LETTING DATE 10-16-07

IM-080-1(308)2--13-78

POTTAWATTAMIE COUNTY

CONVENTIONAL SIGNS

- DIVIDED HIGHWAY
- PAVED ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTH ROAD
- INTERSTATE HIGHWAY (000)
- UNITED STATES HIGHWAY (000)
- STATE HIGHWAY (000)
- COUNTY HIGHWAY (000)
- 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

INTERSTATE ROAD SYSTEM

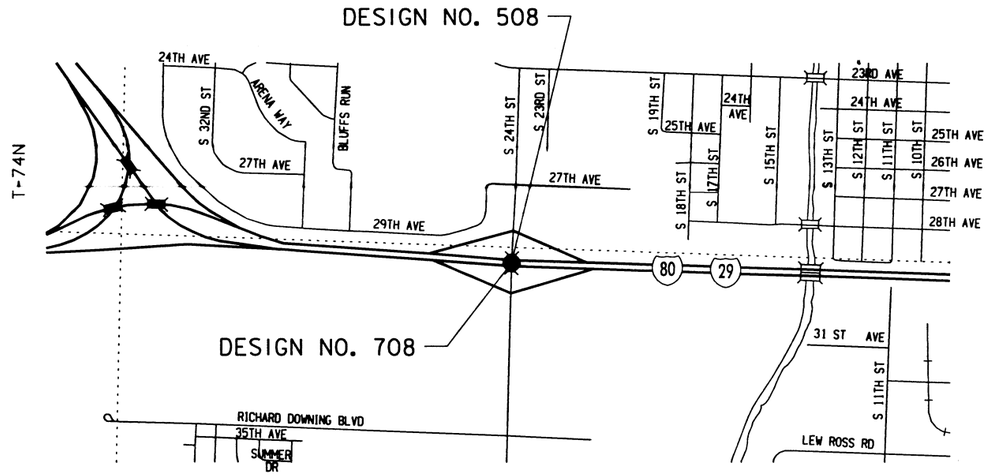
POTTAWATTAMIE COUNTY

BRIDGE REPLACEMENT-STEEL GIRDER ON 24TH STREET OVER I-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.

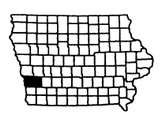
VALUE ENGINEERING SAVES. REFER TO THE GENERAL NOTES IN THESE PLANS.

HIGHWAYS FOR LIFE
Accelerating innovation for the American driving experience



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

PROJECT DIRECTORY NAME: P8921997 / 7802901004

TOTAL SHEETS
84
PROJECT NUMBER
IM-080-1(308)2--13-78
R.O.W. PROJECT NUMBER
PROJECT IDENTIFICATION NUMBER
04-78-029-010-02

INDEX OF SHEETS

ENGLISH STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED

REVISIONS

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

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	HUSSEIN H. KHALIL	STRUCTURAL DESIGN
SPS.01	ROBERT L. STANLEY	SOILS DESIGN

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — Hussein H. Khalil — 18219 — 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 — Date 8/15/07

Hussein H. Khalil
Printed or Typed Name

My license renewal date is December 31, 2008

Pages or sheets covered by this seal: SHEETS 1 THRU 81 OF 81

DESIGN TEAM: HDR	ENGLISH	IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES	FILE NO. 30169	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 1

POTTAWATTAMIE COUNTY - DESIGN NO. 508

C:\PWworking\OMA\d0132081\78080308.brg

SPECIFICATIONS:

SUPERSTRUCTURE DESIGN: AASHTO LRFD SERIES OF 2004.

SUBSTRUCTURE DESIGN: AASHTO STANDARD SERIES OF 2002.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS, INCLUDING DEVELOPMENTAL SPECIFICATIONS FOR CONSTRUCTION PROGRESS SCHEDULE, DEVELOPMENTAL SPECIFICATION FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES (COUNCIL BLUFFS INTERSTATE SYSTEM), DEVELOPMENTAL SPECIFICATIONS FOR "COLORED SEALER COATING FOR STRUCTURAL CONCRETE", DEVELOPMENTAL SPECIFICATION FOR DISC BEARING ASSEMBLY, SPECIAL PROVISIONS FOR A+B BIDDING, SPECIAL PROVISIONS FOR "PRECAST POST-TENSIONED SLAB PANELS", SPECIAL PROVISIONS FOR "STONE VENEER", AND SUPPLEMENTAL SPECIFICATIONS FOR "CLEANING AND SURFACE PREPARATION OF GALVANIZED SURFACES" SHALL APPLY TO THE CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

SUPERSTRUCTURE: DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2004.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5, f'c = 3,500 PSI, EXCEPT AS NOTED.
CONCRETE FOR THE PRECAST DECK PANELS IS TO BE HIGH PERFORMANCE CONCRETE AND IS TO HAVE STRENGTH AS NOTED ON DESIGN SHEET 32. SHEAR STUD POCKETS, TRANSVERSE JOINTS AND GIRDER HAUNCHES (f'c = 6,000 PSI). STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 6, ASTM A709 GRADE 50W AND GRADE HPS70W (AASHTO M270 GRADE 50W AND GRADE HPS70W).

SUBSTRUCTURE: DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3,500 PSI, EXCEPT AS NOTED.

ALL PIER CONCRETE ABOVE THE FOOTING AND ALL ABUTMENT CONCRETE IS TO BE HIGH PERFORMANCE CONCRETE AND IS TO HAVE A MINIMUM f'c = 5,000 PSI.

ALL PILING SHALL BE GRADE 50.

GENERAL NOTES:

THE BRIDGE SUPERSTRUCTURE IS DESIGNED FOR HL93 LOADING.

THE BRIDGE SUBSTRUCTURE IS DESIGNED FOR HS-25 LOADING.

THE DESIGN OF THE SUPERSTRUCTURE IS BY THE LOAD AND RESISTANCE FACTOR DESIGN METHOD. THE DESIGN OF SUBSTRUCTURE IS BY THE LOAD FACTOR DESIGN METHOD, EXCEPT THE PILE BEARING VALUE IS BY THE SERVICE LOAD DESIGN METHOD.

THIS DESIGN IS FOR THE REPLACEMENT OF THE EXISTING 215'x53' CONTINUOUS I-BEAM BRIDGE, DESIGN NO. 6665. PLANS FOR THE EXISTING STRUCTURE WILL BE MADE AVAILABLE TO THE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS - HIGHWAY DIVISION - IOWA D.O.T. - AMES.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL OF THE EXISTING 215' x 53' CONTINUOUS PRESTRESSED I-BEAM BRIDGE.

STAGED REMOVALS ARE REQUIRED. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS EXCEPT THE EXISTING ABUTMENTS AND PIERS SHALL BE REMOVED TO THE ELEVATION AS SHOWN ON DESIGN SHEET 7.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THE CITY AND 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.

GENERAL NOTES (CON'T.):

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

THE CONTRACTOR SHALL NOTE THE STANDARD ABUTMENT DETAILS HAVE BEEN MODIFIED TO OFFSET THE ABUTMENT FOOTING FROM THE WINGWALL AND THE ABUTMENT FOOTING FROM THE BACKWALL TO AID IN TYING THE REINFORCING STEEL BETWEEN THE FOOTING TO WINGWALL AND THE FOOTING TO BACKWALL.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENTS THE INTENDED METHOD FOR THE DEMOLITION OF THE EXISTING BRIDGE AND THE ERECTION OF THE STEEL GIRDERS AND THE PRECAST PANELS. AT A MINIMUM THE SUBMITTAL SHALL INCLUDE THE START & FINISH TIME ON A DAILY BASIS FOR EACH OF THE WORK ACTIVITIES STATED PREVIOUSLY. ALSO, TYPE OF EQUIPMENT AND METHODS OF REMOVAL AND ERECTION.

CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03B OF THE STANDARD SPECIFICATION. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD). CONCRETE CURING COMPOUNDS CONTAINING PARAFIN SHALL NOT BE USED.

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE HPS 50W AND GRADE HPS 70W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 2408.30.

TEMPORARY SHORING (SHEET PILE OR OTHER) SHALL BE REQUIRED AS NECESSARY TO PREVENT THE EARTH UNDER THE TRAFFIC LANE FROM SLOUGHING IN DURING CONSTRUCTION.

THE CONTRACTOR SHALL SUBMIT A TEMPORARY SHORING PLAN TO THE ENGINEER FOR APPROVAL. THE TEMPORARY SHORING PLAN SHALL BE DESIGNED AND CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF IOWA. THE CONTRACTOR SHALL SUBMIT 6 COPIES OF PLANS FOR TEMPORARY SHORING. THE ENGINEER WILL BE ALLOWED 30 CALENDAR DAYS TO REVIEW THE TEMPORARY SHORING PLAN. THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION OF THE TEMPORARY SHORING WITHOUT NOTICE TO PROCEED FROM THE ENGINEER.

THE TEMPORARY SHORING SUBMITTAL SHALL INCLUDE:
- DESIGN CALCULATIONS (INCLUDING A GLOBAL STABILITY ANALYSIS)
- SOIL PROPERTIES
- SHORING MATERIAL PROPERTIES
- SHORING PLAN LAYOUT (SHOWING LOCATION OF TRAFFIC)
- SHORING DETAILS

TEMPORARY SHORING SHALL BE PAID FOR AS A LUMP SUM INCLUDING ALL COST FOR DESIGNING, FURNISHING, INSTALLING AND REMOVAL. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS STILL APPLIES.

CONCRETE SEALER IS TO BE APPLIED TO THE EXPOSED BRIDGE SEAT SURFACE AT THE ABUTMENTS.

SUBSTRUCTURE CONCRETE SHALL BE PROTECTED FROM STAINING BY A WRAPPING OF POLYETHYLENE OR SIMILAR MATERIALS WHICH SHALL BE LEFT IN PLACE AND KEPT IN A SERVICEABLE CONDITION UNTIL AFTER THE DECK HAS BEEN PLACED. IF SUBSTRUCTURE CONCRETE IS STAINED, THE STAINS SHALL BE REMOVED BY METHODS APPROVED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH THE PROTECTION AND ANY REQUIRED CLEANING OF THE SUBSTRUCTURE CONCRETE SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL".

LONGITUDINAL GROOVING WILL NOT BE AS PART OF THIS PROJECT, BUT WILL BE INCLUDED IN ANOTHER PROJECT ASSOCIATED WITH THIS CONTRACT.

TEMPORARY CONCRETE BARRIERS REQUIRED FOR PHASING ARE NOT PAID FOR AS A PART OF THIS PROJECT, BUT WILL BE PAID FOR IN ANOTHER PROJECT ASSOCIATED WITH THIS CONTRACT.

THE BRIDGE FLOOR SURFACING CONCRETE SHALL NOT BE PLACED AFTER OCTOBER 31 AND PRIOR TO APRIL 1, WITHOUT WRITTEN APPROVAL OF THE ENGINEER. ALL OTHER LIMITATIONS OF OPERATIONS IN ARTICLE 2413.10 SHALL APPLY.

GENERAL NOTES (CON'T.):

A SCRAPE SAMPLE WAS TAKEN FROM AREAS OF THE EXISTING BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. SAMPLES WERE TAKEN FROM THE ABUTMENT BEARINGS AND EXPANSION DEVICES.
ANALYSIS OF TOTAL LEAD ON ABUTMENT BEARING WAS 4690 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON ABUTMENT BEARING WAS 2220 PPM.
ANALYSIS OF TOTAL LEAD ON EXPANSION DEVICE SAMPLE WAS 3575 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON EXPANSION DEVICE SAMPLE WAS 2325 PPM.
THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

SEE INDIVIDUAL DESIGN SHEETS FOR SPECIFIC NOTES AND DETAILS DESCRIBING THE FEATURES WHICH INCORPORATE TEXTURED CONCRETE. WORK PERFORMED TO CREATE TEXTURED CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR FORMWORK AND THE FOLLOWING:

FORM THE TEXTURED CONCRETE SURFACES USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER OR FLEXIBLE FOAM MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL EASILY ATTACH TO FORMS AND BE REMOVABLE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, USE STRUCTURAL BACKERS TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO FORM SURFACES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES AND DIMENSIONS SHOWN IN THE PLANS AND TO AVOID VISIBLE PATTERN REPEATS. MATCH PATTERN FEATURES AT FORM LINER JOINTS TO MINIMIZE PATTERN REPEATS AND MAKE THE FORMED CONCRETE SURFACE APPEAR UNIFORM AND CONTINUOUS WITHOUT VISIBLE SEAMS AND FORM MARKS. WHEN JOINTS ARE UNAVOIDABLE, MAKE JOINTS ALONG MAIN FEATURES OF THE PATTERN IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

FORM LINER EDGES FOLLOWING CURVES ARE TO BE CUT CLEANLY AND PARALLEL TO THE CURVE. USE ADEQUATE BLOCKING, SEALING AND OTHER MEANS IN ORDER TO MAINTAIN THE APPROPRIATE DEPTH AND CHARACTER OF TEXTURE AT CUT EDGES OF LINERS AND TO PREVENT MORTAR LEAKAGE.

LAY OUT INDIVIDUAL SIMULATED STONE LINERS WITHIN FORMS SO THAT NO VERTICAL MORTAR JOINTS ARE ALIGNED ON ADJACENT COURSES. DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING THE TEXTURED CONCRETE ON THIS PROJECT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT, AT HIS OWN COST, ANY SURFACE DEFECTS.

VERIFY THAT RELEASE AGENTS USED ARE COMPATIBLE WITH FORM LINER MATERIAL, AND ARE NON-STAINING. APPLY RELEASE AGENT IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS. RELEASE AGENTS MUST ALSO BE COMPATIBLE WITH THE PROPOSED CONCRETE STAINS TO BE USED TO COLOR THE CONCRETE.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN 1½ INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS AND AT HIGH POINTS OF FINISHED WALL.

STRIP FORMWORK IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS SUFFICIENT STRENGTH TO AVOID SURFACE DAMAGE. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO REUSE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

HDR

HDR Engineering, Inc.

NOTE:
ROADWAY QUANTIES SHOWN IN IM-080-1(334)2--13-78.

NOTE:
POLLUTION PREVENTION PLAN SHOWN IN IM-080-1(334)2--13-78.

TRAFFIC CONTROL PLAN:
REFER TO THE TRAFFIC CONTROL PLAN SHOWN IN IM-080-1(334)2--13-78.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

GENERAL NOTES

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 2

8/15/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

GENERAL NOTES (CON'T.):

CONSTRUCT A 4-FOOT HIGH, BY 10-INCH WIDE (MIN.), BY 8-FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. CAST THE MOCKUP PANEL ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINER, AND CONCRETE MIXTURE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACE SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO. 5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN CONCRETE TEXTURE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER CURING FOR A MINIMUM OF 28 DAYS, THE MOCKUP PANEL WILL ALSO BE USED TO DEMONSTRATE THE COLORED SEALER COATING APPLICATION. SEE DETAILS AND NOTES ON DESIGN SHEET 62 FOR FURTHER INFORMATION REGARDING COLORED SEALER.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS INCLUDING CONSTRUCTING AND REMOVING THE MOCKUP PANEL ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (HIGH PERFORMANCE)".

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a| 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 OF 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

THE CONCRETE USED TO FILL THE SHEAR STUD POCKETS AND GIRDER HAUNCHES SHALL BE A CLASS O-4WR, WITH THE FOLLOWING REQUIREMENTS:

SIZE OF AGGREGATE SHALL BE SUCH THAT A MAXIMUM OF 5% IS RETAINED ON THE $\frac{3}{8}$" SIEVE AND 100% PASSING THE $\frac{1}{2}$" SIEVE.
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.

IN ORDER TO OBTAIN THE PROPER AMOUNT OF THE WATER REDUCER ALONG WITH ITS USEFUL TIME, THE CONTRACTOR SHALL PRODUCE A TRIAL BATCH THAT SHALL BE REPRESENTATIVE OF THE PRODUCTION CONCRETE.

THE TRIAL BATCH CONCRETE SHALL BE MADE AT LEAST 14 CALENDAR DAYS PRIOR TO PLACEMENT.

THE DISTRICT MATERIALS ENGINEER SHALL BE NOTIFIED AT LEAST 7 CALENDAR DAYS PRIOR TO BATCHING.

THE DISTRICT MATERIALS ENGINEER SHALL BE WITNESS TO THE MIXING OF THE TRIAL BATCH.

TRIAL BATCH MATERIALS, PROPORTIONS, AND TEST RESULTS SHALL BE REPORTED TO THE DISTRICT MATERIALS ENGINEER FOR APPROVAL.

THE MAXIMUM EVAPORATION RATE SHALL BE 0.1 POUNDS PER SQUARE FOOT PER HOUR. WET BURLAP CURING SHALL BE PLACED IMMEDIATELY AFTER FINISHING AND COVERED WITH PLASTIC. CURING SHALL REMAIN IN PLACE AND KEPT WET FOR A MINIMUM OF 7 DAYS. THE CURING MAY BE REMOVED PRIOR TO 7 DAYS IF THE SPECIFIED STRENGTH HAS BEEN REACHED AND THE CURING IS REMOVED JUST PRIOR TO PLACEMENT OF THE BRIDGE FLOOR SURFACING. 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.

GENERAL NOTES (CON'T.):

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.

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

DESIGN HISTORY AT THIS SITE	
DES. NO.	TYPE OF WORK
6665	ORIGINAL DESIGN
492	BEAM REPLACEMENT
696	REPAIR + OVERLAY
508	BRIDGE REPLACEMENT
708	TERRACE WALLS

HDR Engineering, Inc.

NOTE:
ROADWAY QUANTIES SHOWN IN IM-080-1(334)2--13-78.

NOTE:
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DESIGN FOR 0° SKEW

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178'-6 & 175'-0 SPANS

GENERAL NOTES

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 3

8/24/2007 gclark c:\pwworking\oma\d0132081\78080308.brg

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	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	1086.4	
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	164639	
8	2408-7800000	STRUCTURAL STEEL	LB	1485189	
9	2413-0698130	BRIDGE FLOOR SURFACE (CLASS HPC-O PCC)	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	
14	2414-6772020	STEEL FENCE, WELDED WIRE MESH	LF	707.3	
15	2501-0201057	PILE, STEEL, HP 10x57	LF	13250.0	
16	2501-0201489	PILE, STEEL, HP 14x89	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
3	ALL PIER FOOTING CONCRETE SHALL BE CLASS "C".
4	ALL CAST-IN-PLACE SLAB CONCRETE, INCLUDING CLOSURE POUR AND END SECTIONS, 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 AND 629 FT. OF 1" DIA. RIGID STEEL CONDUIT. INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING 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 $\frac{3}{4}$" DIA. RIGID STEEL CONDUIT IN BARRIERS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS.
14	THE QUANTITY FOR "STEEL FENCE, WELDED WIRE MESH" WILL BE MEASURED IN LINEAR FEET END TO END OF FENCE AS SHOWN IN THE CONTRACT DOCUMENTS. FOR THE NUMBER OF LINEAR FEET OF FENCE CONSTRUCTED THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. PAYMENT FOR THE FENCE QUANTITY SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, ANCHORAGES, PAINTING, EQUIPMENT AND LABOR NECESSARY TO CONSTRUCT THE FENCE AS SHOWN IN THE CONTRACT DOCUMENTS.
15, 16	PILING SHALL BE GRADE 50.
17	INCLUDES THE COST TO DESIGN, FURNISH AND INSTALL SHEETING & SHORING TYPE "A" & TYPE "C" 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. TYPE "B" SHEETING & SHORING IS PAID FOR IN ANOTHER PROJECT ASSOCIATED WITH THIS CONTRACT.
20	THIS ITEM INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE PRECAST SLAB PANELS. INCLUDING GROUT FOR TRANSVERSE JOINTS (19.8 CY), $\frac{3}{4}$" 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 O-4 WR CONCRETE. INCLUDES ALL COSTS ASSOCIATED WITH DECK FORMING AS SHOWN ON DETAIL "C" ON DESIGN SHEET 7.
22	INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND APPLYING ANTI-GRAFFITI COATING (270.0 SY).
23	METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE PER SQUARE YARD AS MEASURED IN THE FIELD.

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ESTIMATED QUANTITIES

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

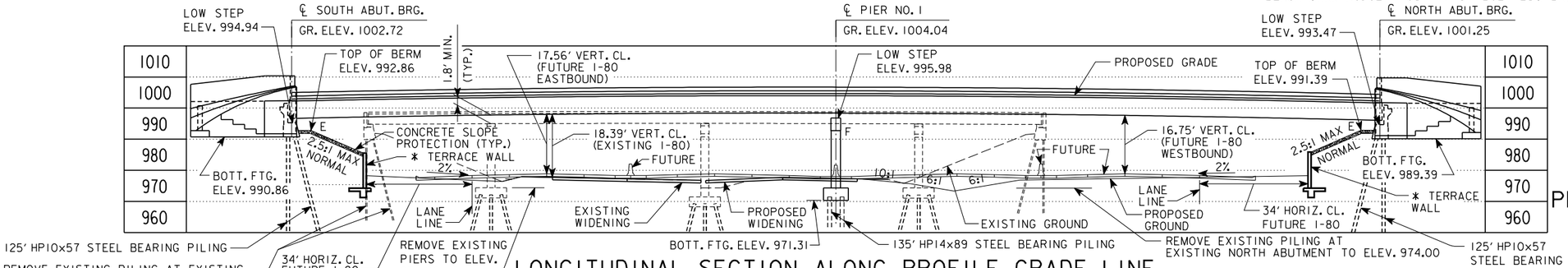
JUNE, 2007

POTTAWATTAMIE COUNTY

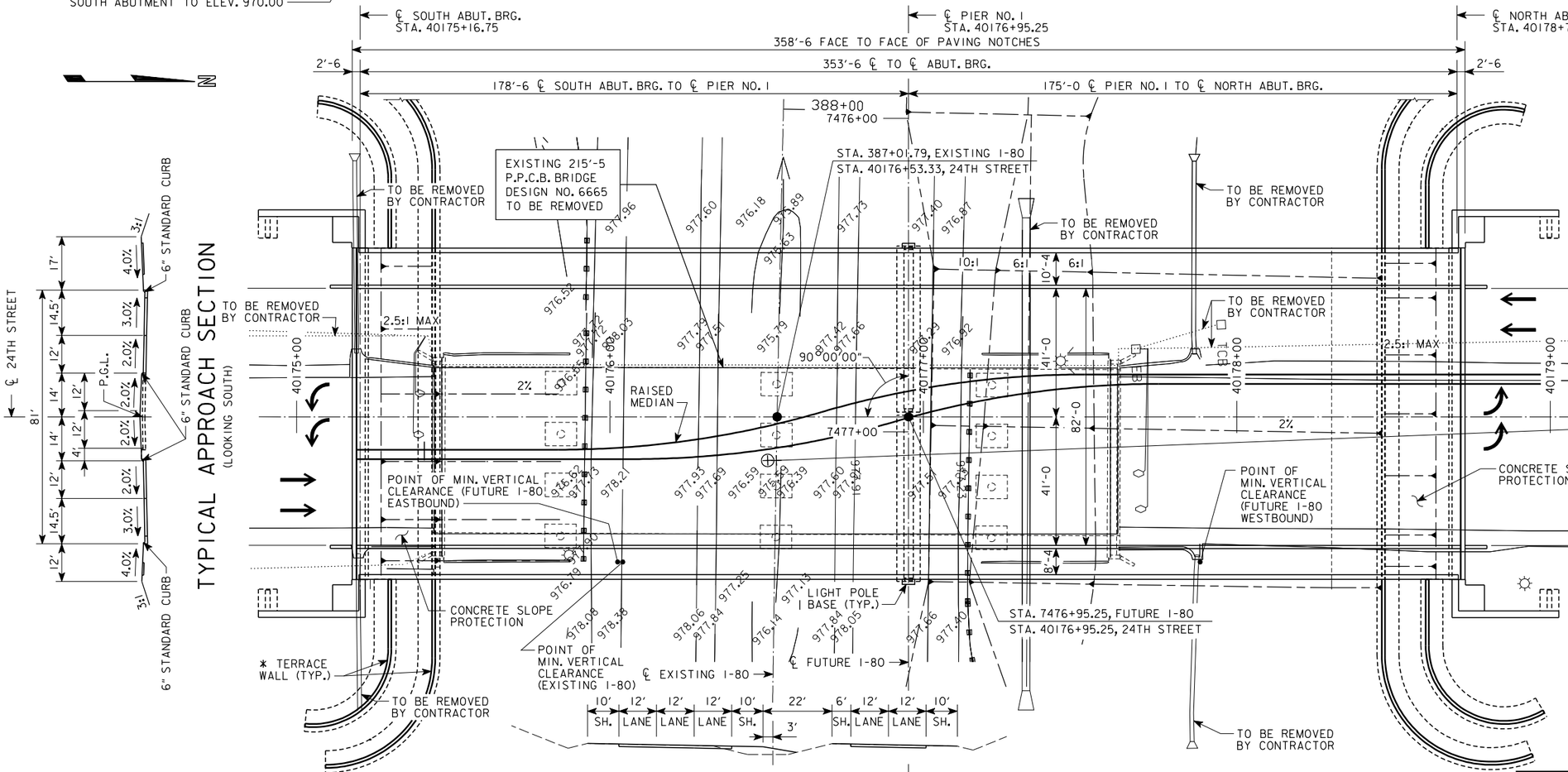
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 62 FILE NO. 30169 DESIGN NO. 508

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

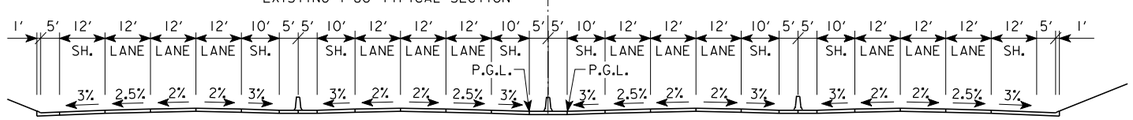


LONGITUDINAL SECTION ALONG PROFILE GRADE LINE



TYPICAL APPROACH SECTION (LOOKING SOUTH)

EXISTING I-80 TYPICAL SECTION



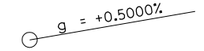
FUTURE I-80 TYPICAL SECTION
(NOT IN THIS CONTRACT)

* SEE DESIGN 708 FOR DETAILS AND PAYMENTS.

SITUATION PLAN

V.P.I. STA. 40176+80.00
V.P.I. ELEV. 1008.23
V.C. = 500'

PROPOSED PROFILE GRADE 24TH STREET



V.P.T. STA. 7476+00.00
ELEV. 977.65

PROPOSED PROFILE GRADE FUTURE I-80

MINIMUM VERTICAL CLEARANCE

24TH ST. STATION 40177+88.25
ELEVATION AT PROFILE GRADE = 1003.06
ELEVATION AT LOW GIRDER = 1001.96
(TOP OF PRECAST SLAB PANEL)

FUTURE I-80 STATION 7477+43.75
ELEVATION AT PROFILE GRADE = 978.37
ELEVATION AT CRIT. CLEARANCE POINT = 979.21

SLAB, HAUNCH AND GIRDER = 6.00'
CLEARANCE = 16.75'

LOCATION

24TH ST OVER I-80
T-74 N R-44 W
SECTION 2/3/10/11
LEWIS TOWNSHIP
POTTAWATTAMIE COUNTY
CITY OF COUNCIL BLUFFS
BRIDGE MAINT. NO. 7801.70080
FHWA NO. 44691

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SITUATION PLAN

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM DLO/HHK/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER BRFIM-080-1(308)2--05-78 | SHEET NUMBER 5

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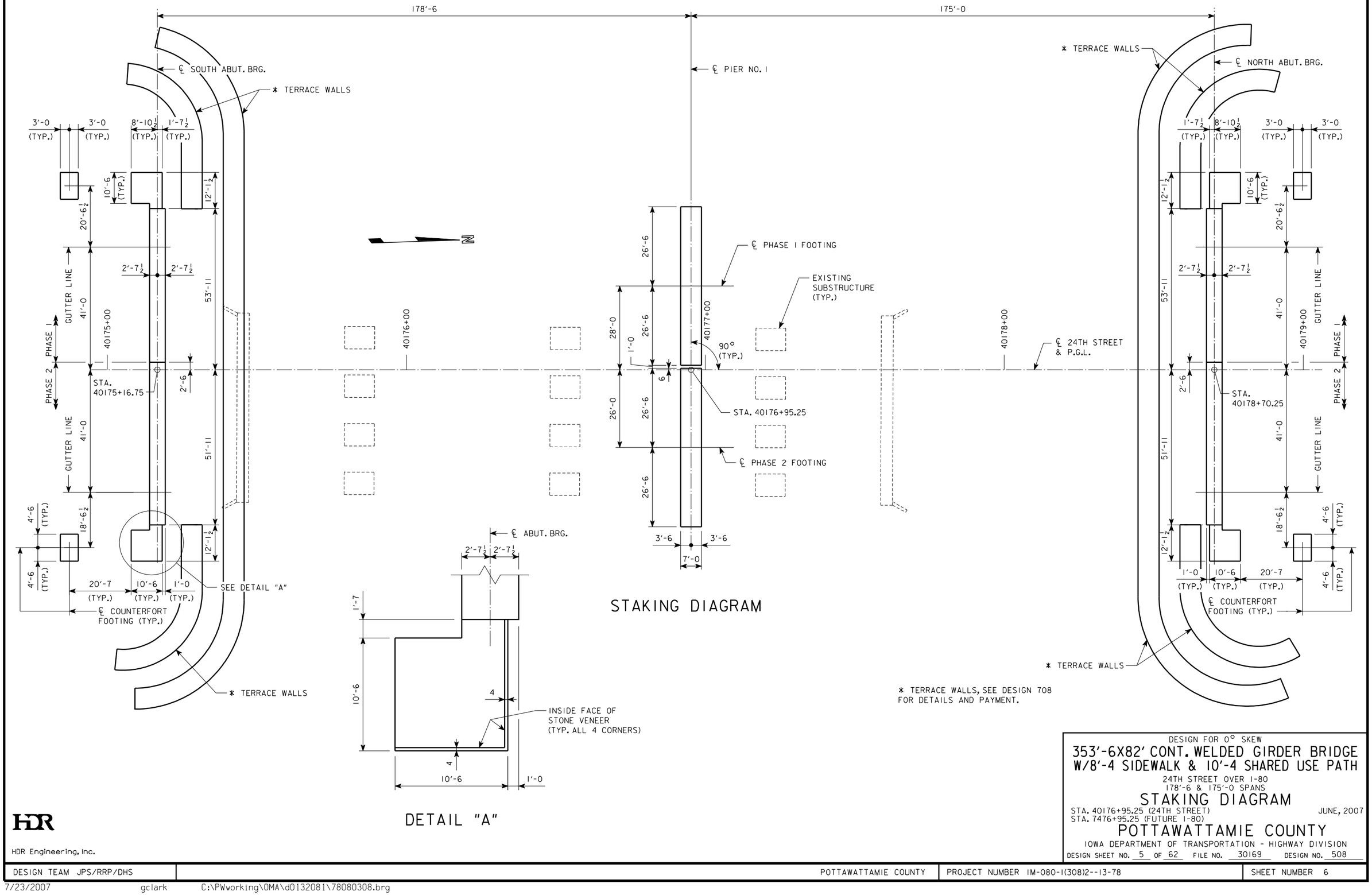

STAKING DIAGRAM

DETAIL "A"

* TERRACE WALLS, SEE DESIGN 708 FOR DETAILS AND PAYMENT.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

STAKING DIAGRAM

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/RRP/DHS		POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 6

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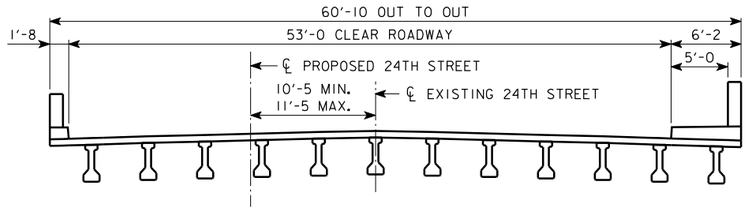
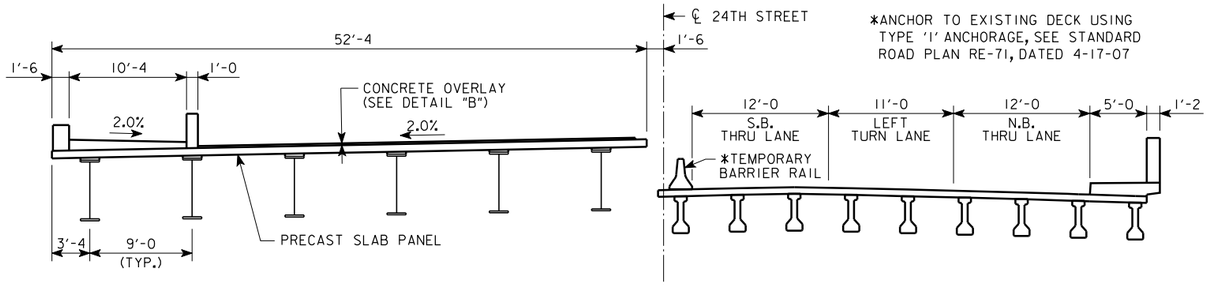


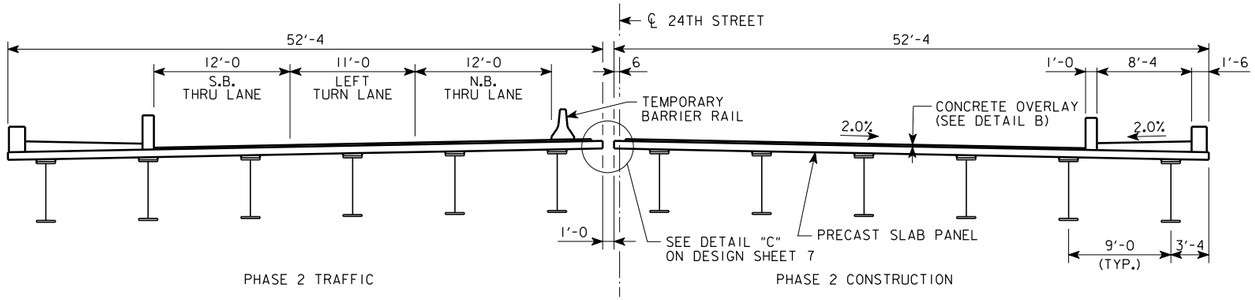
EXISTING STRUCTURE



PHASE I CONSTRUCTION

PHASE I TRAFFIC

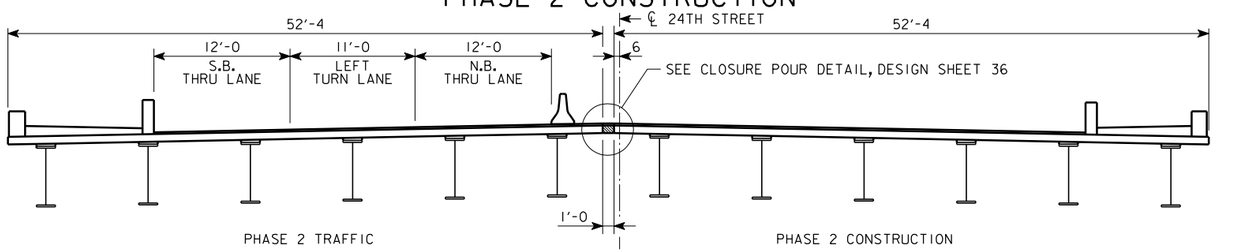
PHASE I CONSTRUCTION



PHASE 2 TRAFFIC

PHASE 2 CONSTRUCTION

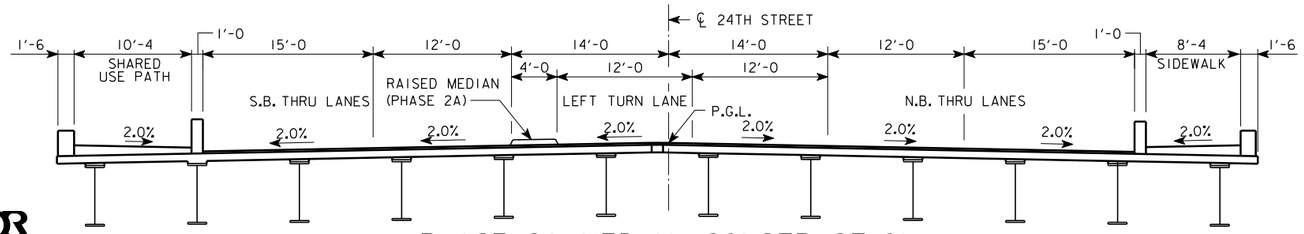
PHASE 2 CONSTRUCTION



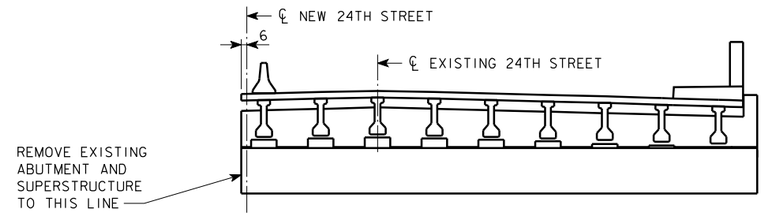
PHASE 2 TRAFFIC

PHASE 2 CONSTRUCTION

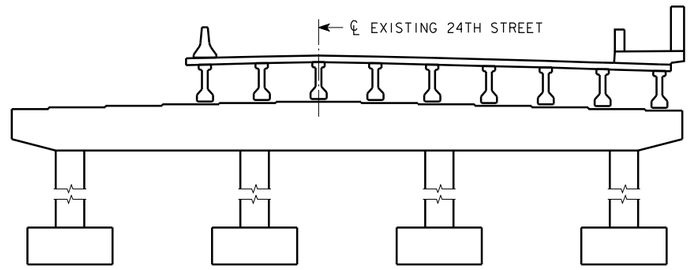
PHASE 2A CONSTRUCTION (CLOSURE POUR)



PHASE 2A MEDIAN CONSTRUCTION AND FINAL BRIDGE CROSS SECTION



NEAR ABUTMENTS

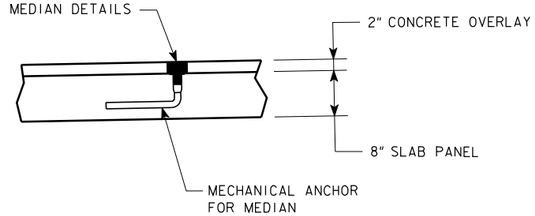


NEAR PIERS

PHASE I - EXISTING STRUCTURE

(NOTE: ENTIRE PIERS TO REMAIN DURING PHASE I)

PLACE 1" x 1" PLUG OR PLASTIC SCREW CAP OVER EXPOSED MECHANICAL ANCHOR FOR MEDIAN FLUSH WITH TOP OF CONCRETE OVERLAY CONSTRUCTION. REMOVE PLUG PLACED OVER MECHANICAL CONNECTOR IN PHASE - I - CONSTRUCTION. CLEAN HOLE AS REQUIRED BEFORE THE INSTALLATION OF MEDIAN BARS. SEE DESIGN SHEET 38 FOR MEDIAN DETAILS



DETAIL "B"

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PHASING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/HHK/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 7

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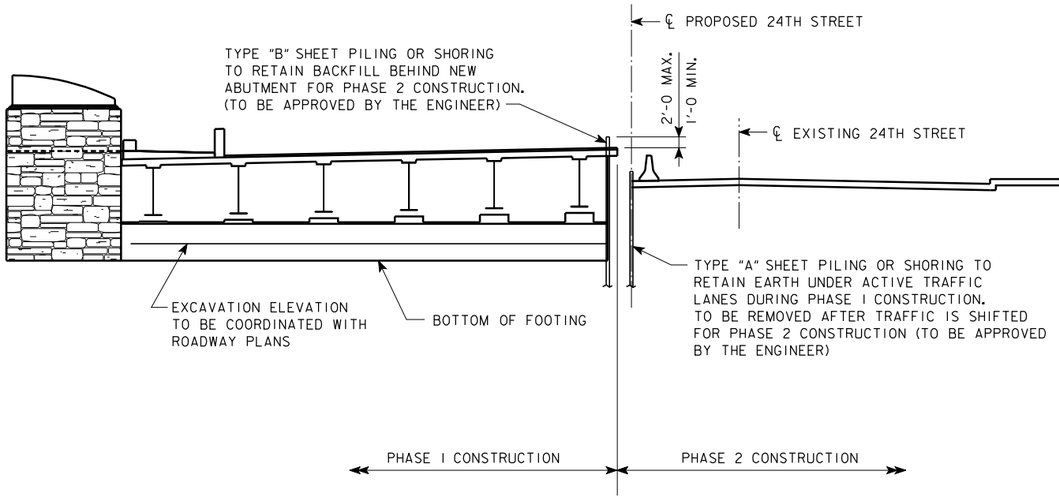
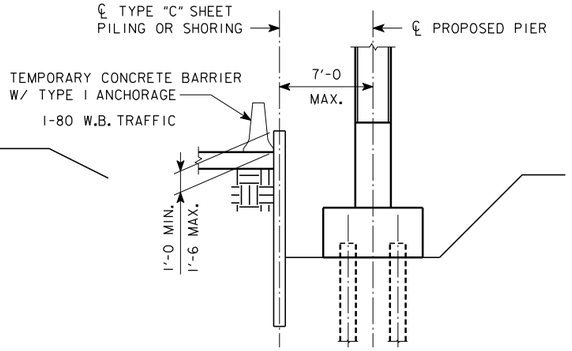
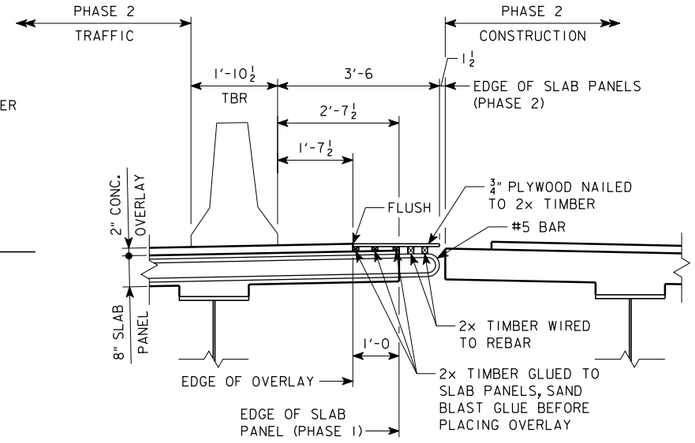


EXCAVATION ELEVATION VIEW

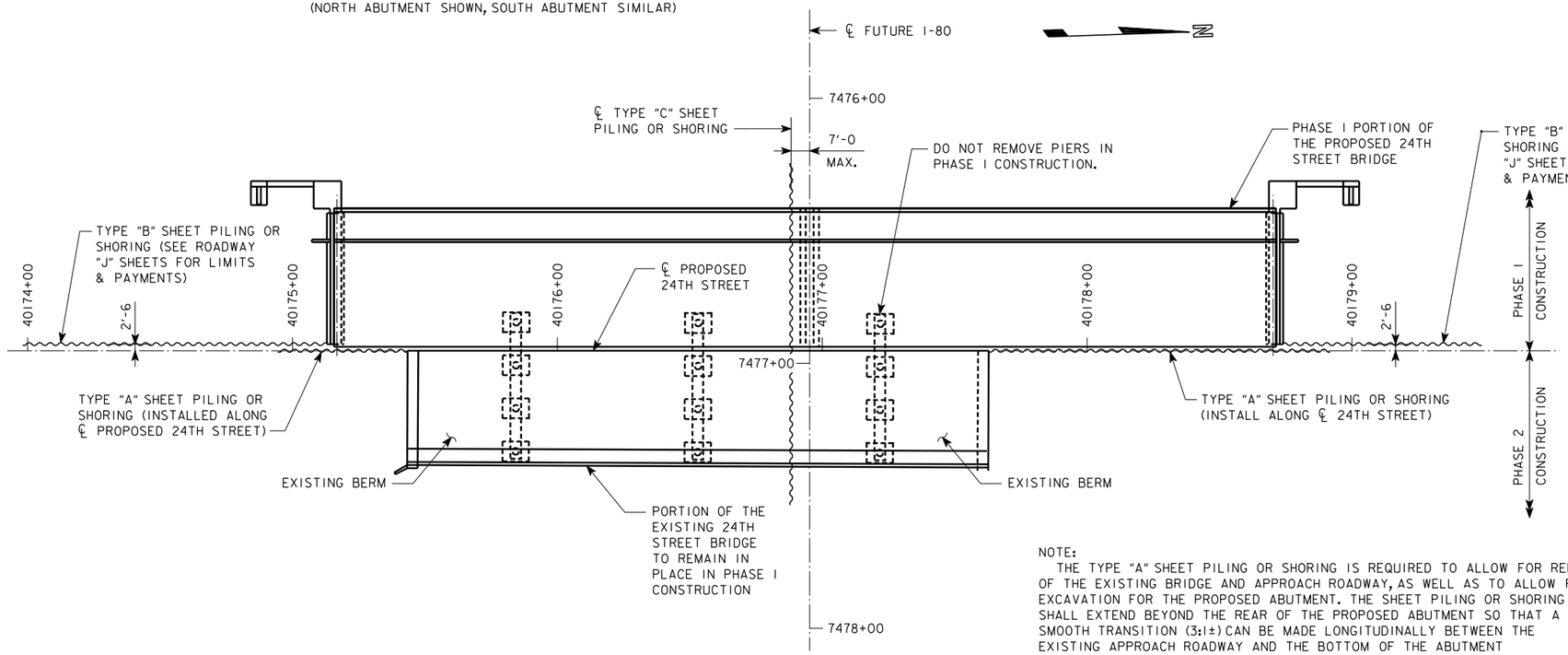
(NORTH ABUTMENT SHOWN, SOUTH ABUTMENT SIMILAR)



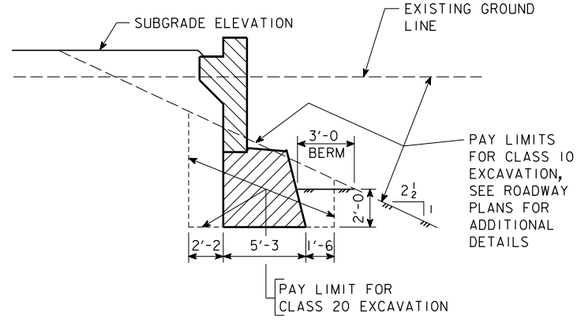
PIER EXCAVATION DETAIL



DECK FORMING DETAIL PHASE 2 TRAFFIC DETAIL "C"



SHEET PILING



ABUTMENT EXCAVATION DETAILS

NOTE:

THE TYPE "A" SHEET PILING OR SHORING IS REQUIRED TO ALLOW FOR REMOVAL OF THE EXISTING BRIDGE AND APPROACH ROADWAY, AS WELL AS TO ALLOW FOR EXCAVATION FOR THE PROPOSED ABUTMENT. THE SHEET PILING OR SHORING SHALL EXTEND BEYOND THE REAR OF THE PROPOSED ABUTMENT SO THAT A SMOOTH TRANSITION (3:1±) CAN BE MADE LONGITUDINALLY BETWEEN THE EXISTING APPROACH ROADWAY AND THE BOTTOM OF THE ABUTMENT EXCAVATION.

THE TYPE "B" SHEET PILING OR SHORING IS REQUIRED TO RETAIN THE NEW ABUTMENT BACKFILL. THE BACKFILL SHALL BE RETAINED SO THAT THE ENDS OF THE NEW ABUTMENTS ARE EXPOSED SUCH THAT THE PHASE 2 CONSTRUCTION IS MOST EASILY ACCOMMODATED.

THE TYPE "C" SHEET PILING OR SHORING IS REQUIRED TO ALLOW FOR THE EXCAVATION OF THE PROPOSED PIER AND PREVENT THE EARTH UNDER THE TRAFFIC LANE FROM SLOUGHING DURING CONSTRUCTION. REMOVE SHORING AFTER COMPLETION OF PIER CONSTRUCTION AND PROPER BACKFILL HAS BEEN PLACED & COMPACTED.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PHASING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

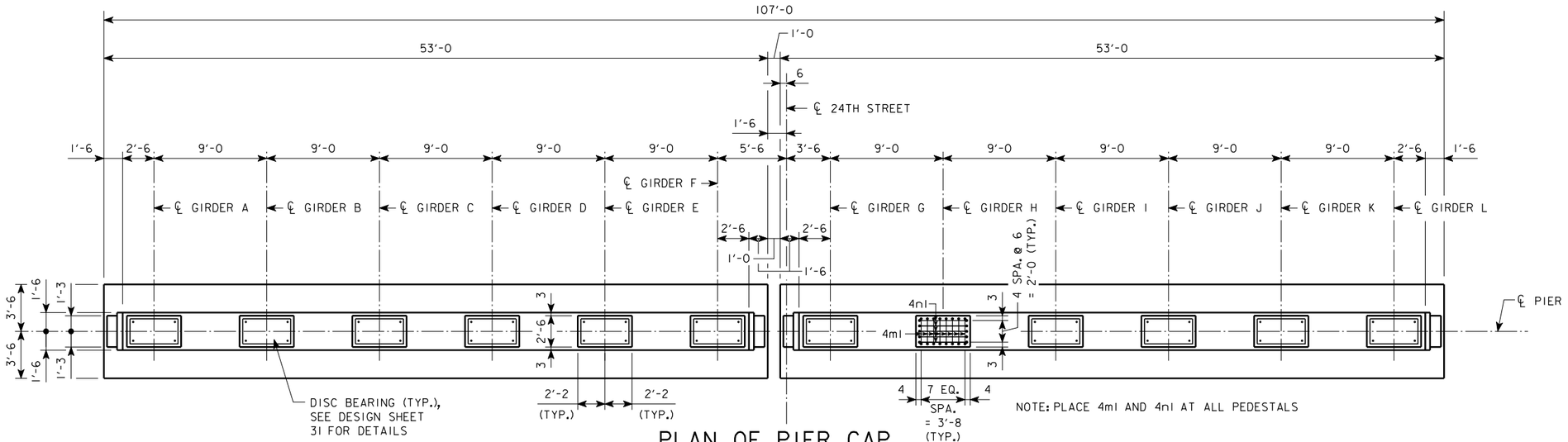
DESIGN SHEET NO. 7 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

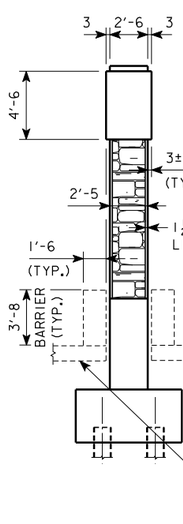
DESIGN TEAM ATN/HHK/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 8

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

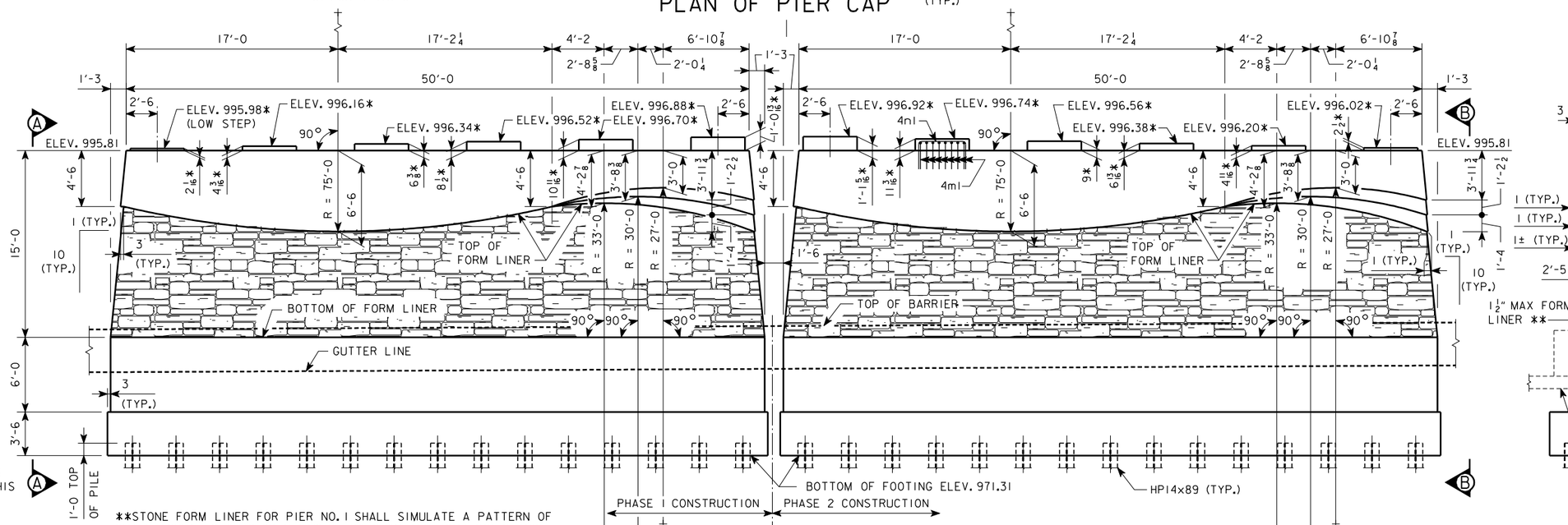
BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



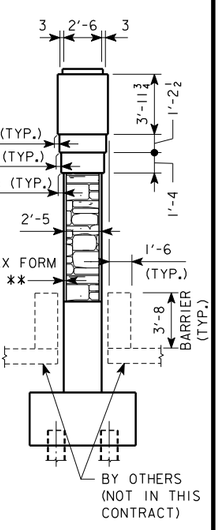
PLAN OF PIER CAP



END VIEW A-A



PIER ELEVATION



END VIEW B-B

**STONE FORM LINER FOR PIER NO. 1 SHALL SIMULATE A PATTERN OF SMALL ASHLAR STONES WITH SAWED EDGES ON ALL FOUR SIDES AND A SPLIT OR SNAPPED EXPOSED FACE. STONE SIZES SHALL RANGE FROM 3" X 6" MINIMUM TO 14" X 28" MAXIMUM. MAXIMUM DEPTH OF RELIEF IN THE FORM LINER SHALL BE 1½" AND JOINT WIDTH SHALL BE ¾". THE FORM LINER PATTERN AND MANUFACTURER USED FOR PIER NO. 1 SHALL MATCH THE FORM LINER USED FOR THE DESIGN 708 TERRACE WALLS ASSOCIATED WITH THIS CONTRACT. ACCEPTABLE PATTERNS AND MANUFACTURES ARE:

PATTERN #12020 - TOLLWAY ASHLAR
CUSTOM ROCK
2020 W. 7th STREET
ST. PAUL, MN 55116

PATTERN #17000 - FLORIDA ASHLAR
FITZGERALD FORM LINER
1341 EAST PAMONA STREET
SANTA ANA, CA 92705

PATTERN #905 - SMALL AGED ASHLAR STONE
ARCHITECTURAL POLYMERS
1220 LITTLE GAP ROAD
PALMERTON, PA 18071

PATTERN #1515 - SC ASHLAR
SPEC FORM LINERS, INC.
530 EAST DYER ROAD
SANTA ANA, CA 92707

NOTES:
*ELEVATIONS AND PEDESTAL HEIGHTS ARE DEPENDENT ON FINAL BEARING HEIGHT. FINAL BEARING HEIGHT AND PEDESTAL ELEVATIONS SHALL BE DETERMINED BY BEARING MANUFACTURER.
FOR ANCHOR BOLT LAYOUT, SEE DESIGN SHEET 10.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PIER NO. 1 DETAILS

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

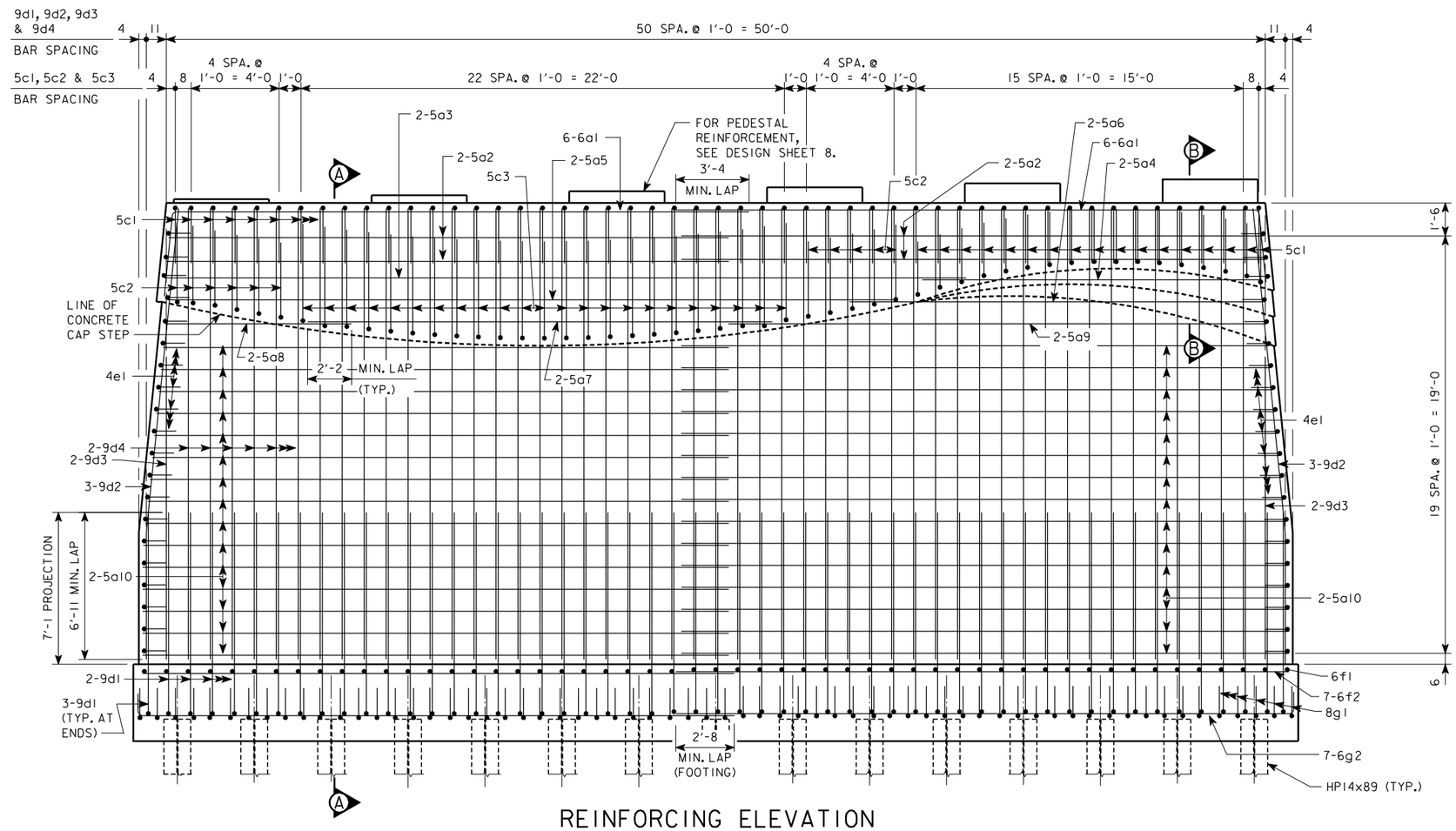
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

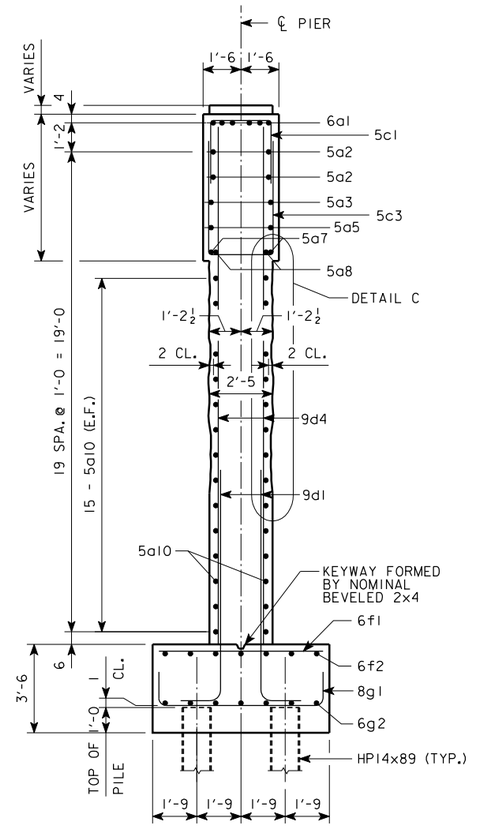
DESIGN SHEET NO. 8 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 9

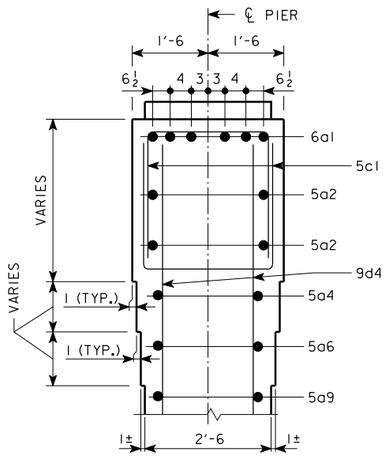
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



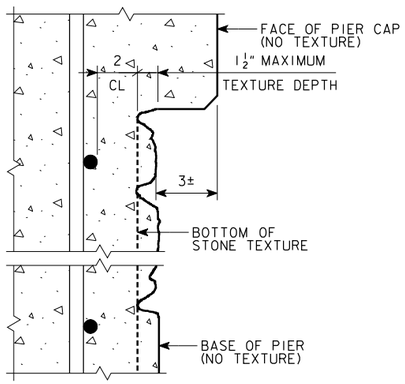
REINFORCING ELEVATION



SECTION A-A



SECTION B-B



DETAIL C

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PIER NO. 1 DETAILS

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

JUNE, 2007

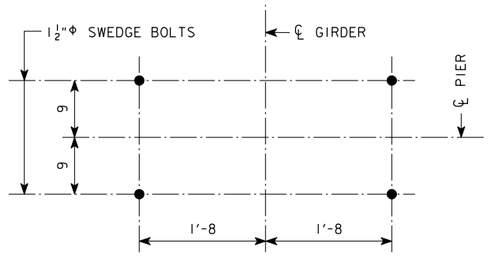
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 10

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



ANCHOR BOLT LAYOUT

NOTE:
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
WALL & STEPS (HIGH PERFORMANCE CONCRETE) *	106.8
FOOTING	48.1
TOTAL C.Y.	154.9

ESTIMATED QUANTITIES

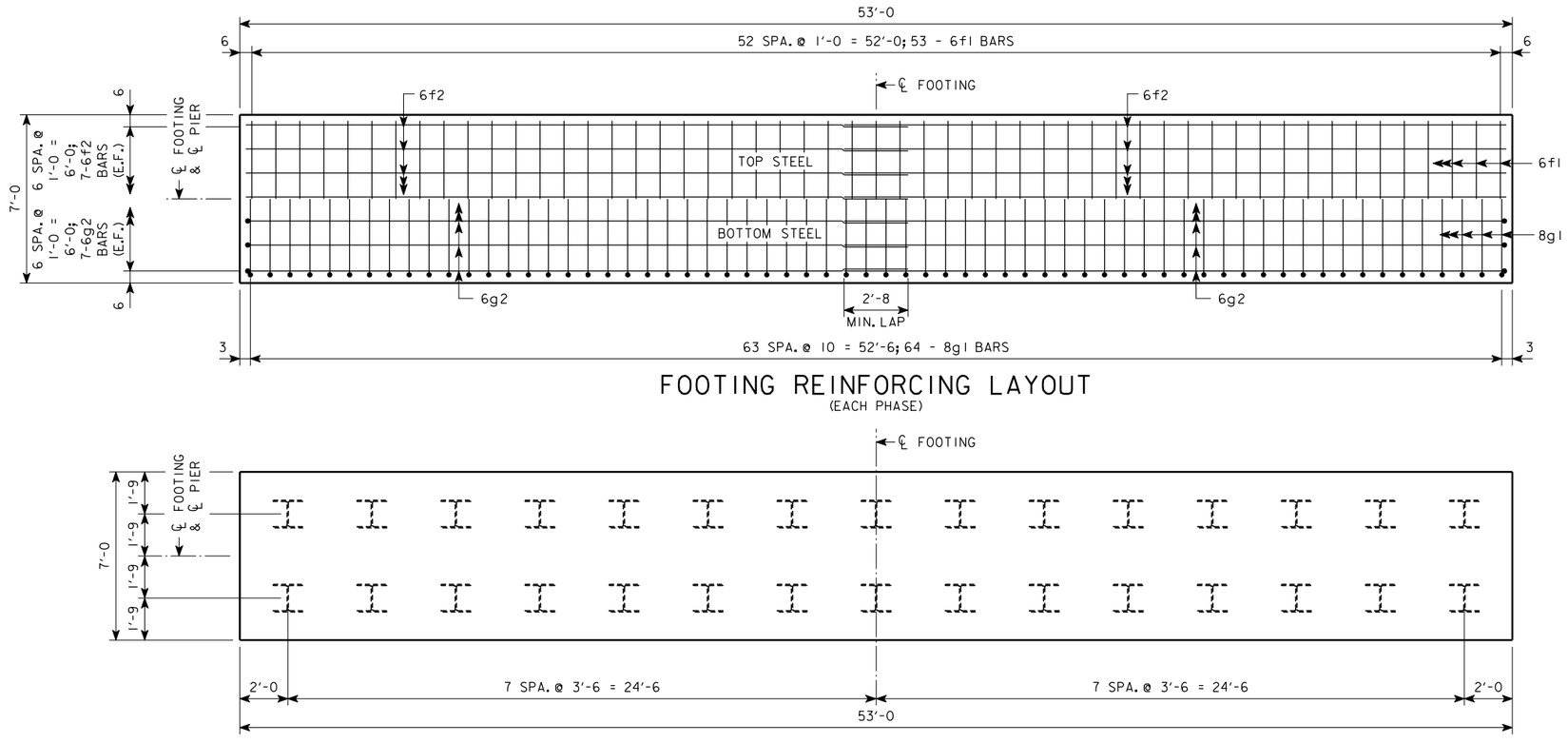
ITEM	UNIT	PHASE 1 PIER	PHASE 2 PIER	QUANTITY
STRUCTURAL CONCRETE (HIGH PERFORMANCE)	C.Y.	106.8	106.8	213.6
STRUCTURAL CONCRETE (BRIDGE)	C.Y.	48.1	48.1	96.2
REINFORCING STEEL - EPOXY COATED	LB.	19,011	19,011	38,022
CLASS 20 EXCAVATION	C.Y.	139	138	277
HP14x89 STEEL BEARING PILING	L.F.	30 @ 135	30 @ 135	8100

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

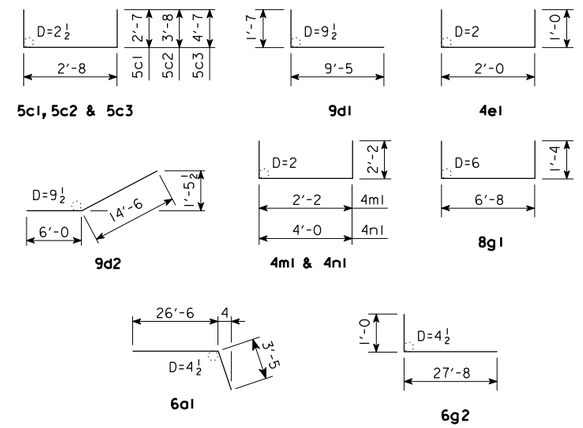
REINFORCING STEEL (EACH PHASE)

EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	WALL, TOP, LONGITUDINAL	⌝	12	29'-11	539
5a2	WALL, SIDE, LONGITUDINAL	—	8	26'-2	218
5a3	WALL, SIDE, LONGITUDINAL	—	2	36'-6	76
5a4	WALL, SIDE, LONGITUDINAL	—	2	16'-0	33
5a5	WALL, SIDE, LONGITUDINAL	—	2	32'-8	68
5a6	WALL, SIDE, LONGITUDINAL	—	2	19'-9	41
5a7	WALL, SIDE, LONGITUDINAL	—	2	20'-9	43
5a8	WALL, SIDE, LONGITUDINAL	—	2	8'-11	19
5a9	WALL, SIDE, LONGITUDINAL	—	2	25'-0	52
5a10	WALL, SIDE, LONGITUDINAL	—	60	27'-2	1700
5c1	CAP, STIRRUP	⌞⌟	68	7'-10	556
5c2	CAP, STIRRUP	⌞⌟	11	10'-0	115
5c3	CAP, STIRRUP	⌞⌟	23	11'-10	284
9d1	FOOTING TO COLUMN DOWELS	⌞	108	11'-0	4039
9d2	WALL, VERTICAL, ENDS	◿	6	20'-6	418
9d3	WALL, VERTICAL	—	4	13'-8	186
9d4	WALL, VERTICAL	—	98	20'-6	6831
4e1	WALL, ENDS	⌞⌟	40	4'-0	107
6f1	FOOTING, TOP	—	53	6'-8	531
6f2	FOOTING, TOP	—	14	27'-8	582
8g1	FOOTING, BOTTOM	⌞⌟	64	9'-4	1595
6g2	FOOTING, BOTTOM	⌞	14	28'-8	603
4m1	PEDESTAL, TRANSVERSE	⌞⌟	48	6'-6	208
4n1	PEDESTAL, LONGITUDINAL	⌞⌟	30	8'-4	167
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				19,011



