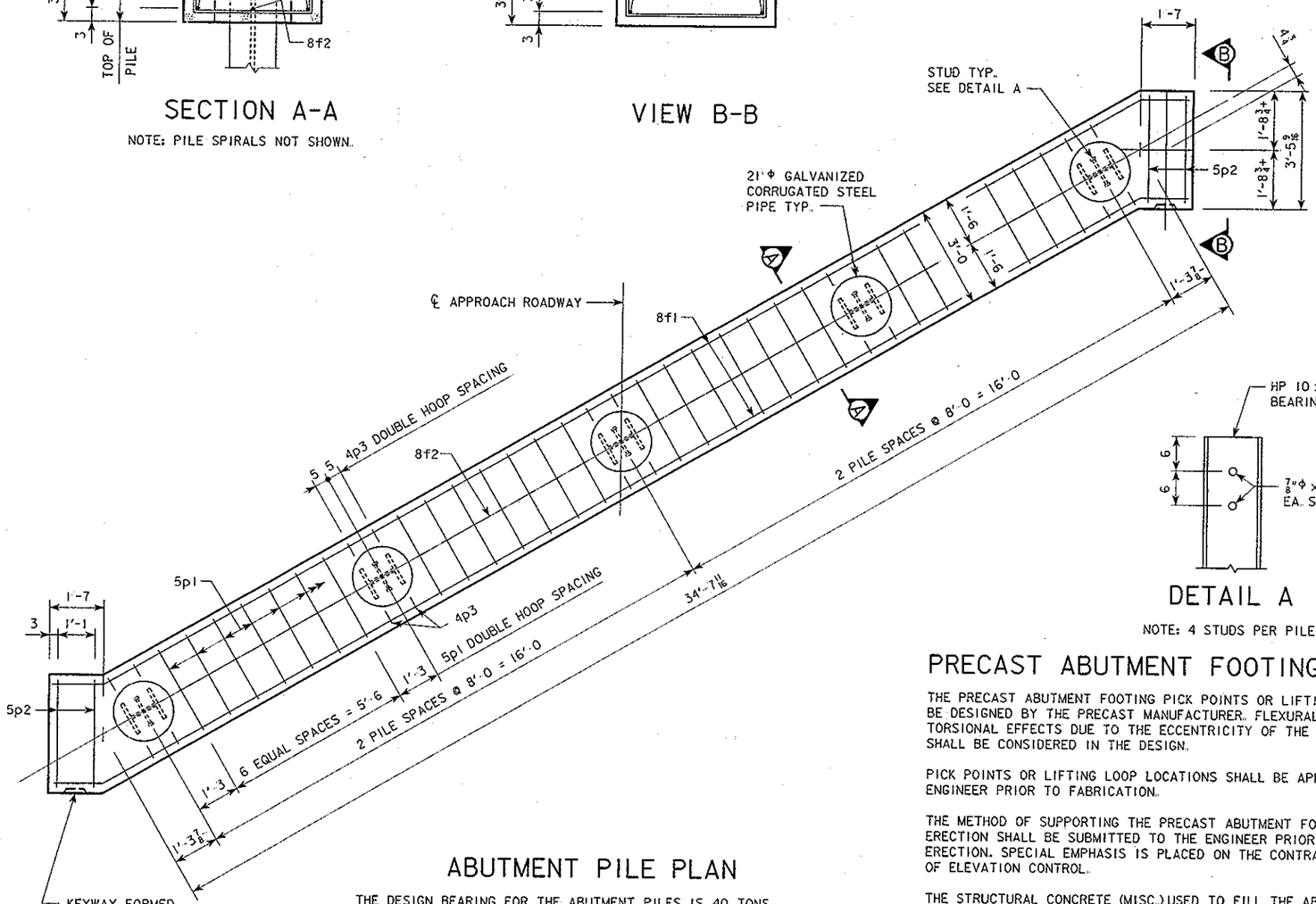


SECTION A-A

NOTE: PILE SPIRALS NOT SHOWN.



VIEW B-B

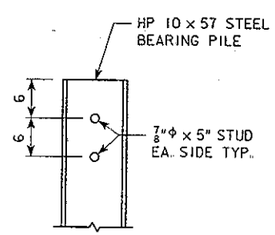


ABUTMENT PILE PLAN

THE DESIGN BEARING FOR THE ABUTMENT PILES IS 40 TONS.

5 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT EACH ABUTMENT.

FINAL PILE HEAD POSITION SHALL NOT DEVIATE FROM THE LOCATION DESIGNATED IN THESE PLANS BY MORE THAN 3" IN ANY DIRECTION IN ORDER TO ALLOW THE PRECAST ABUTMENT FOOTING TO BE INSTALLED.



DETAIL A

NOTE: 4 STUDS PER PILE.

PRECAST ABUTMENT FOOTING NOTES:

THE PRECAST ABUTMENT FOOTING PICK POINTS OR LIFTING LOOPS SHALL BE DESIGNED BY THE PRECAST MANUFACTURER. FLEXURAL EFFECTS AND TORSIONAL EFFECTS DUE TO THE ECCENTRICITY OF THE ABUTMENT FOOTING SHALL BE CONSIDERED IN THE DESIGN.

PICK POINTS OR LIFTING LOOP LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION.

THE METHOD OF SUPPORTING THE PRECAST ABUTMENT FOOTING DURING ERECTION SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE ERECTION. SPECIAL EMPHASIS IS PLACED ON THE CONTRACTORS METHOD OF ELEVATION CONTROL.

THE STRUCTURAL CONCRETE (MISC.) USED TO FILL THE ABUTMENT PILING ENCASEMENTS SHALL BE CLASS C-4 CONCRETE WITH A HIGH RANGE WATER REDUCER. THE MAXIMUM SLUMP ACHIEVED WITH WATER SHALL BE 2 INCHES. THE HRWR SHALL BE ADDED AT THE POUR SITE. THE MAXIMUM ALLOWABLE SLUMP AFTER ADDITION OF THE HRWR SHALL BE 7 INCHES. COARSE AGGREGATE SHALL BE ¾ INCH TOP SIZE.

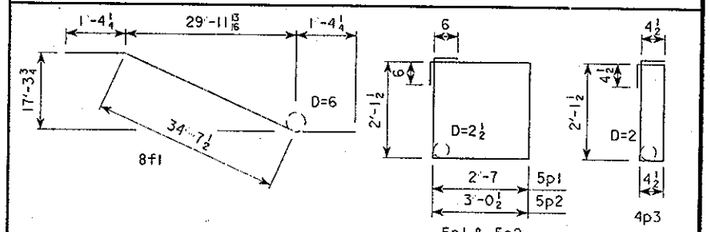
OTHER MIXES MAY BE CONSIDERED PROVIDED THEY HAVE BEEN REVIEWED AND APPROVED BY THE DISTRICT MATERIALS ENGINEER.

DISTRICT MATERIALS WILL PROVIDE COMPRESSIVE STRENGTH TESTING OF THE CONCRETE USED TO FILL THE ABUTMENT PILING ENCASEMENTS. BLOCKING AND TEMPORARY SHORING SHALL NOT BE REMOVED UNTIL 3500 PSI HAS BEEN ACHIEVED.

REINFORCING BAR LIST - ONE FOOTING

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	8f1	ABUT. FOOTING, BOTH FACES		8	37'-4	797
	8f2	ABUT. FOOTING, TOP & BOTT.		8	5'-8	121
*	8g1	ABUT. FOOTING, VERT., B.F.		44	3'-3	382
*	8g2	ABUT. FOOTING, VERT., F.F.		35	3'-3	304
*	8g4	ABUT. FOOTING, VERT., F.F.		35	3'-0	280
*	8g5	ABUT. FOOTING, VERT., B.F.		44	3'-0	352
*	5h3	ABUT. WING, HORIZ.		8	6'-10	57
*	5h4	ABUT. TO WING, HORIZ		8	2'-6	21
	5p1	ABUT. FOOTING HOOPS		56	10'-5	608
	5p2	ABUT. FOOTING HOOPS, ENDS		8	11'-4	95
	4p3	ABUT. FOOTING HOOPS @ PILES		40	5'-9	154
				REINFORCING STEEL - TOTAL (LBS.)		3171

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER.

ESTIMATED QUANTITIES - ONE FOOTING

ITEM	UNITS	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CY	14.0
STRUCTURAL CONCRETE (MISC.)	CY	1.6
REINFORCING STEEL	LBS	3171
EXCAVATION CLASS 20	CY	58.3
21"Φ CMP	LF	18.2

*NOTE
THE 8g4, 8g5 AND 5h3 BARS ARE SPLICED WITH MECHANICAL SPLICERS TO THE 8g2, 8g1 AND 5h4 BARS RESPECTIVELY. MECHANICAL SPLICERS SHALL BE IN ACCORDANCE WITH MATERIALS IM 451, APPENDIX E.

THE PILE SPIRAL AND SPIRAL SPACER ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

PRECAST ABUTMENT & PILE DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

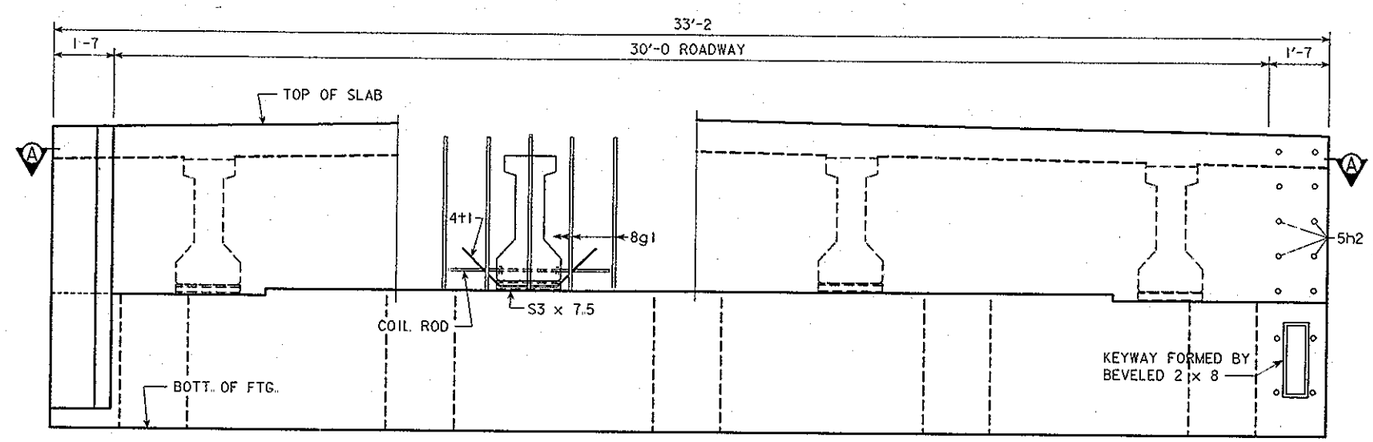
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW | BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 6

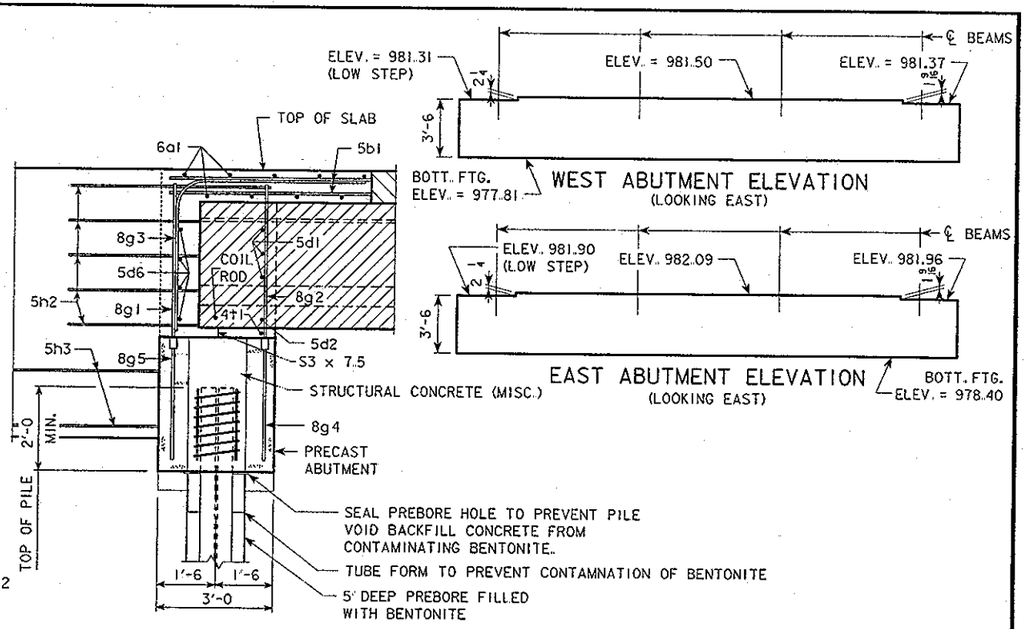
20-FEB-2006 14:06 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C00039.dgn 0801065005

BENCH MARK: 50+11, 7' LT., NW CORNER HANDRAIL, ELEV. = 982.17



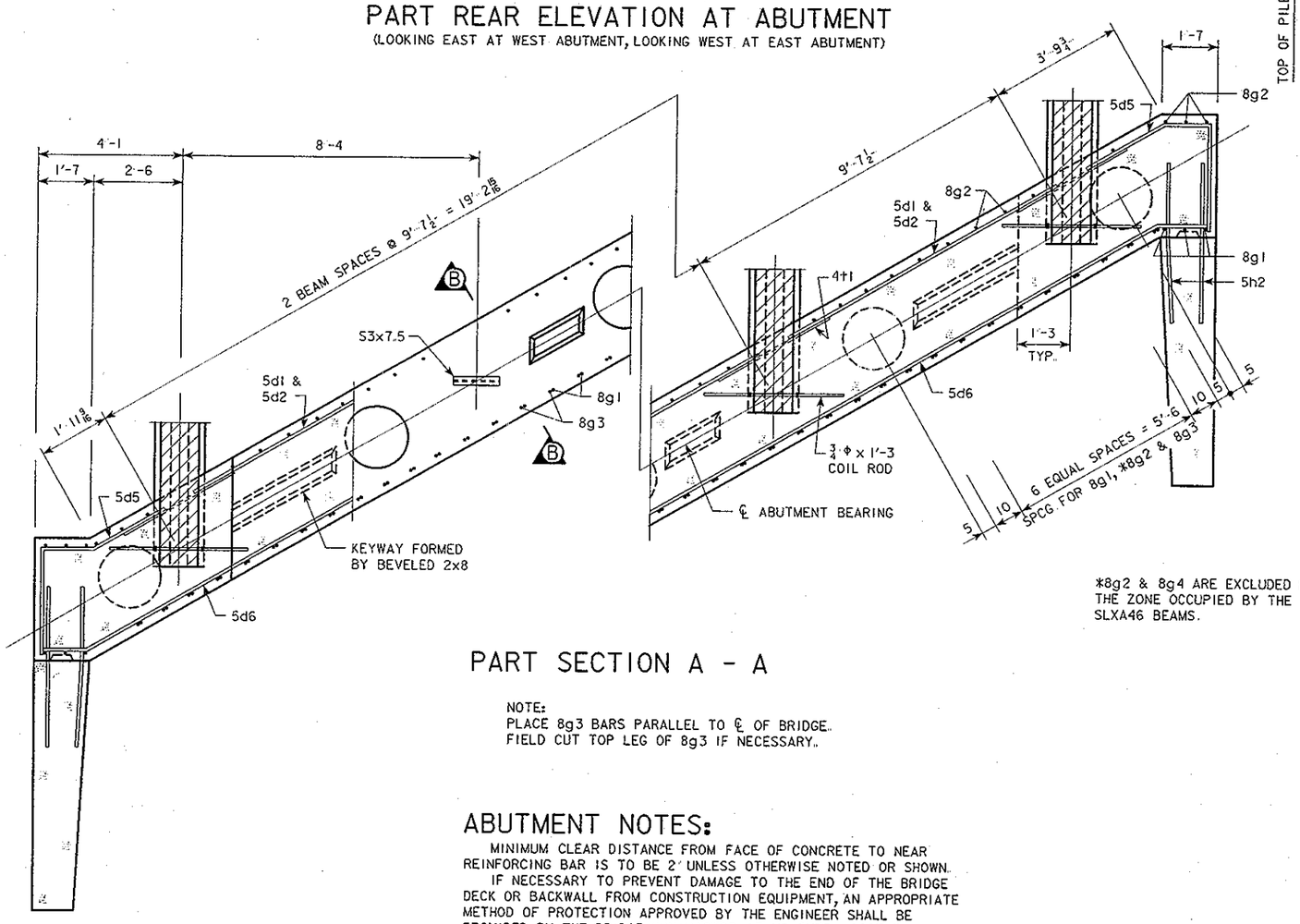
PART REAR ELEVATION AT ABUTMENT

(LOOKING EAST AT WEST ABUTMENT, LOOKING WEST AT EAST ABUTMENT)



PART SECTION B-B

NOTE: THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No 2 BAR, 18" DIAMETER, 3" PITCH WITH 2 - $L\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ SPACERS PUNCHED TO HOLD SPIRAL.



*8g2 & 8g4 ARE EXCLUDED FROM THE ZONE OCCUPIED BY THE SLXA46 BEAMS.

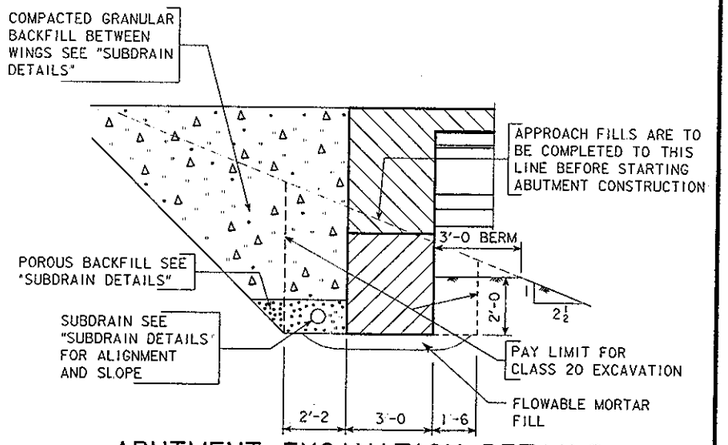
PART SECTION A - A

NOTE:
PLACE 8g3 BARS PARALLEL TO ℄ OF BRIDGE.
FIELD CUT TOP LEG OF 8g3 IF NECESSARY.

ABUTMENT NOTES:

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

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE CONTRACTING AUTHORITY.



ABUTMENT EXCAVATION DETAILS

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

ABUTMENT DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

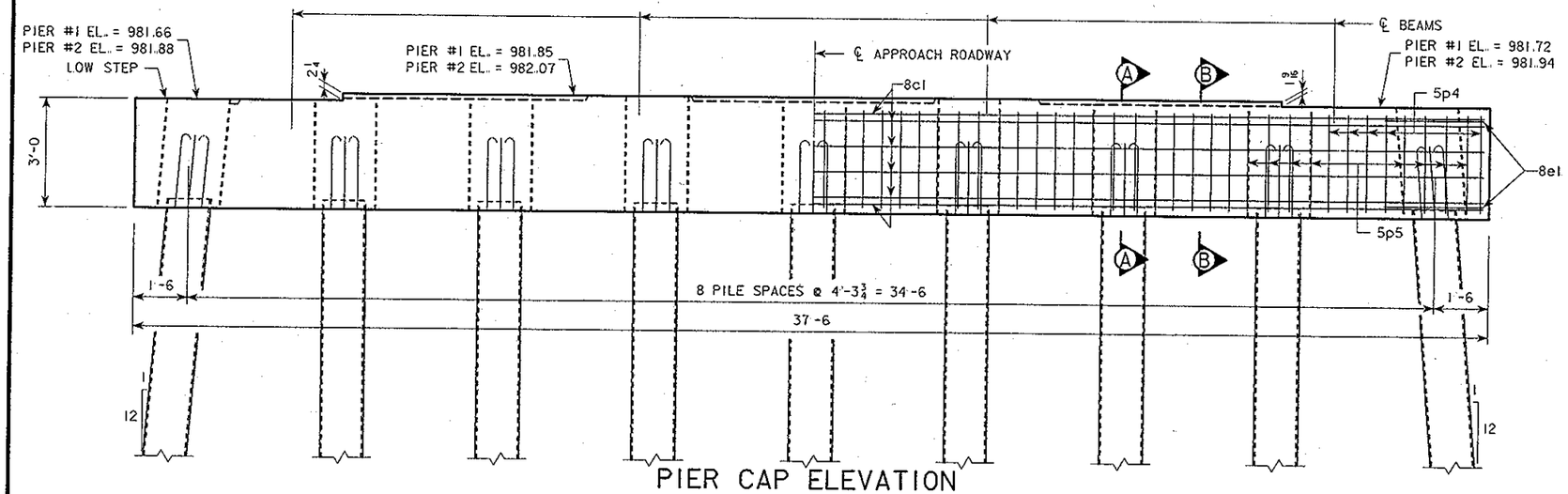
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 22 FILE NO. 30101 DESIGN NO. 106

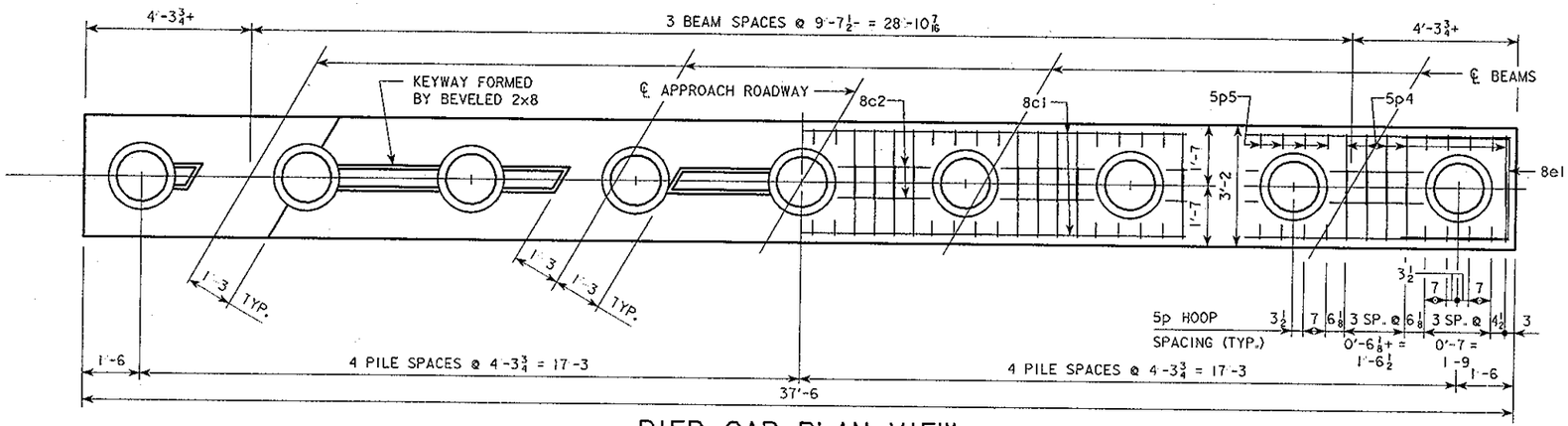
DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 7

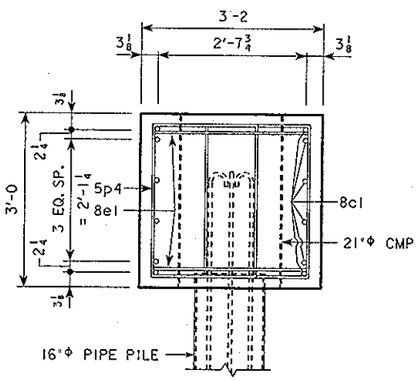
BENCH MARK: 50+11, 7' LT., NW CORNER HANDRAIL, ELEV. = 982.17



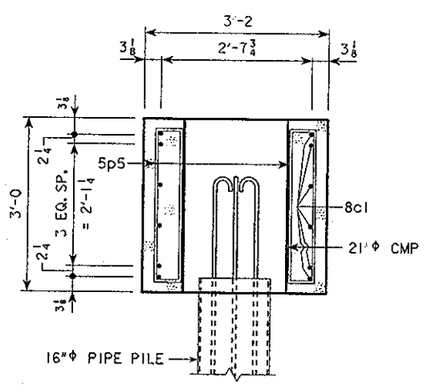
PIER CAP ELEVATION
(LOOKING EAST)



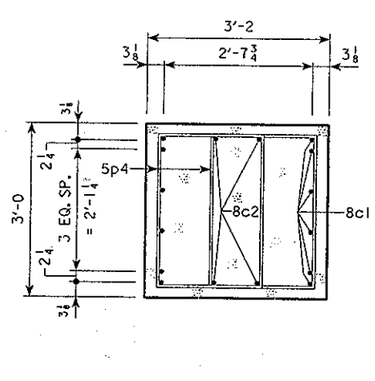
PIER CAP PLAN VIEW



END VIEW



SECTION A-A

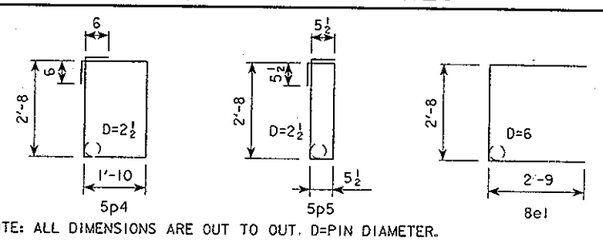


SECTION B-B

REINFORCING BAR LIST - ONE PRECAST PIER CAP

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8c1	PIER CAP, LONGITUDINAL	——	12	37'-2	1191
8c2	PIER CAP, LONGITUDINAL	——	32	2'-5	207
8e1	PIER CAP, ENDS	⊏	4	8'-2	87
5p4	PIER CAP HOOPS	□	68	10'-0	709
5p5	PIER CAP HOOPS	⊓	72	7'-2	538
	REINFORCING STEEL - TOTAL (LBS.)				2732

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER.

ESTIMATED QUANTITIES - ONE PRECAST PIER CAP

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CY	11.3
STRUCTURAL CONCRETE (MISC.)	CY	2.5
REINFORCING STEEL	LB	2732
21"Φ CMP	LF	28.5

PIER CAP NOTES:

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

THE DESIGN BEARING FOR THE PIER PILE IS 34 TONS.

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF PIER CAP. BATTER EXTERIOR PILES 1:12 IN THE DIRECTION SHOWN.

