

A d d e n d u m

Iowa Department of Transportation
Office of Contracts

Date of Letting: September 20, 2016
Date of Addendum: September 2, 2016

B.O.	Proposal ID	Proposal Work Type	County	Project Number	Addendum
005	85-0354-183	BRIDGE NEW - STEEL GIRDER	STORY	IM-035-4(182)112--13-85 IM-035-4(183)112--13-85 IM-035-4(184)112--13-85 IM-035-4(185)112--13-85 IM-035-4(226)112--13-85	20SEP005A03

Make the following changes to the PROPOSAL SCHEDULE OF PRICES:

Change Proposal Line No. 1400 2403-7000210 HIGH PERFORMANCE STRUCTURAL
CONCRETE:

From: 2,614.100 CY

To: 2,600.800 CY

Change Proposal Line No. 1410 2404-7775000 REINFORCING STEEL:

From: 259,629.000 LB

To: 259,041.000 LB

If the above changes are not made, they will be made as shown here.

Make the following changes to IM-035-4(183)112--13-85 plans:

Replace Plan Sheets 2, 4, 22, 33, 34, 35, 36, 37, 39, 40, & 41 with attached.

ESTIMATED BRIDGE QUANTITIES					
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2402 - 2720000	EXCAVATION, CLASS 20	CY	2779	
2	2403 - 0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	1059.9	
3	2403 - 7000210	HIGH PERFORMANCE STRUCTURAL CONCRETE	CY	2600.8	
4	2404 - 7775000	REINFORCING STEEL	LB	259041	
5	2404 - 7775005	REINFORCING STEEL, EPOXY COATED	LB	829254	
6	2404 - 7775009	REINFORCING STEEL, STAINLESS STEEL	LB	24638	
7	2408 - 7800000	STRUCTURAL STEEL	LB	4585379	
8	2414 - 6424110	CONCRETE BARRIER RAILING	LF	3405.9	
9	2414 - 6625502	STRUCTURAL STEEL RAILING, TRAFFIC	LF	3405.5	
10	2434 - 0000100	DISC BEARING ASSEMBLIES	EACH	40	
11	2499 - 2300001	DECK DRAINS	LS	1.00	
12	2499 - 9000000	MODULAR EXPANSION JOINT ASSEMBLY	LF	76.0	
13	2499 - 9000100	MODULAR EXPANSION JOINT ASSEMBLY LEAK TESTING	EACH	2	
14	2501 - 0201274	PILES, STEEL, HP 12 X 74	LF	2800	
15	2501 - 0201517	PILES, STEEL, HP 14 X 117	LF	8850	
16	2501 - 8400172	TEMPORARY SHORING	LS	1.00	
17	2526 - 8285000	CONSTRUCTION SURVEY	LS	1.00	
18	2533 - 4980005	MOBILIZATION	LS	1.00	
19	2599 - 9999010	CONCRETE DEADMAN ANCHOR	LS	1.00	
20	2599 - 9999014	INTEGRAL THIN VENEER BRICK	SF	4237	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
2	INCLUDES THE CONCRETE FOR THE PIER FOOTINGS. SEE DEVELOPMENTAL SPECIFICATIONS FOR "MASS CONCRETE-CONTROL OF HEAT OF HYDRATION".
3	INCLUDES THE CONCRETE FOR THE SLAB, ABUTMENTS AND PIER CAPS/COLUMNS. REFER TO THE DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" AND "MASS CONCRETE-CONTROL OF HEAT OF HYDRATION", FOR ADDITIONAL INFORMATION. INCLUDES FURNISHING AND PLACING CONCRETE SEALER AT ABUTMENTS. INCLUDES FURNISHING AND PLACING SUBDRAIN, POROUS BACKFILL, GEOTEXTILE FABRIC AND VERTICAL PIPE TO MSE WALL DRAIN. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. INCLUDE ALL COSTS ASSOCIATED WITH THE TEXTURED CONCRETE MOCKUP PANEL(S).
5	INCLUDES THE ADDITIONAL EPOXY COATED REINFORCING STEEL AROUND DECK DRAINS. INCLUDES REINFORCEMENT IN SUPERSTRUCTURE, ABUTMENTS AND PIERS 3, 5 AND 6 CAP/COLUMN.
7	INCLUDES COST OF FURNISHING AND INSTALLING INSPECTION CABLE SYSTEM (DES. SHT. 65) AND TOP LATERAL BRACING (DES. SHT. 64).
8	INCLUDES 1732 FT. OF 2" DIA. RIGID STEEL CONDUIT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS. IF PLACEMENT IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE HIGH PERFORMANCE STRUCTURAL CONCRETE. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS.
9	ALL COSTS ASSOCIATED WITH FURNISHING, FABRICATING AND GALVANIZING SHALL BE INCLUDED.
10	INCLUDES ALL COSTS OF FURNISHING AND INSTALLING DISC BEARINGS, INCLUDING SOLE PLATES, MASONRY PLATES, PREFORMED MASONRY PADS, STRUCTURAL BOLTS, ANCHOR BOLTS, SWEDGE ANCHOR BOLTS, THREADED COUPLERS AND WASHERS.
11	INCLUDES ALL NEW DECK DRAINS. REFER TO DESIGN SHEETS 82 THRU 85 AND 100 FOR LOCATIONS, MATERIALS AND THE DETAILS OF THEIR CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.
12	INCLUDES THE COST OF FURNISHING AND INSTALLING THE COVER PLATE ASSEMBLIES AT ABUTMENTS. SEE DEVELOPMENTAL SPECIFICATIONS FOR "MODULAR EXPANSION JOINT ASSEMBLY".
14	INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS AT ABUTMENTS.
15	INCLUDES COST OF FURNISHING AND INSTALLING PILE UPLIFT ANCHORS AT PIERS 1 THROUGH 5. INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS AT ALL PIERS.
16	TEMPORARY SHORING REQUIRED FOR CONSTRUCTION OF FOOTINGS AT PIERS 1, 3 AND 5.
19	INCLUDES ALL COSTS OF FURNISHING AND INSTALLING DEADMAN ANCHOR, INCLUDING ANCHOR TEES, RODS, CLEVIS, TURNBUCKLES, GALVANIZING, CONCRETE, REINFORCING STEEL AND ALL WORK NECESSARY TO COMPLETE THE INSTALLATION OF DEADMAN ANCHOR. SEE DESIGN SHEETS 13 & 16 FOR DETAILS AND NOTES.
20	REPER TO SPECIAL PROVISIONS FOR "INTEGRAL THIN VENEER BRICK FOR STRUCTURAL CONCRETE"

SPECIFICATIONS :

DESIGN: AASHTO LRFD 7TH ED, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS INCLUDING DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES", "MASS CONCRETE-CONTROL OF HEAT OF HYDRATION", "MODULAR EXPANSION JOINT ASSEMBLY", "ADHESIVE-BONDED ANCHORS AND DOWELS FOR TRAFFIC RAILINGS", "CONSTRUCTION PROGRESS SCHEDULE" AND SPECIAL PROVISIONS FOR "INTEGRAL THIN VENEER BRICK FOR STRUCTURAL CONCRETE" SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES :

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH ED, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

REINFORCING STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 5, GRADE 60.

CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, f'c = 4.0 KSI.

BRIDGE DECK CONCRETE f'c = 4.0 KSI

STRUCTURAL STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

FATIGUE STRESSES BASED ON INFINITE LIFE.

GENERAL NOTES :

THIS DESIGN INVOLVES THE CONSTRUCTION OF 1690'-0 x 36'-0 CONTINUOUS CURVED WELDED PLATE GIRDER BRIDGE (RAMP H) OVER I-35 AND US 30.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THE BRIDGE CONTRACTOR SHALL DRIVE ABUTMENT PILING BEFORE THE MECHANICALLY STABILIZED EARTH (MSE) WALL IS CONSTRUCTED AND MAINTAIN PROPER POSITION OF PILING WHILE THE MSE WALL IS BEING CONSTRUCTED. THE PILING SHALL BE TIED TOGETHER BY MECHANICAL MEANS AND ANCHORED TO PREVENT DISPLACEMENT DURING BACKFILLING OPERATIONS AND MSE WALL CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER FOR APPROVAL OF THE CONNECTIONS AND ANCHORAGE.

SHOP DRAWING SUBMITTALS	
SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)	
SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH 1105.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.	
1	STEEL GIRDERS, CROSS FRAMES, SPLICES, STIFFENERS, INSPECTION CABLE SYSTEM, TOP LATERAL BRACING & MISC. STEEL.
2	DISC BEARINGS.
3	EXPANSION JOINTS.

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 CONSTRUCTION STARTING DATE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE AND DESIGN SPEED OF 40 MPH. PIERS 1, 3, 5 AND 6 ARE DESIGNED FOR VEHICULAR COLLISION FORCE.

BRIDGE DECK DIMENSIONS TABLE			
	ITEM	UNITS	QUANTITY
1	DECK LENGTH	L.F.	1699.2
2	MINIMUM DECK WIDTH	L.F.	39.7
3	MAXIMUM DECK WIDTH	L.F.	39.7
4	DECK AREA	S.F.	66547

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE BASELINE OF THE ROADWAY (℄ RAMP H).
- 2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE BASELINE OF ROADWAY (℄ RAMP H).
4. DECK AREA IS BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. OTHER WORK IN PROGRESS DURING THE SAME PERIOD OF TIME WILL INCLUDE, BUT IS NOT LIMITED TO, CONSTRUCTION OF THE FOLLOWING PROJECTS:	
IM-035-4(182)112--13-85	PCC PAVEMENT - GRADE AND NEW
IM-035-4(226)112--13-85	RCB CULVERT REPLACEMENT - TWIN BOX
IM-035-4(184)112--13-85	TRAFFIC SIGNS
IM-035-4(185)112--13-85	LIGHTING

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
POLLUTION PREVENTION PLAN SHOWN IN PROJECT NO. IM-035-4(182)112--13-85.

TRAFFIC CONTROL PLAN
THIS STRUCTURE IS BEING BUILT ON A NEW ALIGNMENT. THE ROAD WILL NOT BE OPEN TO TRAFFIC UNTIL AFTER COMPLETION OF CONSTRUCTION. REFER TO TRAFFIC CONTROL PLAN SHOWN IN PROJECT NO. IM-035-4(182)112--13-85.

