

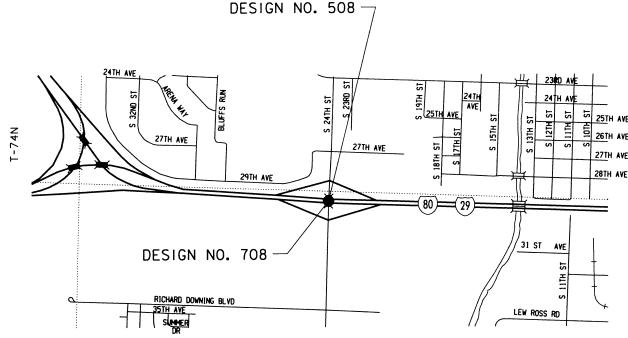
PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM POTTAWATTAMIE COUNTY

BRIDGE REPLACEMENT-STEEL GIRDER ON 24TH STREET OVER 1-80

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.



R-44W LOCATION MAP (PART OF CITY OF COUNCIL BLUFFS)

ALL WORKING DRAWINGS INCLUDING SHOP DRAWINGS AND FALSEWORK DRAWINGS WILL BE REVIEWED BY: HDR ENGINEERING BRIDGE SECTION 8404 INDIAN HILLS DRIVE OMAHA, NE 68114

INDEX OF SEALS SHEET NO. NAME STRUCTURAL DESIGN HUSSEIN H. KHALIL ROBERT L. STANLEY SOILS DESIGN SPS.01

TITLE SHEET 2-3 GENERAL NOTES BRIDGE ESTIMATE SHEET 5-63 BRIDGE DESIGN NO. 508 TERRACE WALLS DESIGN NO. 708 1-18 SPS.01-SPS.03 SOIL PROFILE SHEET

PROJECT NUMBER

BRF1M-080-1(308)2--05-78

R.O.W. PROJECT NUMBER

PROJECT IDENTIFICATION NUMBER

04-78-029-010-02

INDEX OF SHEETS

NO.

DESCRIPTION

TOTAL SHEETS

ENGLISH STANDARD BRIDGE PLANS STANDARD ISSUED REVISED

TRAFFIC ESTIMATE (24TH STREET)

A.A.D.T. = 15,000 VPD (2004) A.A.D.T. = 24,400 VPD (2030) D.H.V. = 2,930 VPH (2030) 19% TRUCKS

STANDARD ROAD **PLANS** STANDARD ROAD PLANS ARE LISTED

ON SHEET 5

SEE REVISION SHEET IA SEE REVISION SHEET IA SEE REVISION SHEET IA

11-20-07 01-18-08 01-23-08

STRUCTURAL DESIGN



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

Hussein H. Khalil

My license renewal date is December 31, 2008

Pages or sheets covered by this seal: SHEETS I THRU 81 OF 81

PROJECT DIRECTORY NAME: P8921997 / 7802901004

DESIGN TEAM: HDR

IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES

FILE NO. 30169

POTTAWATTAMIE COUNTY

PROJECT NUMBER BRFIM-080-1(308)2--05-78

SHEET NUMBER I

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	LISTING OF PROJECT REVISIONS						
DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS		
11-20-07	IA	REVISION SHEET ADDED.					
11-20-07	65-76	WALL ELEVATIONS REVISED. REASON: GRADING CHANGES TO ACCOMMODATE 3'BERM IN FRONT OF ABUTMENTS.					
11-20-07	80 & 81	SUBDRAIN ELEVATIONS REVISED. REASON: REVISED WALL ELEVATIONS.					
01-18-08	4 & 52	ADDED STEEL PEDESTRIAN HAND RAILING TO THE EAST SEPERATION BARRIER REASON: PER IGDOT'S REQUEST					
01-23-08	4, 5,9 & 11	REVISED QUANTITY ITEMS NO.4 & 7 REVISED LOW STEP ELEVATIONS AT PIER NO.1 REVISED PIER STEP ELEVATIONS AND HEIGHTS REVISED PIER STEP REINFORCING AND QUANTITIES REASON: ACTUAL DISC BEARING HEIGHTS ARE SHALLOWER THAN ASSUMED.					
					POTTAWATTAMIE COUNTY DESIGN NOS. 508 & 708		
					REVISION SHEET IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION		
DESIGN TEAM	M HHK/ /ACB			POTTAWATTAMI	E COUNTY PROJECT NUMBER BRFIM-080-1(308)205-78 SHEET NUMBER IA		