THE STRUCTURAL CONCRETE (MISC.) USED TO FILL THE PIER PILING ENCASEMENTS SHALL BE CLASS C-4 CONCRETE WITH A HIGH RANGE WATER REDUCER. THE MAXIMUM SLUMP ACHIEVED WITH WATER SHALL BE 2 INCHES. THE HRWR SHALL BE ADDED AT THE POUR SITE. THE MAXIMUM ALLOWABLE SLUMP AFTER ADDITION OF THE HRWR SHALL BE 7 INCHES. COARSE AGGREGATE SHALL BE ½ INCH TOP SIZE.

OTHER MIXES MAY BE CONSIDERED PROVIDE THEY HAVE BEEN REVIEWED AND APPROVED BY THE DISTRICT MATERIALS ENGINEER.

DISTRICT MATERIALS WILL PROVIDE COMPRESSIVE STRENGTH TESTING OF THE CONCRETE USED TO FILL THE ABUTMENT AND PIER PILING ENCASEMENTS. BLOCKING AND TEMPORARY SHORING SHALL NOT BE REMOVED UNTIL 3500 PSI HAS BEEN ACHIEVED.

FINAL PILE HEAD POSITION SHALL NOT DEVIATE FROM THE LOCATION DESIGNATED IN THESE PLANS BY MORE THAN 2" IN ANY DIRECTION IN ORDER TO ALLOW THE PRECAST PIER CAP TO BE INSTALLED.

PICK POINTS OR LIFTING LOOP LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

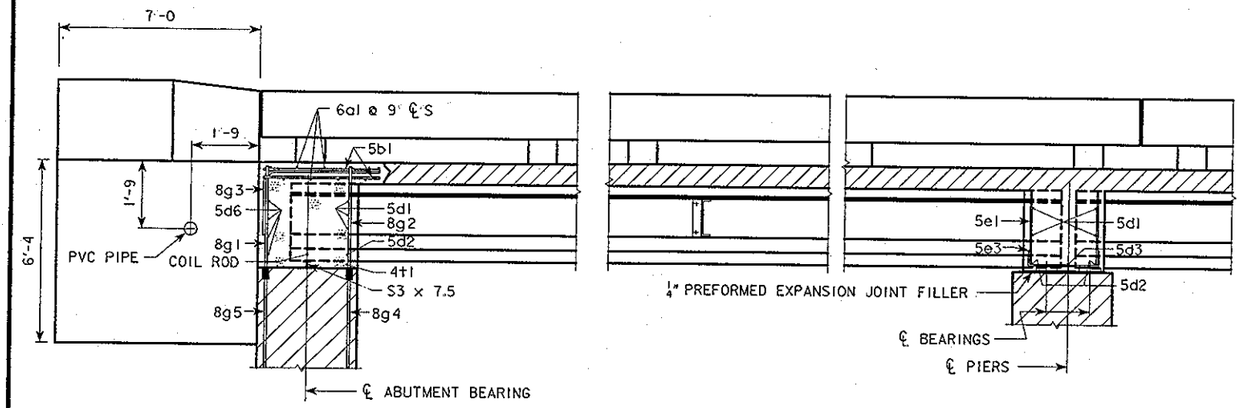
SUBSTRUCTURE DETAILS

STATION: 50+59.59 — FEBRUARY, 2006

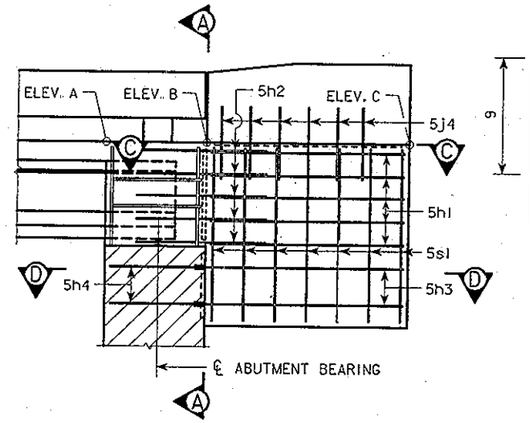
BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

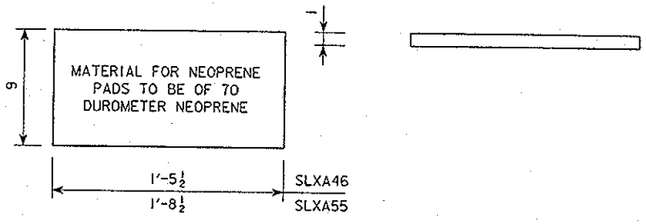
DESIGN SHEET NO. 7 OF 22 — FILE NO. 30101 — DESIGN NO. 106



PART LONGITUDINAL SECTION NEAR GUTTER

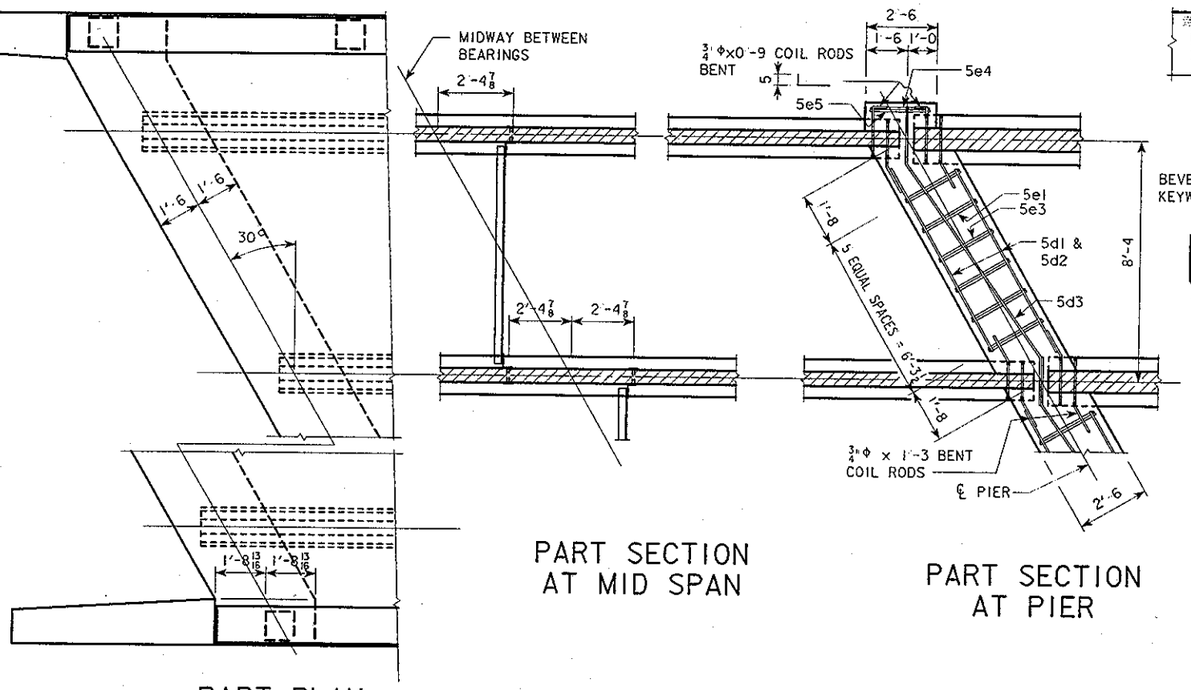


PART END VIEW AT ABUTMENT



NEOPRENE PAD DETAILS

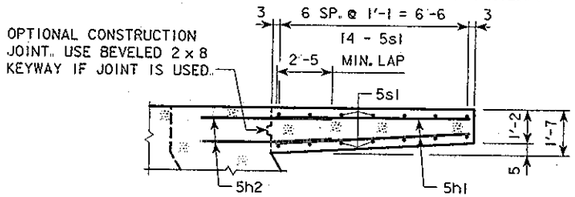
NOTE: COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS."



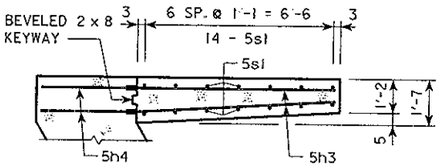
PART PLAN

PART SECTION AT MID SPAN

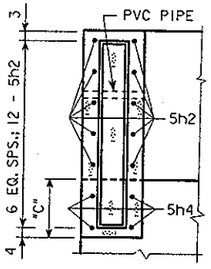
PART SECTION AT PIER



PART SECTION C-C

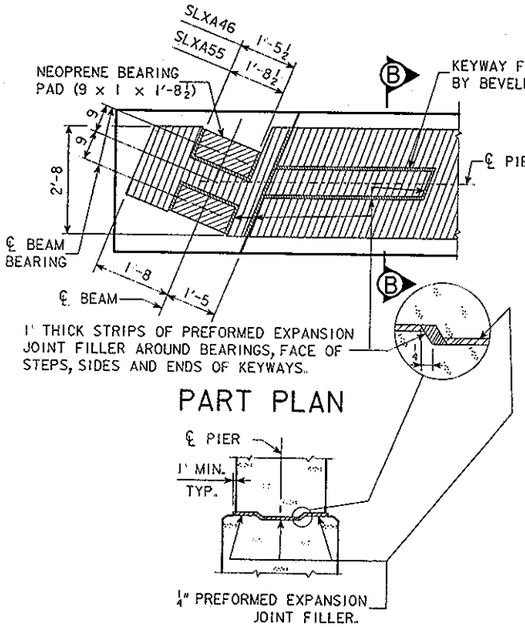


PART SECTION D-D



SECTION A-A

OPEN BARRIER RAIL NOT SHOWN.



PART PLAN

SECTION B-B TOP OF PIER DETAILS

TABLE OF WING ELEVATIONS

LOCATION	DIM "C"	ELEV. A	ELEV. B	ELEV. C
S.W. CORNER	2'-7 13/16	985.06	985.05	985.02
N.W. CORNER	2'-7 15/16	984.99	984.98	984.95
S.E. CORNER	2'-7 3/4	985.64	985.65	985.68
N.E. CORNER	2'-7 15/16	985.57	985.57	985.61

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION: 50+59.59

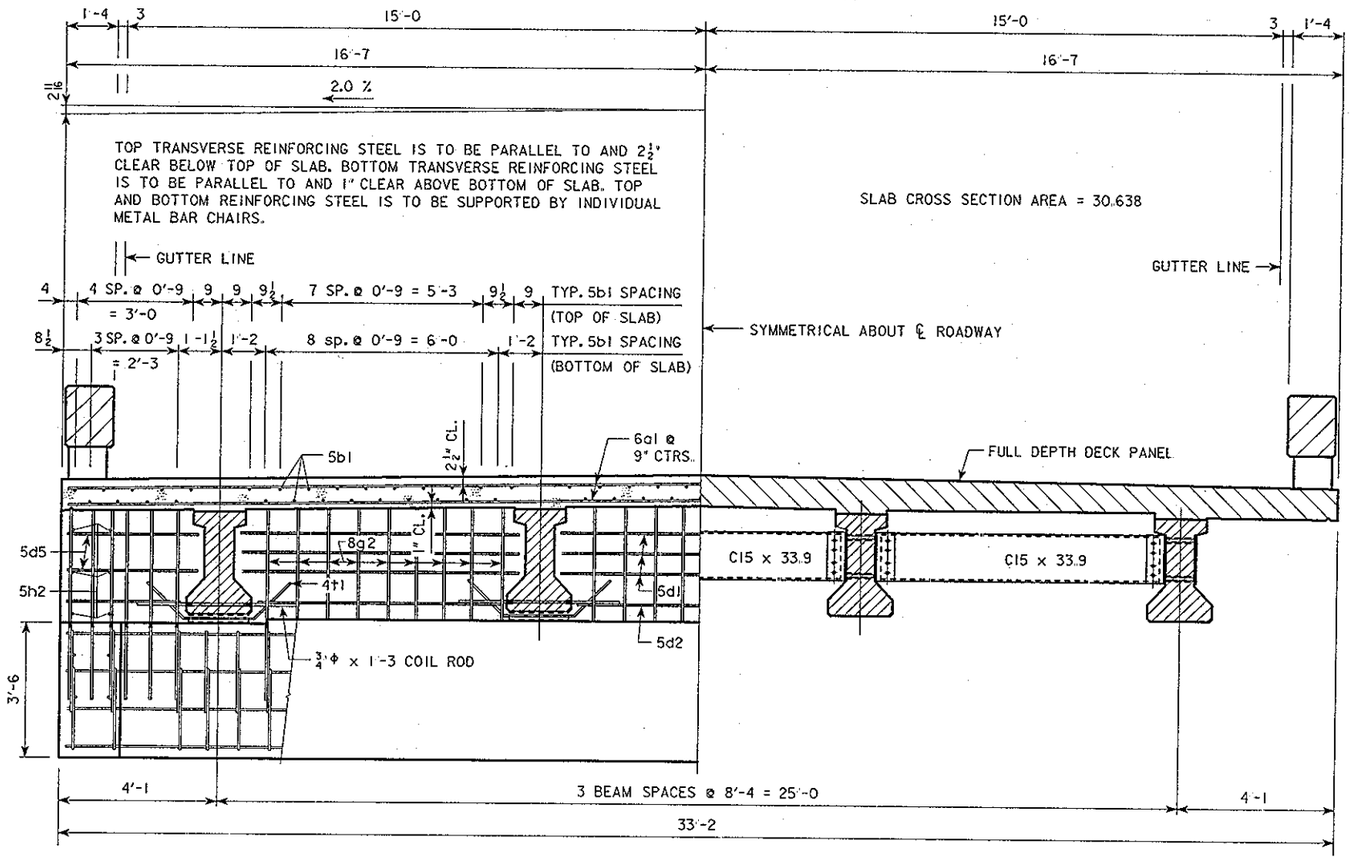
FEBRUARY, 2006

BOONE COUNTY

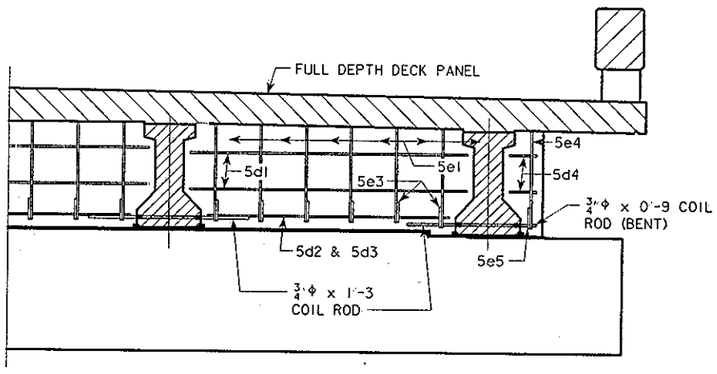
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

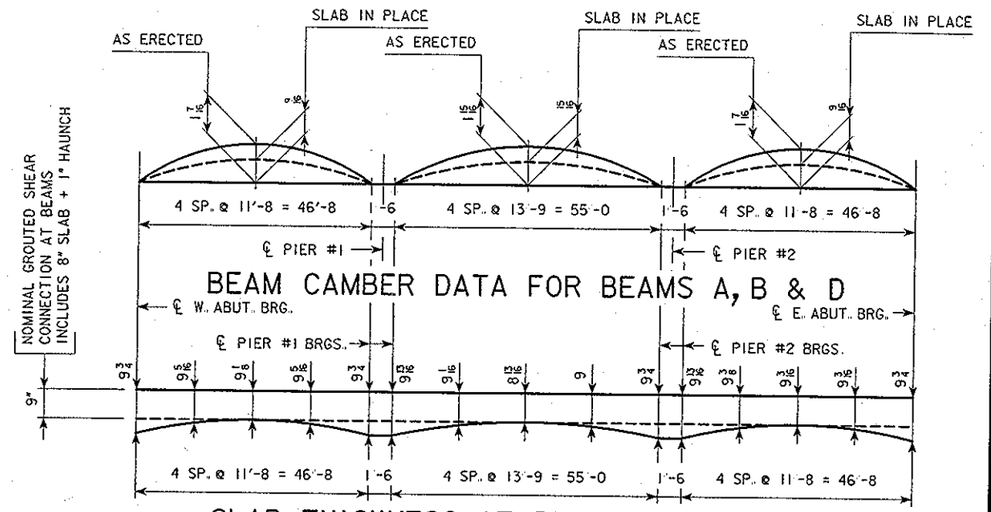


HALF SECTION NEAR ABUTMENT

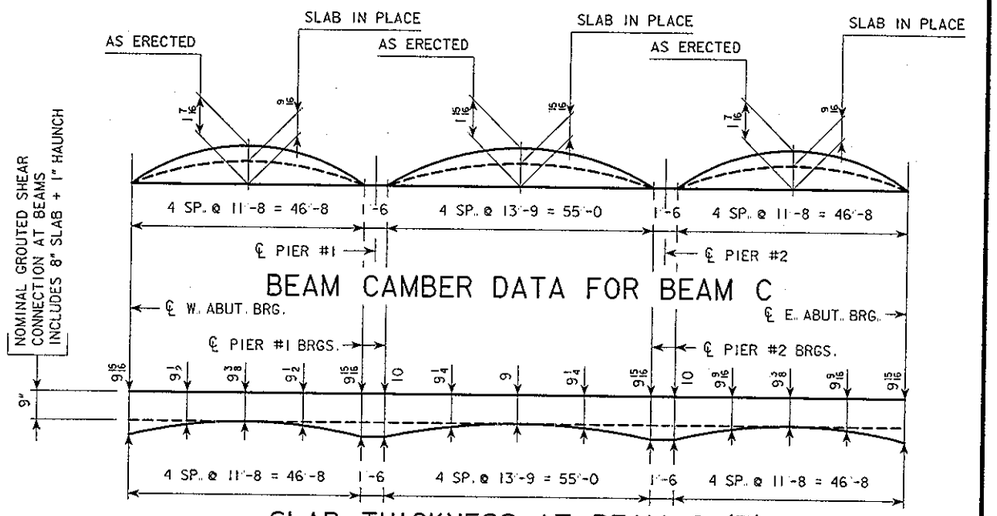


HALF SECTION NEAR MID SPAN

HALF SECTION NEAR PIER



SLAB THICKNESS AT BEAMS A, B & D (T)



SLAB THICKNESS AT BEAM C (T)

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

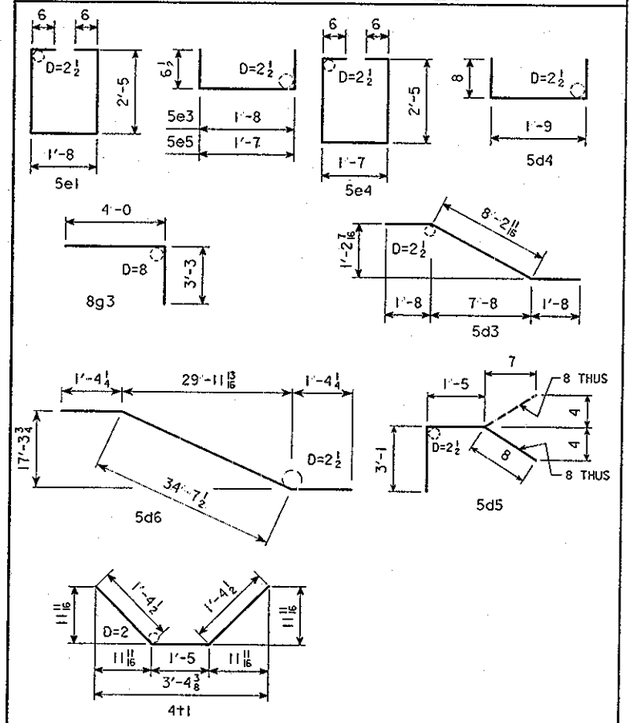
DESIGN SHEET NO. 9 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 10

20-FEB-2006 14:08 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRF1na1\08C00039.dgn 0801065009

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

REINFORCING BAR LIST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	SLAB, TRANSV., TOP & BOTT.	—	18	37'-9	1021
5b1	SLAB, LONGIT., TOP & BOTT.	—	150	3'-2	495
5d1	PIER & ABUT. DIAPHR., LONGIT.	—	42	8'-4	365
5d2	PIER & ABUT. DIAPHR., LONGIT.	—	18	6'-3	117
5d3	PIER DIAPHR., LONGIT.	⌒	6	11'-7	72
5d4	PIER DIAPHR., ENDS	⊔	8	3'-1	26
5d5	ABUT. DIAPHR., LONGIT. ENDS	⌐	16	5'-2	86
5d6	ABUT. DIAPHR., LONGIT.	⌒	8	37'-4	312
5d7	LONGITUDINAL CLOSURE POUR STEEL	—	16	39'-4	657
5e1	PIER DIAPHR., HOOPS	□	36	7'-6	282
5e3	PIER DIAPHR., TIES	⊔	36	2'-9	103
5e4	PIER DIAPHR., HOOPS, ENDS	□	4	7'-5	31
5e5	PIER DIAPHR., TIES, ENDS	⊔	4	2'-8	11
8g3	ABUT. DIAPHR., VERT., B.F.	⌐	76	7'-3	1471
5h1	ABUT. WING, HORIZ.	—	40	6'-8	278
5h2	ABUT. TO WING, HORIZ.	—	40	4'-0	167
5s1	WING, VERT.	—	56	6'-0	350
4t1	UNDER BEAMS AT ABUTS.	⌣	8	4'-2	22
#2	PILE SPIRAL	WWWW	10	33'-0	54
	SPIRAL SPACER, L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8} \times 0.70$	—	20	1'-10	26
BARRIER RAIL REINFORCING - SEE DES. SHT. NO. 21					9073
				TOTAL (LBS.)	15,019

CONCRETE PLACEMENT QUANTITIES - ONE SUPERSTR.

SECTION	TOTAL
SLAB ENDS, ABUTMENT DIAPHRAGMS	33.2
PIER DIAPHRAGMS	14.6
ABUTMENT WINGS (4 AT 2.25 CY EA.)	9.0
TOTAL C.Y.	56.8

DESIGN FOR 30° SKEW (R.A.)

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47'-5 END SPANS 56'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW | BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 11

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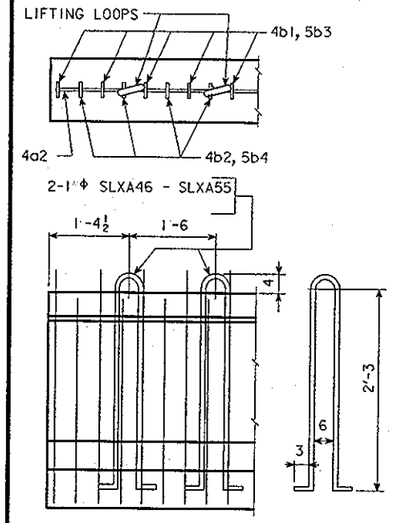
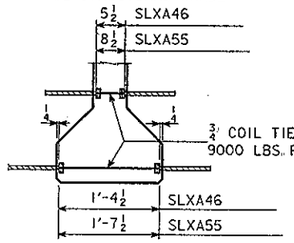


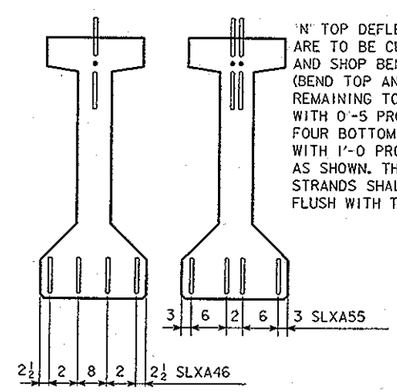
LIFTING LOOP DETAIL

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



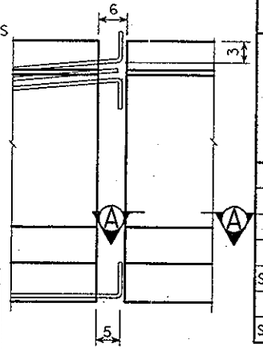
COIL TIE DETAIL

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON SPECIFIC BRIDGE DESIGN.

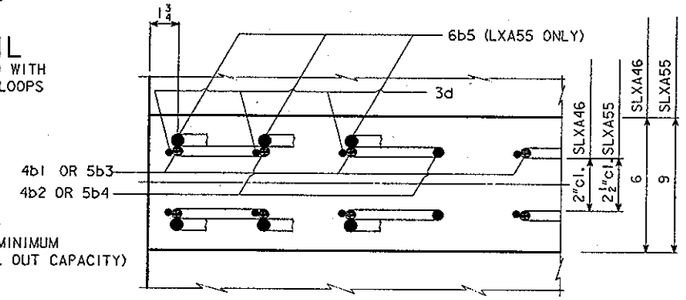


'N' TOP DEFLECTED OR STRAIGHT STRANDS ARE TO BE CUT WITH 1'-0 PROJECTIONS AND SHOP BENT UP OR DOWN AS SHOWN (BEND TOP AND BOTTOM ROWS). THE REMAINING TOP STRANDS ARE TO BE CUT WITH 0'-5 PROJECTIONS.
FOUR BOTTOM STRANDS ARE TO BE CUT WITH 1'-0 PROJECTIONS AND SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS SHALL BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.

BEAM	"N"
SLXA46	2
SLXA55	4



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS



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

SLXA BEAM DATA

BEAM	SPAN LENGTH ℄-℄ BEARING	OVERALL BEAM LENGTH (L)	STRAND SIZE	NO. OF STRANDS STRAIGHT	NO. OF STRANDS DEFLECTED	TOTAL INITIAL PRESTRESS ③ KIPS	HOLD DOWN FORCE-KIPS	CAMBER (in.) AT RELEASE	CAMBER (in.) AFTER LOSSES	DEFLECTION (in.) Δ_D IMMEDIATE① (Δ_I) CONC. DIAPH.	DEFLECTION (in.) Δ_D IMMEDIATE① (Δ_I) STEEL DIAPH.	DEFLECTION (in.) Δ_D TIME ② (PLASTIC) Δ_T CONC. DIAPH.	DEFLECTION (in.) Δ_D TIME ② (PLASTIC) Δ_T STEEL DIAPH.	PERMISSIBLE SPACING	PERMISSIBLE SPACING HS20 LOADING CONC. DIAPH	PERMISSIBLE SPACING HS20 LOADING STEEL DIAPH.	WEIGHT (TONS)	CONCRETE (C. Y.)	REINFORCING STEEL-(lb)
SLXA46	46'-8	47'-8	½"Φ	12	3	450	10.5	0.81	1.44		0.62		0.32			8'-4	7.7	3.82	474
SLXA55	55'-0	56'-0	½"Φ	18	6	743.6	13.6	1.10	1.96		0.87		0.27			8'-4	11.9	5.87	703

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB WEIGHT OF 865 #/FT. (PRECAST SLAB AND 8'-4 BEAM SPACING) AND ONE STEEL DIAPHRAGM (330 #) AT ℄ OF SPAN.

② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.

TOTAL BEAM DEFLECTIONS AT ℄ 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 SLXA46 IS BASED ON 72.664% f's, AND FOR SLXA55 ON 75% f's. f's = 270 ksi AND As = 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 INTENTIONALLY ROUGHENED TRANSVERSELY TO A FULL AMPLITUDE OF APPROXIMATELY ¼" EXCEPT A 2 INCH WIDE FINISH SHALL BE PROVIDED ON THE TOP EDGE ON ONE SIDE ONLY OF THE BEAM.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.

BEAMS ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE GROUTING OF THE FULL-DEPTH PRECAST DECK PANEL JOINTS IS DONE.

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 2403.14 OF THE SPECIFICATIONS.

UNLESS OTHERWISE NOTED ALL BEAMS ARE TO BE INCREASED IN LENGTH BY .0005L TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.

TWO 2"Φ VENT HOLES ARE TO BE CAST INTO EACH BEAM AS DETAILED ON BEAM DETAIL SHEET

½" DIAMETER STRANDS STRESSED TO NOT MORE THAN 3,000 LBS. EACH MAY BE USED IN LIEU OF THE a BARS WHICH RUN THE FULL LENGTH OF THE BEAM IN THE TOP FLANGE.

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.

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:

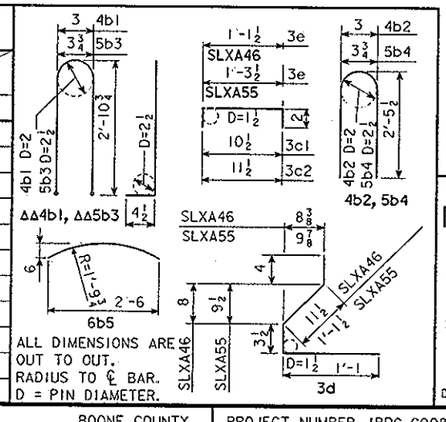
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

SLXA46 - CONCRETE IN ACCORDANCE WITH SECTION 9, f'c = 5000 psi., f'ci = 4500 psi.
SLXA55 - CONCRETE IN ACCORDANCE WITH SECTION 9, f'c = 6000 psi., f'ci = 5500 psi.

PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, f's = 270,000 psi

REINFORCING BAR LIST

BEAM / SPAN		SLXA46 46'-8		SLXA55 55'-0	
BAR	SHAPE	NO.	LENGTH	NO.	LENGTH
5a1	—	4	24'-11	4	29'-1
4a2	—	2	3'-3	2	3'-3
4b1	⊂	44	6'-8	—	—
4b2	⊂	10	5'-0	—	—
5b3	⊂	—	—	48	6'-8
5b4	⊂	—	—	8	5'-0
6b5	(	—	—	12	2'-9
3c1	⊏	44	1'-3	—	—
3c2	⊏	—	—	48	1'-4
* 3d	∠	108	2'-8	112	2'-10
3e	⊏	12	1'-6	14	1'-8



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

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

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

LXA BEAM DETAILS

STATION: 50+59.59 — FEBRUARY, 2006

BOONE COUNTY

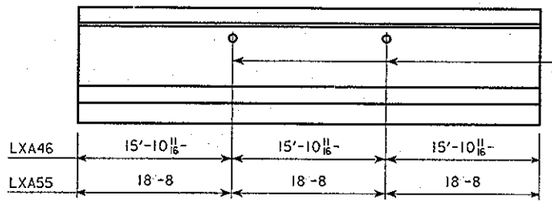
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 22 — FILE NO. 30101 — DESIGN NO. 106

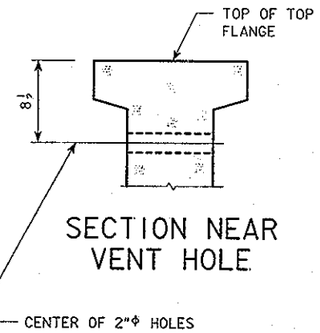
DESIGN TEAM	JSN/DAW	LXA BEAMS	MODIFIED STANDARD SHEET 4600	BOONE COUNTY	PROJECT NUMBER BRC-C008(39)--8E-08	SHEET NUMBER 12

REVISED 05-04 - BARS 4b1 AND 4b3 CHANGED TO EPOXY COATED.
HLXA4600.S01 - ISSUED 06-01-90

20-FEB-2006 14:08 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th St over Squaw Creek\BRFinal\08C00039.dgn 0901060911

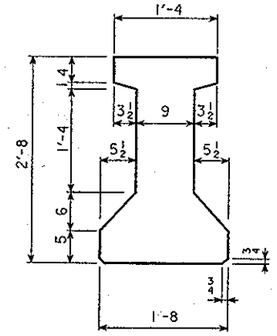


VENT HOLE LOCATIONS



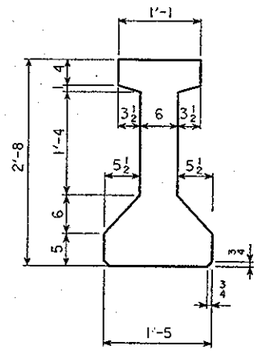
SECTION NEAR VENT HOLE

NOTE: 2"Φ HOLES TO BE PROVIDED IN EVERY PRESTRESSED BEAM. 2"Φ HOLES MAY BE PRODUCED WITH A REMOVABLE OR NON-REMOVABLE FORM. THEY MAY BE SHIFTED SLIGHTLY TO AVOID INTERFERENCE WITH REINFORCING.



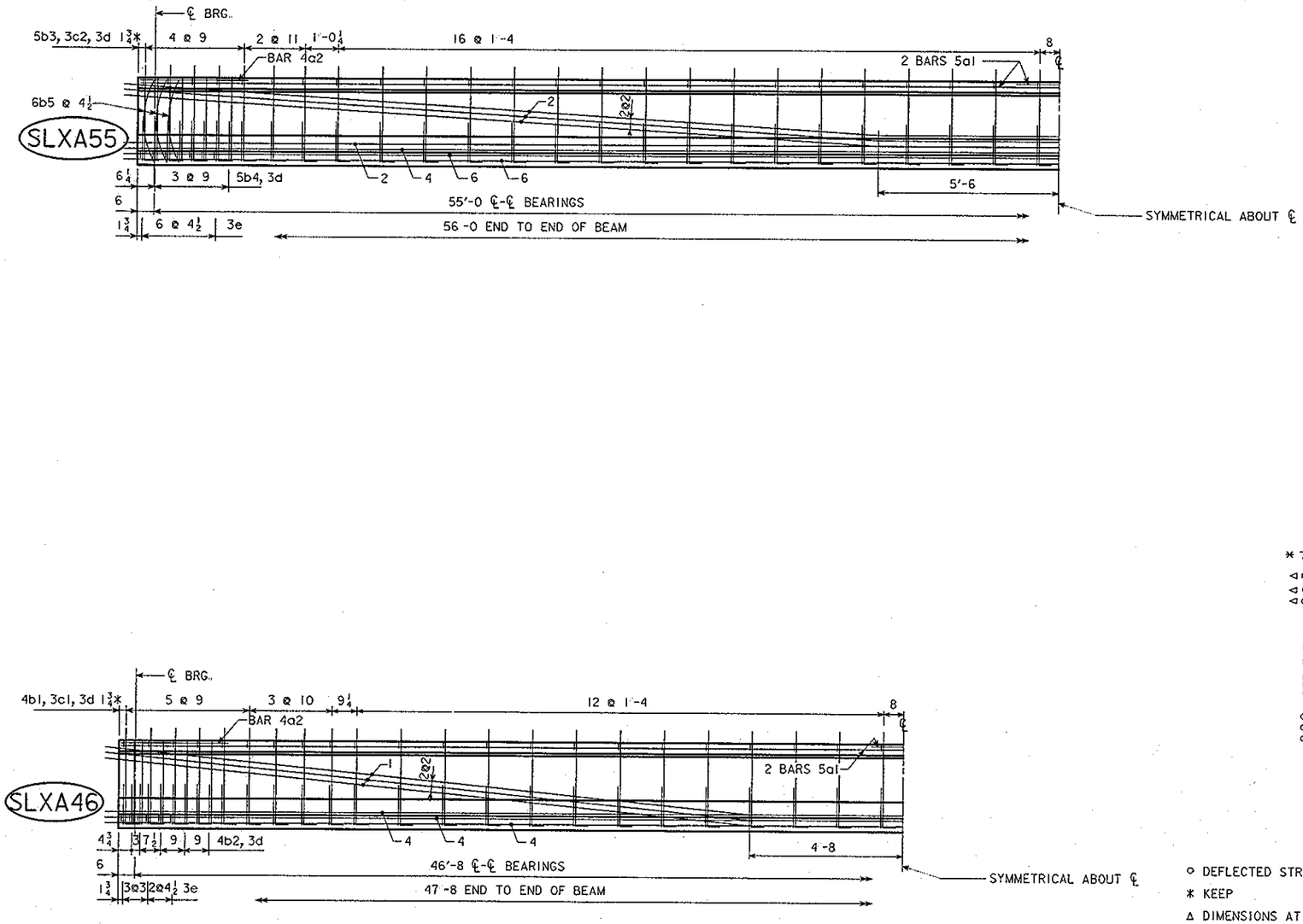
BEAM SLXA55

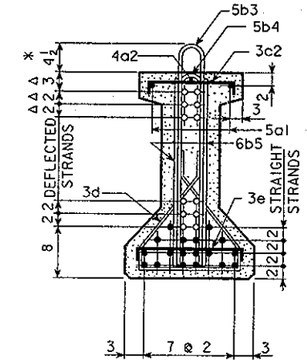
A = 407.5 in.^{2}
Y_b = 14.51 in.
I = 42,552 in.^{4}



BEAM SLXA46

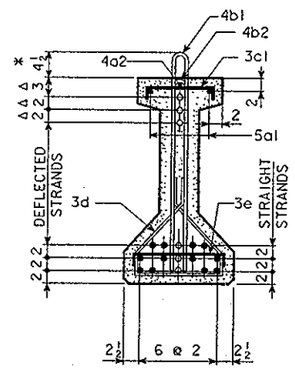
A = 311.5 in.^{2}
Y_b = 14.05 in.
I = 34,082 in.^{4}





BEAM SLXA55

NOTE: BARS 6b5 AND 3d ARE TO BE PLACED IN PAIRS.



BEAM SLXA46

NOTE: SHEAR STIRRUPS PROJECTING OUT OF THE PRECAST CONCRETE BEAMS THAT ARE IN CONFLICT WITH THE PRECAST DECK PANEL POST-TENSIONING ANCHORAGE ZONES SHALL BE FIELD CUT.

o DEFLECTED STRANDS
* KEEP
Δ DIMENSIONS AT END OF BEAM

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

LXA46-LXA55 BEAM DETAILS

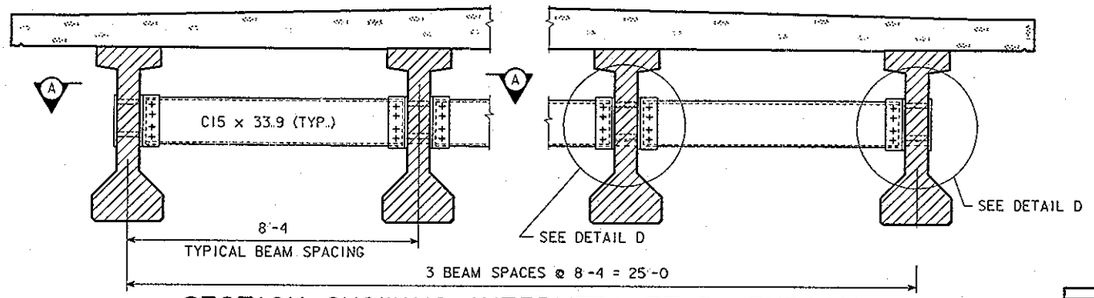
STATION: 50+59.59 — FEBRUARY, 2006

BOONE COUNTY

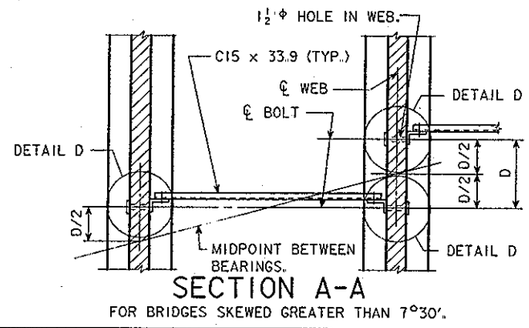
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 22 — FILE NO. 30101 — DESIGN NO. 106

REVISED 05-04 - BARS 4b1 CHANGED TO EPOXY COATED.
HLXA46O1.SOI - ISSUED 06-01-90

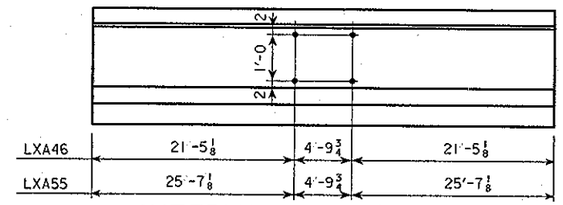


SECTION SHOWING INTERMEDIATE DIAPHRAGM



SECTION A-A

FOR BRIDGES SKEWED GREATER THAN 7°30'.



INTERMEDIATE DIAPHRAGM BOLT LOCATIONS

NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

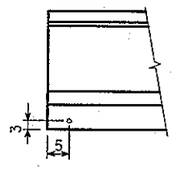
SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1½"Φ HOLES FOR THE ⅞"Φ H.T.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

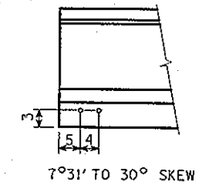
THE ⅞"Φ H.T.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING PRECAST CONCRETE DECK PANELS.



ALL SKEWS

INTEGRAL ABUTMENT



7°31' TO 30° SKEW

FIXED PIER

BEAM COIL TIE LOCATIONS

INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

				WEIGHT

ONE CONNECTION DETAIL "D"

2 - ⅞"Φ× LENGTH H.T.S. BOLTS WITH NUTS AND WASHERS

WEB THICKNESS	LENGTH OF H.T.S. BOLTS	WEIGHT PER DETAIL "D"	NUMBER OF DETAIL "D"	
6"	9"	4.30 LB	12	51.6
9"	12"	5.34 LB	6	32.0
1 - BACKING PL 4 × ⅜ × 1'-3¼ =		6.5 LB	18	117.0
1 - L 6 × 4 × ½ × 1'-3¼ =		20.6 LB	18	370.8

ONE C15 x 33.9 DIAPHRAGM

WEB THICKNESS \ BEAM SPACING	8'-4 * LENGTH	UNIT WEIGHT (LB)	
6"	7'-6⅝	256.0	
9"	7'-3⅝	247.5	

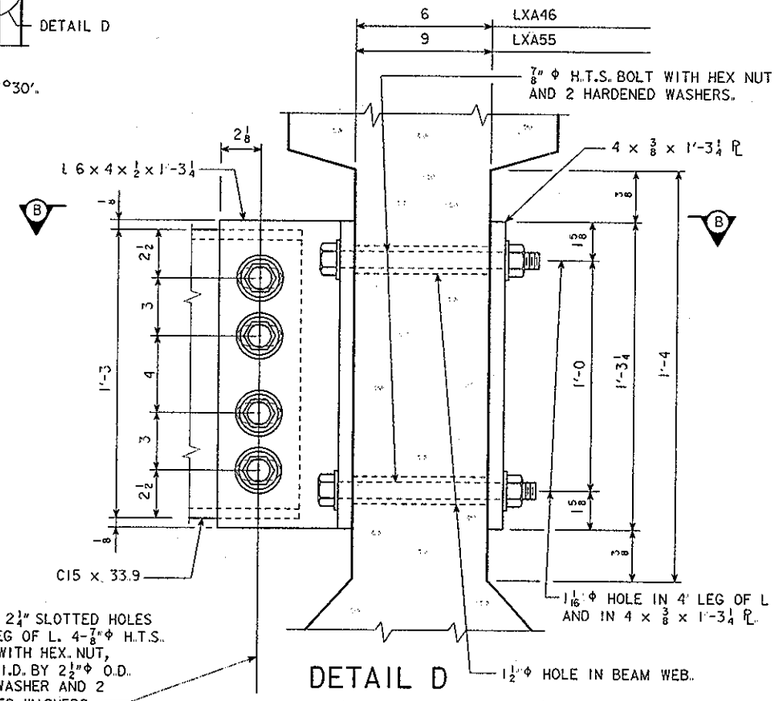
* THE LENGTH OF THE C15 x 33.9 SHOWN IN THE TABLE IS BASED ON A VARIABLE CLEARANCE OF 1 1/16" TO 2 1/16" BETWEEN THE FACE OF BEAM WEB AND END OF C15 x 33.9.

DIAPHRAGM WEIGHTS

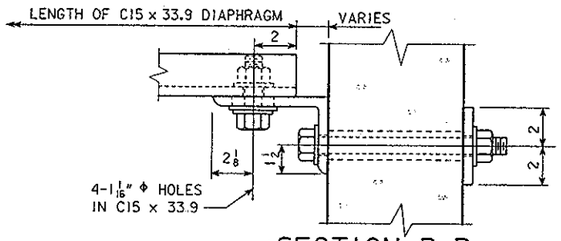
UNIT WEIGHT	NUMBER OF DIAPHRAGMS	
256.0 LB	6	1536.0
247.5 LB	3	742.5

DIAPHRAGM CONNECTION BOLTS

8 - ⅞"Φ × 0'-2¾ H.T.S. BOLTS WITH NUTS AND WASHERS, PER UNIT DIAPHRAGM	NUMBER OF DIAPHRAGMS	
10.3 LB	9	92.7
INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL (TOTAL LB) =		2942.6



DETAIL D



SECTION B-B

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

INTERMEDIATE DIAPHRAGM DETAILS

STATION: 50+59.59 — FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 22 — FILE NO. 30101 — DESIGN NO. 106

REVISED 09-03 - MINOR WASHER SIZE CHANGED, CHANGE TO NOTES ABOUT BOLT REQUIREMENTS. SEAL END OF BEAM AT STUB ABUTMENTS.
15 9-8-88 HEI036.S01 (HSTD01036.S01--LEP; THIS SHEET REDRAWN, DEVICE:ZHAO:(200,004) ARCH.TAPE NO. DATE)

DESIGN TEAM JSN/DAW	STEEL INTERMEDIATE DIAPHRAGMS FOR PC BM. BRIDGES	STANDARD SHEET 1036	BOONE COUNTY	PROJECT NUMBER BRC-C008(39)--8E-08	SHEET NUMBER 14

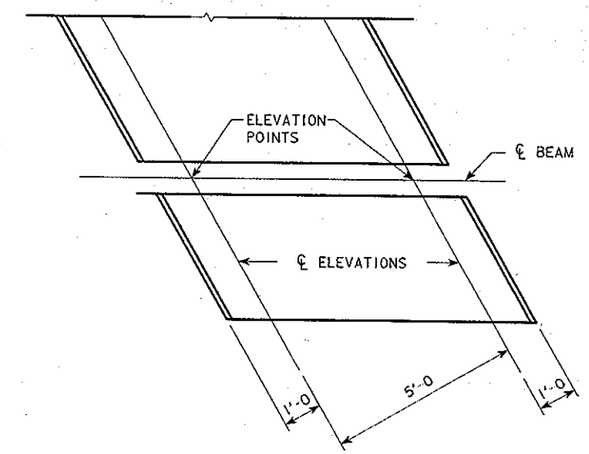
TOP OF SLAB ELEVATIONS

LOCATION	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19
EDGE OF SLAB	984.95	984.97	984.99	985.00	985.02	985.03	985.05	985.06	985.08	985.09	985.11	985.12	985.15	985.16	985.18	985.19	985.21	985.22	985.24
BEAM LINE A	985.04	985.06	985.08	985.09	985.11	985.12	985.14	985.15	985.17	985.18	985.21	985.21	985.24	985.25	985.27	985.28	985.30	985.31	985.33
BEAM LINE B	985.23	985.24	985.26	985.27	985.30	985.30	985.33	985.34	985.36	985.37	985.39	985.40	985.42	985.43	985.45	985.46	985.49	985.49	985.52
℄ APPROACH ROADWAY	985.32	985.33	985.36	985.37	985.39	985.40	985.42	985.43	985.45	985.46	985.48	985.49	985.51	985.52	985.55	985.56	985.58	985.59	985.61
BEAM LINE C	985.25	985.26	985.28	985.29	985.31	985.32	985.35	985.36	985.38	985.39	985.41	985.42	985.44	985.45	985.47	985.48	985.50	985.51	985.54
BEAM LINE D	985.10	985.11	985.13	985.14	985.17	985.18	985.20	985.21	985.23	985.24	985.26	985.27	985.29	985.30	985.32	985.33	985.36	985.37	985.39
EDGE OF SLAB	985.03	985.04	985.06	985.07	985.09	985.10	985.13	985.13	985.16	985.17	985.19	985.20	985.22	985.23	985.25	985.26	985.28	985.29	985.32

TOP OF SLAB ELEVATIONS

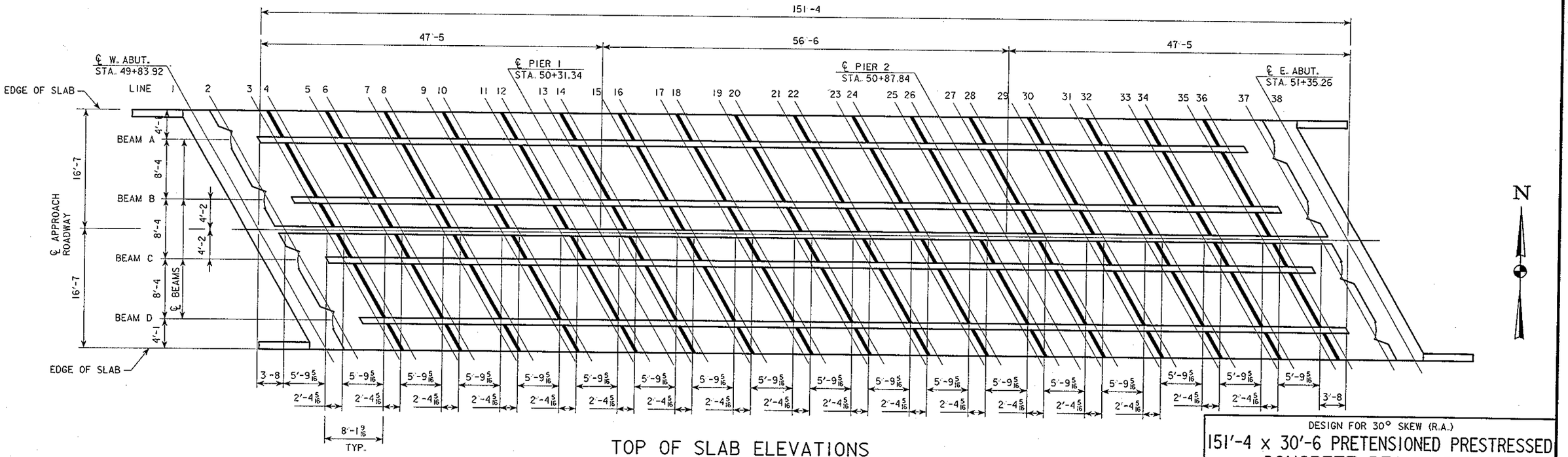
LOCATION	LINE 20	LINE 21	LINE 22	LINE 23	LINE 24	LINE 25	LINE 26	LINE 27	LINE 28	LINE 29	LINE 30	LINE 31	LINE 32	LINE 33	LINE 34	LINE 35	LINE 36	LINE 37	LINE 38
EDGE OF SLAB	985.25	985.27	985.28	985.30	985.31	985.34	985.35	985.37	985.38	985.40	985.41	985.43	985.44	985.46	985.47	985.49	985.50	985.53	985.54
BEAM LINE A	985.34	985.36	985.37	985.40	985.40	985.43	985.44	985.46	985.47	985.49	985.50	985.52	985.53	985.55	985.56	985.58	985.59	985.62	985.63
BEAM LINE B	985.53	985.55	985.56	985.58	985.59	985.61	985.62	985.64	985.65	985.68	985.68	985.71	985.72	985.74	985.75	985.77	985.78	985.80	985.82
℄ APPROACH ROADWAY	985.62	985.64	985.65	985.67	985.68	985.70	985.71	985.74	985.75	985.77	985.78	985.80	985.81	985.83	985.84	985.86	985.87	985.89	985.91
BEAM LINE C	985.55	985.57	985.58	985.60	985.61	985.63	985.64	985.66	985.67	985.69	985.70	985.73	985.73	985.76	985.77	985.79	985.80	985.82	985.84
BEAM LINE D	985.40	985.42	985.43	985.45	985.46	985.48	985.49	985.51	985.52	985.55	985.56	985.58	985.59	985.61	985.62	985.64	985.65	985.67	985.69
EDGE OF SLAB	985.32	985.35	985.36	985.38	985.39	985.41	985.42	985.44	985.45	985.47	985.48	985.51	985.51	985.54	985.55	985.57	985.58	985.60	985.61

NOTE: DECK ELEVATIONS SHOWN ARE BASED ON THE FINAL BRIDGE DECK GRADE.



TYPICAL PANEL

(NOTE: PANEL ADJUSTMENTS MAY AFFECT HOW ELEVATIONS ARE LOCATED.)