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE	
1690'-0 X 36'-0 CONTINUOUS WELDED GIRDER BRIDGE	
190'-0, 240'-0, 251'-0, 271'-0, 271'-0, 267'-0, 200'-0 SPANS	
QUANTITIES & GENERAL NOTES	
STA. 8525+52.00 (℄ - RAMP H)	JULY, 2016
STORY COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION	
DESIGN SHEET NO. 1 OF 105	FILE NO. 31296 DESIGN NO. 616

SUMMARY OF CONCRETE QUANTITIES

LOCATION	STRUCTURAL CONCRETE	HPC STRUCTURAL CONCRETE
S. ABUT. FTG. + BKWL. + WING + MASKWALL	_____	117.4
N. ABUT. FTG. + BKWL. + WING + MASKWALL	_____	117.0
BRIDGE DECK	_____	1769.4
PIER #1	154.0	111.8
PIER #2	154.0	110.7
PIER #3	224.6	84.8
PIER #4	231.0	109.8
PIER #5	142.3	100.8
PIER #6	154.0	79.1
TOTAL (CU. YDS.)	1059.9	2600.8

SUMMARY OF REINFORCING STEEL

LOCATION	NON-COATED REINFORCING STEEL	STAINLESS STEEL REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
S. ABUT. FTG. + BKWL. + WING + MASKWALL	_____	74	13963
N. ABUT. FTG. + BKWL. + WING + MASKWALL	_____	74	13963
BRIDGE DECK	_____	_____	583612
BARRIER RAIL - EAST RAIL	_____	12454	56849
BARRIER RAIL - WEST RAIL	_____	12036	55297
PIER #1	58035	_____	_____
PIER #2	57785	_____	_____
PIER #3	24798	_____	40399
PIER #4	80250	_____	_____
PIER #5	18353	_____	36302
PIER #6	19820	_____	28869
TOTAL (LBS.)	259041	24638	829254

SUMMARY OF EXCAVATION

LOCATION	CLASS 20 EXCAVATION	CLASS --- EXCAVATION
SOUTH ABUTMENT	_____	_____
NORTH ABUTMENT	_____	_____
PIER #1	585	_____
PIER #2	390	_____
PIER #3	572	_____
PIER #4	477	_____
PIER #5	365	_____
PIER #6	390	_____
TOTAL (CU. YDS.)	2779	_____

SUMMARY OF FOUNDATIONS

[illegible]

SUMMARY OF STRUCTURAL STEEL

LOCATION	TOTAL (LBS.)
WELDED GIRDERS ①	4585379
TOTAL (LBS.)	4585379

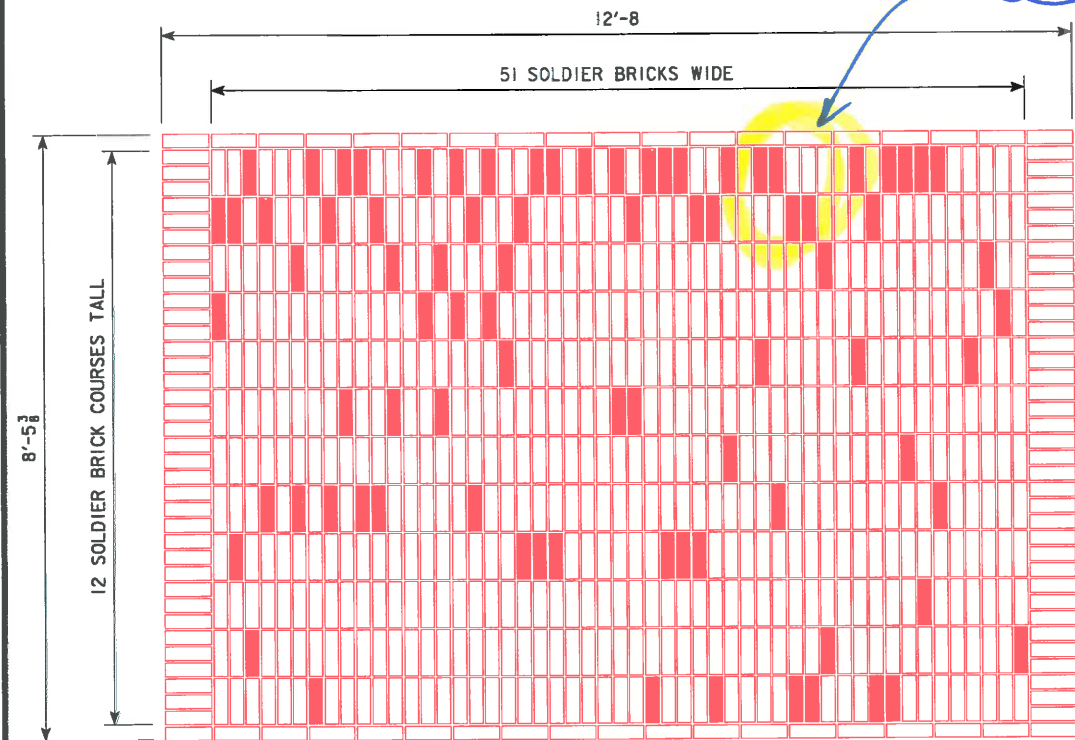
SUMMARY OF BEARINGS

[illegible]

① GIRDER WEIGHT INCLUDES STUDS, BEARING STIFFENERS, INTERMEDIATE CROSS FRAME STIFFENERS, CONNECTION PLATES, SPLICE PLATES, BOLTS, WELDS, FLANGE DEFLECTORS AND ALL MATERIAL FOR ABUTMENT CROSS FRAMES, INTERMEDIATE CROSS FRAMES, PIER DIAPHRAGMS AND LATERAL BRACING.

DESIGN FOR 3° SKEW ON 1100.00' RADIUS CURVE
1690'-0 X 36'-0 CONTINUOUS
WELDED GIRDER BRIDGE
190'-0, 240'-0, 251'-0, 271'-0, 271'-0, 267'-0, 200'-0 SPANS
SUMMARY QUANTITIES SHEET
STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 105 FILE NO. 31296 DESIGN NO. 616

[Revised Brick Pattern]



ABUTMENT "CARD SECTION"
ACCENT COLOR BRICK PATTERN
(ALL 4 ABUTMENT WING PATTERNS ARE IDENTICAL)

BRICK TYPE KEY

- = ACCENT COLOR BRICK
- = FIELD COLOR BRICK

THIN VENEER BRICK COLOR KEY

LOCATION	ACCENT COLOR	FIELD COLOR
ABUTMENT WING & MASK WALL (ALL)	GOLD	RED

ABUTMENT THIN BRICK NOTES

THIS WORK CONSISTS OF CREATING THIN VENEER BRICK FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE ABUTMENTS AS SHOWN IN THIS PLAN. SEE "SPECIAL PROVISIONS FOR INTEGRAL THIN VENEER BRICK FOR STRUCTURAL CONCRETE" FOR MORE INFORMATION. THE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION ABUTMENT CONCRETE WORK THAT INCLUDES THIN BRICK.

THE SYSTEM USED TO CREATE THE INTEGRAL THIN BRICK AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE MODULAR SIZE BRICKS IN STACK BOND AND SOLDIER COURSE BRICK PATTERNS AS INDICATED IN THE DRAWINGS. THE TWO CONTRASTING BRICK COLORS SHALL BE RED AND GOLD. BRICK TEXTURE SHALL BE SMOOTH. SUBMIT THIN BRICK SAMPLES FOR APPROVAL AND FOR COLOR SELECTION IN ACCORDANCE WITH THE SPECIAL PROVISIONS PRIOR TO ORDERING MATERIALS.

ABUTMENT BRICK PATTERN NOTES

THE INTENT OF THIS DESIGN IS TO USE PRECISELY PLACED ACCENT COLOR BRICKS WITHIN A GRID OF SOLDIER COURSE BRICKS. THE ACCENT BRICKS CONVEY INFORMATION USING A RIGOROUS CODING SYSTEM, THEREFORE IT IS IMPORTANT THAT THE ACCENT COLOR BRICK PLACEMENTS ARE ACCURATE. DO NOT OMIT ACCENT COLOR BRICKS FROM ANY PATTERN SHOWN. DO NOT ADD ACCENT COLOR BRICKS TO ANY PATTERN SHOWN.

USE CARE IN PLACING ACCENT COLOR BRICKS DURING FORM SETUP PRIOR TO POURING CONCRETE. EACH FORM SETUP INCLUDING THIN VENEER BRICK MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO CLOSING OF FORMS AND POURING OF CONCRETE. AT THE CONTRACTOR'S REQUEST, FLIPPED (BACK SIDE OF FORMS VIEW) DRAWINGS OF ACCENT BRICK PATTERNS WILL BE MADE AVAILABLE FOR USE DURING PLACEMENT OF THIN BRICK UNITS INTO FORM LINER GASKETS.

FOR MORE INFORMATION ON THIN BRICK, SEE THE "SPECIAL PROVISIONS FOR INTEGRAL THIN VENEER BRICK FOR STRUCTURAL CONCRETE".

ABUTMENT WING FORMS AND CONCRETE FINISH NOTES

DO NOT USE PLAIN, UNFACED PLYWOOD FORMS FOR THE FORMING OF ABUTMENT WING WALL AND MASK WALL CONCRETE SURFACES. USE OF STEEL, MEDIUM-DENSITY OVERLaid (MDO), OR HIGH-DENSITY OVERLaid (HDO) PLYWOOD FACED FORMS IS ALLOWED FOR THESE SURFACES.

ARRANGE FORM TIES TO BE REGULARLY SPACED AND IN A CONSISTENT GEOMETRIC GRID PATTERN. DO NOT LOCATE TIES WITHIN CONCRETE RUSTICATIONS. SEE THE SPECIAL PROVISIONS FOR INTEGRAL THIN VENEER BRICK FOR STRUCTURAL CONCRETE FOR ADDITIONAL INFORMATION.

FOLLOWING FORM REMOVAL, DEMONSTRATE HOLE AND VOID PATCHING OPERATIONS AS REQUIRED BY STANDARD SPECIFICATIONS ARTICLE 2403.03,P,2,B WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:

1. ON A SMALL SECTION OF VERTICAL ABUTMENT CONCRETE, BEGIN PATCHING DEMONSTRATION USING A MORTAR MIX COMPRISED OF 1 PART WHITE CEMENT, 2 PARTS STANDARD PORTLAND CEMENT, 6 PARTS MORTAR SAND, AND WATER. THE QUANTITY OF WATER USED SHALL PRODUCE A MORTAR CONSISTENCY AS DRY AS POSSIBLE TO USE EFFECTIVELY.

2. WHEN PATCHING TEST AREAS HAVE SET, SATURATE WITH WATER AND RUB WITH A FINE CARBORUNDUM STONE UNTIL SURFACES ARE SMOOTH IN TEXTURE. REMOVE LOOSE POWDER AND OTHER CONTAMINANTS BY RUBBING WITH BURLAP AND RINSING WITH WATER. AFTER SURFACES HAVE DRIED, PATCH COLOR AND TEXTURE OF SURFACES WILL BE REVIEWED BY THE ENGINEER. PATCHES SHALL MATCH OR BE SLIGHTLY LIGHTER THAN SURROUNDING CONCRETE. IF RESULTS ARE UNSATISFACTORY, ADJUST PATCHING MORTAR MIX PROPORTIONS AND PERFORM ANOTHER DEMONSTRATION UNTIL RESULTS ARE DEEMED SATISFACTORY BY THE ENGINEER.