BENT BAR DETAILS



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

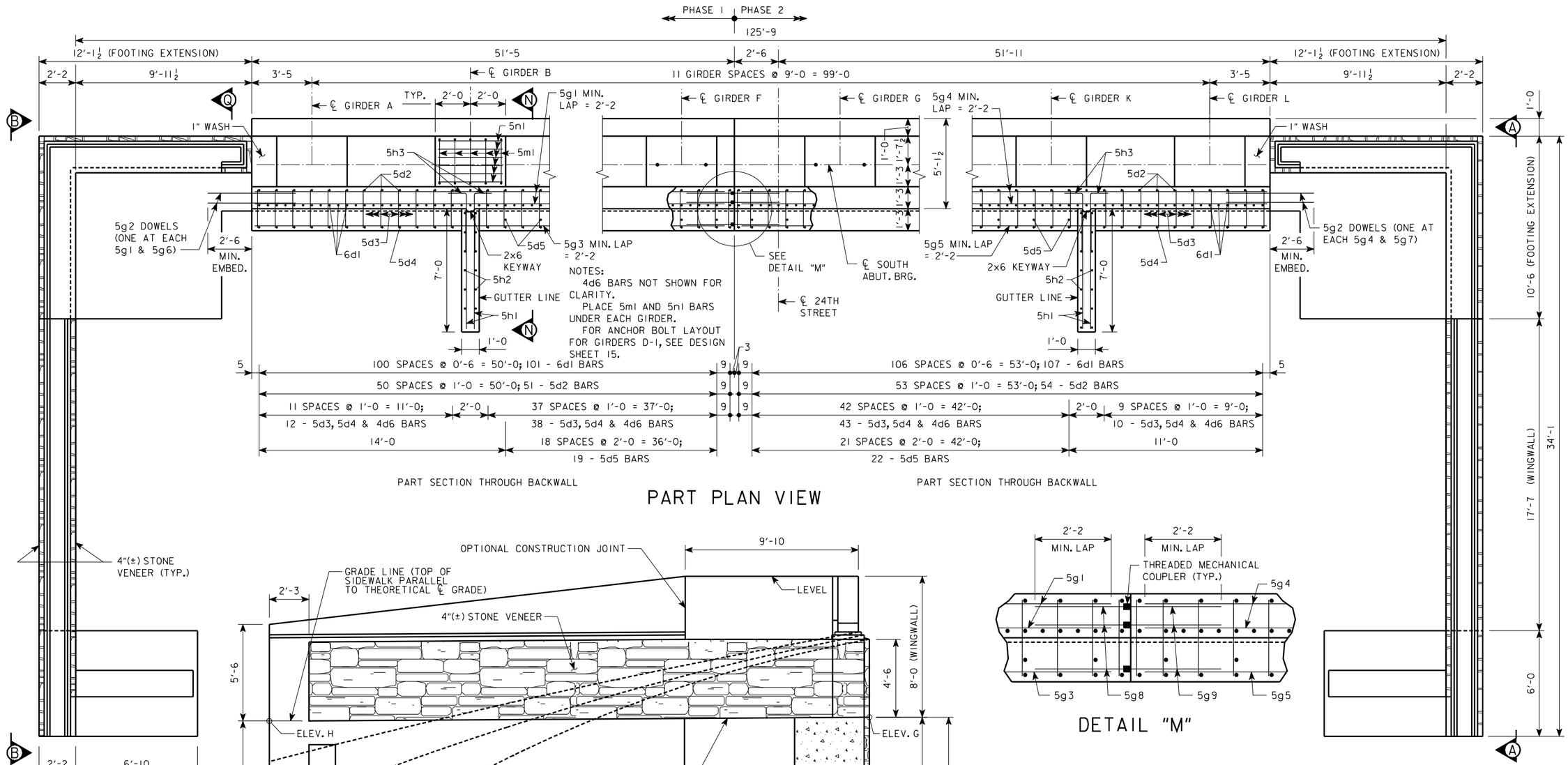
PIER NOTES:
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH A ¾" DRESSED AND BEVELED STRIP.
ALL REINFORCING IS TO BE SECURLY WIRED IN PLACE BEFORE CONCRETE IS POURED.
30 - HP14x89 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.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW
353'-6X82' CONT. WELDED GIRDER BRIDGE W/8'-4 SIDEWALK & 10'-4 SHARED USE PATH
24TH STREET OVER I-80
178'-6 & 175'-0 SPANS
PIER NO. 1 DETAILS
STA. 40176+95.25 (24TH STREET)
STA. 7476+95.25 (FUTURE I-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 IM-080-1(308)2--13-78 | SHEET NUMBER 11

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



NOTES:
FOR ABUTMENT REAR ELEVATION VIEW, SEE DESIGN SHEET 12.
FOR SECTION N-N AND OTHER ABUTMENT DETAILS, SEE DESIGN SHEET 15.
FOR ABUTMENT NOTES, SEE DESIGN SHEET 17.
FOR VIEWS A-A & B-B, SEE DESIGN SHEET 18.
FOR VIEW C-C, SEE DESIGN SHEET 19.
FOR BEARING DETAILS, SEE DESIGN SHEET 30.
FOR ABUTMENT WING REINFORCING, SEE DESIGN SHEETS 18 AND 19.
FOR CONTROL ELEVATIONS SHOWN IN VIEW Q-Q, SEE DESIGN SHEET 18.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SOUTH ABUTMENT DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

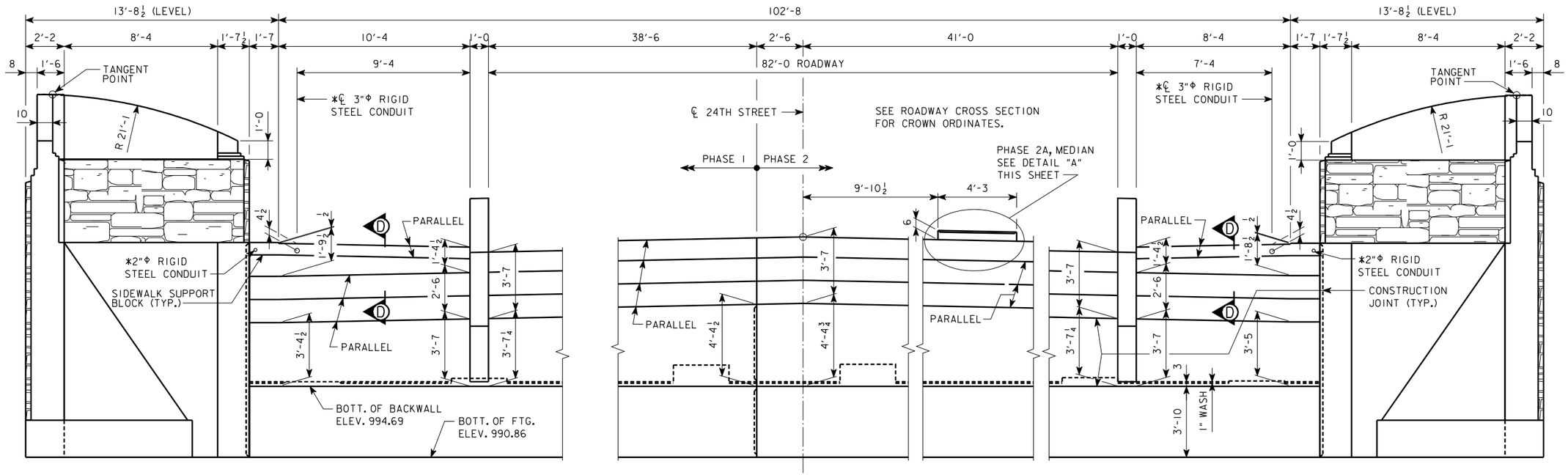
DESIGN SHEET NO. 11 OF 62 FILE NO. 30169 DESIGN NO. 508

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 12

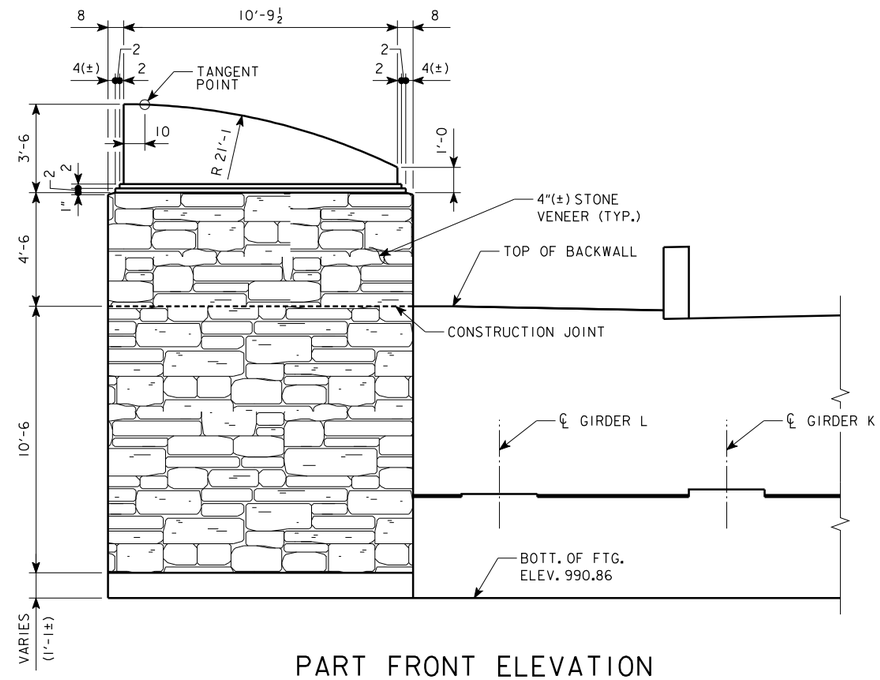
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

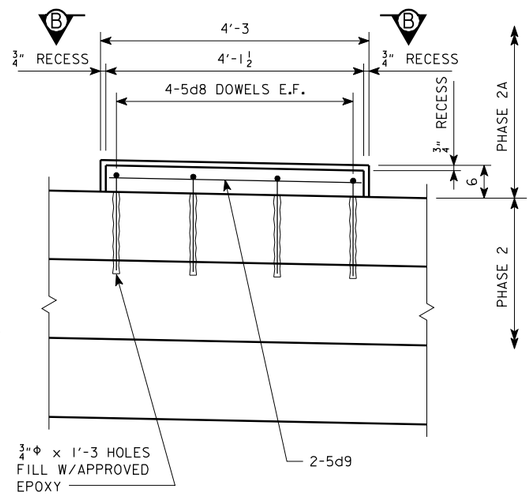


PART REAR ELEVATION

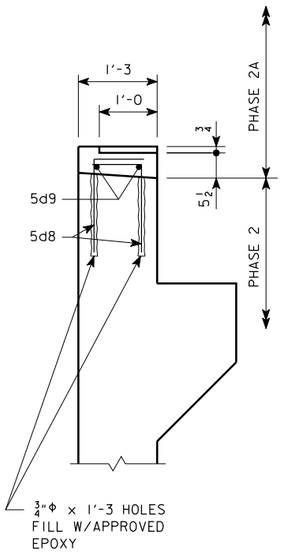
NOTE:
FOR SECTION D-D, SEE DESIGN SHEET 15.
*FOR ADDITIONAL CONDUIT DETAILS EMBEDED IN THE ABUTMENT, SEE DESIGN SHEETS 43 TO 48.



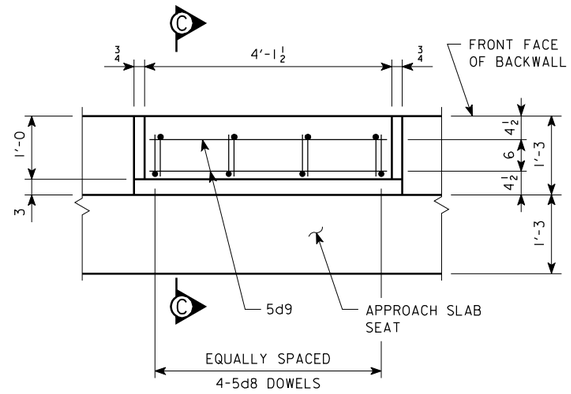
PART FRONT ELEVATION



DETAIL "A"



SECTION C-C



SECTION B-B

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SOUTH ABUTMENT DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 62 FILE NO. 30169 DESIGN NO. 508

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 13

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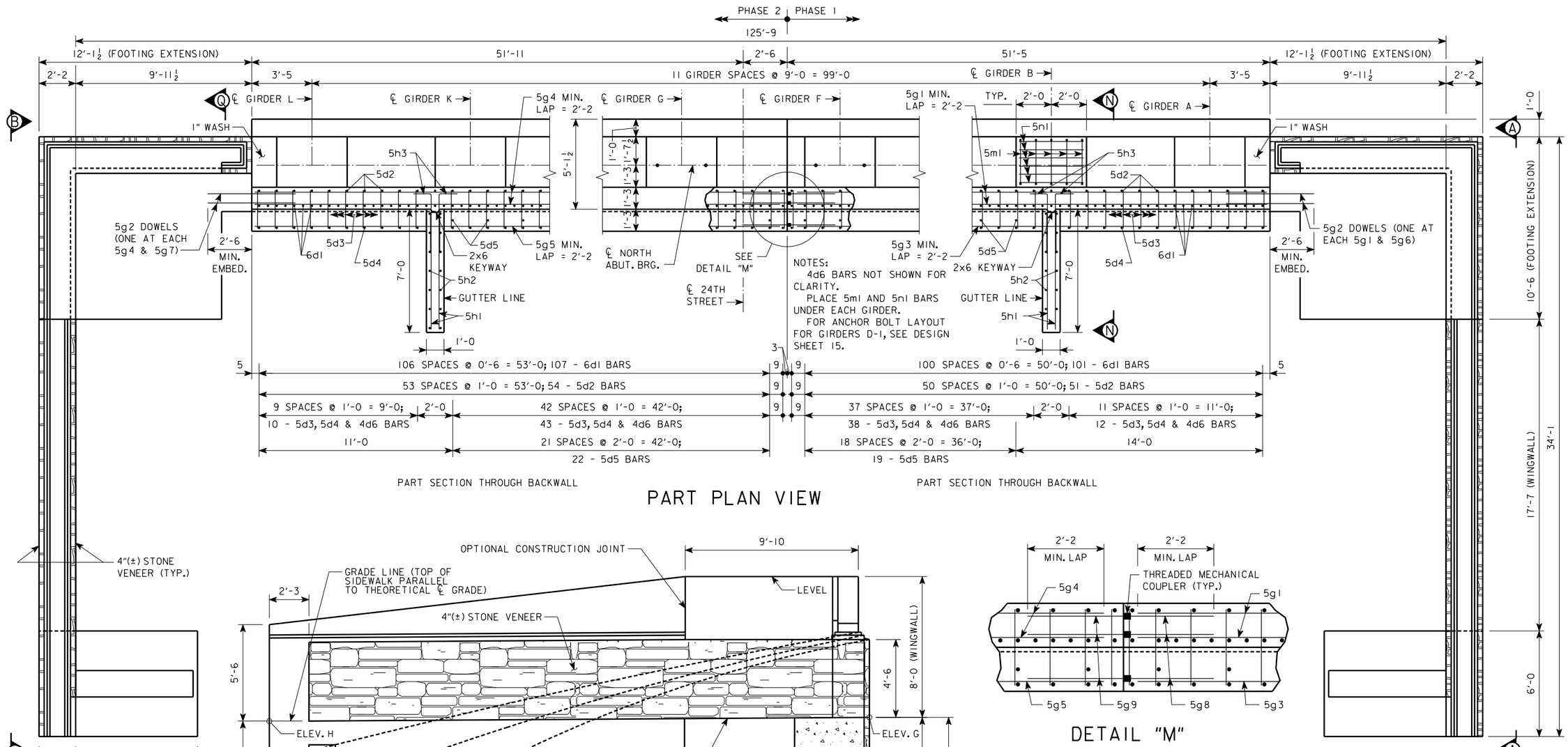


NOTES:
FOR ABUTMENT REAR ELEVATION VIEW, SEE DESIGN SHEET 14.
FOR SECTION N-N AND OTHER ABUTMENT DETAILS, SEE DESIGN SHEET 15.
FOR ABUTMENT NOTES, SEE DESIGN SHEET 17.
FOR VIEWS A-A & B-B, SEE DESIGN SHEET 18.
FOR VIEW C-C, SEE DESIGN SHEET 19.
FOR BEARING DETAILS, SEE DESIGN SHEET 30.
FOR ABUTMENT WING REINFORCING, SEE DESIGN SHEETS 18 AND 19.
FOR CONTROL ELEVATIONS SHOWN IN VIEW Q-Q, SEE DESIGN SHEET 18.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

NORTH ABUTMENT DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

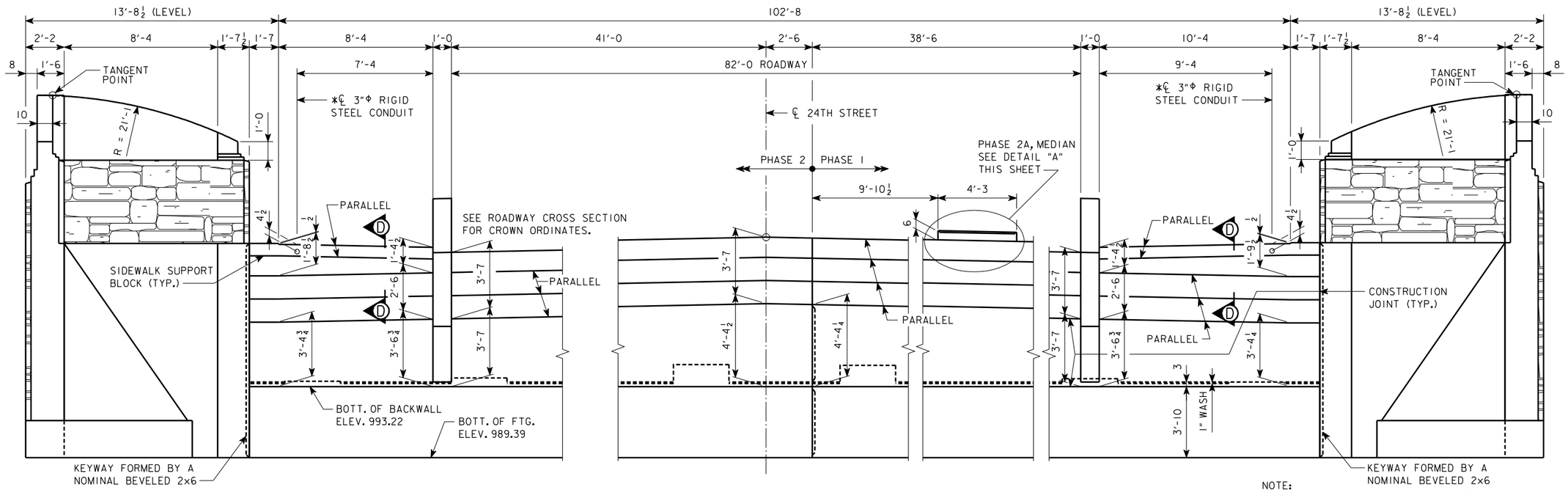
DESIGN SHEET NO. 13 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 14

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

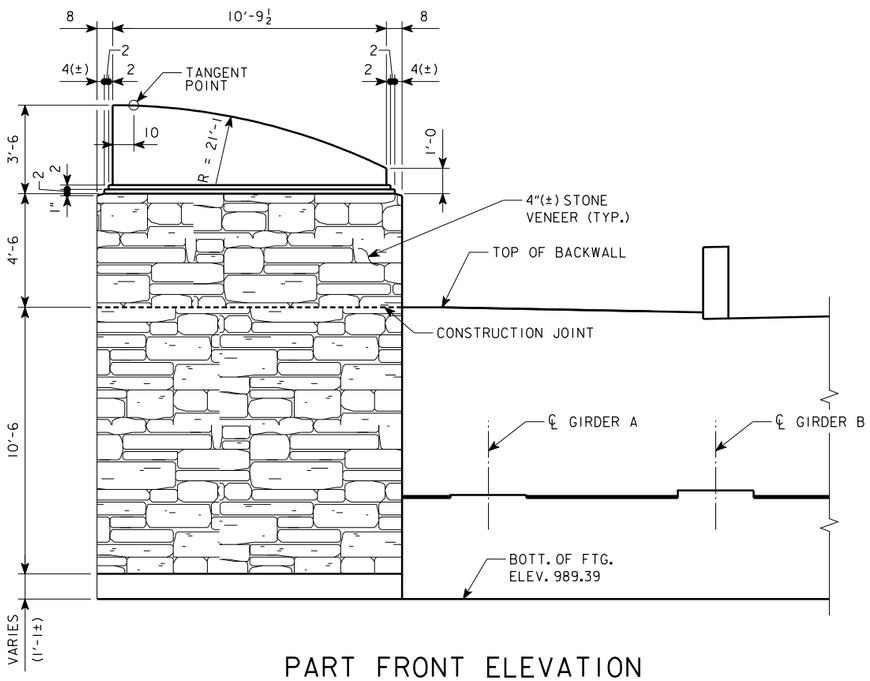
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

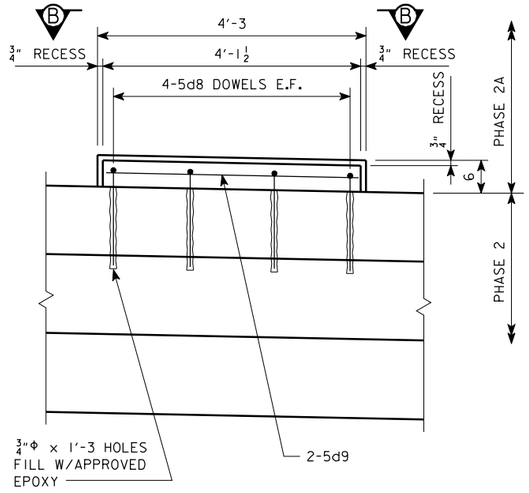


PART REAR ELEVATION

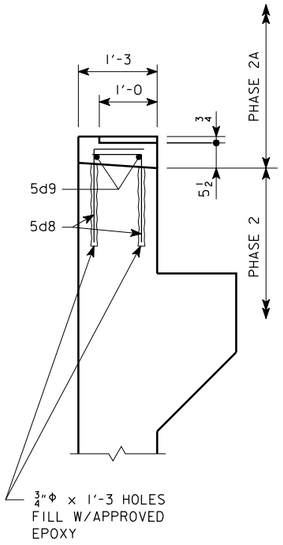
NOTE:
FOR SECTION D-D, SEE DESIGN SHEET 15.
*FOR ADDITIONAL CONDUIT DETAILS, SEE DESIGN SHEETS 43 TO 48.



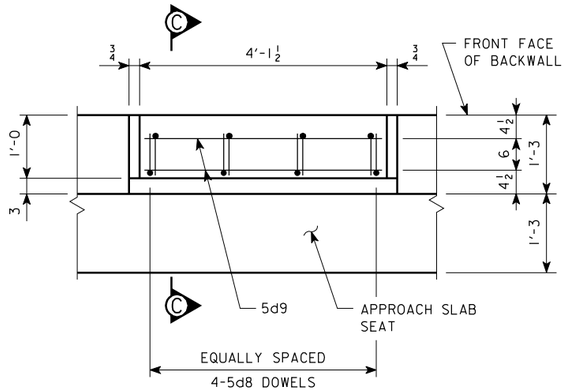
PART FRONT ELEVATION



DETAIL "A"



SECTION C-C



SECTION B-B

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

NORTH ABUTMENT DETAILS

STA. 401+76.95.25 (24TH STREET)
STA. 747+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

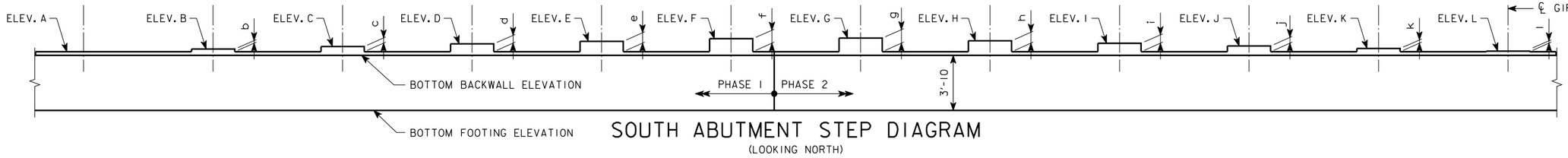
DESIGN SHEET NO. 14 OF 62 FILE NO. 30169 DESIGN NO. 508

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

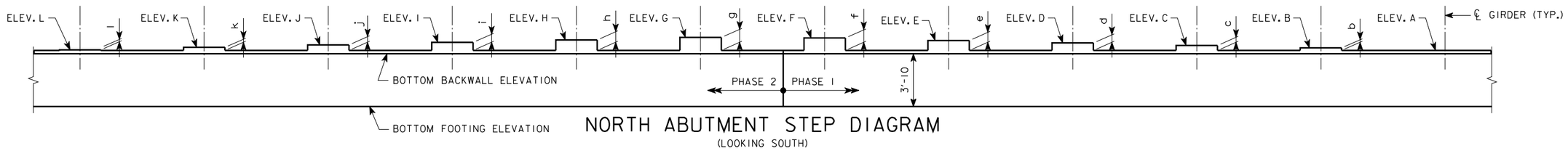
DESIGN TEAM RRP/JPS/ACB	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 15

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



SOUTH ABUTMENT STEP DIAGRAM
(LOOKING NORTH)



NORTH ABUTMENT STEP DIAGRAM
(LOOKING SOUTH)

NOTE:
FOR TABLE OF WINGWALL ELEVATION, SEE DESIGN SHEET 18.

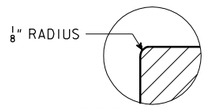
TABLE OF ABUTMENT ELEVATIONS

POINT	SOUTH ABUTMENT	NORTH ABUTMENT
ELEV. A (LOW STEP)	994.94	993.47
ELEV. B	995.12	993.65
ELEV. C	995.30	993.83
ELEV. D	995.48	994.01
ELEV. E	995.66	994.19
ELEV. F	995.84	994.37
ELEV. G	995.88	994.41
ELEV. H	995.70	994.23
ELEV. I	995.52	994.05
ELEV. J	995.34	993.87
ELEV. K	995.16	993.69
ELEV. L	994.98	993.51
BOTT. BACKWALL ELEV.	994.69	993.22
BOTT. FTG. ELEV.	990.86	989.39

TABLE OF ABUTMENT STEPS

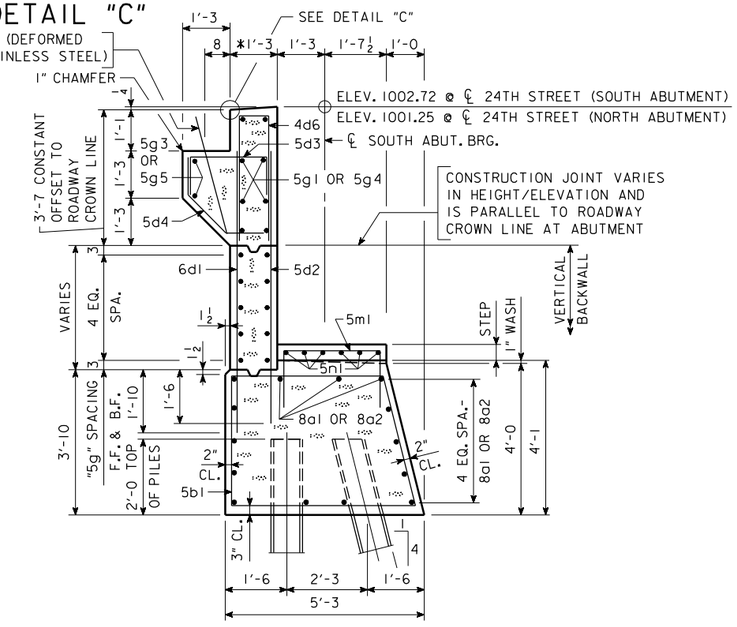
STEP	SOUTH ABUTMENT	NORTH ABUTMENT
b	$2\frac{3}{16}$	$2\frac{3}{16}$
c	$4\frac{5}{16}$	$4\frac{5}{16}$
d	$6\frac{1}{2}$	$6\frac{1}{2}$
e	$8\frac{5}{8}$	$8\frac{5}{8}$
f	$10\frac{13}{16}$	$10\frac{13}{16}$
g	$11\frac{1}{4}$	$11\frac{1}{4}$
h	$9\frac{1}{8}$	$9\frac{1}{8}$
i	$6\frac{15}{16}$	$6\frac{15}{16}$
j	$4\frac{13}{16}$	$4\frac{13}{16}$
k	$2\frac{5}{8}$	$2\frac{5}{8}$
l	$\frac{1}{2}$	$\frac{1}{2}$

NOTE:
SEE DESIGN SHEET 7 FOR ABUTMENT BERM DETAIL.

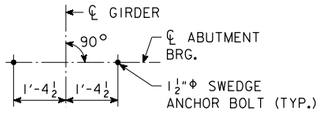


DETAIL "C"

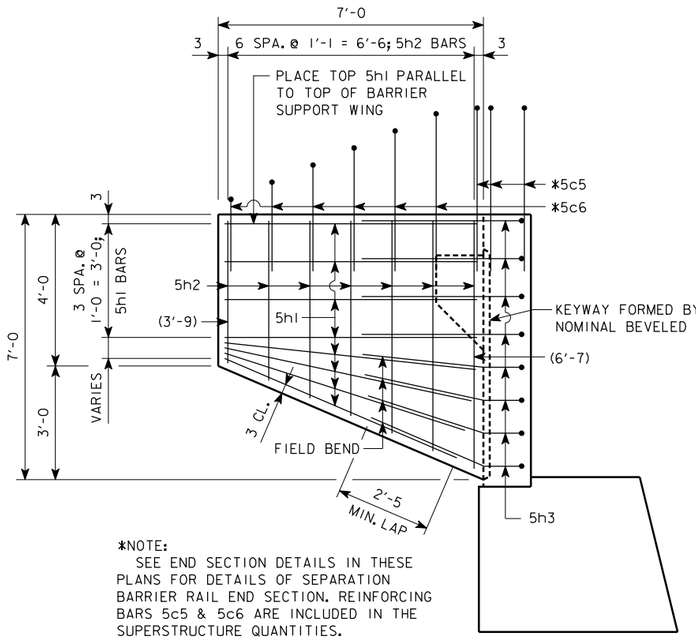
* THIS DIMENSION MAY VARY. TILTING OF THE PAVEMENT SUPPORT SECTION DURING CONSTRUCTION MAY BE NECESSARY TO ACCOMMODATE PROPER SETTING OF THE STRIP SEAL EXPANSION DEVICE OPENING.



SECTION THROUGH ABUTMENT
(EXPANSION DEVICE NOT SHOWN)(TYPICAL BETWEEN GUTTER LINES)

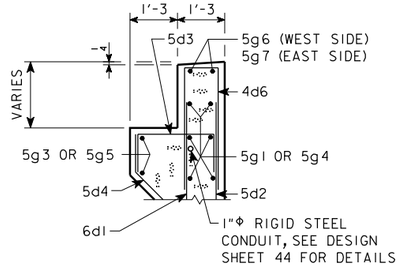


ANCHOR BOLT LAYOUT
(ANCHOR BOLTS AT GIRDERS D TO I ONLY)



*NOTE:
SEE END SECTION DETAILS IN THESE PLANS FOR DETAILS OF SEPARATION BARRIER RAIL END SECTION. REINFORCING BARS 5c5 & 5c6 ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

SECTION N-N
(ABUTMENT REINFORCING NOT SHOWN FOR CLARITY)



SECTION D-D

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT DETAILS

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

POTTAWATTAMIE COUNTY

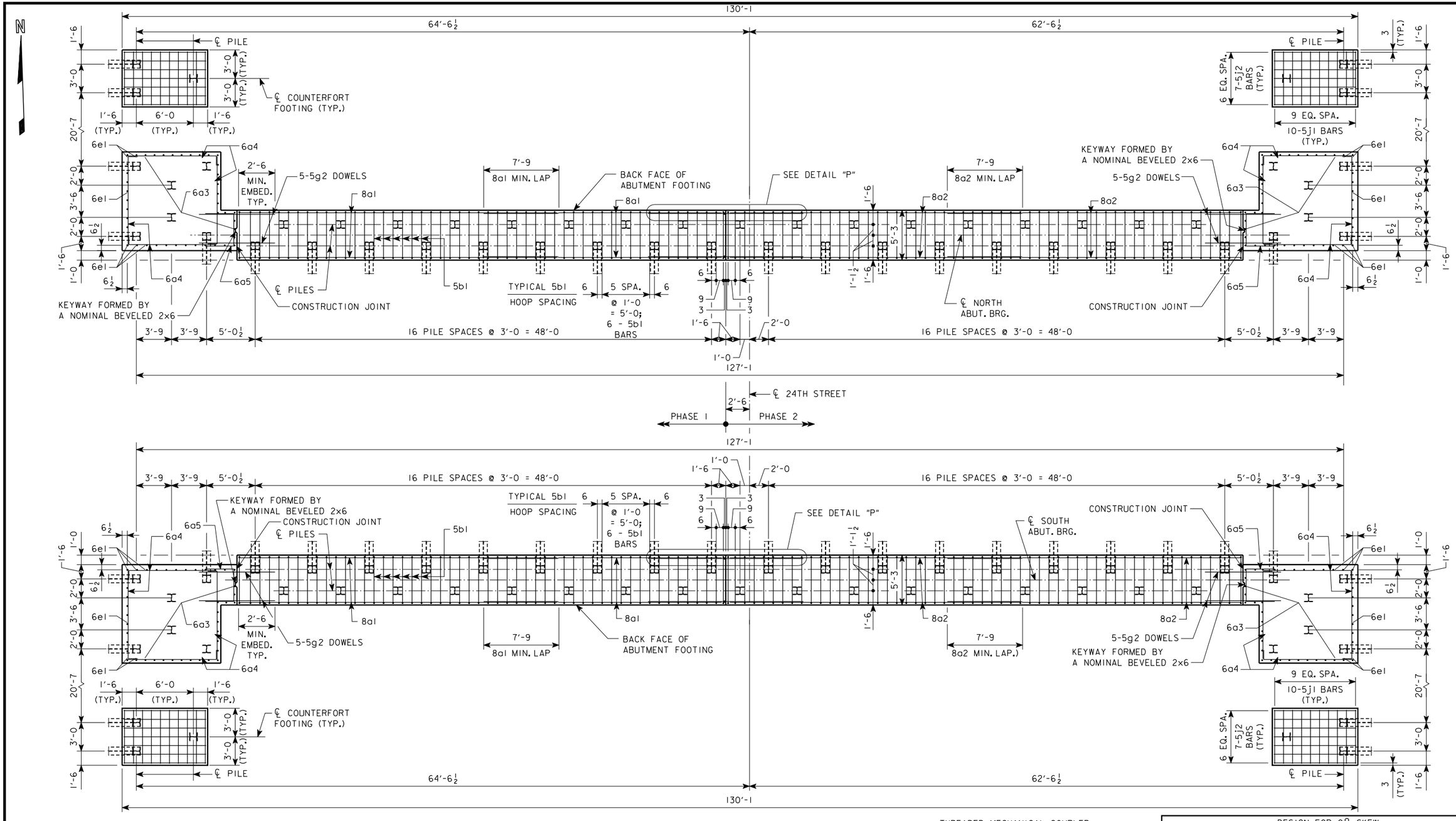
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 62 FILE NO. 30169 DESIGN NO. 508

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

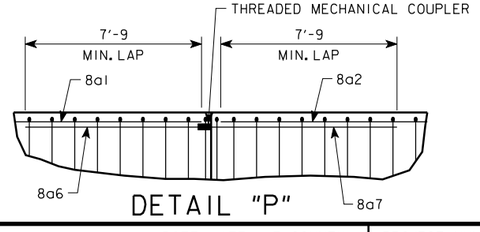
DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 16

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



NOTES:
- DIMENSIONS SHOWN ON PILING LAYOUT ARE AT BOTTOM OF FOOTING.
- BATTER PILES 4:1 IN THE DIRECTION SHOWN.
- 53 - HP10x57 STEEL BEARING PILING REQUIRED AT EACH ABUTMENT.
- DESIGN BEARING FOR THE ABUTMENT PILES IS 50 TONS.
- FOR ADDITIONAL ABUTMENT NOTES, SEE DESIGN SHEET 17.

PILING LAYOUT



DETAIL "P"

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT PILE PLAN

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 62 FILE NO. 30169 DESIGN NO. 508

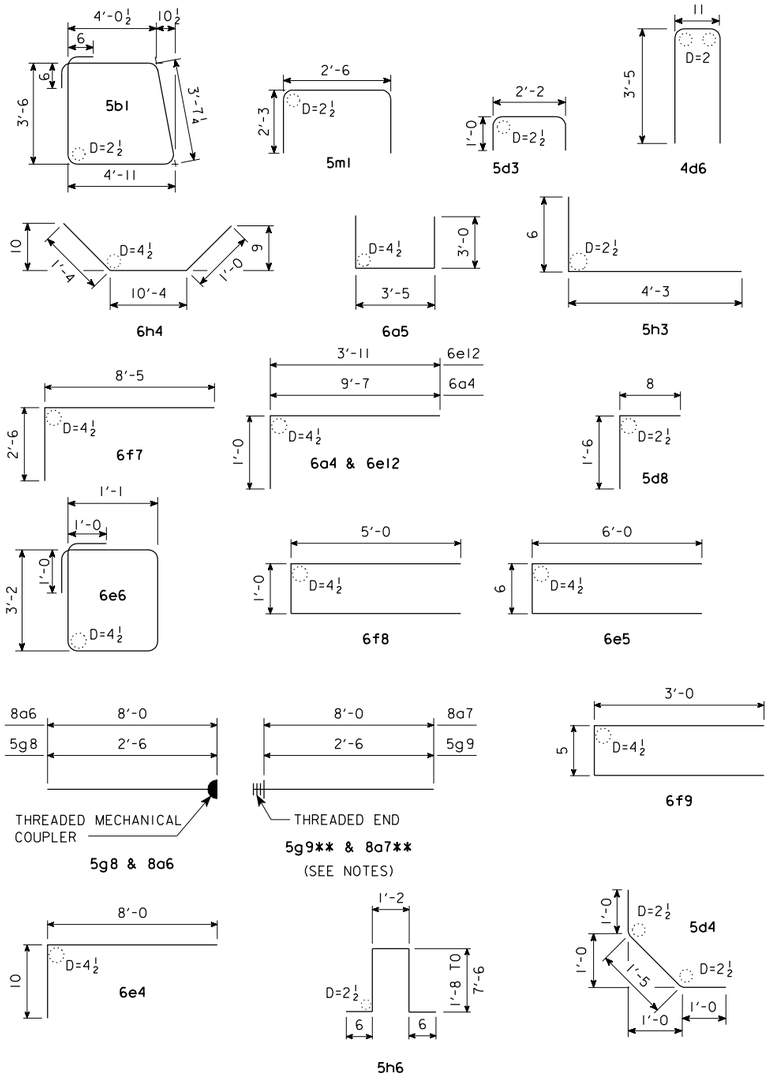
DESIGN TEAM RRP/JPS/ACB	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 17

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

REINFORCING BAR LIST - ONE ABUTMENT

	BAR	LOCATION	SHAPE	LENGTH	PHASE 1		PHASE 2	
					NO.	WEIGHT	NO.	WEIGHT
EPOXY COATED REINFORCING	8a1	FOOTING LONGITUDINAL	—	29'-6	28	2205		0
	8a2	FOOTING LONGITUDINAL	—	31'-0		0	28	2318
	6a3	FOOTING VERTICAL	—	10'-10	19	309	19	309
	6a4	FOOTING HORIZONTAL	⌐	10'-7	48	763	48	763
	6a5	FOOTING HORIZONTAL	⌐	9'-5	12	170	12	170
	8a6*	FOOTING DOWEL	—	8'-0	14	299		0
	8a7**	FOOTING DOWEL	—	8'-0		0	14	299
	5b1	FOOTING HOOPS	⌐	17'-1	52	927	55	980
	6d1	BACKWALL VERTICAL B.F.	—	8'-10	102	1353	108	1433
	5d2	BACKWALL VERTICAL F.F.	—	8'-6	52	461	55	488
	5d3	PAVING NOTCH	⌐	4'-2	51	222	54	235
	5d4	PAVING NOTCH	⌐	3'-5	51	182	54	192
	4d6	BACKWALL VERTICAL HOOP	⊏	7'-9	51	264	54	280
	5d8	MEDIAN DOWELS	⌐	2'-2	-	-	8	18
	5d9	MEDIAN TRANSVERSE	—	3'-9	-	-	2	8
	6e1	WINGWALL VERTICAL	—	13'-6	24	487	24	487
	6e2	WINGWALL VERTICAL	—	16'-7	18	448	18	448
	6e3	WINGWALL VERTICAL	—	10'-5	18	282	18	282
	6e4	WINGWALL VERTICAL	⌐	8'-10	85	1128	85	1128
	6e5	WINGWALL VERTICAL	⊏	12'-6	46	864	46	864
	6e6	WINGWALL VERTICAL	⊐	10'-6	19	300	19	300
	6e10	WINGWALL VERTICAL	—	13'-9	7	145	7	145
	6e11	WINGWALL VERTICAL	—	8'-3	7	87	7	87
	6e12	WINGWALL VERTICAL	⌐	4'-11	7	52	7	52
	6f1	WINGWALL HORIZONTAL	—	17'-3	4	104	4	104
	6f2	WINGWALL HORIZONTAL	—	23'-3	30	1048	30	1048
	6f3	WINGWALL HORIZONTAL	—	9'-7	18	259	18	259
	6f4	WINGWALL HORIZONTAL	—	14'-5	2	43	2	43
	6f5	WINGWALL HORIZONTAL	—	6'-11	2	21	2	21
	6f6	WINGWALL HORIZONTAL	—	23'-6	2	71	2	71
	6f7	WINGWALL HORIZONTAL (FIELD CUT AS REQ'D)	⌐	10'-11	18	295	18	295
	6f8	WINGWALL HORIZONTAL	⊏	11'-0	5	83	5	83
	6f9	WINGWALL HORIZONTAL	⊏	6'-5	4	39	4	39
	6f10	WINGWALL HORIZONTAL	—	1'-11	4	12	4	12
	5g1	BACKWALL LONGITUDINAL	—	26'-9	36	1004		0
	5g2	DOWELS	—	5'-0	70	365	70	365
	5g3	PAVING NOTCH LONGITUDINAL	—	26'-9	4	112		0
	5g4	BACKWALL LONGITUDINAL	—	28'-3		0	36	1061
	5g5	PAVING NOTCH LONGITUDINAL	—	28'-3		0	4	118
	5g6	BACKWALL LONGITUDINAL	—	11'-7	2	24		0
	5g7	BACKWALL LONGITUDINAL	—	9'-7		0	2	20
	5g8*	BACKWALL DOWEL	—	2'-6	20	52		0
	5g9**	BACKWALL DOWEL	—	2'-6		0	20	52
	5h1	WING HORIZONTAL	—	6'-8	16	111	16	111
	5h2	WING VERTICAL	—	5'-2	14	75	14	75
	5h3	WING DOWELS	⌐	4'-9	16	79	16	79
	6h4	COUNTERFORT VERTICAL	◡	12'-8	3	57	3	57
	6h5	COUNTERFORT VERTICAL	—	6'-2	10	93	10	93
	5h6	COUNTERFORT HORIZONTAL	⊔	11'-4	8	95	8	95
	5j1	WING FOOTING TRANSVERSE	—	5'-8	10	59	10	59
	5j2	WING FOOTING LONGITUDINAL	—	8'-8	7	63	7	63
	5m1	BEAM STEPS TRANSVERSE	⌐	7'-0	30	219	30	219
	5n1	BEAM STEPS LONGITUDINAL	—	3'-8	36	138	36	138
		REINFORCING STEEL EPOXY COATED TOTAL (LBS.)				15,469		15,866
S.S. BARS	5d5	PAVING NOTCH DOWELS	—	3'-6	19	69	22	80
		STAINLESS STEEL-TOTAL (LBS)				69		80

BENT BAR DETAILS



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

*INCLUDES 1 THREADED MECHANICAL COUPLER.
**SEE ABUTMENT NOTES.

ABUTMENT NOTES:

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

CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2x6's.

THE PORTION OF THE BACKWALL CONTAINING THE ABUTMENT ANCHORAGE OF THE EXPANSION DEVICE IS TO BE PLACED AFTER THE BRIDGE FLOOR IS PLACED.

CONCRETE SEALER IS TO BE APPLIED TO THE ABUTMENT BRIDGE SEAT IN ACCORDANCE WITH THE CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS.

THE COST OF PREFORMED EXPANSION JOINT FILLER, AND COST OF FURNISHING AND PLACING CONCRETE SEALER IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".

PAVING NOTCH DOWEL (5d5) SHALL BE DEFORMED BAR GRADE 60, TYPE 316 LN IN ACCORDANCE WITH ASTM A955/A955M-01. THE COST AND WEIGHT OF THE STAINLESS STEEL PAVING NOTCH DOWEL IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL-EPOXY COATED"

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 STATE.

ALL THREADED MECHANICAL COUPLER ASSEMBLIES TO BE USED IN SPLICING THE REINFORCING IN THE ABUTMENT SHALL BE EPOXY COATED. THREE ADDITIONAL NON EPOXY COATED SPLICE ASSEMBLIES OF EACH SIZE SHALL BE FURNISHED TO THE ENGINEER FOR TESTING AND APPROVAL. THE COST OF ALL COUPLERS, INCLUDING THE 3 TO BE FURNISHED FOR TESTING, IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL EPOXY COATED" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE MECHANICAL COUPLERS IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL EPOXY COATED".

EXPOSED CONCRETE SURFACES OF THE ABUTMENT WING WALLS ABOVE THE STONE VENEER SHALL BE SMOOTH AND SHOW NO WOOD GRAIN OR OTHER TEXTURE FROM THE FACE OF THE FORMS USED. ALL COSTS FOR REPAIRS OR COVERING THE WOOD GRAIN OR OTHER TEXTURE ON THESE SURFACES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

** THE LENGTHS SHOWN DO NOT INCLUDE AN ALLOWANCE FOR THE THREADED ENDS. BAR LENGTHS MAY NEED TO INCREASE DEPENDING ON THE MECHANICAL COUPLER ASSEMBLY USED. THE COST OF ALL THREADED PORTIONS OF THESE BARS IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL EPOXY COATED" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE THREADED ENDS IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL EPOXY COATED".

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

CONCRETE PLACEMENT QUANTITIES

LOCATION	SOUTH ABUT.		NORTH ABUT.	
	PHASE 1	PHASE 2	PHASE 1	PHASE 2
FOOTING AND STEPS	37.2	39.4	37.2	39.4
BACKWALL BELOW CONSTR. JOINT	9.2	9.9	9.1	9.8
BACKWALL ABOVE CONSTR. JOINT	13.2	13.9	13.2	13.9
BARRIER SUPPORT WING	1.4	1.4	1.4	1.4
WING FOOTING	4.0	4.0	4.0	4.0
COUNTERFORT	1.5	1.5	1.5	1.5
WINGWALL	31.9	31.8	31.8	31.7
FOOTING EXTENSION	47.6	47.5	47.5	47.4
TOTAL (C.Y.)	146.0	149.4	145.7	149.1

ESTIMATED QUANTITIES - BOTH ABUTMENTS

ITEM	UNIT	SOUTH ABUT.		NORTH ABUT.		TOTAL
		PHASE 1	PHASE 2	PHASE 1	PHASE 2	
STRUCTURAL CONCRETE (HIGH PERFORMANCE)	C.Y.	146.0	149.4	145.7	149.1	590.2
REINFORCING STEEL - EPOXY COATED	LB.	15,538	15,946	15,538	15,946	62,968
CLASS 20 EXCAVATION	C.Y.	187	191	186	190	754
HP10x57 STEEL BEARING PILING	L.F.	26 @ 125	27 @ 125	26 @ 125	27 @ 125	13,250
STONE VENEER	S.F.	617	617	617	617	2,468

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

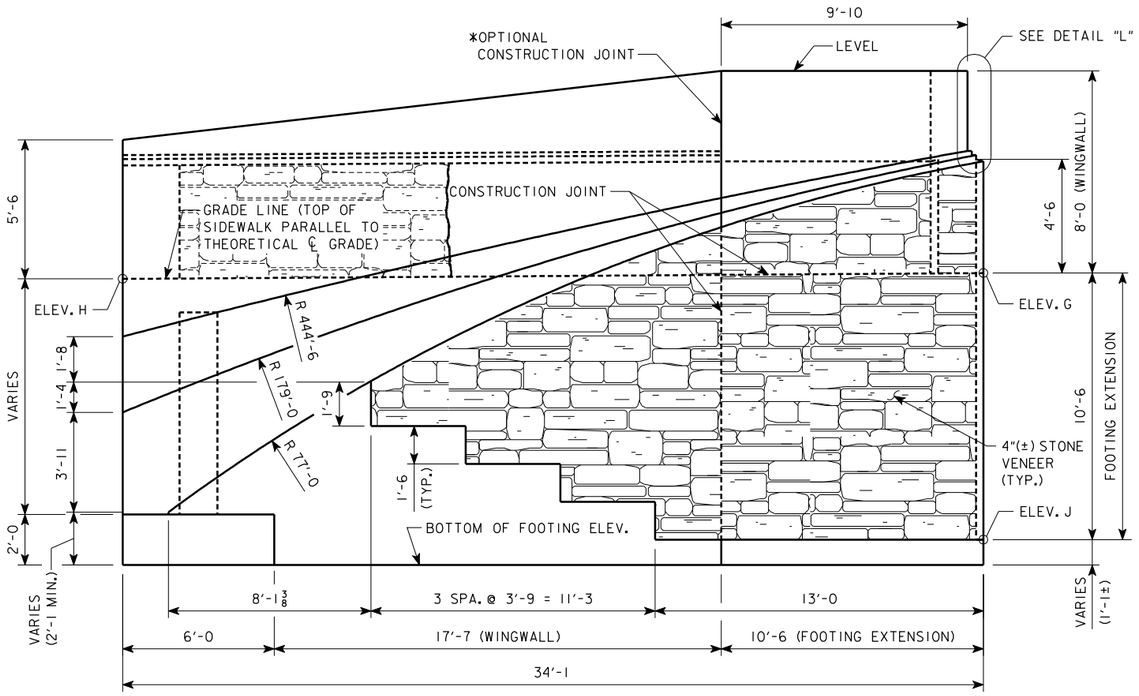
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 62 FILE NO. 30169 DESIGN NO. 508

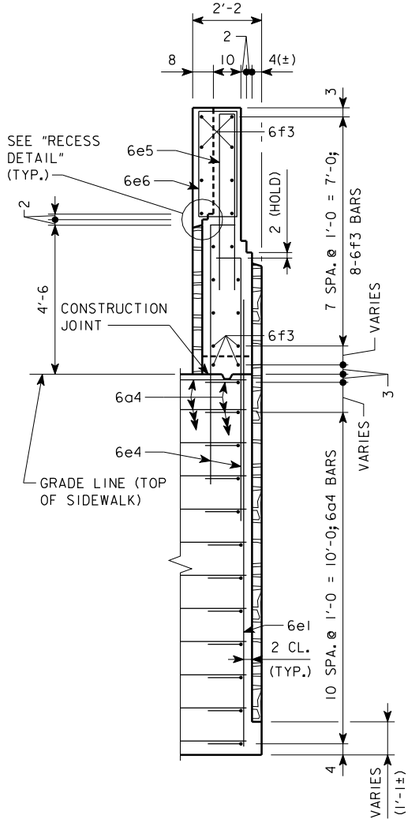
DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 18

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

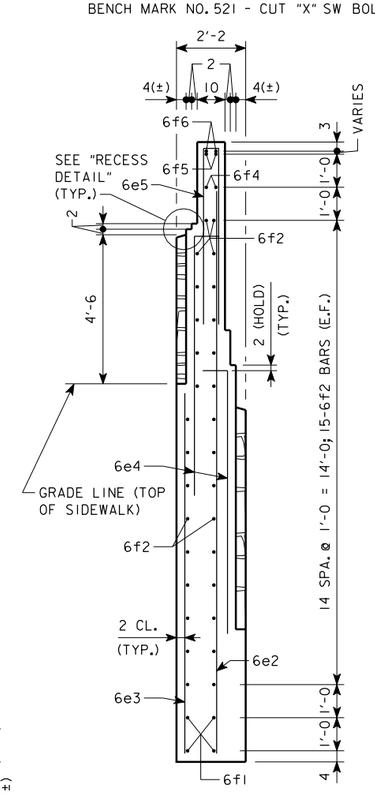
BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



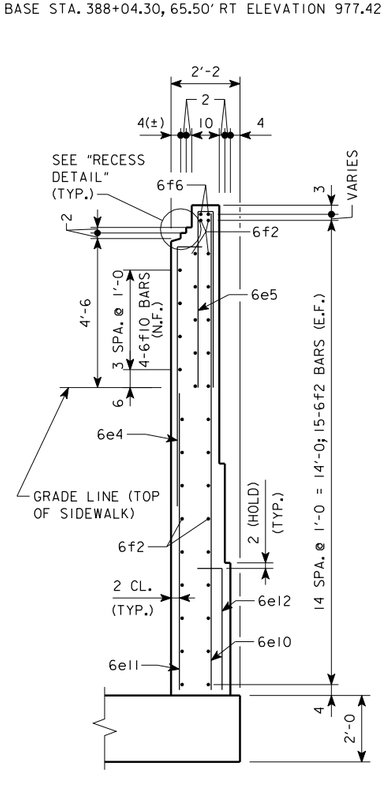
VIEW A-A
(SHOWING GENERAL DIMENSIONS)



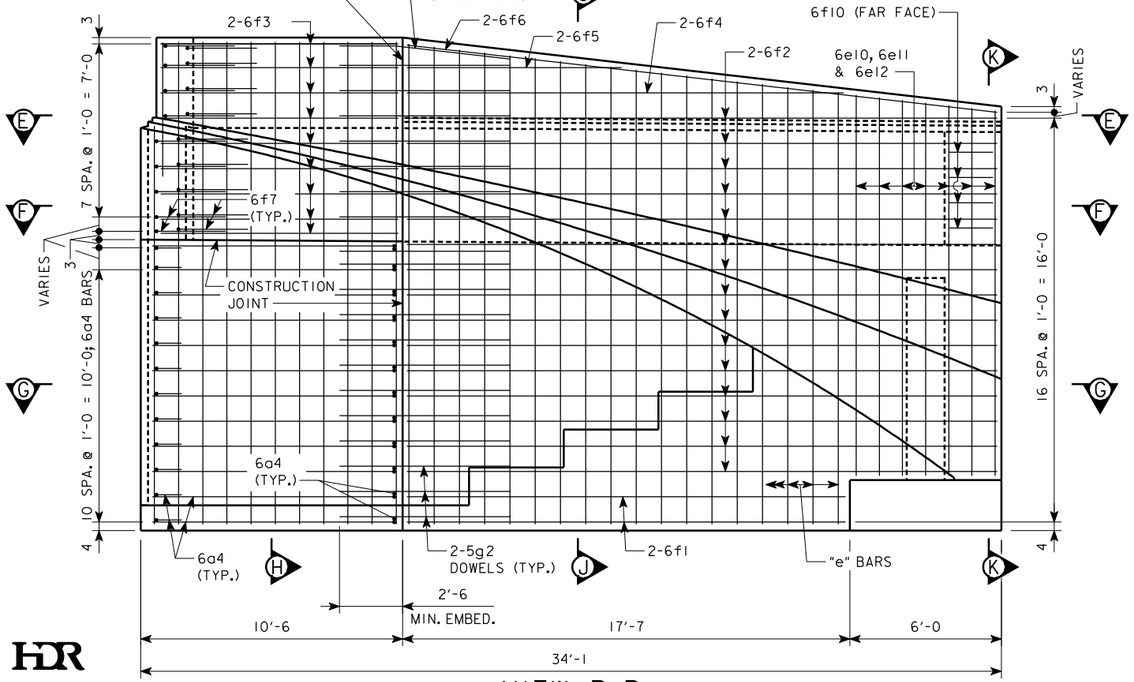
SECTION H-H



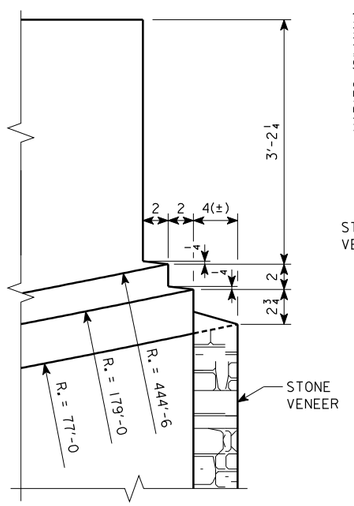
SECTION J-J



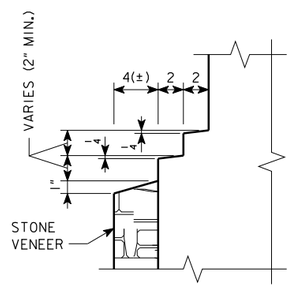
SECTION K-K



VIEW B-B
(SHOWING REINFORCING STEEL)



DETAIL "L"



RECESS DETAIL

TABLE OF WINGWALL ELEVATIONS			
LOCATION	ELEV. G	ELEV. H	ELEV. J
SOUTHWEST WING	1002.48	1001.76	991.98
SOUTHEAST WING	1002.44	1001.71	991.94
NORTHWEST WING	1001.03	1000.02	990.53
NORTHEAST WING	1000.99	999.98	990.49

*IF CONTRACTOR UTILIZES THE OPTIONAL CONSTRUCTION JOINT SHOWN, THE JOINT SHALL NOT BE DRESSED WITH A BEVELED CHAMFER STRIP. FORMS SHALL BE REMOVED IN ACCORDANCE WITH SECTION 2403.18.A OF THE IOWA D.O.T. STANDARD SPECIFICATIONS AND THE JOINT SHALL RECEIVE A CLASS 2 SPECIAL SURFACE FINISH IN ACCORDANCE WITH SECTION 2403.21.B TO OBTAIN A SURFACE THAT IS UNIFORM IN TEXTURE AND APPEARANCE.

NOTES:
FOR SECTIONS E-E, F-F & G-G, SEE DESIGN SHEET 19.
FOR CONDUIT DETAILS, SEE DESIGN SHEETS 43 TO 48.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

WINGWALL DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

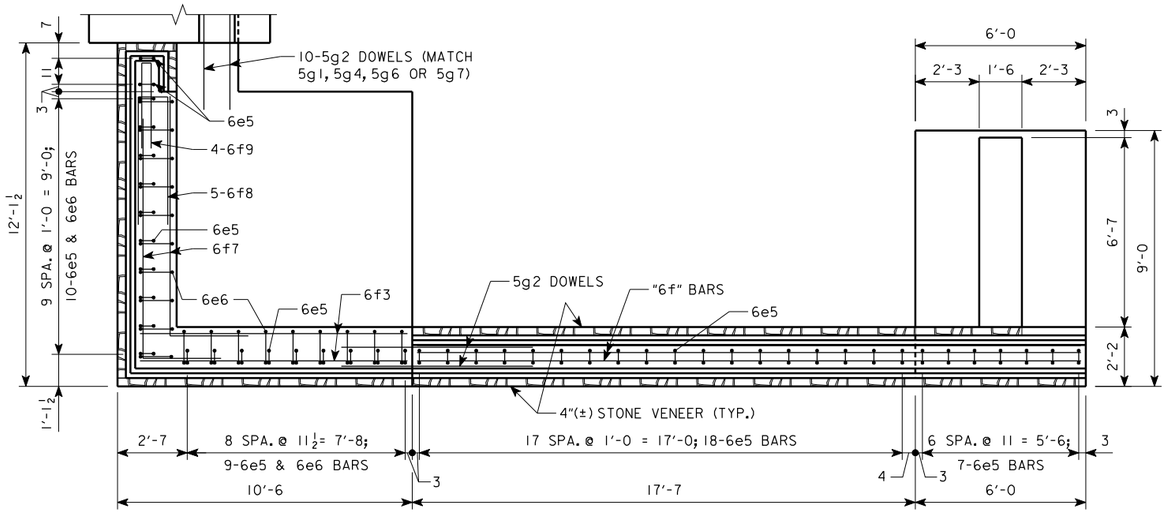
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 62 FILE NO. 30169 DESIGN NO. 508

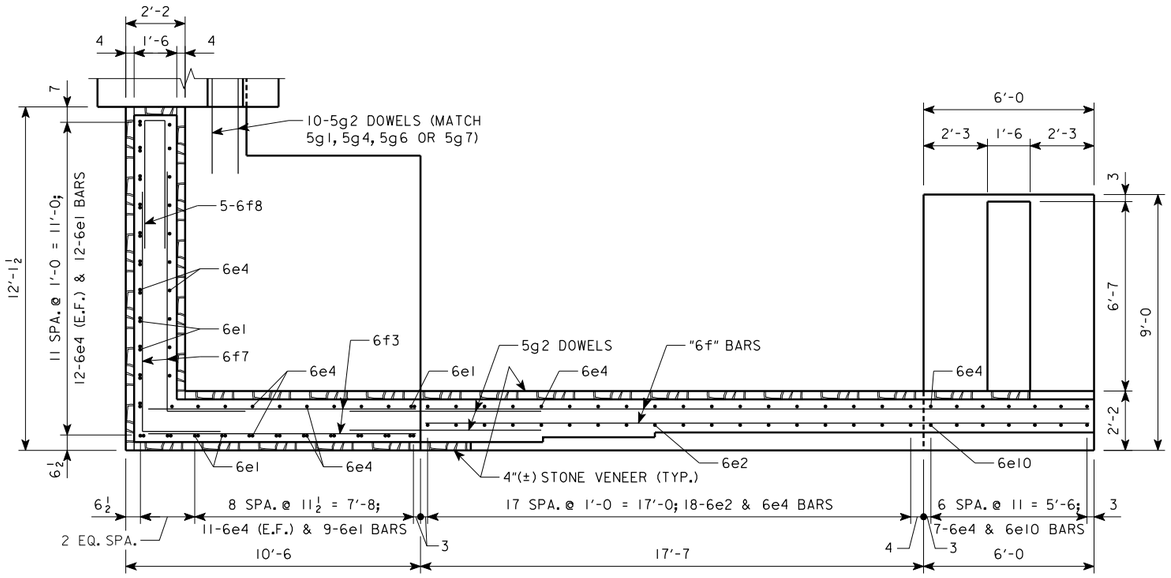
HDR Engineering, Inc.

DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 19

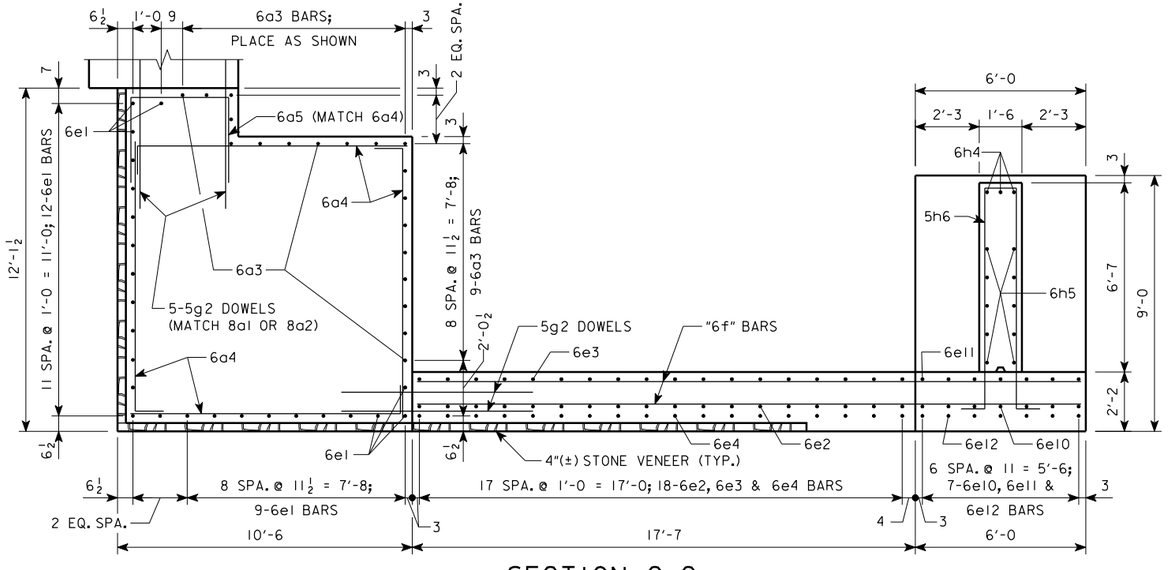
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



SECTION E-E



SECTION F-F



SECTION G-G

VIEW C-C

NOTE:
TYPICAL WING REINFORCING NOT SHOWN FOR CLARITY.

REVISED 11-05 - ALL BLACK BARS CHANGES TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 2092 - THIS SHEET REDRAWN 5-23-91.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

WINGWALL DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/ACB	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 20

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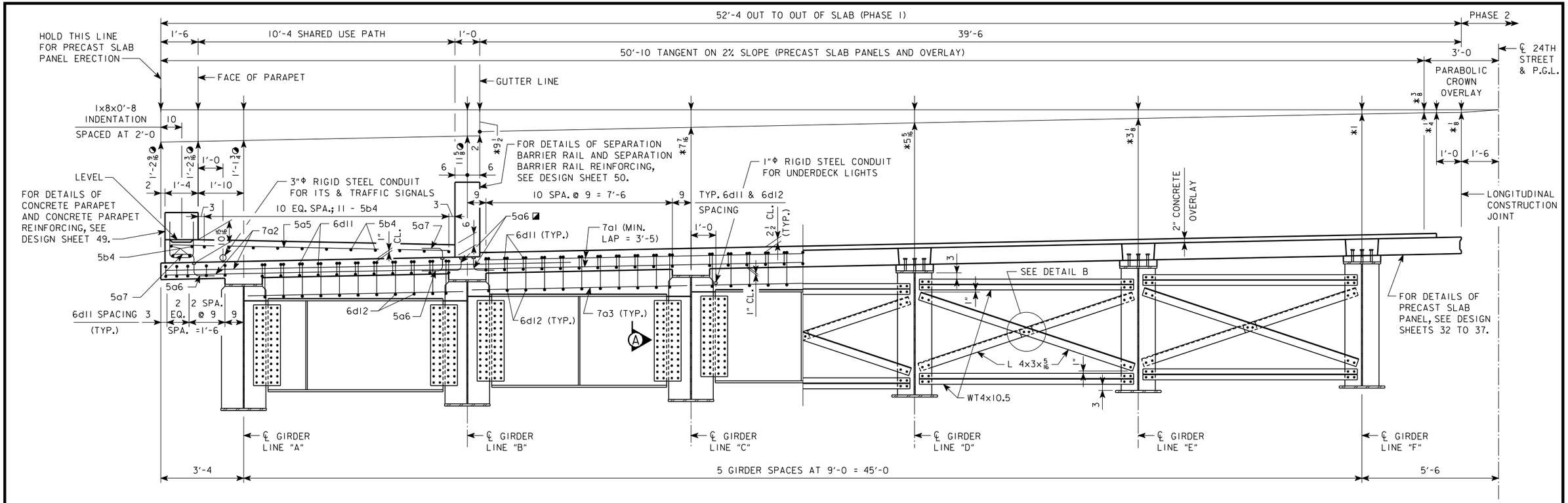


SUPERSTRUCTURE NOTES:

FORMS FOR THE CAST-IN-PLACE PORTION OF THE SLAB AND PARAPET RAIL ARE TO BE SUPPORTED BY THE GIRDERS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF CIP SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF CIP SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL EPOXY COATED METAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF EPOXY COATED METAL BAR HIGH CHAIRS OR SLAB BOLSTERS SPACED 4'-0 APART.

ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH TENSILE STRENGTH BOLTS". UNLESS OTHERWISE NOTED, ALL OPEN HOLES ARE TO BE 15/16"Φ AND ALL BOLTS ARE TO BE 7/8"Φ.

BOTTOM FLANGES ARE TO BE PERPENDICULAR TO WEBS AT THE REACTION POINTS.

FILL ℗ THICKNESSES SHOWN ON PLANS ARE BASED ON NOMINAL GIRDER DIMENSIONS. THESE THICKNESSES ARE TO BE VERIFIED OR ADJUSTED DURING FABRICATION TO SECURE A CLOSE FIT. EACH FILL PLATE SHALL FIT TO THE NEAREST 1/16" IN THICKNESS AND SINGLE PLATES ARE REQUIRED AT EACH FILL LOCATION. GIRDERS ARE TO BE TRULY SQUARE AT SPLICE POINTS WITH FLANGES PERPENDICULAR TO WEBS.