TOP OF SLAB ELEVATIONS

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

TOP OF SLAB ELEVATIONS

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

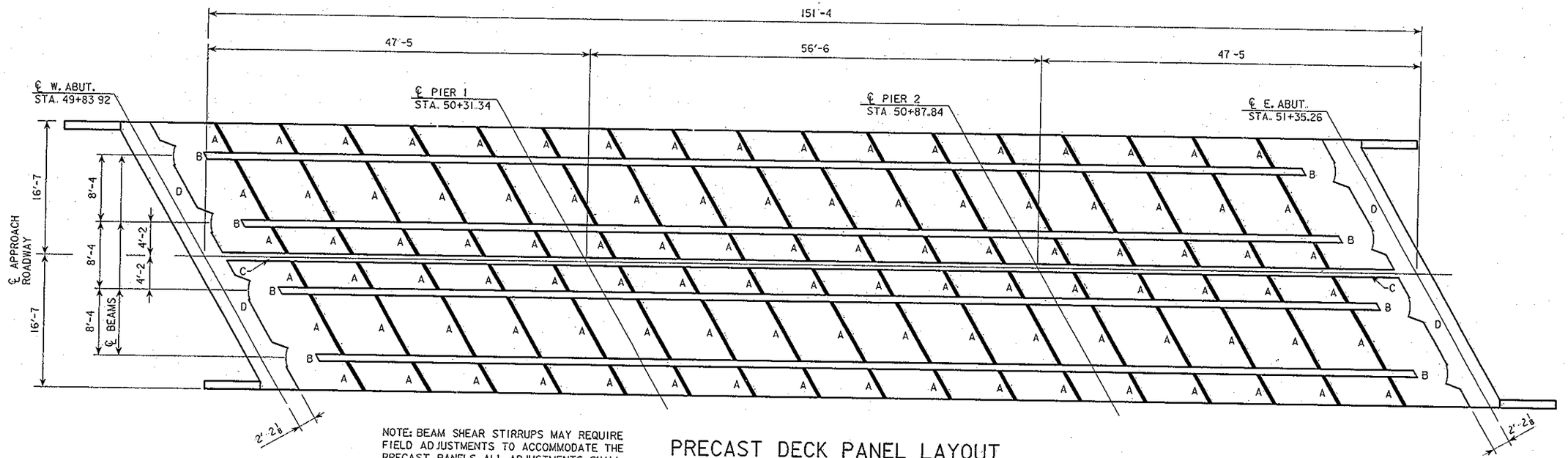
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM . JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 15

20-FEB-2006 14:09 dwrigh2 W:\Projects\BridgesStructures\LocalSystem_PrimaryRoutes\BooneCounty\120th_St_over_Squaw_Creek\BRFinal\08C00039.dgn 08010650014



NOTE: BEAM SHEAR STIRRUPS MAY REQUIRE FIELD ADJUSTMENTS TO ACCOMMODATE THE PRECAST PANELS. ALL ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER.

PRECAST DECK PANEL LAYOUT

PRESTRESSED CONCRETE DECK PANEL CONSTRUCTION SEQUENCE

1) ALL OF THE GIRDERS SHALL BE PLACED ON THE ENTIRE BRIDGE, PRIOR TO PLACEMENT OF DECK PANELS.

2) ALL OF THE PRECAST DECK PANELS SHALL BE PLACED AS SHOWN IN THE PANEL LAYOUT. CARE SHOULD BE TAKEN TO ENSURE THAT THE PANELS ARE IN TIGHT CONTACT WITH THE BACKER ROD SEPARATING THEM AND THAT PROPER ALIGNMENT AND GRADE ARE ACHIEVED.

3) REMOVE THE PANELS OVER THE PIERS AND POUR THE PIER DIAPHRAGMS. AFTER THE DIAPHRAGM HAS REACHED MATURITY STRENGTH REMOVE THE FORMS

4) REPLACE THE PANELS OVER THE PIERS.

5) THREAD THE 0.6" POST-TENSIONING STRANDS THROUGH THE POST-TENSIONING CHANNELS AND ANCHOR SYSTEMS. POSITION THEM AS SHOWN IN THESE PLANS.

6) THE TRANSVERSE JOINTS (A) SHALL BE CONCRETED LEVEL WITH THE TOPS OF THE DECK PANELS WITH THE SPECIFIED CONCRETE MIX.

7) ALLOW CONCRETE TO ATTAIN A COMPRESSIVE STRENGTH OF 4000 PSI BEFORE PROGRESSING.

8) BEGINNING AT EITHER END OF THE DECK, TENSION TWO OF THE INNERMOST STRANDS IN EACH POST-TENSIONING CHANNEL, TO THE SPECIFIED FORCE.

9) REPEAT STEP EIGHT, TENSIONING FROM THE CENTROID OF THE STRAND PATTERN OUTWARD IN BOTH HORIZONTAL DIRECTIONS, SO AS TO MAINTAIN SYMMETRY DURING THE POST-TENSIONING OPERATION. REPEAT UNTIL ALL OF THE STRANDS AT ONE END OF THE DECK HAVE BEEN TENSIONED.

10) RE-TENSION ALL STRANDS AT THE OPPOSITE END OF THE DECK TO THE REQUIRED FORCE.

11) FILL ALL VOIDS (B) IN THE POST-TENSIONING CHANNELS WITH THE SPECIFIED CONCRETE MIX.

12) FILL THE LONGITUDINAL CLOSURE POUR (C). (STEP 11 AND STEP 12 CAN BE COMBINED)

13) POUR THE REMAINING DECK ENDS AND ABUTMENTS (D).

14) GRIND UP TO ¼" FROM THE TOP LAYER OF DECK TO REDUCE VALLEYS AND CRESTS, CAUSED BY THE CONCRETE.

15) PLACE BARRIER RAIL POSTS AND RAILS.

PRECAST DECK PANEL NOTES:

FABRICATOR SHALL BE RESPONSIBLE FOR EXERCISING EXTREME CARE IN LIFTING, HANDLING, STORING, AND TRANSPORTATION OF THE PRESTRESS DECK PANELS TO PREVENT CRACKING OR DAMAGE. PANELS SHALL BE LIFTED BY DEVICES AT THE GIRDER LINES, DESIGNED BY THE FABRICATOR.

PRETENSIONING STRAND FOR THE PRECAST PANELS SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STEEL STRAND OF ½" NOMINAL DIAMETER AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A416, GRADE 270. STRANDS SHALL BE TENSIONED TO 31 KIPS BEFORE RELEASE, UNLESS SPECIFIED OTHERWISE. ALL METHODS EMPLOYED AND PROCEDURES TO BE FOLLOWED IN TENSIONING THE STRANDS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL. THE METHOD CHOSEN SHALL BE EXECUTED IN A MANNER TO ASSURE THAT BOTH ENDS OF ALL STRANDS IN THE PANEL ARE UNIFORMLY TENSIONED. THE PRESTRESSED STRAND SHALL BE RELEASE IN A MANNER THAT WILL MINIMIZE ECCENTRICITY.

POST-TENSIONING STRAND SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STEEL STRAND OF 0.6" NOMINAL DIAMETER, AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A416, GRADE 270. STRANDS SHALL BE TENSIONED TO 41.0 KIPS BEFORE RELEASE, UNLESS OTHERWISE SPECIFIED. ALL METHODS EMPLOYED AND PROCEDURES TO BE FOLLOWED IN POST-TENSIONING THE STRANDS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL. THE METHOD CHOSEN SHALL BE EXECUTED IN A MANNER TO ASSURE THAT BOTH ENDS OF ALL STRANDS IN THE PANEL ARE UNIFORMLY TENSIONED. THE POST-TENSIONING STRAND SHALL BE RELEASED IN A MANNER THAT WILL MINIMIZE ECCENTRICITY.

END ANCHORAGES TO BE APPROVED BY THE ENGINEER.

CONCRETE IN THE PANELS SHALL HAVE CONCRETE STRENGTHS AT STRESS TRANSFER OF 4000 PSI AND AT 28 DAYS OF 6000 PSI. NO BOND STRESS SHALL BE TRANSFERRED TO THE CONCRETE NOR THE END ANCHORAGE RELEASED UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED STRENGTH.

SPIRALS SHALL BE ¼" DIAMETER HIGH CARBON SPRING WIRE AND CONFORM TO THE REQUIREMENTS OF ASTM A227.

STRANDS AT PANEL ENDS SHALL BE REMOVED TO A DEPTH OF 1 INCH INSIDE THE PANEL EDGE. THE RESULTING POCKET SHALL BE GROUTED WITH HIGH STRENGTH, NON-SHRINK GROUT.

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A615 GRADE 60 BLACK STEEL REINFORCING BAR SHALL BE USED FOR THE PRECAST PANELS.

LONGITUDINAL GROOVING NOTES:

ESTABLISHMENT OF LONGITUDINAL GROOVING IN CONCRETE;

LONGITUDINAL GROOVING SHALL BE DONE WITH A MECHANICAL CUTTING DEVICE INTO THE HARDENED CONCRETE. EACH GROOVE SHALL BE ⅛ INCH ± 1/64 INCH IN WIDTH, ⅛ INCH ± 1/16 INCH IN DEPTH, AND UNIFORMLY SPACED AT ¾ INCH INTERVALS. LONGITUDINAL GROOVING SHALL NOT BE WITHIN THE AREA APPROXIMATELY 2 FOOT FROM THE CURBS.

METHOD OF MEASURE AND BASIS OF PAVEMENT;

THE QUANTITY OF LONGITUDINAL GROOVING IN CONCRETE, IN SQUARE YARDS, WILL BE THE QUANTITY SHOWN IN THE CONTRACT DOCUMENTS.

THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE FOR LONGITUDINAL GROOVING IN CONCRETE PER SQUARE YARD.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

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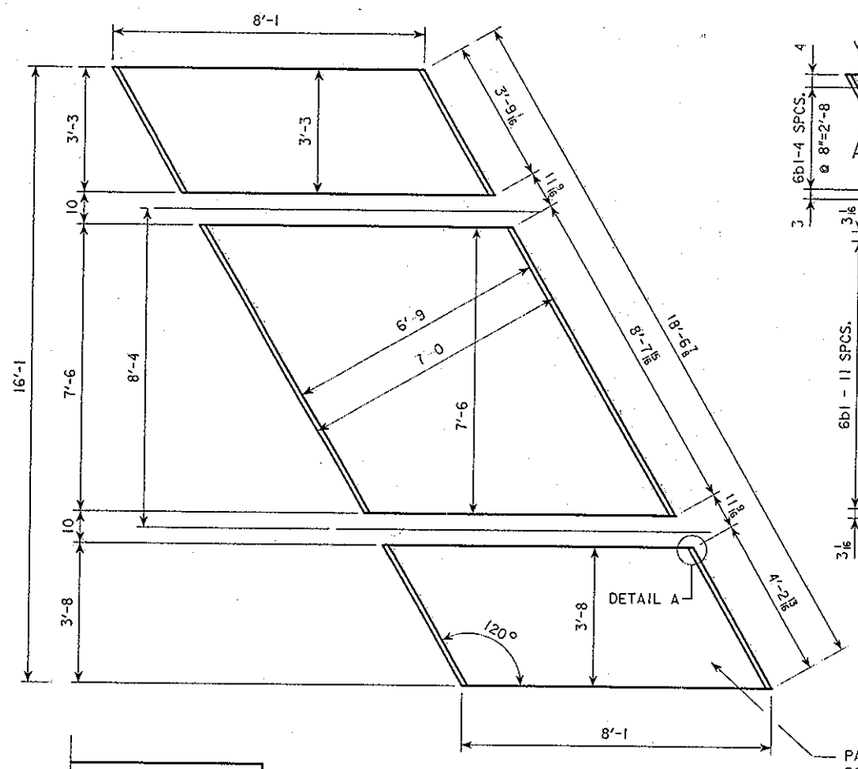
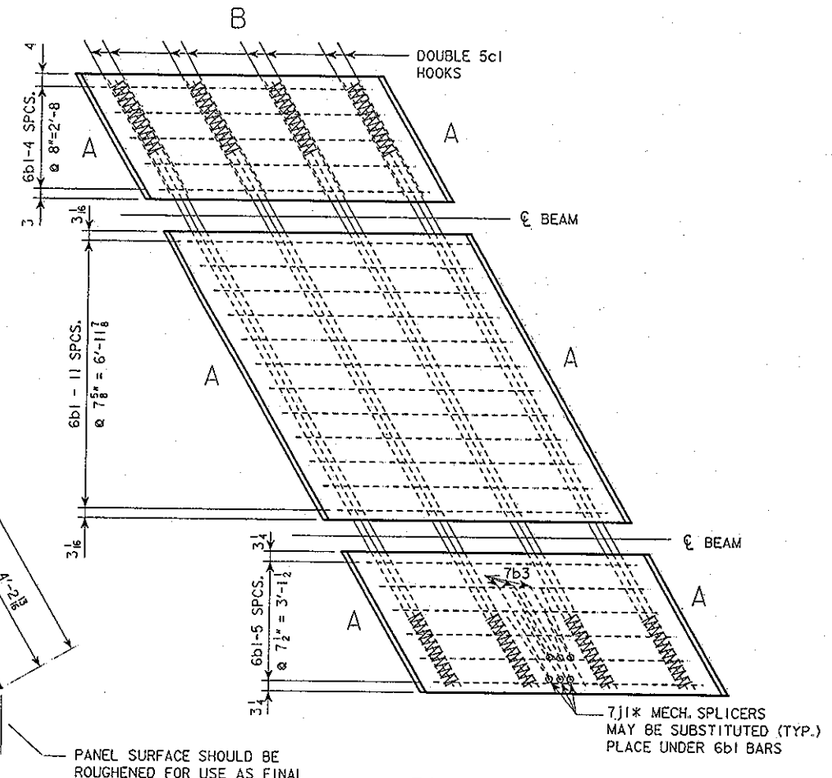
BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 16

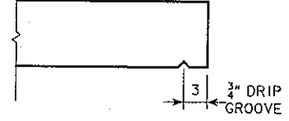


PANEL SURFACE SHOULD BE ROUGHENED FOR USE AS FINAL DRIVING SURFACE (TYP).

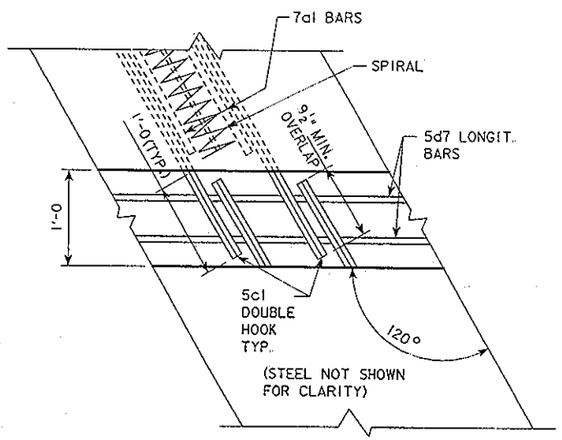
PLAN VIEW OF PANEL



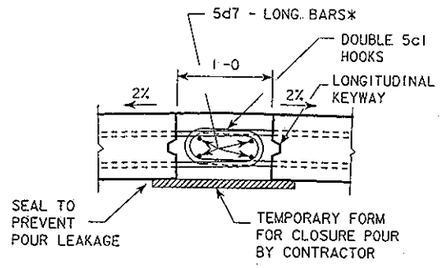
PLAN VIEW OF PANEL



DRIP EDGE



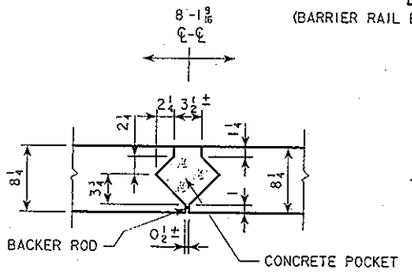
TYPICAL LONGITUDINAL CLOSURE POUR - DETAIL SIDE "B"



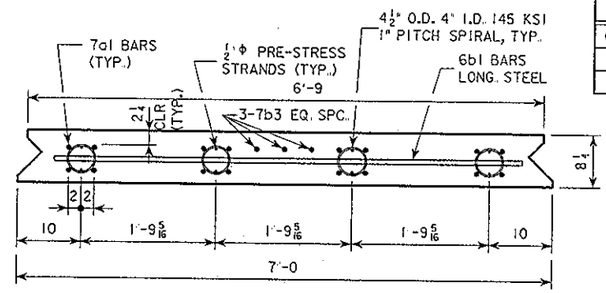
TYPICAL EDGE SIDE "B" LONGITUDINAL CLOSURE POUR

NOTE:
THE MANUFACTURER SHALL OFFSET THE PLACEMENT OF THE 5c1 HOOKS BETWEEN THE TWO HALVES OF THE DECK TO AVOID CLOSURE POUR INTERFERENCE. THE HOOKS SHALL BE PLACED UP TO A MAXIMUM OF 5' IN. AWAY FROM THE 7a1 TRANSVERSE BARS.

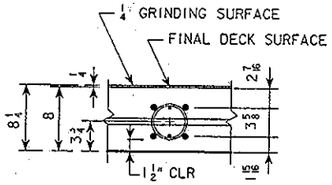
*5d7 BARS ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.



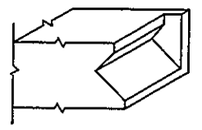
TYPICAL TRANSVERSE EDGE SIDE "A"



END VIEW
(BARRIER RAIL BARS 7J1 NOT SHOWN FOR CLARITY)



TRANSVERSE PANEL STEEL (TYP.)



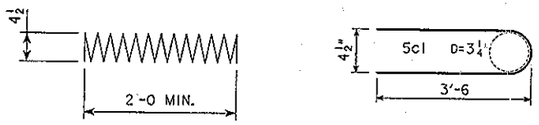
DETAIL A

NOTE:
TO PREVENT TRANSVERSE CONCRETE LEAKAGE DURING CONSTRUCTION, THE PRECAST MANUFACTURER CAN USE DETAIL A ON ALL CORNERS OF THE PANEL. OTHERWISE THE CONTRACTOR IS REQUIRED TO BLOCK THE ENDS OF THE PANEL, TO PREVENT TRANSVERSE CONCRETE LEAKAGE DURING CONSTRUCTION.

REINFORCING BAR LIST- ONE INTERIOR PANEL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	TRANSVERSE PANEL	——	16	18'-1	592
6b1	LONGITUDINAL PANEL	——	23	7'-0	242
7b3	BARRIER RAIL PANEL STEEL	——	3	3'-0	19
5c1	CLOSURE POUR HOOKS	⊃	16	7'-5	124
	1/2"Φ PRESTRESSED STRANDS 270 KSI-LL	——	8	18'-4	78
	4 1/2" O.D. 4" I.D. 145 KSI 1" PITCH SPIRAL	⦚	8	27'-4	228
				TOTAL (LBS.)	1283

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER.

INTERIOR PANEL CONC. QUANT.

CONCRETE	TOTAL
ONE INTERIOR PANEL	2.9
TOTAL (CY)	2.9

DESIGN FOR 30° SKEW (R.A.)

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47'-5 END SPANS — 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59 — FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 22 — FILE NO. 30101 — DESIGN NO. 106

DESIGN TEAM JSN/DAW

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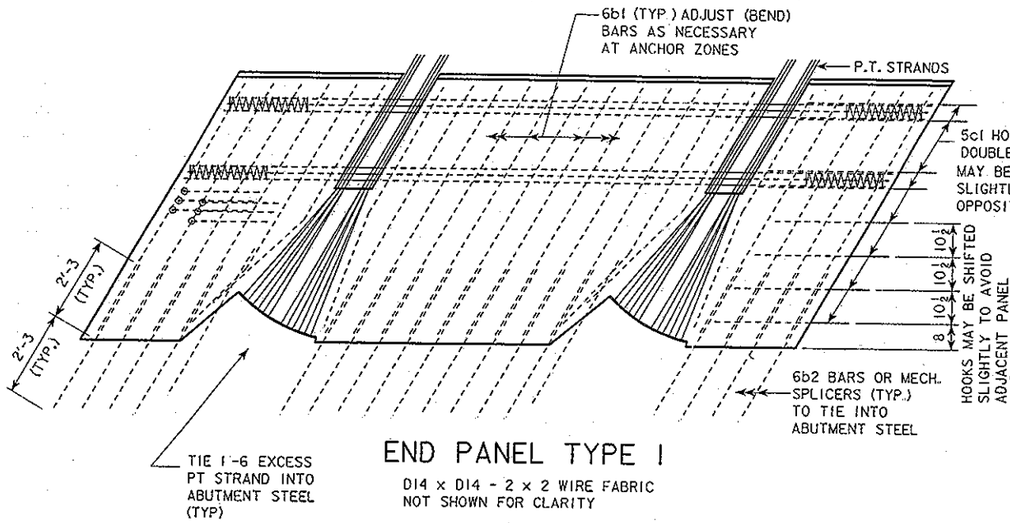
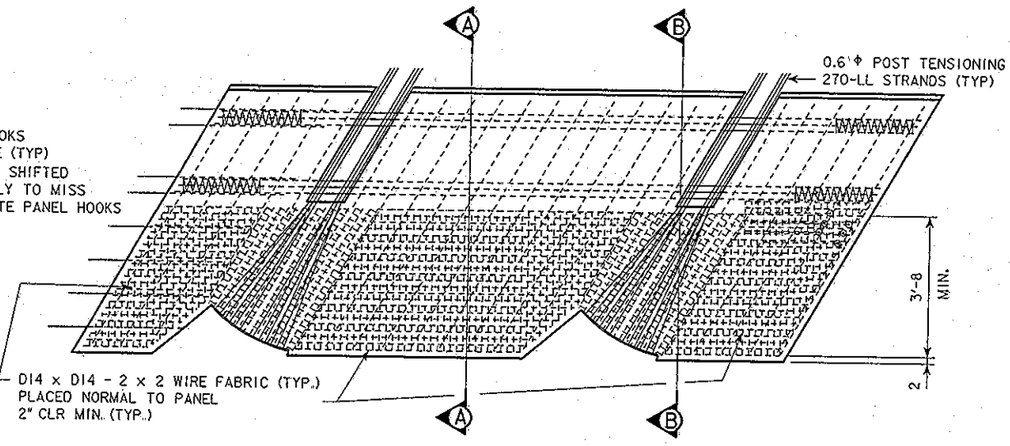
BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 17



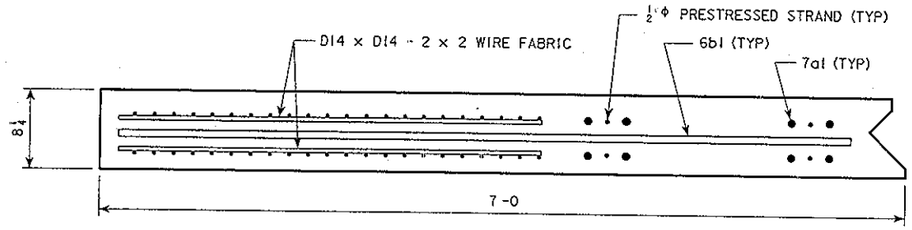
END PANEL TYPE 1

D14 x D14 - 2 x 2 WIRE FABRIC NOT SHOWN FOR CLARITY

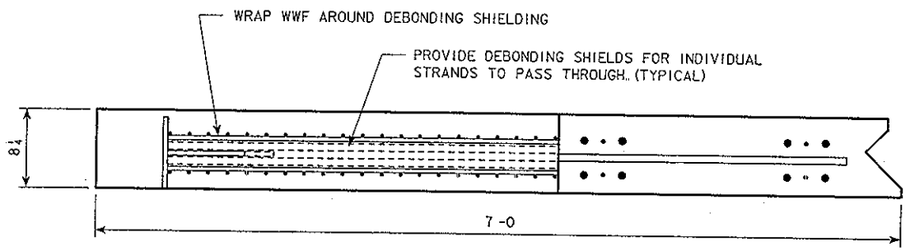


END PANEL TYPE 2

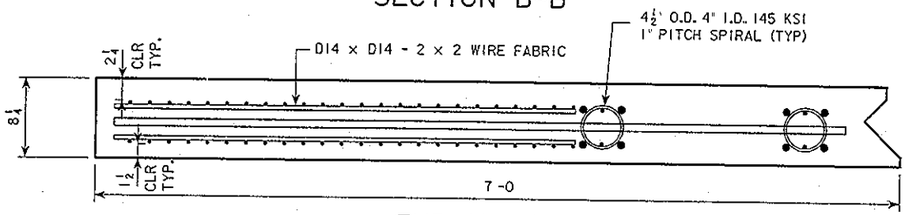
6b2 BARS NOT SHOWN FOR CLARITY



SECTION A-A

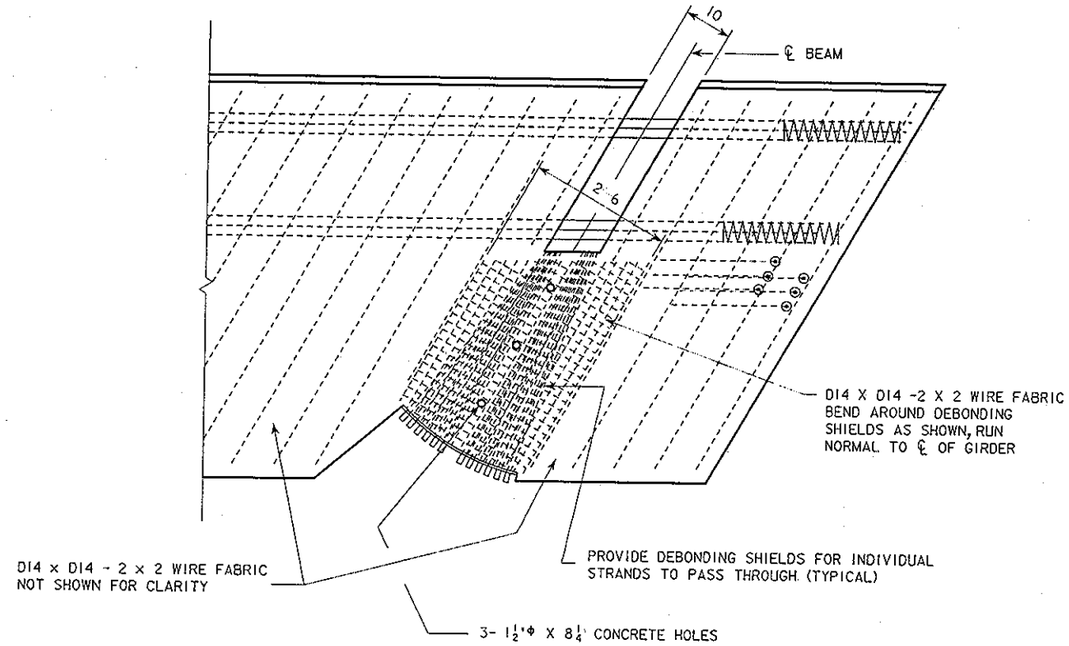


SECTION B-B



END VIEW

(7j1 BARS NOT SHOWN FOR CLARITY)



DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

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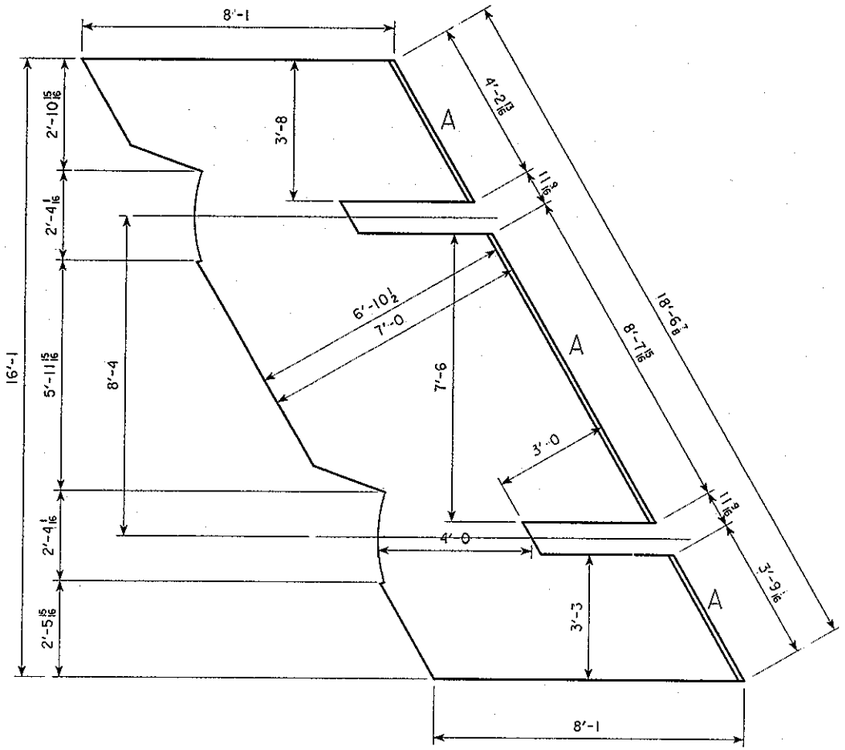
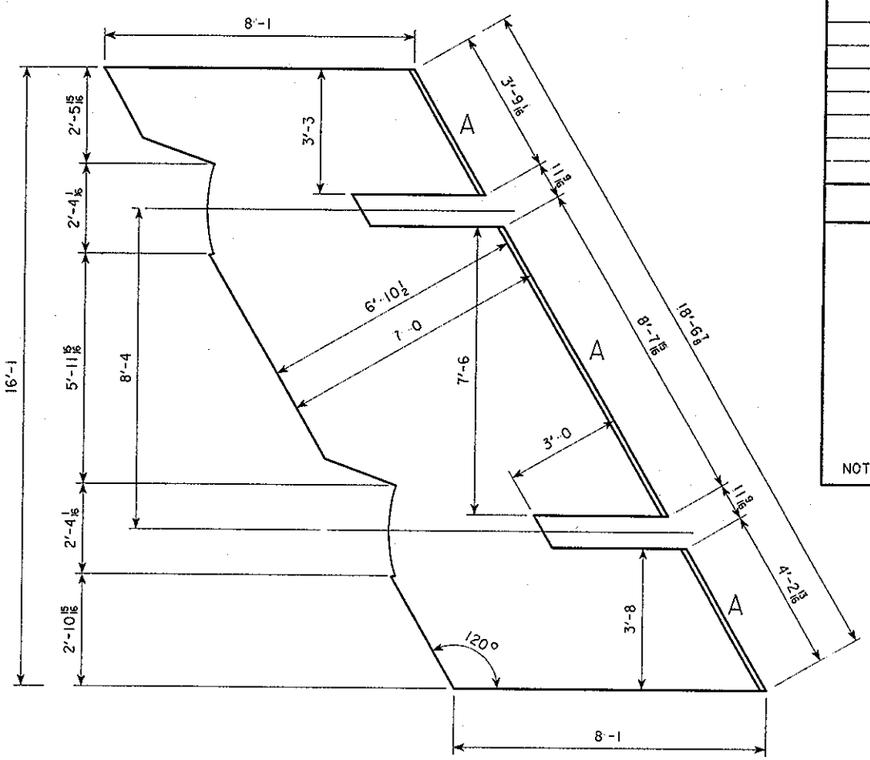
BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 18



END PANEL TYPE 1



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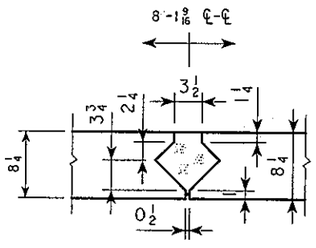
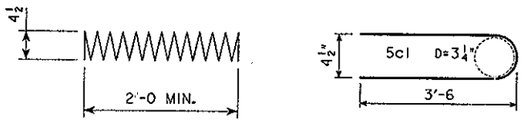


TYPICAL EDGE SIDE "A"

REINFORCING BAR LIST - ONE END PANEL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	TRANSVERSE PANEL	——	8	18'-1	296
6b1	LONGITUDINAL PANEL	——	23	7'-4	253
6b2	ABUTMENT TIE-IN STEEL	——	19	4'-6	128
5c1	CLOSURE POUR HOOKS	⊃	16	7'-5	124
	½"Φ PRESTRESSED STRANDS 270 KSI-LL	——	4	18'-4	39
	4½" O.D. 4" I.D. 145 KSI 1" PITCH SPIRAL	⌇	4	27'-4	114
	D14 X D14-2X2 WELDED WIRE REINFORCEMENT	⊞		124 SF	732
				REINFORCING STEEL - TOTAL (LBS.)	1686

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER.

END PANEL CONC. QUANT.

CONCRETE	TOTAL
ONE END PANEL	3.0
TOTAL (CY)	3.0

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW | BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 19

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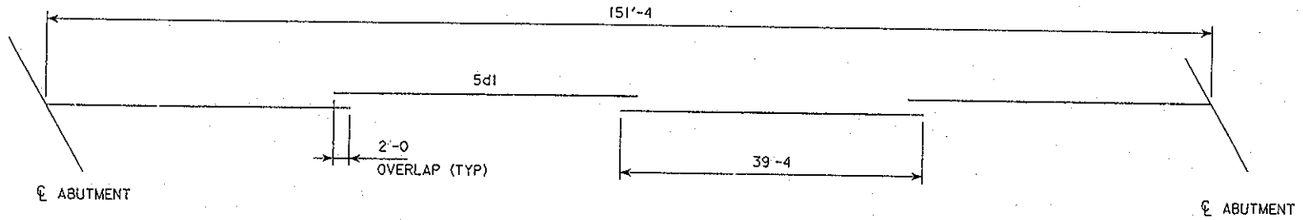
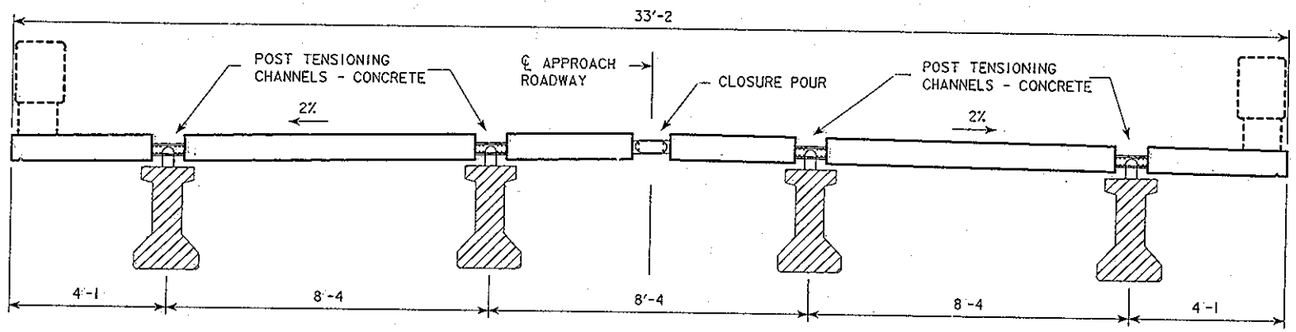
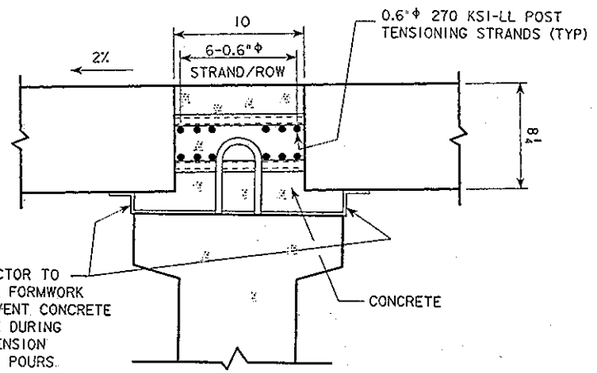


LONGITUDINAL CLOSURE POUR BARS

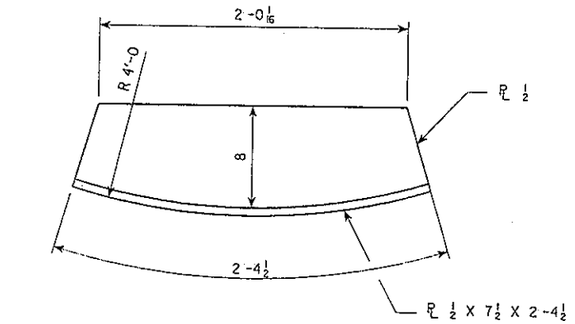


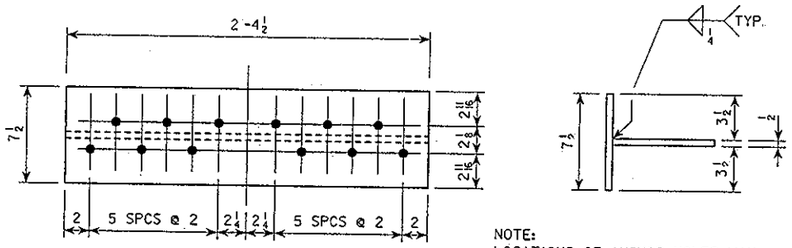
PANEL LAYOUT

(BARRIER RAILS INSTALLED AFTER P.T. GROUTING AND LONGITUDINAL CLOSURE POUR)



PRECAST DECK PANEL POST-TENSIONING CHANNEL





PANEL ANCHOR SYSTEM

NOTE:
LOCATIONS OF ANCHOR HOLES MAY REQUIRE ADJUSTMENT DEPENDING ON THE FINAL ANCHORAGE SYSTEM CHOSEN BY THE CONTRACTOR. ANY CHANGES SHALL BE APPROVED BY THE ENGINEER.

NOTES:

CONTRACTOR SHALL USE MANUFACTURING RECOMMENDED POST-TENSIONING MATERIALS, EQUIPMENT AND INSTALLATION GUIDELINES FOR THE POST TENSIONING OPERATIONS.

LEVELING DEVICES, DESIGNED BY THE CONTRACTOR, SHALL BE USED ON EACH PRECAST PANEL, AND SHALL BE APPROVED BY THE ENGINEER.

PLATES SHALL MEET THE REQUIREMENTS OF ASTM A709 GRADE 36. ALL PLATES SHALL BE GALVANIZED. GALVANIZING SHALL BE IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

MATERIAL, INSTALLATION AND MANUFACTURING OF ALL COMPONENTS OF THE LEVELING DEVICES WILL BE CONSIDERED INCIDENTAL TO THE COSTS OF THE PRECAST PANELS.

THE LEVELING DEVICES SHALL BE TESTED ON THE FIRST PANEL PRODUCED, IN THE MANUFACTURER'S SHOP, BEFORE PROCEEDING TO THE FIELD INSTALLATION. NOTE THE PANELS WILL BE ON A 2% GRADE IN THE FIELD AND THE LEVELING DEVICES SHOULD BE CHECKED FOR SLIPPAGE AT THIS ANGLE.

LEVEL DEVICES MAY BE LEFT IN PLACE AND COVERED BY CONCRETE.

THE CONCRETE USED TO FILL THE TRANSVERSE JOINTS, LONGITUDINAL TENSIONING CHANNELS AND LONGITUDINAL CLOSURE POUR SHALL BE A CLASS O-4WR, WITH THE FOLLOWING REQUIREMENTS:

MAXIMUM TOP SIZE OF AGGREGATE SHALL BE $\frac{3}{8}$".
35% REPLACEMENT WITH GGBFS.
MAXIMUM WATER CEMENT RATIO OF 0.38.
THE SLUMP SHALL BE A MAXIMUM OF 3 INCHES AT THE PLANT AND A MID RANGE OR HIGH RANGE WATER REDUCER SHALL BE ADDED AT THE SITE.
THE MAXIMUM SLUMP FOR A MID RANGE WATER REDUCER SHALL BE 6 INCHES AND THE MAXIMUM SLUMP FOR A HIGH RANGE WATER REDUCER SHALL BE 8 INCHES.
CONCRETE TEMPERATURE AT PLACEMENT SHALL BE A MINIMUM OF 70 F.

THE MAXIMUM EVAPORATION RATE SHALL BE 0.1 PERCENT. WET BURLAP CURING SHALL BE PLACED IMMEDIATELY AFTER FINISHING AND COVERED WITH PLASTIC. CURING SHALL REMAIN IN PLACE AND KEPT WET UNTIL THE SPECIFIED STRENGTH IS REACHED. TEMPERATURES WILL BE MONITORED BY THE DISTRICT MATERIALS ENGINEER AND INSULATING BLANKETS MAY BE REQUIRED TO MAINTAIN TEMPERATURE.

OTHER MIXES MAY BE CONSIDERED PROVIDED THEY HAVE BEEN REVIEWED AND APPROVED BY THE DISTRICT MATERIALS ENGINEER.

SIDES OF THE PANELS SHALL BE SANDBLASTED BY THE FABRICATOR.

DISTRICT MATERIALS WILL PROVIDE COMPRESSIVE STRENGTH TESTING OF THE CONCRETE USED TO FILL THE TRANSVERSE AND LONGITUDINAL JOINTS. DISTRICT MATERIALS WILL SURE CURE THE CYLINDERS WITH THE ELEMENTS. POST TENSIONING SHALL NOT COMMENCE UNTIL THE CONCRETE IN THE TRANSVERSE JOINTS HAS REACHED 4000 PSI COMPRESSIVE STRENGTH. NO EQUIPMENT SHALL BE PLACED ON THE DECK UNTIL THE CONCRETE IN THE JOINTS HAS REACHED 6000 PSI.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59 FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

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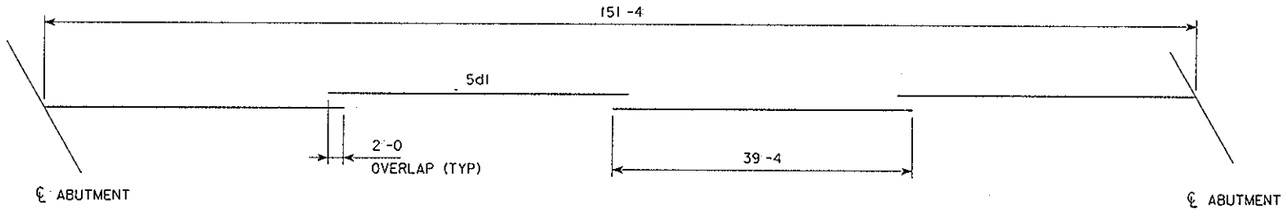
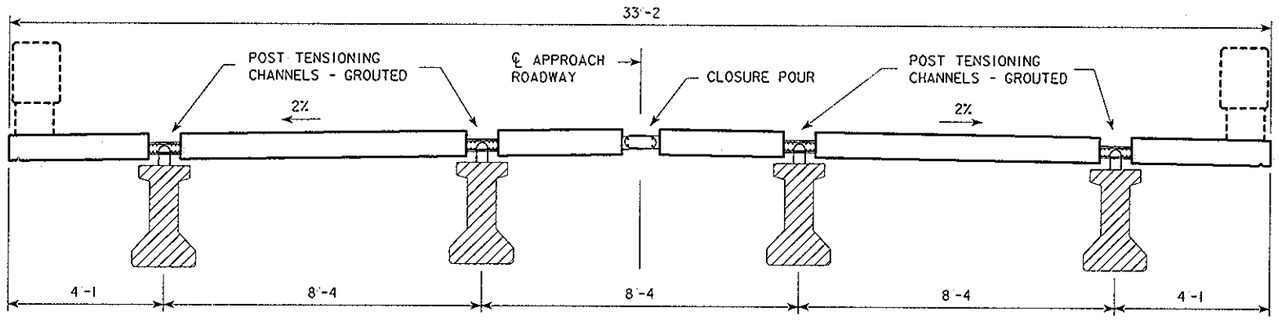
BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 20

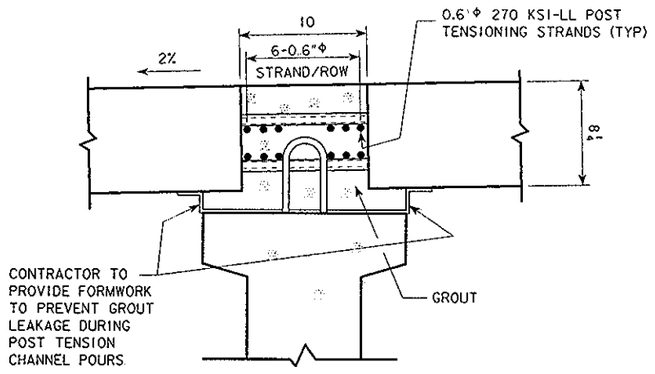


LONGITUDINAL CLOSURE POUR BARS

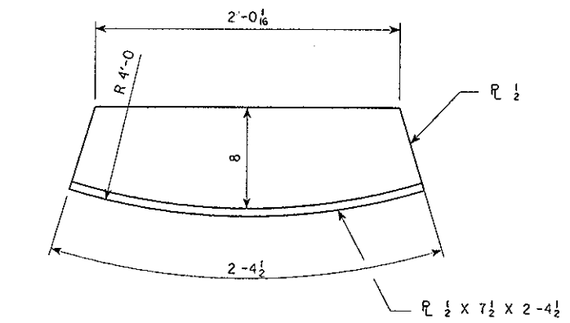


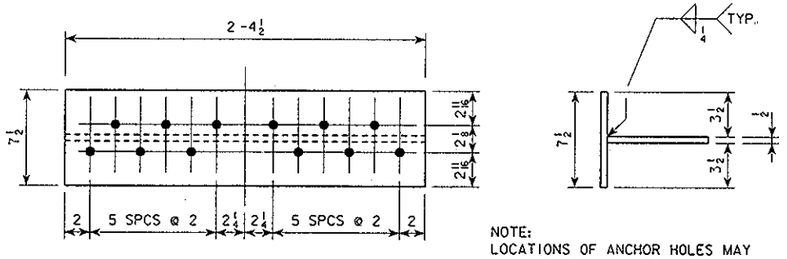
PANEL LAYOUT

(BARRIER RAILS INSTALLED AFTER P.T. GROUTING AND LONGITUDINAL CLOSURE POUR)



PRECAST DECK PANEL POST-TENSIONING CHANNEL





NOTE:
LOCATIONS OF ANCHOR HOLES MAY REQUIRE ADJUSTMENT DEPENDING ON THE FINAL ANCHORAGE SYSTEM CHOSEN BY THE CONTRACTOR. ANY CHANGES SHALL BE APPROVED BY THE ENGINEER

PANEL ANCHOR SYSTEM

NOTES:

CONTRACTOR SHALL USE MANUFACTURING RECOMMENDED POST-TENSIONING MATERIALS, EQUIPMENT AND INSTALLATION GUIDELINES FOR THE POST TENSIONING OPERATIONS.

LEVELING DEVICES, DESIGNED BY THE CONTRACTOR, SHALL BE USED ON EACH PRECAST PANEL, AND SHALL BE APPROVED BY THE ENGINEER.

PLATES SHALL MEET THE REQUIREMENTS OF ASTM A709 GRADE 36. ALL PLATES SHALL BE GALVANIZED. GALVANIZING SHALL BE IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

MATERIAL, INSTALLATION AND MANUFACTURING OF ALL COMPONENTS OF THE LEVELING DEVICES WILL BE CONSIDERED INCIDENTAL TO THE COSTS OF THE PRECAST PANELS.

THE LEVELING DEVICES SHALL BE TESTED ON THE FIRST PANEL PRODUCED, IN THE MANUFACTURER'S SHOP, BEFORE PROCEEDING TO THE FIELD INSTALLATION. NOTE THE PANELS WILL BE ON A 2% GRADE IN THE FIELD AND THE LEVELING DEVICES SHOULD BE CHECKED FOR SLIPPAGE AT THIS ANGLE

LEVEL DEVICES MAY BE LEFT IN PLACE AND COVERED BY GROUT.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS 56'-6 INTERIOR SPAN

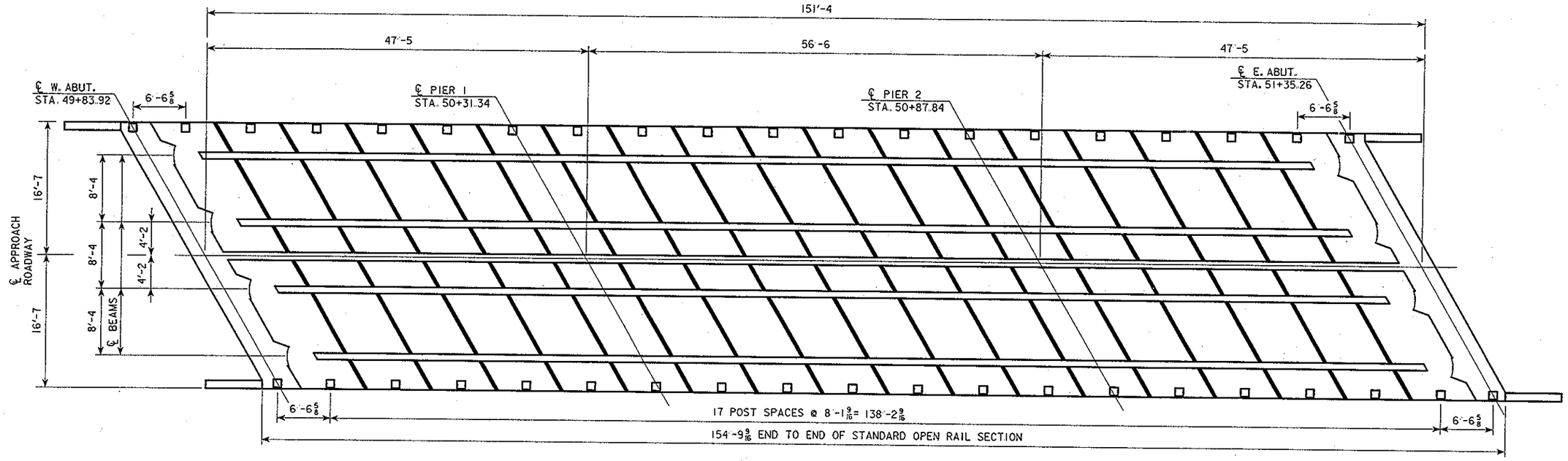
DECK PANEL DETAILS

STATION: 50+59.59 FEBRUARY, 2006

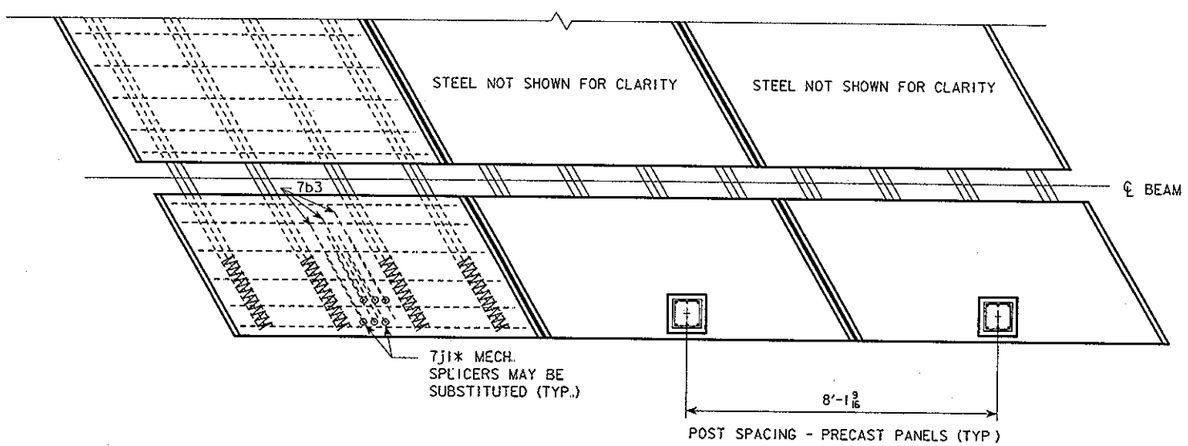
BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

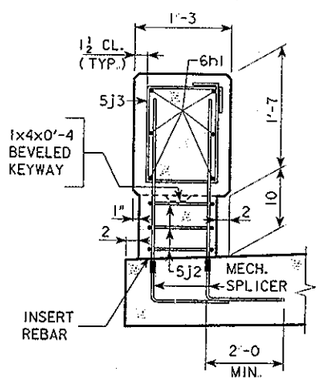
DESIGN SHEET NO. 19 OF 22 FILE NO. 30101 DESIGN NO. 106



BARRIER RAIL LAYOUT



TYPICAL BARRIER POST LOCATIONS



ALTERNATIVE BARRIER RAIL PART SECTION B-B USING MECH. SPLICERS

(APPROVAL REQUIRED BY THE ENGINEER)

BARRIER RAIL NOTES:

THE 7j1 BAR QUANTITY IS INCLUDED IN THE SUPERSTRUCTURE REINFORCING QUANTITIES.

WITH THE ENGINEERS APPROVAL MECHANICAL SPLICERS IN ACCORDANCE WITH IM451, APPENDIX E MAY BE USED TO ELIMINATE THE 7j1 BAR PROJECTION FROM THE DECK PANELS. THE BARS SUBSTITUTED FOR THE 7j1 WITH MECHANICAL SPLICERS SHALL HAVE THE SAME EMBEDMENT AS THE 7j1.