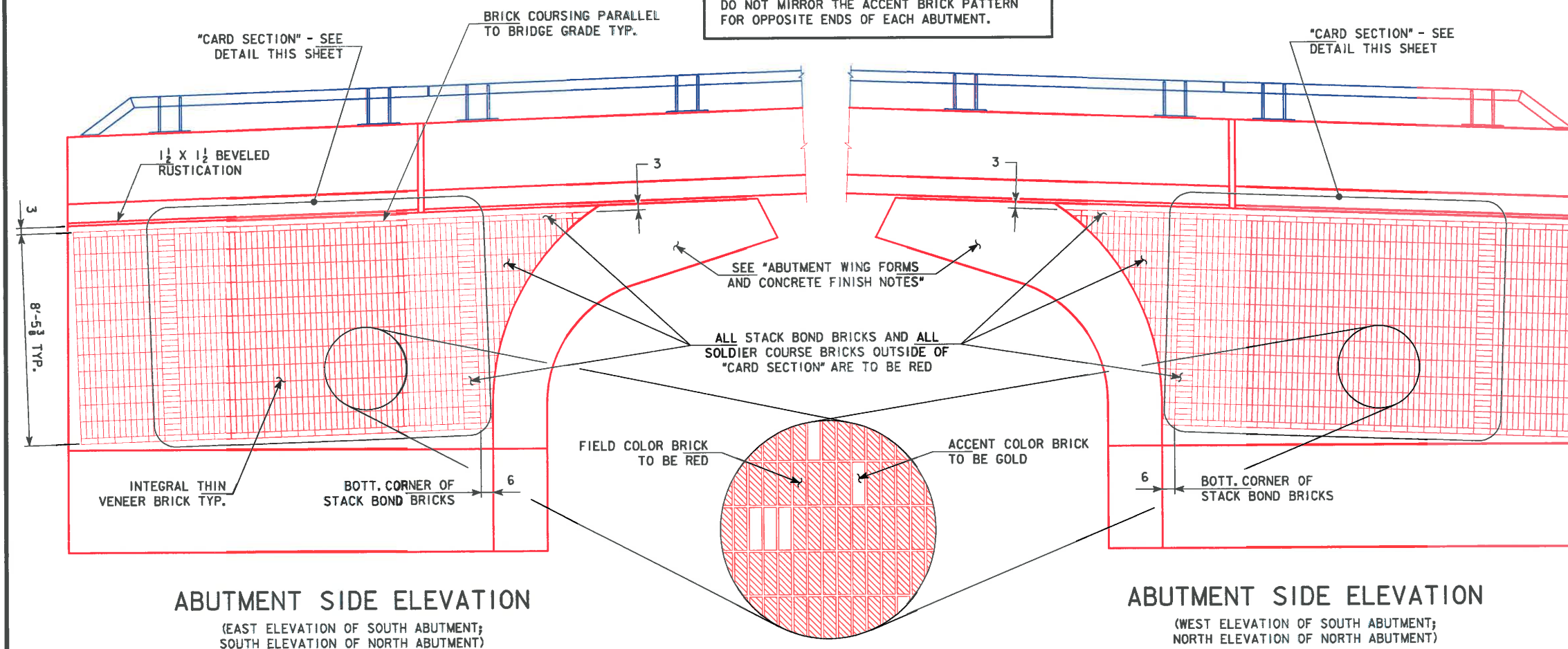
3. USE THE PATCHING MORTAR MIX PROPORTIONS THAT ARE APPROVED BY THE ENGINEER AS A RESULT OF THE SATISFACTORY DEMONSTRATION. DO NOT USE PATCHING MORTAR THAT IS MORE THAN 1 HOUR OLD.

THE RESULTING CONCRETE SURFACES SHALL BE SMOOTH, UNIFORM, AND CONSISTENT IN COLOR AND FINISH, WITH NO WOOD TEXTURE OR OTHER TEXTURE FROM THE FORMING MATERIALS EVIDENT ON THE SURFACE. REPEAT THE FINISH PROCEDURES AS NECESSARY TO RESULT IN SURFACES DEEMED SATISFACTORY BY THE ENGINEER.

THIN VENEER BRICK QUANTITY

LOCATION	UNIT	QUANTITY
ABUTMENT WINGS (4 AT 149.3 SF EACH)	SF	597.2

NOTE: "CARD SECTION" PATTERN IS IDENTICAL FOR ALL FOUR ABUTMENT WING ELEVATIONS. DO NOT MIRROR THE ACCENT BRICK PATTERN FOR OPPOSITE ENDS OF EACH ABUTMENT.



ABUTMENT SIDE ELEVATION

(EAST ELEVATION OF SOUTH ABUTMENT;
SOUTH ELEVATION OF NORTH ABUTMENT)

ABUTMENT SIDE ELEVATION

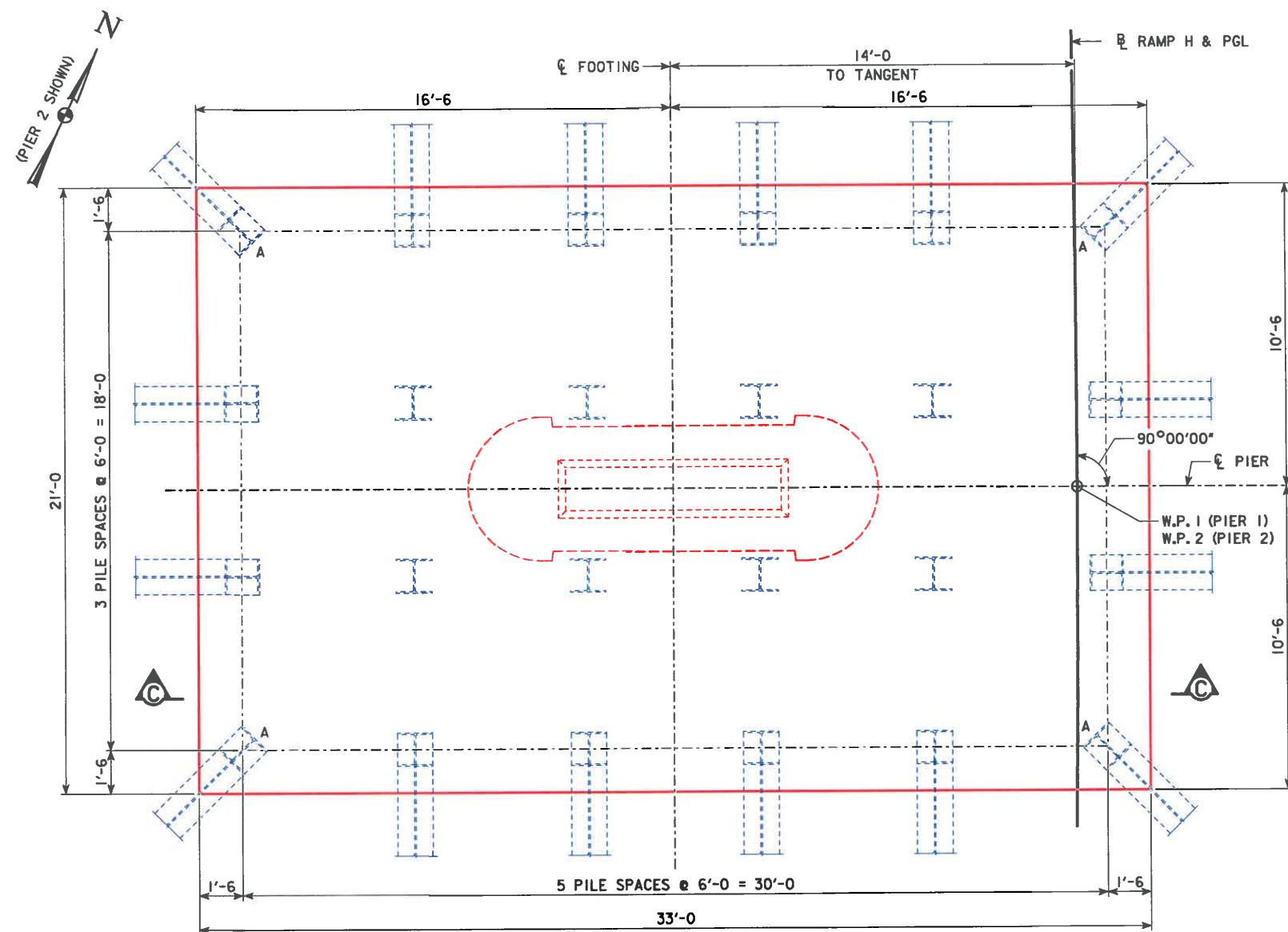
(WEST ELEVATION OF SOUTH ABUTMENT;
NORTH ELEVATION OF NORTH ABUTMENT)

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
**1690'-0 X 36'-0 CONTINUOUS
WELDED GIRDER BRIDGE**
190'-0, 240'-0, 251'-0, 271'-0, 271'-0, 267'-0, 200'-0 SPANS
ABUTMENT AESTHETIC DETAILS
STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 21 OF 105 FILE NO. 31295 DESIGN NO. 616

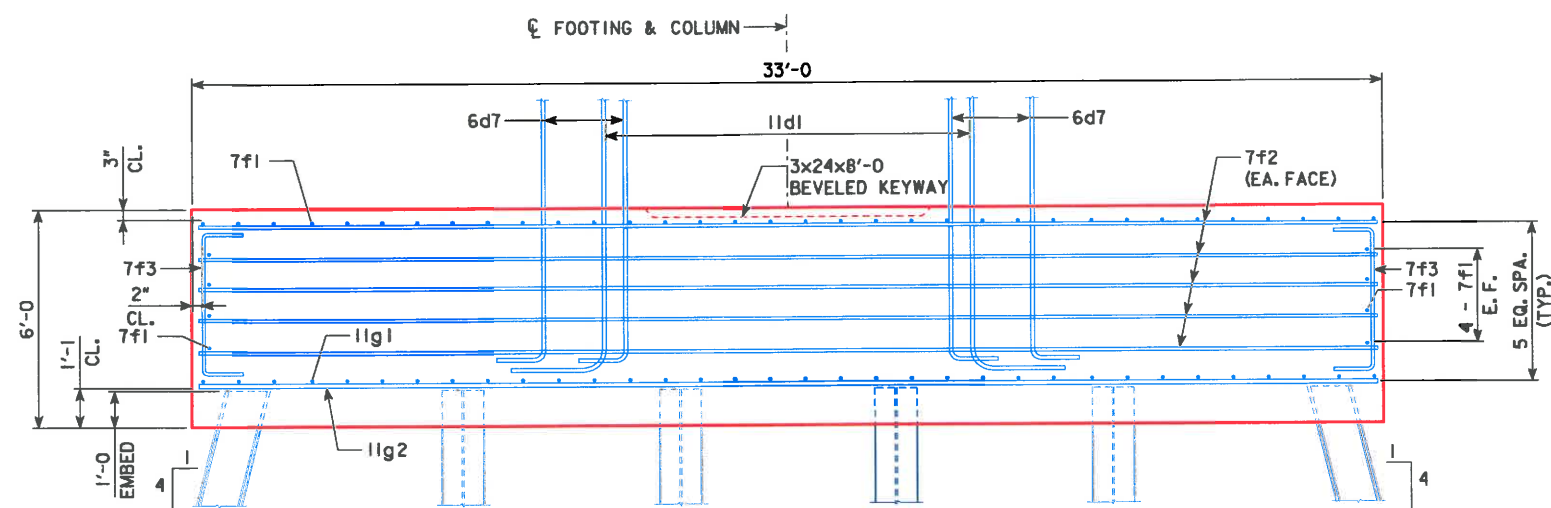
Structural drawing of a bridge deck cross-section showing reinforcement details. The drawing includes a central column labeled "COLUMN" and two cross-sections labeled "A". Reinforcement bars are shown in red, with labels for "11-6d BARS (LAP WITH 6d7 BARS)", "11-6e5", "13-6e5", "6e BARS", and "6d7 BARS". Dimensions include "3'-1 MIN. LAP (6d BARS)", "3' CL. (TYP.)", and "TOTAL 52 - 11d1". A note indicates "PERMISSIBLE CONST. JT.".

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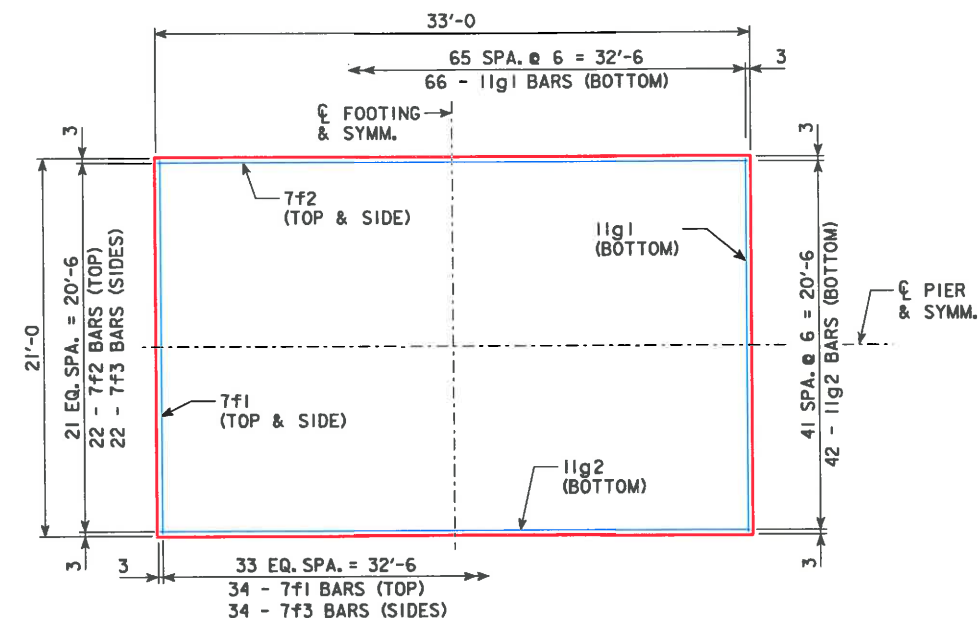
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PIER FOOTING PLAN
24 - HP14X117 STEEL BEARING PILING REQUIRED



SECTION C-C



PIER FOOTING REINFORCEMENT

NOTES:

PILES DESIGNATED WITH "A" REQUIRE PILE UPLIFT ANCHORS. SEE DESIGN SHEET 35 FOR DETAILS.