THE DESIGN DRAWINGS INDICATE AWS PREQUALIFIED WELDED JOINTS. ALTERNATE JOINT DETAILS MAY BE SUBMITTED FOR APPROVAL.

MAGNETIC PARTICLE INSPECTION OF WELDS, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, WILL BE REQUIRED.

FOR ADDITIONAL STIFFENER AND WELDING DETAILS, SEE DESIGN SHEET 24.

FOR PLAN VIEW OF SIDEWALK REINFORCING DETAILS AND SPACING OF 5a BARS, SEE DESIGN SHEET 39.

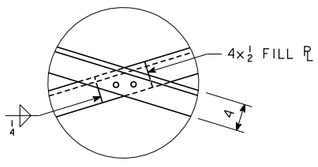
◒ MEASURED FROM A HORIZONTAL LINE TO TOP OF SLAB PANEL.

✱ MEASURED FROM A HORIZONTAL LINE TO TOP OF CONCRETE OVERLAY.

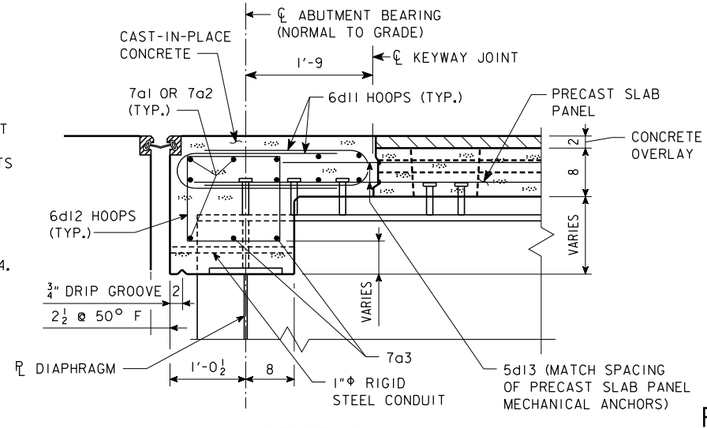
◪ FOR LOCATION AND SPACING OF 5a6 BARS FOR THE SEPARATION BARRIER RAIL, SEE DESIGN SHEET 50.

FOR LIGHTING DETAILS, SEE DESIGN SHEETS 43 TO 48.

PART SECTION NEAR ABUTMENT



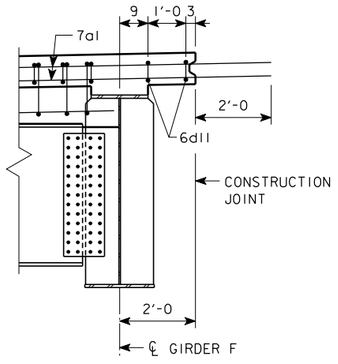
DETAIL B



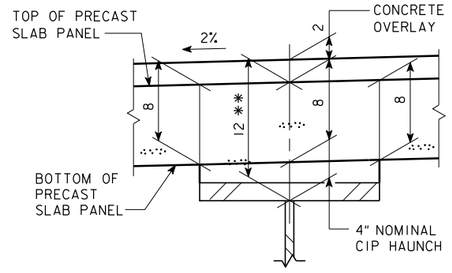
SECTION A-A
(NORMAL TO ABUTMENT)

PHASE I

PART SECTION NEAR ABUTMENT
(SHOWING PHASE I)



PART SECTION NEAR INTERMEDIATE CROSS FRAME



TYP. SLAB & NOMINAL HAUNCH DETAIL

** NOMINAL HAUNCH DIMENSION SHOWN IS MEASURED FROM BOTTOM OF PRECAST SLAB PANEL TO TOP OF WEB. THEORETICALLY THIS IS A CONSTANT DIMENSION ALONG THE GIRDER AND IS USED BY THE DESIGNER TO SET BRIDGE SEAT ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE FIELD HAUNCH DATA DETAIL SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR. METHOD FOR FORMING THE HAUNCH IS TO BE DETERMINED BY THE CONTRACTOR.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SUPERSTRUCTURE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM RRP/JPS/DHS	30' RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET 4305 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 21

REVISION 09-03 - SUPERSTRUCTURE NOTES ABOUT WELDING CHANGED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4305 - THIS SHEET REDRAWN 5-23-91.

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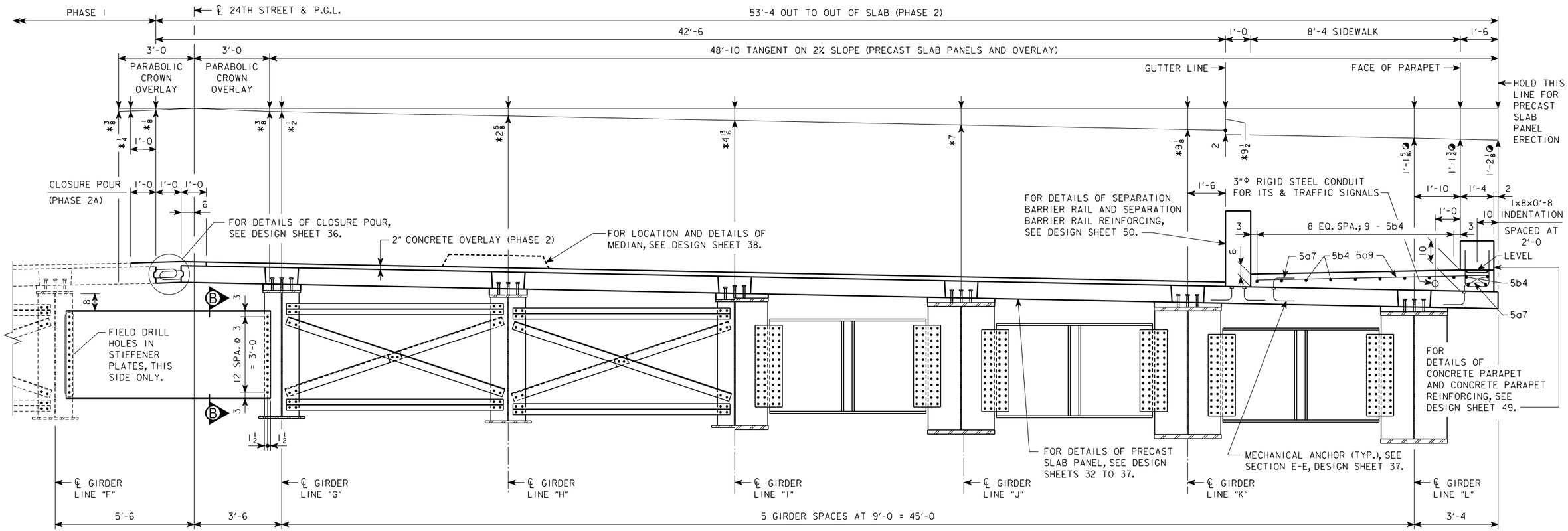
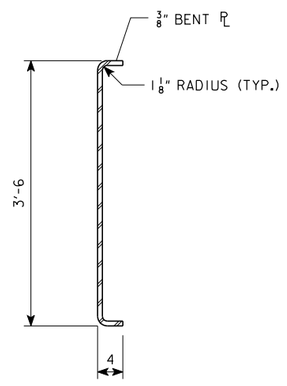
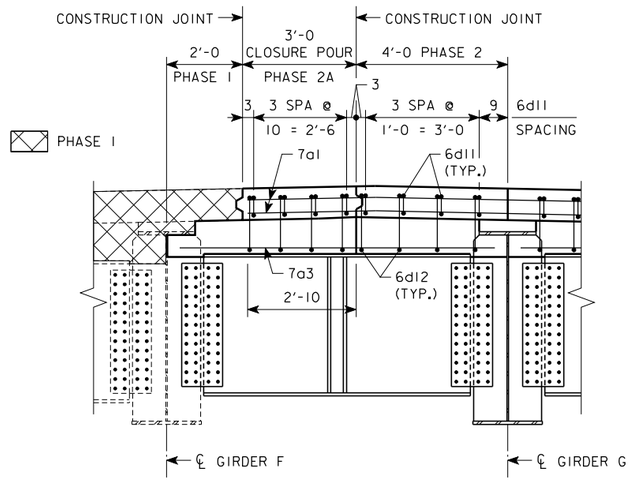




SECTION B-B

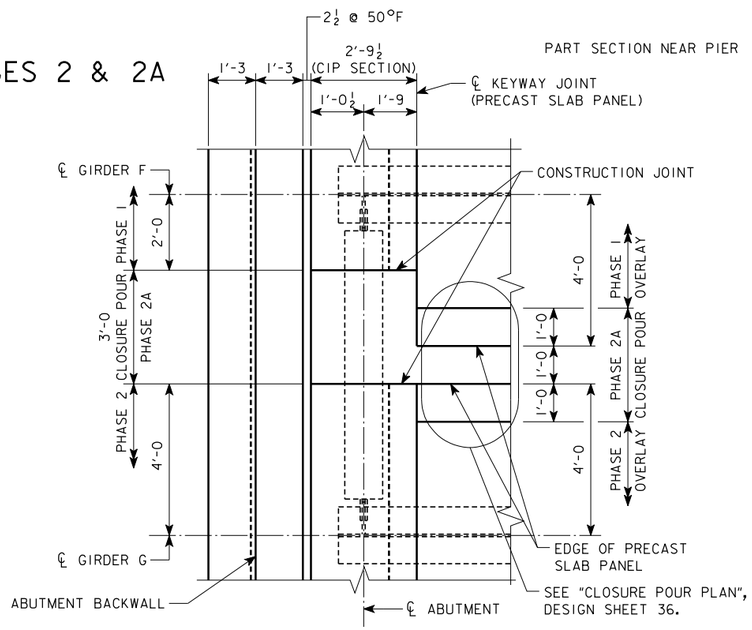
PART SECTION NEAR INTERMEDIATE CROSS FRAME



PART PLAN NEAR ABUTMENT
(AT CLOSURE POUR)

PHASES 2 & 2A

PART SECTION NEAR PIER



PART PLAN NEAR ABUTMENT
(AT CLOSURE POUR)

NOTES:
FOR ADDITIONAL SUPERSTRUCTURE NOTES, SEE DESIGN SHEET 20.
◕ MEASURED FROM A HORIZONTAL LINE TO TOP OF PRECAST SLAB PANEL.
✱ MEASURED FROM A HORIZONTAL LINE TO TOP OF CONCRETE OVERLAY.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SUPERSTRUCTURE DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

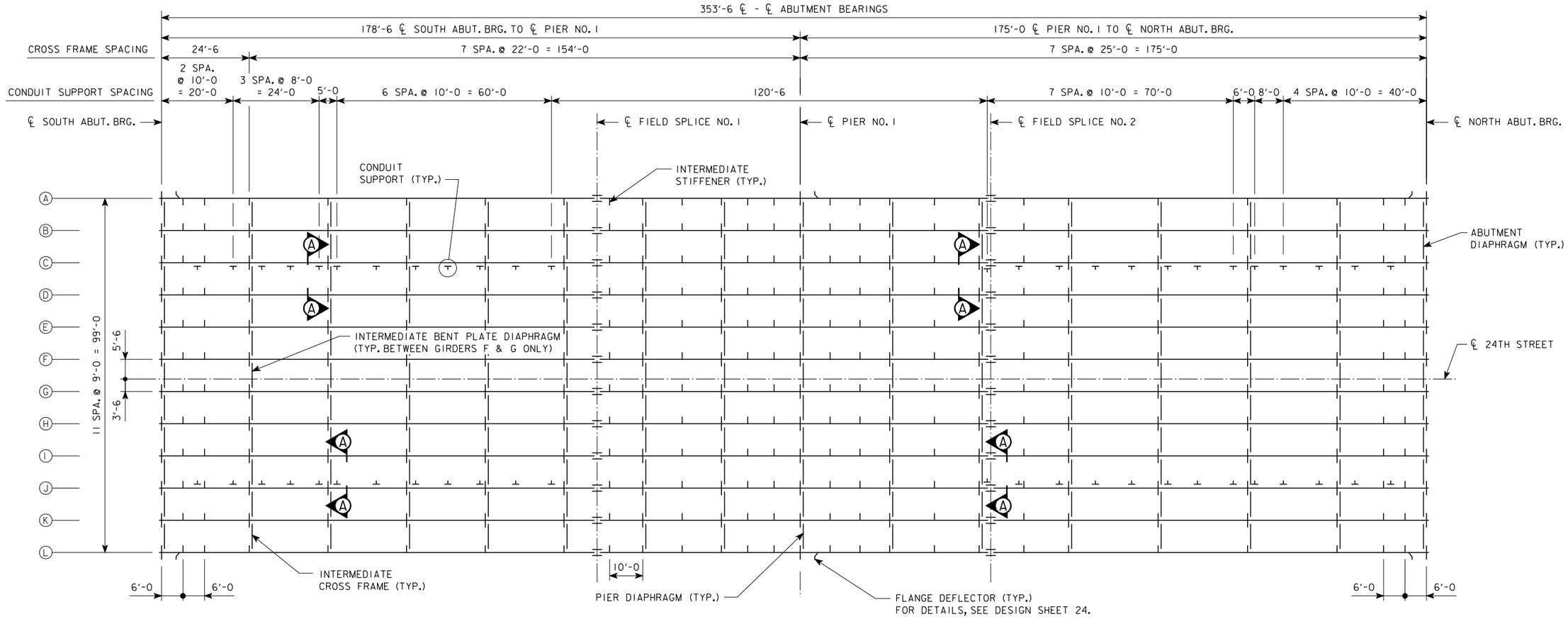
DESIGN SHEET NO. 21 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

REVISION 09-03 - SUPERSTRUCTURE NOTES ABOUT WELDING CHANGED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4305 - THIS SHEET REDRAWN 5-23-91.

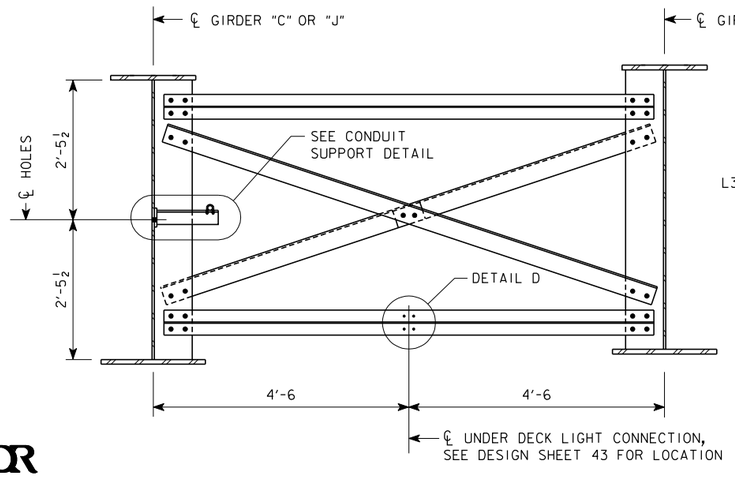
DESIGN TEAM RRP/JPS/DHS	30' RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET 4305 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 22

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

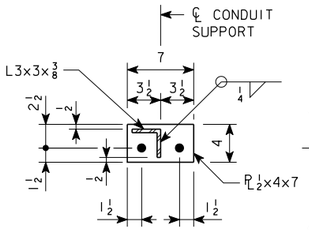


N

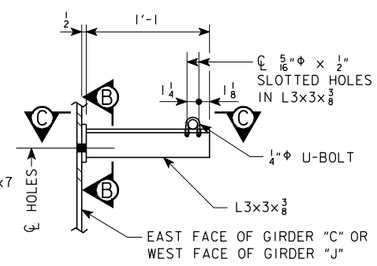
STRUCTURAL STEEL LAYOUT



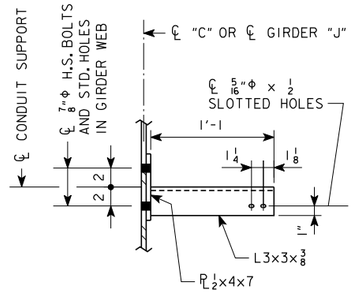
SECTION A-A



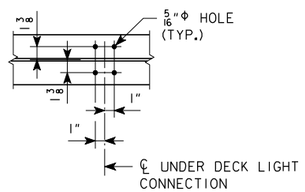
SECTION B-B



CONDUIT SUPPORT DETAIL



SECTION C-C



DETAIL D

NOTES:

ALL INTERMEDIATE STIFFENERS SHALL BE AT EQUAL SPACES BETWEEN CROSS FRAMES UNLESS NOTED OTHERWISE.

THE FABRICATOR MAY REQUEST THE SUBSTITUTION OF A SINGLE PLATE OPTION FOR THE TOP AND BOTTOM FLANGE IN THE NEGATIVE REGION BETWEEN FIELD BOLTED SPLICE PLATES. THE REQUEST SHALL INCLUDE DESIGN CALCULATIONS SIGNED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF IOWA VERIFYING THE PLATE SIZE SUBSTITUTION AND BOLTED FIELD SPLICE ARE SATISFACTORY.

THE INTERMEDIATE BENT PLATE DIAPHRAGMS SHALL BE PLACED BETWEEN GIRDER LINES F & G ONLY. THE BOLT HOLES IN THE STIFFENER PLATES OF GIRDER LINE F SHALL BE FIELD DRILLED TO PROVIDE ALLOWANCES FOR FIT UP OF THE INTERMEDIATE DIAPHRAGMS. SEE DESIGN SHEET 21 FOR DETAILS. THE BOLTS CONNECTING THE INTERMEDIATE DIAPHRAGMS TO THE STIFFENER PLATES SHALL NOT BE FULLY TIGHTENED UNTIL AFTER COMPLETION OF THE PHASE 2A CONCRETE OVERLAY POUR.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

STRUCTURAL STEEL LAYOUT

STA. 401+76+95.25 (24TH STREET)
STA. 747+6+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

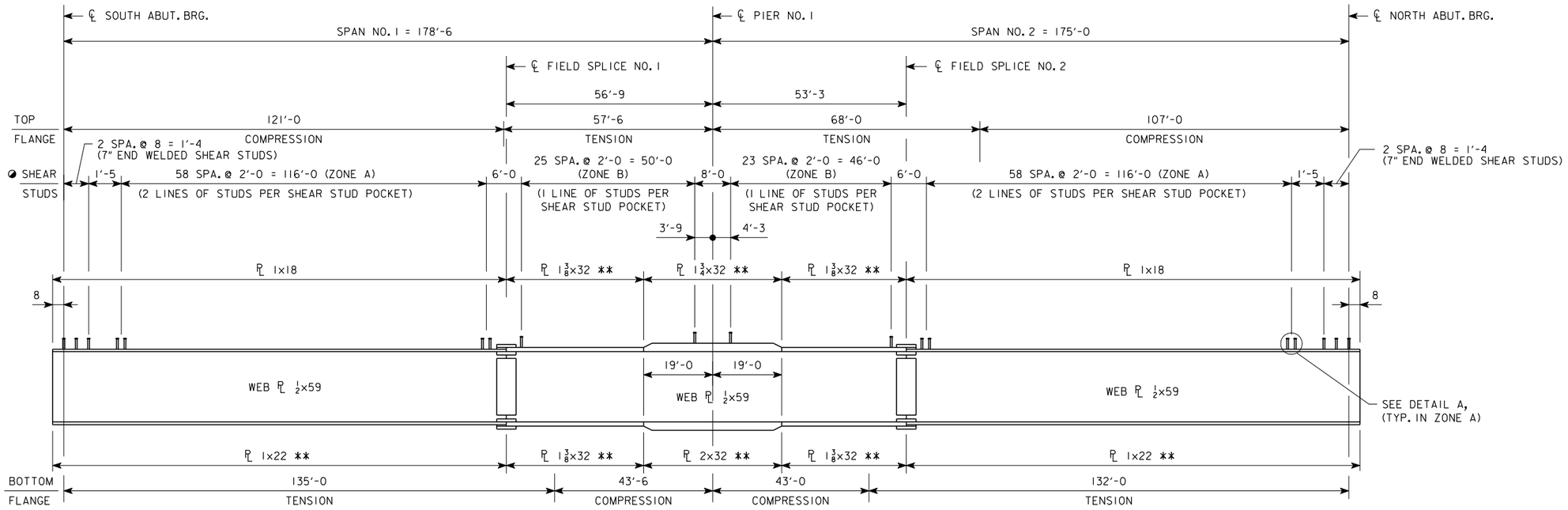
DESIGN SHEET NO. 22 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM RRP/JPS/DHS	30' RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET 4305 (MODIFIED)		POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 23

REVISION 09-03 - SUPERSTRUCTURE NOTES ABOUT WELDING CHANGED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4305 - THIS SHEET REDRAWN 5-23-91.

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



GIRDER ELEVATION

** DENOTES ASTM A709 GRADE HPS 70W.
MINIMUM YIELD POINT = 70 KSI.

◕ FOR ADDITIONAL SHEAR STUD PLACEMENT DETAILS, SEE DESIGN SHEET 33.

WEATHERING STEEL NOTES:

ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE HPS 50W. THE MINIMUM YIELD POINT FOR GRADE HPS 50W STRUCTURAL STEEL IS 50 KSI FOR PLATES 4 INCHES AND UNDER IN THICKNESS, AND ALL STRUCTURAL SHAPES. THE GRADE HPS 50W STEEL IS A WEATHERING STEEL AND IS TO REMAIN UNPAINTED, EXCEPT AS NOTED.

ALL PIECES COMPRISING THE ABUTMENT AND PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON DESIGN SHEETS 30 AND 31.

SHEAR STUDS ARE TO BE OF AN APPROVED TYPE LISTED IN MATERIALS I.M. 453.10, APPENDIX A.

THE FINISH ON BEARINGS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND STANDARD SPECIFICATIONS 2408. EXTERIOR SURFACES OF ALL GALVANIZED COMPONENTS WHICH ARE DESIGNATED IN THE CONTRACT DOCUMENTS TO BE PAINTED SHALL BE PREPARED ACCORDING TO SUPPLEMENTAL SPECIFICATIONS SS-01025.

THE GRADE HPS 50W STEEL FOR THE WEBS OF THE EXTERIOR GIRDERS OF THE BRIDGE SHALL BE OF THE SAME TYPE AND FROM THE SAME STEEL MILL.

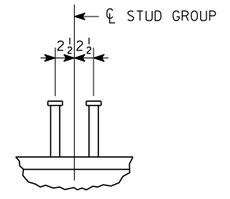
BOLTS FOR USE WITH WEATHERING STEEL SHALL BE A325 TYPE III WITH A563 GRADE DH3 NUTS AND F436 TYPE III WASHERS.

BOLTS USED TO SPLICE GIRDER SECTIONS ARE TO BE INSTALLED SUCH THAT NUTS ARE ON THE INSIDE FACE OF THE GIRDER WEBS FOR THE EXTERIOR GIRDERS, AND ON THE TOP OF BOTH TOP AND BOTTOM FLANGES OF ALL THE GIRDERS.

THE STEEL SHALL BE KEPT FREE OF OIL, GREASE, DIRT, CRAYON OR CHALK MARKS, CONCRETE SPATTER AND ANY OTHER FOREIGN MATTER THAT MAY AFFECT THE NATURAL OXIDATION OF THE STEEL. ANY FOREIGN MATTER REMAINING ON THE STEEL AFTER COMPLETION OF BRIDGE CONSTRUCTION SHALL BE REMOVED BY THE BRIDGE CONTRACTOR AS DIRECTED BY THE ENGINEER. THE RESULTANT SURFACE SHALL BE FREE OF ALL VISIBLE RESIDUES. ALL COSTS ASSOCIATED WITH CLEANING STEEL SURFACES SHALL BE BORNE BY THE BRIDGE CONTRACTOR.

SEAL MATERIAL FOR CAULKING SHALL BE NEUTRAL CURE AND NON SAG SILICONE. THREE PRODUCTS MEETING THESE CRITERIA ARE DOW 888, CSL342 JOINT SEALANT AND CRAFCO ROADSAVER SILICONE.

TO ENSURE UNIFORM WEATHERING, ALL UNPAINTED AREAS OF OUTSIDE SURFACES OF THE FASCIA GIRDERS SHALL RECEIVE, AFTER BLASTING, AT LEAST THREE UNIFORM APPLICATIONS OF WATER MIST WITH A 24 HOUR INTERVAL BETWEEN APPLICATIONS. EACH APPLICATION SHALL BE APPLIED ON DRY SURFACES. THE WATER MIST APPLICATION SHALL BE PERFORMED WITHIN 48 HOURS AFTER THE PAINTED SURFACES HAVE BEEN PROPERLY CURED. ALL WATER MIST APPLICATIONS SHALL BE WITNESSED BY A REPRESENTATIVE OF THE CONTRACTING AUTHORITY.



DETAIL A

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

GIRDER ELEVATION

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

JUNE, 2007

POTTAWATTAMIE COUNTY

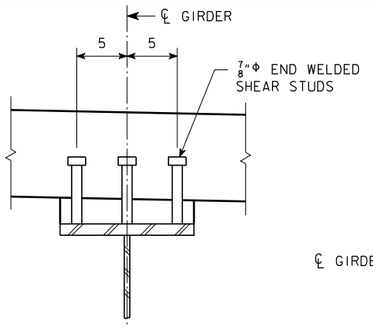
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 62 FILE NO. 30169 DESIGN NO. 508

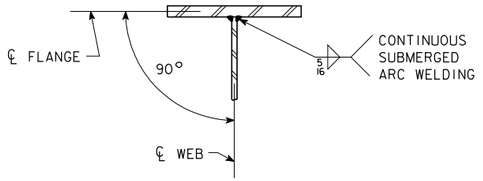
DESIGN TEAM RRP/JPS/DHS	30' RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET 4305 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 24

REVISION 09-03 - SUPERSTRUCTURE NOTES ABOUT WELDING CHANGED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4305 - THIS SHEET REDRAWN 5-23-91.

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

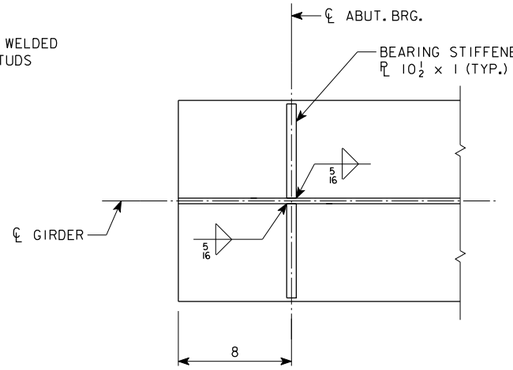


SHEAR STUD DETAIL

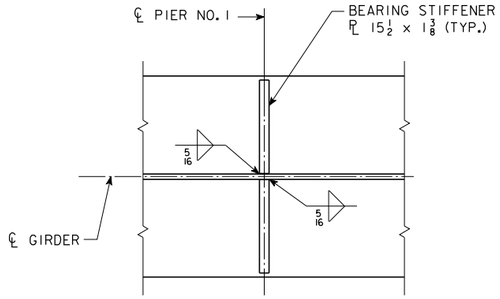


FLANGE TO WEB WELD DETAIL

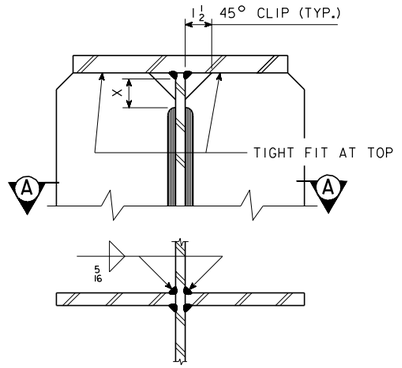
NOTE:
DO NOT INTERSECT STIFFENER WELD WITH LONGITUDINAL WEB WELD.



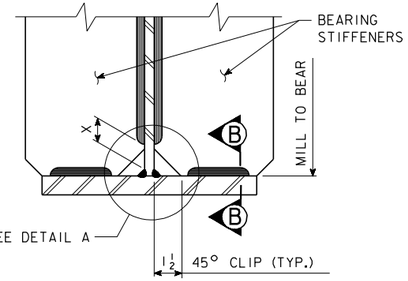
ABUTMENT BEARING STIFFENERS



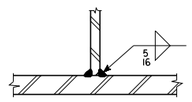
PIER BEARING STIFFENERS



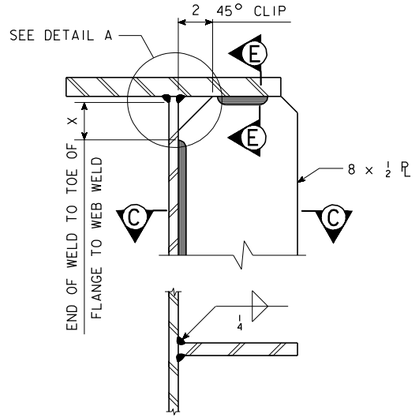
SECTION A-A



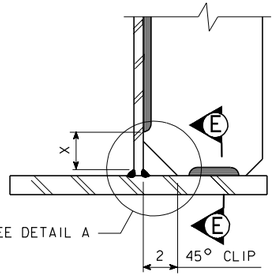
BEARING STIFFENERS

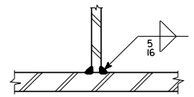


SECTION B-B

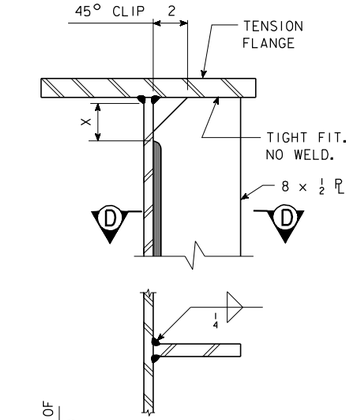


SECTION C-C

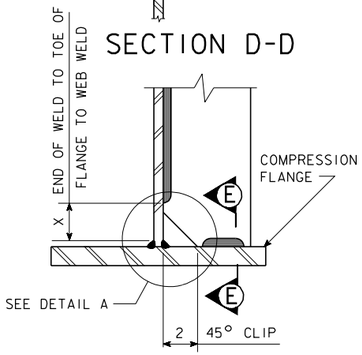




SECTION E-E



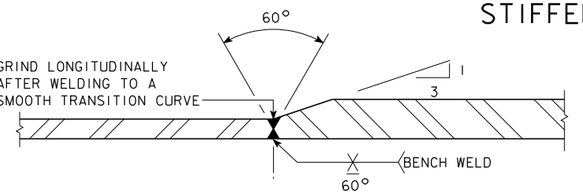
SECTION D-D



INTERMEDIATE STIFFENER

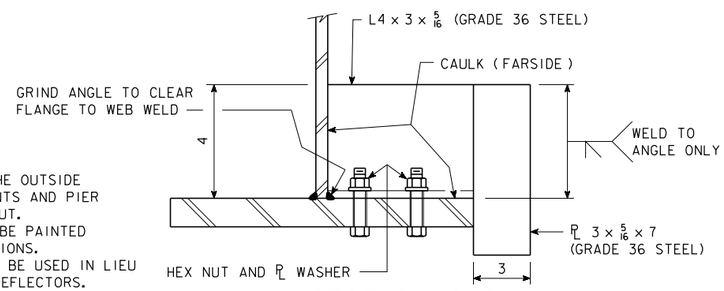
INTERMEDIATE CROSS FRAME STIFFENER

PIER BEARING STIFFENERS



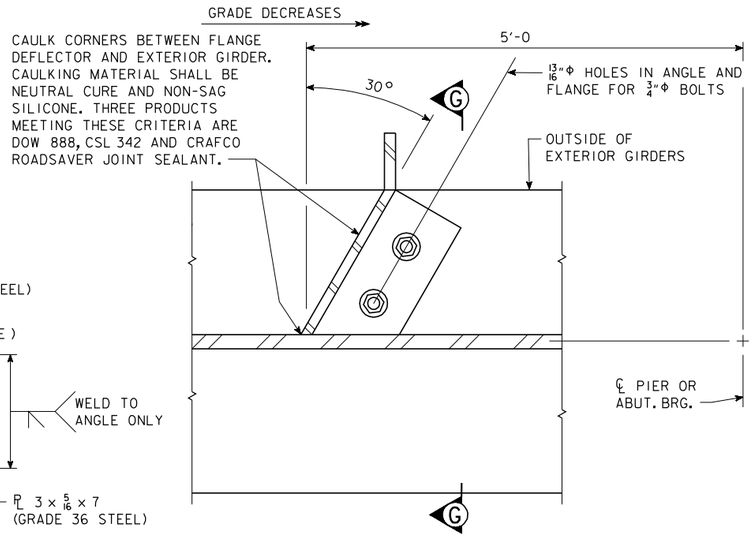
FLANGE PLATE TRANSITION AT SHOP SPLICES

ALL FLANGE BUTT WELDED JOINTS SUBJECT TO TENSION OR REVERSAL OF STRESS ARE TO BE RADIOGRAPHED FULL WIDTH. ALL BUTT WELDED JOINTS SUBJECT TO COMPRESSION ONLY ARE TO BE RADIOGRAPHED FOR A MINIMUM OF 50 PERCENT OF THE WIDTH.
FOR TENSION AND COMPRESSION LIMITS SEE DESIGN SHEET 23.



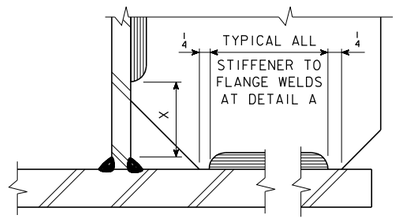
SECTION G-G

FLANGE DEFLECTORS ARE REQUIRED ON THE OUTSIDE OF THE EXTERIOR GIRDERS AT THE ABUTMENTS AND PIER AS SHOWN ON THE STRUCTURAL STEEL LAYOUT.
FLANGE DEFLECTOR COMPONENTS ARE TO BE PAINTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
GRADE HPS 50W "WEATHERING STEEL" MAY BE USED IN LIEU OF PAINTED GRADE 36 STEEL FOR FLANGE DEFLECTORS.



FLANGE DEFLECTOR DETAILS
(6 REQUIRED)

T - WEB THICKNESS	X = 5T WITH 2 1/4" MINIMUM
3/8	2 1/4
7/16	2 1/4
1/2	2 1/2
9/16	2 13/16
5/8	3 1/8
11/16	3 7/16
3/4	3 3/4



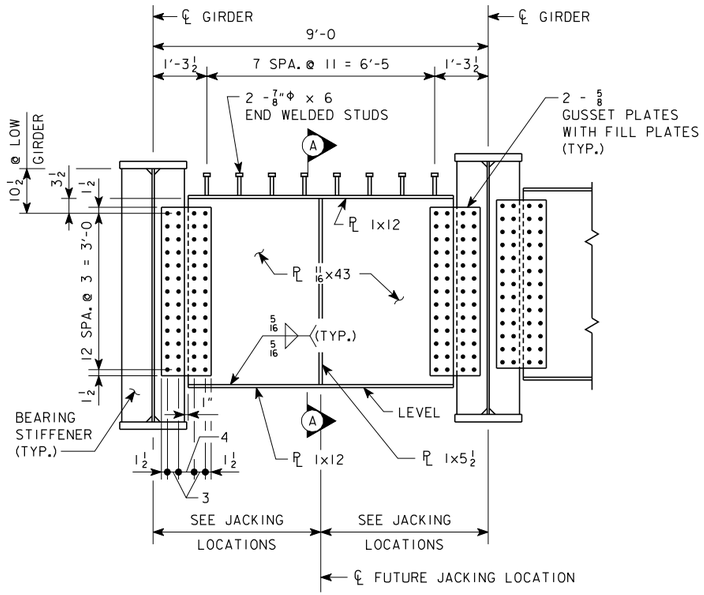
DETAIL A

DESIGN FOR 0° SKEW
353'-6X82' CONT. WELDED GIRDER BRIDGE
W/8'-4 SIDEWALK & 10'-4 SHARED USE PATH
24TH STREET OVER I-80
178'-6 & 175'-0 SPANS
SUPERSTRUCTURE DETAILS
STA. 40176+95.25 (24TH STREET) JUNE, 2007
STA. 7476+95.25 (FUTURE I-80)
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 24 OF 62 FILE NO. 30169 DESIGN NO. 508

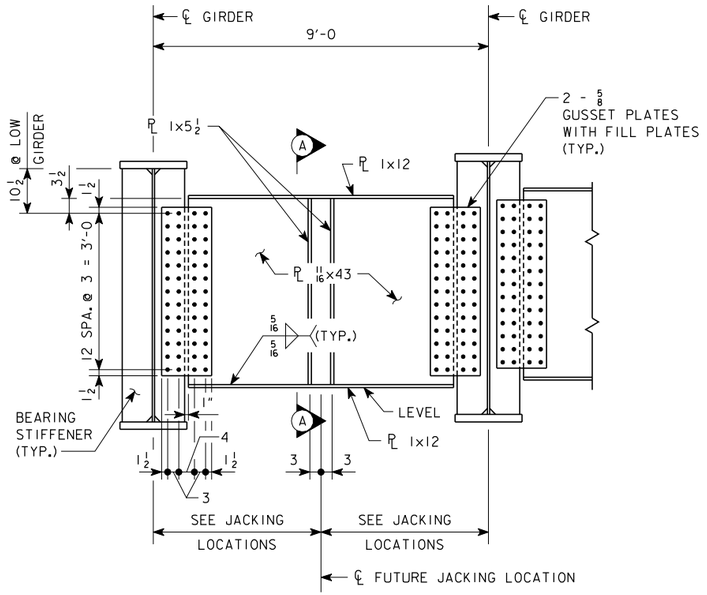
REVISED 09-03 - CHANGES SECTION G-G.
ENGLISHBEAMS.DGN 1021 - THIS SHEET ISSUED 11-3-88.

DESIGN TEAM RRP/JPS/DHS	WELDING DETAILS	STANDARD SHEET 1021 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 25

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

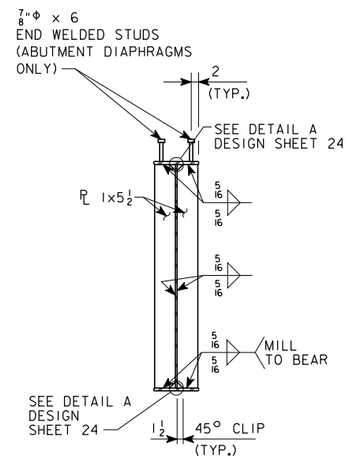


ABUTMENT DIAPHRAGM

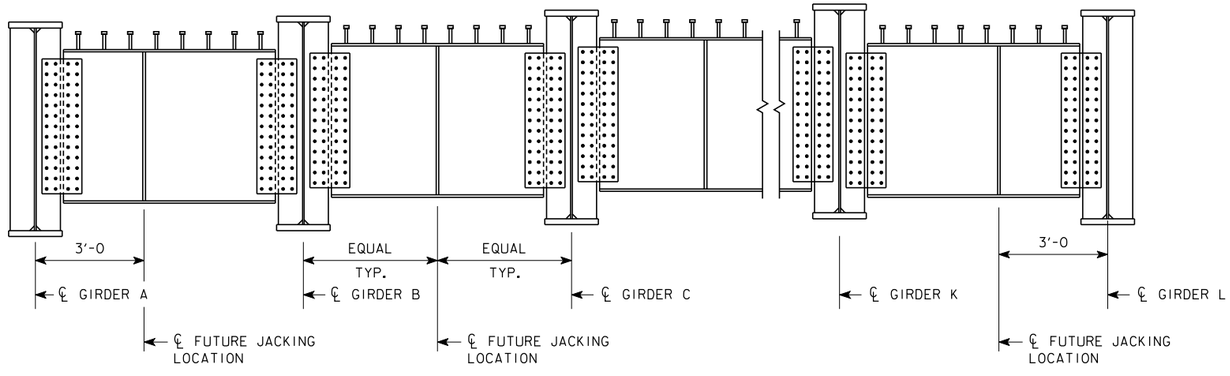


PIER NO. 1 DIAPHRAGM

JACKING LOAD TABLE	
LOCATION	JACK LOAD (kips)
SOUTH ABUTMENT	290
PIER NO. 1	1120
NORTH ABUTMENT	290



SECTION A-A



JACKING LOCATIONS

(ABUTMENT DIAPHRAGMS SHOWN, PIER NO. 1 DIAPHRAGMS SIMILAR)

JACKING NOTES:

PROVISIONS FOR JACKING HAVE BEEN INCLUDED IN THIS DESIGN TO ALLOW FOR FUTURE BEARING MAINTENANCE.

JACK LOAD IS BASED ON MAXIMUM DEAD LOAD REACTION. (LIVE LOAD IS NOT INCLUDED).

FUTURE JACKING AND BEARING REPLACEMENT SHALL BE CONDUCTED IN A MANNER SUCH THAT THE SUPERSTRUCTURE WILL NOT BE DAMAGED.

THE MAXIMUM ALLOWABLE VERTICAL JACKING DISPLACEMENT SHALL BE 1" WITH RESPECT TO BEARINGS OF ADJACENT PIERS OR ABUTMENTS. IF ADDITIONAL JACKING HEIGHT IS REQUIRED TO FACILITATE BEARING REMOVAL, THE SUPERSTRUCTURE SHALL BE JACKED AT ADJACENT PIERS OR ABUTMENTS SUCH THAT THE MAXIMUM VERTICAL DIFFERENTIAL DISPLACEMENT BETWEEN ADJACENT PIERS OR ABUTMENTS DOES NOT EXCEED 1".

ALL JACKING POINTS INDICATED ON THE DRAWINGS AT A PIER OR ABUTMENT LINE SHALL BE JACKED SIMULTANEOUSLY AND SHALL BE RAISED THE SAME AMOUNT AND AT THE SAME RATE. THE HYDRAULIC PRESSURE OF THE JACKS SHALL BE ADJUSTED AS REQUIRED TO ALLOW FOR EQUAL MOVEMENTS.

TRAFFIC SHALL NOT BE PERMITTED ON THE SUPERSTRUCTURE WHILE JACKING IS OCCURRING. EFFECTS OF VIBRATIONS FROM TRAFFIC NEAR THE SUBSTRUCTURE SHOULD BE CONSIDERED DURING JACKING AND BEARING REPLACEMENT.

WHEN JACKING AT ABUTMENTS, SEPARATION BARRIER AND MEDIAN COVER PLATES SHALL BE REMOVED TO PREVENT DAMAGE TO THE JOINTS. EXPANSION JOINTS SHOULD ALSO BE INSPECTED TO VERIFY THAT ITEMS PLACED ACROSS THE EXPANSION JOINTS WILL NOT BE DAMAGED BY JACKING.

THE BRIDGE SHALL BE INSPECTED PRIOR TO JACKING TO VERIFY THAT ITEMS CONNECTED TO THE SUPERSTRUCTURE OR SUBSTRUCTURE WILL NOT BE DAMAGED DURING THE JACKING AND BEARING REPLACEMENT PROCEDURE.

THE SUPERSTRUCTURE SHALL ONLY BE JACKED AT THE LOCATIONS NOTED ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE JACKING TO SIZE AND DESIGN THE REQUIRED JACKING EQUIPMENT AND BLOCKING AND TO ESTABLISH THE PROCEDURE FOR JACKING AND BEARING REPLACEMENT. JACKS SHALL HAVE A MINIMUM SAFE LOAD CAPACITY OF 125% OF THE LOAD SPECIFIED IN THE JACKING LOAD TABLE.

PROVISIONS SHALL BE MADE TO ACCOUNT FOR THERMAL MOVEMENTS DURING THE PERIOD THAT THE STRUCTURE IS RESTING ON TEMPORARY SUPPORTS.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

JACKING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

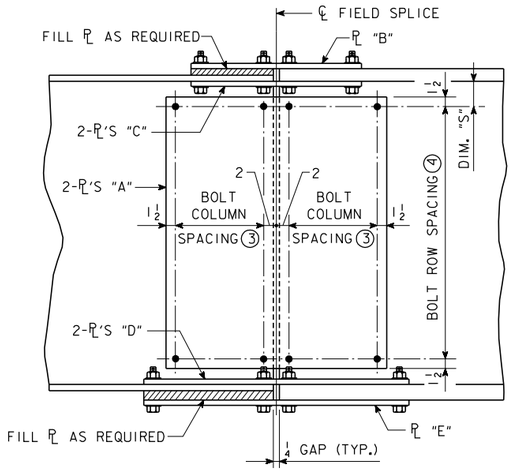
DESIGN SHEET NO. 25 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

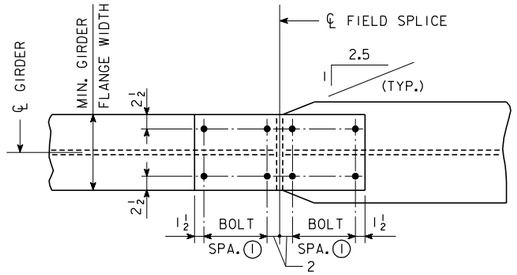
DESIGN TEAM JPS/RRP/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 26

REVISED ??? - CHANGED NEOPRENE SHEETS TO NEOPRENE SHEETS.
ENGLISHBEAMS.DGN 1010 - THIS SHEET ISSUED 09-03

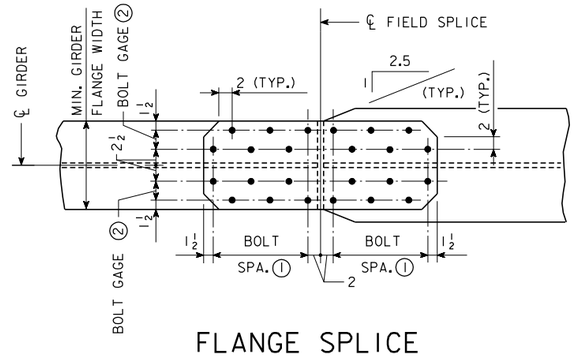
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



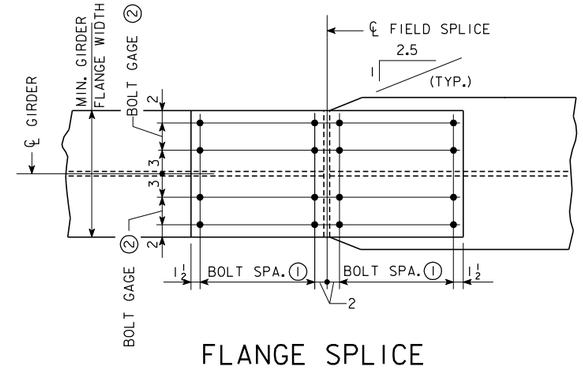
FIELD SPLICE ELEVATION



FLANGE SPLICE
12" MIN.
GIRDER FLANGE WIDTH



FLANGE SPLICE
14", 16" & 18" MIN.
GIRDER FLANGE WIDTH



FLANGE SPLICE
20", 22" & 24" MIN.
GIRDER FLANGE WIDTH

FIELD SPLICE SCHEDULE

FIELD SPLICE NO.	TOP FLANGE SPLICE					WEB PLATE SPLICE				BOTTOM FLANGE SPLICE				
	MIN. GIRDER FLANGE WIDTH	PLATE "B"	PLATE "C" (2 REQUIRED)	BOLT SPACING ①	BOLT GAGE ②	WEB PLATE "A" (2 REQUIRED)	BOLT COLUMN SPACING ③	BOLT ROW SPACING ④	DIM. "S"	MIN. GIRDER FLANGE WIDTH	PLATE "D" (2 REQUIRED)	PLATE "E"	BOLT SPACING ①	BOLT GAGE ②
1 & 2	18	7/16"x18" x 3'-7	½"x8" x 3'-7	9 @ 2" = 1'-6	5	⅜"x19" x 4'-7	2 @ 3" = 0'-6	13 @ 4" = 4'-4	3½"	22	11/16"x10" x 4'-7	⅝"x22" x 4'-7	8 @ 3" = 2'-0	6

MOMENT TABLE (UNITS: FOOT-KIPS)

	POSITIVE MOMENT SPAN NO. 1	NEGATIVE MOMENT PIER	POSITIVE MOMENT SPAN NO. 2
DC1	2033	-5794	1852
DC2	2576	-5051	2398
L.L. + IMPACT	3727	-4115	3526
TOTAL	8336	-14960	7776

REACTION TABLE (UNITS: KIPS)

	REACTION SOUTH ABUTMENT	REACTION PIER	REACTION NORTH ABUTMENT
DC1 + DC2	123	553	118
L.L. + IMPACT	124	230	122
TOTAL	247	783	240

NOTES:
MOMENTS AND REACTIONS ARE UNFACTORED. MOMENTS AND PIER REACTIONS CONTROLLED BY EXTERIOR GIRDER AND ABUTMENT REACTIONS CONTROLLED BY INTERIOR GIRDER.
DC1 COMPRISES ALL NON-COMPOSITE DEAD LOADS DUE TO GIRDER AND SLAB DEAD WEIGHT.
DC2 COMPRISES COMPOSITE DEAD LOAD DUE TO BARRIER RAILS, SIDEWALKS AND CONCRETE OVERLAY.
LL MOMENTS AND REACTIONS ARE BASED ON LRFD DISTRIBUTION FACTORS.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

FIELD SPLICE DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 62 FILE NO. 30169 DESIGN NO. 508

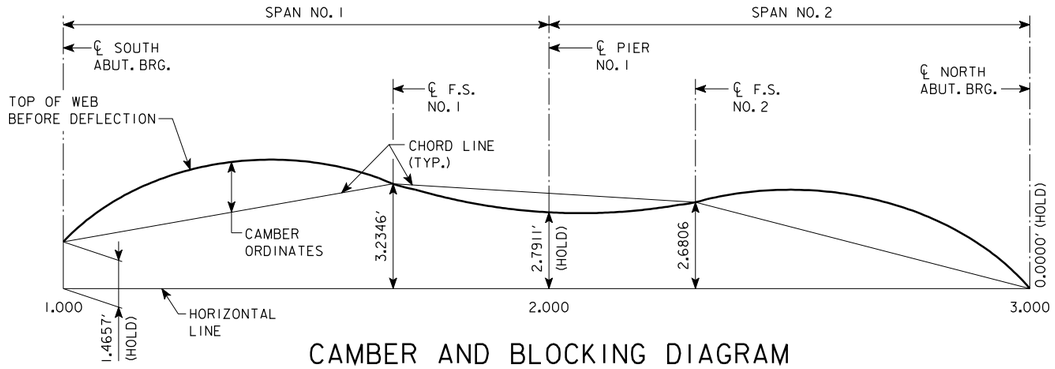
HDR Engineering, Inc.

DESIGN TEAM RRP/JPS/DHS	30' RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET 4305 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 27

REVISION 09-03 - SUPERSTRUCTURE NOTES ABOUT WELDING CHANGED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4305 - THIS SHEET REDRAWN 5-23-91.

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



CAMBER AND BLOCKING DIAGRAM

CAMBER ORDINATES (INCHES)

	℄ SOUTH ABUT. BRG.				MIDPOINT OF FIELD SECTION				℄ F.S. NO. 1				℄ PIER NO. 1				℄ F.S. NO. 2				MIDPOINT OF FIELD SECTION				℄ NORTH ABUT. BRG.
GIRDER	1.000	1.100	1.200	1.300	1.341	1.400	1.500	1.600	1.682	1.700	1.800	1.900	2.000	2.100	2.200	2.300	2.304	2.400	2.500	2.600	2.652	2.700	2.800	2.900	3.000
ALL	0.0000	4.16	7.24	8.82	8.97	8.6996	6.87	3.56	0.0000	-0.07	-0.80	-1.55	-1.89	-1.55	-0.80	-0.03	0.0000	3.68	6.60	8.19	8.41	8.25	6.75	3.88	0.0000

DEFLECTION ORDINATES DUE TO WEIGHT OF SLAB, BARRIERS, SIDEWALK, OVERLAY AND MEDIAN (DOWNWARD DEFLECTIONS ARE POSITIVE)(INCHES)

	℄ SOUTH ABUT. BRG.				MIDPOINT OF FIELD SECTION				℄ F.S. NO. 1				℄ PIER NO. 1				℄ F.S. NO. 2				MIDPOINT OF FIELD SECTION				℄ NORTH ABUT. BRG.
GIRDER	1.000	1.100	1.200	1.300	1.341	1.400	1.500	1.600	1.682	1.700	1.800	1.900	2.000	2.100	2.200	2.300	2.304	2.400	2.500	2.600	2.652	2.700	2.800	2.900	3.000
ALL	0.0000	2.81	5.13	6.64	6.98	7.17	6.71	5.44	4.01	3.70	1.94	0.59	0.00	0.37	1.49	3.02	3.10	4.57	5.73	6.19	6.08	5.78	4.49	2.46	0.00

DEFLECTION ORDINATES DUE TO WEIGHT OF STRUCTURAL STEEL (DOWNWARD DEFLECTIONS ARE POSITIVE)(INCHES)

	℄ SOUTH ABUT. BRG.				MIDPOINT OF FIELD SECTION				℄ F.S. NO. 1				℄ PIER NO. 1				℄ F.S. NO. 2				MIDPOINT OF FIELD SECTION				℄ NORTH ABUT. BRG.
GIRDER	1.000	1.100	1.200	1.300	1.341	1.400	1.500	1.600	1.682	1.700	1.800	1.900	2.000	2.100	2.200	2.300	2.304	2.400	2.500	2.600	2.652	2.700	2.800	2.900	3.000
ALL	0.00	0.60	1.10	1.42	1.50	1.54	1.45	1.18	0.87	0.81	0.43	0.13	0.00	0.06	0.29	0.60	0.62	0.92	1.17	1.27	1.25	1.19	0.92	0.50	0.00

TOP OF SLAB ELEVATIONS ALONG PGL

℄ SOUTH ABUT. BRG.				MIDPOINT OF FIELD SECTION				℄ F.S. NO. 1				℄ PIER NO. 1				℄ F.S. NO. 2				MIDPOINT OF FIELD SECTION				℄ NORTH ABUT. BRG.
1.000	1.100	1.200	1.300	1.341	1.400	1.500	1.600	1.682	1.700	1.800	1.900	2.000	2.100	2.200	2.300	2.304	2.400	2.500	2.600	2.652	2.700	2.800	2.900	3.000
1002.72	1003.04	1003.32	1003.56	1003.65	1003.76	1003.91	1004.02	1004.08	1004.09	1004.12	1004.10	1004.05	1003.95	1003.81	1003.63	1003.63	1003.42	1003.16	1002.86	1002.69	1002.52	1002.14	1001.72	1001.25

NOTES:

CAMBER ORDINATES ARE MEASURED FROM A CHORD LINE BETWEEN FIELD SPLICES. UPWARD CAMBERS ARE POSITIVE.

DEFLECTION ORDINATES FOR CAMBER INCLUDE DEFLECTIONS DUE TO ALL DEAD LOADS. DOWNWARD DEFLECTIONS ARE POSITIVE.

TOP OF GIRDER ELEVATIONS FOR HAUNCH CALCULATIONS SHALL BE SURVEYED PRIOR TO THE PLACEMENT OF PRECAST DECK PANELS.

HAUNCH THICKENING DIAGRAM NOT PROVIDED BECAUSE THE NOMINAL HAUNCH DIMENSION FROM BOTTOM OF PRECAST SLAB PANEL TO TOP OF GIRDER WEB SHOULD THEORETICALLY BE A CONSTANT DIMENSION. (SEE TYPICAL SLAB AND NOMINAL HAUNCH DETAIL, DESIGN SHEET 20.) GIRDER WEB SHALL BE CUT TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE CORRECTION.

CAMBER VALUES MUST BE MAINTAINED AT THE CENTER LINE OF ABUTMENT AND PIER BEARINGS.

CAMBERS ARE GIVEN FOR THE GIRDERS IN THE NO LOAD POSITION.

FOR INDIVIDUAL GIRDER SPAN LENGTHS AND DISTANCE TO FIELD SPLICES, SEE DESIGN SHEET 23.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

CAMBER & BLOCKING DIAGRAMS

STA. 401+76+95.25 (24TH STREET)
STA. 747+6+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 27 OF 62 FILE NO. 30169 DESIGN NO. 508

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

TABLE OF GIRDER LINE HAUNCH ELEVATIONS

	℄ SOUTH ABUT. BRG.													F.S. NO. 1											F.S. NO. 2
LINE	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕
GIRDER LINE A	1000.91	1000.97	1001.28	1001.58	1001.84	1002.08	1002.27	1002.43	1002.54	1002.62	1002.66	1002.67	1002.65	1002.60	1002.54	1002.48	1002.40	1002.33	1002.27	1002.22	1002.18	1002.15	1002.13	1002.11	1002.07
GIRDER LINE B	1001.09	1001.14	1001.46	1001.75	1002.02	1002.25	1002.45	1002.60	1002.72	1002.80	1002.84	1002.85	1002.82	1002.78	1002.72	1002.65	1002.58	1002.51	1002.45	1002.40	1002.36	1002.33	1002.31	1002.28	1002.25
GIRDER LINE C	1001.27	1001.33	1001.64	1001.94	1002.20	1002.43	1002.63	1002.79	1002.90	1002.98	1003.02	1003.03	1003.01	1002.96	1002.90	1002.83	1002.76	1002.69	1002.63	1002.58	1002.54	1002.51	1002.49	1002.46	1002.43
GIRDER LINE D	1001.44	1001.50	1001.82	1002.11	1002.38	1002.61	1002.81	1002.96	1003.08	1003.16	1003.20	1003.21	1003.18	1003.14	1003.08	1003.01	1002.94	1002.87	1002.81	1002.76	1002.72	1002.69	1002.66	1002.64	1002.61
GIRDER LINE E	1001.63	1001.69	1002.00	1002.30	1002.56	1002.79	1002.99	1003.15	1003.26	1003.34	1003.38	1003.39	1003.37	1003.32	1003.26	1003.19	1003.12	1003.05	1002.99	1002.94	1002.90	1002.87	1002.85	1002.82	1002.79
GIRDER LINE F	1001.80	1001.86	1002.18	1002.47	1002.74	1002.97	1003.17	1003.32	1003.44	1003.52	1003.56	1003.57	1003.54	1003.50	1003.44	1003.37	1003.30	1003.23	1003.16	1003.12	1003.08	1003.05	1003.02	1003.00	1002.97
GIRDER LINE G	1001.85	1001.90	1002.22	1002.51	1002.78	1003.01	1003.21	1003.36	1003.48	1003.56	1003.60	1003.61	1003.58	1003.54	1003.48	1003.41	1003.34	1003.27	1003.21	1003.16	1003.12	1003.09	1003.07	1003.04	1003.01
GIRDER LINE H	1001.67	1001.73	1002.04	1002.34	1002.60	1002.84	1003.03	1003.19	1003.31	1003.38	1003.42	1003.43	1003.41	1003.36	1003.30	1003.24	1003.16	1003.09	1003.03	1002.98	1002.94	1002.91	1002.89	1002.87	1002.83
GIRDER LINE I	1001.49	1001.54	1001.86	1002.16	1002.42	1002.65	1002.85	1003.01	1003.12	1003.20	1003.24	1003.25	1003.23	1003.18	1003.12	1003.05	1002.98	1002.91	1002.85	1002.80	1002.76	1002.73	1002.71	1002.68	1002.65
GIRDER LINE J	1001.30	1001.36	1001.68	1001.97	1002.24	1002.47	1002.67	1002.82	1002.94	1003.02	1003.06	1003.07	1003.04	1003.00	1002.94	1002.87	1002.80	1002.73	1002.66	1002.62	1002.58	1002.55	1002.52	1002.50	1002.47
GIRDER LINE K	1001.13	1001.19	1001.50	1001.80	1002.06	1002.29	1002.49	1002.65	1002.76	1002.84	1002.88	1002.89	1002.87	1002.82	1002.76	1002.69	1002.62	1002.55	1002.49	1002.44	1002.40	1002.37	1002.35	1002.32	1002.29
GIRDER LINE L	1000.94	1001.00	1001.32	1001.61	1001.88	1002.11	1002.31	1002.46	1002.58	1002.66	1002.70	1002.71	1002.68	1002.64	1002.58	1002.51	1002.44	1002.37	1002.31	1002.26	1002.22	1002.19	1002.16	1002.14	1002.11

TABLE OF GIRDER LINE HAUNCH ELEVATIONS

													℄ NORTH ABUT. BRG.
LINE	㉖	㉗	㉘	㉙	㉚	㉛	㉜	㉝	㉞	㉟	㊱	㊲	㊳
GIRDER LINE A	1002.03	1001.96	1001.87	1001.75	1001.59	1001.40	1001.17	1000.90	1000.60	1000.26	999.90	999.51	999.44
GIRDER LINE B	1002.20	1002.14	1002.05	1001.93	1001.77	1001.58	1001.35	1001.08	1000.77	1000.44	1000.08	999.69	999.62
GIRDER LINE C	1002.39	1002.32	1002.23	1002.11	1001.95	1001.76	1001.53	1001.26	1000.95	1000.62	1000.26	999.87	999.80
GIRDER LINE D	1002.56	1002.50	1002.41	1002.29	1002.13	1001.94	1001.70	1001.44	1001.13	1000.80	1000.44	1000.05	999.98
GIRDER LINE E	1002.75	1002.68	1002.59	1002.47	1002.31	1002.12	1001.89	1001.62	1001.31	1000.98	1000.62	1000.23	1000.16
GIRDER LINE F	1002.92	1002.86	1002.77	1002.64	1002.49	1002.29	1002.06	1001.79	1001.49	1001.16	1000.80	1000.41	1000.34
GIRDER LINE G	1002.96	1002.90	1002.81	1002.69	1002.53	1002.34	1002.11	1001.84	1001.53	1001.20	1000.84	1000.45	1000.38
GIRDER LINE H	1002.79	1002.72	1002.63	1002.51	1002.35	1002.16	1001.93	1001.66	1001.36	1001.02	1000.66	1000.27	1000.20
GIRDER LINE I	1002.61	1002.54	1002.45	1002.33	1002.17	1001.98	1001.75	1001.48	1001.17	1000.84	1000.48	1000.09	1000.02
GIRDER LINE J	1002.42	1002.36	1002.27	1002.14	1001.99	1001.79	1001.56	1001.29	1000.99	1000.66	1000.30	999.91	999.84
GIRDER LINE K	1002.25	1002.18	1002.09	1001.97	1001.81	1001.62	1001.39	1001.12	1000.81	1000.48	1000.12	999.73	999.66
GIRDER LINE L	1002.06	1002.00	1001.91	1001.79	1001.63	1001.44	1001.20	1000.94	1000.63	1000.30	999.94	999.55	999.48

MISCELLANEOUS DATA TABLE

	GIRDER LINE		℄ SOUTH ABUT. BRG.												F.S. NO. 1											F.S. NO. 2
			①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕
ANTICIPATED DEFLECTION DUE TO SLAB, BARRIERS, CONCRETE OVERLAY, SIDEWALK AND MEDIAN (IN.)	ALL		0	5/16	1 7/8	3 3/8	4 11/16	5 3/4	6 9/16	7	7 3/16	7	6 9/16	5 7/8	5	4	3	2 1/16	1 3/16	1/2	1/8	0	3/16	11/16	1 3/8	2 3/16	3 1/8
CROSS SLOPE ADJUSTMENTS (IN.)	ALL		3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
ALLOWABLE FIELD HAUNCH (IN.)	MAX.	ALL	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16
	MIN.	ALL	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16

MISCELLANEOUS DATA TABLE

	GIRDER LINE													℄ NORTH ABUT. BRG.
			㉖	㉗	㉘	㉙	㉚	㉛	㉜	㉝	㉞	㉟	㊱	㊲	㊳
ANTICIPATED DEFLECTION DUE TO SLAB, BARRIERS, CONCRETE OVERLAY, SIDEWALK AND MEDIAN (IN.)	ALL		4	4 13/16	5 1/2	6	6 3/16	6 1/8	5 3/4	5 1/16	4 1/8	3	1 3/4	1/4	0
CROSS SLOPE ADJUSTMENTS (IN.)	ALL		3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16	3/16
ALLOWABLE FIELD HAUNCH (IN.)	MAX.	ALL	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16
	MIN.	ALL	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16

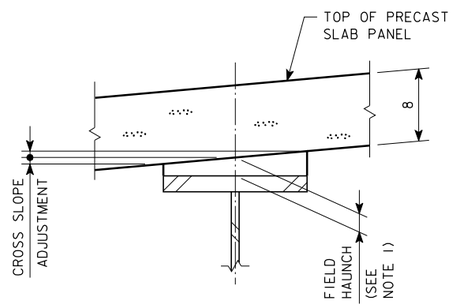
NOTES:

TO CALCULATE FIELD HAUNCH NEEDED AT EACH LOCATION, SURVEY THE TOP OF GIRDER TOP FLANGES AT THE POINTS AND FIELD SPLICE LOCATIONS AS INDICATED IN THE TABLE OF GIRDER LINE HAUNCH ELEVATIONS. SUBTRACT THE SURVEYED GIRDER SHOT FROM THE "GIRDER LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE FIELD HAUNCH NEEDED (SEE "FIELD HAUNCH" IN FIELD HAUNCH DETAIL). THE "GIRDER LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR PRECAST SLAB PANEL THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS INDICATED IN THE MISC. DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF GIRDER TOP FLANGE ELEVATIONS AND "GIRDER LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

DOWNWARD DEFLECTIONS ARE POSITIVE.

FOR "HAUNCH LOCATIONS" DIAGRAM, SEE DESIGN SHEET 29.