THE SUBSTITUTION OF MECHANICAL SPLICERS, IF APPROVED, SHALL BE AT NO ADDITIONAL COST TO THE CONTRACTING AUTHORITY.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

DECK PANEL DETAILS

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 21

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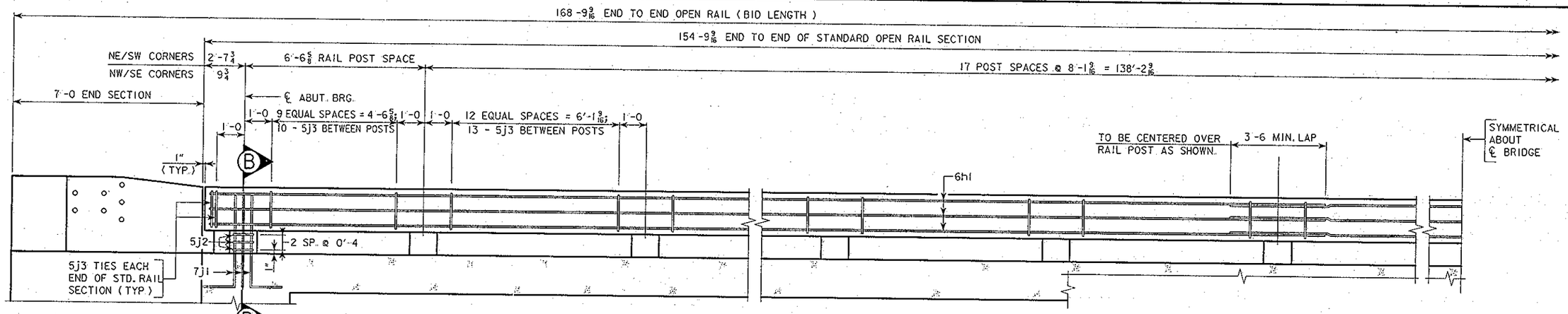
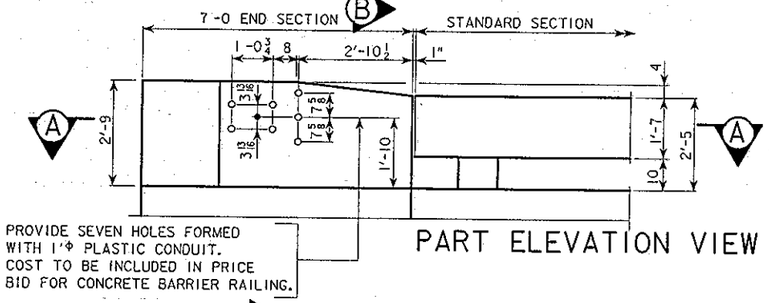
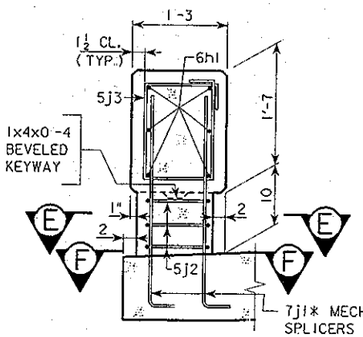


ELEVATION OF RAIL

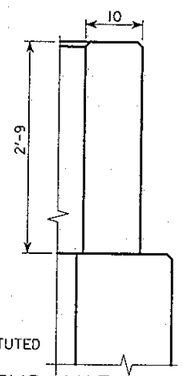


PART ELEVATION VIEW

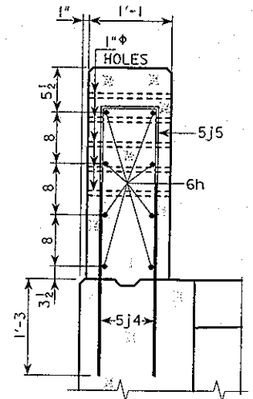


PART SECTION B-B

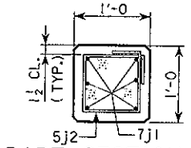
NOTE :
ROUGHEN AREA OF SLAB AT EACH RAIL POST.



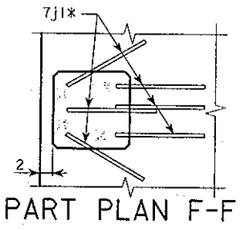
END VIEW C-C



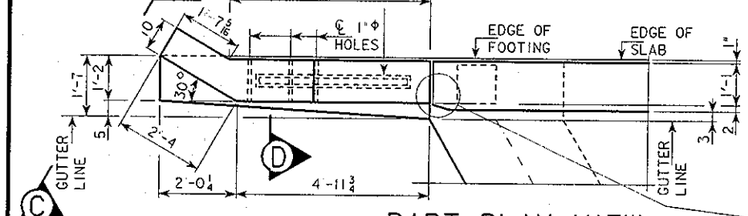
PART SECTION D-D



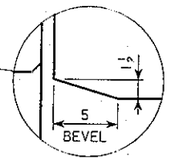
PART SECTION E-E

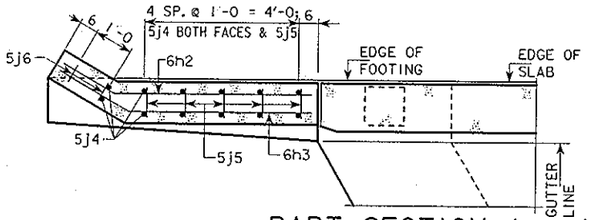


PART PLAN F-F



PART PLAN VIEW





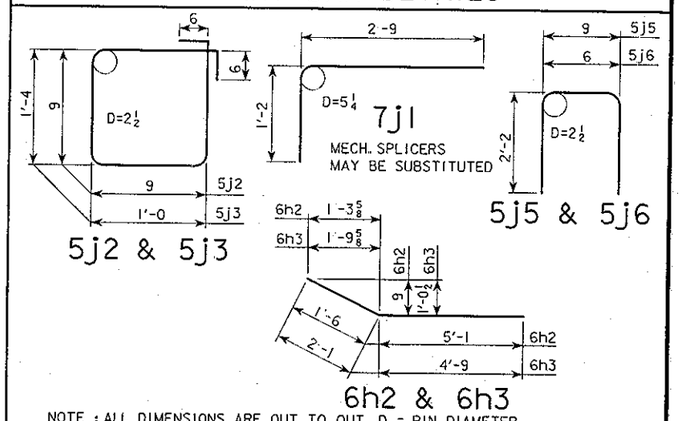
PART SECTION A - A

END SECTION DETAILS

REINFORCING BAR LIST

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
2-STANDARD SECTIONS	7j1	RAIL POST VERTICAL	L	240	3'-11	1922
	5j2	RAIL POST TIES	□	120	4'-0	501
	5j3	RAIL TIES	□	490	5'-8	2896
	6h1	RAIL LONGITUDINAL	—	48	43'-10	3161
4 END SECTIONS	5j4	ANCHOR TO SLAB	—	48	2'-6	125
	5j5	VERTICAL	⌐	20	5'-1	106
	5j6	VERTICAL	⌐	8	4'-10	40
	6h2	LONGITUDINAL	╲	16	6'-7	158
	6h3	LONGITUDINAL	╲	16	6'-10	164
	(INCLUDE WITH SUPERSTRUCTURE REINFORCING)			TOTAL (LBS.)		9073

BENT BAR DETAILS



NOTE : ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

ESTIMATED OPEN RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE OPEN RAILING	L.F.	337.6

OPEN RAIL 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.

ALL OPEN RAIL CONCRETE IS TO BE CLASS C.

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

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 RAIL 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.

DESIGN FOR 30° SKEW (R.A.)

151'-4 x 30'-6 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

47'-5 END SPANS — 56'-6 INTERIOR SPAN

OPEN RAIL DETAILS

STATION: 50+59.59 — FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 22 FILE NO. 30101 DESIGN NO. 106

DESIGN TEAM JSN/DAW

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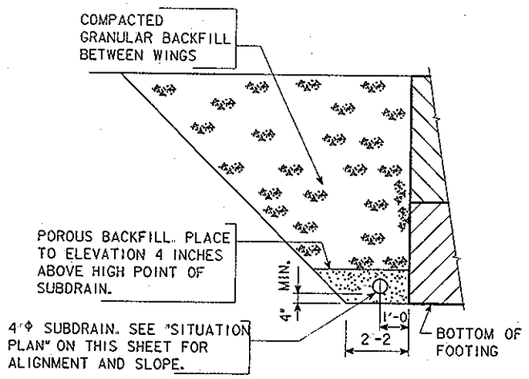
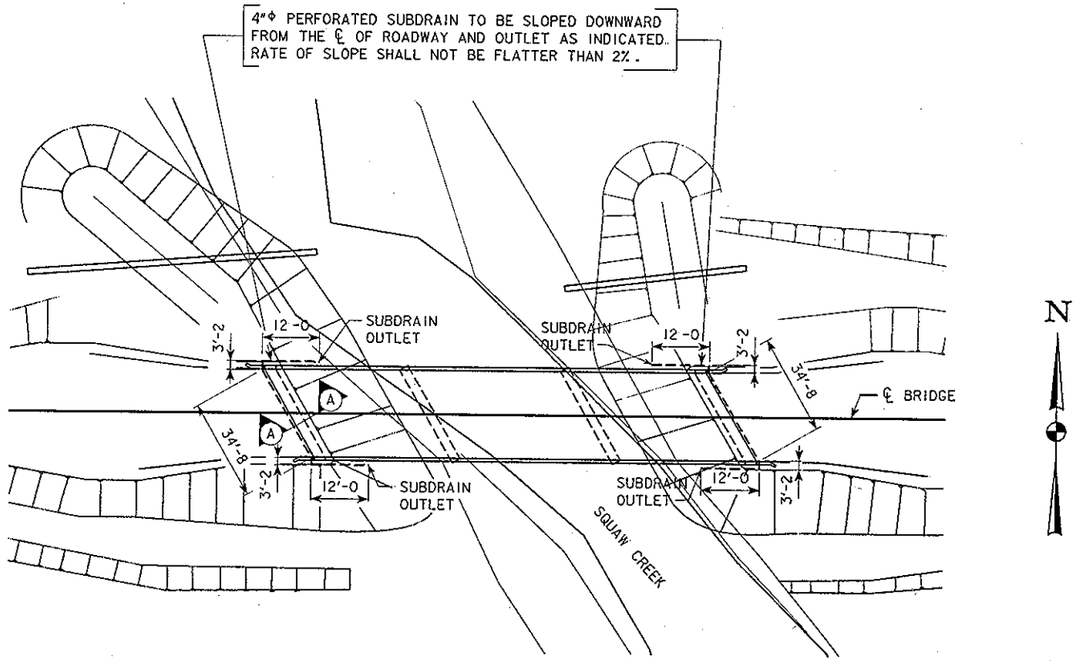
BOONE COUNTY | PROJECT NUMBER BRC-C008(39)--8E-08 | SHEET NUMBER 22



SECTION A-A

NOTE: SPECIAL BACKFILL MAY BE SUBSTITUTED FOR GRANULAR BACKFILL.

GRANULAR BACKFILL DETAILS



SITUATION PLAN

SHOWING SUBDRAIN LOCATIONS

SUBDRAIN NOTES:

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

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND MEET THE REQUIREMENTS OF SECTION 4143.01 B OF THE CURRENT I.D.O.T. STANDARD SPECIFICATION. THE SUBDRAIN OUTLET SHALL CONSIST OF A 6'-0 LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET.

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.

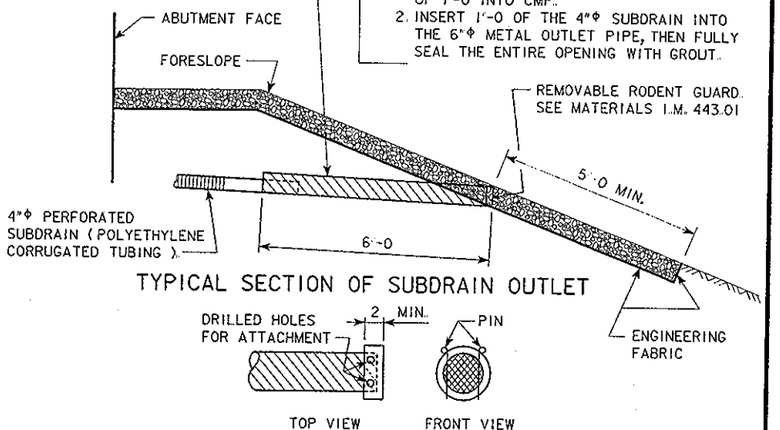
THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.

SUBDRAIN OUTLET ELEVATIONS

LOCATION	ELEVATION
WEST ABUTMENT	977.9
EAST ABUTMENT	978.5

6"Φ CORRUGATED METAL PIPE OUTLET, OR 4"Φ CORRUGATED DOUBLE-WALLED PE OR PVC PIPE OUTLET WITH AN APPROPRIATE COUPLER. IF METAL PIPE IS USED, THE PIPES SHOULD BE COUPLED IN ONE OF THE TWO FOLLOWING WAYS.

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



TYPICAL SECTION OF SUBDRAIN OUTLET

REMOVABLE RODENT GUARD DETAILS

OUTLET DETAILS

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47'-5 END SPANS 56'-6 INTERIOR SPAN

SUBDRAIN DETAILS

STATION: 50+59.59

FEBRUARY, 2006

BOONE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 22 FILE NO. 30101 DESIGN NO. 106

HE1007C.S01 - THIS SHEET ISSUED 06-02 FOR WATER CROSSINGS.

DESIGN TEAM JSN/DAW	SUBDRAIN DETAILS (WATER CROSSING)	STANDARD SHEET 1007C	BOONE COUNTY	PROJECT NUMBER BRC-C008(39)--8E-08	SHEET NUMBER 23

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ESTIMATE OF QUANTITIES – GRADING

REF. NO.	CODE NO.	ITEM DESCRIPTION	UNITS	TOTAL
1.	2101-0850001	CLEARING AND GRUBBING	ACRE	0.2
2.	2102-2710070	EXCAVATION, CL. 10 ROADWAY AND BORROW	C.Y.	26,760
3.	2102-2712015	EXCAVATION, CL. 12 BOULDERS OR ROCK FRAGMENTS	C.Y.	15
4.	2104-2710020	EXCAVATION, CL. 10, CHANNEL	C.Y.	1,580
5.	2312-8260051	GRAN. SURF. ON ROAD, CLASS A CRUSHED STONE	TONS	1,100
6.	2402-2720000	EXCAVATION, CL. 20	C.Y.	413
7.	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	C.Y.	4.0
8.	2404-7775000	STEEL, REINFORCING	LBS.	114
9.	2417-1007000	CULVERT, CORR. METAL ARCH RDWY. PIPE. 142 IN. X 91 IN.	L.F.	104
10.	2417-1040024	CULVERT, CORR. METAL ENT. PIPE, 24 IN DIA.	L.F.	54
11	2417-1060036	CULVERT, CORR METAL RDWY. PIPE. 36 IN DIA.	L.F.	246
12.	2417-1060042	CULVERT. CORR. METAL RDWY PIPE, 42 IN DIA.	L.F.	86
13.	2505-4008200	INSTALLATION OF GUARDRAIL	L.F.	225
14	2505-4021690	GUARDRAIL, END ANCHORAGE. BEAM RE-69	EACH	4
15.	2505-4021762	GUARDRAIL TERMINAL, BEAM, FLARED, RE-76	EACH	4
16.	2507-3250005	ENGINEERING FABRIC	S.Y.	740
17.	2507-6800042	REVETMENT, CLASS D	TONS	400
18.	2518-6910000	SAFETY CLOSURE	EACH	6
19.	2528-8445110	TRAFFIC CONTROL	LUMP SUM	1.0
20.	2533-4980005	MOBILIZATION	LUMP SUM	1.0
21	2601-2634100	MULCHING	ACRE	7.0
22.	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	7.0
23.	2602-0000020	SILT FENCE	L.F.	420
24	2602-0000030	SILT FENCE FOR DITCH CHECKS	L.F.	436

ESTIMATE REFERENCE INFORMATION:

2. A. INCLUDES 35% SHRINKAGE.
   B. INCLUDES MATERIAL REQUIRED TO CONSTRUCT WING DIKES, (800 C.Y.) DRIVES, AND APPROACH GRADES.
   C. SEE CROSS SECTIONS FOR TEMPLATE DETAILS.
   D. NO OVERHAUL WILL BE ALLOWED FOR THIS ITEM.
   E. TEMPLATE CUT WITHIN PROJECT LIMITS TOTALS 10,502 C.Y. CONTRACTOR TO BE RESPONSIBLE FOR THE ACQUISITION OF 16,258 C.Y., INCLUDING ALL NECESSAY APPROVALS AND CLEARANCES

4. THE CROSS SECTIONS SHOW THE LOCATIONS OF 1277 C.Y. OF OF CHANNEL EXCAVATION. THE REMAINING 303 C.Y. SHALL BE REMOVED FROM THE CENTER OF THE CHANNEL JUST UPSTREAM OF THE BRIDGE

5. GRADATION FOR THIS ITEM SHALL BE WITHIN THE RANGES OF THE FOLLOWING SIEVE ANALYSIS:

SIEVE SIZE:	1½"	1"	¾"	½"	#4	#8	#200
% PASSING:	100	70-90	50-70	40-60	25-45	15-40	6-12

7. A. STRUCTURAL CONCRETE SHALL BE CLASS C
   B. COARSE AGGREGATE SHALL BE CLASS 2 DURABILITY LIMESTONE OR BETTER.
   C. TO BE PLACED IN CMP TIE DOWN, SEE DETAILS ON SHEET U.01.

8. STEEL REINFORCING TO BE PLACED IN CMP TIE-DOWN.

9. A. ARCH PIPE SHALL BE LAYED WITH ONE 36' PIECE IN THE MIDDLE AND A 34' SECTION ON EACH END.
   B. ALL BANDS SHALL BE 2' WIDE.
   C. SEE TIE-DOWN DETAILS ON SHEET U.01

10-12. A. ALL C.M.P. SHALL BE OF THE RIVETED TYPE CONSTRUCTION.
   B. ALL BANDS SHALL BE 2 FEET WIDE.

13-15. SEE TABULATION ON SHEET NO. B.01

16-17. TO BE PLACED ON BERM SLOPES AND DIKES AND OTHER AREAS AS DIRECTED BY THE ENGINEER.

19. SEE TRAFFIC CONTROL NOTE ON SHEET C.02

22. A. SEED MIXTURE SHALL BE AS PER SECTION 2601.04.C.
   B. FERTILIZER AS PER SECTION 2601.04.B.

23 - 24. SEE TABULATIONS ON SHEET B.01

GENERAL NOTES:

A. ALL SALVAGEABLE MATERIAL AND RUBBLE FROM THIS PROJECT SHALL BE REMOVED FROM THE ROAD RIGHT-OF-WAY TO A WASTE AREA PROVIDED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE COST OF WASTING THIS MATERIAL IS TO BE INCLUDED IN THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" NO PAYMENT WILL BE MADE FOR OVERHAUL.

B. THE CONTRACTOR SHALL VISIT THE CONSTRUCTION SITE TO ENSURE THAT HE IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE

C. THE CONTRACTOR'S WORK AND MATERIAL STORAGE AREA SHALL BE AT A LOCATION APPROVED BY THE ENGINEER

D. ANY TEMPORARY CREEK CROSSING SHALL INCLUDE ADEQUATE CULVERTS TO ACCOMMODATE LOW FLOWS. AFTER COMPLETION OF WORK ON THIS PROJECT, THE CROSSING SHALL BE REMOVED TO THE NATURAL CHANNEL CONTOURS. THE COST OF INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY CROSSINGS, INCLUDING CULVERTS, SHALL BE INCIDENTAL TO THE PROJECT.

E. IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THE PROJECT, THE OFFICE OF LOCATION AND ENVIRONMENT AND/OR THE DISTRICT OFFICE OF LOCAL SYSTEMS (I.D.O.T.) 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 FOR FURTHER TESTING CANNOT BE CONSIDERED AS FINAL UNTIL CONCURRENCE IS RECIEVED FROM THE OFFICE OF THE STATE HISTORIC PRESERVATION OFFICER.

PHONE NUMBERS:

IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF LOCATION AND ENVIRONMENT
515-239-1225

IOWA DEPARTMENT OF TRANSPORTATION, DISTRICT OFFICE OF LOCAL SYSTEMS
515-239-1635

F. BOONE COUNTY WILL PROVIDE THE BASIC CONSTRUCTION STAKING NECESSARY TO CONSTRUCT THE BRIDGE.

ROAD STANDARD PLANS

The following Standard Plans shall be considered applicable to construction work on this project.

Standard	Date	Standard	Date	Standard	Date
RC-17	4-18-06	RF-68	10-19-04	RL-3	10-31-95
RE-2B	4-03-01	RE-69A	10-19-04	RL-7	12-03-96
RE-7	4-15-03	RE-76	4-19-05	RI-14A(1)	4-19-05
RE-12A	10-19-04	RF-30A	10-18-05	RS-26A	10-18-05
RE-12B	10-19-04	RF-32	4-18-06		
RE-47	10-19-04	RF-33	3-28-95		
RE-48A	10-19-04				
RE-64A	4-19-05				

PROJECT TRAFFIC CONTROL NOTE

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 OF THE CURRENT STANDARD SPECS. TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

LICENSED PROFESSIONAL ENGINEER
DAVID T. ANTHONEY
8504
IOWA

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.

David J. Anthoney 2/15/06

David T. Anthoney *Date*

My license renewal date is Dec. 31, 2006

Pages or sheets covered by this seal:

C.01, B.01, D.01, E.01, E.02, Q.02, U.01, U.02, W.01, W.02, W.03, W.04, X.01, X.02, X.03

BOONE COUNTY
PROJECT NO. IBRC-C008(39)--8E-08
30'-6" x 151'-4" PPCB
ESTIMATE OF QUANTITIES
ESTIMATE REFERENCE INFORMATION
GENERAL NOTES

STA. 50+59.59 30° SKEW
SHEET C.01

STEEL BEAM GUARDRAIL AT BRIDGE END POST AND CONCRETE BARRIER

Refer to Standard Road Plans RE-48A, RE-64A, RE-64B, and RE-65B

108-8A
04-19-05

Location					Case	Standard Road Plan	Layout Lengths					Materials Required					Delineators and Object Markers					Bid Items				
No	Direction of Traffic (1)	End A=Approach T=Trailing	Side O = Outside M = Median	Station			STS (18.75)	VT1	VF	VT2	ET Terminal (37.5)	STS Thrie Beam (25.0)	STS Transition Section (6.25)	W Beam (2) VT1+VF+VT2+ET	Posts (3) 6'x 8'x 7' with 6'x 8" Spacer Blocks (6 or 7)	Posts (4) 6'x 8'x 6' with 6'x 8" Spacer Blocks	CRT Posts 6'x 8'x 6' with 6'x 8" Spacer Blocks (5)	Type	Delineator Single White D-1W	Object Marker Type 2 OM2-3YV	Object Marker Type 3 OM-3L	Object Marker Type 3 OM-3R	Installation of Guardrail STS+VT1+VF+VT2+ET	Anchorage and Terminal Systems RE-69A	RE-69B	RE-69C	RE-76	Remarks
							Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	No.	No.	No.	No.		No.	No.	No.	No.	Lin. Ft.	No.	No.	No.	No.	
1	E	A		50+59.59		RE-64A	18.75				37.5	25.0	6.25	37.5	-	3	3	2		4	1	1	56.25	1			1	W. END RT.
2	W	T		50+59.59		RE-64A	18.75				37.5	25.0	6.25	37.5	-	3	3							1			1	W. END LT.
3	E	T		50+59.59		RE-64A	18.75				37.5	25.0	6.25	37.5	-	3	3	2		4	1	1	56.25	1			1	E. END RT.
4	W	A		50+59.59		RE-64A	18.75				37.5	25.0	6.25	37.5	-	3	3						56.25	1			1	E. END LT.

(1) Line(s) to which the obstacle is adjacent.
(2) Includes (1) special 12.5 section of W Beam. see RE-76.
(3) (6) 6'x 8'x 7' posts required when RE-69C is specified.
(4) The last two posts of the RE-76 Terminal section are included as part of that bid item.

TABULATION OF SAFETY CLOSURES

108-13A
10-28-97

Refer to Section 2518 of the Standard Specifications

STATION	CLOSURE TYPE Road Qty.	CLOSURE TYPE Hazard Qty.	REMARKS
41+00	1		W. END
51+35.26		1	W. END BR.
49+83.92		1	E. END BR.
57+00	1		E. END
144+00	1		S. END
258+00	1		N. END

TABULATION OF CROSS ROAD PIPES

104-3
MODIFIED

Location	Type	Size Inches	Kind of Pipe	Length New Const. Lin. Ft.	Design Cover (ft)	Flow Line Elevations Lt.	Flow Line Elevations Rt.	Flow Line Elevations Other	Dimensions Lin. Ft. Total Lt.	Dimensions Lin. Ft. Total Rt.	Class 20 Cu. Yds.
54+02		42"	CMP	86	8'-0"	972.0	971.0		42	44	25
147+18		142" x 91"	CMP ARCH	104	6'-6"	971.0	971.5		52	52	159
254+53		36"	CMP	70	3'-4"	971.0	971.5		36	34	47

TABULATION OF SILT FENCES FOR DITCH CHECKS

100-18
11-10-83

LOCATION STATION	SIDE	LIN FT	REMARKS
43+00	LT.	18	
43+00	RT.	17	
45+00	LT.	20	
45+00	RT.	18	
47+00	LT.	18	
47+00	RT.	24	
53+50	RT.	18	
55+00	LT.	15	
56+00	LT.	17	
56+00	RT	15	
145+00	LT.	17	
145+00	RT.	80	
146+75	LT.	15	
146+75	RT.	80	
147+25	LT	15	
147+25	RT.	15	
255+50	LT.	17	
255+50	RT	17	

POINTS OF ACCESS (RL-7)

Refer to Detail Cross-Sections For Pipe Culvert Details Refer to RF-30A RF-30B and RF-30C

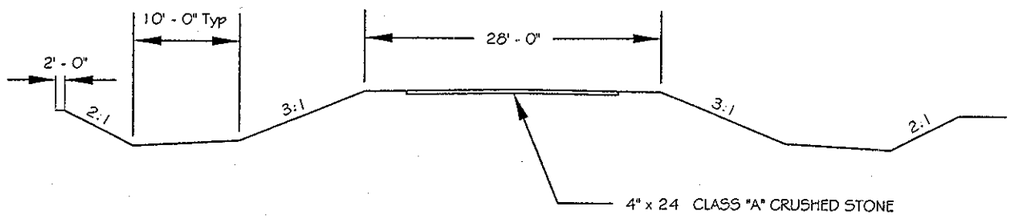
102-1
10-21-03

Location (RL-7) Station	Side	(W)	Type	(H)	Size (Inches)	Length LT (Lin. Ft.)	Length RT (Lin. Ft.)	Apron (No.)	Surface Material (Tons)
41+09 U.A.C.	RT.								
55+00	RT.	20	C	2.5	24	23	31		

TABULATION OF SILT FENCES

100-17
11-10-83

STATION TO STATION		SIDE	LIN FT	REMARKS
48+80	50+50	RT.	170	
51+50	53+00	RT.	150	
146+00	147+00	LT.	100	



TYPICAL CROSS SECTION

ROADWAY TOP TO HAVE 3% CROWN

BOONE COUNTY
PROJECT NO IBRC-C008(39)--8E-08

TABULATIONS, TYPICAL CROSS SECTION.