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN THE DIRECTION SHOWN.

ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

PIER 1:

THE CONTRACT LENGTH OF 35 FEET FOR THE PIER 1 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 325 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 19 KIPS AND AN EXTREME TENSION FORCE OF 33 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 1 PILES IS 240 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 25 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

PIER 2:

THE CONTRACT LENGTH OF 50 FEET FOR THE PIER 2 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 325 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 30 KIPS.

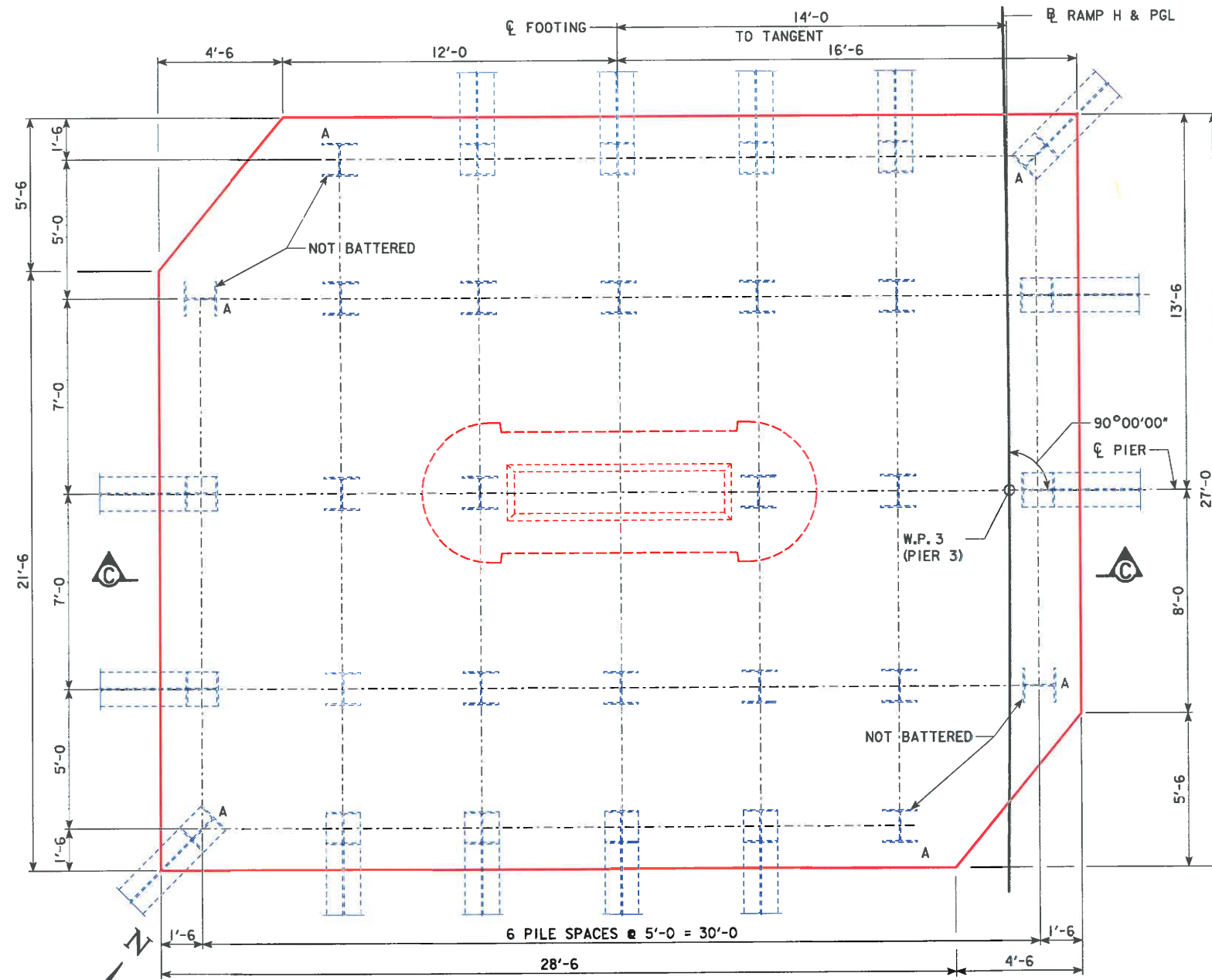
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 2 PILES IS 237 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 30 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

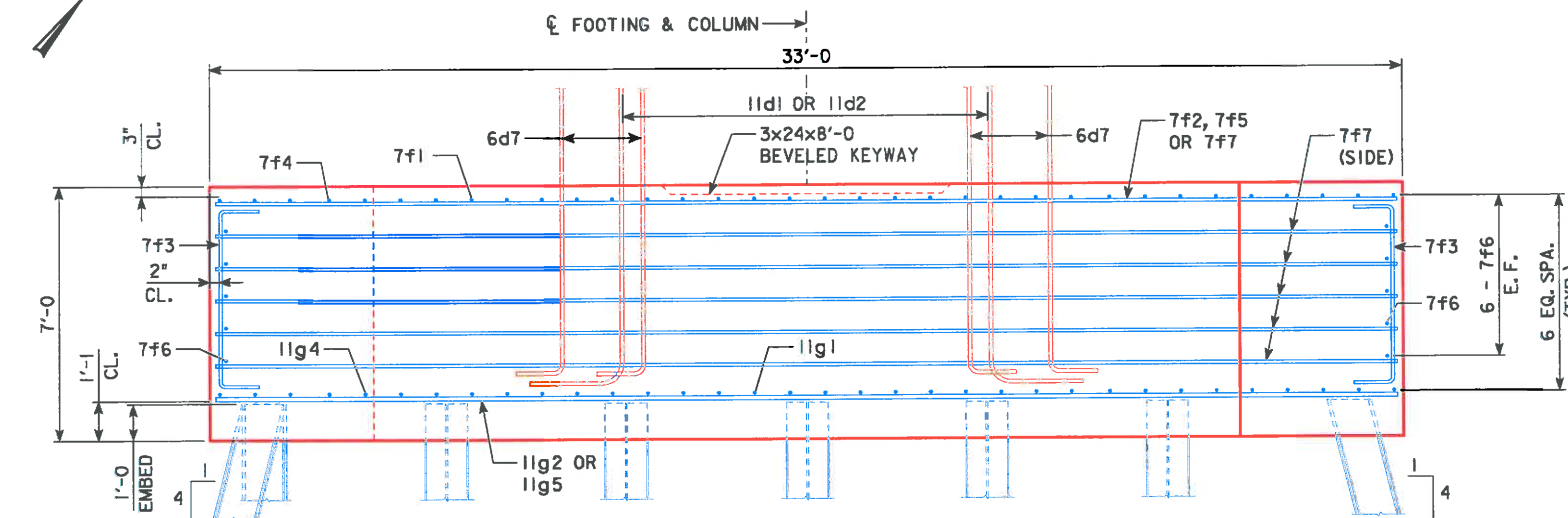
24 - HP14X117 STEEL BEARING PILING REQUIRED PER PIER FOR PIERS 1 AND 2.

**STEEL PILE
ANCHOR DETAIL
DELETED**

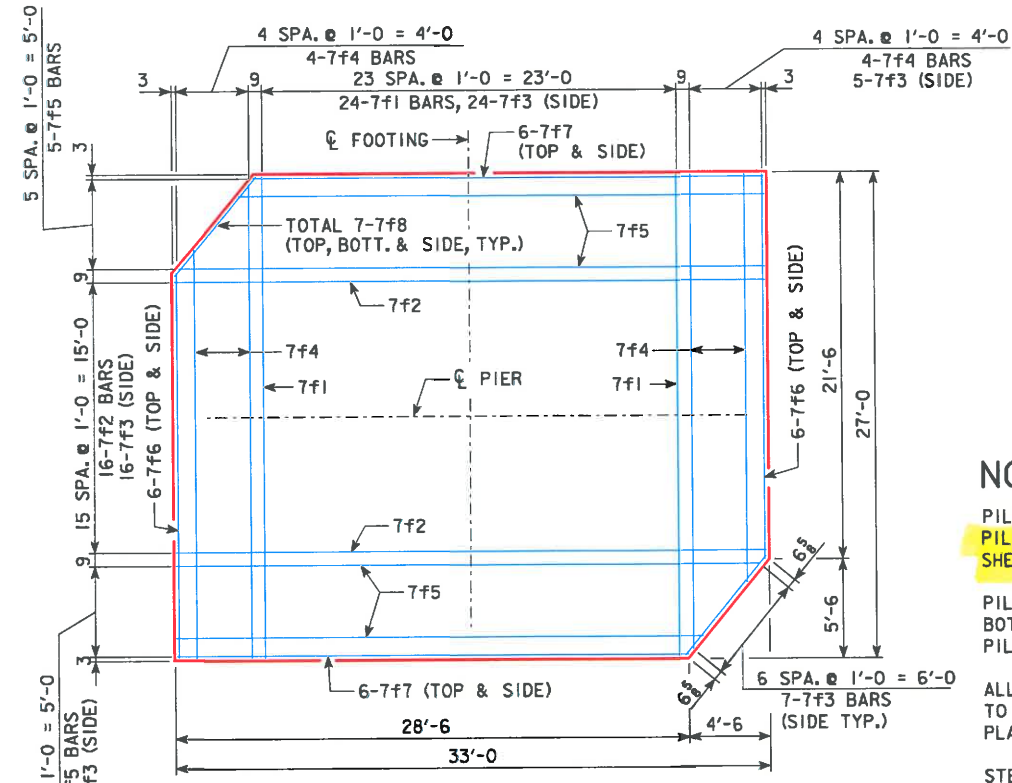
DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
**1690'-0" X 36'-0" CONTINUOUS
WELDED GIRDER BRIDGE**
190'-0", 240'-0", 251'-0", 271'-0", 271'-0", 267'-0", 200'-0" SPANS
PIERS 1 & 2 FOOTING DETAILS
STA. 8525+52.00 (RAMP H) JULY, 2016
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 33 OF 105 FILE NO. 31296 DESIGN NO. 616