FIELD HAUNCH DETAIL

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

FIELD HAUNCH DATA DETAIL

STA. 401+76+95.25 (24TH STREET) JUNE, 2007
STA. 747+95.25 (FUTURE I-80)

POTTAWATTAMIE COUNTY

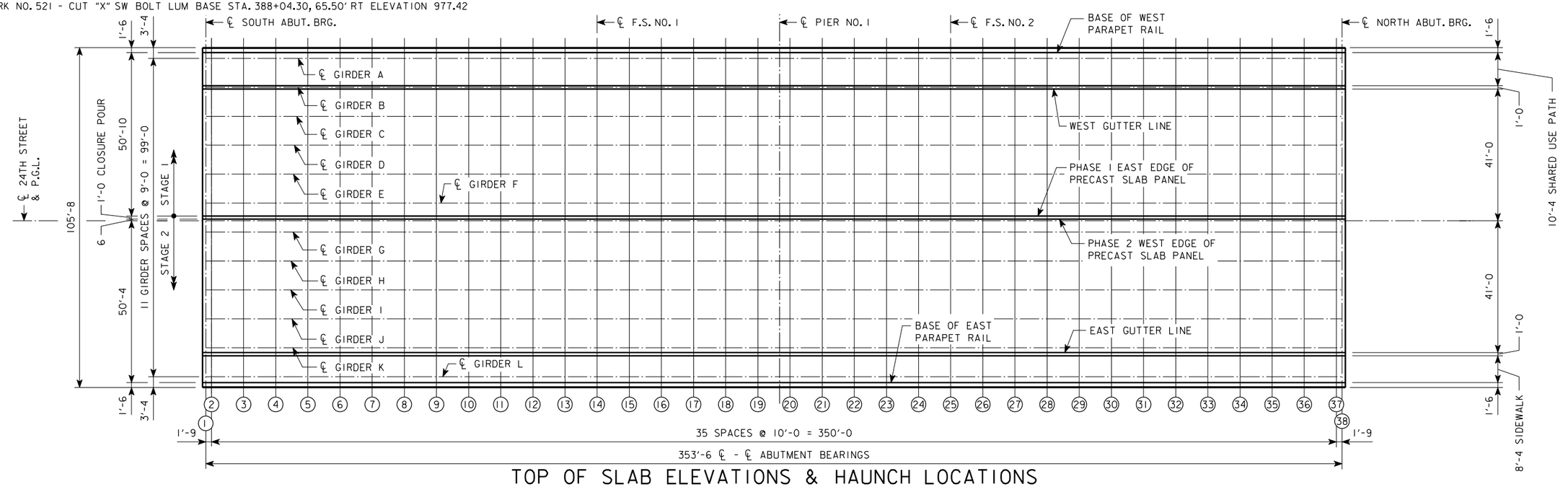
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 28 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 29

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



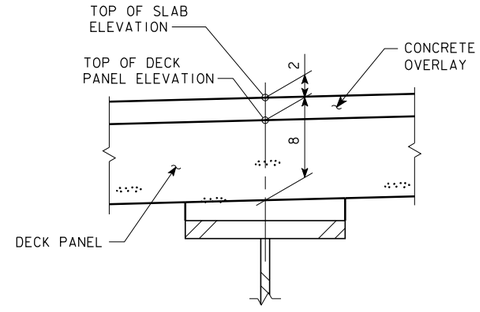
TOP OF SLAB ELEVATIONS & HAUNCH LOCATIONS

TABLE OF TOP OF SLAB ELEVATIONS

LINE	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲
BASE OF WEST PARAPET RAIL*	1001.54	1001.57	1001.76	1001.93	1002.08	1002.23	1002.36	1002.47	1002.58	1002.67	1002.75	1002.81	1002.86	1002.90	1002.92	1002.94	1002.93	1002.92	1002.89
GIRDER LINE A*	1001.57	1001.61	1001.79	1001.96	1002.12	1002.26	1002.39	1002.51	1002.61	1002.70	1002.78	1002.85	1002.90	1002.94	1002.96	1002.97	1002.97	1002.95	1002.93
GIRDER LINE B*	1001.75	1001.79	1001.97	1002.14	1002.30	1002.44	1002.57	1002.69	1002.79	1002.88	1002.96	1003.02	1003.07	1003.11	1003.14	1003.15	1003.15	1003.13	1003.10
WEST GUTTER LINE	1001.93	1001.96	1002.15	1002.32	1002.47	1002.62	1002.75	1002.86	1002.97	1003.06	1003.14	1003.20	1003.25	1003.29	1003.31	1003.33	1003.32	1003.31	1003.28
GIRDER LINE C	1002.10	1002.13	1002.32	1002.49	1002.64	1002.79	1002.92	1003.04	1003.14	1003.23	1003.31	1003.37	1003.42	1003.46	1003.49	1003.50	1003.50	1003.48	1003.45
GIRDER LINE D	1002.28	1002.31	1002.49	1002.66	1002.82	1002.97	1003.10	1003.21	1003.32	1003.41	1003.49	1003.55	1003.60	1003.64	1003.66	1003.67	1003.67	1003.66	1003.63
GIRDER LINE E	1002.46	1002.49	1002.68	1002.85	1003.00	1003.15	1003.28	1003.40	1003.50	1003.59	1003.67	1003.73	1003.78	1003.82	1003.85	1003.86	1003.86	1003.84	1003.81
GIRDER LINE F	1002.64	1002.67	1002.85	1003.02	1003.18	1003.32	1003.46	1003.57	1003.68	1003.77	1003.84	1003.91	1003.96	1004.00	1004.02	1004.03	1004.03	1004.02	1003.99
PHASE 1 EAST EDGE OF SLAB PANEL	1002.71	1002.74	1002.93	1003.10	1003.25	1003.40	1003.53	1003.65	1003.75	1003.84	1003.92	1003.98	1004.03	1004.07	1004.10	1004.11	1004.11	1004.09	1004.06
PHASE 2 WEST EDGE OF SLAB PANEL	1002.72	1002.75	1002.94	1003.11	1003.26	1003.41	1003.54	1003.66	1003.76	1003.85	1003.93	1003.99	1004.04	1004.08	1004.11	1004.12	1004.12	1004.10	1004.07
P.G.L. 24TH STREET	1002.72	1002.75	1002.94	1003.11	1003.26	1003.41	1003.54	1003.66	1003.76	1003.85	1003.93	1003.99	1004.04	1004.08	1004.11	1004.12	1004.12	1004.10	1004.07
GIRDER LINE G	1002.68	1002.71	1002.90	1003.07	1003.22	1003.37	1003.50	1003.61	1003.72	1003.81	1003.89	1003.95	1004.00	1004.04	1004.06	1004.08	1004.07	1004.06	1004.03
GIRDER LINE H	1002.50	1002.54	1002.72	1002.89	1003.05	1003.19	1003.32	1003.44	1003.54	1003.63	1003.71	1003.77	1003.82	1003.86	1003.89	1003.90	1003.90	1003.88	1003.85
GIRDER LINE I	1002.32	1002.35	1002.54	1002.71	1002.86	1003.01	1003.14	1003.25	1003.36	1003.45	1003.53	1003.59	1003.64	1003.68	1003.71	1003.72	1003.71	1003.70	1003.67
GIRDER LINE J	1002.14	1002.17	1002.35	1002.52	1002.68	1002.82	1002.96	1003.07	1003.18	1003.27	1003.34	1003.41	1003.46	1003.50	1003.52	1003.53	1003.53	1003.52	1003.49
GIRDER LINE K	1001.96	1001.99	1002.18	1002.35	1002.50	1002.65	1002.78	1002.90	1003.00	1003.09	1003.17	1003.23	1003.28	1003.32	1003.35	1003.36	1003.36	1003.34	1003.31
EAST GUTTER LINE	1001.93	1001.96	1002.15	1002.32	1002.47	1002.62	1002.75	1002.86	1002.97	1003.06	1003.14	1003.20	1003.25	1003.29	1003.31	1003.33	1003.32	1003.31	1003.28
GIRDER LINE L*	1001.61	1001.64	1001.83	1002.00	1002.16	1002.30	1002.43	1002.55	1002.65	1002.74	1002.82	1002.88	1002.93	1002.97	1003.00	1003.01	1003.01	1002.99	1002.96
BASE OF EAST PARAPET RAIL*	1001.57	1001.61	1001.79	1001.96	1002.12	1002.26	1002.39	1002.51	1002.61	1002.70	1002.78	1002.85	1002.90	1002.94	1002.96	1002.97	1002.97	1002.95	1002.93

TABLE OF TOP OF SLAB ELEVATIONS

LINE	⑳	㉑	㉒	㉓	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛	㉜	㉝	㉞	㉟	㊱	㊲	㊳
BASE OF WEST PARAPET RAIL*	1002.85	1002.79	1002.73	1002.65	1002.55	1002.44	1002.32	1002.19	1002.04	1001.88	1001.71	1001.52	1001.32	1001.11	1000.88	1000.64	1000.39	1000.12	1000.07
GIRDER LINE A*	1002.89	1002.83	1002.76	1002.68	1002.59	1002.48	1002.36	1002.22	1002.08	1001.92	1001.74	1001.56	1001.36	1001.14	1000.92	1000.68	1000.42	1000.16	1000.11
GIRDER LINE B*	1003.06	1003.01	1002.94	1002.86	1002.76	1002.66	1002.54	1002.40	1002.25	1002.09	1001.92	1001.73	1001.53	1001.32	1001.09	1000.85	1000.60	1000.33	1000.29
WEST GUTTER LINE	1003.24	1003.18	1003.12	1003.04	1002.94	1002.83	1002.71	1002.58	1002.43	1002.27	1002.10	1001.91	1001.71	1001.50	1001.27	1001.03	1000.78	1000.51	1000.46
GIRDER LINE C	1003.41	1003.36	1003.29	1003.21	1003.11	1003.01	1002.88	1002.75	1002.60	1002.44	1002.27	1002.08	1001.88	1001.67	1001.44	1001.20	1000.95	1000.68	1000.64
GIRDER LINE D	1003.59	1003.53	1003.47	1003.38	1003.29	1003.18	1003.06	1002.93	1002.78	1002.62	1002.45	1002.26	1002.06	1001.85	1001.62	1001.38	1001.13	1000.86	1000.81
GIRDER LINE E	1003.77	1003.72	1003.65	1003.57	1003.47	1003.36	1003.24	1003.11	1002.96	1002.80	1002.63	1002.44	1002.24	1002.03	1001.80	1001.56	1001.31	1001.04	1000.99
GIRDER LINE F	1003.95	1003.89	1003.83	1003.74	1003.65	1003.54	1003.42	1003.29	1003.14	1002.98	1002.81	1002.62	1002.42	1002.21	1001.98	1001.74	1001.49	1001.22	1001.17
PHASE 1 EAST EDGE OF SLAB PANEL	1004.02	1003.97	1003.90	1003.82	1003.72	1003.61	1003.49	1003.36	1003.21	1003.05	1002.88	1002.69	1002.49	1002.28	1002.05	1001.81	1001.56	1001.29	1001.24
PHASE 2 WEST EDGE OF SLAB PANEL	1004.03	1003.98	1003.91	1003.83	1003.73	1003.63	1003.50	1003.37	1003.22	1003.06	1002.89	1002.70	1002.50	1002.29	1002.06	1001.82	1001.57	1001.30	1001.25
P.G.L. 24TH STREET	1004.03	1003.98	1003.91	1003.83	1003.73	1003.63	1003.50	1003.37	1003.22	1003.06	1002.89	1002.70	1002.50	1002.29	1002.06	1001.82	1001.57	1001.30	1001.25
GIRDER LINE G	1003.99	1003.93	1003.87	1003.79	1003.69	1003.58	1003.46	1003.33	1003.18	1003.02	1002.85	1002.66	1002.46	1002.25	1002.02	1001.78	1001.53	1001.26	1001.21
GIRDER LINE H	1003.81	1003.76	1003.69	1003.61	1003.51	1003.41	1003.29	1003.15	1003.00	1002.84	1002.67	1002.48	1002.28	1002.07	1001.84	1001.60	1001.35	1001.08	1001.04
GIRDER LINE I	1003.63	1003.58	1003.51	1003.43	1003.33	1003.22	1003.10	1002.97	1002.82	1002.66	1002.49	1002.30	1002.10	1001.89	1001.66	1001.42	1001.17	1000.90	1000.85
GIRDER LINE J	1003.45	1003.39	1003.33	1003.24	1003.15	1003.04	1002.92	1002.79	1002.64	1002.48	1002.31	1002.12	1001.92	1001.71	1001.48	1001.24	1000.99	1000.72	1000.67
GIRDER LINE K	1003.27	1003.22	1003.15	1003.07	1002.97	1002.86	1002.74	1002.61	1002.46	1002.30	1002.13	1001.94	1001.74	1001.53	1001.30	1001.06	1000.81	1000.54	1000.49
EAST GUTTER LINE	1003.24	1003.18	1003.12	1003.04	1002.94	1002.83	1002.71	1002.58	1002.43	1002.27	1002.10	1001.91	1001.71	1001.50	1001.27	1001.03	1000.78	1000.51	1000.46
GIRDER LINE L*	1002.92	1002.87	1002.80	1002.72	1002.62	1002.52	1002.40	1002.26	1002.11	1001.95	1001.78	1001.59	1001.39	1001.18	1000.95	1000.71	1000.46	1000.19	1000.15
BASE OF EAST PARAPET RAIL*	1002.89	1002.83	1002.76	1002.68	1002.59	1002.48	1002.36	1002.22	1002.08	1001.92	1001.74	1001.56	1001.36	1001.14	1000.92	1000.68	1000.42	1000.16	1000.11



TOP OF SLAB ELEVATION DETAIL

*THE ELEVATIONS IN THE "TABLE OF TOP OF SLAB ELEVATIONS" ARE TYPICALLY GIVEN AT THE TOP OF THE 2" CONCRETE OVERLAY AS SHOWN IN THE DETAIL. FOR LOCATIONS OUTSIDE OF THE 2" CONCRETE OVERLAY, THE ELEVATIONS ARE GIVEN AT THE TOP OF THE PRECAST SLAB PANEL AND ARE MARKED WITH AN ASTERISK(*) IN THE TABLE.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

TOP OF SLAB ELEVATIONS

STA. 401+76+95.25 (24TH STREET)
STA. 747+95.25 (FUTURE I-80)

JUNE, 2007

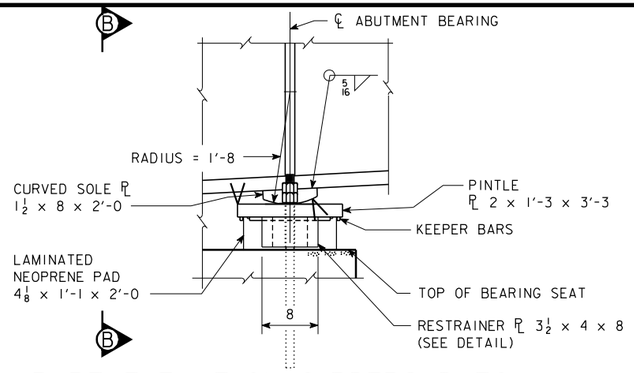
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

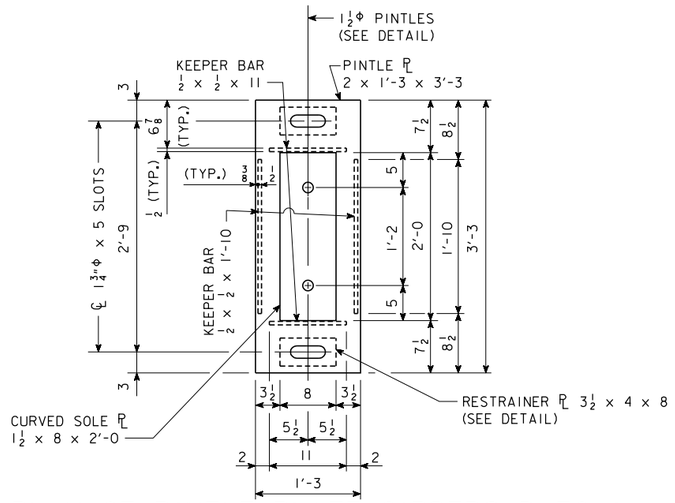
DESIGN SHEET NO. 29 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 30

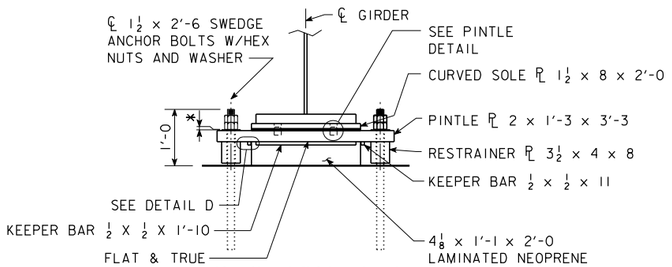
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



PART ELEVATION GIRDERS D TO I

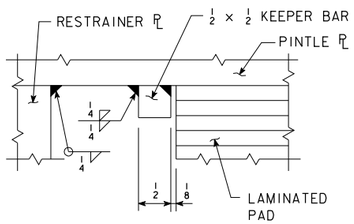


PLAN OF PINTLE PLATE GIRDERS D TO I

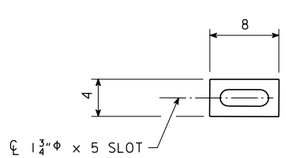


SECTION B-B

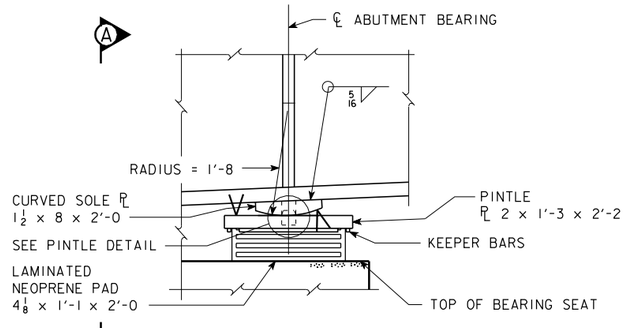
* ½" GAP BETWEEN BOTTOM OF NUT & TOP OF PL WASHER



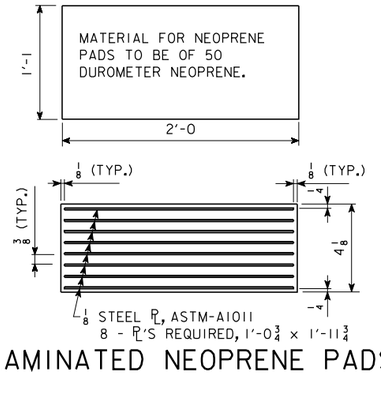
DETAIL D



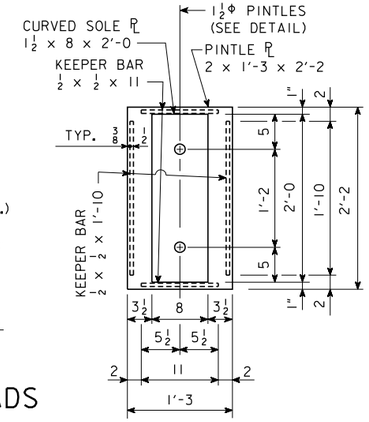
RESTRAINER PLATE DETAIL GIRDERS D TO I



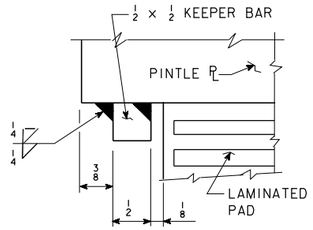
PART ELEVATION GIRDERS A TO C & J TO L



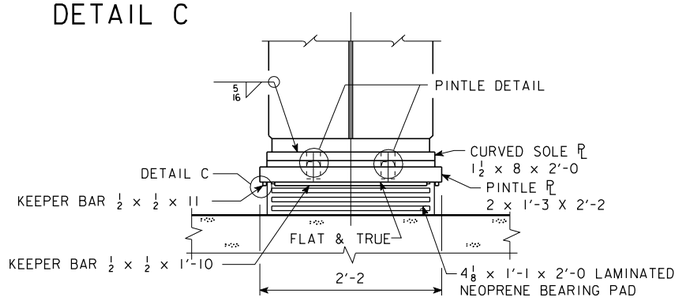
LAMINATED NEOPRENE PADS



PLAN OF PINTLE PLATE GIRDERS A TO C & J TO L

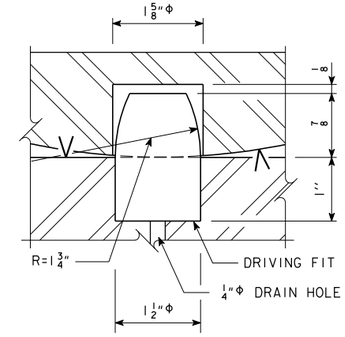


DETAIL C

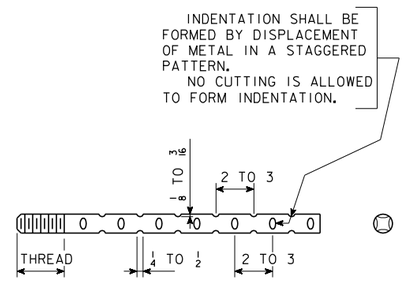


SECTION A-A

GIRDERS A TO C & J TO L



PINTLE DETAIL



ANCHOR BOLT SWEDGE DETAIL

BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED ANSI 250.

PINTLE PLATES AND SOLE PLATES ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY. UNIT PRICE BID FOR "STRUCTURAL STEEL" SHALL INCLUDE ALLOWANCE FOR COST OF THE NEOPRENE BEARING PADS.

THE PINTLE PLATES, KEEPER BARS, AND RESTRAINER PLATES SHALL BE GALVANIZED. WELDING SHALL BE COMPLETED PRIOR TO GALVANIZING. THE SURFACES OF THE PINTLE PLATE IN CONTACT WITH THE CURVED SOLE PLATE AND THE LAMINATED NEOPRENE PAD SHALL BE FREE OF PROJECTIONS DUE TO GALVANIZING.

CURVED SOLE PLATES SHALL COMPLY WITH ASTM A 709 GRADE 50W.

KEEPER BARS, PINTLE PLATES AND RESTAINER PLATES SHALL COMPLY WITH ASTM A 709 GRADE 50.

ANCHOR BOLTS, NUTS AND WASHERS SHALL MEET THE REQUIREMENTS OF IM 453.08.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT BEARING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

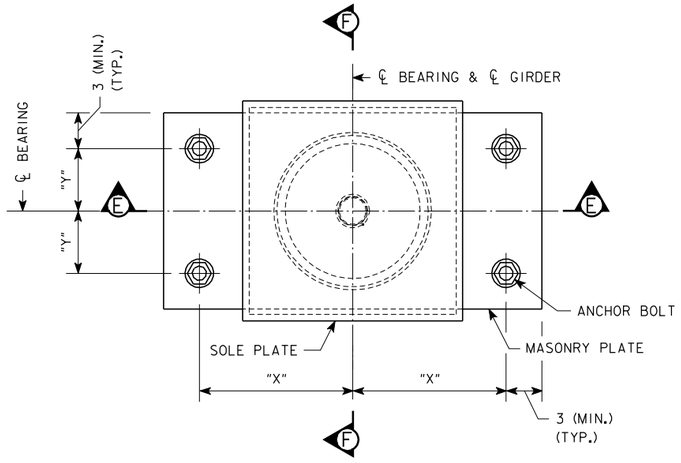
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 30 OF 62 FILE NO. 30169 DESIGN NO. 508

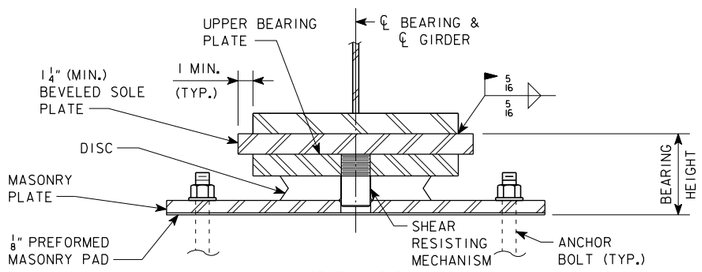
REVISED ??? - CHANGED NEOPRENE SHEETS TO NEOPRENE SHEETS.
ENGLISHBEAMS.DGN 1010 - THIS SHEET ISSUED 09-03

DESIGN TEAM JPS/RRP/DHS	LOW PROFILE BEARING STANDARD	STANDARD SHEET 1010 MODIFIED	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 31

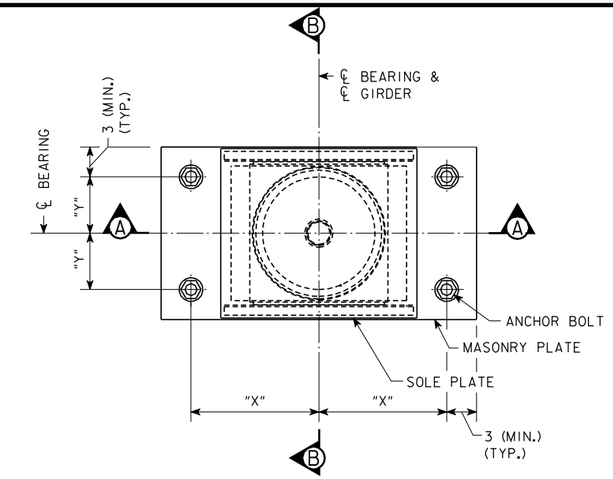
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



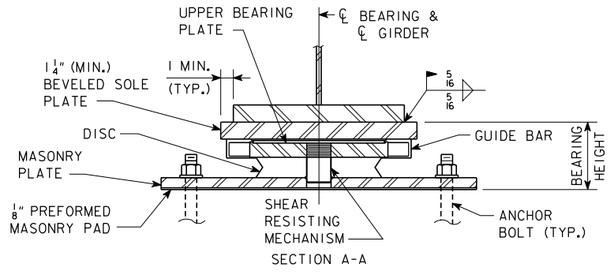
PLAN



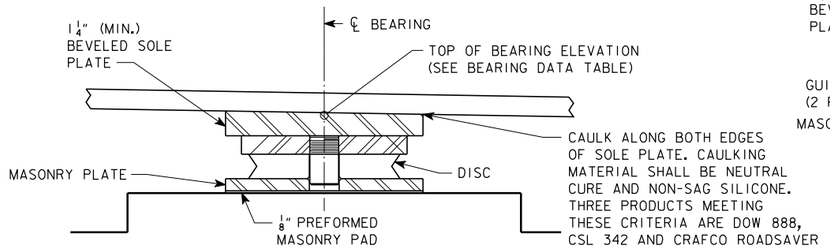
SECTION E-E



PLAN



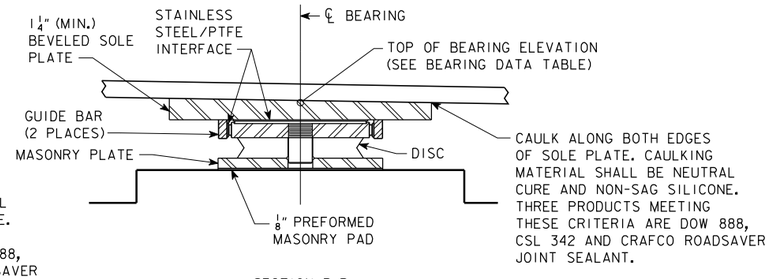
SECTION A-A



SECTION F-F

(SHOWING NEGATIVE LONGITUDINAL SLOPE)

DIRECTION OF STATIONING



SECTION B-B

(SHOWING NEGATIVE LONGITUDINAL SLOPE)

DIRECTION OF STATIONING

FIXED BEARING - TYPE FX

GUIDED TRANSVERSE EXPANSION BEARING - TYPE TG

DISC BEARING NOTES:

THE BEARING DEVICES, INCLUDING SOLE PLATES AND MASONRY PLATES, SHALL BE DESIGNED BY THE MANUFACTURER IN ACCORDANCE WITH THE 17TH EDITION OF THE AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", INCLUDING CURRENT INTERIM SPECIFICATIONS.

THE MASONRY PLATES SHALL BE DESIGNED FOR AN ALLOWABLE BEARING STRESS AS SPECIFIED IN AASHTO, SECTION 8.15.2.1.3.

THE SOLE PLATES SHALL BE TAPERED TO THE LONGITUDINAL SLOPE SHOWN, AND SHALL BE SIZED FOR THE MOVEMENTS SHOWN IN THE BEARING DATA TABLE. ADDITIONALLY, THE SOLE PLATES SHALL BE 2" WIDER THAN THE GIRDER BOTTOM FLANGE TO ALLOW THE PLACEMENT OF A HORIZONTAL WELD.

THE BEARINGS SHALL BE DESIGNED FOR THE LOADS AND MOVEMENTS SHOWN IN THE BEARING DATA TABLE OCCURRING SIMULTANEOUSLY. ALL LOADS SHOWN ARE SERVICE LOADS. MINIMUM VERTICAL LOADS SHOWN ARE DUE TO MINIMUM D.L. AND L.L. WITH IMPACT CAUSING UPLIFT. MAXIMUM VERTICAL LOADS SHOWN ARE DUE TO D.L., S.D.L. AND L.L. WITH IMPACT. NO INCREASE IN ALLOWABLE WORKING STRESSES IS ALLOWED.

BEARINGS SHALL BE DESIGNED TO ACCOMMODATE A ROTATION OF 0.02 RADIANS.

ALL BEARINGS SHALL BE FULLY REMOVABLE.

FOR GUIDED EXPANSION BEARINGS, STAINLESS STEEL SURFACES SHALL EXTEND A MINIMUM OF 1" EACH WAY BEYOND THE SPECIFIED MOVEMENT RANGE. WHERE VALUES OF MOVEMENT ARE NOT SPECIFIED, STAINLESS STEEL SURFACES SHALL EXTEND 1" MINIMUM BEYOND THE LOWER ASSEMBLY CONTACT SURFACES.

TOTAL MOVEMENTS SHOWN IN THE BEARING DATA TABLE REPRESENT THE COMBINED MOVEMENT RANGE FOR BRIDGE EXPANSION (50° F. TO 125° F.) AND BRIDGE CONTRACTION (50° F. TO -25° F.).

ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION IN THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UP-STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED. THE MARKS SHALL BE ON THE TOP PLATE OF THE BEARING.

ALL BEARINGS SHALL HAVE A MAXIMUM FRICTION COEFFICIENT OF 3%.

THE GAP BETWEEN THE GUIDE BARS AND THE BEARINGS SHALL BE ⅛".

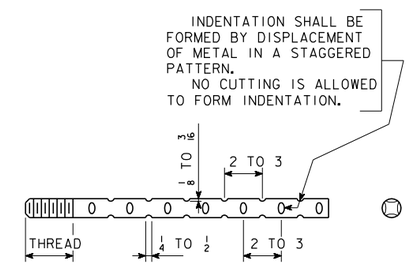
STEEL COMPONENTS OF BEARING ASSEMBLIES SHALL BE OF ASTM A709M GRADE 50W STEEL.

THE BEARING HEIGHT NOTED IN THE BEARING DATA TABLE REPRESENTS THE ASSUMED TOTAL HEIGHT OF THE BEARING ASSEMBLY PLUS THE ⅛" PREFORMED MASONRY PAD. THIS HEIGHT WAS USED BY THE DESIGNER TO ESTABLISH THE PEDESTAL ELEVATIONS AS NOTED ON PIER AND ABUTMENT DETAIL SHEETS. THE MINIMUM PEDESTAL HEIGHT SHALL NOT BE CHANGED WITHOUT WRITTEN APPROVAL OF THE ENGINEER. THE ACTUAL BEARING HEIGHT DETERMINED BY THE BEARING MANUFACTURER SHALL BE USED TO SET THE TOP OF PEDESTAL ELEVATIONS TO ACHIEVE THE PROPER TOP OF BEARING ELEVATIONS GIVEN IN THE BEARING DATA TABLE. THE TOP OF PEDESTAL ELEVATIONS SHALL BE SHOWN ON THE SHOP DRAWINGS.

IN ORDER TO COORDINATE TOP OF PEDESTAL ELEVATIONS AND ANCHOR BOLT LOCATIONS, PIERS AND ABUTMENTS SHALL NOT BE POURED PRIOR TO RECEIVING APPROVED BEARING SHOP DRAWINGS FOR THIS CONTRACT.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF IM 453.08. ANCHOR BOLT LAYOUT SHOWN IN THE DETAILS IS BASED ON PRELIMINARY BEARING DESIGN. THE ANCHOR BOLT LAYOUT WAS USED IN SETTING THE GEOMETRY OF THE PIER AND ABUTMENT REINFORCING WHICH SHOULD ALLOW THE ANCHOR BOLTS TO BE INSTALLED WITHOUT CONFLICT WITH THE REINFORCING. ANY CHANGES TO THE ANCHOR BOLT PATTERN MAY REQUIRE A PLAN CHANGE TO THE REINFORCING LAYOUT.

ANCHOR BOLTS SHALL BE EMBEDDED IN CONCRETE A MINIMUM OF 1'-6. FABRICATOR SHALL DETERMINE REQUIRED ANCHOR BOLT LENGTH BASED ON BEARING DETAILS AND REQUIRED ANCHOR BOLT EMBEDMENT. SHOP DRAWINGS SHALL SHOW ANCHOR BOLT EMBEDMENT, PROJECTION, THREAD LENGTH, AND TOTAL BOLT LENGTH.



ANCHOR BOLT SWEDGE DETAIL

BEARING DATA TABLE

LOCATION	TYPE	GIRDER	TOP OF BEARING ELEVATION	LONGITUDINAL SLOPE OF SOLE PLATE (%)	BEARING HEIGHT (IN)	VERTICAL LOAD MAX. (KIPS)	VERTICAL LOAD MIN. (KIPS)	HORIZONTAL LOAD (KIPS)	TOTAL LONGITUDINAL MOVEMENT (IN)	ANCHOR BOLTS DIM. "X" (IN)	ANCHOR BOLTS DIM. "Y" (IN)	ANCHOR BOLTS NUMBER AND SIZE (EACH BEARING)
PIER NO. 1	TG	A	996.81	-0.4378	10	670	471	33	0	20	9	4 - 1½" DIA.
		B	996.99									
		C	997.17									
	FX	D	997.35									
		E	997.53									
		F	997.71									
		G	997.75									
		H	997.57									
		I	997.39									
	TG	J	997.21									
		K	997.03									
		L	996.85									

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80

178'-6 & 175'-0 SPANS

DISC BEARING DETAILS

STA. 40176+95.25 (24TH STREET)

STA. 7476+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 31 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM JPS/RRP/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 32

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

PRECAST SLAB PANEL CONSTRUCTION SEQUENCE

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED CONSTRUCTION SEQUENCE OF WORK TASKS TO BE PERFORMED BEFORE REMOVAL OF EXISTING STRUCTURE. DETAIL WORK TASK SEQUENCE SHALL INCLUDE THE INTENDED METHOD FOR FORMING THE GIRDER HAUNCHES & QUALITY CONTROL CONSTRUCTION METHOD FOR OBTAINING THE PROPER ALIGNMENT AND GRADE FOR THE PRECAST SLAB PANELS. THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCE, FOR EACH PHASE:

1) ERECT ALL OF THE GIRDERS IN THE ACTIVE CONSTRUCTION PHASE FOR THE ENTIRE LENGTH OF THE BRIDGE INCLUDING ALL CROSS FRAMES.

2) FORM THE GIRDER HAUNCHES. NOTE: ALL PANELS FOR EACH PHASE SHALL BE ERECTED AND THE PANELS SHALL BE LONGITUDINALLY POST-TENSIONED AND ACCEPTED BY THE ENGINEER PRIOR TO PLACING CONCRETE FOR HAUNCHES (SEE STEP 9 BELOW).

3) ERECT ALL OF THE PRECAST SLAB PANELS AS SHOWN IN THE PRECAST SLAB PANEL LAYOUT SHEET. CARE SHOULD BE TAKEN TO ENSURE THE PRECAST SLAB PANELS ARE IN TIGHT CONTACT WITH THE BACKER ROD SEPARATING THEM AND PROPER ALIGNMENT IS ACHIEVED. USE LEVELING BOLTS, OR OTHER APPROVED METHODS, TO ACHIEVE THE REQUIRED GRADE. AT NO TIME WILL CONSTRUCTION EQUIPMENT BE ALLOWED ON THE PRECAST SLAB PANELS UNTIL CONSTRUCTION OF THE PRECAST SLAB IS COMPLETE AND THE HAUNCHES AND KEYWAYS HAVE ACHIEVED A MINIMUM COMPRESSIVE STRENGTH OF 6000 PSI. IF THE OPTIONAL LEVELING BOLTS ARE USED TO PROPERLY SET THE PRECAST SLAB PANELS TO GRADE, THEN THE CONTRACTOR SHALL ENSURE ALL BOLTS ARE IN CONTACT WITH THE TOP FLANGE BEFORE THE PRECAST SLAB PANELS ARE RELEASED FROM THE ERECTING CRANE AND THE PRECAST SLAB PANELS ARE SOLEY SUPPORTED BY ALL THE LEVELING BOLTS.

4) INSTALL SHEAR STUDS. THE INSTALLATION OF SHEAR STUDS CAN COMMENCE AFTER AT LEAST ONE-THIRD OF THE PANELS FOR A PHASE HAVE BEEN ERECTED AND THE CONTRACTOR IS ASSURED THAT ERECTION TOLERANCES AND PROPER GRADE HAVE BEEN ATTAINED AND APPROVED BY THE ENGINEER.

5) JOIN DUCTS FOR POST-TENSIONING TENDONS AT ALL TRANSVERSE JOINTS. IT IS SUGGESTED THAT THE DUCT SPLICE BE ATTACHED TO THE DUCTS PROTRUDING OUT OF THE PANELS BEFORE THE NEXT SUCCESSIVE PANELS ARE ERECTED.

6) FILL THE TRANSVERSE JOINTS WITH NON-SHRINK GROUT LEVEL WITH THE TOPS OF THE PRECAST SLAB PANELS. ALLOW THE GROUT TO ATTAIN A COMPRESSIVE STRENGTH OF 6000 PSI BEFORE PROGRESSING.

7) INSTALL THE 0.6" POST-TENSIONING STRANDS THROUGH THE POST-TENSIONING DUCTS AND ANCHORAGE SYSTEMS.

8) BEGINNING AT EITHER END OF THE PRECAST SLAB, TENSION THE STRANDS IN EACH POST-TENSIONING DUCT, TO THE SPECIFIED FORCE AND AS PER THE SEQUENCE AS SPECIFIED IN THE APPROVED SHOP DRAWINGS.

9) FILL ALL SHEAR STUD POCKETS IN THE PRECAST SLAB PANELS AND HAUNCHES WITH THE SPECIFIED CONCRETE MIX.

10) CONSTRUCT THE REMAINING CAST-IN-PLACE END SECTIONS AND END DAMS.

11) PRIOR TO CONSTRUCTING OVERLAY, PLACE PLASTIC SCREW CAPS FOR MECHANICAL ANCHORS FOR MEDIAN AS DETAILED ON DESIGN SHEET 38. PLACE BARRIER RAIL, SIDEWALK, SEPARATION RAIL AND 2" CONCRETE OVERLAY.

12) REPEAT STEPS 1 THROUGH 12 FOR PHASE 2.

13) CONSTRUCT FULL DEPTH CLOSURE POUR. CONCRETE PLACEMENT FOR CLOSURE POUR SHALL BE PERFORMED WITH 24th STREET CLOSED TO TRAFFIC.

14) CONSTRUCT CONCRETE MEDIAN.

PRECAST SLAB PANEL NOTES:

FABRICATOR SHALL BE RESPONSIBLE FOR EXERCISING CARE IN LIFTING, HANDLING, STORING, AND TRANSPORTATION OF THE PRECAST SLAB PANELS TO PREVENT CRACKING OR DAMAGE. PANELS SHALL BE LIFTED BY DEVICES AS SHOWN ON THE PLANS OR AS DESIGNED BY THE FABRICATOR AND APPROVED BY THE ENGINEER.

PRETENSIONING STRANDS FOR THE PRECAST SLAB PANELS SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STEEL STRAND OF $\frac{1}{2}$" NOMINAL DIAMETER AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A416, GRADE 270. STRANDS SHALL BE TENSIONED TO THE LOADS SHOWN ON DESIGN SHEET 35 BEFORE RELEASE. 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 STRANDS 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. ALL METHODS EMPLOYED AND PROCEDURES TO BE FOLLOWED IN POST-TENSIONING THE STRANDS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

POST-TENSIONING PARAMETERS:
- MAXIMUM JACKING STRESS = 0.8 FU = 216 KSI
- MAXIMUM STRESS AT ANCHOR (SET) = 0.70 FU = 189 KSI
- ASSUMED ANCHOR SET = 0.25 IN
- FOUR STRANDS PER DUCT, JACKING FORCE PER STRAND = 41 KIPS
- ASSUMED FRICTION COEFFICIENT = 0.23

END ANCHORAGES FOR POST-TENSIONING SHALL BE SPRING LOADED CHUCKS TO BE APPROVED BY THE ENGINEER.

CONCRETE IN THE PRECAST SLAB PANELS SHALL HAVE A MIMIMUM CONCRETE STRENGTH OF 4000 PSI BEFORE RELEASE OF PRE-TENSIONING STRANDS. IN ORDER TO MINIMIZE THE EFFECTS OF LONG TERM LOSSES DUE TO CREEP AND SHRINKAGE, THE SLAB PANELS REQUIRE HIGHER CONCRETE STRENGTH FOR YOUNGER AGE PANELS BEFORE ANY BOND STRESSES FROM POST-TENSIONING ARE TRANSFERED TO THE CONCRETE AND ANCHORAGES. THEREFORE, TO PROVIDE FLEXIBILITY FOR FABRICATION AND CONSTRUCTION, THE CONCRETE STRENGTH OF THE PRECAST SLAB PANELS SHALL CONFORM TO THE TABLE AS SHOWN BELOW.

AGE OF PRECAST SLAB PANELS AT TIME OF POST-TENSIONING	MINIMUM f'c
28 DAYS	11,000 PSI
40 DAYS	10,000 PSI
70 DAYS	9,000 PSI
100 DAYS	8,000 PSI

SPIRALS SHALL BE $\frac{1}{4}$" DIAMETER HIGH CARBON SPRING WIRE AND CONFORM TO THE REQUIREMENTS OF ASTM A227.

TRANSVERSE 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.

ALL SIDES OF THE PANEL, WITH CONCRETE PLACED AGAINST IT, SHALL BE ROUGHENED BY EITHER:
1) SAND BLASTING - PROTECTING EXPOSED SURFACES
2) "NEDDLE" GUN - TYPICALLY USED BY PRECAST MANUFACTURERS ON PPC BEAM ENDS.

THE TOP SURFACE OF THE PRECAST SLAB PANELS SHALL BE INTENTIONALLY ROUGHENED OR RAKED TO A MINIMUM DEPTH OF $\frac{1}{4}$". THE ROUGHENING OF THE PRECAST SLAB PANELS SHALL BE DONE WITH A MECHANICAL DEVICE SUCH AS A WIRE BROOM OR A TINING RAKE. TINING CAN BE TRANSVERSE OR LONGITUDINAL. TEXTURE RAKE TINE SPACING SHALL BE EQUAL SPACES OF $1\frac{1}{2}$ INCHES OR UNEQUAL SPACES IN ACCORDANCE WITH ARTICLE 2412.06 OF THE STANDARD SPECIFICATIONS. THIS OPERATION SHALL BE DONE AT SUCH TIME AND IN SUCH A MANNER THAT THE DESIRED SURFACE TEXTURE WILL BE ACHIEVED WHILE MINIMIZING DISPLACEMENT OF THE LARGER AGGREGATE PARTICLES AND BEFORE THE SURFACES PERMANENTLY SETS. THIS OPERATION SHALL NOT DELAY THE PLACEMENT OF WET BURLAP WITHIN THE ALLOTTED TIME AS SPECIFIED BY THE APPROPRIATE SPECIFICATIONS.

ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 2413.04 OF THE STANDARD SPECIFICATIONS SHALL APPLY.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL NOTES

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

JUNE, 2007

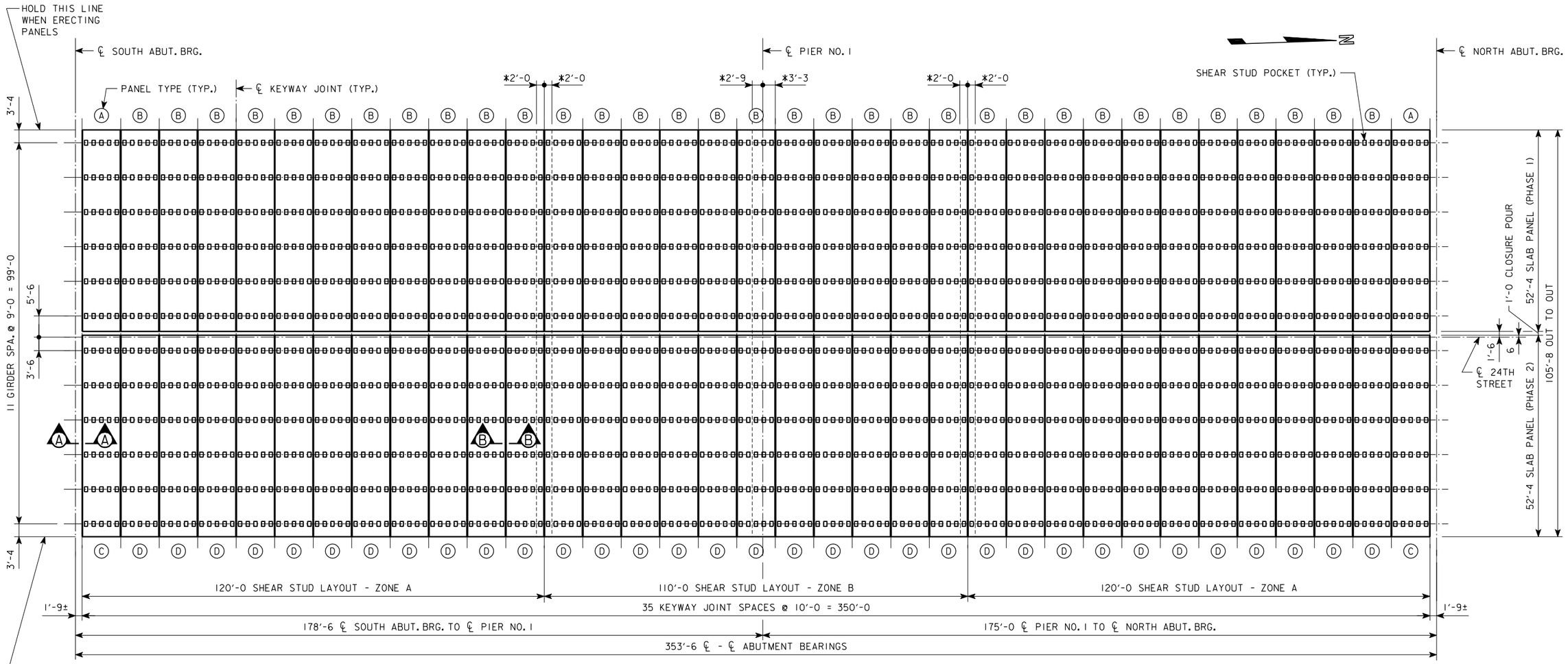
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

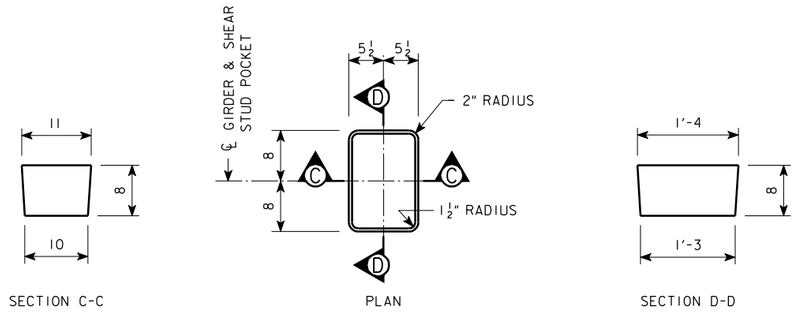
DESIGN SHEET NO. 32 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR

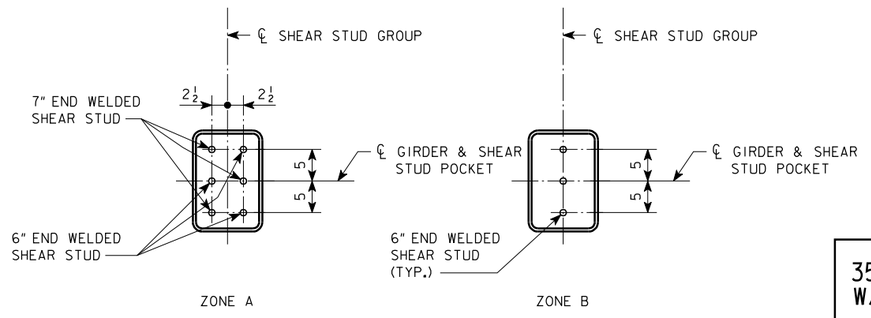
HDR Engineering, Inc.



PRECAST SLAB PANELS LAYOUT



SHEAR STUD POCKET DETAIL



SHEAR STUD PLACEMENT DETAIL

NOTES:
FOR SECTION A-A, SEE DESIGN SHEET 37.
FOR SECTION B-B, SEE DESIGN SHEET 36.
* DO NOT PLACE SHEAR STUDS WITHIN THIS REGION.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL LAYOUT

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM RRP/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 34

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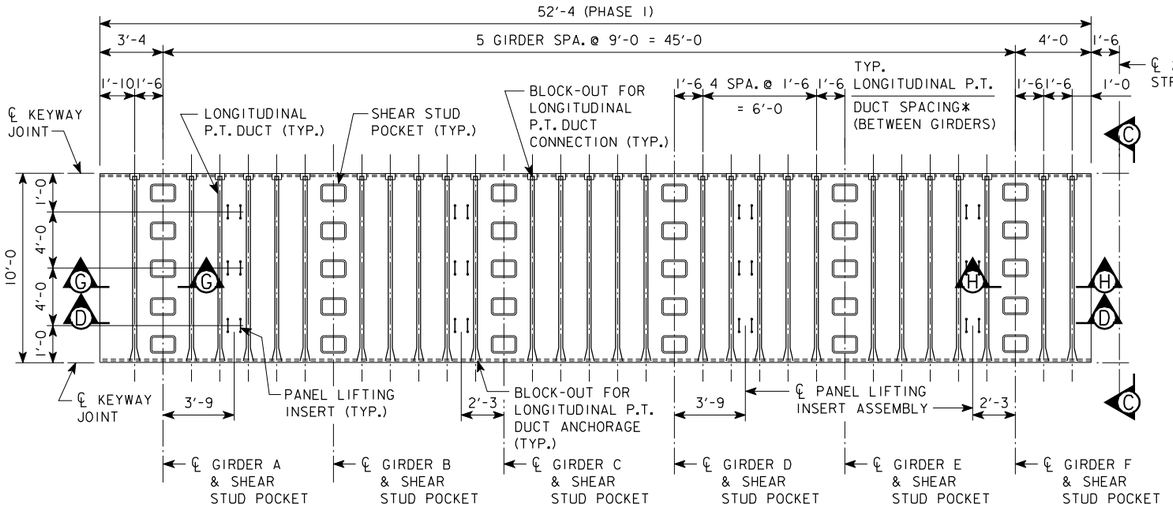
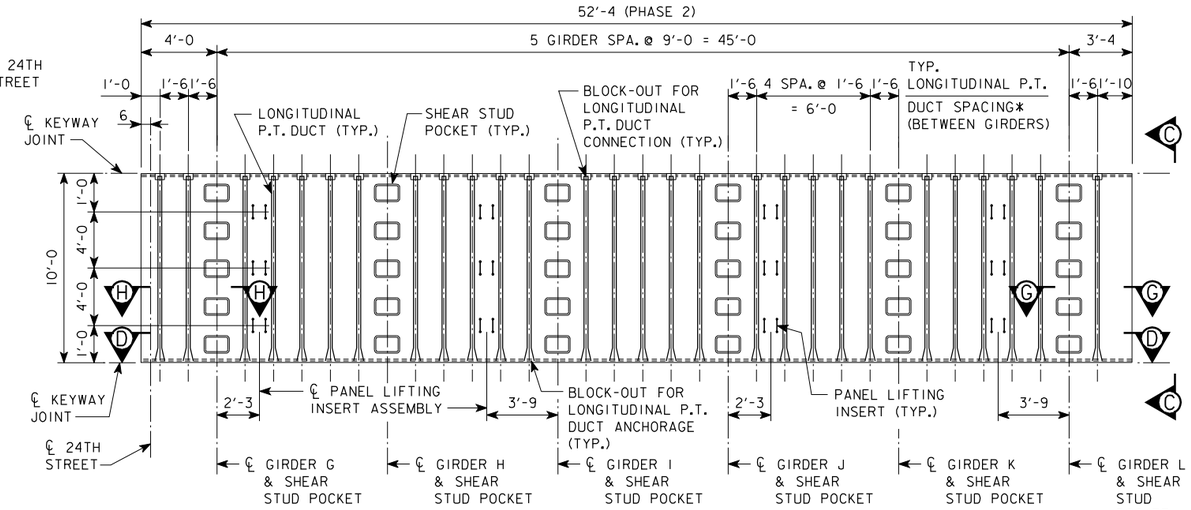


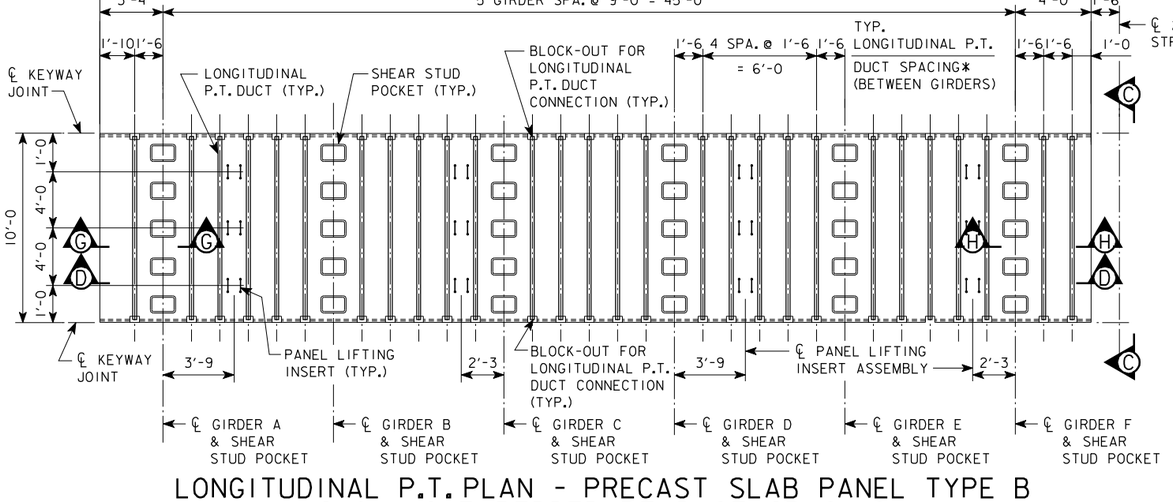
LONGITUDINAL P.T. PLAN - PRECAST SLAB PANEL TYPE A SHOWING EMBEDDED PT DUCT SPACING

(REINFORCEMENT & INSERTS NOT SHOWN FOR CLARITY) (SHOWN AT SOUTH END, NORTH END SIMILAR)



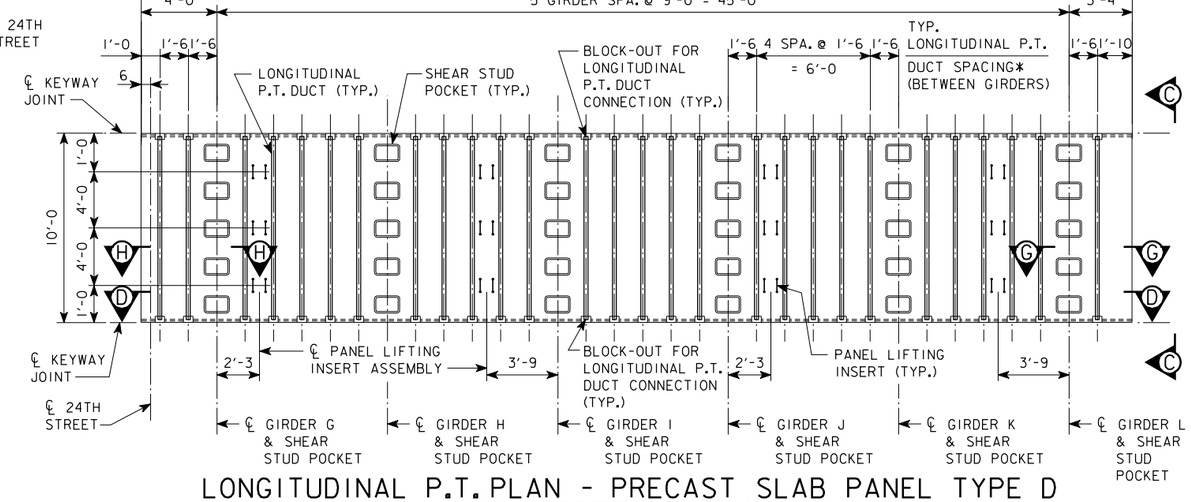
LONGITUDINAL P.T. PLAN - PRECAST SLAB PANEL TYPE C SHOWING EMBEDDED PT DUCT SPACING

(REINFORCEMENT & INSERTS NOT SHOWN FOR CLARITY) (SHOWN AT SOUTH END, NORTH END SIMILAR)



LONGITUDINAL P.T. PLAN - PRECAST SLAB PANEL TYPE B SHOWING EMBEDDED PT DUCT SPACING

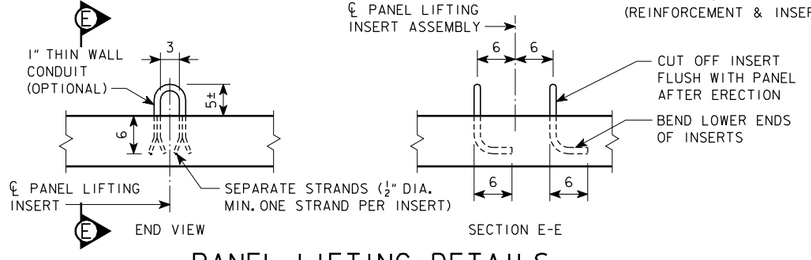
(REINFORCEMENT & INSERTS NOT SHOWN FOR CLARITY)



LONGITUDINAL P.T. PLAN - PRECAST SLAB PANEL TYPE D SHOWING EMBEDDED PT DUCT SPACING

(REINFORCEMENT & INSERTS NOT SHOWN FOR CLARITY)

* TYPICAL EXCEPT BETWEEN GIRDERS F & G
FOR PRECAST SLAB PANELS LAYOUT, SEE SHEET 33.
FOR SECTION C-C, D-D, G-G & H-H, SEE SHEET 36.



PANEL LIFTING DETAILS

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DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL DETAILS

STA. 401+76+95.25 (24TH STREET)
STA. 74+76+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 35

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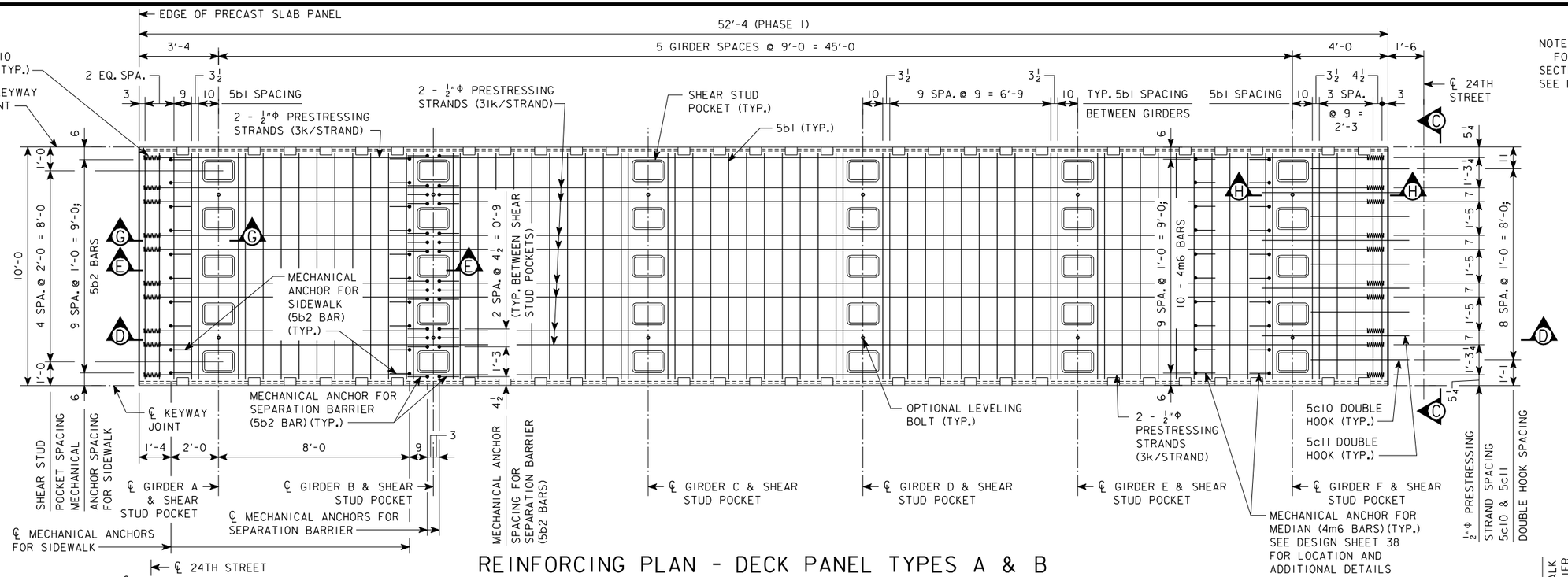
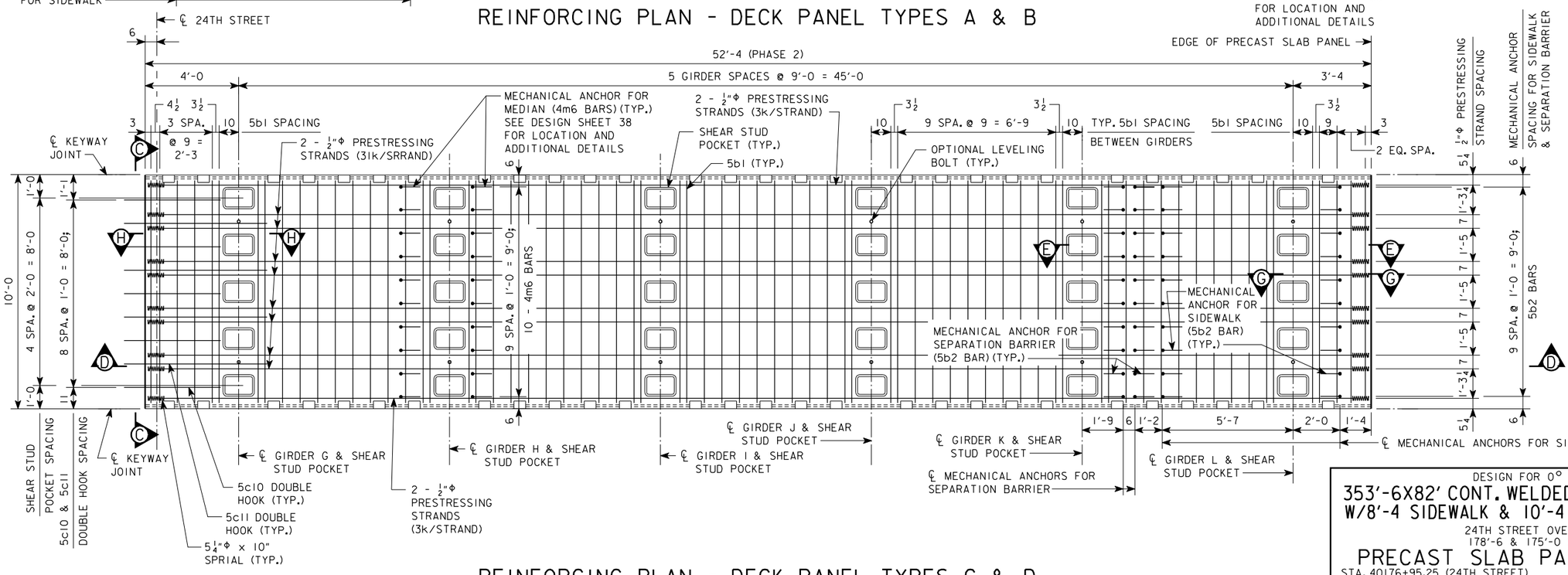
NOTES:
FOR SECTION C-C, SECTION D-D, SECTION G-G AND SECTION H-H, SEE DESIGN SHEET 36.



REINFORCING PLAN - DECK PANEL TYPES A & B



REINFORCING PLAN - DECK PANEL TYPES C & D

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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DESIGN TEAM ATN/JPS/DHS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 36

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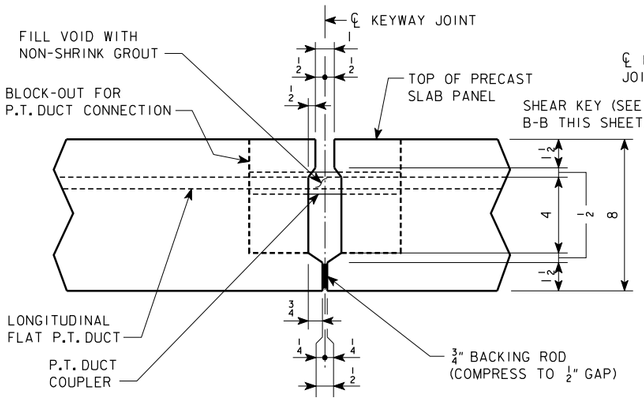
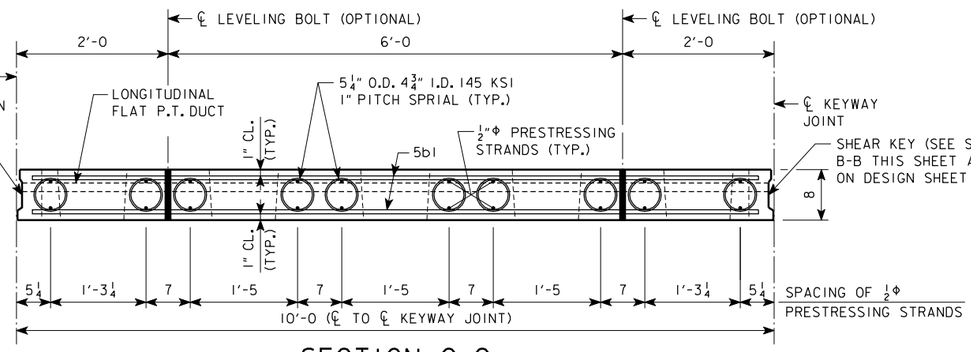
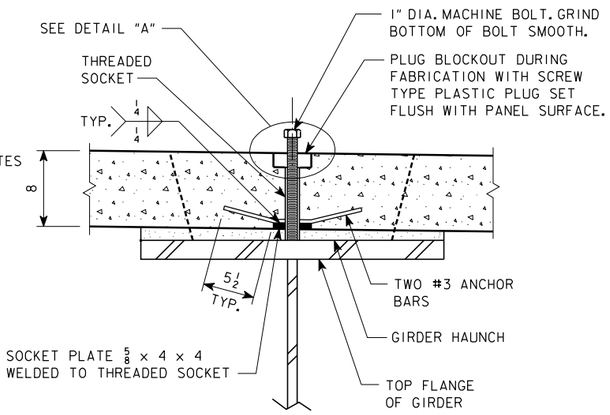


SECTION B-B



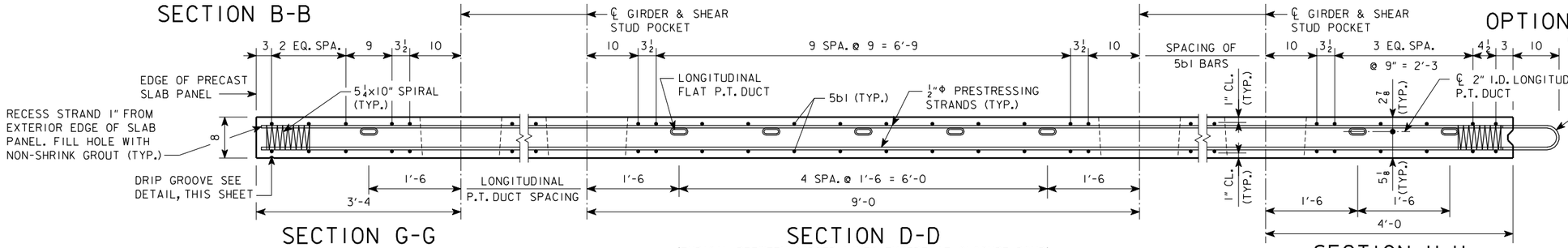
SECTION C-C

(5c1 DOUBLE HOOKS NOT SHOWN FOR CLARITY)



OPTIONAL LEVELING BOLT

(VERTICAL ADJUSTMENT)

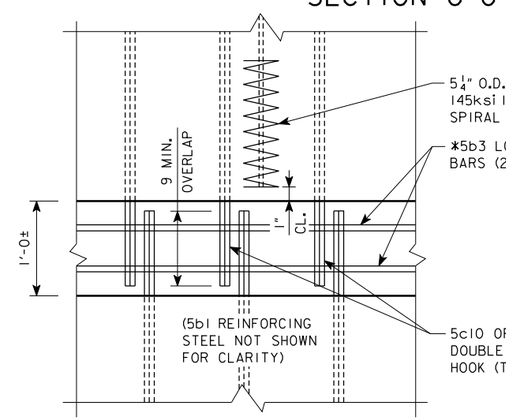


SECTION G-G

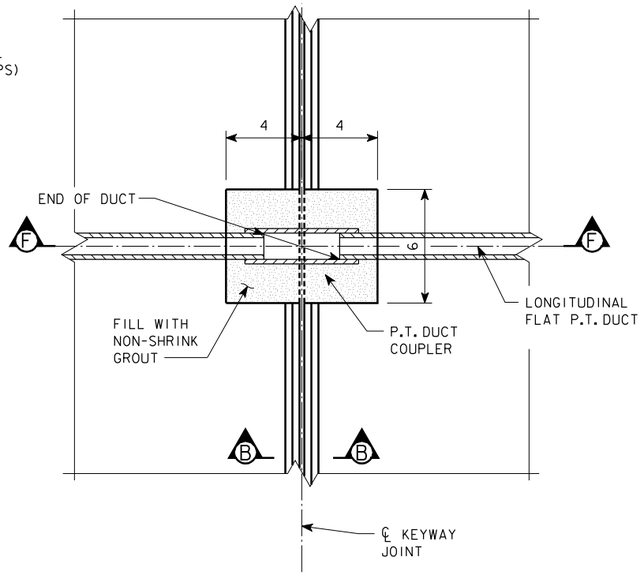
SECTION D-D

(TYPICAL BETWEEN GIRDER LINES EXCEPT AT CLOSURE POUR)

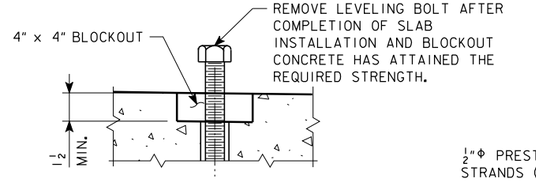
SECTION H-H



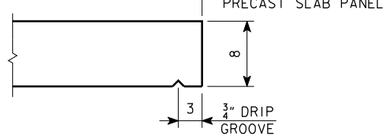
CLOSURE POUR PLAN



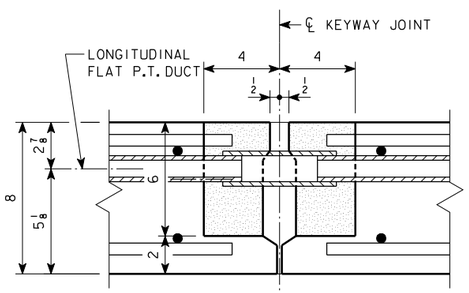
P.T. DUCT CONNECTION DETAIL



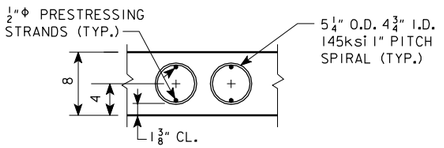
DETAIL "A"



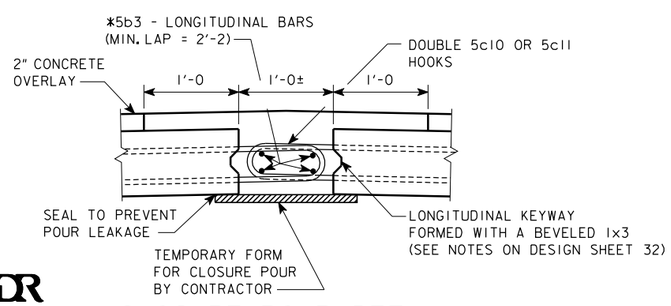
DRIP GROOVE



SECTION F-F



TRANSVERSE PANEL STEEL (TYP.)