HARRISON TWP.
T. 85 N. R 25 W.
SECTION 9

HARRISON TWP.
T. 85 N. R 25 W.
SECTION 10

- RIP RAP AREAS

STA 50+59.59
CONTRACTOR TO REMOVE EXISTING
18' X 76' MARSH ARCH BRIDGE
AND REPLACE WITH 30'-6" x 151'-4" PPCB
SKEWED 30° R A

STA 48+75
CONTRACTOR TO FURN. & PLACE
36" Ø X 84' CMP LETDOWN PIPE @ WINGDIKE
INLET ELEV. = 968.5
OUTLET ELEV. = 968.0
CLASS 20 EX = 87 C.Y.

STA 254+53
24" Ø X 36' CMP
CONTRACTOR TO REMOVE
AND REPLACE WITH
36" Ø X 70' CMP
SEE TAB 104-3

STA 51+58
CONTRACTOR TO FURN. & PLACE
36" Ø X 92' CMP LETDOWN PIPE @ WINGDIKE
INLET ELEV. = 968.5
OUTLET ELEV. = 968.0
CLASS 20 EX = 95 C.Y.

DOROTHY CLARK, LE

45+00

50+00

55+00

60+00

SQUAW CREEK

CULTIVATED

N.E. CORNER SEC. 16-85-25 FD. IRON PIN STA. 53+00 Δ = 0°53'42" LT

DALE K. ANDERSON
KAY K. ANDERSON
CULTIVATED
COUNTY DRAIN #164

MICHAEL L. DESHER

DALE K. ANDERSON
KAY K. ANDERSON
CULTIVATED

48+10 70' LT CONTRACTOR TO PLACE DIKE IN WETLAND

N. 1/4 CORNER SEC. 16-85-25 FD. IRON PIN STA. 26+56.53

YARD

PASTURE

B.O.P.
STA 41+00

E.O.P.
STA 57+00

N. 1/4 CORNER SEC. 15-85-25 FD. IRON PIN STA. 78+96.42

10' x 7' x 22' RCB
STA. 146+76
154 RT.

P.I. STA. 146+62.15
℄ Δ = 53°18'00" RT.
D = 19°00'00"
T = 151.34'
L = 280.53'
R = 301.56'
E = 35.84'

STA 147+18
CONTRACTOR TO PLACE
142" x 91" x 104' CMP ARCH
ALIGN WITH CHANNEL
SEE TAB 104-3

EUGENE MACKEY

PASTURE

STA 54+02
4' X 2' X 26' RCB
CONTRACTOR TO REMOVE
AND REPLACE WITH
42" Ø X 86' CMP
SEE TAB 104-3

KENNETH J. MICHEL
MARIAN L. MICHEL

SECTION 16

P.I. STA. 143+69.25
℄ Δ = 39°31'51" LT.
D = 13°22'50"
T = 153.87'
L = 295.43'
R = 428.20'
E = 26.80'

CULTIVATED

12.0 TILE OUTLET CMP
ELEV 968.47

SECTION 15

SCALES:
1" = 100' HOR
1" = 10' VER

BENCH MARKS:
BM #2 = 50+11.7' LT. NW COR. HANDRAIL EL. 982.17
BM #3 = 60+60.33' LT. 60d SPIKE IN P. POLE EL. 984.42

CUT		50	230	489	567	476	637	678	4102	0		273	404	1225	220	652	500		
FILL +35%		50	105	85	50	153	403	915	8220	3386		3091	2806	5070	1840	578	50		
	1010																		1010
	1000																		1000
	990																		990
	980																		980
	970																		970
	960																		960
	950																		950
	940																		940
		982.70	980.58	978.60	977.62	977.77	979.06	981.36	984.15	985.38	985.77	985.47	983.61	983.05	984.11	986.77			

VPC STA = 43+30.00
VPC EL. = 979.52

VPT STA = 47+50.00
VPT EL = 980.14
VPC STA = 47+80.00
VPC EL = 980.87

VPT STA = 48+80.00
VPT EL = 983.60

VPI STA = 49+30.00
VPI EL = 985.11
100.00' V.C.

VPI STA = 51+71.55
VPI EL = 986.05
71.90' V.C.
0.3892%

VPC STA = 52+60.00
VPC EL = 984.28

VPI STA = 54+68.36
VPI EL = 980.11
416.72' V.C.

VPT STA = 56+76.72
VPT EL = 989.91

-2.1200%
2.4286%
3.0700%
-2.0013%
4.7013%

VPI STA = 45+50.00
VPI EL = 975.28
400.00' V.C.

VPI STA = 48+30.00
VPI EL = 982.08
100.00' V.C.

VPC STA = 48+80.00
VPC EL = 983.60

VPT STA = 49+80.00
VPT EL = 985.30

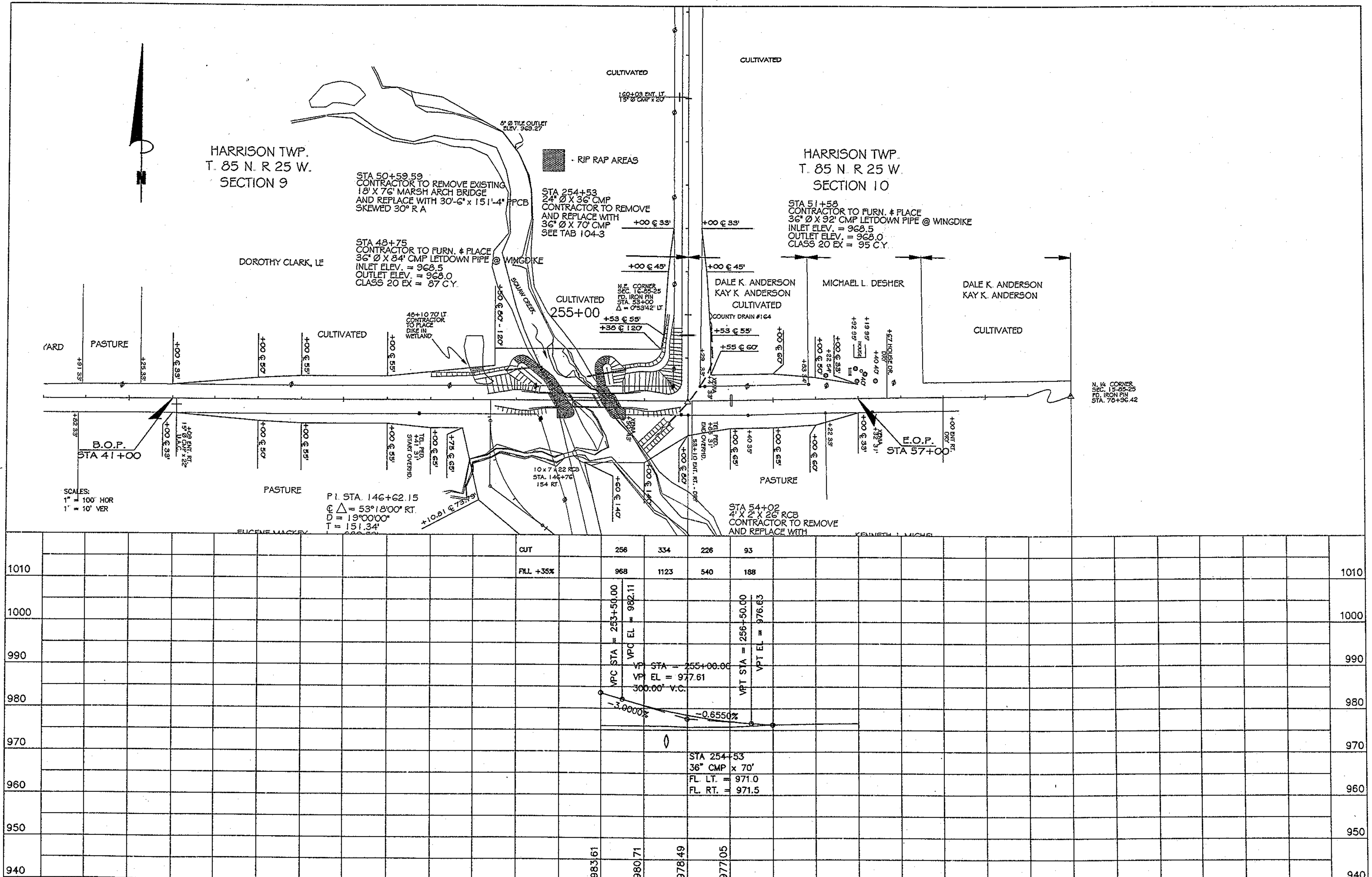
VPC STA = 51+35.66
VPC EL = 985.91

VPT STA = 52+07.50
VPT EL = 985.33

STA. 54+02
42" X 86' CMP
FL. LT. = 972.0
RT. = 971.0

35+00 40+00 45+00 50+00 55+00 60+00

IBRC-C008(39)--8E-08 SHEET E.01


HARRISON TWP.
T. 85 N. R 25 W.
SECTION 9
HARRISON TWP.
T. 85 N. R 25 W.
SECTION 10
CULTIVATED
RIP RAP AREAS
STA 50+59.59
CONTRACTOR TO REMOVE EXISTING 18' X 76' MARSH ARCH BRIDGE AND REPLACE WITH 30'-6" x 151'-4" PPCB SKEWED 30° R A
STA 254+53
24" Ø X 36' CMP CONTRACTOR TO REMOVE AND REPLACE WITH 36" Ø X 70' CMP SEE TAB 104-3
STA 48+75
CONTRACTOR TO FURN. & PLACE 36" Ø X 84' CMP LETDOWN PIPE @ WINGDIKE
INLET ELEV. = 968.5
OUTLET ELEV. = 968.0
CLASS 20 EX = 87 C.Y.
STA 51+58
CONTRACTOR TO FURN. & PLACE 36" Ø X 92' CMP LETDOWN PIPE @ WINGDIKE
INLET ELEV. = 968.5
OUTLET ELEV. = 968.0
CLASS 20 EX = 95 C.Y.
DOROTHY CLARK, LE
DALE K. ANDERSON
KAY K. ANDERSON
MICHAEL L. DESHER
SQUAW CREEK
255+00
COUNTY DRAIN #164
PASTURE
B.O.P.
STA 41+00
E.O.P.
STA 57+00
N. 1/4 CORNER SEC. 15-85-25 FD. IRON PIN STA. 70+96.42
SCALES:
1" = 100' HOR
1" = 10' VER
P.I. STA. 146+62.15
℄ Δ = 53°18'00" RT.
D = 19°00'00"
T = 151.34'
10 x 7 x 22 RCB STA. 146+76 154 RT.
STA 54+02
4' X 2' X 26' RCB
CONTRACTOR TO REMOVE AND REPLACE WITH
CUT 256 334 226 93
FILL +35% 968 1123 540 188
VPC STA = 253+50.00
VPC EL = 982.11
VPI STA = 255+00.00
VPI EL = 977.61
300.00' V.C.
VPT STA = 256+50.00
VPT EL = 976.63
-3.0000%
-0.6550%
STA 254+53
36" CMP x 70'
FL. LT. = 971.0
FL. RT. = 971.5
1010 1000 990 980 970 960 950 940
983.61 980.71 978.49 977.05
255+00

LOG OF BORING NO. 1

Page 1 of 2

OWNER: BOONE COUNTY ENGINEER

SITE: 120TH STREET OVER SQUAW CREEK, BOONE COUNTY, IOWA

PROJECT: REPLACEMENT BRIDGE

Approx. Boring Location: West Abutment
Station 49+84,
8' North of Centerline.

Approx. Surface Elev.: 99.5 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N "BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	0.8 9 Inches Gravel at Surface 98.5 FILL: VERY SANDY LEAN CLAY With Sand Layers Dark Brown				HS					
		5		1	SS	12	8			
					HS					
	7.5 92 FINE TO MEDIUM SAND, Trace Gravel (IDOT CLASSIFICATION: SILTY SAND) Brown Medium Dense		SP	2	SS	16	11			
		10			HS					
	14 85.5 SANDY LEAN CLAY, Trace Gravel and Sand Seams (IDOT CLASSIFICATION: FIRM GLACIAL CLAY) Light Gray Stiff	15	CL	3	SS	18	10			3000*
					HS					
		20	CL	4	SS	18	11			3500*
					HS					
	24 75.5 SANDY LEAN CLAY, Trace Gravel and Sand Seams (IDOT CLASSIFICATION: VERY FIRM GLACIAL CLAY) Gray Very Stiff to Hard	25	CL	5	SS	18	19			9000*
					HS					
		30	CL	6	SS	18	23			9000*
					HS					

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

*Hand Penetrometer
**140 Lbs Automatic SPT Hammer

WATER LEVEL OBSERVATIONS, ft
WL ▽ 14 WD ▽ 8 AB
WL ▽ ▽
WL Cl @ 54' AB

Terracon

BORING STARTED 12-13-04
BORING COMPLETED 12-13-04
RIG 84 FOREMAN JG
APPROVED PJF JOB # 08045163

LOG OF BORING NO. 2

Page 1 of 2

OWNER: BOONE COUNTY ENGINEER

SITE: 120TH STREET OVER SQUAW CREEK, BOONE COUNTY, IOWA

PROJECT: REPLACEMENT BRIDGE

Approx. Boring Location: 8' West of West Pier
Station 50+23, 4' South of Centerline.

Approx. Surface Elev.: 100 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N "BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	1 12 Inches Gravel at Surface 99 FILL: VERY SANDY LEAN CLAY With Sand Layers Dark Brown				HS					
		5		1	SS	18	4			
					HS					
		10		2	SS	18	5			
					HS					
	Concrete Rubble Noted From About 13 to 15'									
	15 85 SANDY LEAN CLAY, Trace Gravel and Sand Seams (IDOT CLASSIFICATION: FIRM SILTY GLACIAL CLAY) Light Gray Stiff	15	CL	3	SS	18	6			4000*
					HS					
		20	CL	4	SS	18	10			6000*
					HS					
		25	CL	5	SS	18	13			6000*
					HS					
	29 71	30	SP	6	SS	18	44			9000*
					HS					

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

*Hand Penetrometer
**140 Lbs Automatic SPT Hammer

WATER LEVEL OBSERVATIONS, ft
WL ▽ 15 WD ▽ 26 AB
WL ▽ ▽
WL Cl @ 46' AB

Terracon

BORING STARTED 12-14-04
BORING COMPLETED 12-14-04
RIG 84 FOREMAN JG
APPROVED PJF JOB # 08045163

LOG OF BORING NO. 1

Page 2 of 2

OWNER: BOONE COUNTY ENGINEER

SITE: 120TH STREET OVER SQUAW CREEK, BOONE COUNTY, IOWA

PROJECT: REPLACEMENT BRIDGE

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N "BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	SANDY LEAN CLAY, Trace Gravel and Sand Seams (IDOT CLASSIFICATION: VERY FIRM GLACIAL CLAY) Gray Very Stiff to Hard	35	CL	7	SS	18	24			9000*
					HS					
		40	CL	8	SS	18	27			9000*
					HS					
		45	CL	9	SS	18	23			9000*
					HS					
		50	CL	10	SS	18	19			8000*
					HS					
		55	CL	11	SS	18	20			7000*
					HS					
	60.5 39 BOTTOM OF BORING	60	CL	12	SS	18	19			6500*

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

*Hand Penetrometer
**140 Lbs Automatic SPT Hammer

WATER LEVEL OBSERVATIONS, ft
WL ▽ 14 WD ▽ 8 AB
WL ▽ ▽
WL Cl @ 54' AB

Terracon

BORING STARTED 12-13-04
BORING COMPLETED 12-13-04
RIG 84 FOREMAN JG
APPROVED PJF JOB # 08045163

LOG OF BORING NO. 2

Page 2 of 2

OWNER: BOONE COUNTY ENGINEER

SITE: 120TH STREET OVER SQUAW CREEK, BOONE COUNTY, IOWA

PROJECT: REPLACEMENT BRIDGE

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N "BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
	SANDY LEAN CLAY, Trace Gravel and Sand Seams (IDOT CLASSIFICATION: VERY FIRM GLACIAL CLAY) Gray Very Stiff to Hard Sand Seam in Sample #6	35	CL	7	SS	18	25			9000*
					HS					
		40	CL	8	SS	18	23			9000*
					HS					
		45	CL	9	SS	18	19			9000*
					HS					
		50	CL	10	SS	18	24			9000*
					HS					
		55	CL	11	SS	18	20			6500*
					HS					
	60.5 39.5 BOTTOM OF BORING	60	CL	12	SS	18	19			7000*

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

*Hand Penetrometer
**140 Lbs Automatic SPT Hammer

WATER LEVEL OBSERVATIONS, ft
WL ▽ 15 WD ▽ 26 AB
WL ▽ ▽
WL Cl @ 46' AB

Terracon

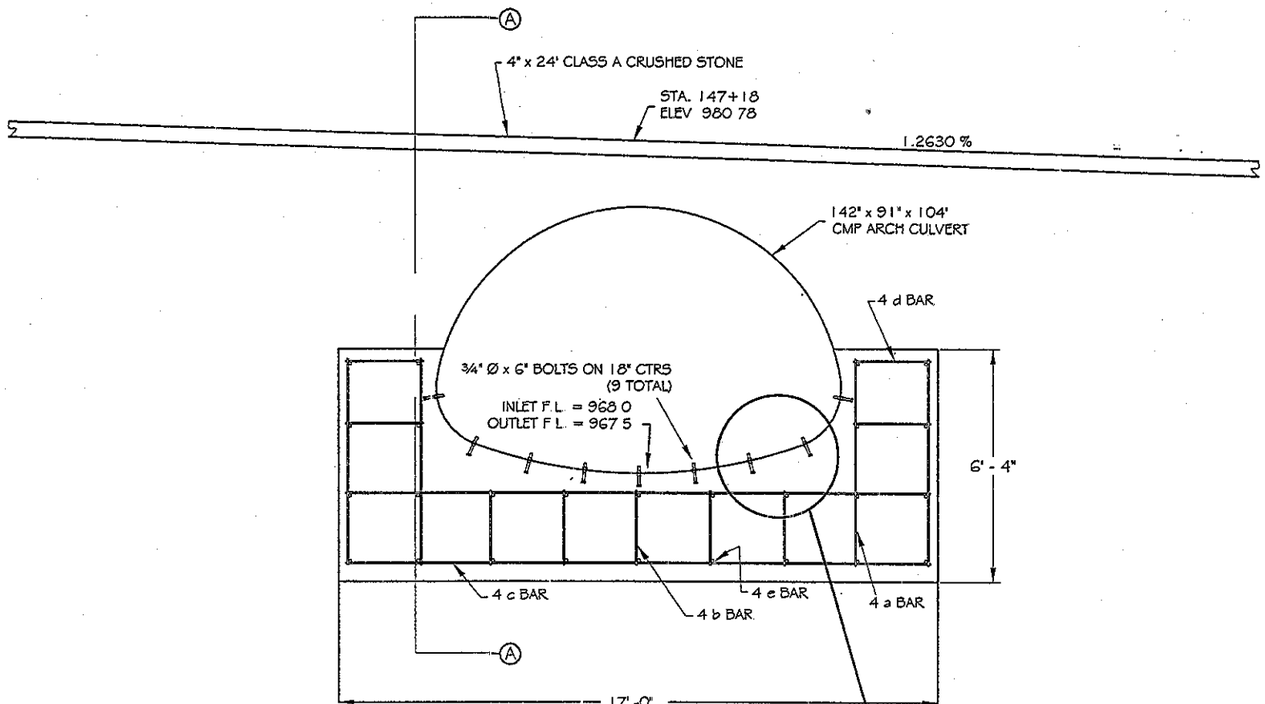
BORING STARTED 12-14-04
BORING COMPLETED 12-14-04
RIG 84 FOREMAN JG
APPROVED PJF JOB # 08045163

BOONE COUNTY
PROJECT NO. IBRC-C008(39)--8E-08

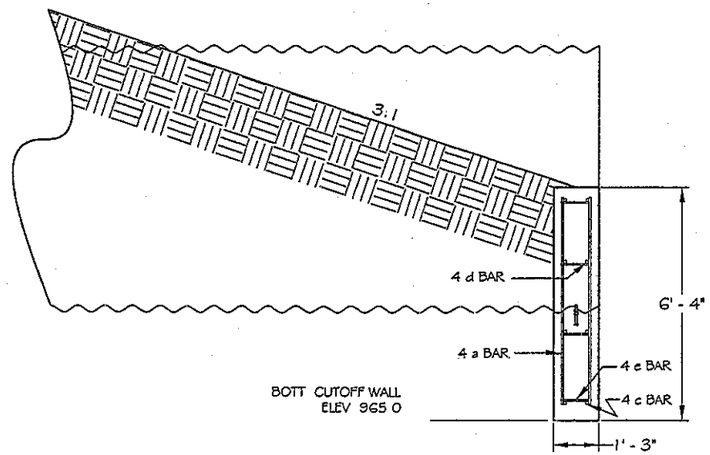
151'-4" x 30'-6" PPCB

SOIL BORING LOGS

SHEET Q 01

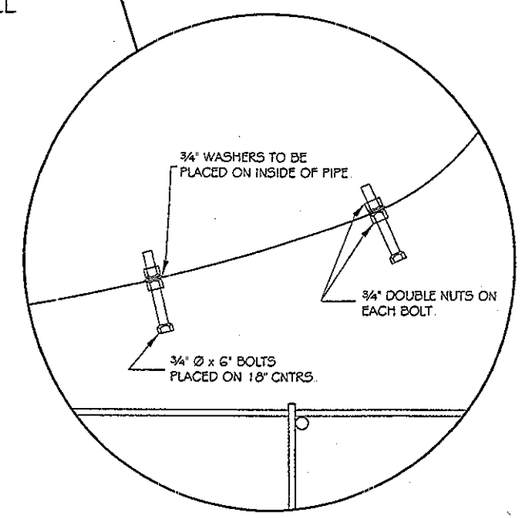


INLET CUTOFF WALL



SECTION A-A

BAR LIST			
BAR NO.	SHAPE	LENGHT	QTY.
4a	———	5' - 9"	8
4b	———	2' - 0"	10
4c	———	16' - 6"	4
4d	———	2' - 0"	8
4e	———	0' - 10"	26



ANCHOR BOLT DETAIL

PROJECT NO. IBRC-C008(39)--8E-08

CMP ARCH CULVERT TIE-DOWN DETAILS, REINFORCING BAR LIST,

SHEET U.01

POLLUTION PREVENTION PLAN

All contractors/subcontractors shall conduct their operations in a manner that minimizes erosion and prevents sediments from leaving the road right-of-way The prime contractor shall be responsible or compliance and implementation of the Pollution Prevention Plan (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.

1. SITE DESCRIPTION

This Pollution Prevention Plan (PPP) is for the construction of an 30'-6" x 151'-4" PPCB and associated grading operations. This bridge is located over Squaw Creek on 120th St , near the N.E. Corner of Section 16-85-25 approximately 14 miles North East of the city of Boone, Iowa.

This PPP covers approximately 7 acres, with an estimated 7 acres being disturbed.

The PPP is located in an area of 5 soil associations (Webster, Storden, Ridgeport, Coland, and Coland Channeled). The estimated average NRCS runoff curve number for this PPP after completion will be 73.

Refer to the project plans for locations of typical slopes, ditch grades, and major structural and non-structural controls. A copy of this plan will be on file at the Boone County Engineer's Office Runoff from this work will flow into Squaw Creek.

POTENTIAL SOURCES OF POLLUTION:
Site sources of pollution generated as a result of this work relate to silts and sediment which may be transported as a result of a storm event However, this PPP provides conveyance for other (non-project related) operations. These other operations have storm water runoff, the regulation of which is beyond the control of this PPP. Potentially, this runoff can contain various pollutants related to site-specific land uses. Examples are:

Rural Agricultural Activities:
Runoff from agricultural land use can potentially contain chemicals including herbicides, pesticides, fungicides and fertilizers.

Commercial and Industrial Activities:
Runoff from commercial and industrial land use may contain constituents associated with the specific operation. Such operations are subject to potential leaks and spills which could be commingled with runoff from the facility. Pollutants associated with commercial and industrial activities are not readily available since they are typically proprietary

2. CONTROLS

At locations where runoff can move offsite, silt fence shall be placed along the perimeter of the areas to be disturbed prior to beginning grading, excavation or clearing and grubbing operations. Vegetation in areas not needed for construction shall be preserved As areas reach their final grade, additional silt fences, silt basins, intercepting ditches, sod flumes, letdowns, bridge end drains and earth dikes shall be installed as specified in the project plans and/or required as required by the Boone County Engineer. This will include using silt fence as ditch checks and to protect intakes. Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days.

This work shall be done in accordance with Section 2602 of the Standard Specifications. If the work involved is not applicable to any contract items, the work shall be paid for according to Article 1109.03 paragraph B.

As the work progresses, additional erosion control items may be required as determined by the Engineer after field investigation. Permanent perennial vegetation shall be placed by Boone County after construction during the next permanent seeding timeframe.

3. OTHER CONTROLS

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 laws, rules or regulations shall apply.