ESTIMATED BRIDGE QUANTITIES						
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY	
Ι	2401-6745625	RMVL OF EXIST BRIDGE	LS	1.0		
2	2402-2720000	EXCAVATION, CL 20	CY	1031.0		
3	2403-0100010	STRUCT CONC (BRIDGE)	CY	96.2		
4	2403-7000210	HIGH PERFORMANCE STRUC CONC	CY	(1088.2	1089.4)	
5	2403-7000220	TRIAL BATCH HIGH PERFORMANCE STRUC CONC	LS	1.0		
6	2403-7302000	COLORED SEALER COAT - STRUCT CONC	SY	1711.0	~~~	
7	2404-7775005	REINFORC STEEL, EPOXY COATED	LB	(+64433-	164537 }	
8	2408-7800000	STRUCTURAL STEEL	LB	1485189		
9	2413-0698110	BRIDGE FLOOR SURF	SY	3072		
10	2413-1200000	STEEL EXTRUSION JOINT W/NEOPRENE	LF	211.5		
11	2414-6425410	CONC BARRIER, REINFORCED, SEPARATION	LF	745.0		
12	2414-6425420	CONC BARRIER, PARAPET	LF	708.5		
13	2414-6445100	STRUCTURAL STEEL PEDESTRIAN HAND RAIL	LF	372.3	744.5}	
14	2414-6772020	STEEL FENCE, WELDED WIRE MESH	LF	707.3		
15	2501-0201057	PILE, STEEL, HP 10×57	LF	13250.0		
16	2501-0201489	PILE, STEEL, HP 14×89	LF	8100.0		
17	2501-8400172	TEMP SHORING	LS	1.0		
18	2526-8285000	CONSTRUCTION SURVEY	LS	1.0		
19	2533-4980005	MOBILIZATION	LS	1.0		
20	2599-9999005	PRECAST POST-TENSIONED SLAB PANELS	EA	70.0		
21	2599-9999005	DISC BEARINGS	EA	12.0		
22	2599-9999014	STONE VENEER	SF	2428		
23	2601-2638610	CONC SLOPE PROTECTION	SY	572.0		

ITEM NO.	ESTIMATE REFERENCE INFORMATION INCLUDES ALL COSTS ASSOCIATED WITH DECK FORMING AS SHOWN ON DETAIL "C" ON DESIGN SHEET 7.
3	ALL PIER FOOTING CONCRETE SHALL BE CLASS "C".
4	ALL CAST-IN-PLACE SLAB CONCRETE, INCLUDING CLOSURE POUR AND END SECTIONS, PRECAST SLAB PANELS, SIDEWALK, PIER CONCRETE ABOVE FOOTING AND CONCRETE FOR ABUTMENTS SHALL BE STRUCTURAL CONCRETE (HIGH PERFORMANCE). INCLUDES 722 FT. OF 3" DIA. RIGID STEEL CONDUIT IN SIDEWALK, 227 FT. OF 2" DIA. RIGID STEEL CONDUIT IN SIDEWALK, 227 FT. OF 2" DIA. RIGID STEEL CONDUIT. INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND FLACING CONDUITS IN THE ABUTMENTS, SIDEWALKS AND UNDER SLAB FOR BRIDGE LIGHTING. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET AT ABUTMENTS. INCLUDES FURNISHING AND PLACING CONCRETE SEALER. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. INCLUDES 36.8 CY OF INTEGRALLY COLORED CONCRETE FOR RAISED MEDIAN. INCLUDES ANCHOR BOLTS AND PLATES AT LIGHT POLE BASES. INCLUDES ALL COSTS ASSOCIATED WITH THE PIER FORM LINER.
7	INCLUDES COST OF 149 LBS. OF STAINLESS STEEL REINFORCING IN THE ABUTMENT PAVING NOTCHES. FOR DETAILS, SEE DESIGN SHEET 15.
8	INCLUDES 662,991 LBS. OF ASTM A709 GRADE HPS 70W (AASHTO M270 GRADE HPS 70W) WEATHERING STEEL. INCLUDES COST OF ABUTMENT BEARING MATERIALS.
9	PORTLAND CEMENT CONCRETE OVERLAY. INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING, PLACING AND REMOVING PLUGS OVER MECHANICAL CONNECTORS FOR MEDIAN CONSTRUCTION.
10	INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL, AND THE COVER PLATES WITH THEIR ANCHORAGE SYSTEMS.
11, 12	IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE. INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING CONDUITS IN BARRIERS. INCLUDES 1068 FT. OF 2" DIA.RIGID STEEL CONDUIT, 15 FT. OF 1" DIA.RIGID STEEL CONDUIT AND 133 FT. OF 3" DIA.RIGID STEEL CONDUIT IN BARRIERS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS.
14	ALL COSTS ASSOCIATED WITH THE FENCE INCLUDING THE ANCHORAGES AND PAINTING SHALL BE INCLUDED IN THE PRICE BID FOR "STEEL FENCE, WELDED WIRE MESH".
15, 16	PILING SHALL BE GRADE 50.
17	INCLUDES THE COST TO DESIGN, FURNISH AND INSTALL SHEETING & SHORING AS REQUIRED TO FACILITATE CONSTRUCTION OF THE ABUTMENTS AND THE PIER WITHOUT LOSS OF SUPPORT OF THE ADJACENT AT-GRADE PAVEMENT. TEMPORARY SHEET PILING & SHORING SHALL BE MEASURED AND PAID FOR AT THE LUMP SUM CONTRACT PRICE.
20	THIS ITEM INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE PRECAST SLAB PANELS. INCLUDING GROUT FOR TRANSVERSE JOINTS (19.8 CY), 3" DIA. TRANSVERSE BACKING ROD (3559 LF), LEVELING DEVICES, CONCRETE FOR GIRDER HAUNCHES & SHEAR STUD POCKETS (125.8 CY), HIGH PERFORMANCE STRUCTURAL CONCRETE FOR PANELS (812.0 CY) MILD REINFORCING (124,021 LBS), 0.6" DIA. 270-LL POST TENSIONING STRANDS (78,400 LF), P.T. PRESSURE GROUT INSIDE OF DUCTS AND REQUIRED POST TENSION END ANCHORAGES, ALL EMBEDED ITEMS SUCH AS DUCTS & DUCT SPLICES, LIFTING AND LEVELING DEVICES. TRIAL BATCH FOR CLASS 0-4 WR CONCRETE.

INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND APPLYING ANTI-GRAFFITI COATING (270.0 SY).

METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE PER SQUARE YARD AS MEASURED IN THE FIELD.

22 23

> REVISED 01-23-08, REVISED QUANTITY ITEM NO.4 REVISED QUANTITU ITEM NO.7

REVISED 01-18-08, REVISED QUANTITY ITEM NO. 13

DESIGN FOR O° SKEW

353'-6X82' CONT. WELDED GIRDER BRIDGE W/8'-4 SIDEWALK & 10'-4 SHARED USE PATH

SIDEWALK & 10 -4 SHANED SSE 1.80 24TH STREET OVER 1-80 178'-6 & 175'-0 SPANS ESTIMATED QUANTITIES 75-95 25 (24TH STREET) JUNE, 2007

STA. 40176+95.25 (24TH STREET) STA. 7476+95.25 (FUTURE 1-80)

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 3 OF 62 FILE NO. 30169 DESIGN NO. 508

HR

HDR Engineering, Inc.

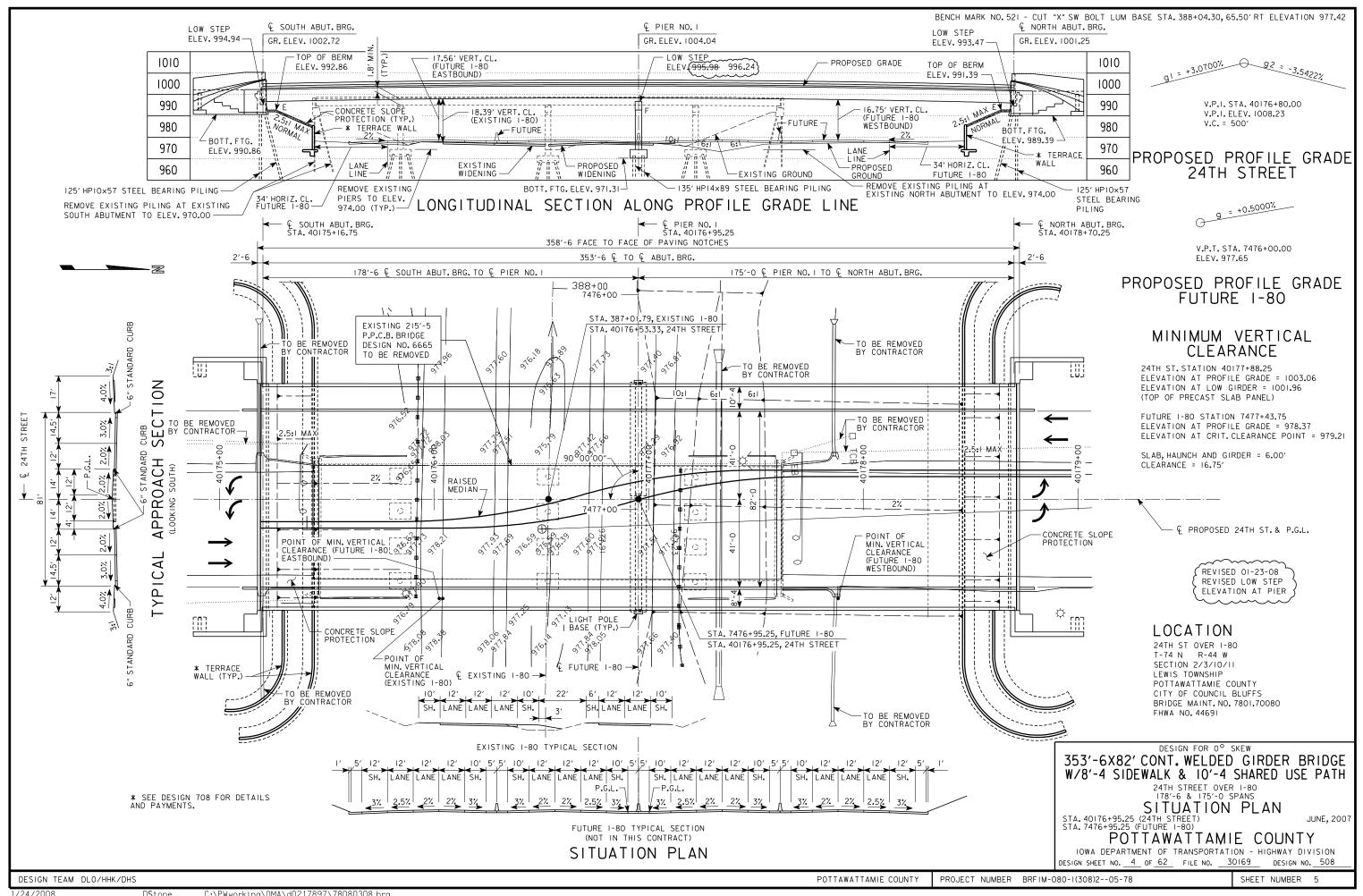
DESIGN TEAM RRP/JPS/ACB

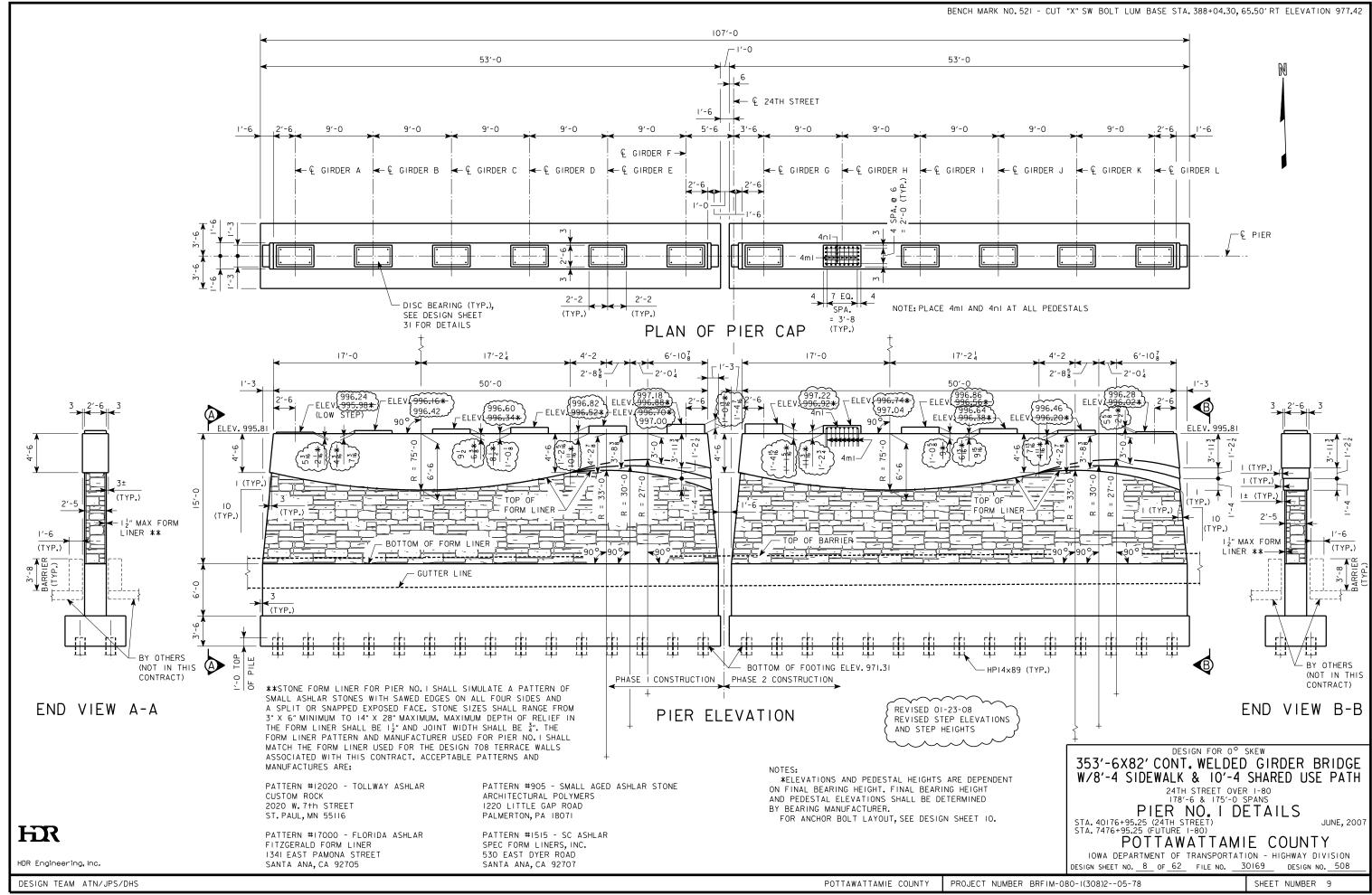
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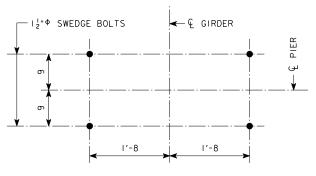