CLOSURE POUR DETAIL

(SEE NOTE 13, DESIGN SHEET 32)

NOTE:
THE PLACEMENT OF THE 5c11 HOOKS BETWEEN THE TWO HALVES OF THE PRECAST SLAB PANELS ARE OFFSET TO AVOID CLOSURE POUR INTERFERENCE. SEE DESIGN SHEET 35 FOR DETAILS.
*5b3 BARS ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES ON ANOTHER SHEET.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM ATN/JPS/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 37

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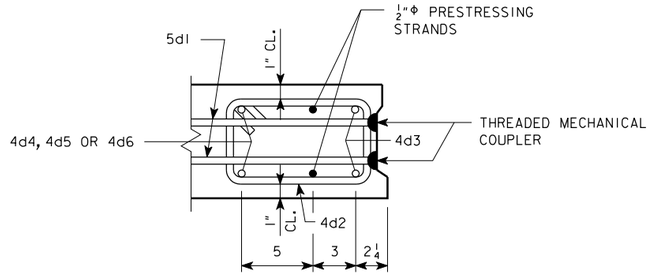
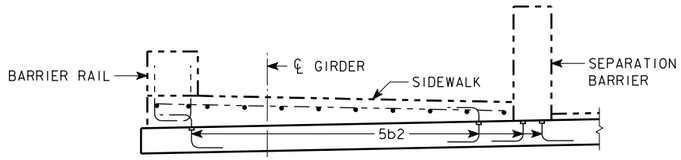


SECTION A-A

(5b1 BARS AND POST-TENSION DUCT NOT SHOWN FOR CLARITY)



SECTION E-E

(SEPARATION BARRIER & SIDEWALK INSERT DETAIL)

NOTES:

EACH PANEL CONTAINS 20 UNCOATED ½" DIA. PRESTRESSING STRANDS 270 KSI-LL.

* INCLUDES 1 THREADED MECHANICAL COUPLER.

◕ THE TOTAL NUMBER OF 4m6 BARS (712 WEIGHING 634 LB.) WAS COMPUTED BASED ON SPACING AS SHOWN ON DESIGN SHEET 38. THE TOTAL NUMBER OF 4m6 BARS MAY VARY FROM THE TOTAL NUMBER AS SHOWN ON THIS SHEET. HOWEVER ANY ADDITIONAL BARS REQUIRED WILL BE CONSIDERED SUBSIDIARY TO THE DECK PANEL.

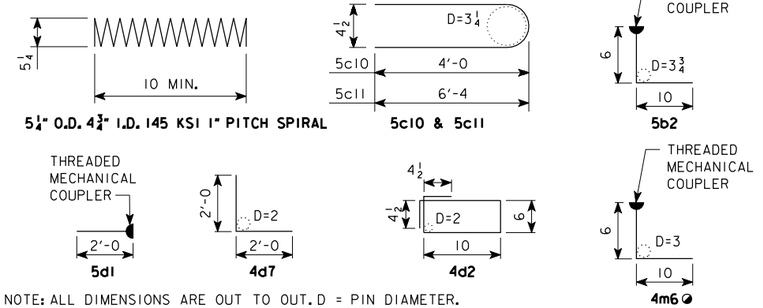
MECHANICAL ANCHORS FOR SIDEWALK, SEPARATION BARRIER, MEDIAN AND CIP END SECTION TIE REINFORCING BARS ARE TO BE SPLICED AT THE LOCATION SHOWN USING A THREADED MECHANICAL COUPLER. THREE COUPLER ASSEMBLIES FOR THE #5 REINFORCING BARS ARE TO BE SUBMITTED FOR TESTING. THE COST OF ALL COUPLERS, INCLUDING THOSE TO BE SUBMITTED FOR TESTING, IS TO BE INCLUDED IN THE PRICE BID FOR "PRECAST POST-TENSIONED SLAB PANELS" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE MECHANICAL COUPLERS IS NOT INCLUDED IN THE QUANTITY SHOWN IN THE REINFORCING BAR LIST.

REINFORCING BAR LIST - ONE END PANEL A

EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	LONGITUDINAL PANEL	——	142	9'-8	1432
5b2*	MECHANICAL ANCHORS	⌊—	48	1'-4	67
5c10	CLOSURE POUR HOOKS	⊃	10	8'-3	86
5c11	CLOSURE POUR HOOKS	⊃	8	12'-11	108
5d1*	END PANEL ABUTMENT TIE	——	114	2'-0	238
4d2	END PANEL ANCHORAGE HOOPS	⊏	114	3'-5	260
4d3	END PANEL TRANSVERSE	——	2	52'-0	69
4d4	END PANEL TRANSVERSE	——	2	2'-4	3
4d5	END PANEL TRANSVERSE	——	2	3'-0	4
4d6	END PANEL TRANSVERSE	——	10	7'-4	49
4d7	END PANEL CORNER	⌊—	4	4'-0	11
4m6	SEE NOTES				
	5¼" O.D. 4¾" I.D. 145 KSI 1" PITCH SPIRAL	wwwwww	20	14'-5	48
	REINFORCING STEEL EPOXY COATED TOTAL (LBS.)				2375

BENT BAR DETAILS



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

PRECAST SLAB PANEL CONC. QUANT.

HIGH PERFORMANCE CONCRETE	UNIT	TOTAL
END PANEL A	CY	2 @ 11.6 = 23.2
INTERIOR PANEL B	CY	33 @ 11.6 = 382.8
END PANEL C	CY	2 @ 11.6 = 23.2
INTERIOR PANEL D	CY	33 @ 11.6 = 382.8
TOTAL (CY)		812.0

REINFORCING BAR LIST - ONE INTERIOR PANEL B

EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	LONGITUDINAL PANEL	——	142	9'-8	1432
5b2*	MECHANICAL ANCHORS	⌊—	48	1'-4	67
5c10	CLOSURE POUR HOOKS	⊃	10	8'-3	86
5c11	CLOSURE POUR HOOKS	⊃	8	12'-11	108
4m6	SEE NOTES				
	5¼" O.D. 4¾" I.D. 145 KSI 1" PITCH SPIRAL	wwwwww	20	14'-5	48
	REINFORCING STEEL EPOXY COATED TOTAL (LBS.)				1741

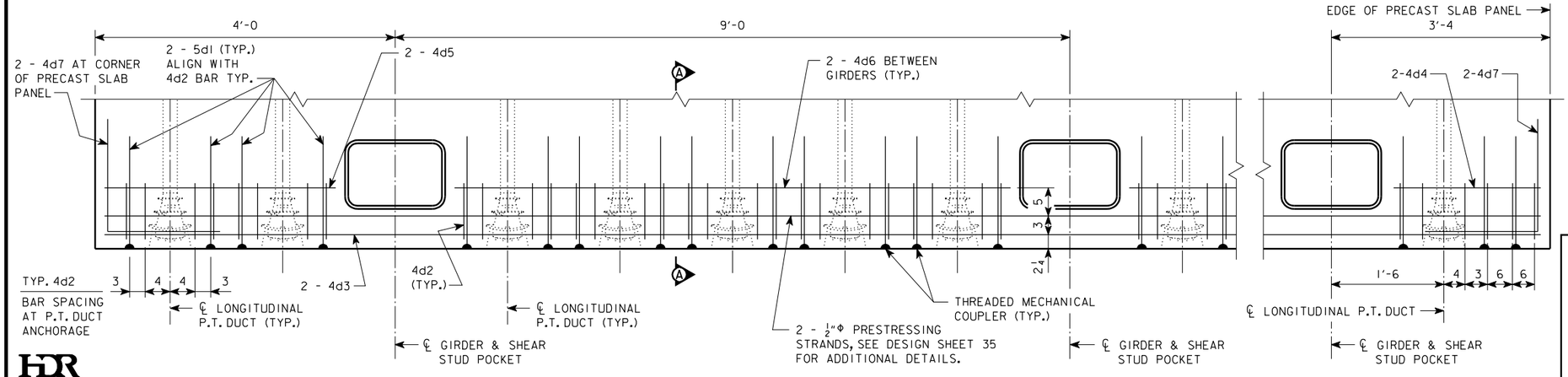
REINFORCING BAR LIST - ONE END PANEL C

EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	LONGITUDINAL PANEL	——	142	9'-8	1432
5b2*	MECHANICAL ANCHORS	⌊—	40	1'-4	56
5c10	CLOSURE POUR HOOKS	⊃	10	8'-3	86
5c11	CLOSURE POUR HOOKS	⊃	8	12'-11	108
5d1*	END PANEL ABUTMENT TIE	——	114	2'-0	238
4d2	END PANEL ANCHORAGE HOOPS	⊏	114	3'-5	260
4d3	END PANEL TRANSVERSE	——	2	52'-0	69
4d4	END PANEL TRANSVERSE	——	2	2'-4	3
4d5	END PANEL TRANSVERSE	——	2	3'-0	4
4d6	END PANEL TRANSVERSE	——	10	7'-4	49
4d7	END PANEL CORNER	⌊—	4	4'-0	11
4m6	SEE NOTES				
	5¼" O.D. 4¾" I.D. 145 KSI 1" PITCH SPIRAL	wwwwww	20	14'-5	48
	REINFORCING STEEL EPOXY COATED TOTAL (LBS.)				2364

REINFORCING BAR LIST - ONE INTERIOR PANEL D

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	LONGITUDINAL PANEL	——	142	9'-8	1432
5b2*	MECHANICAL ANCHORS	⌊—	40	1'-4	56
5c10	CLOSURE POUR HOOKS	⊃	10	8'-3	86
5c11	CLOSURE POUR HOOKS	⊃	8	12'-11	108
4m6	SEE NOTES				
	5¼" O.D. 4¾" I.D. 145 KSI 1" PITCH SPIRAL	wwwwww	20	14'-5	48
	REINFORCING STEEL EPOXY COATED TOTAL (LBS.)				1730



ADDITIONAL END PANEL REINFORCING DETAIL

(PANEL TYPE C SHOWN, TYPE A SIMILAR)

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PRECAST SLAB PANEL DETAILS

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

JUNE, 2007

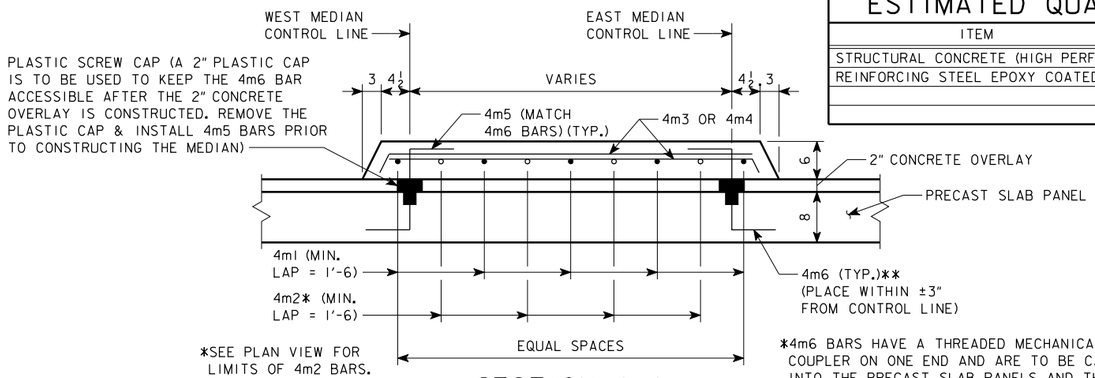
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 37 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 38

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



SECTION A-A

**4m6 BARS HAVE A THREADED MECHANICAL COUPLER ON ONE END AND ARE TO BE CAST INTO THE PRECAST SLAB PANELS AND THE CIP SECTIONS AT THE ABUTMENTS. 4m6 BARS ARE INCLUDED IN THE PRECAST SLAB PANEL QUANTITIES.

ESTIMATED QUANT. - MEDIAN

ITEM	UNIT	TOTAL
STRUCTURAL CONCRETE (HIGH PERFORMANCE)	CY	36.8
REINFORCING STEEL EPOXY COATED	LB	4148

WEST MEDIAN CONTROL LINE

	℄ 24TH STREET	OFFSET
WP1	STA. 40175+15.708	10.500FT RT
PC	STA. 40175+83.471	10.500FT RT
PRC	STA. 40176+67.471	1.500FT LT
PT	STA. 40177+51.471	13.500FT LT
WP2	STA. 40178+71.292	13.500FT LT

EAST MEDIAN CONTROL LINE

	℄ 24TH STREET	OFFSET
WP3	STA. 40175+15.708	13.500FT RT
PC	STA. 40176+07.00	13.500FT RT
PRC	STA. 40176+91.000	1.500FT RT
PT	STA. 40177+75.000	10.500FT LT
WP4	STA. 40178+71.292	10.500FT LT

CURVE A

PI STATION =	STA. 40176+26.328
PI OFFSET =	10.500FT RT
Δ =	16°15'36.44" (LT)
R =	300.000FT
L =	85.138FT

CURVE B

PI STATION =	STA. 40177+08.613
PI OFFSET =	13.500FT LT
Δ =	16°15'36.80" (RT)
R =	300.000FT
L =	85.138FT

CURVE C

PI STATION =	STA. 40176+49.857
PI OFFSET =	13.500FT RT
Δ =	16°15'36.74" (LT)
R =	300.000FT
L =	85.138FT

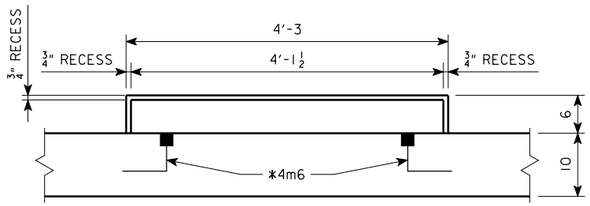
CURVE D

PI STATION =	STA. 40177+32.143
PI OFFSET =	10.500FT LT
Δ =	16°15'36.74" (RT)
R =	300.000FT
L =	85.138FT

EPOXY COATED REINFORCING

REINFORCING BAR LIST - MEDIAN

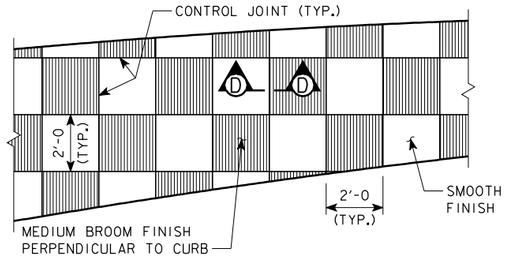
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4m1	LONGITUDINAL	——	50	37'-2	1241
4m2	LONGITUDINAL	——	12	37'-5	300
4m3	TRANSVERSE	⌒	496	3'-8	1215
4m4	TRANSVERSE	⌒	216	5'-3	758
4m5**	TRANSVERSE	⌊⌋	712	1'-4	634
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				4148



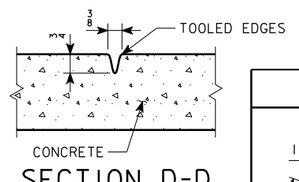
SECTION C-C

NOTE:
FOR SLIDER PLATE DETAILS, SEE DESIGN SHEET 42.

NOTES:
TOTAL QUANTITIES FOR CONCRETE AND REINFORCING STEEL FOR MEDIAN ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES ON ANOTHER SHEET.
**THE LENGTHS SHOWN DO NOT INCLUDE AN ALLOWANCE FOR THE THREADED ENDS. BAR LENGTHS MAY NEED TO INCREASE DEPENDING ON THE MECHANICAL COUPLER ASSEMBLY USED. THE COST OF ALL THREADED PORTIONS OF THESE BARS IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL EPOXY COATED" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE THREADED ENDS IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL EPOXY COATED".

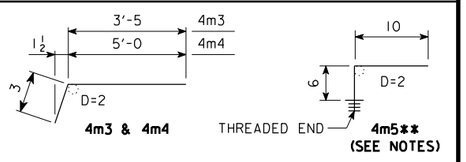


CONTROL JOINT DETAIL



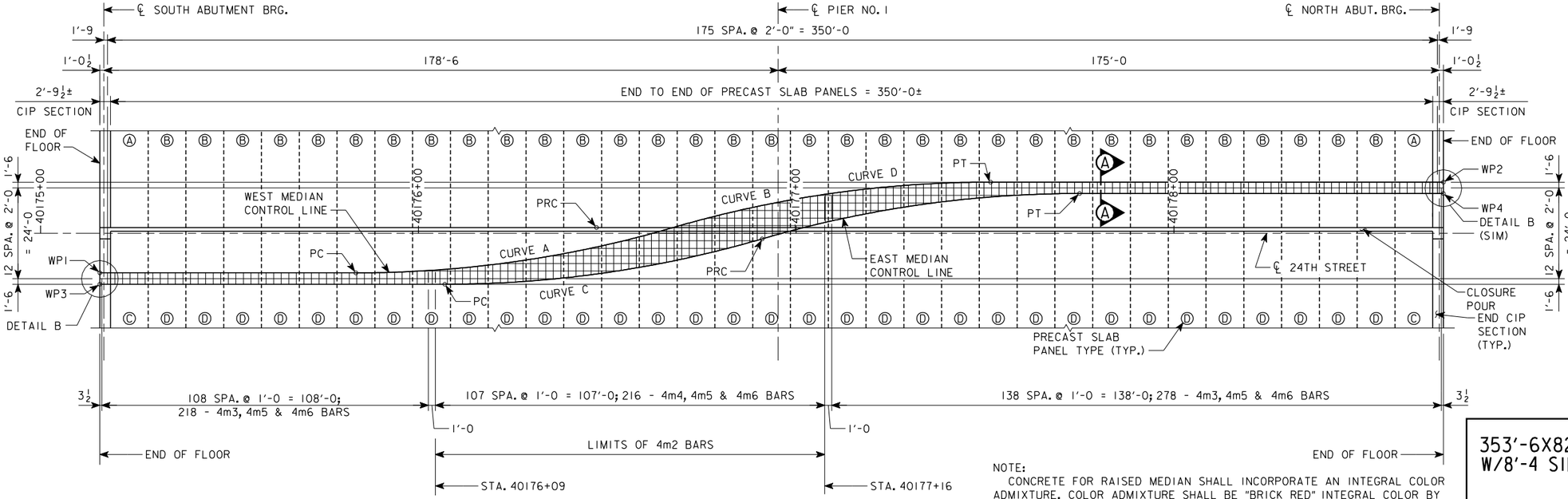
SECTION D-D

BENT BAR DETAILS

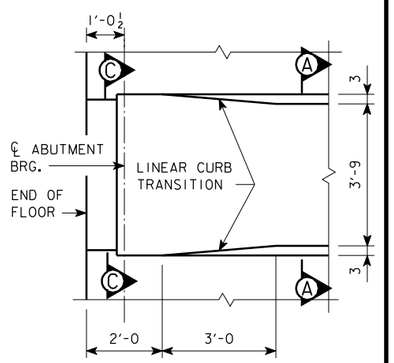


NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

**SEE NOTES



MEDIAN CONTROL GEOMETRY



DETAIL B

(TYP. AT ENDS OF FLOOR)

NOTE:
CONCRETE FOR RAISED MEDIAN SHALL INCORPORATE AN INTEGRAL COLOR ADMIXTURE. COLOR ADMIXTURE SHALL BE "BRICK RED" INTEGRAL COLOR BY DAVIS COLORS. FOLLOWING CASTING OF RAISED MEDIAN, TWO SEALER COATS CONSISTING OF BOMANITE "CON-SHIELD" (TO HARDEN AND SEAL THE SURFACE) AND BOMANITE "COLOR CURE" (TO ASSURE UNIFORM COLOR) SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL COSTS ASSOCIATED WITH PROVIDING THE INTEGRALLY COLORED CONCRETE AND THE TWO SEALER COATS ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (HIGH PERFORMANCE)".

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

MEDIAN DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM ATN/JPS/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 39

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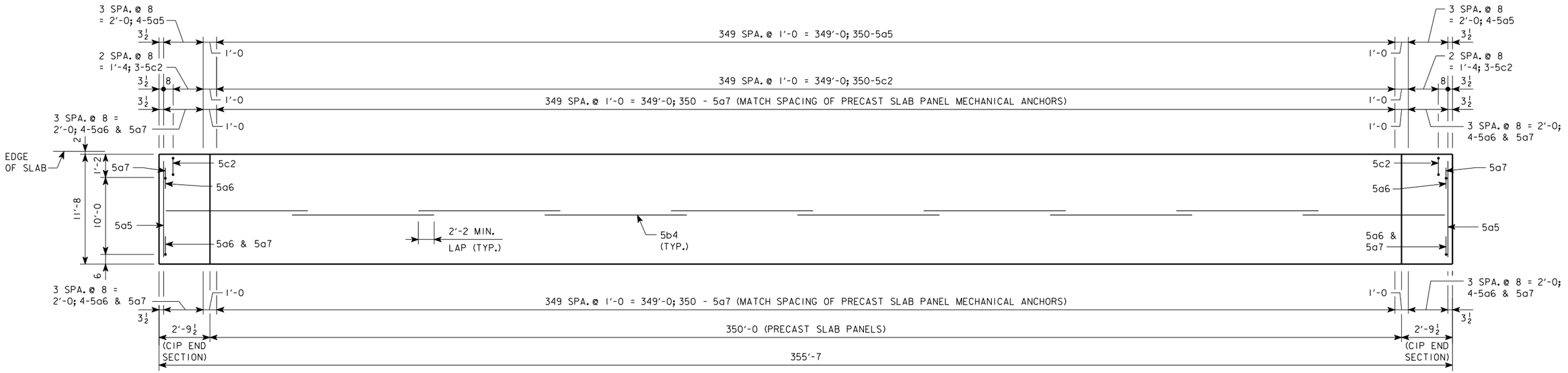
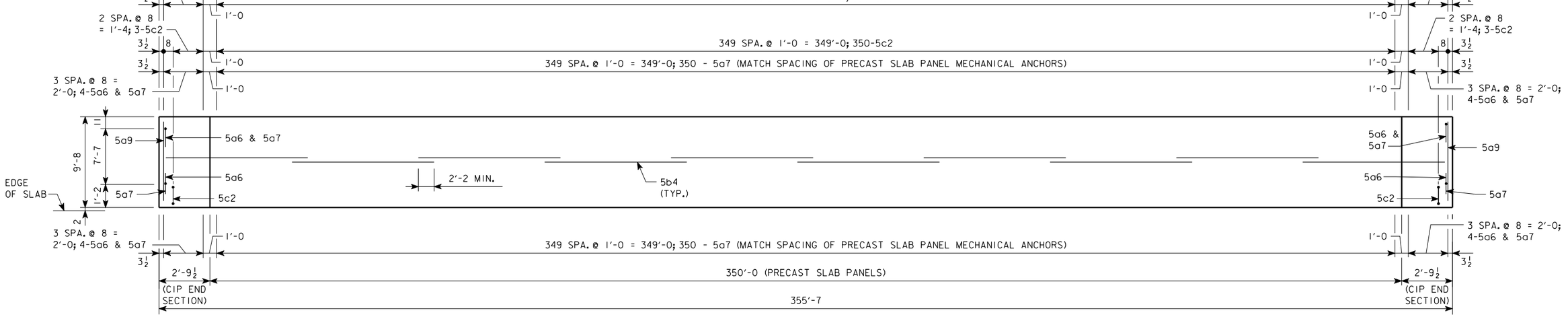


WEST SIDEWALK REINFORCING LAYOUT



EAST SIDEWALK REINFORCING LAYOUT

NOTES:
5c2 BARS ARE INCLUDED IN THE CONCRETE PARAPET QUANTITIES.
FOR TYPICAL SECTIONS THROUGH THE WEST AND EAST SIDEWALKS, SEE DESIGN SHEET 20 & 21.
FOR CONCRETE PARAPET DETAILS, SEE DESIGN SHEET 49.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SIDEWALK DETAILS

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 39 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM JPS/RRP/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 40

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CONC. PLACEMENT QUANTITIES

LOCATION	PHASE 1	PHASE 2	QUANTITY
CIP END SECTION	14.0	14.8	28.8
SIDEWALK	112.0	87.8	199.8
LIGHT POLE BASE	0.5	0.5	1.0
CLOSURE POUR	-	16.2	16.2
MEDIAN	-	36.8	36.8
TOTAL (CU. YDS.)	126.5	156.1	282.6

ESTIMATED QUANTITIES SUPERSTR.

ITEM	UNIT	PHASE 1	PHASE 2	QUANTITY
STRUCTURAL CONCRETE (HIGH PERFORMANCE)	CU. YD.	126.5	156.1	282.6
REINFORCING STEEL EPOXY COATED	LBS.	30,211	33,438	63,649
STRUCTURAL STEEL	LBS.	-	-	1,485,189
STEEL EXTRUSION JOINT WITH NEOPRENE	L.F.	-	-	211.5
DISC BEARINGS	EACH	6	6	12

NOTES:

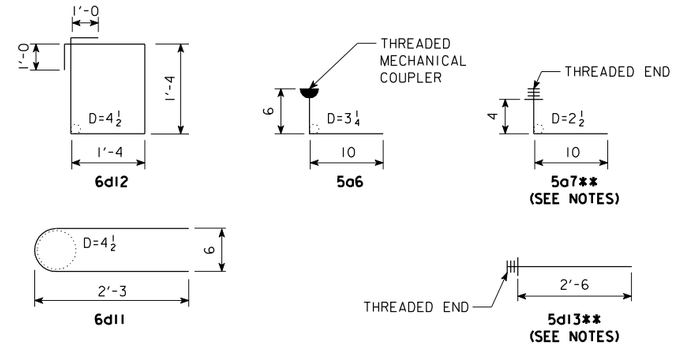
ALL THREADED MECHANICAL COUPLER ASSEMBLIES TO BE USED IN SPLICING THE REINFORCING IN THE SUPERSTRUCTURE SHALL BE EPOXY COATED. THREE ADDITIONAL NON EPOXY COATED SPLICE ASSEMBLIES OF EACH SIZE SHALL BE FURNISHED TO THE ENGINEER FOR TESTING AND APPROVAL. THE COST OF ALL COUPLERS, INCLUDING THE 3 TO BE FURNISHED FOR TESTING, IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL EPOXY COATED" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE MECHANICAL COUPLERS IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL EPOXY COATED".

** THE LENGTHS SHOWN DO NOT INCLUDE AN ALLOWANCE FOR THE THREADED ENDS. BAR LENGTHS MAY NEED TO INCREASE DEPENDING ON THE MECHANICAL COUPLER ASSEMBLY USED. THE COST OF ALL THREADED PORTIONS OF THESE BARS IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL EPOXY COATED" AND NO ADDITIONAL PAYMENT WILL BE MADE. THE WEIGHT OF THE THREADED ENDS IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL EPOXY COATED".

REINFORCING BAR LIST-SUPERSTRUCTURE

EPOXY COATED REINFORCING

BAR	LOCATION	SHAPE	LENGTH	PHASE 1 NO.	PHASE 1 WEIGHT	PHASE 2 NO.	PHASE 2 WEIGHT
7a1	ABUT. DIAPH. TRANSVERSE	——	23'-10	40	1949	40	1949
7a2	ABUT. DIAPH. TRANSVERSE	——	16'-3	20	664	20	664
7a3	ABUT. DIAPH. TRANSVERSE	——	8'-8	20	354	24	425
5a5	SIDEWALK TRANSVERSE	——	11'-4	358	4232		
5a6*	MECHANICAL ANCHORS AT C.I.P. END SECTIONS	L	1'-4	28	39	28	39
5a7**	SIDEWALK TRANSVERSE	L	1'-2	716	871	716	871
5a9	SIDEWALK TRANSVERSE	——	9'-4			358	3485
5b3	CLOSURE POUR LONGITUDINAL	——	37'-7			40	1568
5b4	SIDEWALK LONGITUDINAL	——	37'-7	150	5880	130	5096
6d11	ABUT. DIAPH. HOOPS	⊂⊃	4'-5	248	1645	272	1804
6d12	ABUT. DIAPH. HOOPS	⊏⊐	7'-4	110	1212	126	1388
5d13**	ABUT. DIAPH. TIE	——	2'-6	228	595	228	595
	CONCRETE PARAPET - SEE DES. SHT. NO. 49				4295		4295
	SEPARATION BARRIER RAIL - SEE DES. SHT. NO. 50				8241		6877
	LIGHT POLE BASES - SEE DES. SHT. NO. 48				234		234
	MEDIAN-SEE DES. SHT. NO. 38				-		4148
	REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)				30,211		33,438



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

BENT BAR DETAILS

*INCLUDES 1 THREADED MECHANICAL COUPLER
**SEE NOTES

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SUPERSTRUCTURE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

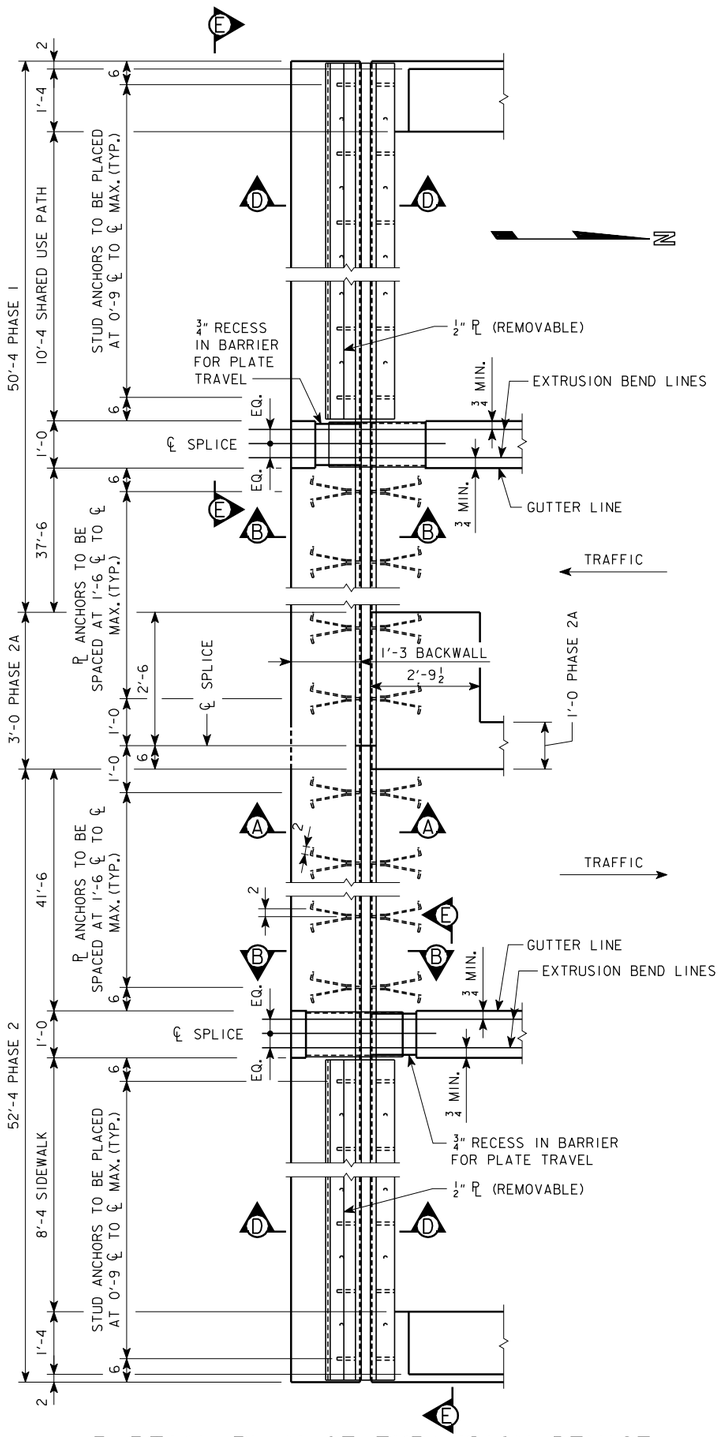
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 40 OF 62 FILE NO. 30169 DESIGN NO. 508

REVISED 11-05 - ALL BLACK BARS CHANGED TO EPOXY COATED.
ENGLISHSTUBABUTMENTBRIDGES.DGN 4549 - THIS SHEET REDRAWN 9-8-88.

DESIGN TEAM RRP/JPS/ACB	STUB ABUT. B, C, & D BEAMS - BAR LIST & SUPER. DETAILS - 0° SKEW	STANDARD SHEET 4549 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 41

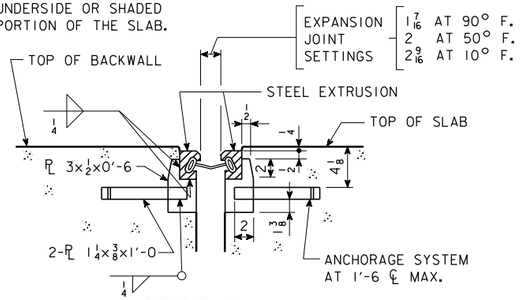
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



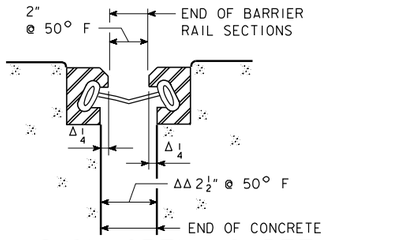
PARTIAL PLAN OF EXPANSION DEVICE

(ABUTMENT NO. 1 SHOWN, ABUTMENT NO. 2 SIMILAR)

NOTE:
JOINT SETTINGS FOR OTHER TEMPERATURES ARE PROPORTIONAL. TEMPERATURES SHOWN ARE CONCRETE SLAB TEMPERATURES ON THE UNDERSIDE OR SHADED PORTION OF THE SLAB.



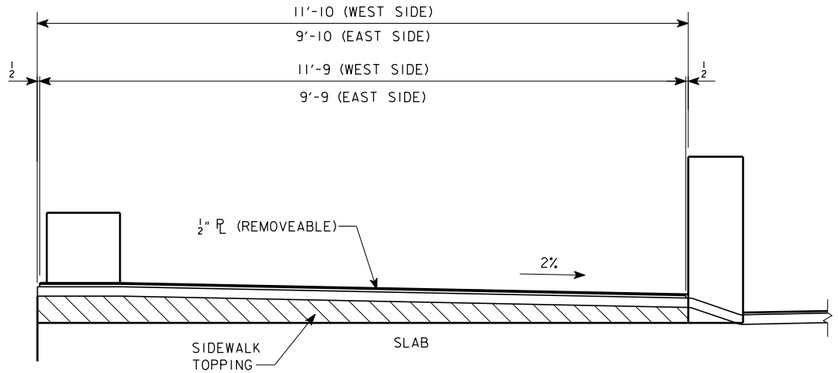
SECTION A-A



EXPANSION OPENING DETAIL

Δ THIS DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.

ΔΔ USED FOR ALL OUT TO OUT DIMENSIONS OF SLAB. THE DIMENSION MAY VARY SLIGHTLY DEPENDING ON MANUFACTURER FURNISHING THE JOINT.



SECTION E-E

EXPANSION DEVICE NOTES:

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL SHOP DRAWINGS OF THE EXPANSION DEVICES SHOWING LAYOUT, MATERIAL TO BE USED, AND PROVISIONS FOR HOLDING DEVICE DURING PLACEMENT OF CONCRETE.

THE EXPANSION DEVICE SHALL BE GALVANIZED AFTER WELDING.

THE EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF THE PLATE.

THE NEOPRENE GLAND IS TO BE PLACED AS ONE CONTINUOUS PIECE FROM END TO END OF THE STEEL EXTRUSIONS.

THE MINIMUM GRADE OF STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE ASTM A-36.

THE NEOPRENE GLAND SHALL CONFORM TO ASTM D-2628 MODIFIED TO EXCLUDE RECOVERY TESTS AND COMPRESSION SET.

BLOCKOUT DETAILS MAY BE ALTERED FROM THOSE SHOWN PROVIDED THE GLAND MAY BE INSTALLED AND REMOVED IF NECESSARY.

THE CONTRACT UNIT PRICE BID FOR "STEEL EXTRUSION JOINT WITH NEOPRENE" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING THE EXPANSION JOINTS. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE ⅜" PLATES AT THE BARRIERS AND THEIR ANCHORAGE SYSTEMS AND THE COVER PLATE ASSEMBLIES AT THE SIDEWALKS AND RAISED MEDIAN), AND THE INSTALLATION AND ADJUSTMENT OF THE EXPANSION JOINTS AND COVER PLATE ASSEMBLY IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE FURNISHING AND INSTALLATION OF ALL NECESSARY HARDWARE AND ACCESSORIES AS SUPPLIED BY THE EXPANSION JOINT MANUFACTURER ARE TO BE INCLUDED IN THIS WORK, INCLUDING THE ANCHORAGE SYSTEM AND ANY TEMPORARY ERECTION MATERIAL. ALL WORK AND MATERIALS FOR THE INSTALLATION OF THE EXPANSION JOINTS ARE TO COMPLY WITH THE WRITTEN RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER.

SHOP AND OR FIELD SPLICES OF THE STEEL EXTRUSION WILL BE PERMITTED. PIECES OF STEEL EXTRUSION IN THE 15 FT. TO 22 FT. RANGE SHALL BE USED TO FORM THE REQUIRED GUTTER TO GUTTER LENGTH. THE INDIVIDUAL LENGTH OF PIECES SHALL BE CHOSEN SO THAT A MINIMUM NUMBER OF SPLICES IS REQUIRED. ALL PIECES SHALL BE JOINED WITH A PREQUALIFIED PARTIAL PENETRATION SINGLE GROOVE WELD, AND ALL SURFACES NOT IN CONTACT WITH CONCRETE ARE TO BE GROUND FLUSH. NO WELD SHALL BE PERMITTED IN THE INTERNAL SECTION OF THE EXTRUSION WHERE THE NEOPRENE GLAND IS TO BE LOCATED.

FOR SECTIONS B-B & D-D, SEE DESIGN SHEET 42.

THE EXPOSED SURFACE OF THE ½" REMOVABLE COVER PLATE AT THE SIDEWALK SHALL HAVE A NON-SLIP TEXTURE CONFORMING TO ASTM 786.

THE MATERIAL USED FOR THE BARRIER PLATES IS TO BE ASTM A-36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-307. THE PLATES, BOLTS AND NUTS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

THE ¾"Φ STAINLESS STEEL SOCKET FLAT COUNTERSUNK HEAD CAP SCREWS SHALL MEET THE REQUIREMENTS OF ASTM F879-91.

CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE ⅜" BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.

TABLE OF APPROVED EXPANSION DEVICES

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND
WATSON-BOWMAN & ACME CORP.	A	SE-400
D.S. BROWN CO.	SSA2	A2R-400
APPROVED EQUAL		

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT EXPANSION DEVICE

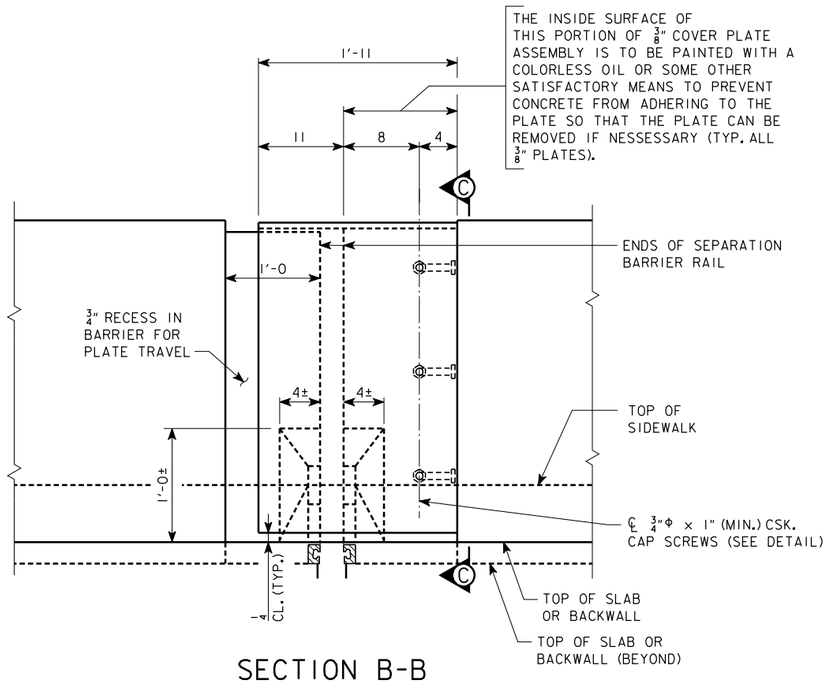
STA. 40176+95.25 (24TH STREET) JUNE, 2007
STA. 7476+95.25 (FUTURE I-80)

POTTAWATTAMIE COUNTY

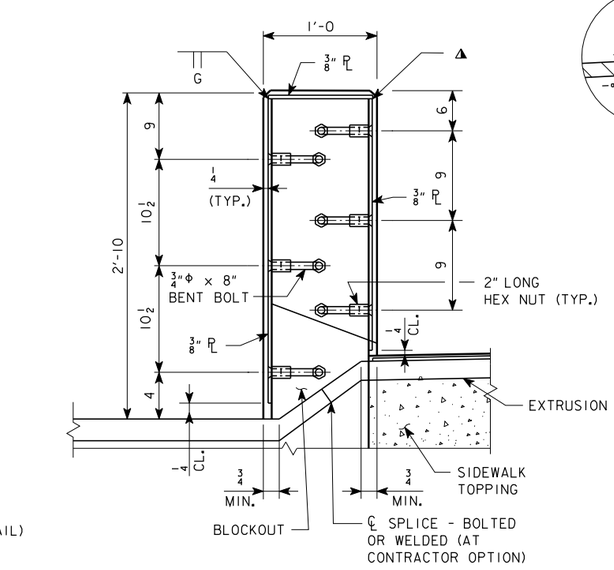
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 41 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

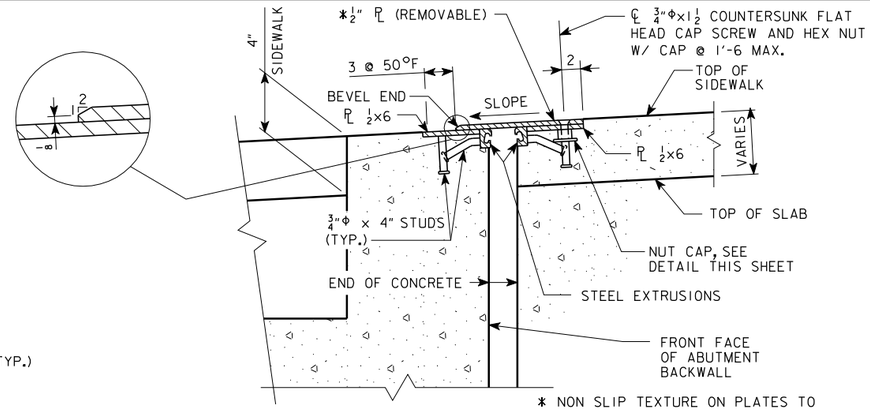


SECTION B-B

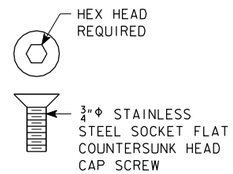


SECTION C-C

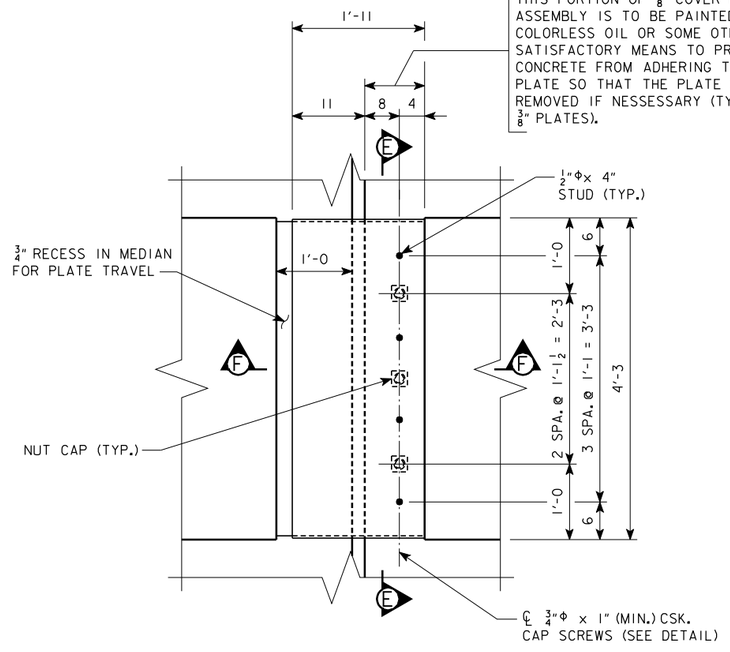
▲ CAULK (NO WELD). CAULKING MATERIAL SHALL BE NEUTRAL CURE AND NON-SAG SILICONE. THREE PRODUCTS MEETING THESE CRITERIA ARE DOW 888, CSL 342 AND CRAFCO ROADSAVER JOINT SEALANT.



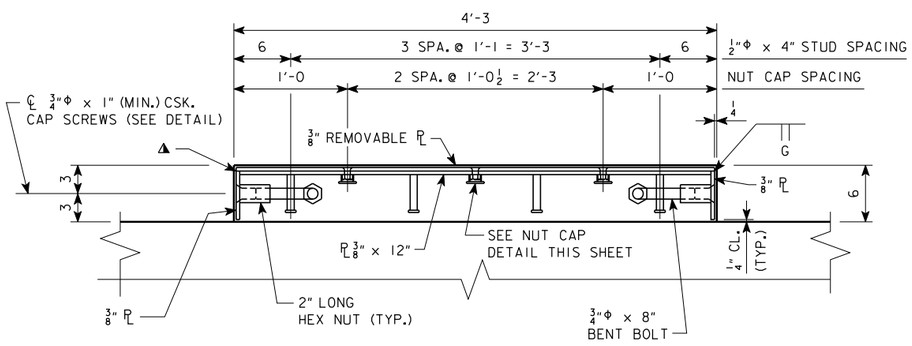
SECTION D-D



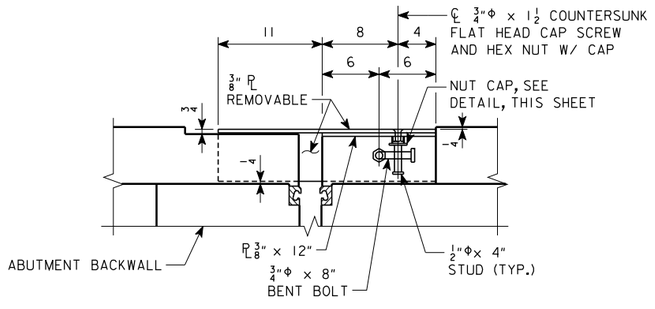
SOCKET FLAT COUNTERSUNK HEAD CAP SCREW DETAIL



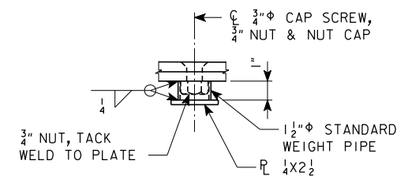
PARTIAL PLAN OF MEDIAN



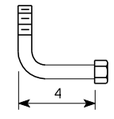
SECTION E-E



SECTION F-F



NUT CAP DETAIL



BENT BOLT DETAIL

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT EXPANSION DEVICE

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 42 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/RRP/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 43

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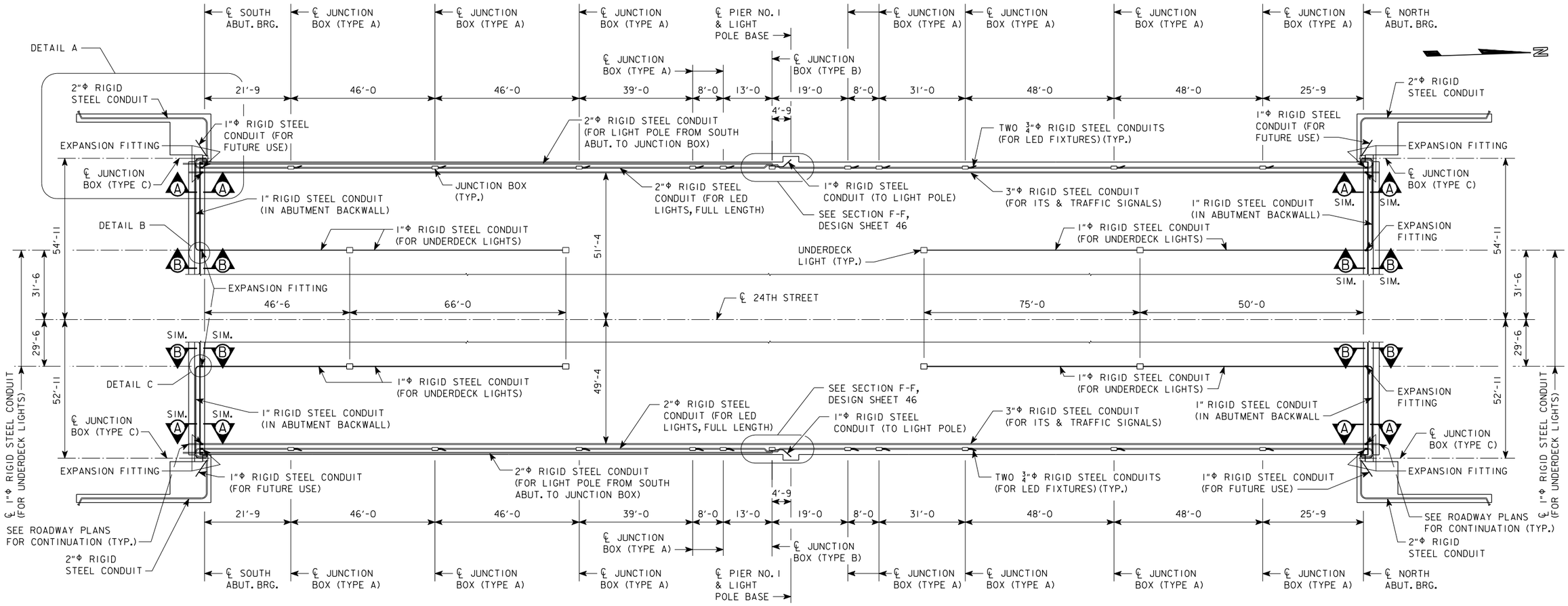


ELECTRICAL CONDUIT LINE DIAGRAM

NOTE:
FOR DETAILS A, B & C AND SECTIONS A-A & B-B, SEE DESIGN SHEET 44.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHTING DETAILS

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

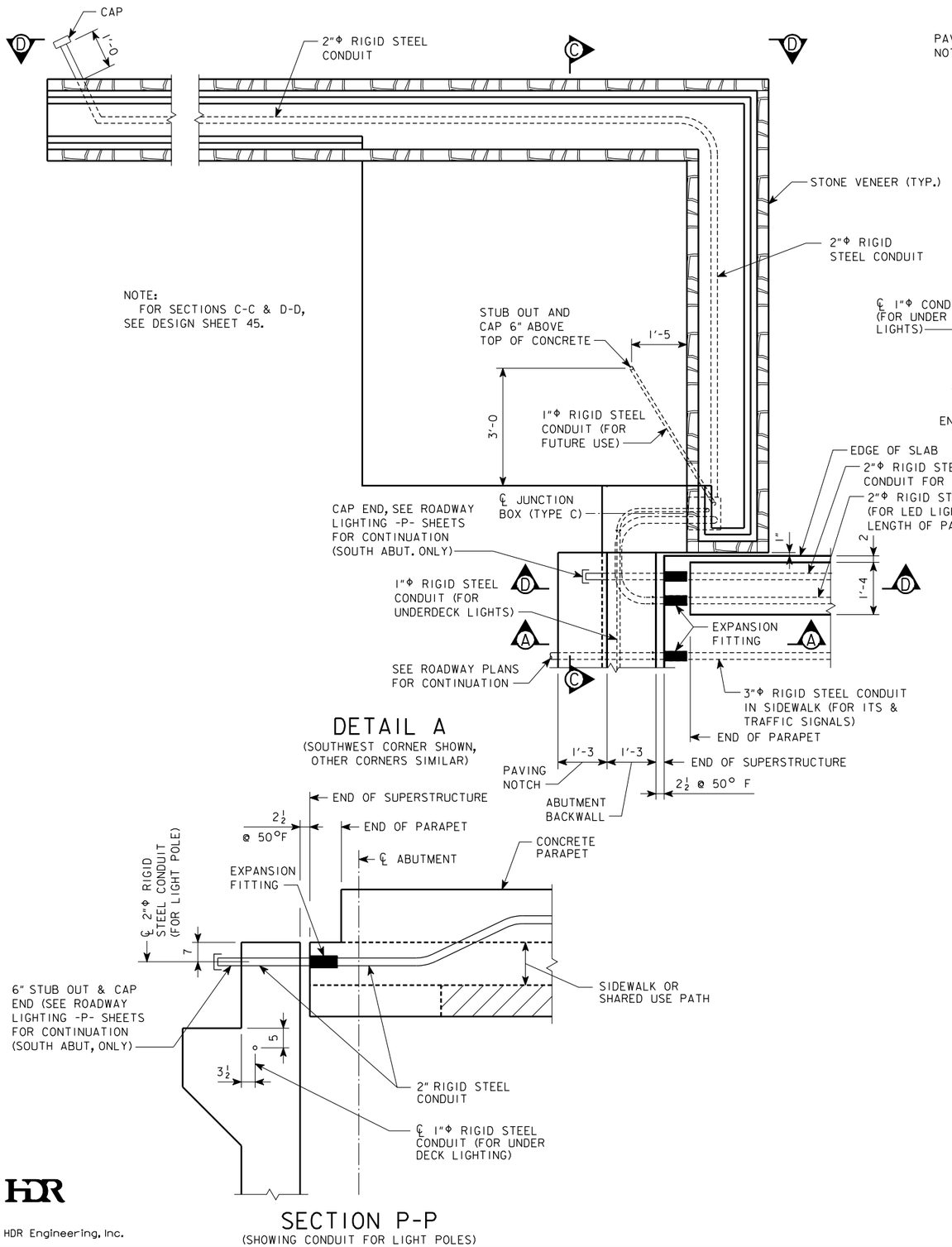
JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 43 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/HHK/DHS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 44



HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHTING DETAILS

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

JUNE, 2007

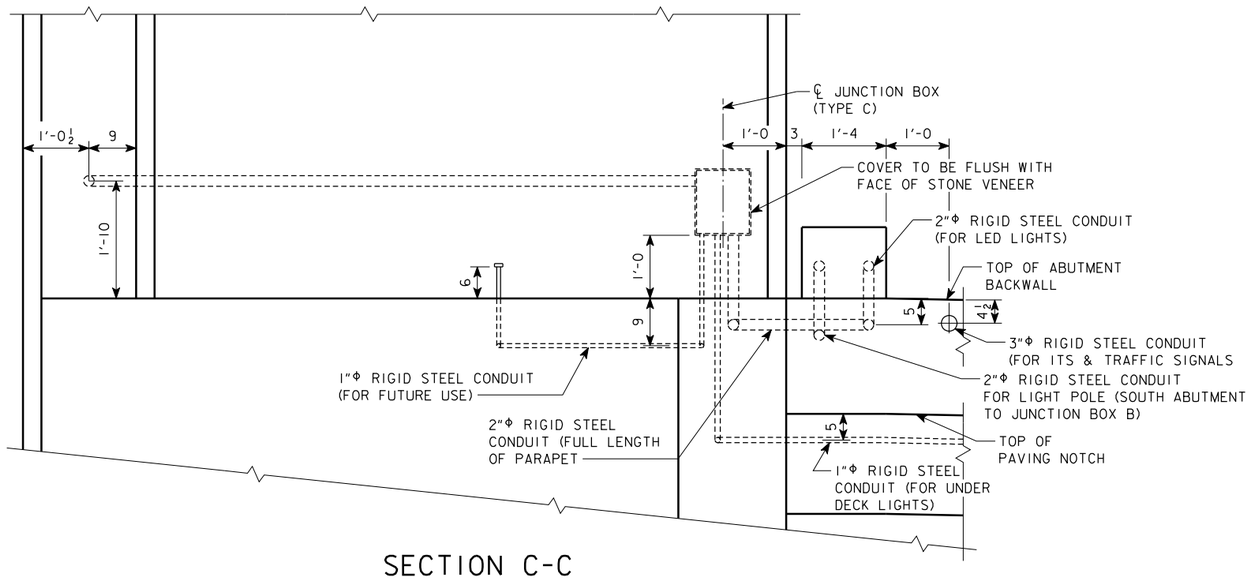
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

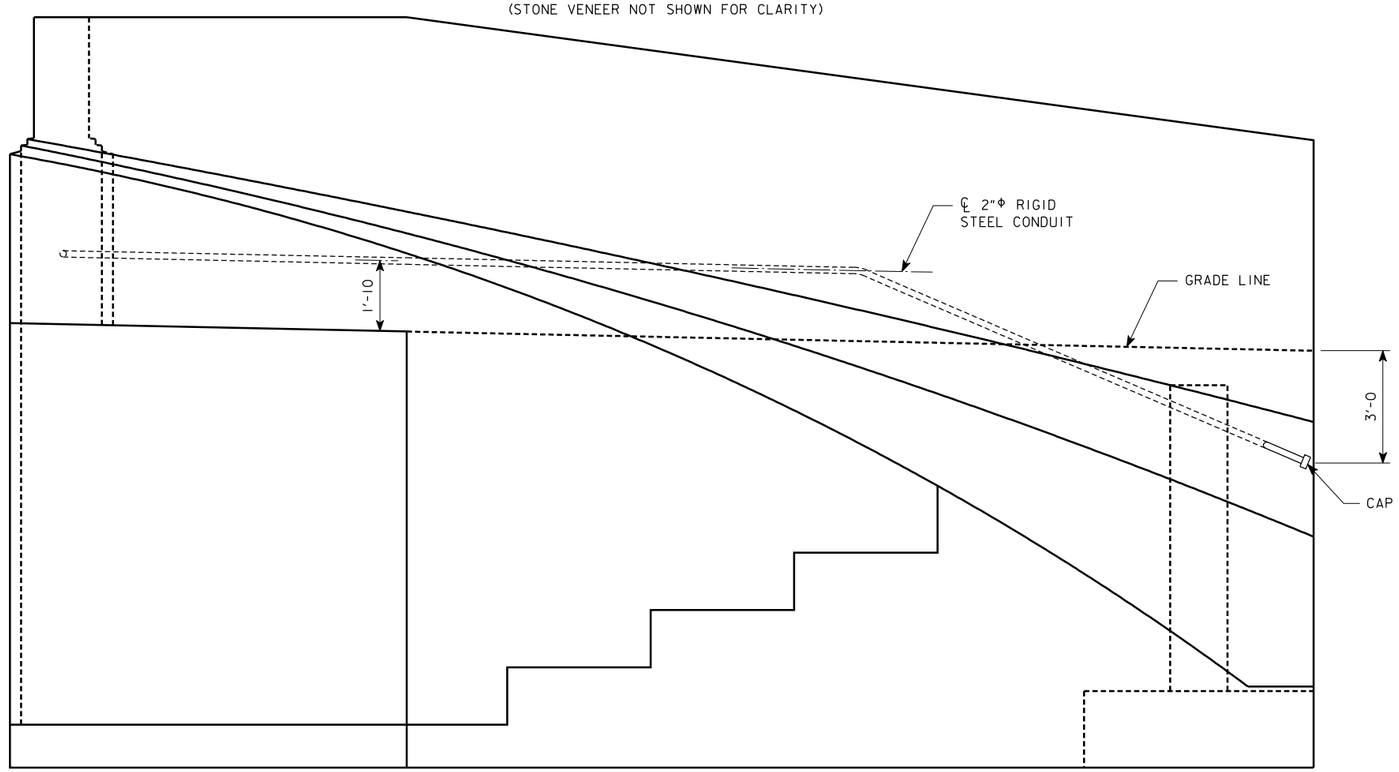
DESIGN SHEET NO. 44 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/HHK/DHS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 45

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



SECTION C-C
(STONE VENEER NOT SHOWN FOR CLARITY)



SECTION D-D
(STONE VENEER NOT SHOWN FOR CLARITY)

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHTING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 45 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/HHK/DHS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 46

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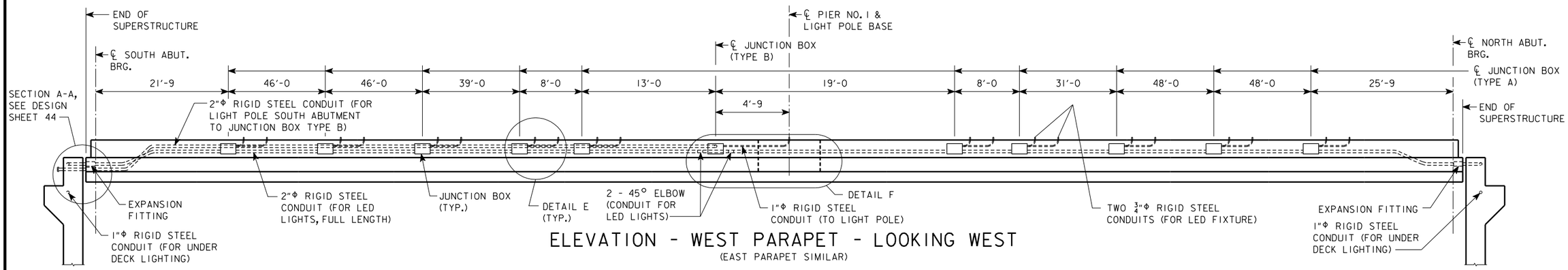
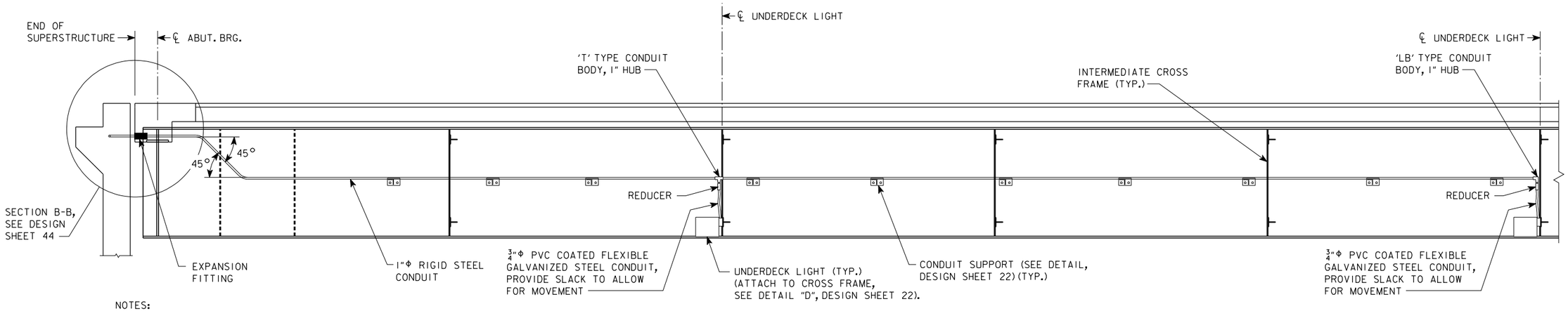


ELEVATION - WEST PARAPET - LOOKING WEST

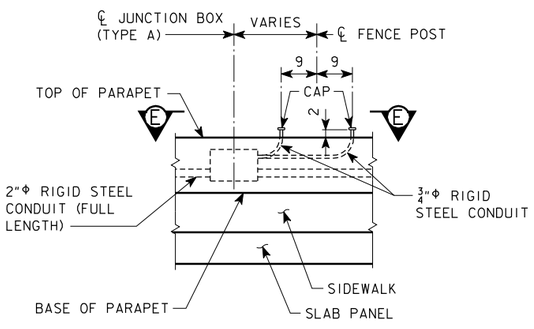
(EAST PARAPET SIMILAR)



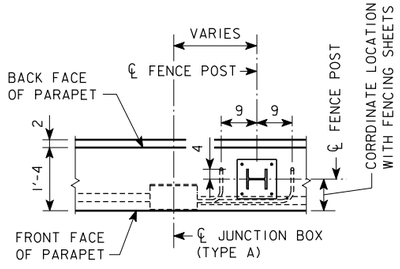
ELEVATION - EAST FACE OF GIRDER "C"

(WEST FACE OF GIRDER "J" SIMILAR)

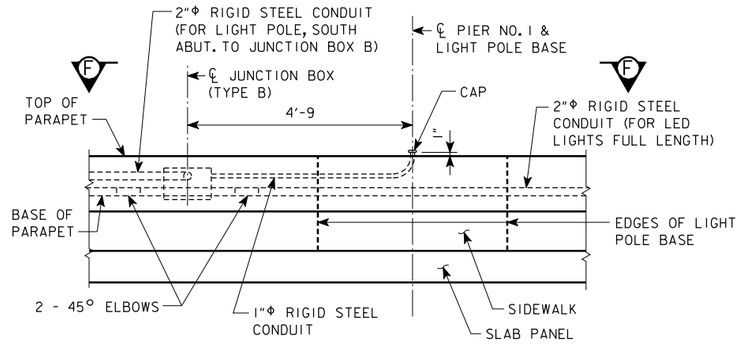
NOTES:
FOR CONDUIT SUPPORT SPACING & DETAILS, SEE DESIGN SHEET 22.
FOR DETAIL OF JUNCTION BOXES, SEE DESIGN SHEET 47.
FOR FENCE DETAILS, SEE DESIGN SHEETS 52 TO 59.
FOR UNDERDECK LIGHT FIXTURE LOCATION, SEE DESIGN SHEET 43.



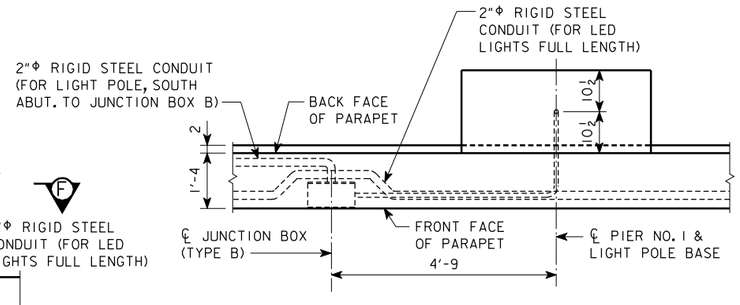
DETAIL E



SECTION E-E



DETAIL F



SECTION F-F

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHTING DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 46 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/HHK/DHS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 47

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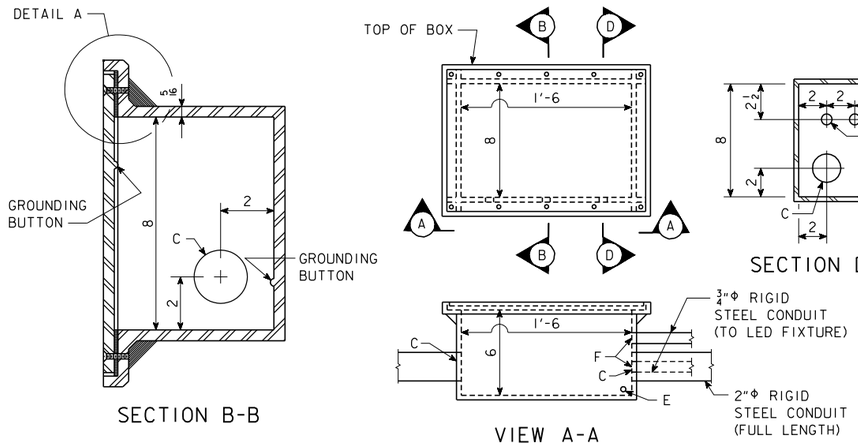
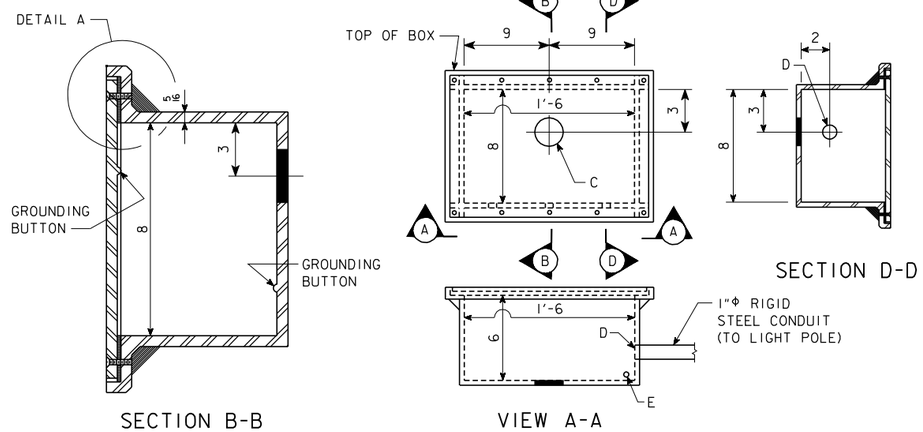


JUNCTION BOX (TYPE A)

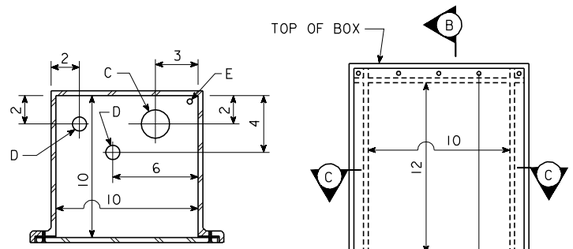
WATERTIGHT , CAST IRON - FLUSH MOUNT

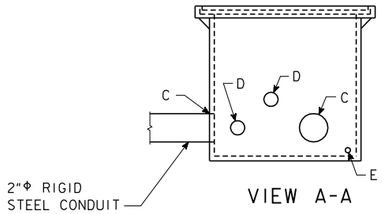


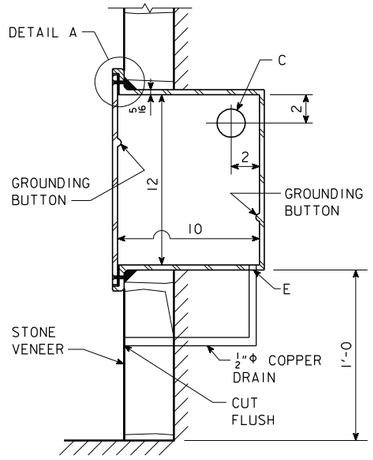
JUNCTION BOX (TYPE B)

WATERTIGHT , CAST IRON - FLUSH MOUNT

DETAIL A



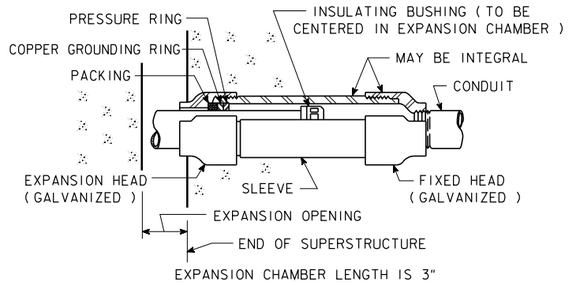




JUNCTION BOX (TYPE C)

WATERTIGHT , CAST IRON - FLUSH MOUNT

NOTE:
FOR ADDITIONAL NOTES
SEE DESIGN SHEET 48.