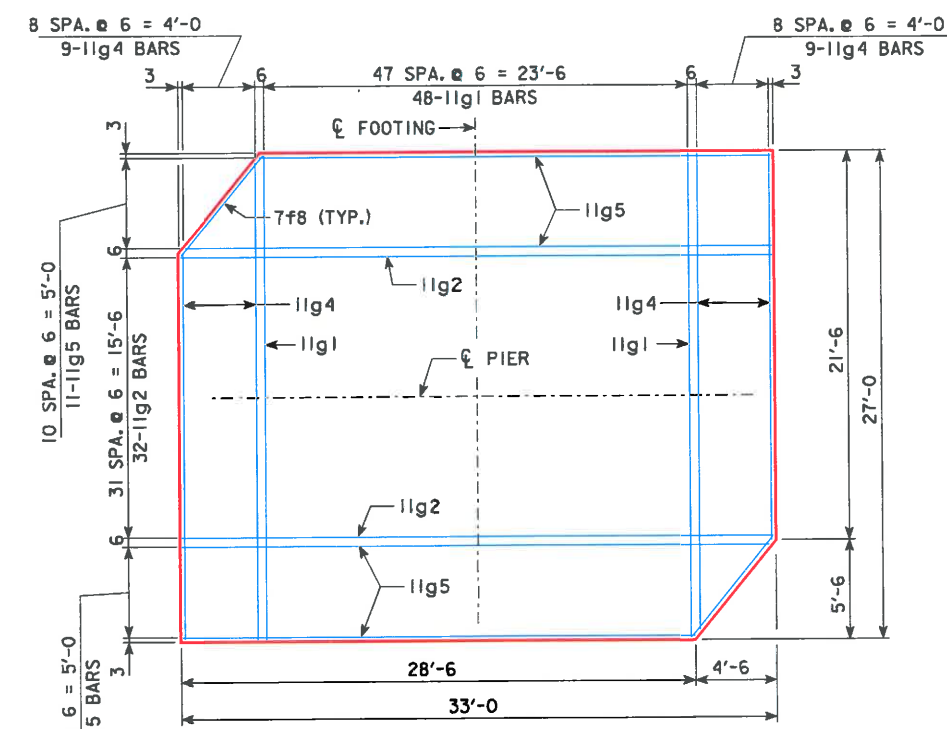
PIER FOOTING PLAN
32 - HP14X117 STEEL BEARING PILING REQUIRED



SECTION C-C



PIER FOOTING REINFORCEMENT
TOP LAYER



PIER FOOTING REINFORCEMENT
BOTTOM LAYER

NOTES:

PILES DESIGNATED WITH "A" REQUIRE PILE UPLIFT ANCHORS. SEE DESIGN SHEET 35 FOR DETAILS.

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN THE DIRECTION SHOWN.

ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

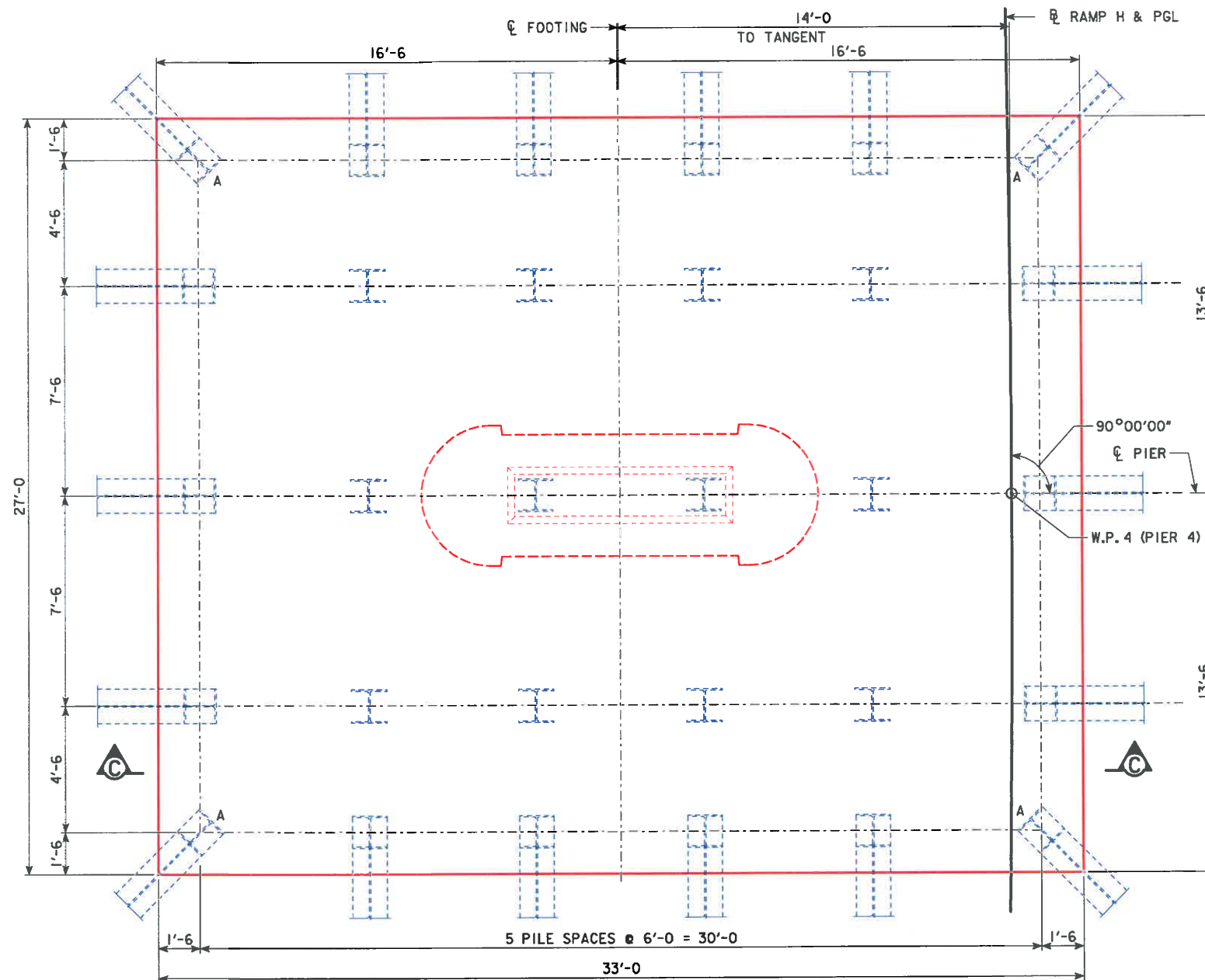
THE CONTRACT LENGTH OF 60 FEET FOR THE PIER 3 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 320 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 30 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

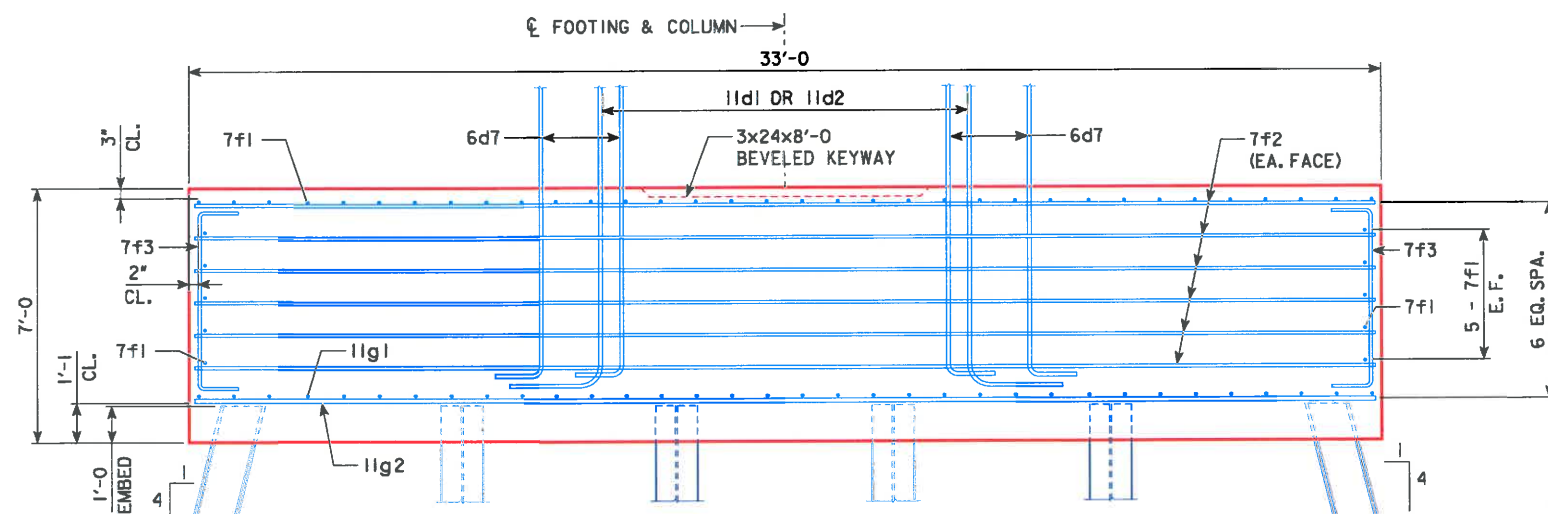
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 3 PILES IS 236 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 35 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

32 - HP14X117 STEEL BEARING PILING REQUIRED FOR PIER 3.

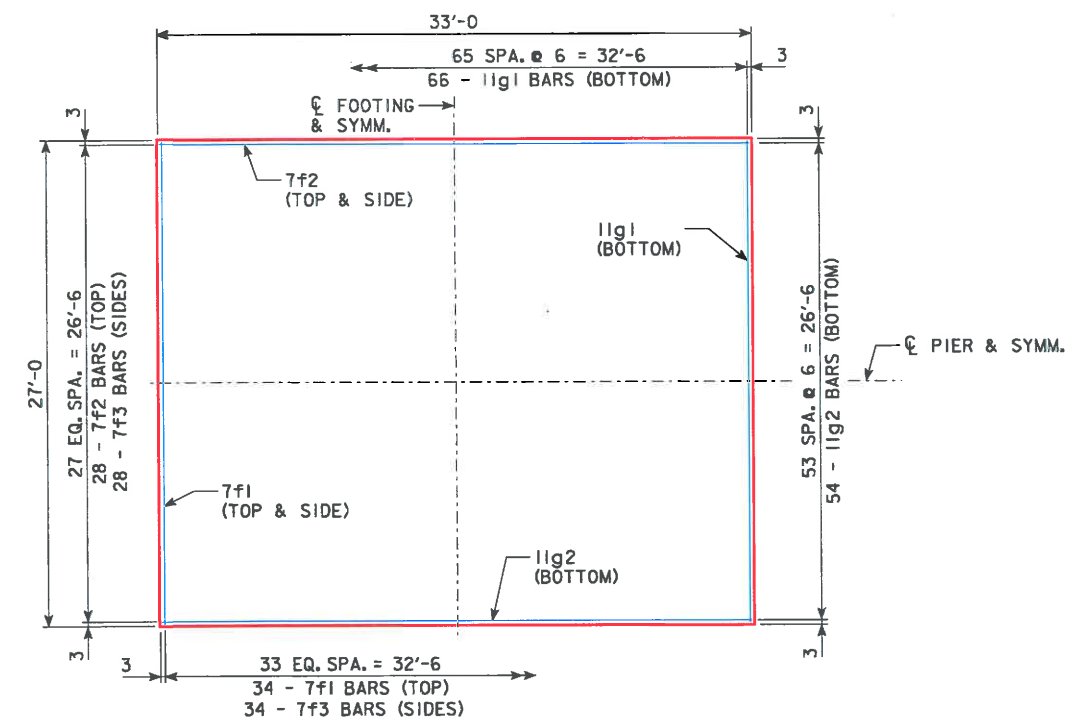
DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
1690'-0" X 36'-0" CONTINUOUS WELDED GIRDER BRIDGE
 190'-0", 240'-0", 251'-0", 271'-0", 271'-0", 267'-0", 200'-0" SPANS
PIER 3 FOOTING DETAILS
 STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 34 OF 105 FILE NO. 31296 DESIGN NO. 616



PIER FOOTING PLAN
30 - HPI4x117 STEEL BEARING PILING REQUIRED



SECTION C-C



PIER FOOTING REINFORCEMENT

NOTES:

PILES DESIGNATED WITH "A" REQUIRE PILE UPLIFT ANCHORS.