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POTTAWATTAMIE COUNTY PROJECT NUMBER BRFIM-080-I(308)2--05-78

SHEET NUMBER 4







ANCHOR BOLT LAYOUT

NOTF.

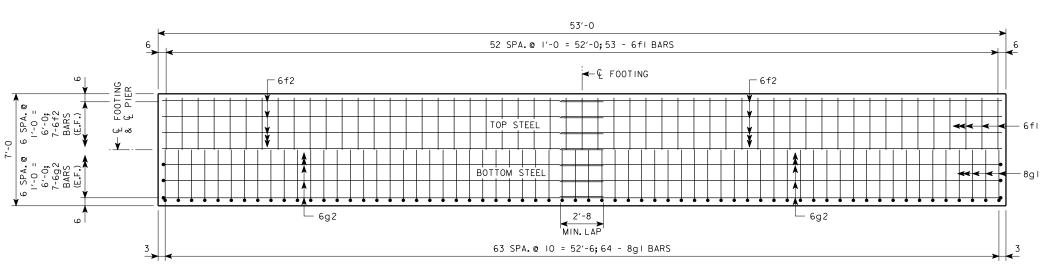
ANCHOR BOLT LAYOUT IS DEPENDENT ON FINAL BEARING DESIGN. FINAL ANCHOR BOLT LOCATIONS SHALL BE DETERMINED BY BEARING MANUFACTURER.

CONCRETE PLACEMENT QUANTITIES (EACH PHASE)

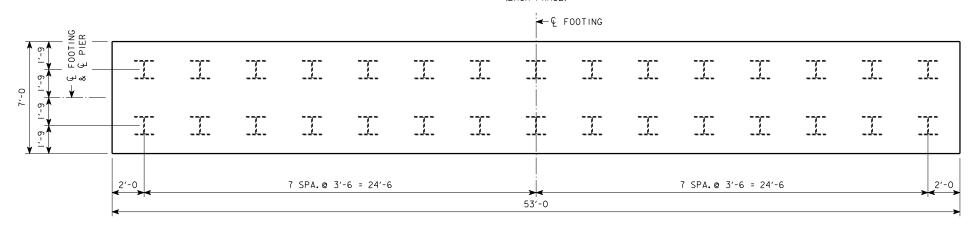
LOCATION	QUANTITY	
NALL & STEPS (HIGH PERFORMANCE CONCRETE) *	106.8	
FOOTING	48 . I	
TOTAL C.Y.	154.9	