EXPANSION FITTING DETAIL

(12 REQUIRED)

BOSSED FOR	HOLE	FOR CONDUIT SIZE
5 THREADS	C	2"Φ RIGID STEEL
NONE	D	1"Φ RIGID STEEL
NONE	E	1/2"Φ COPPER PIPE
NONE	F	3/4"Φ RIGID STEEL

NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR 3/8"Φ x 0'-0 3/4" BOLTS.

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHTING DETAILS

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

JUNE, 2007

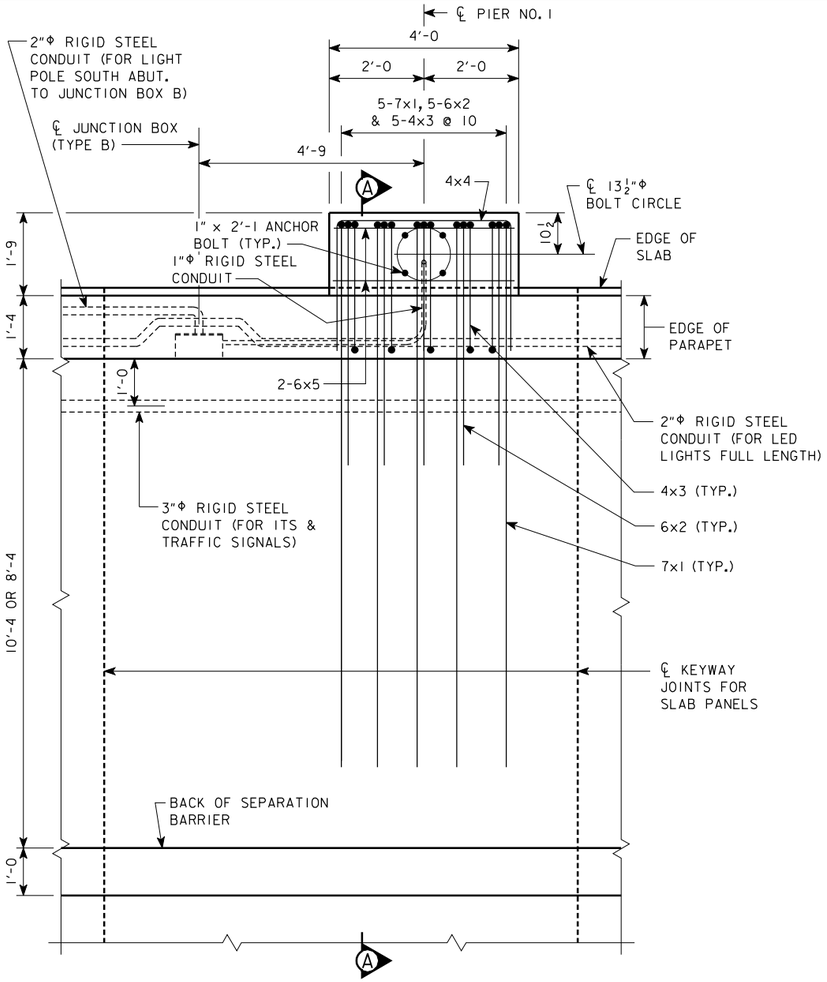
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

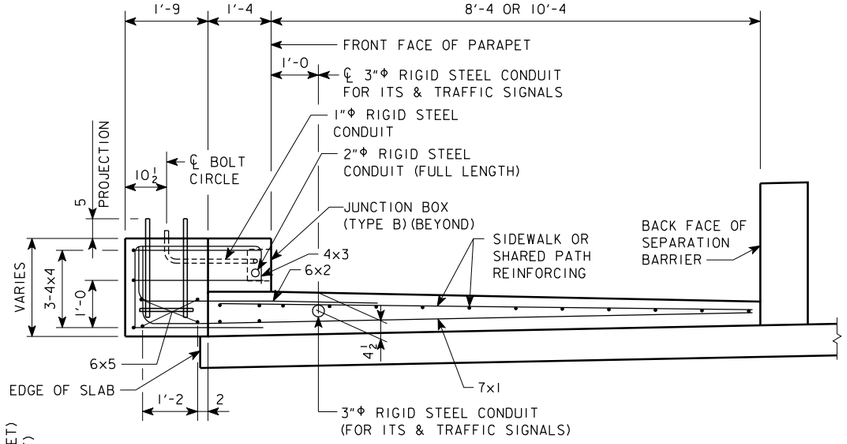
DESIGN SHEET NO. 47 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/RRP/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 48

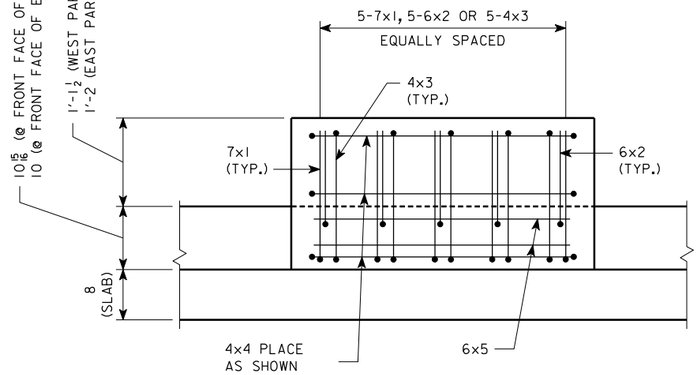
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



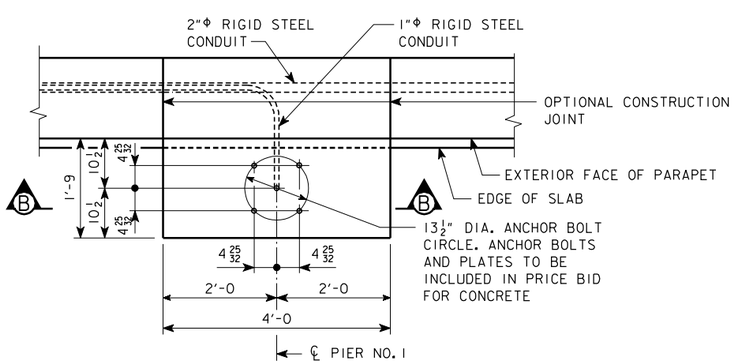
PLAN OF POLE BASE REINFORCING



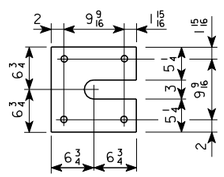
SECTION A-A



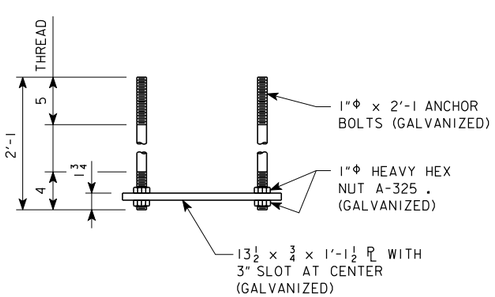
SECTION B-B



PLAN OF POLE BASE
BASE REINFORCING BARS NOT SHOWN



ANCHOR PLATE



ANCHOR BOLTS

LIGHTING NOTES:

SEE RM-37 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.

CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

CONDUIT INSTALLATION SHALL COMPLY WITH THE ARTICLE "ELECTRICAL DUCTS", SECTION 2523.

ALL "C" ENTRANCE HOLES IN JUNCTION BOXES SHALL BE DRILLED AND TAPPED FOR THE SPECIFIED CONDUIT SIZE. ALL OTHER HOLES SHALL HAVE A CONCRETE - TIGHT SLIP FIT. CONDUIT ENDS SHALL NOT PROTRUDE INTO JUNCTION BOX MORE THAN ¼". DRAIN PIPE END SHALL BE FLUSH WITH INSIDE SURFACE OF BOX. GROUNDING BUTTONS SHALL BE LOCATED APPROXIMATELY 3" FROM THE INSIDE SURFACE OF THE BOX WALL, AND NOT CLOSER THAN 3" TO THE EDGE OF ANY HOLE IN THE BOX FLOOR. HOLES FOR DRAIN PIPE SHALL BE PLACED IN THE LOW CORNER OF THE BOX, WITH A MINIMUM CLEARANCE OF 1" BETWEEN THE EDGE OF THE HOLE AND THE INSIDE SURFACE OF THE BOX WALL. TYPICAL DETAILS ARE SHOWN ON DESIGN SHEET 47.

THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE "CONCRETE BARRIER, PARAPET".

COST OF FURNISHING AND INSTALLING POLES, LIGHTS AND LIGHTING CONDUCTOR IS NOT A PART OF THIS ESTIMATE.

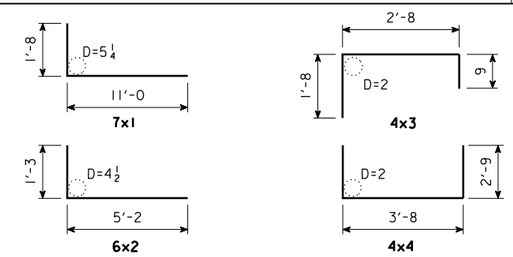
EXPANSION FITTING SHALL BE AS SPECIFIED OR AS APPROVED BY THE ENGINEER. TYPICAL DETAILS ARE SHOWN ON DESIGN SHEET 47.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F-1554, GRADE 105, CLASS 2A. HEAVY HEX NUTS SHALL MEET THE REQUIREMENTS OF THE ASTM A-563-DH, CLASS 2B. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F-436. ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AND SHALL MEET ALL REQUIREMENTS AS SPECIFIED IN IM 453.08.

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

EPOXY REINFORCING STEEL-ONE BASE

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7x1	SIDEWALK ANCHORS	⌊	5	12'-8	129
6x2	SIDEWALK ANCHORS	⌊	5	6'-5	48
4x3	POLE BASE ANCHOR	⌐	5	5'-1	17
4x4	POLE BASE HAIRPIN	⌐	3	9'-2	18
6x5	POLE BASE LONGITUDINAL	—	4	3'-8	22
			TOTAL WEIGHT (LBS.)		234



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

LIGHTING QUANTITIES

ITEM	AMOUNT
STRUCTURAL CONCRETE (HIGH PERFORMANCE) (2 BASES @ 0.5 CU. YD. EACH)	1.0 CU. YD.
REINFORCING STEEL - EPOXY COATED (2 BASES @ 234 LBS. EACH)	468 LBS.

NOTES:

FOR LOCATION AND LENGTHS OF CONDUITS NEEDED SEE DESIGN SHEETS 43-47.

TOTAL QUANTITIES FOR CONCRETE AND REINFORCING STEEL FOR POLE BASES ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIGHT POLE BASE DETAILS

STA. 401+76+95.25 (24TH STREET)
STA. 747+6+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 48 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM JPS/HHK/DHS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 49

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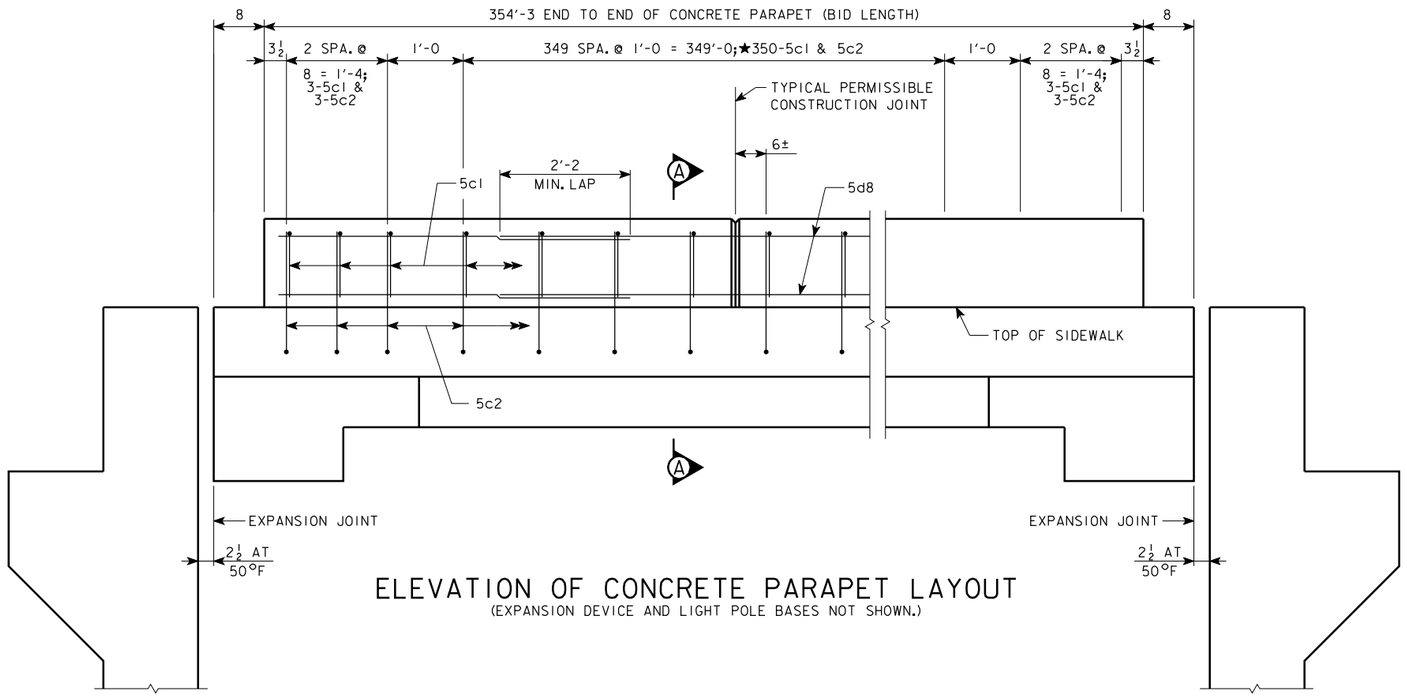


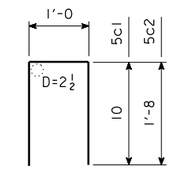
ELEVATION OF CONCRETE PARAPET LAYOUT

(EXPANSION DEVICE AND LIGHT POLE BASES NOT SHOWN.)

EPOXY REINF. STEEL-CONCRETE PARAPET (EA.)

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c1	VERTICAL	⊔	402	2'-8	1118
5c2	VERTICAL	⊔	356	4'-4	1609
5d8	LONGITUDINAL	——	40	37'-7	1568
(INCLUDE WITH SUPERSTRUCTURE REINFORCING)			TOTAL (LBS.)		4295

BENT BAR DETAILS



5c1 & 5c2

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

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
WEST CONCRETE PARAPET	354.25' @ 0.0556 CU. YD. PER FT.	19.7
EAST CONCRETE PARAPET	354.25' @ 0.0578 CU. YD. PER FT.	20.5
	TOTAL (CU. YD.)	40.2

CONCRETE PARAPET QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE BARRIER, PARAPET	L.F.	708.5

PARAPET NOTES:

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

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER. CONSTRUCTION JOINT SHALL BE SPACED A MINIMUM OF 1 FOOT FROM ANY ℄ FENCE POST.

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

★ PLACE 1 ADDITIONAL 5c1 BAR AT EACH ℄ FENCE POST BASE.

ALL PARAPET REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE PARAPET IS TO BE BID ON A LINEAR FOOT BASIS MEASURED FROM END TO END OF PARAPET. THE NUMBER OF LINEAR FEET OF PARAPET INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAR FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER, PARAPET" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE PARAPET IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE PARAPET. ALL PARAPET REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE PARAPET IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

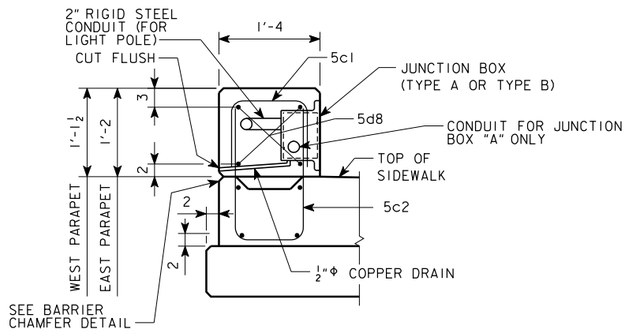
CROSS SECTIONAL AREA OF THE WEST PARAPET = 1.50 SQUARE FEET.

CROSS SECTIONAL AREA OF THE EAST PARAPET = 1.56 SQUARE FEET.

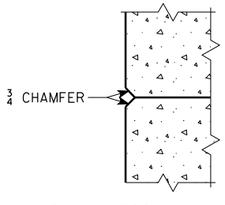
FINISHED PARAPET CONCRETE SHALL BE SMOOTH AND SHOW NO WOOD GRAIN OR OTHER TEXTURE FROM THE FACE OF THE FORMS USED. ALL COSTS FOR REPAIR OR COVERING OF WOOD GRAIN OR OTHER TEXTURES ON THESE SURFACES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

FOR JUNCTION BOX LOCATIONS AND LIGHTING DETAILS, SEE DESIGN SHEETS 43 TO 48.

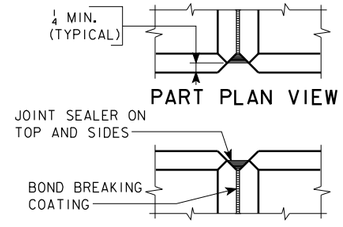
FOR FENCE POST LOCATIONS, SEE DESIGN SHEET 52.



PART SECTION A-A



BARRIER CHAMFER DETAIL



BARRIER RAIL JOINT DETAILS

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

CONCRETE PARAPET RAIL

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 49 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/RRP/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 50

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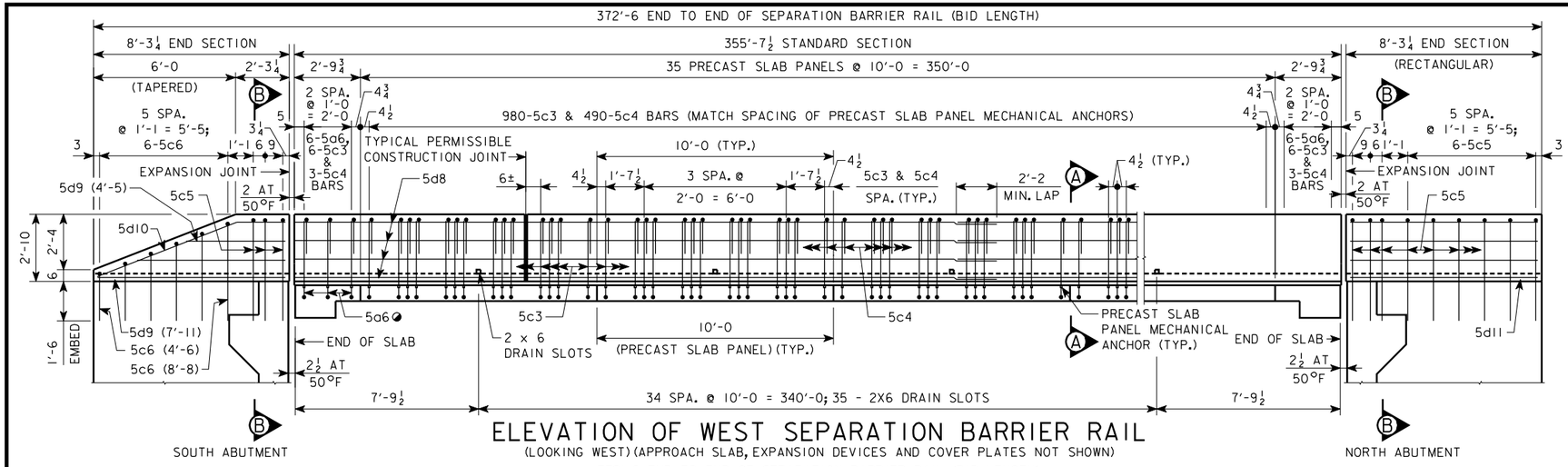
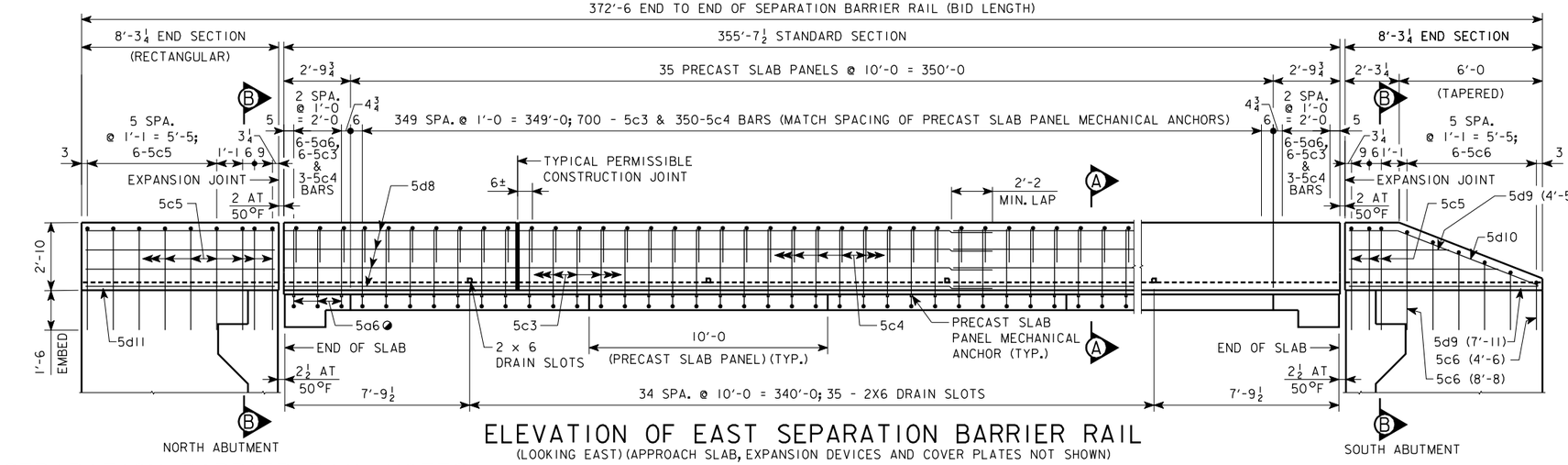


ELEVATION OF WEST SEPARATION BARRIER RAIL

(LOOKING WEST) (APPROACH SLAB, EXPANSION DEVICES AND COVER PLATES NOT SHOWN)



ELEVATION OF EAST SEPARATION BARRIER RAIL

(LOOKING EAST) (APPROACH SLAB, EXPANSION DEVICES AND COVER PLATES NOT SHOWN)

SEPARATION BARRIER RAIL NOTES

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL GRADE.

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

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

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

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

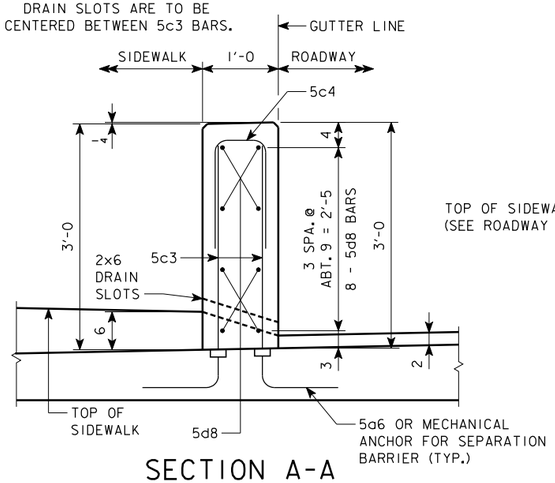
THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

THE SEPARATION BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER, REINFORCED, SEPARATION" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. ALL BARRIER RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

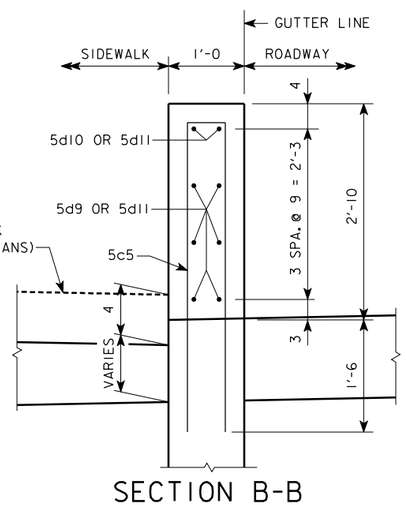
FINISHED SEPARATION BARRIER SHALL BE SMOOTH AND SHOW NO WOOD GRAIN OR OTHER TEXTURE FROM THE FACE OF THE FORM USED. ALL COSTS FOR REPAIR OR COVERING OF WOOD GRAIN OR OTHER TEXTURES ON THESE SURFACES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE SEPARATION BARRIER RAIL = 3.00 SQUARE FEET.

NOTE:
DRAIN SLOTS ARE TO BE CENTERED BETWEEN 5c3 BARS.



SECTION A-A

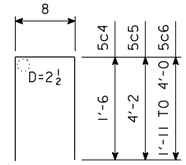


SECTION B-B

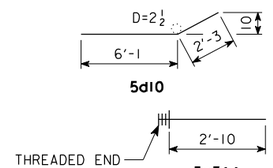
EPOXY REINF. STEEL-TWO SEP. RAILS

SECTION	BAR	LOCATION	SHAPE	LENGTH	WEST (PHASE 1) NO.	WEST (PHASE 1) WEIGHT	EAST (PHASE 2) NO.	EAST (PHASE 2) WEIGHT
STANDARD SECTION	5c3**	VERTICAL	——	2'-10	992	2932	712	2104
	5c4	VERTICAL	⊔	3'-8	496	1897	356	1361
	5d8	LONGITUDINAL	——	37'-7	80	3136	80	3136
2 END SECTIONS	5c5	VERTICAL	⊔	9'-0	12	113	12	113
	5c6	VERTICAL	⊔	VARIES	6	41	6	41
	5d9	LONGITUDINAL	——	VARIES	6	39	6	39
	5d10	LONGITUDINAL	／	8'-4	2	17	2	17
	5d11	LONGITUDINAL	——	7'-11	8	66	8	66
(INCLUDE WITH SUPERSTRUCTURE REINF.)				TOTAL (LBS.)	8241			6877

BENT BAR DETAILS



5c4, 5c5, 5c6



5d10

5c3** (SEE NOTE)

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

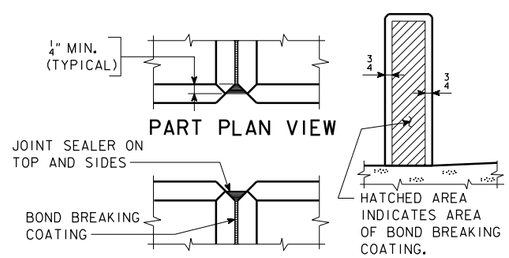
CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
STANDARD SECTION	711.25' @ 0.111 CU. YD. PER FT.	78.9
END SECTION (TAPERED)	2 @ 0.609 CU. YDS.	1.2
END SECTION (RECTANGULAR)	2 @ 0.868 CU. YDS.	1.7
	TOTAL (CU. YD.)	81.8

SEPARATION BARRIER RAIL QUANTITY

ITEM	UNIT	QUANTITY
CONCRETE BARRIER, REINFORCED, SEPARATION	L.F.	745.0

NOTE:
◕ 5a6 BARS ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.
**SEE NOTES ON DESIGN SHEET 40.



SEPARATION BARRIER RAIL JOINT DETAILS

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SEPARATION BARRIER RAIL

STA. 401+76+95.25 (24TH STREET)
STA. 7476+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 50 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM JPS/RRP/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 51

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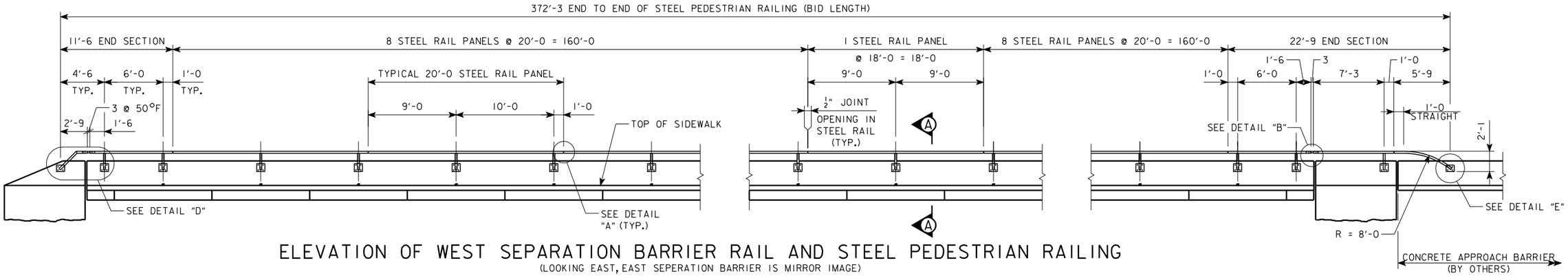
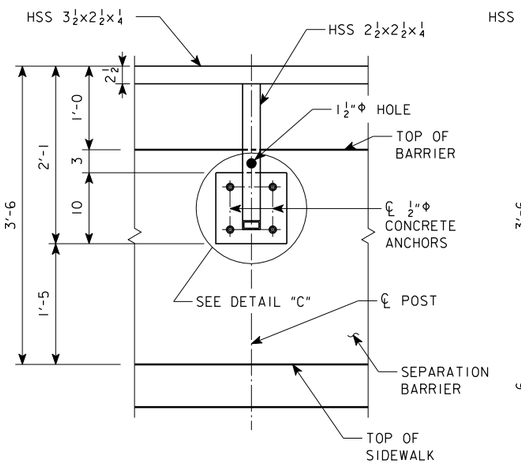
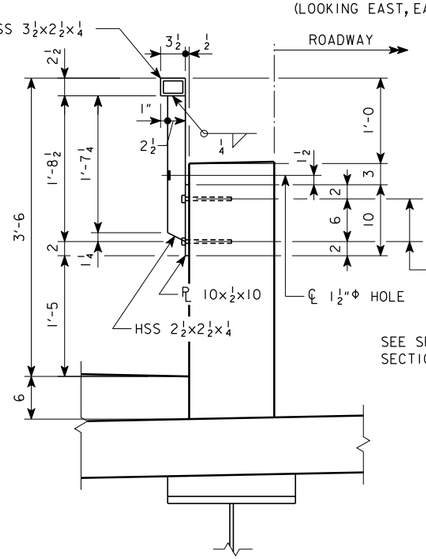


ELEVATION OF WEST SEPARATION BARRIER RAIL AND STEEL PEDESTRIAN RAILING

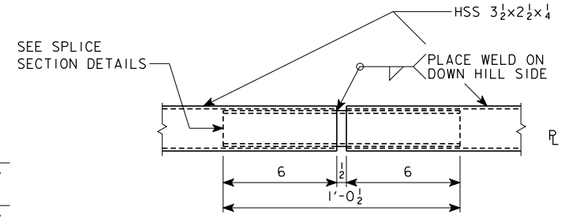
(LOOKING EAST, EAST SEPERATION BARRIER IS MIRROR IMAGE)



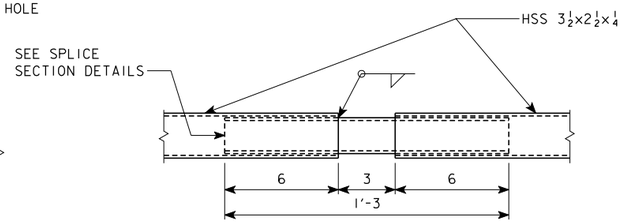
PART ELEVATION



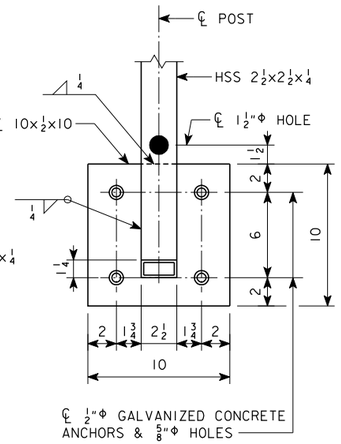
SECTION A-A



DETAIL "A"



DETAIL "B"



DETAIL "C"

QUANTITIES

ITEM	UNITS	AMOUNT
STRUCTURAL STEEL PEDESTRIAN HAND RAILING	LIN. FT.	372.3

STEEL PEDESTRIAN RAILING NOTES:

THE STRUCTURAL STEEL PEDESTRIAN RAILING IS TO BE BID ON A LINEAL FOOT BASIS MEASURED END TO END OF RAIL. THE PRICE BID FOR "STRUCTURAL STEEL PEDESTRIAN HAND RAILING" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING ANCHOR BOLTS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

THE MATERIAL FOR HOLLOW STRUCTURAL SECTIONS SHALL MEET THE REQUIREMENTS OF ASTM A500, GRADE B. STEEL PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-36. PANELS AND END SECTIONS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A-123.

ENDS OF RAIL SECTIONS ARE TO BE SAWED OR MILLED. ALL CUT ENDS ARE TO BE TRUE, SMOOTH, AND FREE OF BURRS OR RAGGED EDGES.

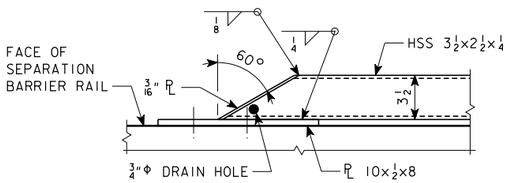
NO PAINTING WILL BE REQUIRED.

THE CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULL OUT STRENGTH OF 8000 POUNDS BASED ON 3500 PSI CONCRETE.

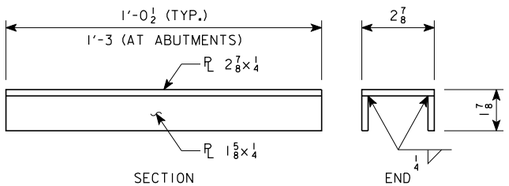
FOR DETAILS OF SEPARATION BARRIER RAIL SEE DESIGN SHEET 50.

DIMENSIONS SHOWN ARE ALONG ℄ RAILING AND ARE IN HORIZONTAL PLANE ONLY. CONTRACTOR SHALL ADJUST FOR SLOPE AND VERTICAL CURVE TO CONFORM TO THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE BRIDGE. POSTS SHALL BE SET PLUMB.

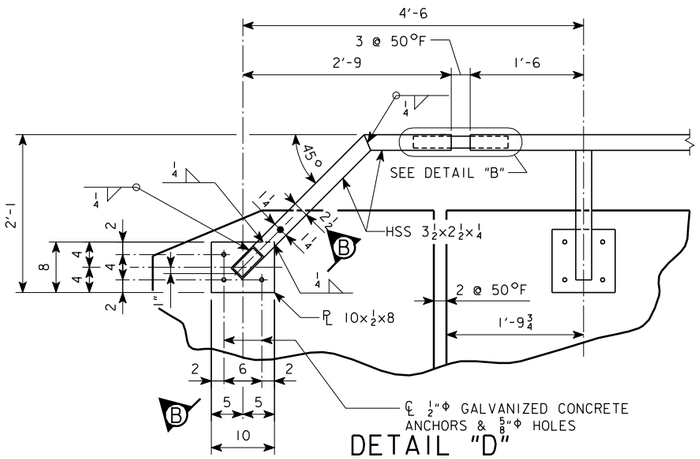
STEEL PEDESTRIAN HANDRAIL IS REQUIRED ON THE WEST SEPARATION BARRIER ONLY.



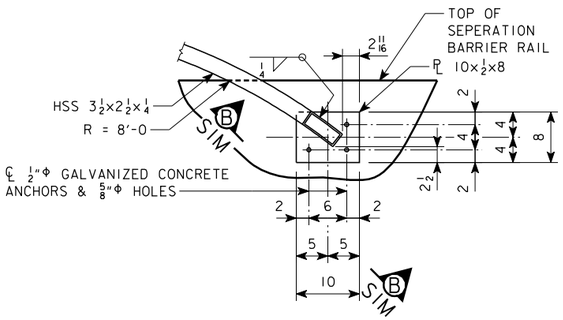
SECTION B-B



SPLICE SECTION



DETAIL "D"



DETAIL "E"

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

STEEL PEDESTRIAN RAILING

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

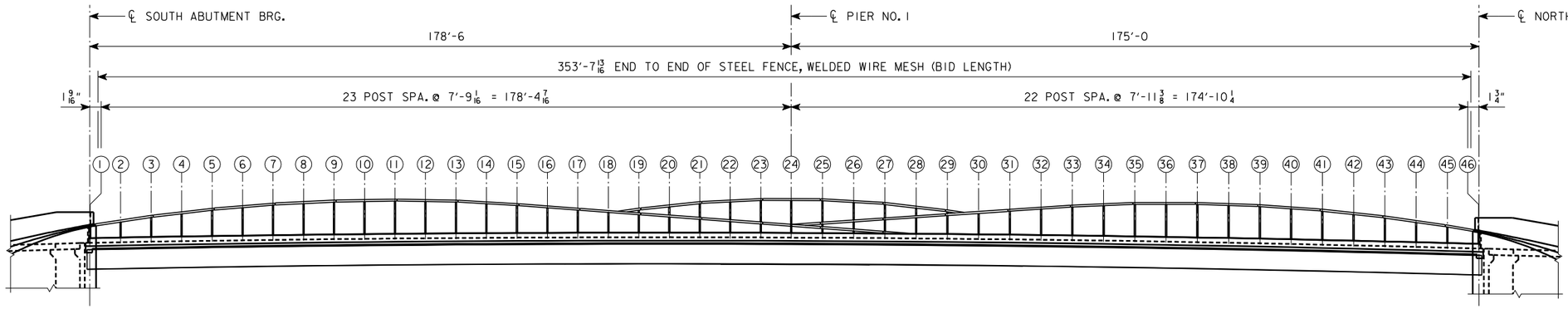
DESIGN SHEET NO. 51 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR

HDR Engineering, Inc.

DESIGN TEAM JPS/RRP/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 52

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



ELEVATION OF PEDESTRIAN FENCE

(OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)
(FENCE FABRIC NOT SHOWN)

FENCE NOTES:

ALL W5X19 POSTS AND WT2X6.5 ARE TO BE SET PLUMB.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF FENCE. ANCHORS ARE TO BE $\frac{5}{8}$" DIAMETER THREADED RODS CONFORMING TO ASTM A709M, GRADE 36. ANCHORS SHALL USE ONE OF THE FOLLOWING ANCHORING SYSTEMS:

1) HILTI HIT HY150/HIT-ICE WITH $7\frac{1}{2}\Phi$ INCH MINIMUM EMBEDMENT DEPTH.
2) SIMPSON STRONG-TIE ACRYLIC-TIE WITH $7\frac{1}{2}\Phi$ INCH MINIMUM EMBEDMENT DEPTH.
3) WEJ-IT INJECT-TITE WITH $9\frac{1}{2}$ INCH MINIMUM EMBEDMENT DEPTH.
4) APPROVED EQUAL.

ALL ANCHOR HARDWARE IS TO BE GALVANIZED PER THE STANDARD SPECIFICATIONS.

STRUCTURAL STEEL POSTS SHALL COMPLY WITH ASTM A572, GRADE 50. STRUCTURAL STEEL HOLLOW STRUCTURAL SECTIONS (HSS) SHALL COMPLY WITH ASTM A500, GRADE B. ALL OTHER STRUCTURAL STEEL MATERIALS SHALL COMPLY WITH ASTM A36, GRADE 36 MINIMUM.

ALL BURRS AND SHARP CORNERS OF STEEL FENCE COMPONENTS SHALL BE GROUND SMOOTH PRIOR TO GALVANIZING AND PAINTING.

ALL POSTS, POST BASE PLATES & SHIM PLATES, HSS8X6X$\frac{5}{16}$ RAILS AND TYPE 2 LATTICE FENCE MATERIALS ARE TO BE PAINTED AFTER GALVANIZING IN ACCORDANCE WITH THE "SUPPLEMENTAL SPECIFICATIONS FOR CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES". PAINT COLOR SHALL CONFORM TO FEDERAL STANDARD 595B, COLOR NUMBER 20040 (DARK BRONZE). PAINT SHALL BE EXCLUDED FROM ALL SURFACES OF THE STEEL ANGLE PANEL MOUNTING TABS FOR THE TYPE I FENCE BY MEANS OF MASKING. PAINT EDGES SHALL BE ALONG CLEAN STRAIGHT LINES AT MASKED SURFACES.

PROTECT ALL PAINTED SURFACES IMMEDIATELY AFTER PAINT HAS CURED. PROTECTION METHOD SHALL BE ADEQUATE TO PREVENT DAMAGE DURING STORAGE, HANDLING, SHIPPING TO THE INSTALLATION SITE, AND DURING THE INSTALLATION OF THE FENCING. DO NOT REMOVE THE PROTECTION UNTIL POTENTIAL DAMAGE TO THE PAINT IS LIMITED TO FINAL ASSEMBLY SURFACES ONLY. PERFORM TOUCH-UP REPAIR OF PAINT IN ACCORDANCE WITH THE "SUPPLEMENTAL SPECIFICATION FOR CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES." DO NOT PAINT ANCHORAGES OR FINAL INSTALLATION HARDWARE.

WIRE MESH PANELS AND ASSOCIATED CHANNEL AND ANGLE FRAME ASSEMBLIES FOR TYPE I FENCING SHALL NOT BE PAINTED, BUT SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. ALL FENCE HARDWARE ASSOCIATED WITH THE TYPE I FENCE SHALL BE GALVANIZED PER THE STANDARD SPECIFICATIONS.

NO SINGLE WIRE OF THE WELDED WIRE MESH SHALL BE WELDED TO THE FRAME AT BOTH ENDS OF THE WIRE.

THE WELDED WIRE MESH PANELS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A 123. GOOD STANDARD PRACTICES SHALL BE FOLLOWED IN ACCORDANCE WITH ASTM A143 AND ASTM A 384. PREPARE THE FABRICATED PANEL SURFACES BY ABRASIVE BLAST CLEANING TO A MINIMUM OF SSPC-SP-6 "COMMERCIAL BLAST CLEANING" PRIOR TO HOT-DIP GALVANIZING.

AFTER FABRICATION AND GALVANIZING, ALL FENCE MEMBERS SHALL BE STRAIGHT AND TRUE TO A TOLERANCE OF $\frac{1}{8}$" IN 10'. ANY STRAIGHTENING REQUIRED SHALL BE ACCOMPLISHED BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

CAULK FOR BASE PLATES SHALL BE WHITE NONSAG LATEX CAULK MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. EXCESS CAULK SHALL BE COMPLETELY REMOVED FROM THE SURROUNDING CONCRETE SURFACES.

ALL COSTS ASSOCIATED WITH THE FENCE, INCLUDING THE ANCHORAGES, SHALL BE INCLUDED IN THE PRICE BID FOR "STEEL FENCE, WELDED WIRE MESH."

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

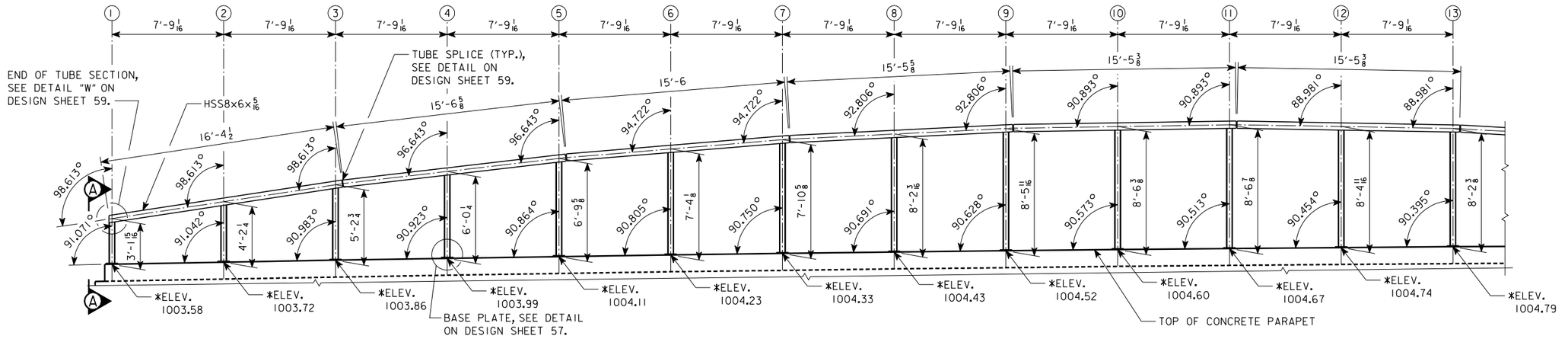
PEDESTRIAN FENCE ELEVATION

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 52 OF 62 FILE NO. 30169 DESIGN NO. 508

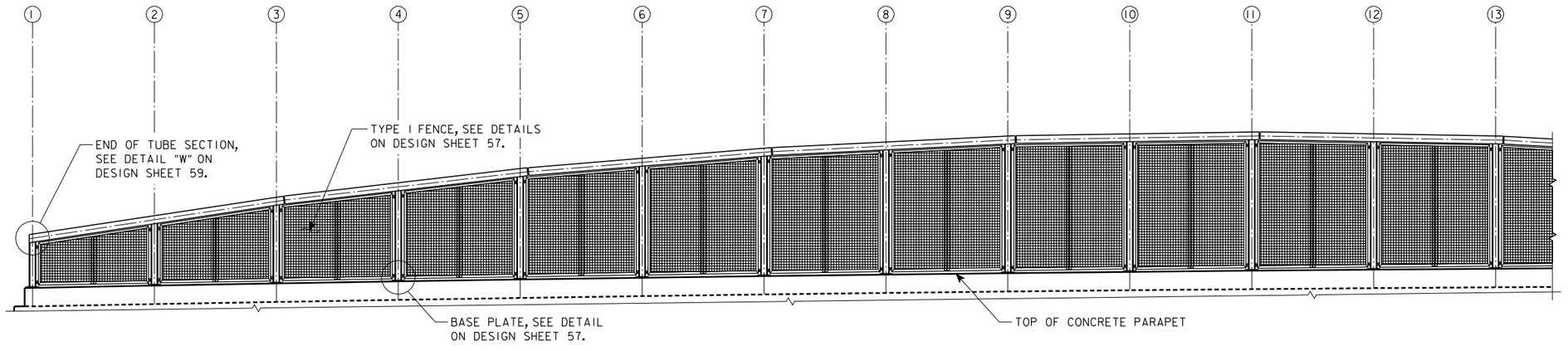


*ELEVATION IS GIVEN AT THE TOP OF THE CONCRETE PARAPET AT THE ℄ OF THE POST.

PART ELEVATION OF PEDESTRIAN FENCE

(FENCE FABRIC NOT SHOWN, OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

NOTE:
VERTICAL POST DIMENSIONS ARE MEASURED FROM TOP OF CONCRETE PARAPET TO THE CENTER OF HSS8x6x5/16.
FOR SECTION A-A, SEE DESIGN SHEET 56.



PART ELEVATION OF PEDESTRIAN FENCE

(OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178′-6 & 175′-0 SPANS

PEDESTRIAN FENCE DETAILS

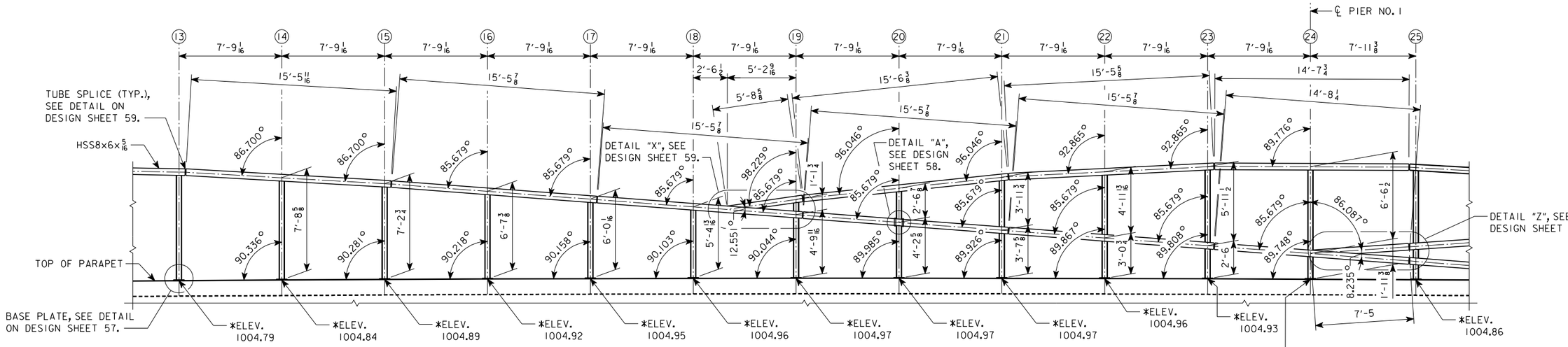
STA. 40176+95.25 (24TH STREET)
STA. 7476+95.25 (FUTURE I-80)

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 53 OF 62 FILE NO. 30169 DESIGN NO. 508

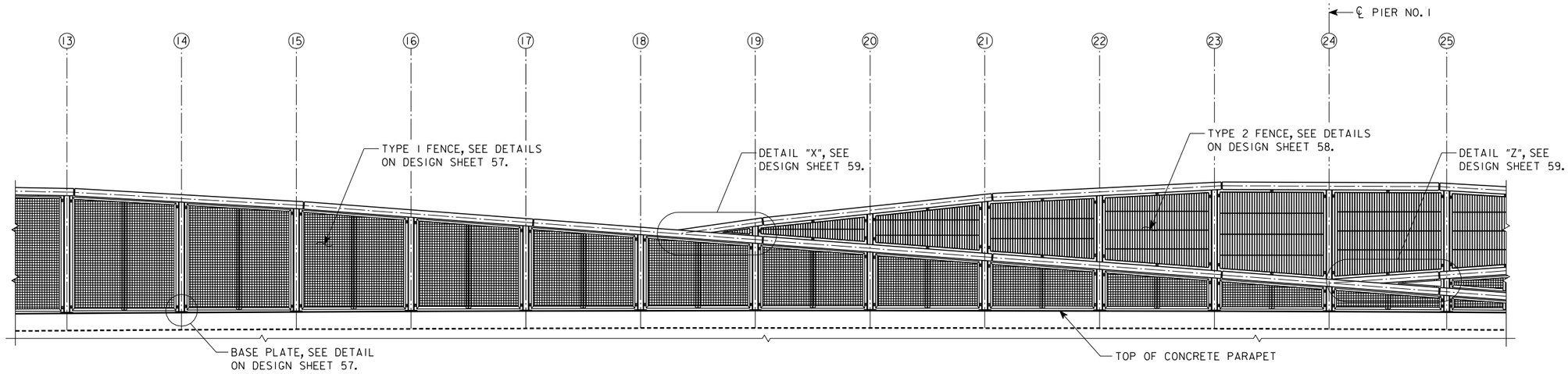


*ELEVATION IS GIVEN AT THE TOP OF THE CONCRETE PARAPET AT THE ℄ OF THE POST.

NOTE:
VERTICAL POST DIMENSIONS ARE MEASURED FROM TOP OF CONCRETE PARAPET TO THE CENTER OF HSS8x6x5/16 OR BETWEEN THE CENTERS OF HSS8x6x5/16.

PART ELEVATION OF PEDESTRIAN FENCE

(FENCE FABRIC NOT SHOWN, OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)



PART ELEVATION OF PEDESTRIAN FENCE

(OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178′-6 & 175′-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

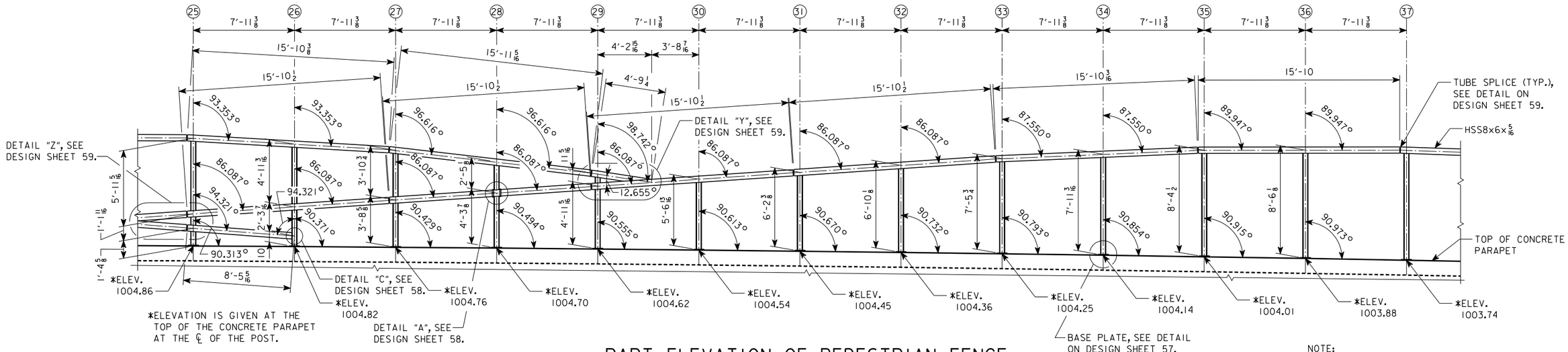
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 54 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM ATN/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 55

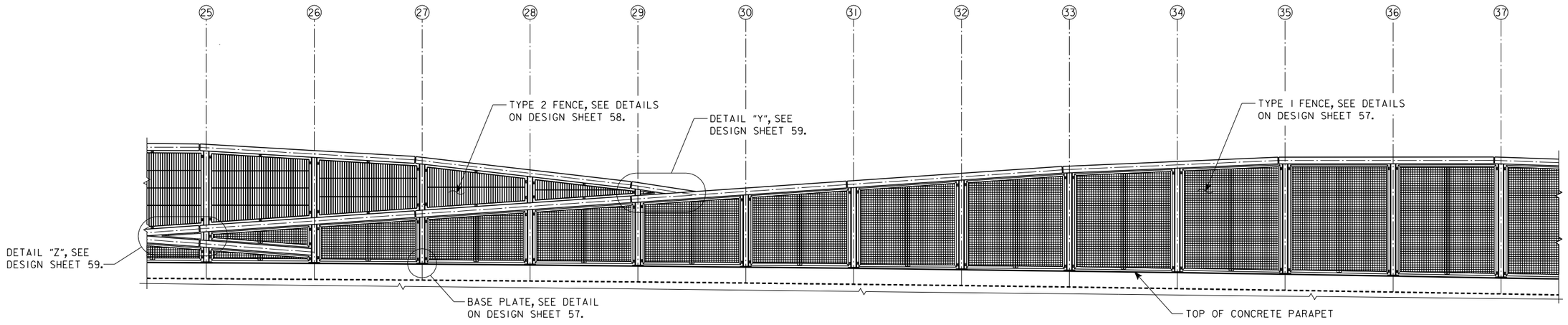
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



PART ELEVATION OF PEDESTRIAN FENCE

(FENCE FABRIC NOT SHOWN, OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

NOTE:
VERTICAL POST DIMENSIONS ARE MEASURED FROM TOP OF CONCRETE PARAPET TO THE CENTER OF HSS8x6x5/16 OR BETWEEN THE CENTERS OF HSS8x6x5/16.



PART ELEVATION OF PEDESTRIAN FENCE

(OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

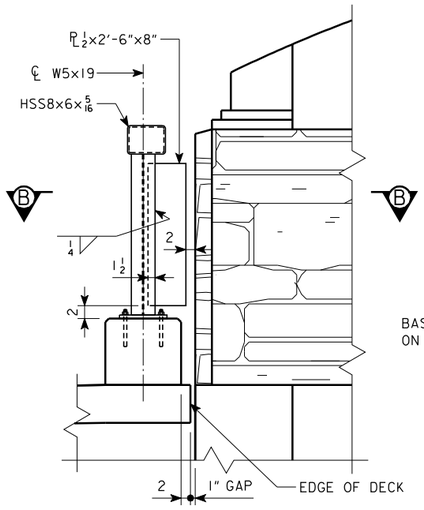
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

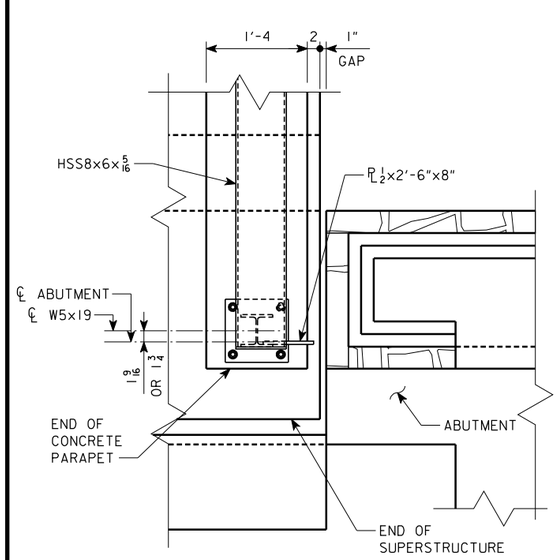
DESIGN SHEET NO. 55 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/HHK/ACB	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 56

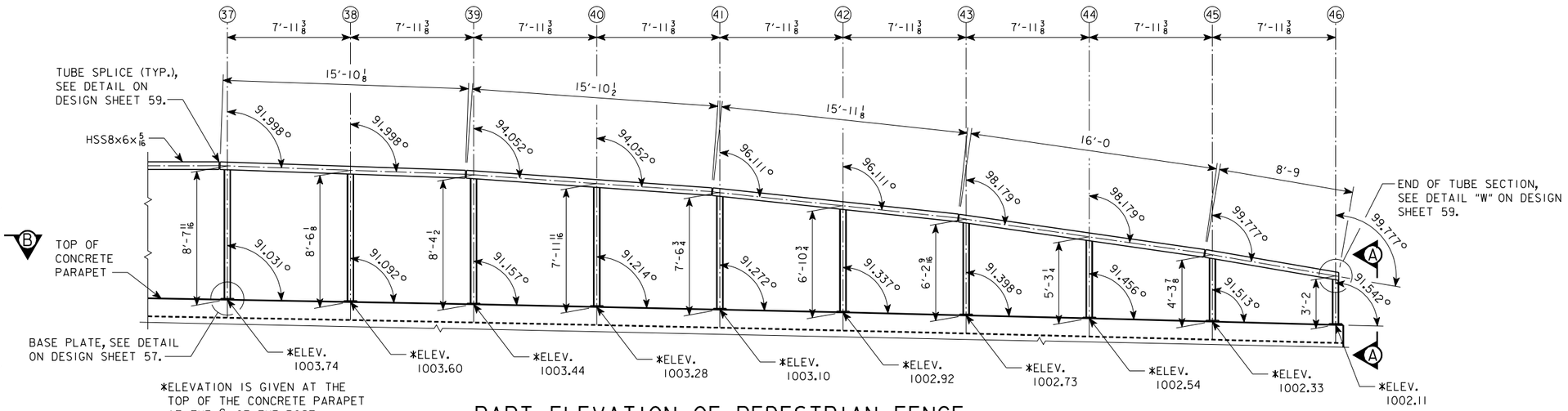
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



SECTION A-A



SECTION B-B

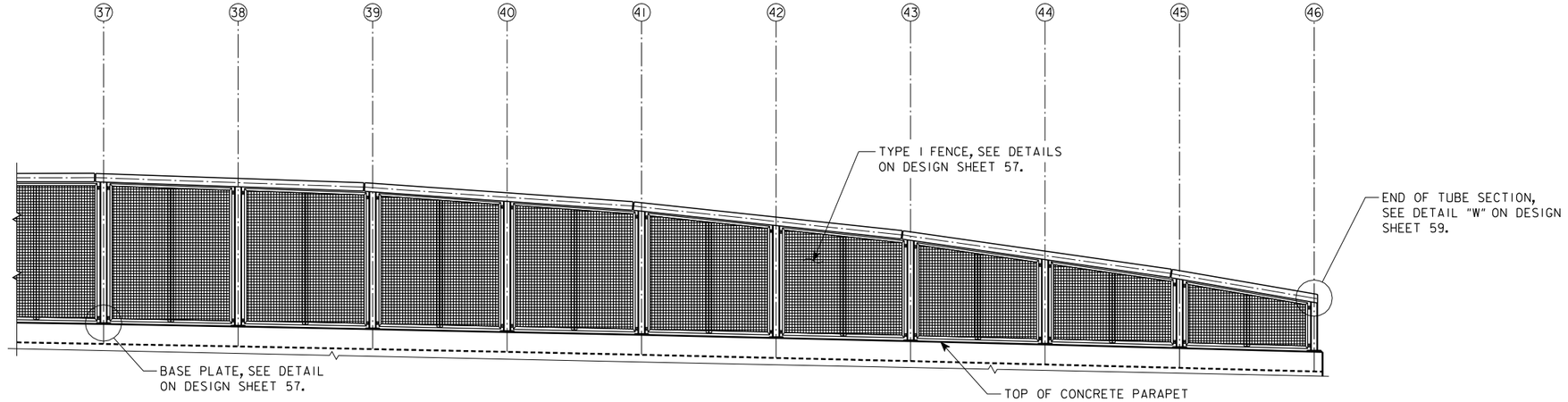


*ELEVATION IS GIVEN AT THE TOP OF THE CONCRETE PARAPET AT THE ℄ OF THE POST.

PART ELEVATION OF PEDESTRIAN FENCE

(FENCE FABRIC NOT SHOWN, OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

NOTE:
VERTICAL POST DIMENSIONS ARE MEASURED FROM TOP OF CONCRETE PARAPET TO THE CENTER OF HSS8x6x5/16.



PART ELEVATION OF PEDESTRIAN FENCE

(OUTSIDE OF EAST FENCE SHOWN, WEST FENCE SIMILAR - OPPOSITE HAND)

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 56 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR

HDR Engineering, Inc.

DESIGN TEAM ATN/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 57

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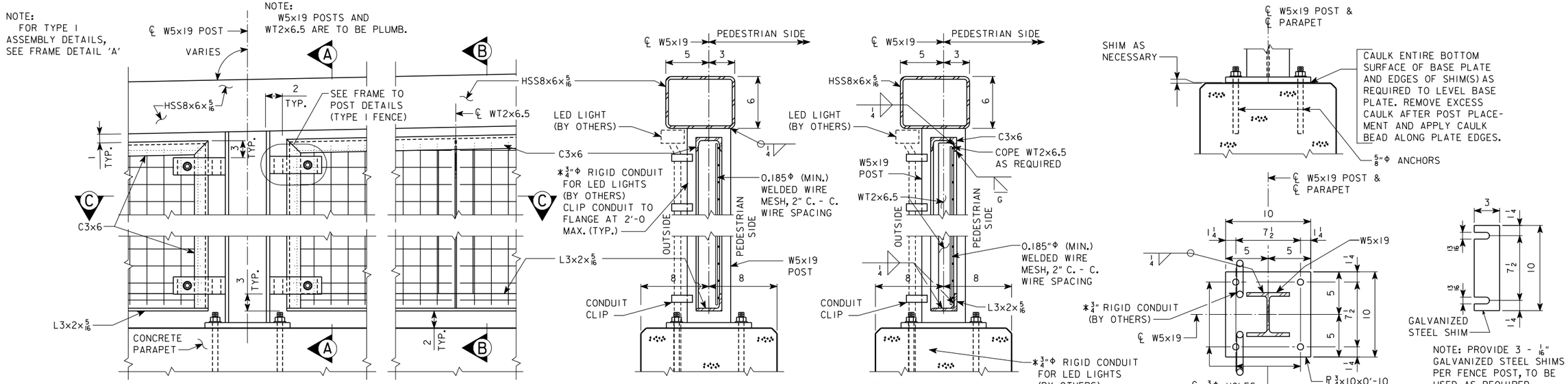


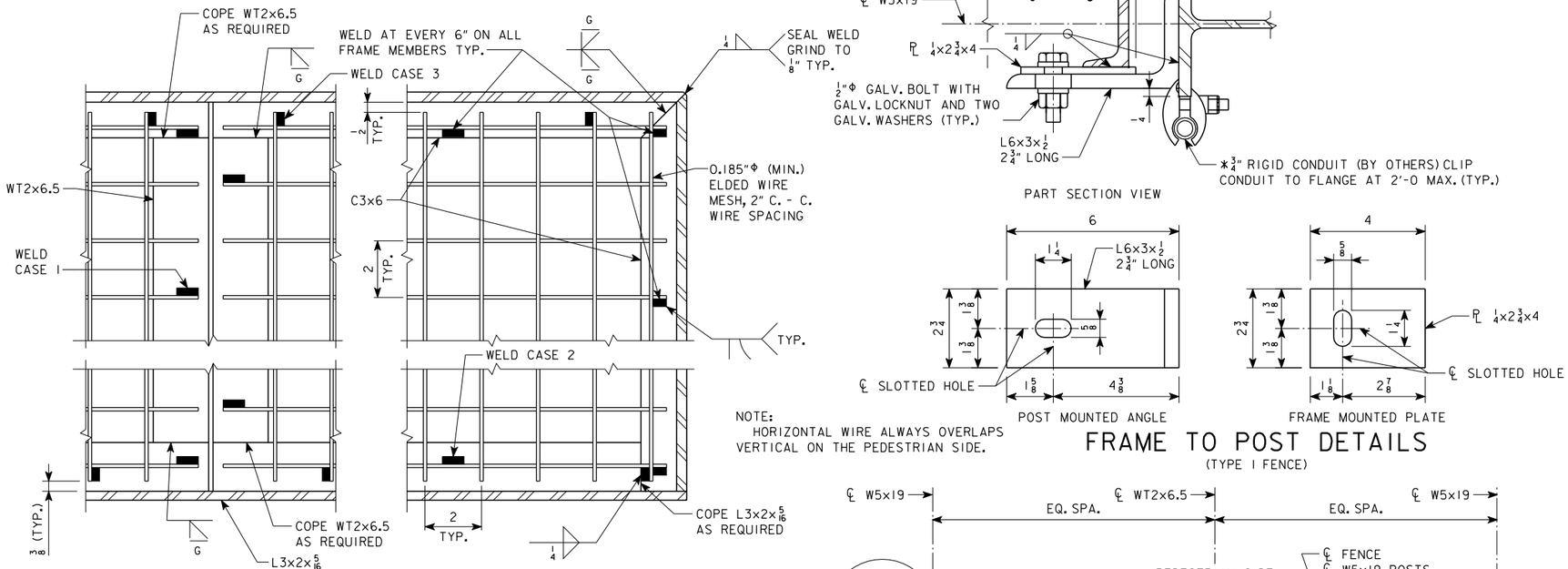
TYPE I FENCE SECTION - PART ELEVATION DETAIL

(OUTSIDE ELEVATION SHOWN)

PART SECTION A-A

PART SECTION B-B

POST BASE PLATE DETAILS



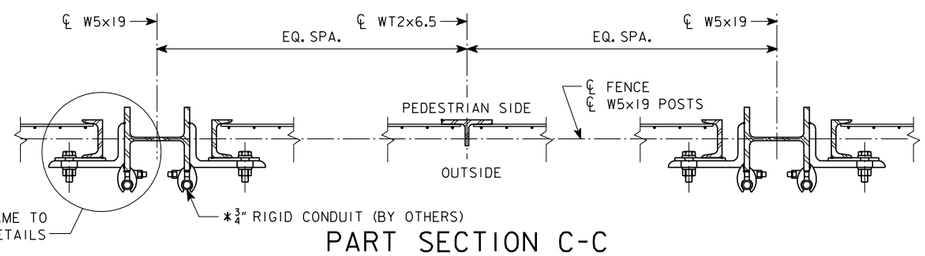
FRAME DETAIL 'A'

(BACK SIDE SHOWN - BACK FLANGE OF CHANNELS NOT SHOWN)

FRAME TO POST DETAILS

(TYPE I FENCE)

NOTE:
HORIZONTAL WIRE ALWAYS OVERLAPS VERTICAL ON THE PEDESTRIAN SIDE.