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN THE DIRECTION SHOWN.

ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

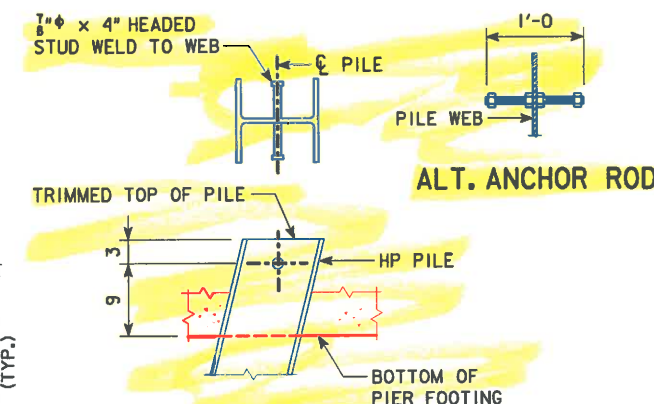
STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

THE CONTRACT LENGTH OF 55 FEET FOR THE PIER 4 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 330 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 22 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 4 PILES IS 247 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 35 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

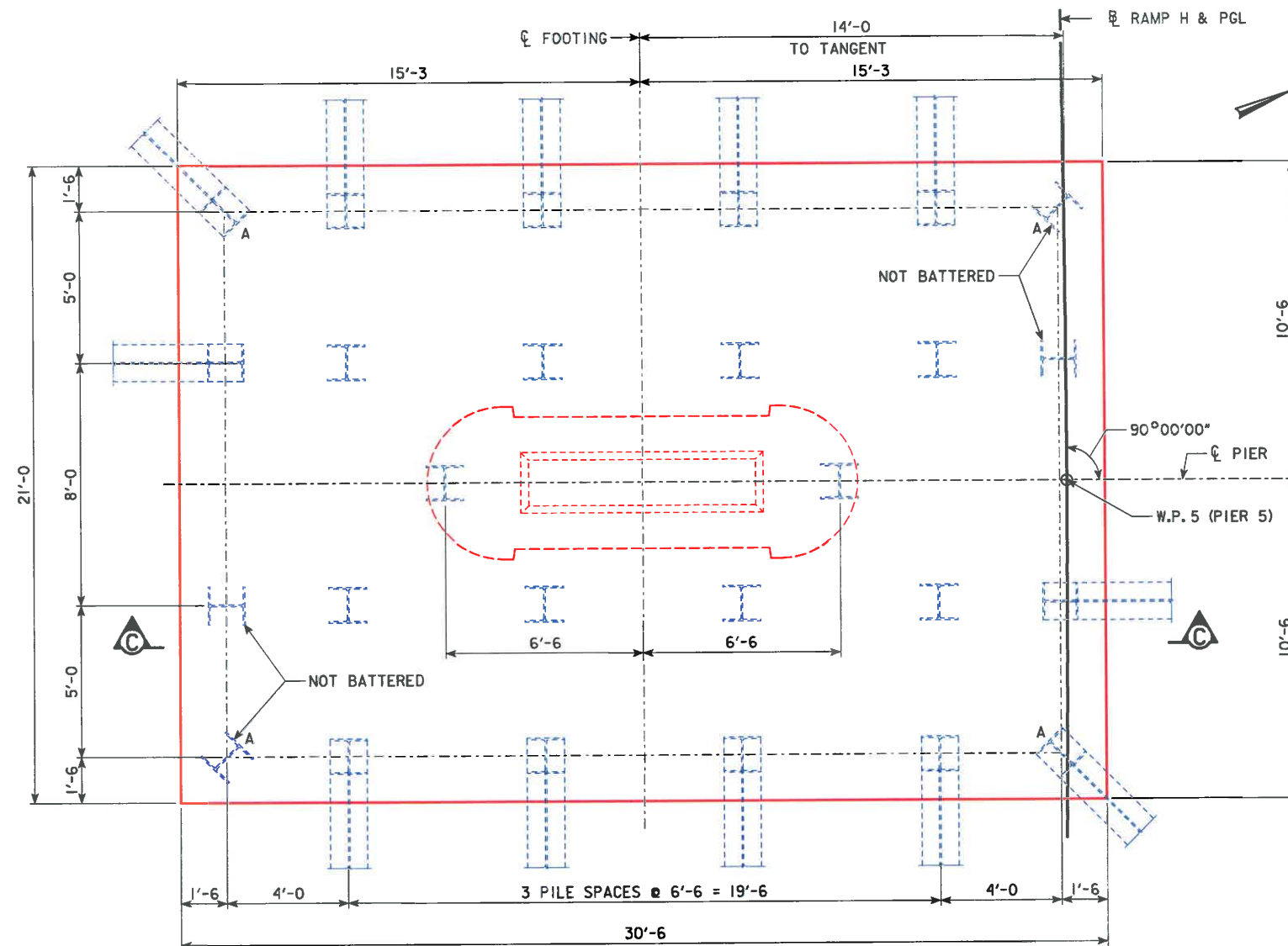
30 - HPI4x117 STEEL BEARING PILING REQUIRED FOR PIER 4.



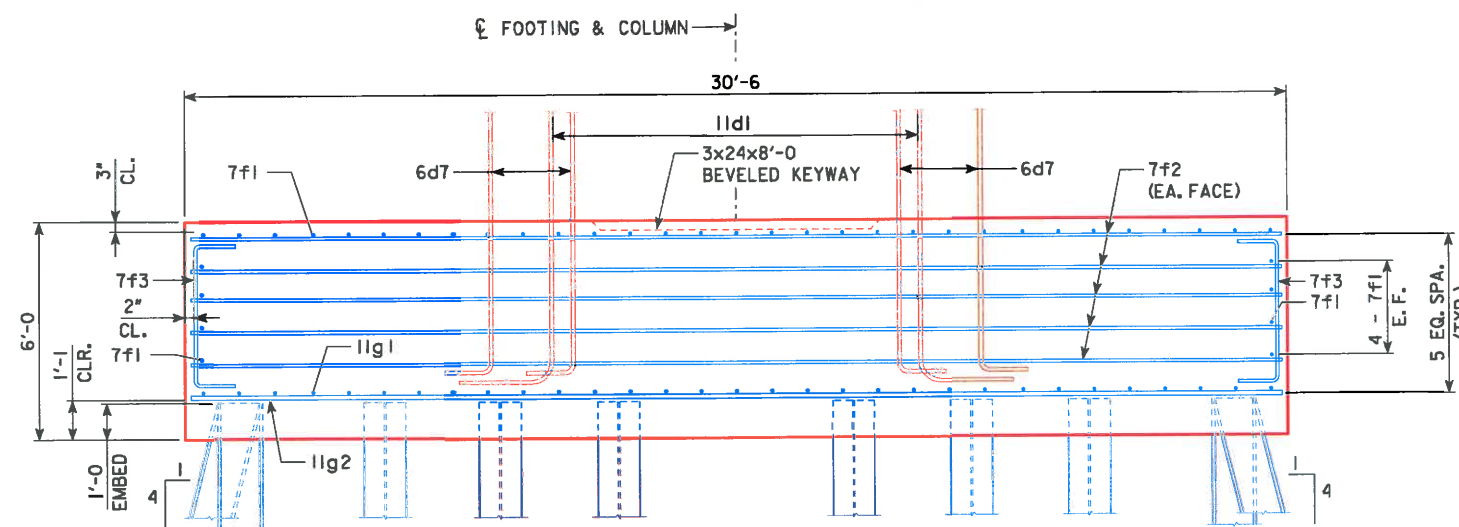
PILE UPLIFT ANCHOR DETAIL
(REQ'D AT PILES MARKED "A")

IN LIEU OF TWO STUDS, ONE 7/8" x 1'-0" LONG, THREADED F1554 GRADE 36 ANCHOR ROD WITH (4) A563 GRADE A HEX NUTS MAY BE USED. THE HOLE SHALL BE DRILLED OR PUNCHED IN ACCORDANCE WITH SECTION 2408 OF THE STANDARD SPECIFICATIONS IN THE SAME LOCATION AS THE STUDS.

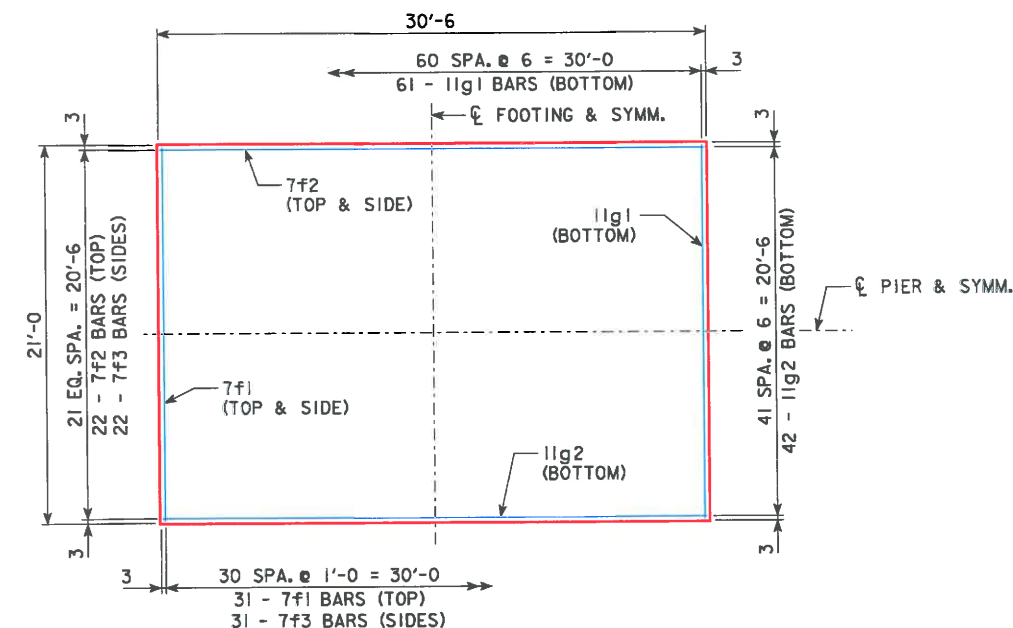
DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
1690'-0" X 36'-0" CONTINUOUS WELDED GIRDER BRIDGE
 190'-0", 240'-0", 251'-0", 271'-0", 271'-0", 267'-0", 200'-0" SPANS
PIER 4 FOOTING DETAILS
 STA. 8525+52.00 (RAMP H) JULY, 2016
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 35 OF 105 FILE NO. 31296 DESIGN NO. 616



PIER FOOTING PLAN
26 - HP14x117 STEEL BEARING PILING REQUIRED



SECTION C-C



PIER FOOTING REINFORCEMENT

NOTES:

PILES DESIGNATED WITH "A" REQUIRE PILE UPLIFT ANCHORS. SEE DESIGN SHEET 35 FOR DETAILS.

PILE DIMENSIONS SHOWN ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN THE DIRECTION SHOWN.

ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

THE CONTRACT LENGTH OF 60 FEET FOR THE PIER 5 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 320 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 26 KIPS AND AN EXTREME TENSION OF 27 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 5 PILES IS 240 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 35 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

26 - HP14x117 STEEL BEARING PILING REQUIRED PER PIER FOR PIER 5.