ESTIMATED QUANTITIES							
ITEM	UNIT	PHASE I PIER	PHASE 2 PIER	QUANTITY			
STRUCTURAL CONCRETE (HIGH PERFORMANCE)	C.Y.	{+06.8 107.4	106.8 107.4	213.6 214.8			
STRUCTURAL CONCRETE (BRIDGE)	C.Y.	48.1	48.1	96.2			
REINFORCING STEEL - EPOXY COATED	LB.	(19,011 19,063	19,011 19,063	38,022 38,126			
CLASS 20 EXCAVATION	C.Y.	139	$\frac{138}{38}$	277			
HPI4×89 STEEL BEARING PILING	L.F.	30 @ 135	30 @ 135	8100			

* QUANTITY IS CALCULATED ASSUMING THE WALL THICKNESS IS 2'-6 AND IGNORES THE DEDUCTION OF CONCRETE VOLUME DUE TO THE FORM LINER.



FOOTING REINFORCING LAYOUT



FOOTING PILE LAYOUT

PIER NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE

2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH A $\frac{3}{4}$ " DRESSED AND BEVELED STRIP.

ALL REINFORCING IS TO BE SECURLY WIRED IN PLACE BEFORE CONCRETE IS POURED. 30 - HPI4x89 STEEL BEARING PILING ARE REQUIRED FOR EACH FOOTING.

THE DESIGN BEARING FOR THE PIER PILES IS 78 TONS.

SEE GENERAL NOTES ON DESIGN SHEET 2 FOR ADDITIONAL NOTES REGARDING TEXTURED

CONCRETE FORM LINERS AND REQUIRED TEXTURED CONCRETE MOCK-UP PANEL.

REINFORCING STEEL EPOXY COATED - TOTAL (LBS.) (T9,01-BENT BAR DETAILS $D=2^{1}_{2}$ D=9½ D=2 5c1 9′-5 2′-8 2'-0 9d1 5c1, 5c2 & 5c3 4eI D=6 D=9 2 2'-2 6′-8 4'-0 4nl 6'-0 8g i 4ml & 4nl D=4 1 27′-8 6al 6g2 NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

REVISED 01-23-08

REVISED 4mI & 4nI BENT
BAR DETAILS, LENGTHS
AND WEIGHTS
REVISED QUANTITIES

DESIGN FOR 0° SKEW

REINFORCING STEEL (EACH PHASE)

SHAPE NO. LENGTH WEIGHT

29'-11

26'-2

36′-6

16'-0

32′-8

19'-9

20'-9

8'-11

60 27'-2

25′-0

11'-0

13'-8

20′-6

4'-0

53 6'-8 531

9'-4

7′-6

6'-6

9'-4

6 20'-6

14 27'-8

14 28′-8

539

218

76

33

68

41

43

52

1700

115

4039

418

186

6831

107

582

1595

603

208

187

19,063

240

12

8

2

2

2

2

2

L___ 23 | II'-IO

108

4

98

LJ 40

LJ 64

□ 30

48

L____ 68

LOCATION

WALL, TOP, LONGITUDINAL

WALL, SIDE, LONGITUDINAL

FOOTING TO COLUMN DOWELS

WALL, VERTICAL, ENDS

5aIO WALL, SIDE, LONGITUDINAL

CAP, STIRRUP

CAP, STIRRUP

WALL, VERTICAL

WALL, VERTICAL

WALL, ENDS

FOOTING, TOP

FOOTING, TOP

FOOTING, BOTTOM

FOOTING, BOTTOM

PEDESTAL, TRANSVERSE

PEDESTAL, LONGITUDINAL

5c2 CAP, STIRRUP

RΔR

6al

5a2

5a3 5a4

5a5

5a6

5a7

5a8

5a9

5c1

5c3

9d1

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353'-6X82' CONT. WELDED GIRDER BRIDGE W/8'-4 SIDEWALK & 10'-4 SHARED USE PATH

24TH STREET OVER 1-80

PIER NO. I DETAILS

STA. 40176+95.25 (24TH STREET) STA. 7476+95.25 (FUTURE 1-80) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 10 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/JPS/DHS

POTTAWATTAMIE COUNTY

PROJECT NUMBER BRFIM-080-1(308)2--05-78

SHEET NUMBER II

HR

HDR Fnaineering, Inc.