PART SECTION C-C

WIRE MESH WELD CASE DETAILS

SEE FRAME DETAIL 'A' FOR LOCATIONS

NOTE:
DO NOT WELD BOTH ENDS OF THE SAME WIRE TO THE FRAME.

*SEE ROADWAY LIGHTING SHEET AND BRIDGE DESIGN SHEET NO. 46 FOR LOCATION OF CONDUIT AND ADDITIONAL DETAILS.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

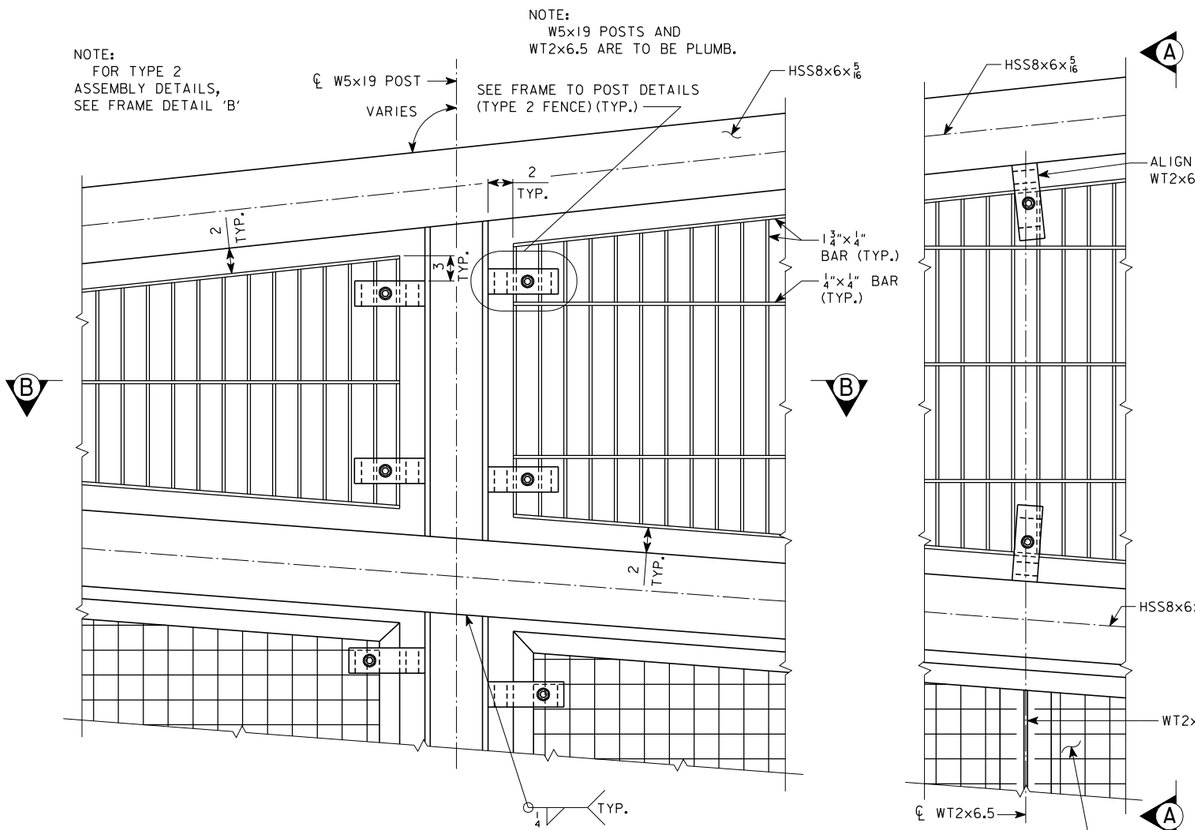
DESIGN SHEET NO. 57 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR Engineering, Inc.

DESIGN TEAM ATN/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 58

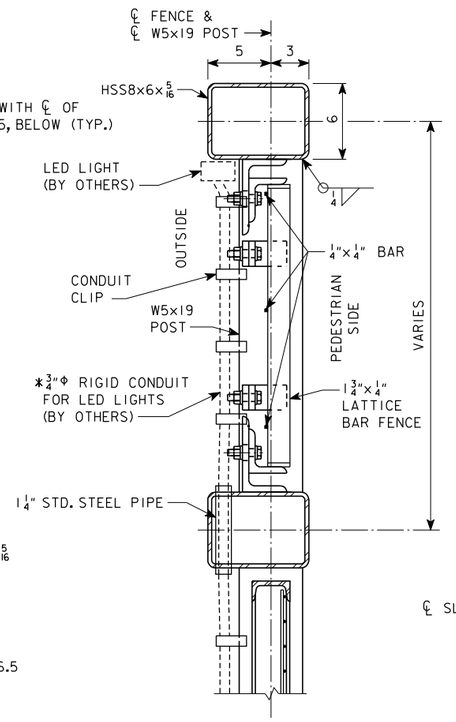
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

* SEE ROADWAY LIGHTING SHEET AND BRIDGE DESIGN SHEET NO. 46 FOR LOCATION OF CONDUIT AND ADDITIONAL DETAILS.

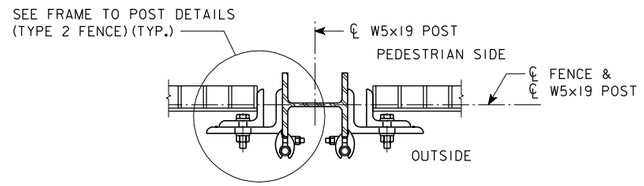


TYPE 2 FENCE SECTION - PART ELEVATION DETAIL

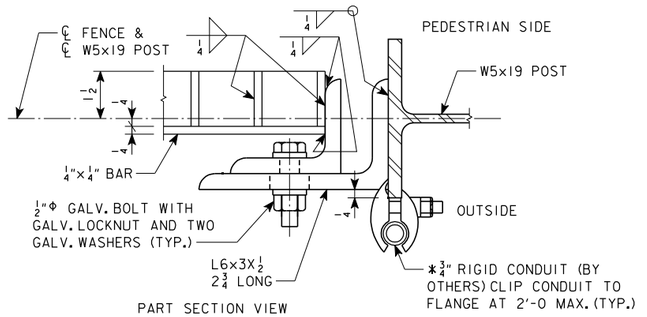
(OUTSIDE ELEVATION SHOWN)



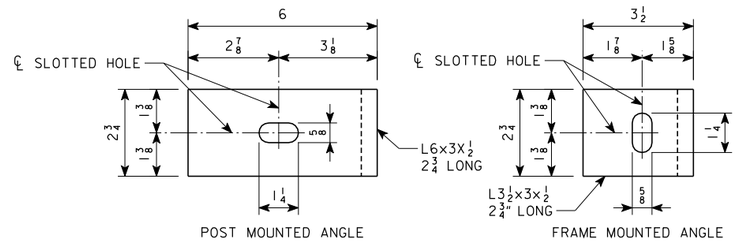
PART SECTION A-A



PART SECTION B-B

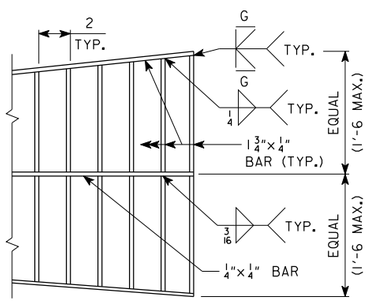


PART SECTION VIEW

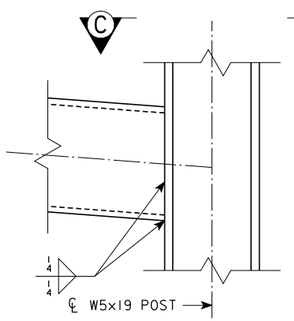


FRAME TO POST DETAILS

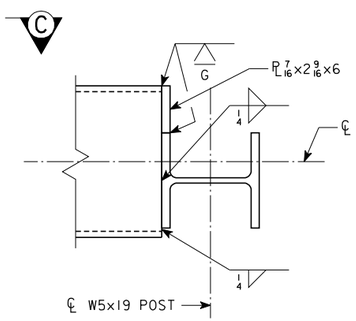
(TYPE 2 FENCE)



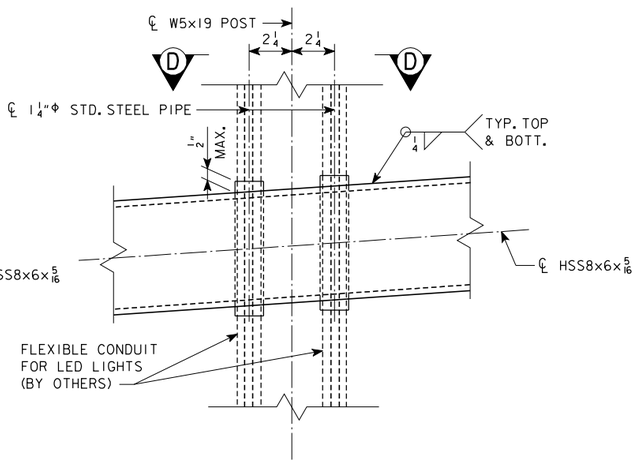
FRAME DETAIL "B"



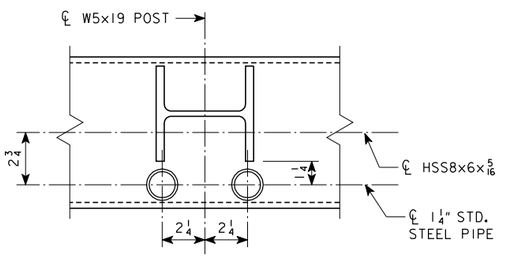
DETAIL "C"



SECTION C-C



DETAIL "A"



SECTION D-D

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

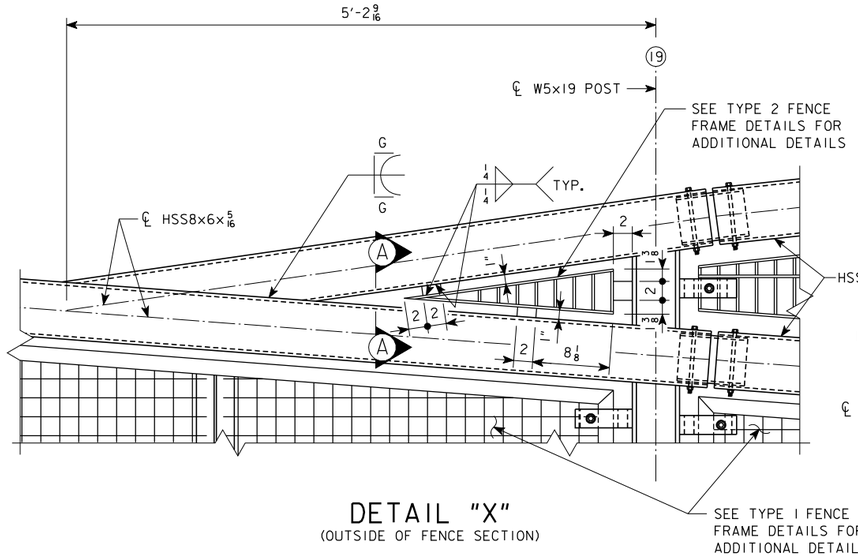
DESIGN SHEET NO. 58 OF 62 FILE NO. 30169 DESIGN NO. 508

HDR

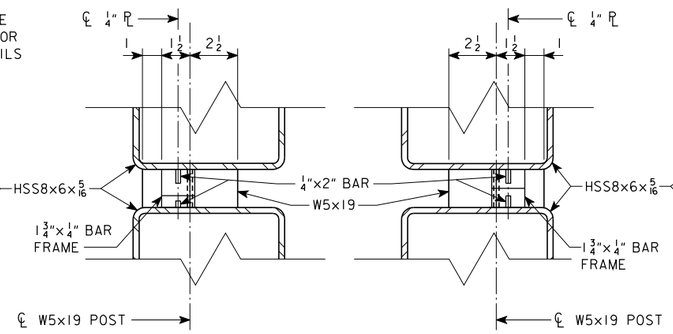
HDR Engineering, Inc.

DESIGN TEAM ATN/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 59

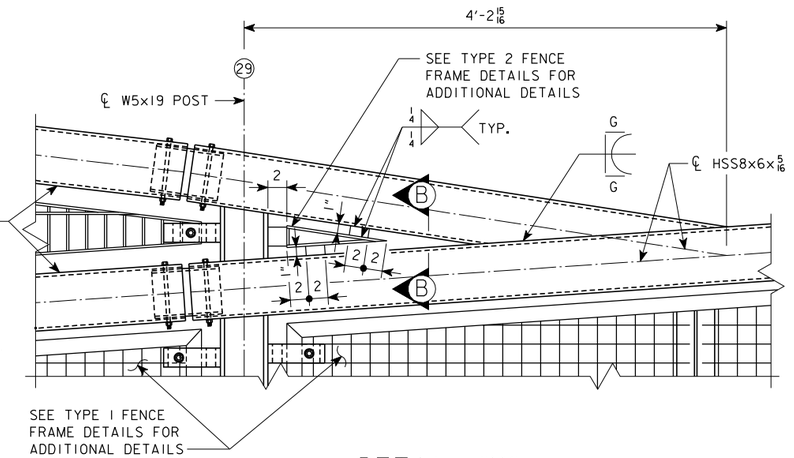
7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



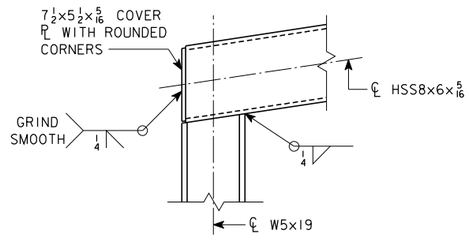
DETAIL "X"
(OUTSIDE OF FENCE SECTION)



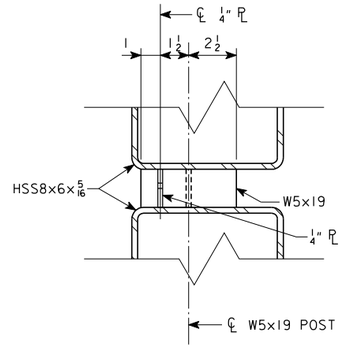
SECTION A-A SECTION B-B



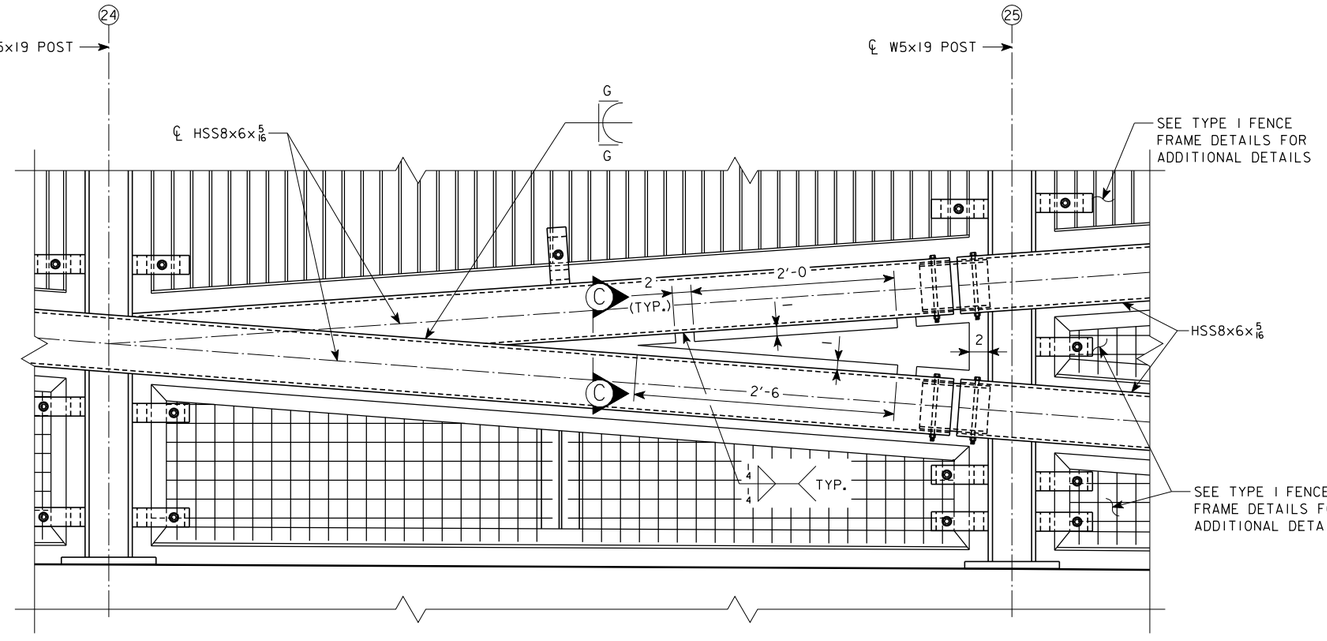
DETAIL "Y"
(OUTSIDE OF FENCE SECTION)



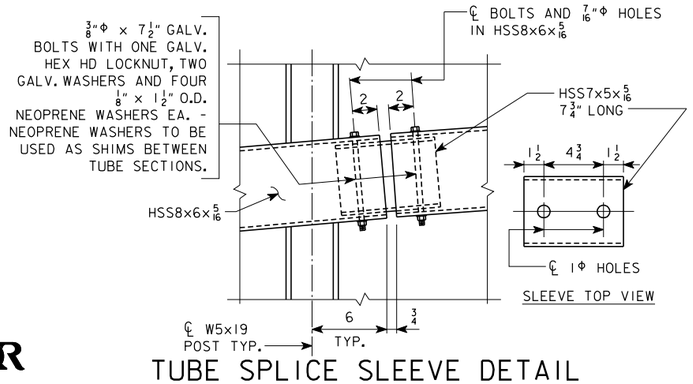
DETAIL "W"



SECTION C-C



DETAIL "Z"
(OUTSIDE OF FENCE SECTION)



TUBE SPLICE SLEEVE DETAIL
(FENCING MATERIAL NOT SHOWN FOR CLARITY)

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

PEDESTRIAN FENCE DETAILS

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

JUNE, 2007

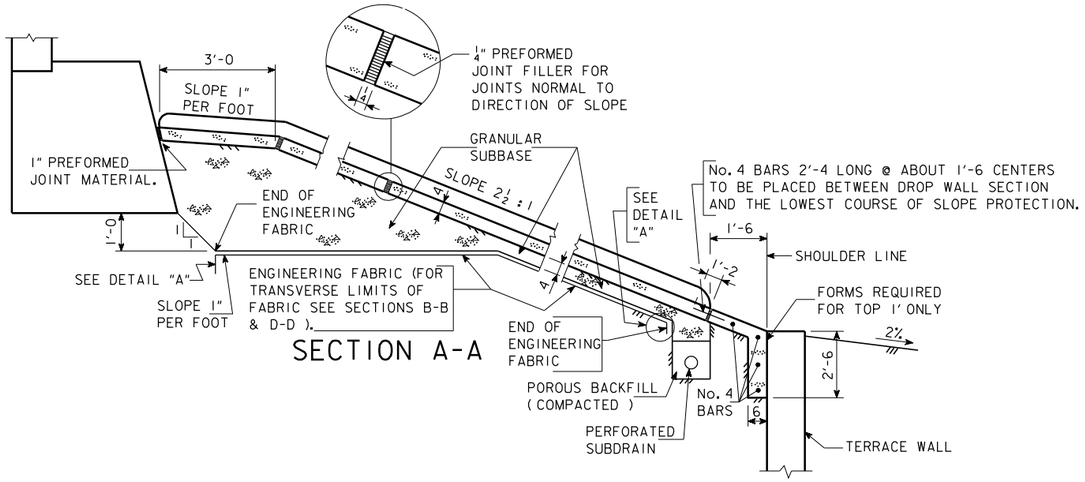
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

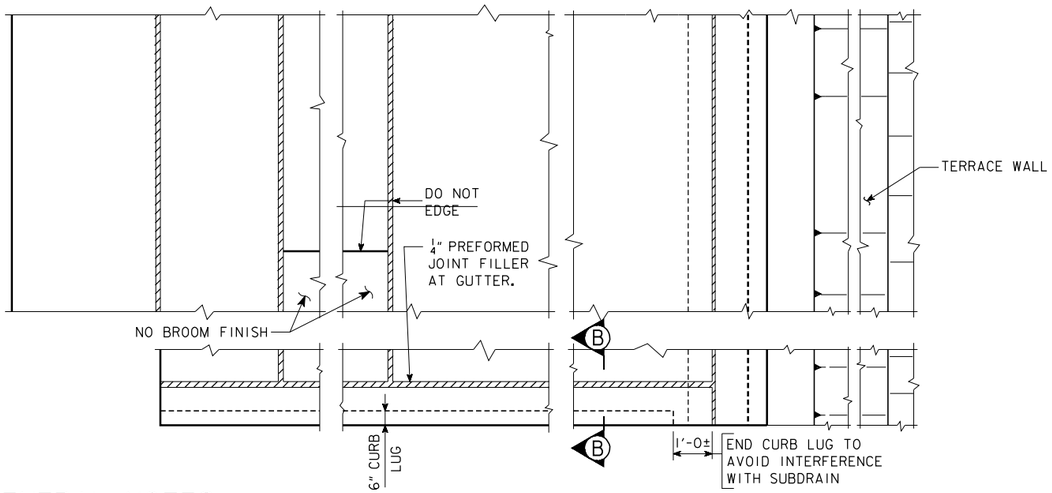
DESIGN SHEET NO. 59 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM ATN/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 60

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

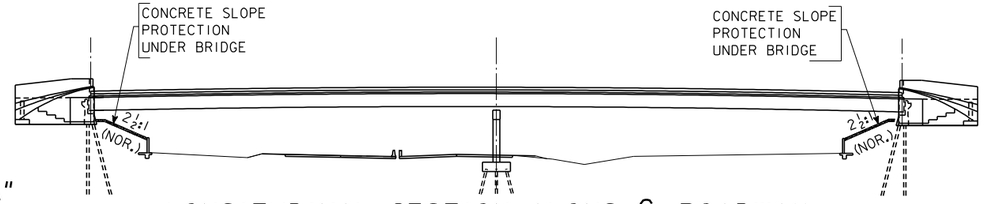


SECTION A-A

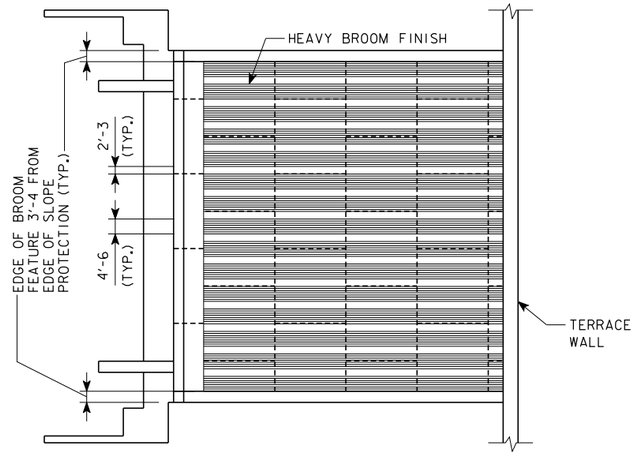


ENGINEERING FABRIC ENDS ARE TO BE BURIED 6" TO PREVENT UNDERMINING.

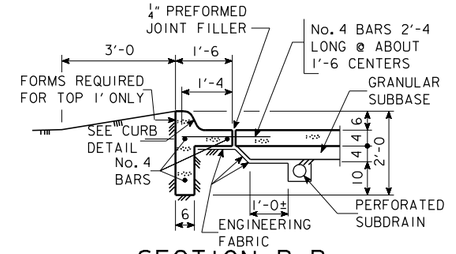
DETAIL "A"



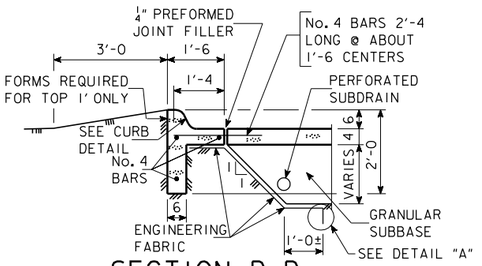
LONGITUDINAL SECTION ALONG ℄ ROADWAY



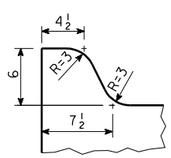
PLAN VIEW OF BROOM FINISH PATTERN ON CONCRETE SLOPE PROTECTION



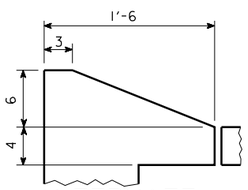
SECTION B-B
(THROUGH 4" THICK GRANULAR SUBBASE)



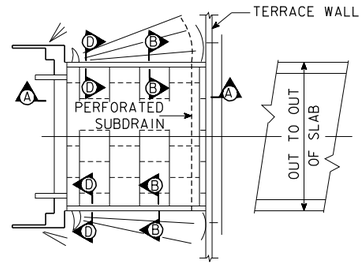
SECTION D-D
(THROUGH VARIABLE THICKNESS GRANULAR SUBBASE)



CURB DETAIL



ALTERNATE CURB DETAIL



SLOPE PROTECTION LAYOUT 0° SKEW

ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
CONCRETE SLOPE PROTECTION	SOUTH ABUT.	308 SQ.YDS.
CONCRETE SLOPE PROTECTION	NORTH ABUT.	264 SQ.YDS.
	TOTAL	572 SQ.YDS.

ITEMS TO BE INCLUDED IN "CONCRETE SLOPE PROTECTION":
- ENGINEERING FABRIC
- GRANULAR SUBBASE
- CLASS "C" STRUCTURAL CONCRETE
- #4 REINFORCING
- PREFORMED JOINT FILLER
- EXCAVATION, SHAPING AND COMPACTING
- COMMERCIAL BITUMINOUS PATCHING MATERIAL.

GENERAL NOTES:

THIS PLAN SHEET SHOWS DETAILS FOR PLACING A PORTLAND CEMENT CONCRETE SLOPE PROTECTION UNDER OVERHEAD STRUCTURES.

THE CURRENT SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION SHALL APPLY WITH MODIFICATIONS OR ADDITIONS LISTED BELOW :

FINISH - CLASS 1, FLOATED SURFACE FINISH.

CURE - CURE AS PER CURRENT SPECIFICATIONS.

GRANULAR SUBBASE - THIS PREWETTED MATERIAL SHALL BE DEPOSITED BY A METHOD APPROVED BY THE ENGINEER AND BE THOROUGHLY TAMPED OR VIBRATED TO INSURE COMPACTION. FINISHED SHAPE SHALL BE AS SHOWN IN SECTION A-A.

FORESLOPE PREPARATION - THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN IN SECTION A-A ON THIS SHEET. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND GRANULAR SUBBASE ARE PLACED.

ENGINEERING FABRIC SHALL MEET REQUIREMENTS OF 4196.01 B. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE CAST IN PLACE CONCRETE IS TO BE POURED IN APPROXIMATELY 10' WIDE COURSES, BUT ALL COURSES ON ONE SLOPE SHOULD HAVE APPROXIMATELY EQUAL WIDTHS. ADJACENT COURSES SHALL NOT BE POURED WITHIN 15 HOURS OF ONE ANOTHER. THE JOINTS IN THE DIRECTION OF THE SLOPE ARE TO BE STAGGERED ABOUT ½ BLOCK WIDTH.

PAYMENT FOR "CONCRETE SLOPE PROTECTION" WILL BE MADE ON A SQUARE YARD BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE YARD IS TO INCLUDE COSTS OF ALL MATERIALS AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION AS SHOWN ON THESE PLANS. THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING, AS DIRECTED BY THE ENGINEER, SHALL BE CONSIDERED INCIDENTAL TO PLACING THE CONCRETE SLOPE PROTECTION.

WHERE EROSION CONTROL WORK IS COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL AREAS IN ACCORDANCE WITH SECTION 2601 OF THE CURRENT STANDARD SPECIFICATIONS, AT HIS EXPENSE.

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

DESIGN:

THE HEAVY BROOM FINISH FEATURES SHALL BE PARALLEL TO THE BRIDGE DECK CENTERLINE, IN APPROXIMATELY EQUAL SPACED WIDTHS OF 4'-6, WITH CLEAR SPACINGS BEING HALF THE WIDTH OF THE BROOMED SECTIONS.

FINISH:

THE INTENT OF THE ARCHITECTURAL BROOM FINISH IS TO CREATE A HIGHLY VISUAL AND TEXTURAL CONTRAST BETWEEN THE BROOMED AND FLOATED CONCRETE SURFACES.

THE BROOM FINISH SHALL CONSIST OF TWO OR MORE PASSES WITH A STIFF FINISHING BROOM OR RAKE. BROOMING SHALL BE SUFFICIENT TO PROVIDE A ROUGH TEXTURE, OF APPROXIMATELY ¼ INCH IN DEPTH, BUT SHALL NOT RESULT IN EXPOSURE OR DISLOCATION OF THE COARSE AGGREGATE IN THE CONCRETE.

THE PORTIONS OF THE CONCRETE SLOPE PROTECTION NOT BROOM FINISHED SHALL BE CLASS 1, FLOATED SURFACE FINISH.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

CONCRETE SLOPE PROTECTION

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 60 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/ACB	CONCRETE SLOPE PROTECTION (STUB ABUTMENTS)	STANDARD SHEET 1006 (MODIFIED)	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 61

7/23/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

ABUTMENT BACKFILL PROCESS:

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

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

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

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

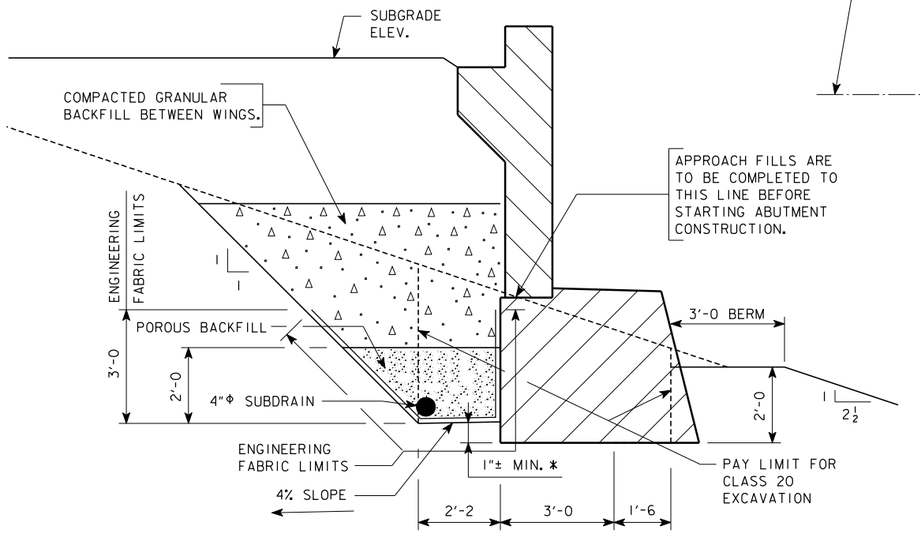
THE REMAINING WORK INVOLVES BACKFILLING WITH GRANULAR BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE GRANULAR BACKFILL MATERIAL SHALL HAVE 4% OR LESS PASSING THE #200 SIEVE (I.E. WASHED CONCRETE SAND). THE GRANULAR BACKFILL WILL REQUIRE PLACEMENT IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND THEN FOLLOWED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FOOT OF THICKNESS.

TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FROM A 2 INCH DIAMETER HOSE FOR 5 MINUTES SHOULD BE SPRAYED ON EACH SAND LIFT AT INCREMENTS NOTED. SURFACE FLOODING IS TO START AT THE HIGH END OF THE SUBDRAIN AND PROGRESS INCREMENTALLY TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TYPICAL SPACING FOR THE SURFACE FLOODING (5 MINUTE INTERVALS) SHOULD BE APPROXIMATELY AT 6 FOOT TO 8 FOOT INCREMENTS.

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

TECHNICAL DATA INFORMATION - GEOTEXTILE FABRIC

MECHANICAL PROPERTIES	TEST METHOD	UNIT	MINIMUM AVERAGE ROLL VALUE	
			MD	CD
TENSILE STRENGTH (AT 5% STRAIN)	ASTM D 4595	kN/m (LBS/FT)	19.8 (1356)	19.8 (1356)
PERMEABILITY	ASTM D 4491	CM/SEC	0.038	
FLOW RATE	ASTM D 4491	$L/MIN/m^2$ ($GAL/MIN/FT^2$)	733 (18)	
UV RESISTANCE (AT 500 HOURS)	ASTM D 4355	% STRENGTH RETAINED	70	

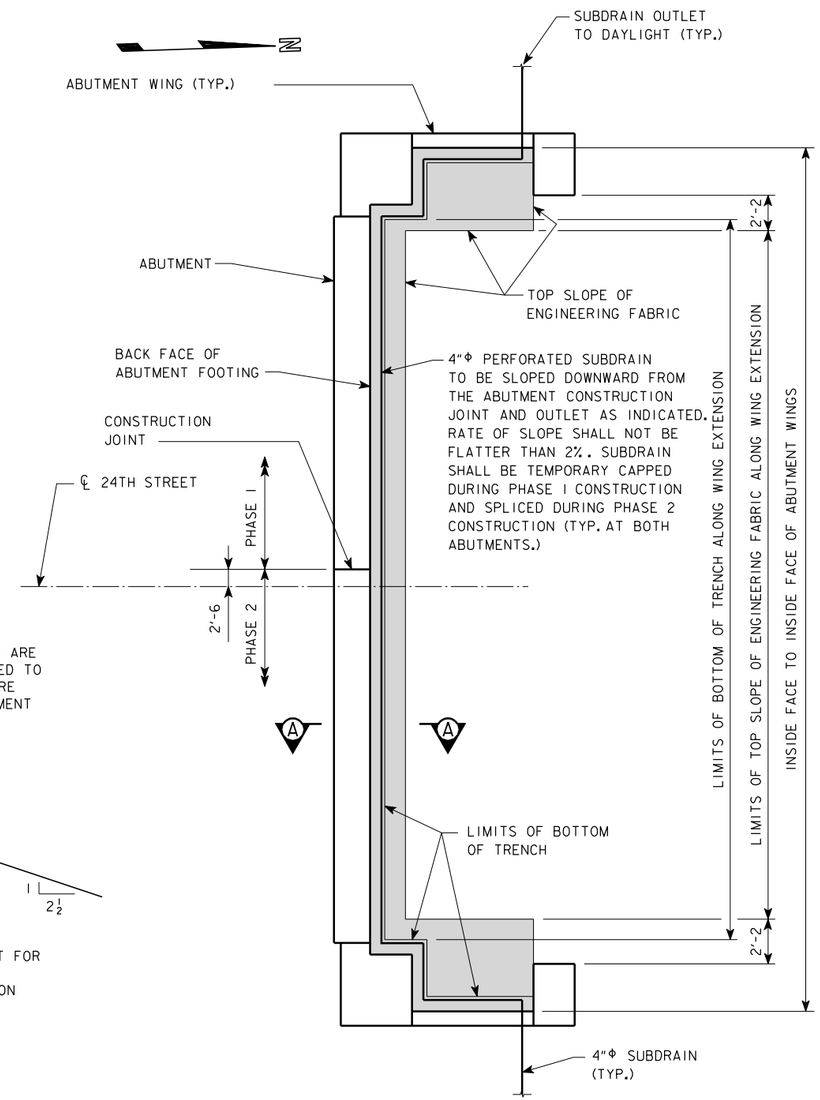


SECTION A-A

GRANULAR BACKFILL DETAILS

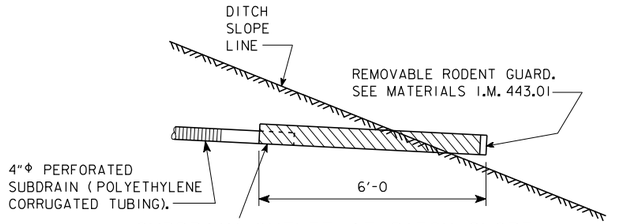
NOTE: ENGINEERING FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WINGS.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.



SITUATION PLAN

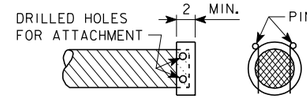
SHOWING SUBDRAIN LOCATIONS



SUBDRAIN OUTLET AT DITCH SLOPE

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.



REMOVABLE RODENT GUARD DETAILS

OUTLET DETAILS

SUBDRAIN NOTES:

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

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AROUND THE ABUTMENT AS DETAILED ON THIS SHEET. 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 SUBDRAINS (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.

HDR

HDR Engineering, Inc.

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

ABUTMENT BACKFILL AND SUBDRAIN DETAILS

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

JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 61 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM RRP/JPS/DHS		POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 62

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COLORED SEALER COATINGS NOTES:

PRIOR TO BEGINNING ANY CONCRETE SEALER COATING WORK ON THE ACTUAL PROJECT, THE MOCKUP PANEL CREATED TO DEMONSTRATE THE SIMULATED STONE TEXTURES ON THE PIERS SHALL BE USED TO DEMONSTRATE THE PREPARATION, APPLICATION METHODS AND RESULTS FOR CONCRETE STAINING. BEGIN WORK ON THE ACTUAL COATING APPLICATION ONLY AFTER FINAL APPROVAL BY THE ENGINEER.

ALL CONCRETE SURFACES NOTED AND SHOWN IN ON THIS SHEET WILL RECEIVE APPLICATION OF COLORED SEALER COATING. CONCRETE COATING WORK SHALL BE IN ACCORDANCE WITH THE DEVELOPMENTAL SPECIFICATION, "COLORED SEALER COATING FOR STRUCTURAL CONCRETE".

THERE ARE THREE COLORS OF CONCRETE SEALER COATING TO BE USED ON THE PIERS AND ONE COLOR TO BE USED ON THE ABUTMENTS. IN ADDITION, THE SIMULATED STONE TEXTURES ON THE PIERS WILL RECEIVE A THREE-COAT SYSTEM OF PENETRATING STAIN TO SIMULATE THE NATURAL TONES AND VARIATIONS OF THE STONE. APPEARANCE OF THE SIMULATED STONE TEXTURE IS INTENDED TO CLOSELY MATCH THE STONE VENEER USED ON THE ABUTMENT WINGS. SEE DETAILS ON THIS DESIGN SHEET FOR SPECIFIC COLOR LOCATIONS AND LIMITS. "COLOR NO. 1" SHALL BE A LIGHT BUFF COLOR, "COLOR NO. 2" AND "COLOR NO. 3" SHALL BE IN THE SAME COLOR FAMILY AS "COLOR NO. 1" WITH INCREASINGLY DARKER HUES. "COLOR NO. 4" SHALL BE A FULL RANGE OF NATURAL STONE COLORS WITH A FIRST COAT COLOR OF LIGHT OR MEDIUM BUFF AND INCLUDING SUBTLE COLOR VARIATIONS, MINERAL OXIDATION AND STAINING. THE FINAL COLORATION OF THE CONCRETE SURFACE SHALL ACCURATELY SIMULATE THE APPEARANCE OF REAL STONE INCLUDING THE MULTIPLE COLORS, SHADES, FLECKING, AND VEINING THAT ARE APPARENT IN REAL LIMESTONE. USE AT LEAST THREE COLOR SHADES TO SIMULATE THE APPEARANCE OF STONE. BEGIN WITH A BASE COLOR APPLICATION OF LIGHT BUFF. APPLY A SLIGHTLY LIGHTER OR DARKER BASE COLOR TO RANDOM STONES PRIOR TO ADDING THE COLOR VARIATIONS. WHEN ALL STONE COLORS HAVE BEEN APPLIED, APPLY A LIGHT GREY COLOR TO THE SIMULATED MORTARED JOINTS. THE GREY COLOR SHALL MATCH OR BE SLIGHTLY LIGHTER THAN THE PLAIN CONCRETE SURFACES OF THE STRUCTURE. APPLY JOINT COLOR NEATLY AND ONLY TO THE BOTTOM SURFACE OF SIMULATED JOINTS. SUBMIT PRODUCT SPECIFICATION SHEETS AND COATED CONCRETE SAMPLES AS DESCRIBED IN THE DEVELOPMENTAL SPECIFICATION.

MASK ADJACENT CONCRETE SURFACES THAT WILL NOT RECEIVE COATING. NO OVERSPRAY OR CONTAMINATION OF ADJACENT SURFACES IS ALLOWED.

AFTER ALL COLORED SEALER COATING WORK IS COMPLETED, THE TEXTURE MOCKUP PANEL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED FROM THE SITE.

COLORED SEALER COATING SURFACE AREA TABULATION:

COLOR NO. 1
PIER 277.6 SY
ABUTMENTS 285.3 SY
SUPERSTRUCTURE 908.3 SY

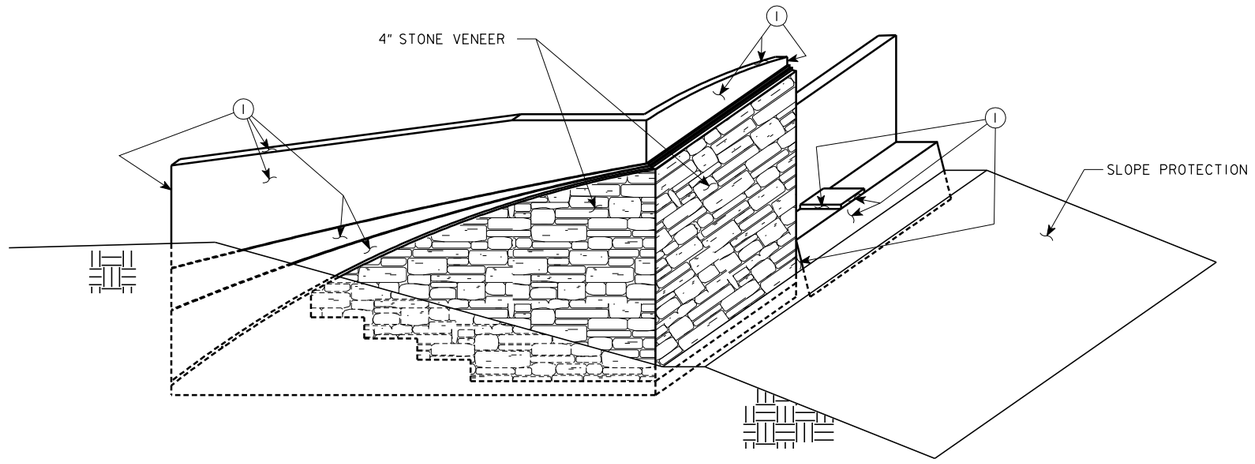
COLOR NO. 2
PIER 5.6 SY

COLOR NO. 3
PIER 6.2 SY

COLOR NO. 4
SIMULATED STONE ON PIER 228.0 SY

TOTAL 1711.0 SY

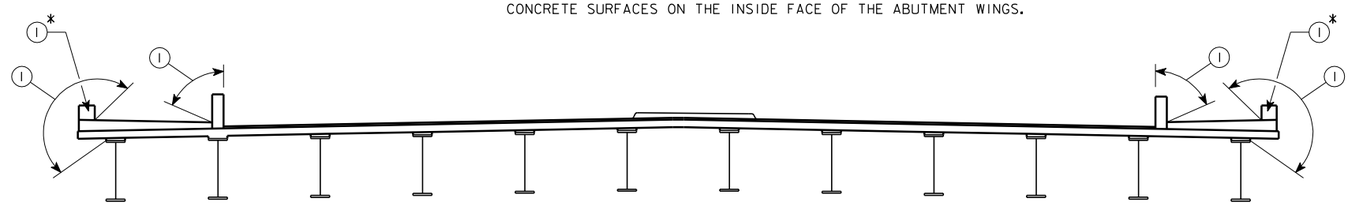
ALL COSTS ASSOCIATED WITH CONCRETE SEALER COATING ARE TO BE INCLUDED IN THE BID ITEM "COLORED SEALER COATING FOR STRUCTURAL CONCRETE".



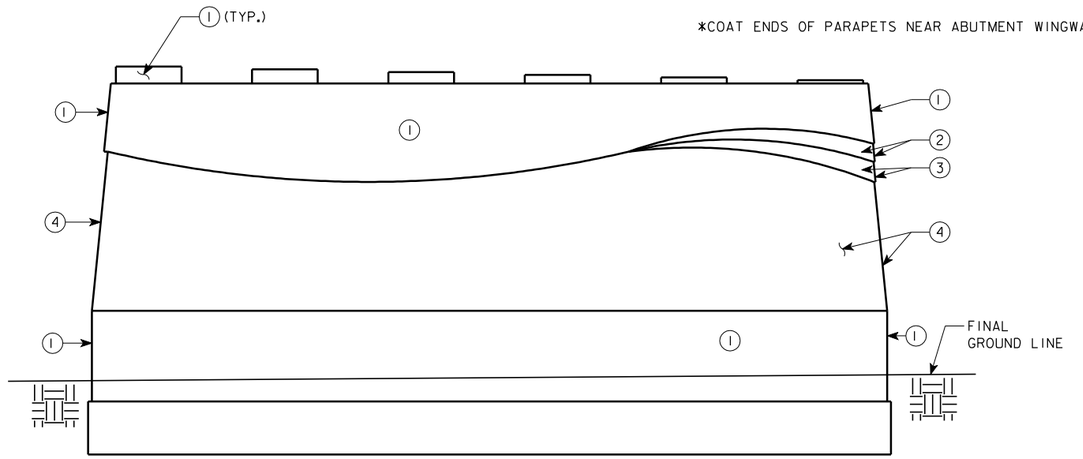
ABUTMENT WINGS
(OUTSIDE)

NOTES:
1. LIMITS OF COLOR SEALER COAT FOR CONCRETE SHALL EXTEND TO A MINIMUM OF SIX INCHES BELOW FINISHED GRADE.

2. COLOR 1 CONCRETE SEALER SHALL ALSO BE APPLIED TO ALL EXPOSED CONCRETE SURFACES ON THE INSIDE FACE OF THE ABUTMENT WINGS.



*COAT ENDS OF PARAPETS NEAR ABUTMENT WINGWALLS



LEGEND:
(X) = COLOR NUMBER

NOTE:
CONCRETE SEALER COATING SHALL EXTEND TO CONCRETE SURFACES ON EACH END OF THE PIERS, EXTEND APPLICATION OF SEALER TO A MINIMUM OF 6" BELOW FINISHED GRADE.

HDR Engineering, Inc.

DESIGN FOR 0° SKEW
353'-6X82' CONT. WELDED GIRDER BRIDGE
W/8'-4 SIDEWALK & 10'-4 SHARED USE PATH
24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

LIMITS OF CONCRETE STAINING

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

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 62 OF 62 FILE NO. 30169 DESIGN NO. 508

DESIGN TEAM PER/HHK/ACB | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 63

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SPECIFICATIONS:

DESIGN: AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS, INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR "COLORED SEALER FOR STRUCTURAL CONCRETE"

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

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

GENERAL NOTES:

THIS DESIGN IS FOR THE CONSTRUCTION OF SIX NEW CAST IN PLACE RETAINING WALLS ALONG THE NORTH SIDE AND SOUTH SIDE OF I-80 AT 24TH STREET.

THE RETAINING WALLS ARE DESIGNED FOR AN ACTIVE EARTH PRESSURE OF 60 psf.

THE ALLOWABLE SOIL BEARING IS 2,500 psf. THE SOIL FRICTION ANGLE = 30 DEGREES.

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

AQUILA GAS LINE IS LOCATED AT APPROXIMATELY 1.5 FEET BELOW THE BOTTOM OF THE CONCRETE FOOTING SHEAR KEY FOR RETAINING WALLS NO & SO. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION ACTIVITIES WITH THE UTILITY PRIOR TO ANY CONSTRUCTION ACTIVITY ASSOCIATED WITH THE WALLS.

THE 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.

COPIES OF THE ORIGINAL DESIGN PLANS AND SHOP DRAWINGS OF THE EXISTING BRIDGE WILL BE AVAILABLE TO THE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS-HIGHWAY DIVISION-IOWA D.O.T.-AMES.

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

ALL STRUCTURAL CONCRETE TO BE CLASS "C".

EXCAVATION OR EMBANKMENT QUANTITIES ARE INCLUDED IN THE ROADWAY PLANS ASSOCIATED WITH THIS CONTRACT.

ALL COARSE AGGREGATE FOR STRUCTURAL CONCRETE SHALL BE CRUSHED LIMESTONE.

SPECIAL BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 4132.01 OF THE STANDARD SPECIFICATIONS EXCEPT UNCLASSIFIED RECLAIMED HOT MIX ASPHALT (HMA) SHALL NOT BE ALLOWED IN THE GRADATION.

FAINT LINES INDICATE THE EXISTING BRIDGE.

STORM DRAINAGE DETAILS AND QUANTITIES ARE NOT A PART OF THIS PROJECT BUT ARE INCLUDED IN THE ROADWAY PLANS ASSOCIATED WITH THIS CONTRACT.

GRADING PLANS AND QUANTITIES ARE NOT A PART OF THIS PROJECT BUT ARE INCLUDED IN THE ROADWAY PLANS ASSOCIATED WITH THIS CONTRACT.

THE NEW 24TH BRIDGE (DESIGN NO. 508) IS BEING CONSTRUCTED IN PHASES. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, THE WALL CONSTRUCTION SCHEDULE AND CONSTRUCTION METHOD TAKING INTO ACCOUNT THE BRIDGE CONSTRUCTION. EXCAVATION FOR THE WALLS SHALL NOT IMPACT ANY PART OF THE NEWLY CONSTRUCTED BRIDGE OR ANY PART OF THE EXISTING BRIDGE CARRYING TRAFFIC. IF TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO MAINTAIN STABILITY OF THE NEW STRUCTURE AND/OR EXISTING STRUCTURE CARRYING TRAFFIC. THE CONTRACTOR WILL SUBMIT A SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACK FILLING HAS BEEN COMPLETED.

TEMPORARY SHORING, IF ANY, OF THE CIP WALLS SHALL REMAIN IN PLACE UNTIL 1/3 OF THE TOTAL SOIL HEIGHT IS PLACED TO PREVENT OVERTURNING.

ALL ELEVATIONS ON THESE PLANS SHOWN IN FEET.

ALL STATIONS SHOWN IN FEET.

ALL COSTS ASSOCIATED WITH EXPANSION AND CONTROL JOINTS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "STRUCTURAL CONCRETE (MISCELLANEOUS)".

WORK PERFORMED TO CREATE TEXTURED CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR FORMWORK AND THE FOLLOWING:

FORM THE TEXTURED CONCRETE SURFACE USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER OR FLEXIBLE FOAM MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL EASILY ATTACH TO FORMS AND BE REMOVABLE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, USE STRUCTURAL BACKERS TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO FORM SURFACES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES AND DIMENSIONS SHOWN IN THE PLANS AND TO AVOID VISIBLE PATTERN REPEATS. MATCH PATTERN FEATURES AT FORM LINER JOINTS TO MINIMIZE PATTERN REPEATS AND MAKE THE FORMED CONCRETE SURFACE APPEAR UNIFORM AND CONTINUOUS WITHOUT VISIBLE SEAMS AND FORM MARKS. WHEN JOINTS ARE UNAVOIDABLE, MAKE JOINTS ALONG MAIN FEATURES OF THE PATTERN IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

FORM LINER EDGES FOLLOWING CURVES ARE TO BE CUT CLEANLY AND PARALLEL TO THE CURVE. USE ADEQUATE BLOCKING, SEALING AND OTHER MEANS IN ORDER TO MAINTAIN THE APPROPRIATE DEPTH AND CHARACTER OF TEXTURE AT CUT EDGES OF LINERS AND TO PREVENT MORTAR LEAKAGE.

LAY OUT INDIVIDUAL SIMULATED STONE LINERS WITHIN FORMS SO THAT NO VERTICAL MORTAR JOINTS ARE ALIGNED ON ADJACENT COURSES. DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING THE TEXTURED CONCRETE ON THIS PROJECT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT, AT HIS OWN COST, ANY SURFACE DEFECTS.

VERIFY THAT RELEASE AGENTS USED ARE COMPATIBLE WITH FORM LINER MATERIAL, AND ARE NON-STAINING. APPLY RELEASE AGENT IN ACCORDANCE WITH THE FORM LINER MANUFACTURER*S RECOMMENDATIONS. RELEASE AGENTS MUST ALSO BE COMPATIBLE WITH THE PROPOSED CONCRETE STAINS TO BE USED TO COLOR THE CONCRETE.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN 1-1/2 INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS AND AT HIGH POINTS OF FINISHED WALL.

STRIP FORMWORK IN ACCORDANCE WITH LINER MANUFACTURER*S RECOMMENDATIONS AFTER THE CONCRETE HAS SUFFICIENT STRENGTH TO AVOID SURFACE DAMAGE. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO REUSE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

CONSTRUCT A 4-FOOT HIGH, BY 10-INCH WIDE (MIN.), BY 8-FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. CAST THE MOCKUP PANEL ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINER, AND CONCRETE MIXTURE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACE SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO. 5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN CONCRETE TEXTURE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER CURING FOR A MINIMUM OF 28 DAYS, THE MOCKUP PANEL WILL ALSO BE USED TO DEMONSTRATE THE COLORED SEALER COATING APPLICATION. SEE NOTES ON RETAINING WALL DETAIL SHEET FOR FURTHER INFORMATION REGARDING COLORED SEALER.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS INCLUDING CONSTRUCTING AND REMOVING THE MOCKUP PANEL ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (MISCELLANEOUS)".

STONE FORM LINER FOR TERRACE WALLS SHALL SIMULATE A PATTERN OF SMALL ASHLAR STONES WITH SAWED EDGES ON ALL FOUR SIDES AND A SPLIT OR SNAPPED EXPOSED FACE. STONE SIZES SHALL RANGE FROM 3" X 6" MINIMUM TO 14" X 28" MAXIMUM. MAXIMUM DEPTH OF RELIEF IN THE FORM LINER SHALL BE 1½ AND JOINT WIDTH SHALL BE ¾. THE FORMLINER PATTERN AND MANUFACTURER USED FOR THE TERRACE WALLS SHALL MATCH THE FORM LINER USED FOR PIER NO. 1 OF BRIDGE DESIGN 508, SHOWN ELSEWHERE IN THESE PLANS. ACCEPTABLE PATTERNS AND MANUFACTURERS ARE:

PATTERN #12020-TOLLWAY ASHLAR
CUSTOM ROCK
2020 W. 7TH STREET
ST. PAUL, MN 55116

PATTERN #17000-FLORIDA ASHLAR
FITZGERALD FORMLINER
1341 EAST PAMONA STREET
SANTA ANA, CA 92705

PATTERN #905-SMALL AGED ASHLAR STONE
ARCHITECTURAL POLYMERS
1220 LITTLE GAP ROAD
PALMERTON, PA 18071

PATTERN #1515-SC ASHLAR
SPEC FORMLINERS, INC.
530 EAST DYER ROAD
SANTA ANA, CA 92707

NOTE:
POLLUTION PREVENTION PLAN IN IM_080_1 (33 4) 2-13-78

TRAFFIC CONTROL PLAN:
SEE TRAFFIC CONTROL PLAN IN IM_080_1 (33 4) 2-13-78

NOTE:
ROADWAY QUANTITIES SHOWN IN IM_080_1 (33 4) 2-13-78

ESTIMATED RETAINING WALL QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	564.0	
2	2403-7302000	COLORED SEALER COAT-STRUCT CONC	SY	438.7	
3	2404-7775000	REINFORCING STEEL	LBS	36144	
4	2404-7775005	REINFORCING STEEL, EPOXY COATED	LBS	44082	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
1	INCLUDES COST OF FURNISHING AND INSTALLING PREFORMED JOINT FILLER AND MATERIALS FOR EXPANSION AND CONTROL JOINTS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION) GRANULAR BACKFILL, POROUS BACKFILL AND SUBDRAIN OUTLETS AT RETAINING WALL. INCLUDES ALL COSTS ASSOCIATED WITH THE FORM LINER. 200.2 CY AT WALL NO, 44.9 CY AT WALL NW, 50.3 CY AT WALL NE, 184.4 CY AT WALL SO, 40.6 CY AT WALL SW, 43.6 CY AT WALL SE
2	INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND APPLYING ANTI-GRAFFITI COATING.
3	12674 LBS AT WALL NO, 2948 LBS AT WALL NW, 3256 LBS AT WALL NE, 11715 LBS AT WALL SO, 2691 LBS AT WALL SW, 2860 LBS AT WALL SE
4	15620 LBS AT WALL NO, 3554 LBS AT WALL NW, 3914 LBS AT WALL NE, 14326 LBS AT SO WALL, 3227 LBS AT WALL SW, 3441 LBS AT WALL SE

DESIGN HISTORY AT THIS SITE

DESIGN NO.	TYPE OF WORK
6665	ORIGINAL BRIDGE DESIGN
492	BEAM REPLACEMENT
696	REPAIR & OVERLAY
508	NEW 24TH STREET BRIDGE
708	TERRACE WALLS

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11,
279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
GENERAL NOTES AND QUANTITIES
STA. 40176+95.25 (24TH STREET) JUNE, 2007
POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 64

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BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42

G = +0.0000% G = -0.5041% G = +0.0000%

V.P.I. STA. 34+12.27 ELEV. 983.20 | V.P.I. STA. 34+99.33 ELEV. 983.20 | V.P.I. STA. 36+18.35 ELEV. 982.60 | V.P.I. STA. 36+70.16 ELEV. 982.60

TOP OF WALL PROFILE GRADE ON WALL SO

G = +0.0000%

V.P.I. STA. 14+76.42 ELEV. 988.20 | V.P.I. STA. 15+36.21 ELEV. 988.20

TOP OF WALL PROFILE GRADE ON WALL SW

G = +0.0000%

V.P.I. STA. 57+40.28 ELEV. 988.90 | V.P.I. STA. 58+06.42 ELEV. 988.90

TOP OF WALL PROFILE GRADE ON WALL NW

G = +0.0000% G = +0.5093% G = +0.0000%

V.P.I. STA. 47+10.92 ELEV. 982.60 | V.P.I. STA. 47+71.05 ELEV. 982.60 | V.P.I. STA. 49+22.25 ELEV. 983.37 | V.P.I. STA. 49+90.83 ELEV. 983.37

TOP OF WALL PROFILE GRADE ON WALL NO

G = +0.0000%

V.P.I. STA. 24+14.38 ELEV. 988.20 | V.P.I. STA. 24+78.42 ELEV. 988.20

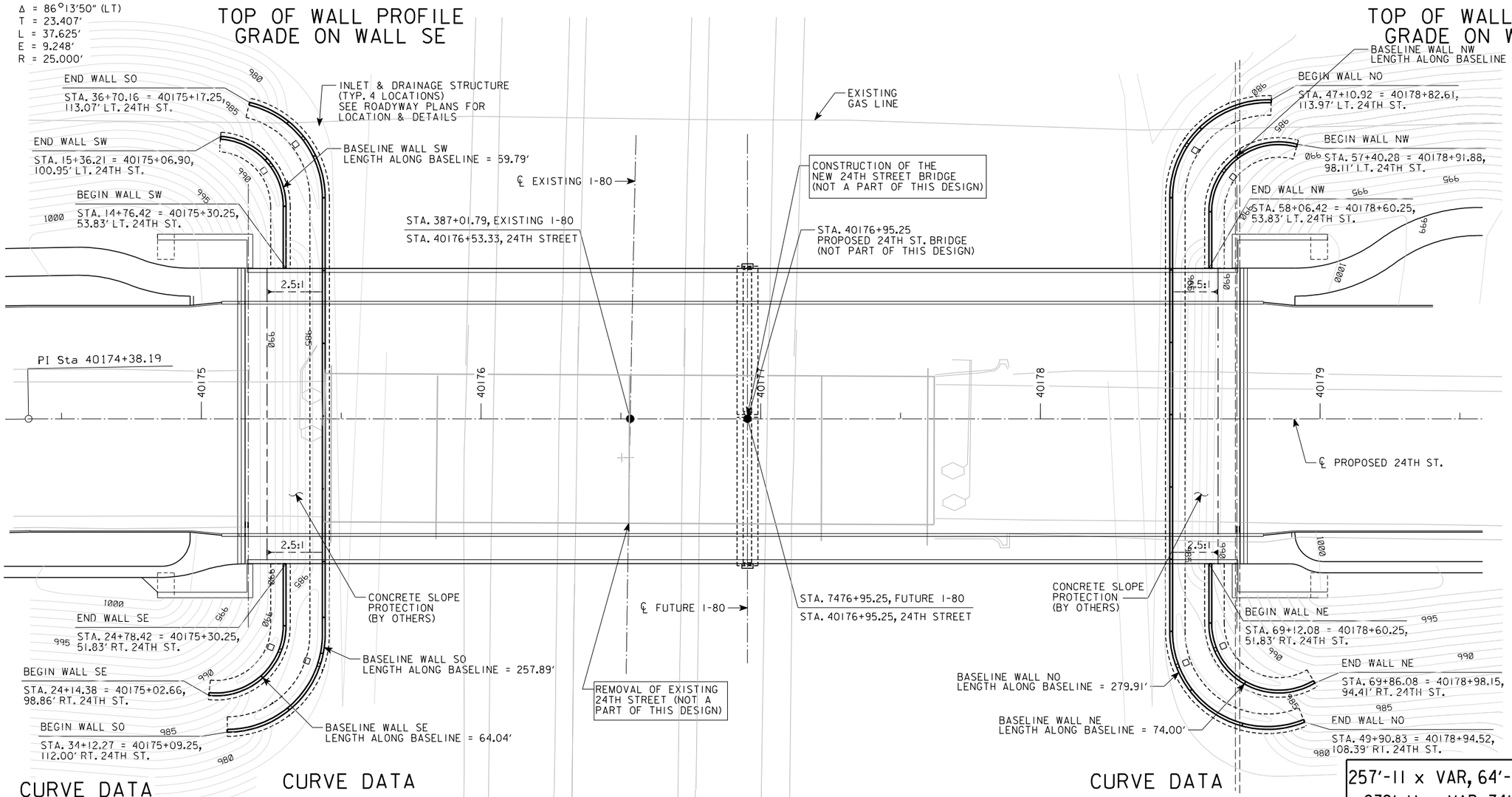
TOP OF WALL PROFILE GRADE ON WALL SE

V.P.I. STA. 69+12.08 ELEV. 989.20 | V.P.I. STA. 69+86.08 ELEV. 989.20

TOP OF WALL PROFILE GRADE ON WALL NE

CURVE DATA
ON WALL SW

P.I. STA = 15+21.99
P.C. STA. = 14+98.59
P.T. STA. = 15+36.21
Δ = 86°13'50" (LT)
T = 23.407'
L = 37.625'
E = 9.248'
R = 25.000'



CURVE DATA
ON WALL NW

P.I. STA = 57+73.08
P.C. STA. = 57+40.28
P.T. STA. =57+86.25
Δ = 105°22'07" (LT)
T = 32.799'
L = 45.976'
E = 16.240'
R = 25.000'

NOTE:
BASELINE IS ALONG FRONT FACE OF WALL.

N

CURVE DATA
ON WALL NE

P.I. STA = 69+77.50
P.C. STA. = 69+33.25
P.T. STA. = 69+86.08
Δ = 121°04'13" (LT)
T = 44.25'
L = 52.83'
E = 25.82'
R = 25.000'

LOCATION
24TH ST OVER I-80
T-74 N R-44 W
SECTION 2/3/10/11
LEWIS TOWNSHIP
POTTAWATTAMIE COUNTY
CITY OF COUNCIL BLUFFS
BRIDGE MAINT. NO. 7801.70080
FHWA NO. 44691

CURVE DATA
ON WALL SE

P.I. STA = 24+42.13
P.C. STA. = 24+14.38
P.T. STA. = 24+56.25
Δ = 95°57'40" (LT)
T = 27.746'
L = 41.871'
E = 12.348'
R = 25.000'

CURVE DATA
ON WALL SO

P.I. STA = 34+47.27	P.I. STA = 36+50.99
P.C. STA. = 34+12.27	P.C. STA. = 36+23.25
P.T. STA. = 34+67.25	P.T. STA. = 36+70.16
Δ = 90°00'00" (LT)	Δ = 76°47'30" (LT)
T = 35.000'	T = 27.737'
L = 54.978'	L = 46.909'
E = 14.498'	E = 9.658'
R = 35.000'	R = 35.000'

CURVE DATA
ON WALL NO

P.I. STA = 47+47.30	P.I. STA = 49+74.41
P.C. STA. = 47+10.92	P.C. STA. = 49+22.25
P.T. STA. = 47+67.25	P.T. STA. = 49+90.83
Δ = 92°13'28" (LT)	Δ = 112°16'06" (LT)
T = 36.386'	T = 52.153'
L = 56.337'	L = 68.581'
E = 15.487'	E = 27.808'
R = 35.000'	R = 35.000'

SITUATION PLAN

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11,
279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
SITUATION PLAN

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 65

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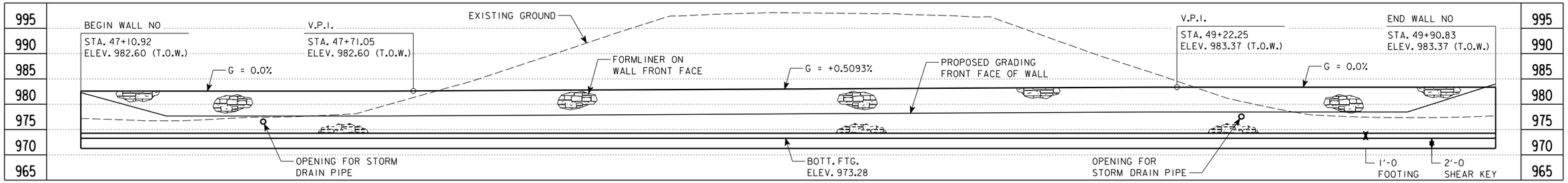
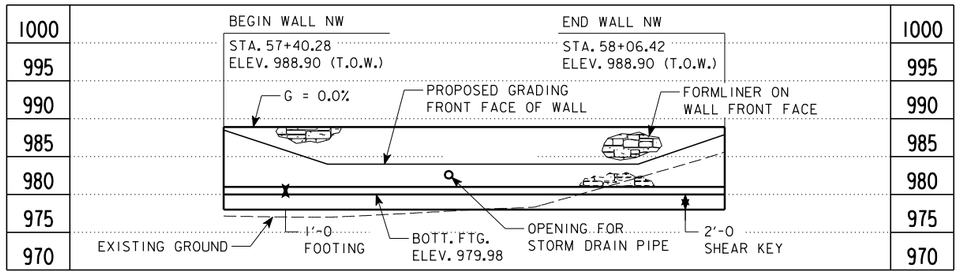
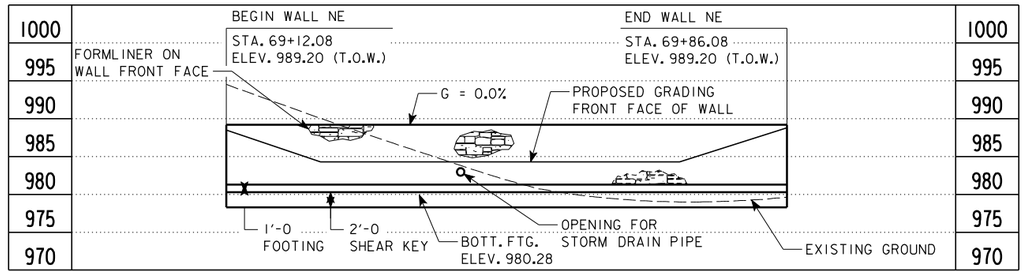
BENCH MARK NO. 521 - CUT "X" SW BOLT LUM BASE STA. 388+04.30, 65.50' RT ELEVATION 977.42



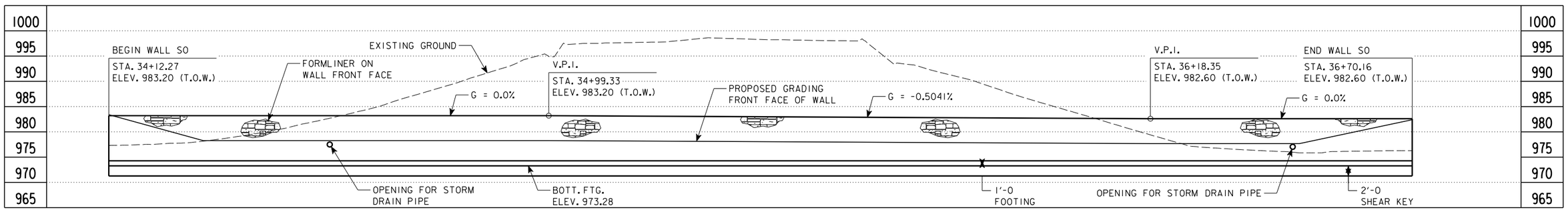
LONGITUDINAL SECTION ALONG ℄ WALL NO



LONGITUDINAL SECTION ALONG ℄ WALL NW

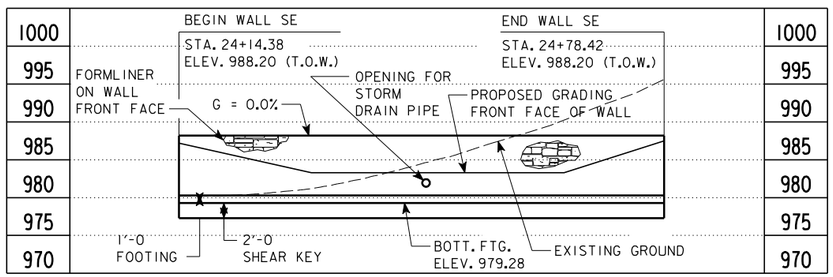


LONGITUDINAL SECTION ALONG ℄ WALL NE

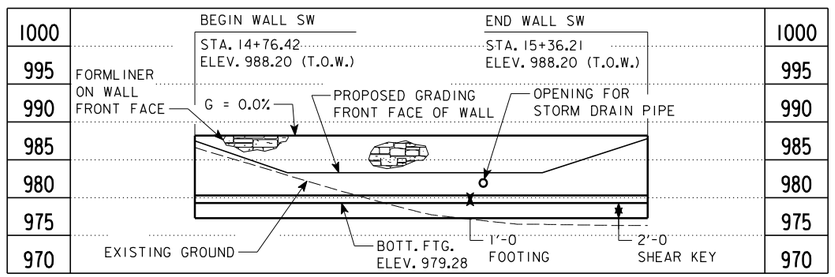


LONGITUDINAL SECTION ALONG ℄ WALL SO

NOTE:
FORMLINER PLACED ON WALL FRONT FACE FROM TOP OF WALL TO WITHIN APPROXIMATELY TWO INCHES FROM TOP OF FOOTING FROM BEGIN OF WALL TO END OF WALL (TYP.).