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 arise, they will be handled according to all federal, state and local regulations in effect at the time

4. MAINTENANCE

The contractor is required to maintain all temporary erosion control measures in proper working order, including cleaning, repairing or replacing them throughout the contract period. Cleaning of silt control devices shall begin when the features have lost 50% of their capacity

5. INSPECTIONS

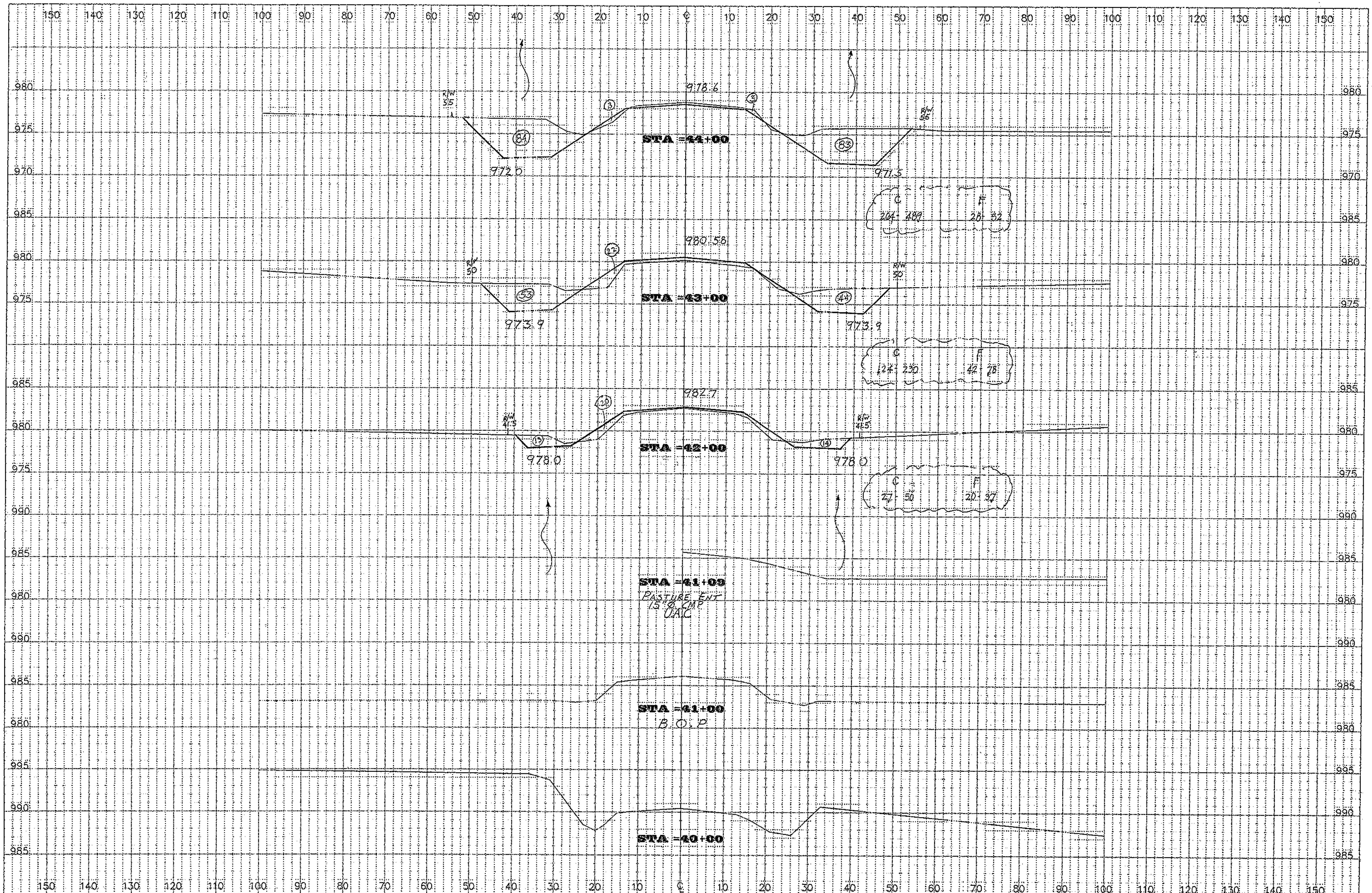
Inspections shall be made jointly by the contractor and the contracting authority every seven calendar days and after each rain event that is one-half inch or greater. The contractor shall immediately begin corrective action on all deficiencies found. The findings of this inspection shall be recorded in the project diary. This PPP may be revised based on the findings of the inspection. The contractor shall implement all revisions. All corrective actions shall be completed within 3 calendar days of the inspection.

6. NON-STORM DISCHARGES

This includes subsurface drains, slope drains and bridge end drains. The velocity of the Discharge from these features may be controlled by the use of patio blocks, Class A stone or erosion stone.

BOONE COUNTY
PROJECT NO. IBRC-C008(39)--8E-08

POLLUTION PREVENTION PLAN



STA =44+00
978.6
972.0
971.5
STA =43+00
980.58
973.9
973.9
STA =42+00
982.7
978.0
978.0
STA =41+09
PASTURE ENT
15" Ø CMP
U.A.C.
STA =41+00
B.O.P.
STA =40+00

* RWN FULL FOR 68

983.8

TOP OF DIKE 981.2

674

RW 120

36"Ø CMP
LET DOWN
INLET 969.5
OUTLET 968.0

67

968.5

STA =49+00

49+91
EXISTING SIDE RD.
TO BE REMOVED

C		F	
0	0	1348	2197

DIKE FT
FILL = 400 C.Y.

MAIN LINE

SIDEROAD

C		F		C		F	
101	335	926	1715	1514	2804	3622	6708

STA 48+40
NEW SIDE RD.
SEE SIDE RD.
SECTIONS FOR
INFORMATION

981.4

252

48+10
TO ET
WETLAND
DIKE

RW 75

64

969.0

STA =48+00

70

970.2

C		F	
345	676	366	678

RW 65

979.1

114

170

969.5

STA =47+00

105

970.4

C		F	
344	637	161	298

977.8

47

RW 55

55

970.0

STA =46+00

63

970.2

C		F	
257	476	61	113

977.6

40

4

RW 55

59

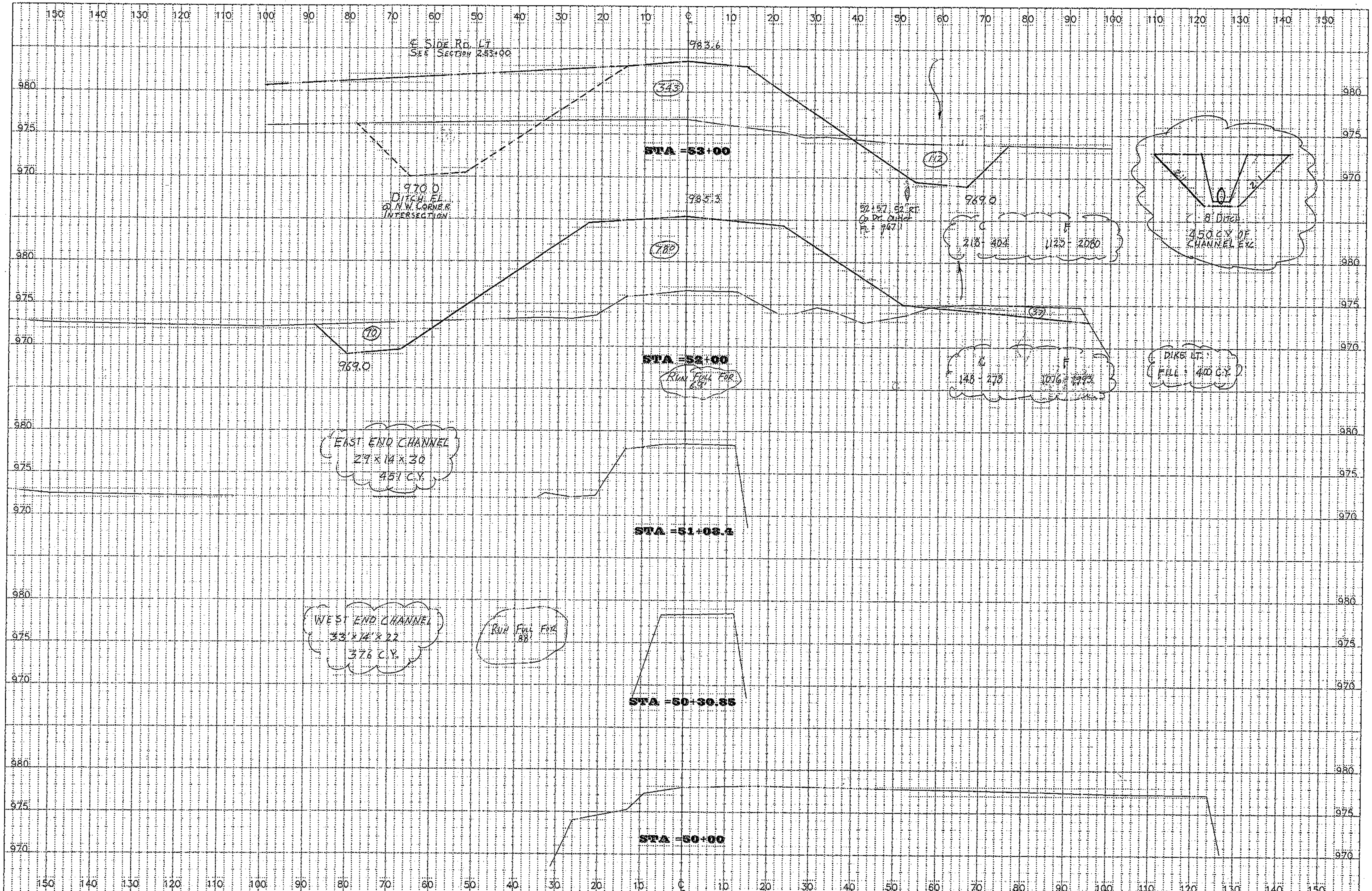
970.5

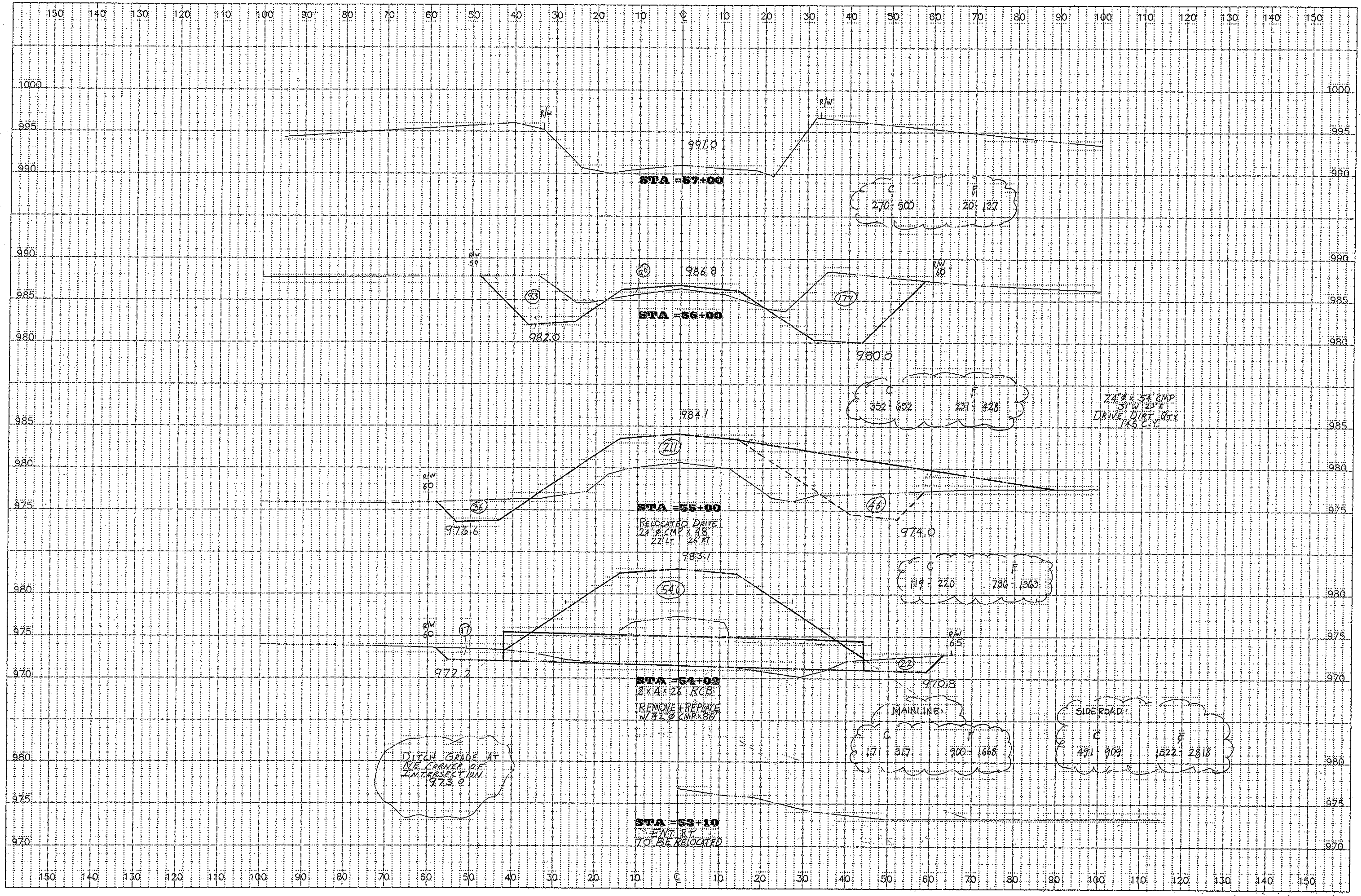
STA =45+00

80

977.0

C		F	
306	567	20	37


℄ SIDE RD. LT
SEE SECTION 253+00
983.6
343
STA =53+00
970.0
DITCH F.L.
@ N.W. CORNER
INTERSECTION
112
969.0
52+57, 52' RT.
@ PC OUTLET
F.L. 967.1
C 218 404
F 1123 2080
8' DITCH
450 C.Y. OF
CHANNEL EXC.
983.3
780
70
969.0
37
STA =52+00
RUN FULL FOR
C 148 275
F 1076
DIKE LT.
FILL 40 C.Y.
EAST END CHANNEL
27 x 14 x 30
451 C.Y.
STA =51+08.4
WEST END CHANNEL
33' x 14' x 22
376 C.Y.
RUN FULL FOR
88'
STA =50+30.85
STA =50+00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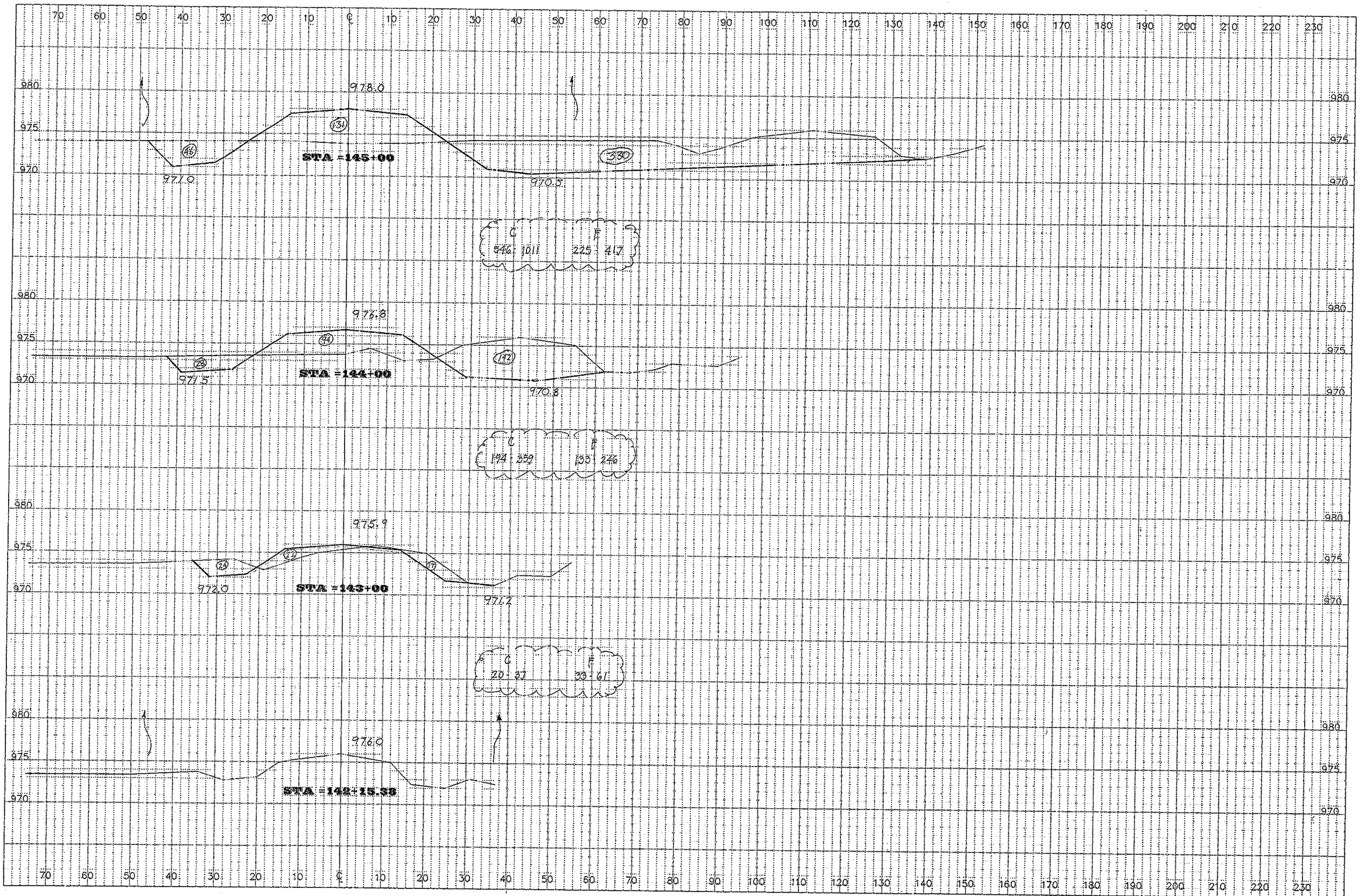
991.0
270 500
20 137
STA =56+00
986.8
982.0
980.0
352 652
231 428
24"Ø x 54' CMP
Drive Dirt Qty
STA =55+00
984.1
973.6
974.0
Relocated Drive
24"Ø CMP x 48'
STA =54+02
983.1
972.2
970.8
2 x 4 x 28' RCB
Remove + Replace
w/ 42"Ø CMP x 80'
119 220
736 1363
Mainline
171 317
900 1668
Side Road
491 909
1522 2818
Ditch Grade At
NE Corner of
Intersection
973.0
STA =53+10
ENT. RT.
To Be Relocated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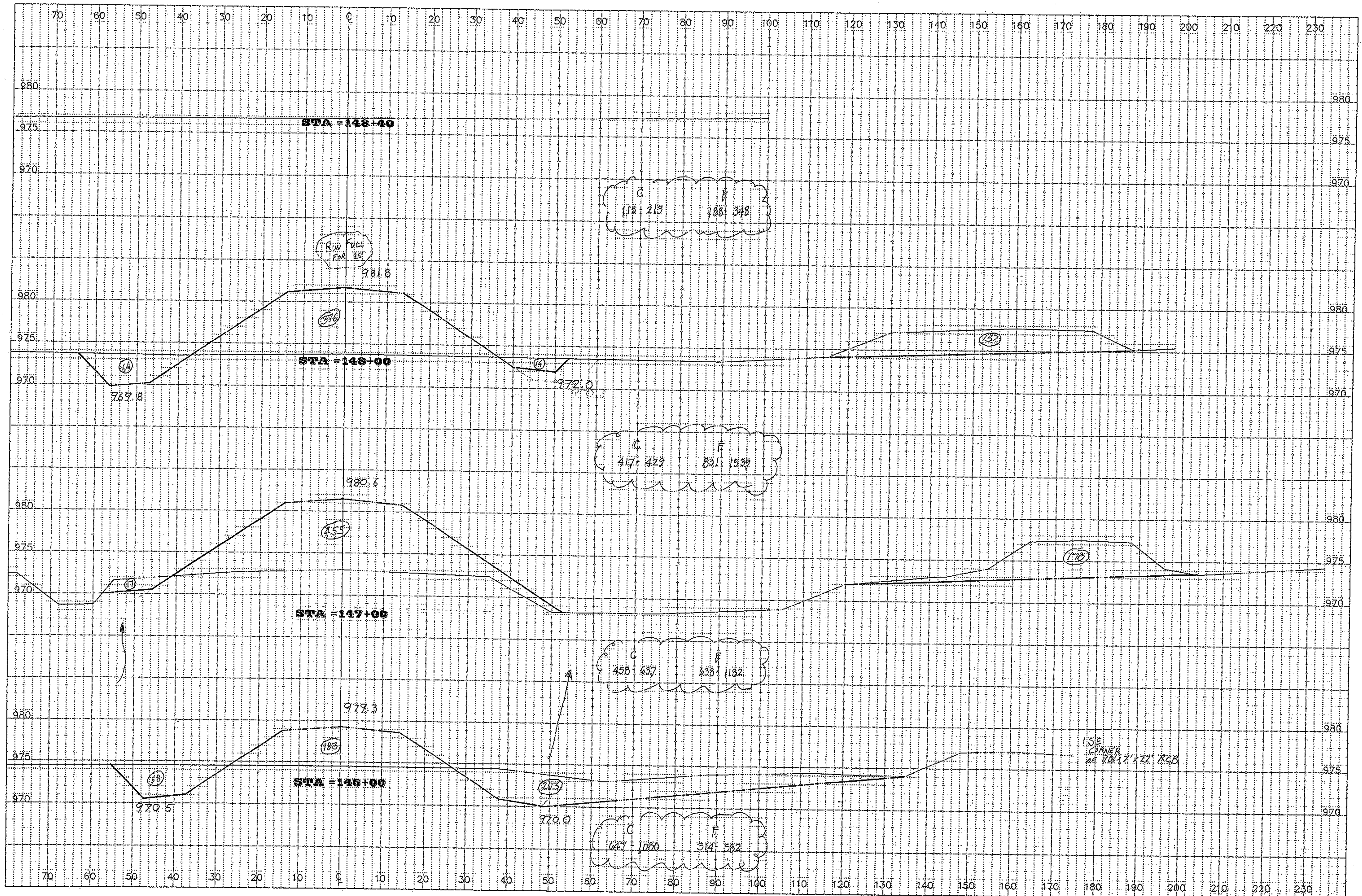
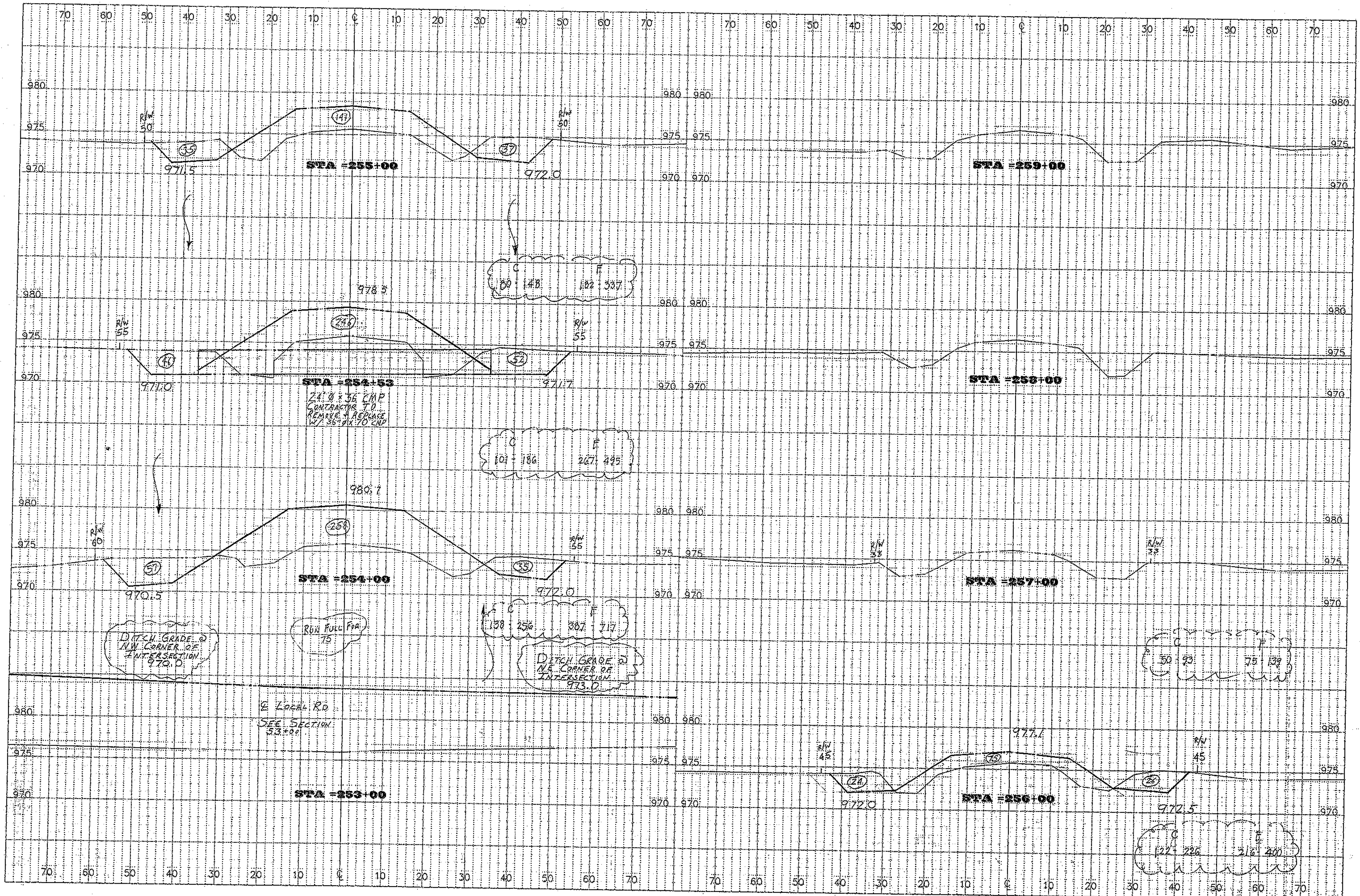
980
975
970
978.0
977.0
STA =145+00
970.5
C 646 1011
F 225 417
976.8
977.5
STA =144+00
970.8
C 194 359
F 135 246
975.9
972.0
STA =143+00
977.2
C 20 37
F 33 61
976.0
STA =142+15.38


STA =148+40
STA =148+00
STA =147+00
STA =146+00
C
115 213
F
188 348
Rud Fill For 25'
981.8
769.8
972.0
C
417 429
F
831 1539
980.6
C
458 637
F
638 1182
979.3
970.5
970.0
C
647 1080
F
314 582



STA =255+00
971.5
972.0
C 89 148
F 182 337
STA =259+00
978.5
STA =254+53
971.0
971.7
24"Ø x 36' CMP
CONTRACTOR TO
REMOVE & REPLACE
W/ 36"Ø x 70' CMP
C 101 186
F 267 495
STA =258+00
980.7
STA =254+00
970.5
972.0
C 138 256
F 387 717
RGN FULC FOR 75
DITCH GRADE @
N.W. CORNER OF
INTERSECTION
970.0
DITCH GRADE @
N.E. CORNER OF
INTERSECTION
973.0
STA =257+00
C 50 93
F 75 139
℄ LOCAL RD
SEE SECTION
53+00
STA =253+00
977.1
972.0
972.5
STA =256+00
C 122 226
F 216 400