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
**1690'-0" X 36'-0" CONTINUOUS
WELDED GIRDER BRIDGE**
190'-0", 240'-0", 251'-0", 271'-0", 271'-0", 267'-0", 200'-0" SPANS
PIER 5 FOOTING DETAILS
STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 36 OF 105 FILE NO. 31296 DESIGN NO. 616

REINFORCING BAR LIST - PIER 1					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		52	15'-1	4167
11d2	COLUMN, VERTICAL		52	34'-9	9601
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	41'-7	62
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	41'-9	125
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	42'-1	126
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	42'-7	128
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	43'-4	130
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	44'-1	132
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	43'-6	65
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-7	131
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-11	132
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	44'-5	133
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	45'-2	136
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	45'-11	138
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		110	23'-4	2677
5e2	COLUMN, TIES		55	11'-6	660
6e5	COLUMN STIRRUPS		69	11'-8	1209
6e6-6e29	COLUMN STIRRUPS		57	TABLE	1307
7f1	PILE FOOTING, TOP, TRANS.		42	20'-8	1774
7f2	PILE FOOTING, TOP, LONGIT.		30	32'-8	2003
7f3	PILE FOOTING, SIDES, U-BARS		112	6'-7	1507
11g1	PILE FOOTING, BOTT., TRANS.		66	20'-8	7247
11g2	PILE FOOTING, BOTT., LONGIT.		42	32'-8	7289
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - TOTAL (LBS.)					58035

REINFORCING BAR LIST - PIER 2					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		52	15'-1	4167
11d2	COLUMN, VERTICAL		52	34'-3	9462
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	41'-1	62
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	41'-3	124
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	41'-7	125
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	42'-1	126
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	42'-10	129
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	43'-7	131
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	43'-0	65
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-1	129
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-5	130
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-11	132
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	44'-8	134
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	45'-5	136
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		108	23'-4	2628
5e2	COLUMN, TIES		54	11'-6	648
6e5	COLUMN STIRRUPS		67	11'-8	1174
6e6-6e29	COLUMN STIRRUPS		57	TABLE	1307
7f1	PILE FOOTING, TOP, TRANS.		42	20'-8	1774
7f2	PILE FOOTING, TOP, LONGIT.		30	32'-8	2003
7f3	PILE FOOTING, SIDES, U-BARS		112	6'-7	1507
11g1	PILE FOOTING, BOTT., TRANS.		66	20'-8	7247
11g2	PILE FOOTING, BOTT., LONGIT.		42	32'-8	7289
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - TOTAL (LBS.)					57785

REINFORCING BAR LIST - PIER 3					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		84	30'-3	13500
11d2	FOOTING TO COLUMN DOWEL		46	17'-1	4175
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	29'-5	44
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	29'-7	89
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	29'-11	90
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	30'-5	91
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	31'-2	94
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	31'-11	96
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	31'-4	47
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	31'-5	94
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	31'-9	95
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	32'-3	97
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	33'-0	99
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	33'-9	101
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		62	23'-4	1509
5e2	COLUMN, TIES		62	11'-6	744
5e3	COLUMN, TIES		62	5'-0	323
6e5	COLUMN STIRRUPS		37	11'-8	648
6e6-6e29	COLUMN STIRRUPS		57	TABLE	1307
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - EPOXY COATED - TOTAL (LBS.)					40399
7f1	PILE FOOTING, TOP, TRANS.		24	26'-8	1308
7f2	PILE FOOTING, TOP, LONGIT.		16	32'-8	1068
7f3	PILE FOOTING, SIDES, U-BARS		116	7'-7	1798
7f4	PILE FOOTING, TOP, TRANS		8	VARIES	400
7f5	PILE FOOTING, TOP, LONGIT.		10	VARIES	629
7f6	PILE FOOTING, SIDES, TRANS		12	21'-4	523
7f7	PILE FOOTING, SIDES, LONGIT.		12	28'-3	693
7f8	PILE FOOTING, SIDES, CORNERS		14	7'-1	203
11g1	PILE FOOTING, BOTT., TRANS.		48	26'-8	6801
11g2	PILE FOOTING, BOTT., LONGIT.		32	32'-8	5554
11g4	PILE FOOTING, BOTT., TRANS.		18	VARIES	2275
11g5	PILE FOOTING, BOTT., LONGIT.		22	VARIES	3546
REINFORCING STEEL - TOTAL (LBS.)					24798

7f, 7f5 11g4 AND 11g5		
BARS	MIN. LENGTH	MAX. LENGTH
7f4	22'-7	26'-4
7f5	29'-1	32'-5
11g4	21'-4	26'-3
11g5	28'-3	32'-5

PIER NOTES:
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED.

REINFORCING BARS MAY BE SHIFTED SLIGHTLY TO CLEAR ANCHOR BOLTS.

ANCHOR BOLTS ARE TO BE PRESET IN PIERS IN ACCORDANCE WITH ARTICLE 2405.03, H, 2 OF THE STANDARD SPECIFICATIONS.

WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER/FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

THE 11d AND 6d7 FOOTING TO COLUMN DOWELS ARE TO BE IN PLACE BEFORE FOOTING CONCRETE IS PLACED.

NOTES:

SEE DESIGN SHEET 40 FOR TABLES.

REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
**1690'-0 X 36'-0 CONTINUOUS
W**

REINFORCING BAR LIST - PIER 4					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		84	16'-2	7215
11d2	FOOTING TO COLUMN DOWEL		46	28'-3	6904
11d3	COLUMN, VERTICAL		84	33'-10	15100
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	40'-8	61
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	40'-10	123
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	41'-2	124
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	41'-8	125
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	42'-5	127
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	43'-2	130
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	42'-7	64
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	42'-8	128
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-0	129
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	43'-6	131
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	44'-3	133
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	45'-0	135
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		106	23'-4	2580
5e2	COLUMN, TIES		106	11'-6	1271
5e3	COLUMN, TIES		106	5'-0	553
6e5	COLUMN STIRRUPS		67	11'-8	1174
6e6-6e29	COLUMN STIRRUPS		57	TABLE	1307
7f1	PILE FOOTING, TOP, TRANS.		44	26'-8	2398
7f2	PILE FOOTING, TOP, LONGIT.		38	32'-8	2537
7f3	PILE FOOTING, SIDES, U-BARS		124	7'-7	1922
11g1	PILE FOOTING, BOTT., TRANS.		66	26'-8	9351
11g2	PILE FOOTING, BOTT., LONGIT.		54	32'-8	9372
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - TOTAL (LBS.)					80250

EPOXY COATED BARS

NON-COATED BARS

REINFORCING BAR LIST - PIER 5					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		52	16'-9	4628
11d2	COLUMN, VERTICAL		52	29'-10	8242
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	36'-7	55
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	36'-9	110
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	37'-1	111
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	37'-7	113
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	38'-4	115
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	39'-1	117
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	38'-7	58
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	38'-8	116
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	39'-0	117
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	39'-6	119
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	40'-3	121
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	41'-0	123
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		90	23'-4	2190
5e2	COLUMN, TIES		45	11'-6	540
6e5	COLUMN STIRRUPS		55	11'-8	964
6e6-6e29	COLUMN STIRRUPS		57	TABLE	1307
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - EPOXY COATED - TOTAL (LBS.)					36302
7f1	PILE FOOTING, TOP, TRANS.		39	20'-8	1647
7f2	PILE FOOTING, TOP, LONGIT.		30	30'-2	1850
7f3	PILE FOOTING, SIDES, U-BARS		106	6'-7	1426
11g1	PILE FOOTING, BOTT., TRANS.		61	20'-8	6698
11g2	PILE FOOTING, BOTT., LONGIT.		42	30'-2	6732
REINFORCING STEEL - TOTAL (LBS.)					18353

EPOXY COATED BARS

NON-COATED BARS

REINFORCING BAR LIST - PIER 6					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL		12	43'-8	2784
11a2	CAP, TOP, LONGITUDINAL		12	42'-0	2678
11a3	CAP, TOP, LONGITUDINAL		12	37'-6	2391
8a4	CAP, LONGITUDINAL		4	37'-8	402
8a5	CAP, LONGITUDINAL		4	38'-0	406
8a6	CAP, LONGITUDINAL		4	32'-8	349
8a7	CAP, LONGITUDINAL		4	26'-7	284
8a8	CAP, LONGITUDINAL		4	22'-0	235
8a9	CAP, LONGITUDINAL		4	19'-1	204
8a10	CAP, LONGITUDINAL		4	17'-1	182
8a11	CAP, LONGITUDINAL		4	15'-7	166
8a12	CAP, LONGITUDINAL		4	14'-4	153
8a13	CAP, LONGITUDINAL		4	13'-5	143
5a14	CAP, END		12	6'-0	75
5a15	CAP, END, TOP		16	9'-4	156
5a16	CAP, END		18	4'-5	83
5a17	CAP, END		2	12'-10	27
5a18	CAP, END		2	10'-10	23
5a19	CAP, END		2	7'-0	15
5a20	CAP, END		2	4'-8	10
6c1	CAP, U-BAR STIRRUPS		108	15'-0	2433
6c2	CAP, U-BAR STIRRUPS		36	11'-8	631
6c3	CAP, U-BAR STIRRUPS		36	10'-0	541
6c4	CAP, U-BAR STIRRUPS		56	9'-2	771
6c5	CAP, HOOPS		38	12'-8	723
6c6	CAP, TOP, U-BARS		24	6'-8	240
11d1	FOOTING TO COLUMN DOWEL		52	26'-8	7367
6d7	FTG. TO COLUMN DOWEL, SURFACE		22	9'-10	325
6d8	LEFT COLUMN, SURFACE, VERTICAL		1	26'-10	40
6d9	LEFT COLUMN, SURFACE, VERTICAL		2	27'-0	81
6d10	LEFT COLUMN, SURFACE, VERTICAL		2	27'-4	82
6d11	LEFT COLUMN, SURFACE, VERTICAL		2	27'-10	84
6d12	LEFT COLUMN, SURFACE, VERTICAL		2	28'-7	86
6d13	LEFT COLUMN, SURFACE, VERTICAL		2	29'-4	88
6d14	RIGHT COLUMN, SURFACE, VERTICAL		1	28'-9	43
6d15	RIGHT COLUMN, SURFACE, VERTICAL		2	28'-10	87
6d16	RIGHT COLUMN, SURFACE, VERTICAL		2	29'-2	88
6d17	RIGHT COLUMN, SURFACE, VERTICAL		2	29'-8	89
6d18	RIGHT COLUMN, SURFACE, VERTICAL		2	30'-5	91
6d19	RIGHT COLUMN, SURFACE, VERTICAL		2	31'-2	94
6d20	LEFT COLUMN, SURFACE, VERTICAL		2	16'-9	50
6d21	RIGHT COLUMN, SURFACE, VERTICAL		2	16'-2	49
6d22	COLUMN, SURFACE		4	15'-2	91
6d23	COLUMN, SURFACE		4	13'-9	83
6d24	LEFT COLUMN, SURFACE		2	8'-4	25
6d25	LEFT COLUMN, SURFACE		2	4'-10	15
6d26	RIGHT COLUMN, SURFACE		2	6'-3	19
5e1	COLUMN, HOOPS		52	23'-4	1266
5e2	COLUMN, TIES		26	11'-6	312
6e5	COLUMN, TIES		29	11'-8	508
6e5-6e29	COLUMN STIRRUPS		57	TABLE	1307
5m1	CAP, PEDESTAL, LONGIT.		21	9'-4	204
5n1	CAP, PEDESTAL, TRANS.		21	8'-8	190
REINFORCING STEEL - EPOXY COATED - TOTAL (LBS.)					28869
7f1	PILE FOOTING, TOP, TRANS.		42	20'-8	1774
7f2	PILE FOOTING, TOP, LONGIT.		30	32'-8	2003
7f3	PILE FOOTING, SIDES, U-BARS		112	6'-7	1507
11g1	PILE FOOTING, BOTT., TRANS.		66	20'-8	7247
11g2	PILE FOOTING, BOTT., LONGIT.		42	32'-8	7289
REINFORCING STEEL - TOTAL (LBS.)					19820

NOTES:

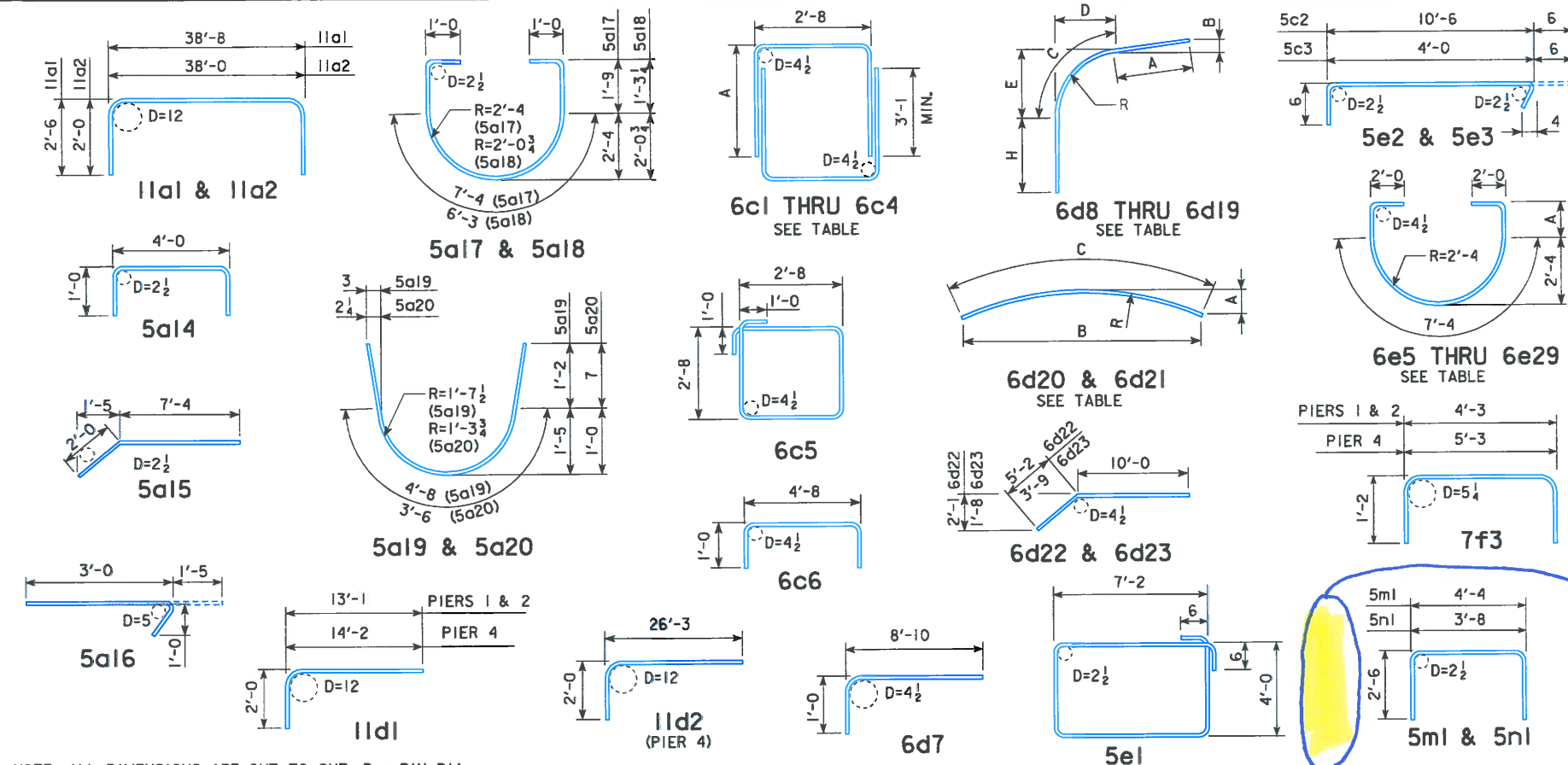
SEE DESIGN SHEET 40 FOR TABLES.

REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
**1690'-0 X 36'-0 CONTINUOUS
WELDED GIRDER BRIDGE**
190'-0, 240'-0, 251'-0, 271'-0, 271'-0, 267'-0, 200'-0 SPANS
PIER REBAR LIST AND DETAILS
STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 39 OF 105 FILE NO. 31296 DESIGN NO. 616

893 bars deleted

BENT BAR DETAILS (PIERS 1, 2 AND 4) (NON - COATED BARS)



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

6d8 THRU 6d19

BAR	A	B	C	D	E	R	H					
							PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6
6d8	8'-7	2'-4	10'-8	6'-0	7'-11	8'-2 1/2	22'-3	21'-10	10'-1	21'-5	17'-4	7'-7
6d9	8'-7	2'-4	10'-10	6'-1	8'-0	8'-4						
6d10	8'-6	2'-4	11'-3	6'-4	8'-4	8'-7 1/8						
6d11	8'-5	2'-3	11'-10	6'-8	8'-10	9'-1 1/2						
6d12	8'-4	2'-3	12'-8	7'-1	9'-5	9'-9 1/4						
6d13	8'-2	2'-3	13'-7	7'-7	10'-1	10'-5 1/2	24'-2	23'-8	12'-0	23'-3	19'-3	9'-5
6d14	8'-8	2'-4	10'-8	6'-0	7'-11	8'-2 1/2						
6d15	8'-7	2'-4	10'-10	6'-1	8'-0	8'-4						
6d16	8'-6	2'-4	11'-3	6'-4	8'-4	8'-7 1/8						
6d17	8'-5	2'-3	11'-10	6'-8	8'-10	9'-1 1/2						
6d18	8'-4	2'-3	12'-8	7'-1	9'-5	9'-9 1/4	24'-2	23'-8	12'-0	23'-3	19'-3	9'-5
6d19	8'-2	2'-3	13'-7	7'-7	10'-1	10'-5 1/2						

6c1 THRU 6c4

BAR	A
6c1	6'-2
6c2	4'-6
6c3	3'-8
6c4	3'-3

6e5 THRU 6e29

BAR	NO.	A	LENGTH
6e5	*	2	11'-8
6e6	2	3	11'-10
6e7	2	4	12'-0
6e8	2	5	12'-2
6e9	2	6	12'-4
6e10	2	8	12'-8
6e11	2	10	13'-0
6e12	2	1'-0	13'-4
6e13	2	1'-2	13'-8
6e14	2	1'-4	14'-0
6e15	2	1'-6	14'-4
6e16	4	1'-9	14'-10
6e17	4	2'-0	15'-4
6e18	4	2'-2	15'-8
6e19	3	2'-5	16'-2
6e20	5	2'-8	16'-8
6e21	4	2'-11	17'-2
6e22	4	3'-2	17'-8
6e23	2	3'-6	18'-4
6e24	2	3'-9	18'-10
6e25	1	4'-0	19'-4
6e26	1	1'-8	14'-8
6e27	1	3'-1 1/2	17'-7
6e28	1	2'-5	16'-2
6e29	1	1'-11	15'-2

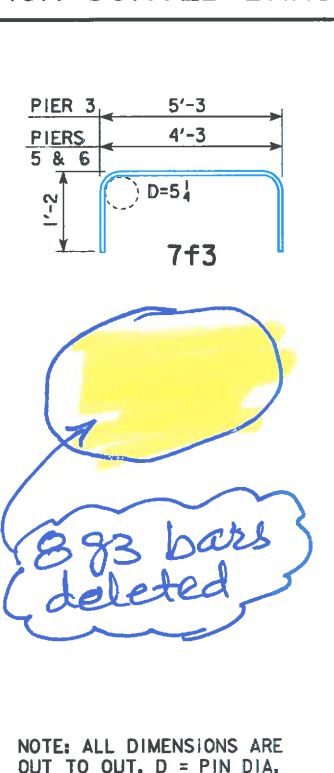
6d20 & 6d21

	A	B	C	R
6d20	2'-0	16'-0	16'-9	16'-10
6d21	2'-0 1/2	15'-5 1/2	16'-2	15'-7

893 bars deleted

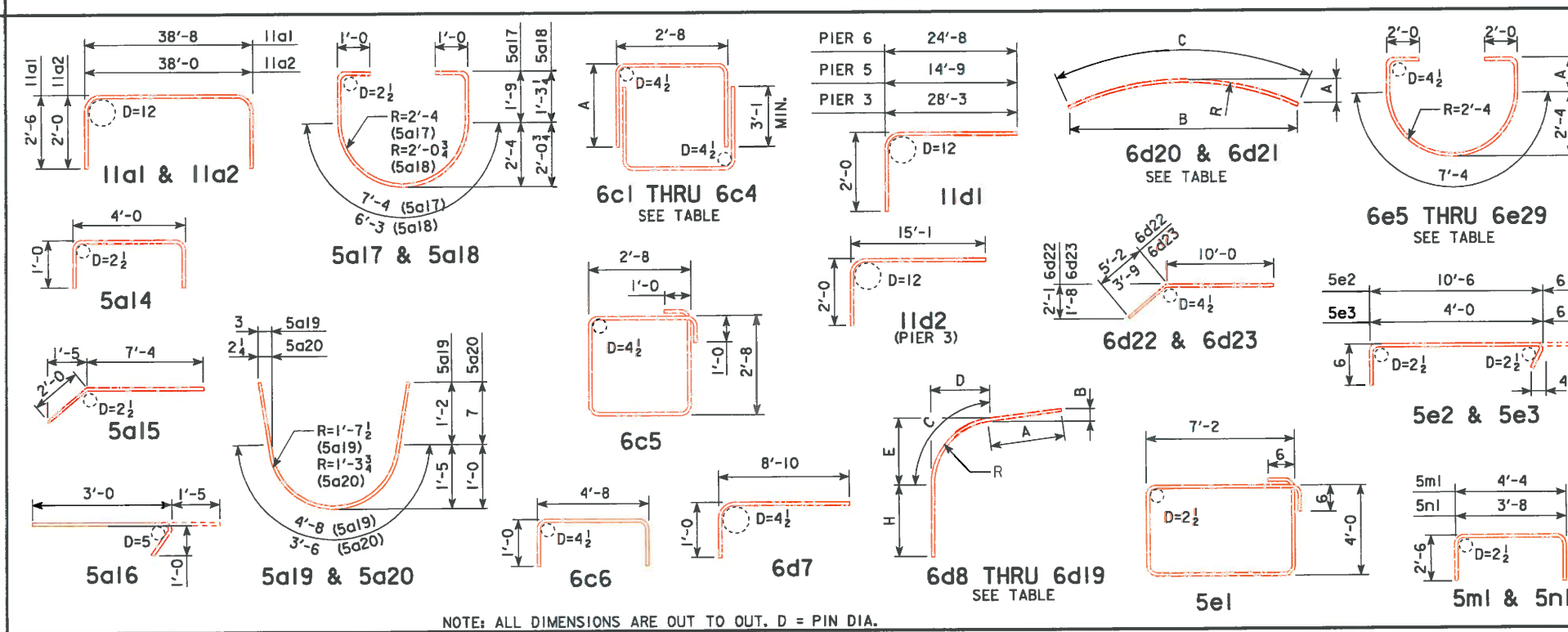
BENT BAR DETAILS (PIERS 3, 5 6)

NON-COATED BARS



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

EPOXY COATED BARS



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

NOTE:

REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

DESIGN FOR 0° SKEW ON 1100.00' RADIUS CURVE
1690'-0 X 36'-0 CONTINUOUS WELDED GIRDER BRIDGE
 190'-0, 240'-0, 251'-0, 271'-0, 271'-0, 267'-0, 200'-0 SPANS
PIER REBAR LIST AND DETAILS
 STA. 8525+52.00 (R - RAMP H) JULY, 2016
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 40 OF 105 FILE NO. 31296 DESIGN NO. 616