LONGITUDINAL SECTION ALONG ℄ WALL SE



LONGITUDINAL SECTION ALONG ℄ WALL SW

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS

RETAINING WALL ELEVATIONS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 66

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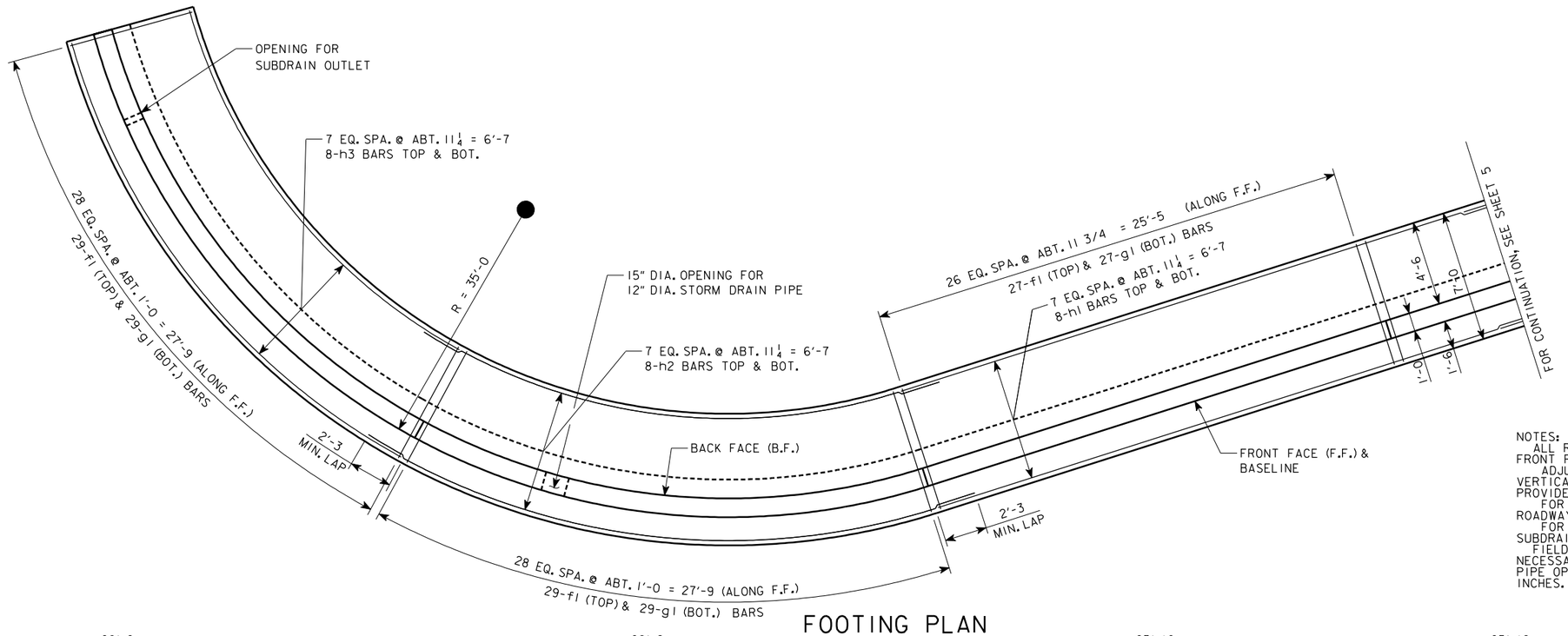
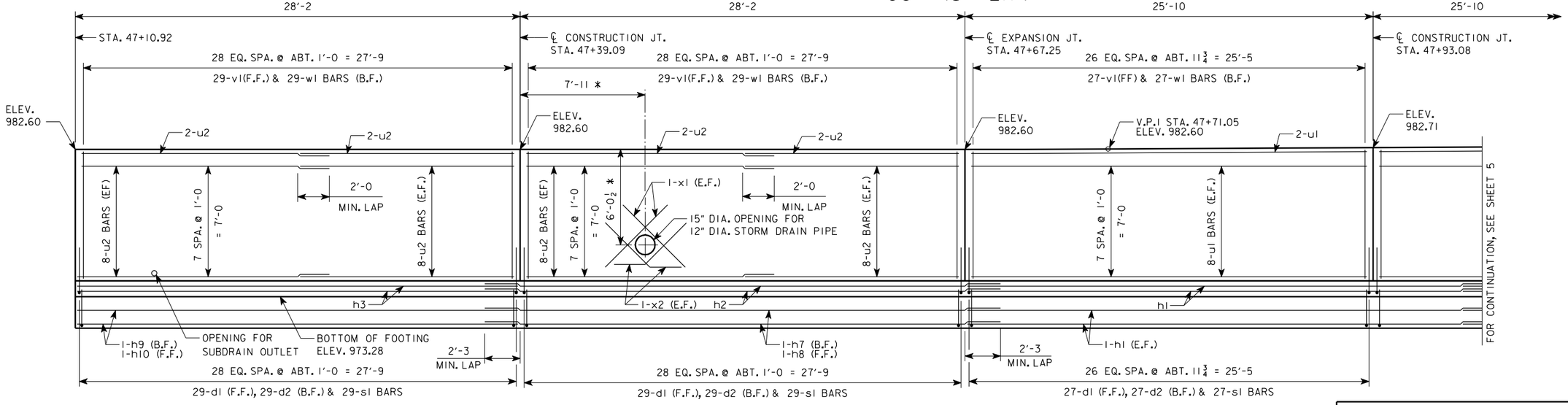


FOOTING PLAN

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE. ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENINGS. PROVIDE 2" MIN. CLR. AROUND OPENINGS.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.
FIELD BEND d1 AND d2 BARS AS NECESSARY TO CLEAR STORM DRAIN PIPE OPENING BY A MINIMUM OF 2 INCHES.



DEVELOPED ELEVATION

* COORDINATE LOCATION AND ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

NOTES:
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¾ INCH DRESSED AND BEVELED STRIP.
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

BACKFILL BEHIND AND BELOW THE RETAINING WALL IS TO BE AS SHOWN ON THE SUBDRAIN DETAIL SHEET. THE REMAINDER OF RETAINING WALL EXCAVATION IS TO BE BACKFILLED WITH SOIL.
ALL ELEVATIONS AND STATIONS ARE IN FEET.
B.F. = BACK FACE
E.F. = EACH FACE
F.F. = FRONT FACE

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
WALL NO DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 67

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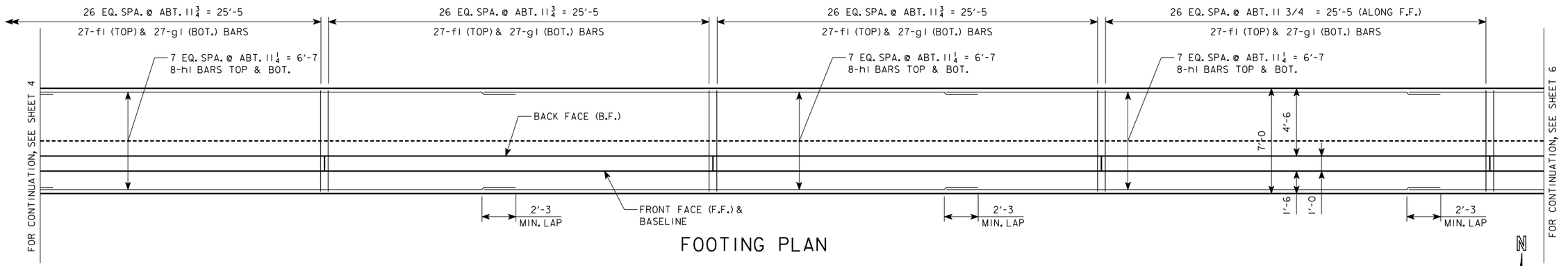
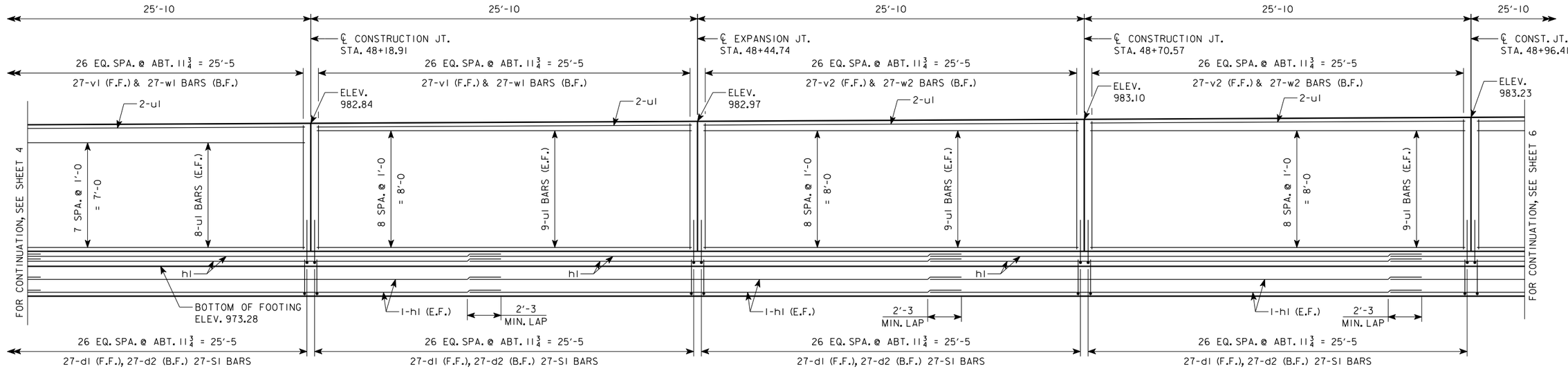


FOOTING PLAN



DEVELOPED ELEVATION

NOTE:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11

CONCRETE RETAINING WALLS

WALL NO DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 68

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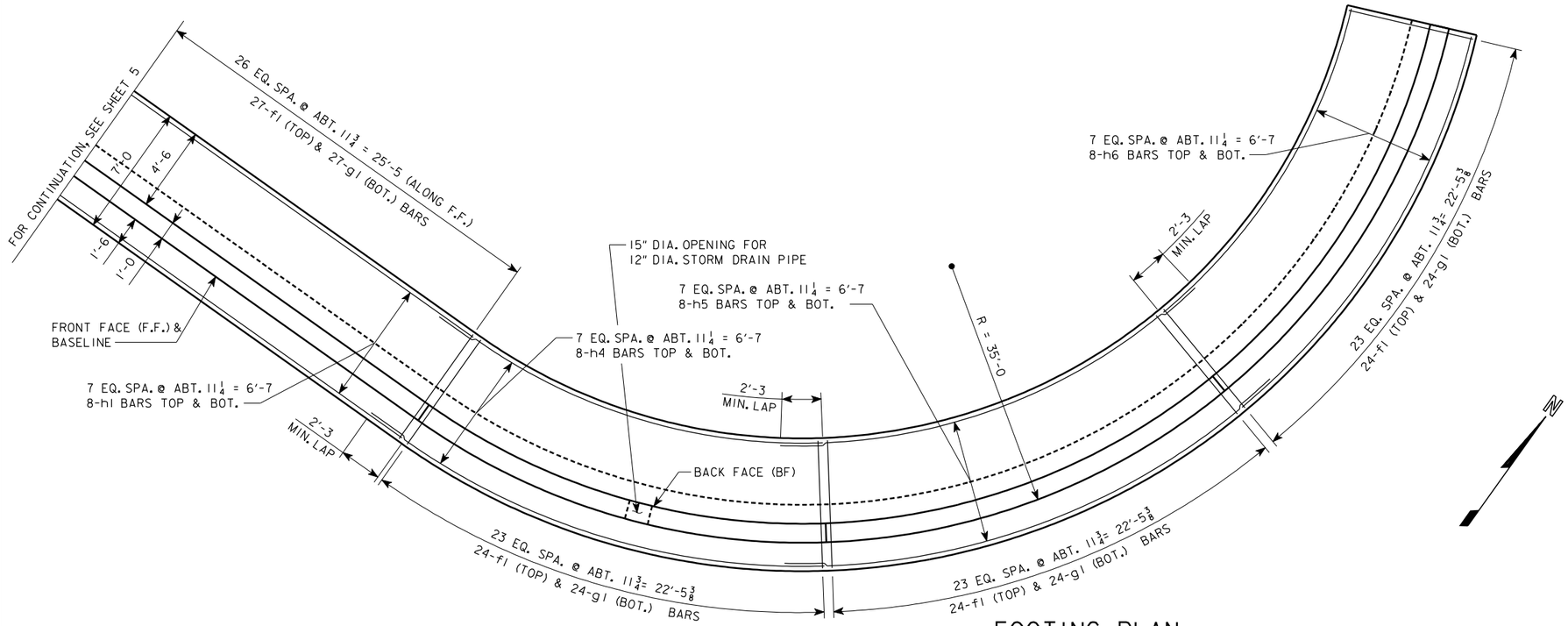
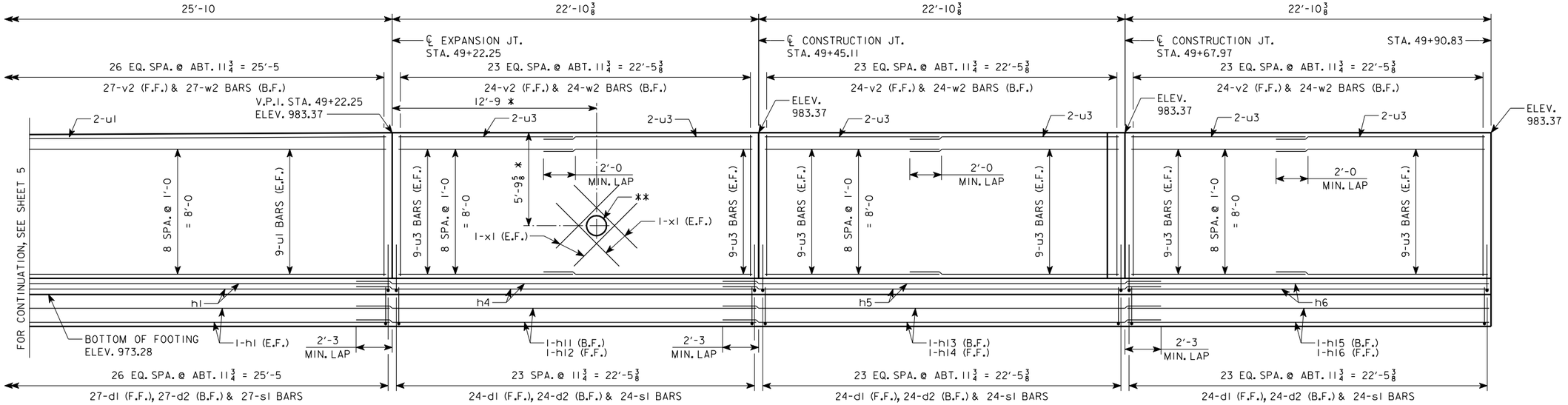


FOOTING PLAN



DEVELOPED ELEVATION

** 15" DIA. OPENING FOR 12" DIA. STORM DRAIN PIPE.

* COORDINATE LOCATION AND ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.
ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENING. PROVIDE 2" MIN. CLR. AROUND OPENING.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FIELD BEND d1 AND d2 BARS AS NECESARY TO CLEAR STORM DRAIN PIPE OPENING BY A MINMUM OF 2 INCHES.

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11,
279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
WALL NO DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 69

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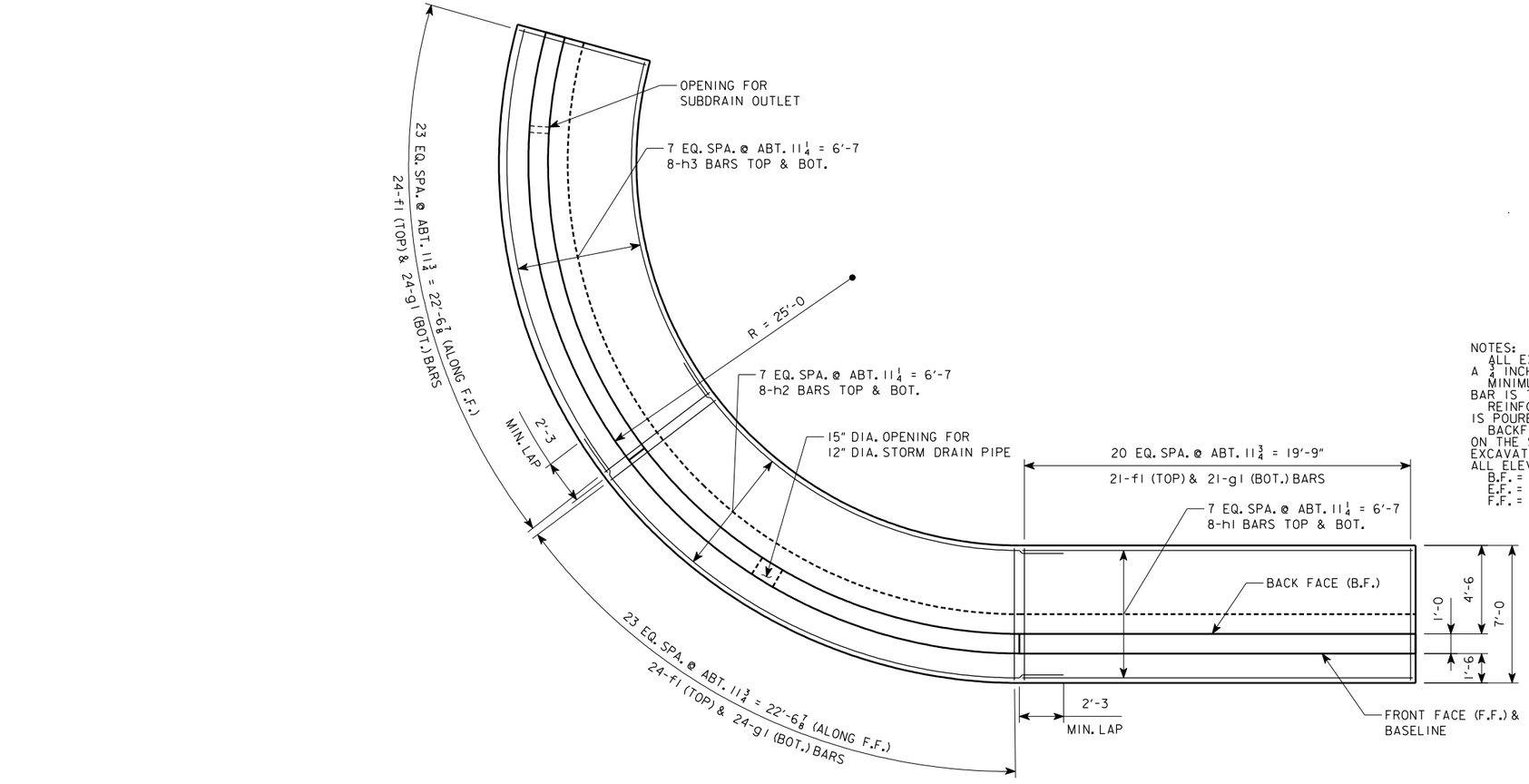
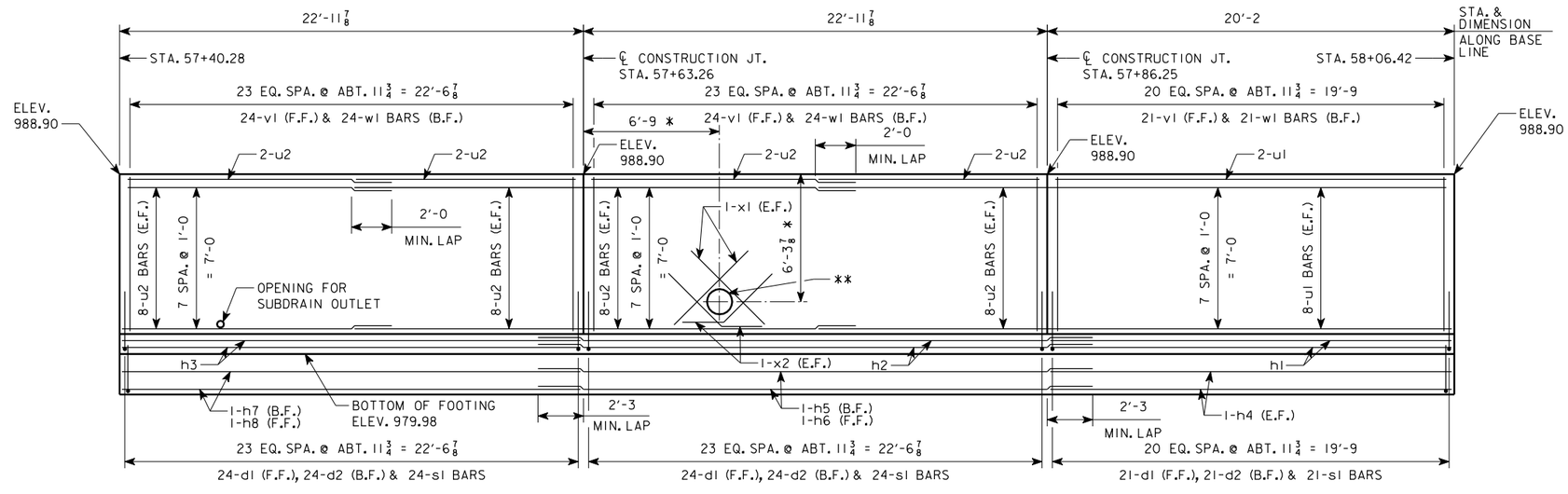


FOOTING PLAN

NOTES:
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A $\frac{3}{4}$ INCH DRESSED AND BEVELED STRIP.
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.
BACKFILL BEHIND AND BELOW THE RETAINING WALL IS TO BE AS SHOWN ON THE SUBDRAIN DETAIL SHEET. THE REMAINDER OF RETAINING WALL EXCAVATION IS TO BE BACKFILLED WITH SOIL.
ALL ELEVATIONS AND STATIONS ARE IN FEET.
B.F. = BACK FACE
E.F. = EACH FACE
F.F. = FRONT FACE

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.
ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENINGS. PROVIDE 2" MIN. CLR. AROUND OPENINGS.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.
FIELD BEND d1 AND d2 BARS AS NECESSARY TO CLEAR STORM DRAIN PIPE OPENING BY A MINIMUM OF 2 INCHES.



DEVELOPED ELEVATION

* COORDINATE LOCATION AND ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

** 15" DIA. OPENING FOR 12" DIA. STORM DRAIN PIPE

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS
NW WALL PLAN & ELEVATION

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 70

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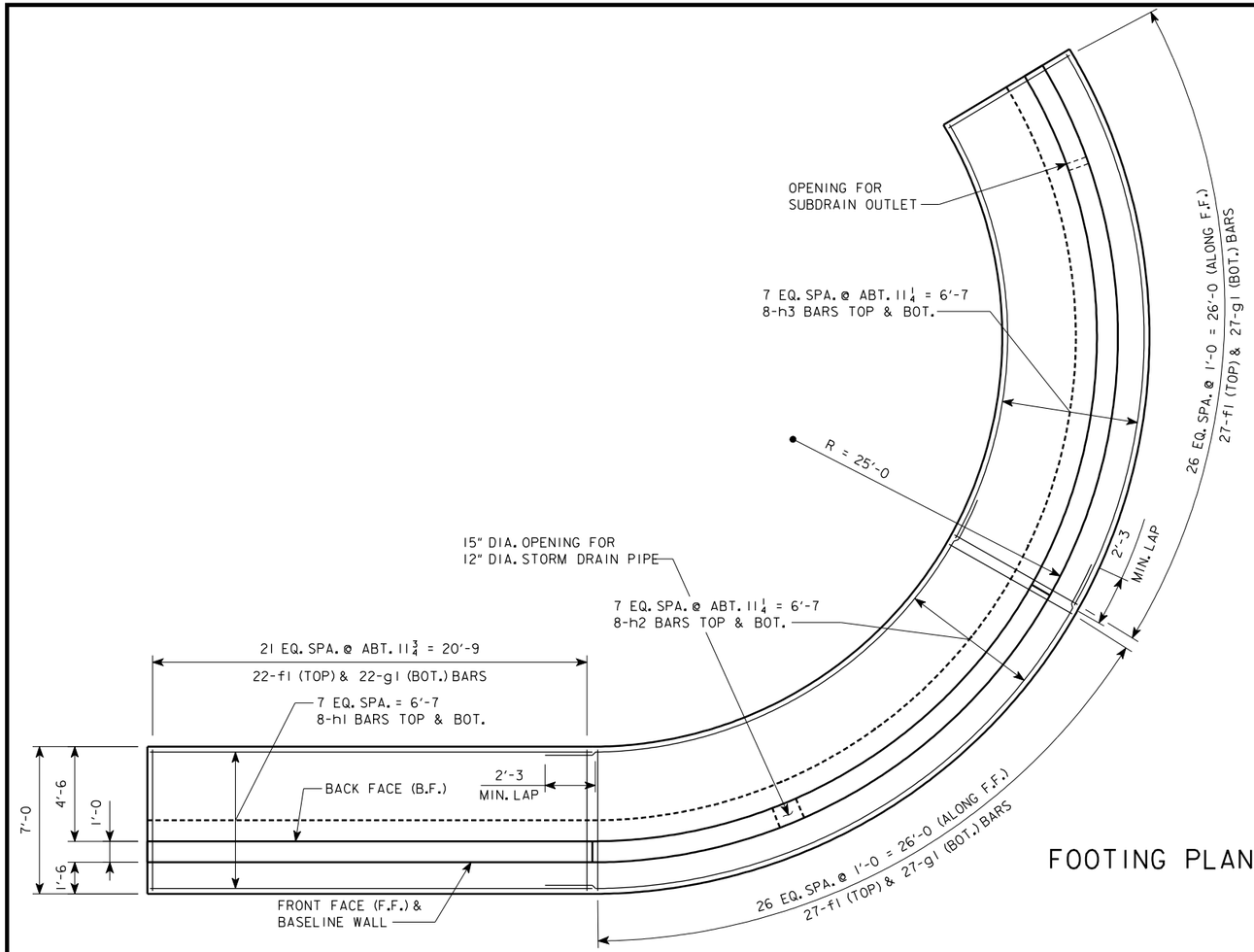
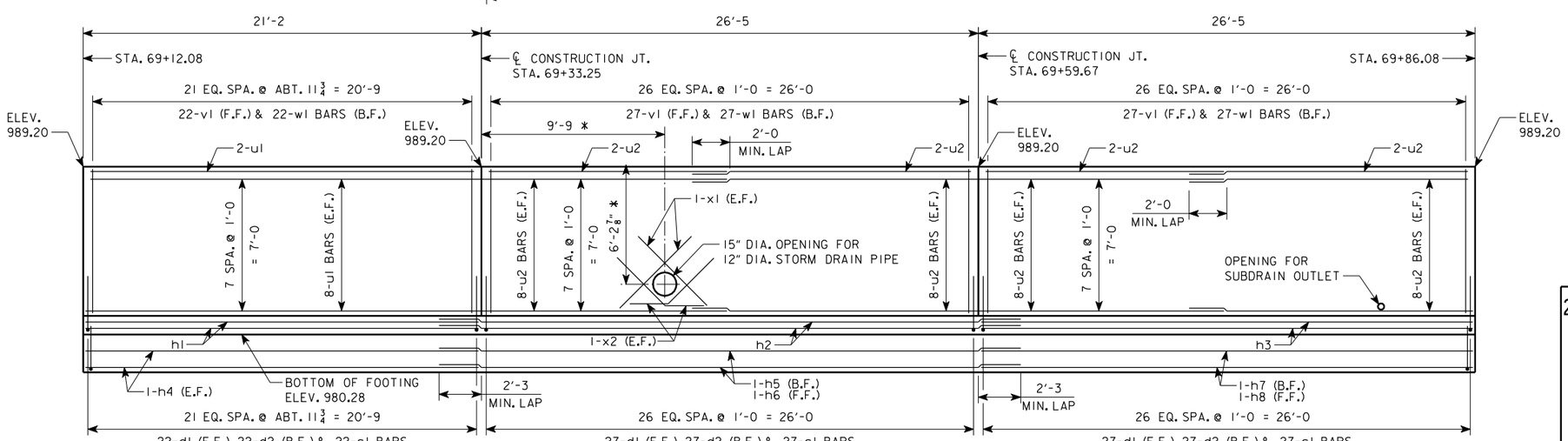


FOOTING PLAN



* CORDINATE LOCATION AND ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

DEVELOPED ELEVATION

NOTES:
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A $\frac{3}{4}$ INCH DRESSED AND BEVELED STRIP.
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.
BACKFILL BEHIND AND BELOW THE RETAINING WALL IS TO BE AS SHOWN ON THE SUBDRAIN DETAIL SHEET. THE REMAINDER OF RETAINING WALL EXCAVATION IS TO BE BACKFILLED WITH SOIL.
ALL ELEVATIONS AND STATIONS ARE IN FEET.
B.F. = BACK FACE
E.F. = EACH FACE
F.F. = FRONT FACE

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.
ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENING. PROVIDE 2" MIN. CLR. AROUND OPENING.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.
FIELD BEND d1 AND d2 BARS AS NECESSARY TO CLEAR STORM DRAIN PIPE OPENING BY MINIMUM OF 2 INCHES.

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS
NE WALL PLAN & ELEVATION

STA. 40176+95.25 (24TH STREET) JUNE, 2007

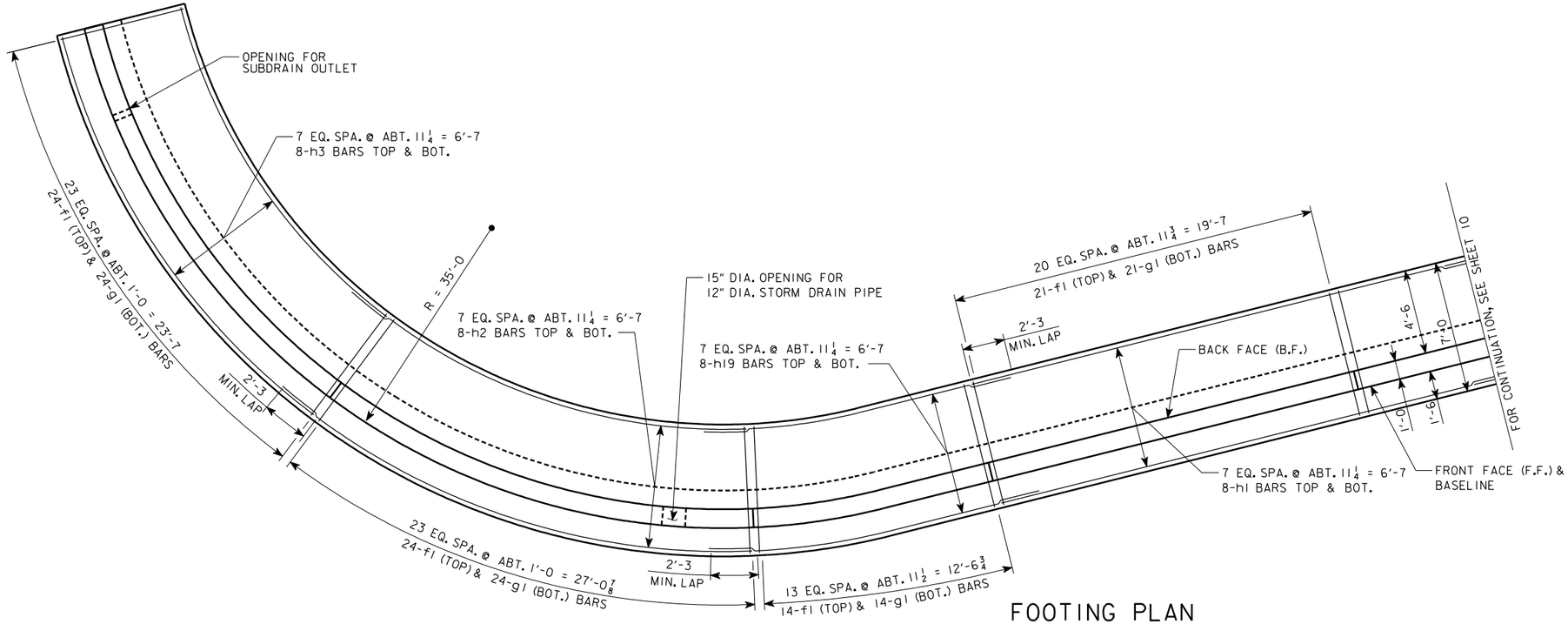
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

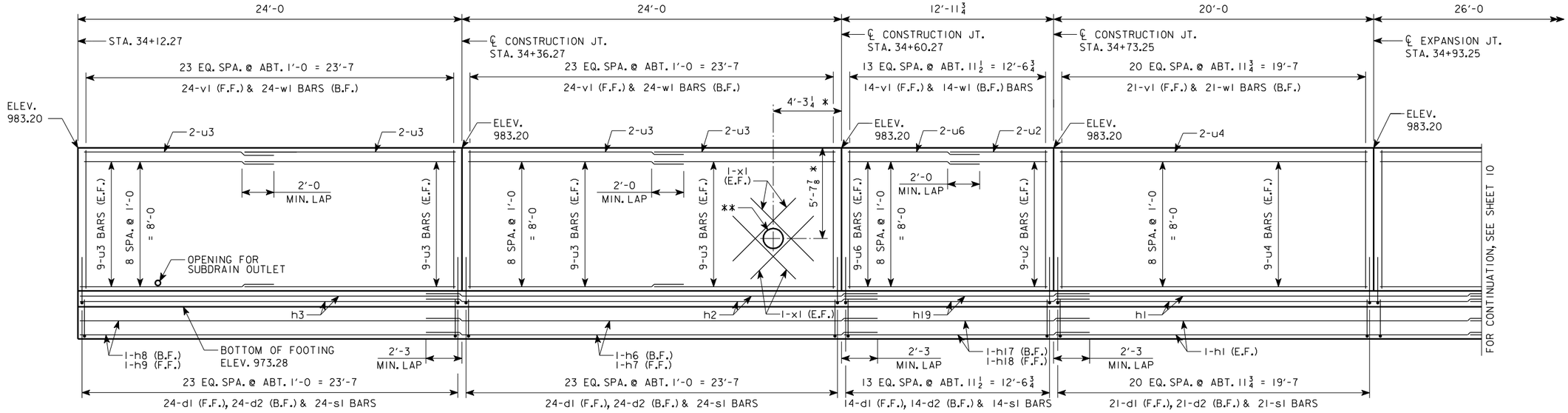
DESIGN SHEET NO. 8 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 71

7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



FOOTING PLAN



DEVELOPED ELEVATION

* COORDINATE LOCATION AND ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

** 15" DIA. OPENING FOR 12" DIA. STORM DRAIN PIPE

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.
ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENINGS. PROVIDE 2" MIN. CLR. AROUND OPENINGS.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.

NOTES:
ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¾ INCH DRESSED AND BEVELED STRIP.
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

BACKFILL BEHIND AND BELOW THE RETAINING WALL IS TO BE AS SHOWN ON THE SUBDRAIN DETAIL SHEET. THE REMAINDER OF RETAINING WALL EXCAVATION IS TO BE BACKFILLED WITH SOIL.
ALL ELEVATIONS AND STATIONS ARE IN FEET.
B.F. = BACK FACE
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257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS WALL SO DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

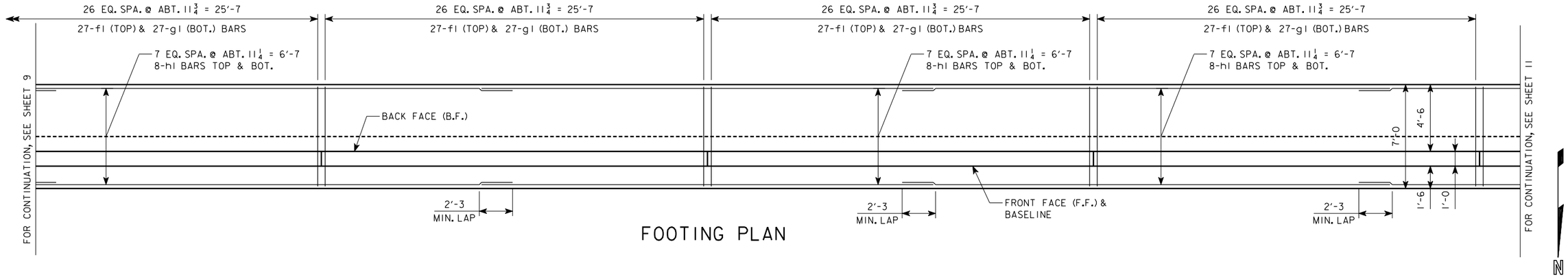
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

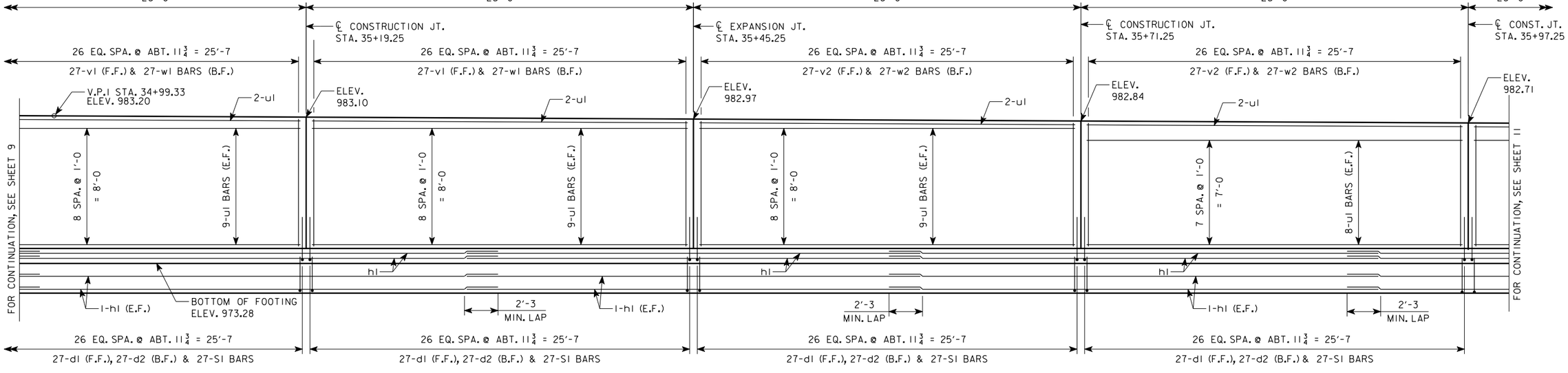
DESIGN SHEET NO. 9 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 72

7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



FOOTING PLAN



DEVELOPED ELEVATION

NOTE:
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257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS

WALL SO DETAILS

STA. 401+76+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 73

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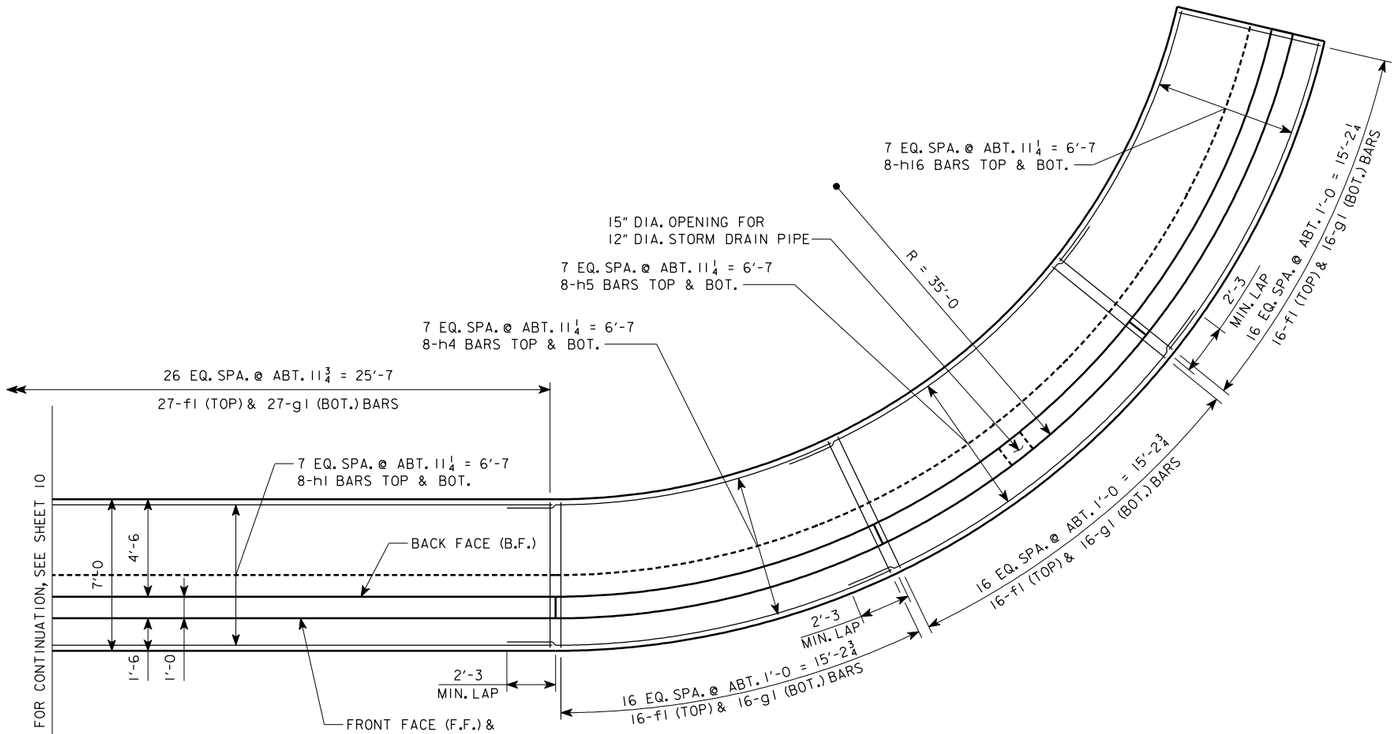
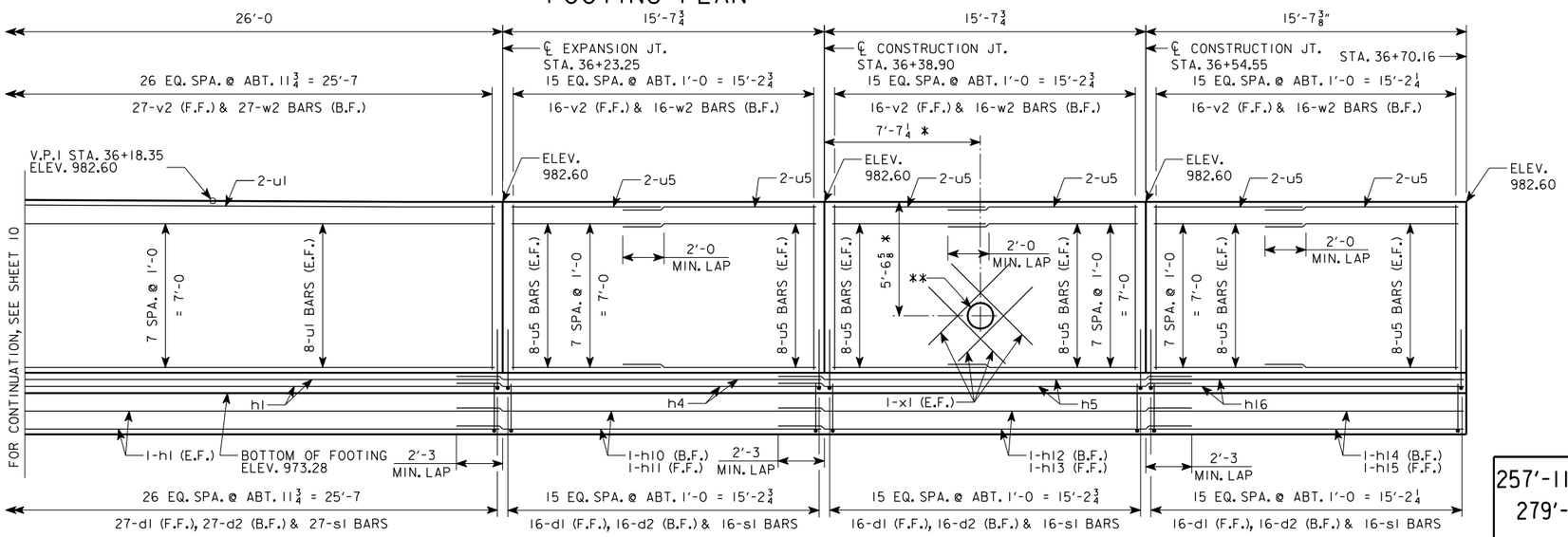


FOOTING PLAN



DEVELOPED ELEVATION

** 15" DIA. OPENING FOR
12" DIA. STORM DRAIN PIPE.

* COORDINATE LOCATION AND
ELEVATIONS OF STORM DRAIN PIPE
WITH ROADWAY SHEETS.

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FIELD BEND d1 AND d2 BARS AS NECESSARY TO CLEAR DRAIN PIPE OPENING BY A MINIMUM OF 2 INCHES.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.
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257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
WALL SO DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

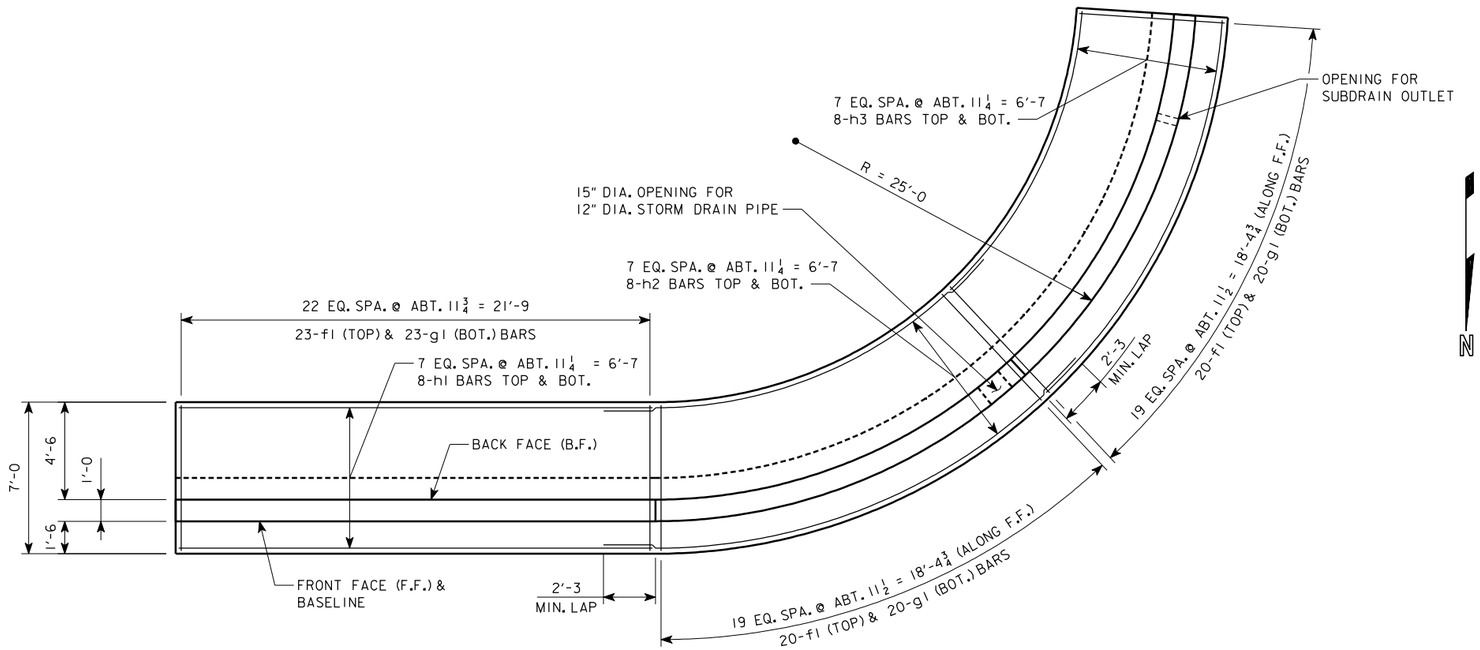
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 74

7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



FOOTING PLAN

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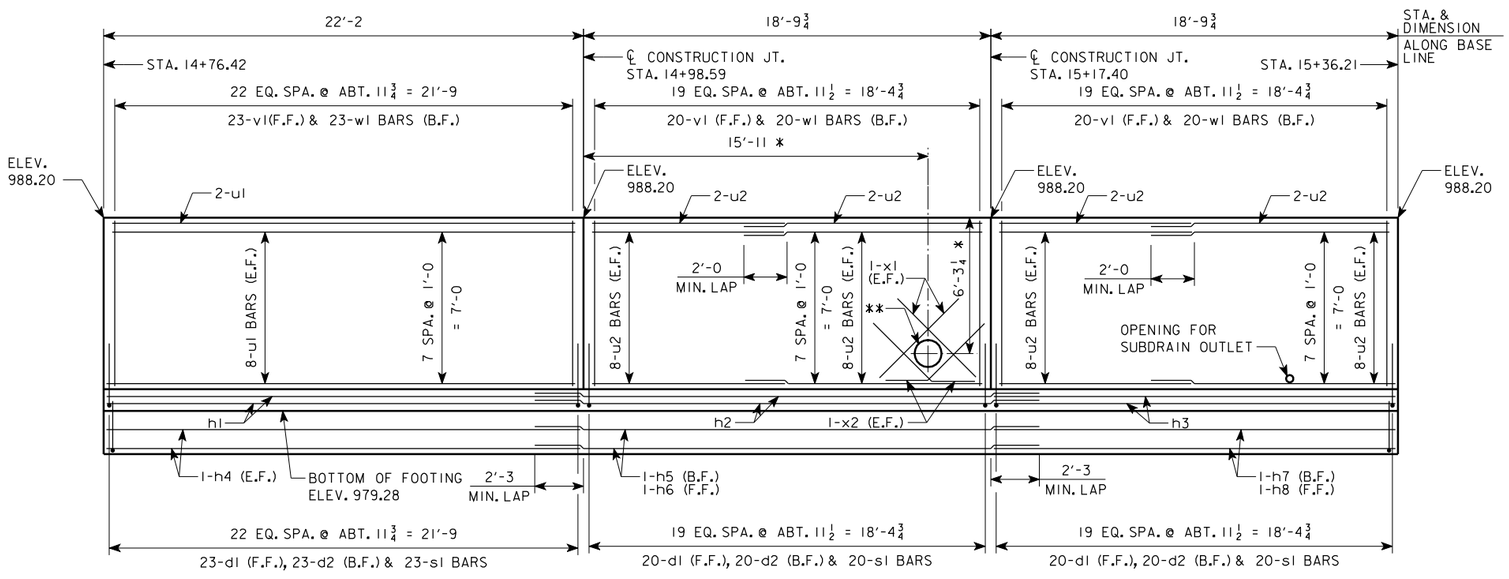

DEVELOPED ELEVATION

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* COORDINATE LOCATION AND ELEVATION OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

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257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11,
279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
WALL SW DETAILS

STA. 401176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 75

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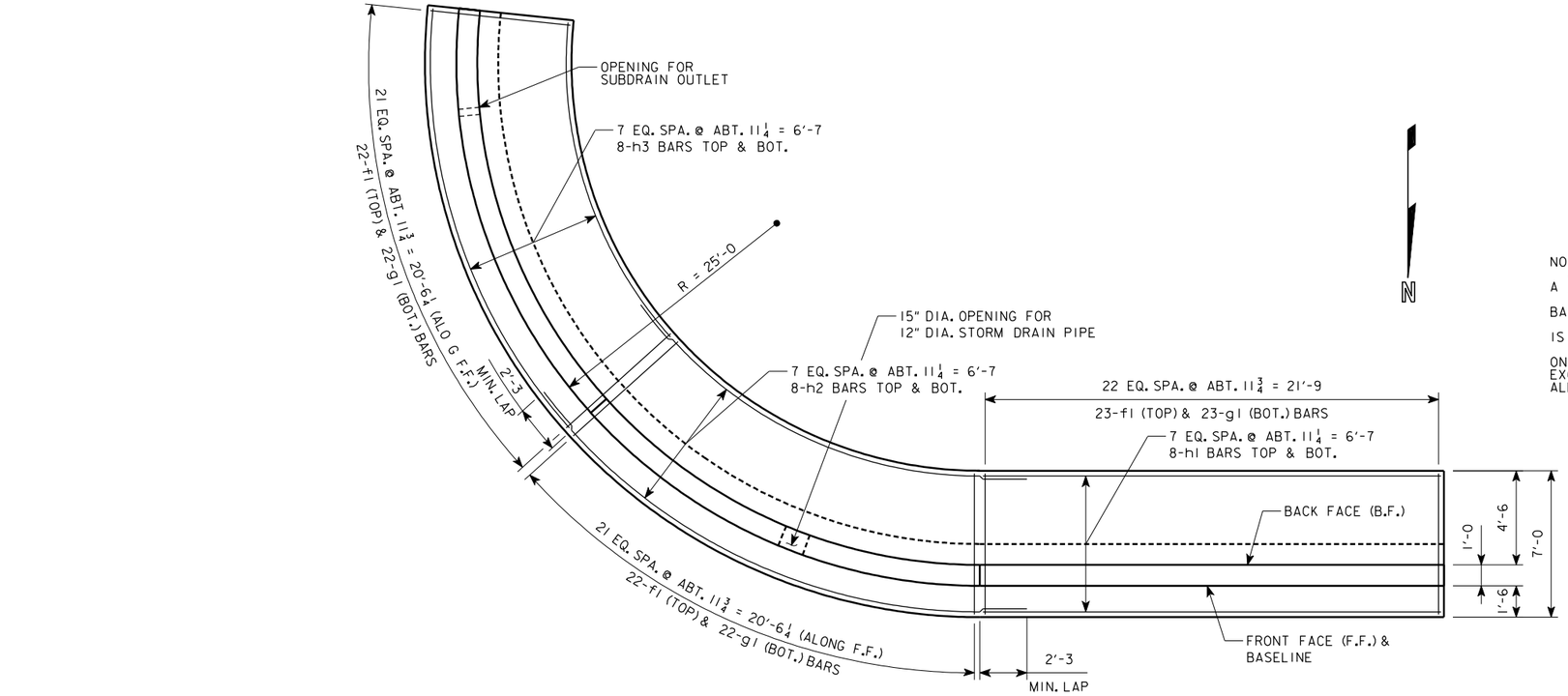

FOOTING PLAN

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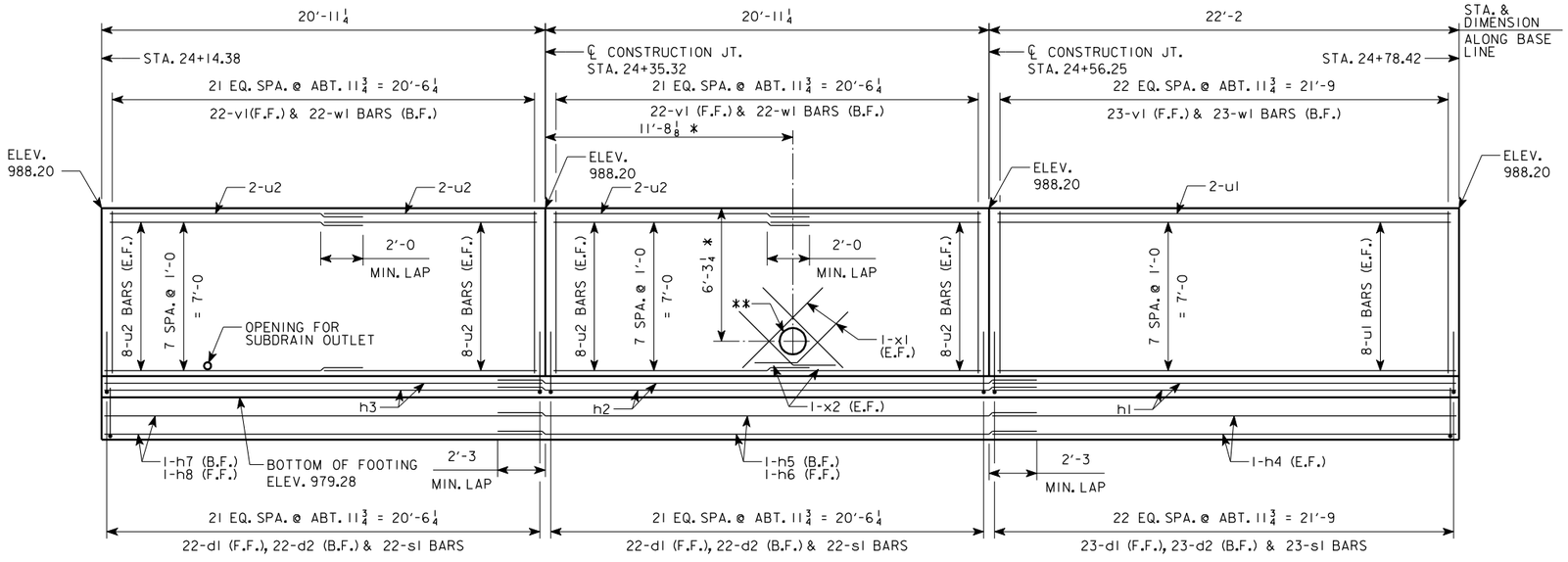


** 15" DIA. OPENING FOR 12" DIA. STORM DRAIN PIPE.

* COORDINATE LOCATION AN D ELEVATIONS OF STORM DRAIN PIPE WITH ROADWAY SHEETS.

DEVELOPED ELEVATION

NOTES:
ALL REINFORCING DIMENSIONED ALONG FRONT FACE OF WALL & WALL BASELINE.
ADJUST SPACING OF HORIZONTAL AND VERTICAL BARS AROUND PIPE OPENINGS. PROVIDE 2" MIN. CLR. AROUND OPENINGS.
FOR STORM DRAIN PIPE DETAILS, SEE ROADWAY PLANS.
FOR SUBDRAIN OUTLET DETAILS, SEE SUBDRAIN DETAILS SHEET.
FIELD BEND d1 AND d2 BARS AS NECESSARY TO CLEAR STORM DRAIN PIPE OPENING BY A MINIMUM OF 2 INCHES.

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11
CONCRETE RETAINING WALLS
WALL SE DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

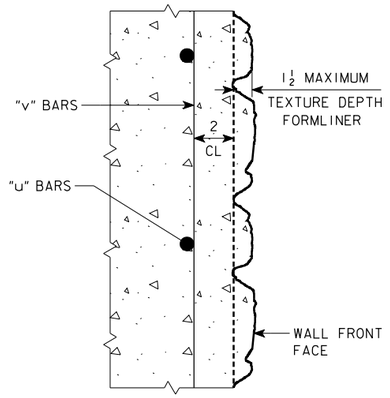
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

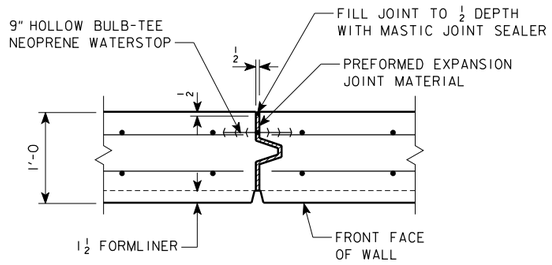
DESIGN SHEET NO. 13 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 76

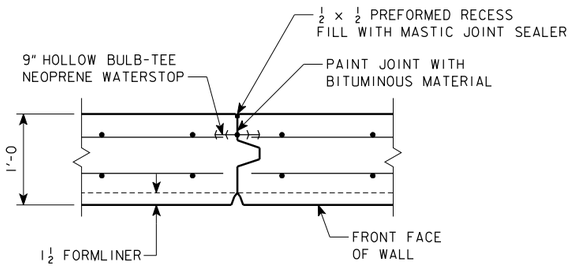
7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



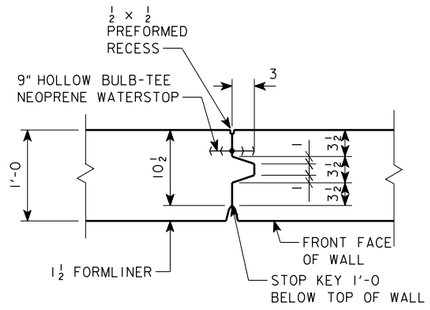
STONE FORMLINER DETAIL



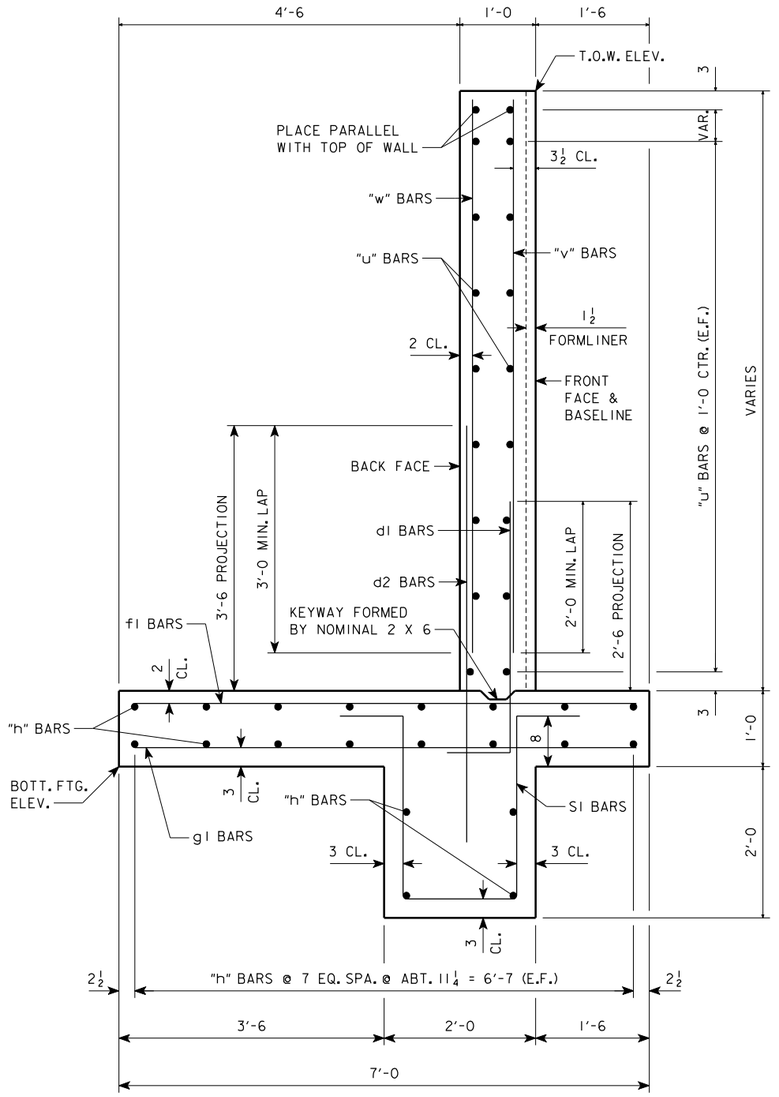
EXPANSION JOINT



CONSTRUCTION JOINT



TYPICAL KEY DETAIL



TYPICAL SECTION

COLORED SEALER COATINGS NOTES:

ALL EXPOSED VERTICAL CONCRETE SURFACES FROM TOP OF WALL TO A DISTANCE 6 INCHES BELOW THE FINISHED GRADE WILL RECEIVE APPLICATION OF COLORED SEALER COATING. CONCRETE COATING WORK SHALL BE IN ACCORDANCE WITH THE DEVELOPMENTAL SPECIFICATION, "COLORED SEALER COATING FOR STRUCTURAL CONCRETE".

FURTHERMORE, THE COLORED SEALER USED ON THE CONCRETE SURFACES OF DESIGN NO. 508, SHALL BE USED FOR THIS DESIGN. IT IS FURTHER ASSUMED THAT A CONCRETE SEALER AND PROCEDURE FOR APPLICATION HAS BEEN ACCEPTED FOR APPLICATION TO THE PIER SURFACES FOR DESIGN NO. 508 BASED ON THE REQUIREMENTS AS STATED IN THE PLANS FOR DESIGN NO. 508 ASSOCIATED WITH THIS CONTRACT.

THE SIMULATED STONE TEXTURES ON THE WALLS WILL RECEIVE A THREE-COAT SYSTEM OF PENETRATING STAIN TO SIMULATE THE NATURAL TONES AND VARIATIONS OF THE STONE. APPEARANCE OF THE SIMULATED STONE TEXTURE IS INTENDED TO CLOSELY MATCH THE STONE VENEER USED ON THE ABUTMENT WINGS FOR DESIGN NO. 508. COLOR SHALL BE A FULL RANGE OF NATURAL STONE COLORS WITH A FIRST COAT COLOR OF LIGHT OR MEDIUM BUFF AND INCLUDING SUBTLE COLOR VARIATIONS, MINERAL OXIDATION AND STAINING. THE FINAL COLORATION OF THE CONCRETE SURFACE SHALL ACCURATELY SIMULATE THE APPEARANCE OF REAL STONE INCLUDING THE MULTIPLE COLORS, SHADES, FLECKING, AND VEINING THAT ARE APPARENT IN REAL LIMESTONE. USE AT LEAST THREE COLOR SHADES TO SIMULATE THE APPEARANCE OF STONE. BEGIN WITH A BASE COLOR APPLICATION OF LIGHT BUFF. APPLY A SLIGHTLY LIGHTER OR DARKER BASE COLOR TO RANDOM STONES PRIOR TO ADDING THE COLOR VARIATIONS. WHEN ALL STONE COLORS HAVE BEEN APPLIED, APPLY A LIGHT GREY COLOR TO THE SIMULATED MORTARED JOINTS. THE GREY COLOR SHALL MATCH OR BE SLIGHTLY LIGHTER THAN THE PLAIN CONCRETE SURFACES OF THE STRUCTURE. APPLY JOINT COLOR NEATLY AND ONLY TO THE BOTTOM SURFACE OF SIMULATED JOINTS. SUBMIT PRODUCT SPECIFICATION SHEETS AND COATED CONCRETE SAMPLES AS DESCRIBED IN THE DEVELOPMENTAL SPECIFICATION.

MASK ADJACENT CONCRETE SURFACES THAT WILL NOT RECEIVE COATING. NO OVERSPRAY OR CONTAMINATION OF ADJACENT SURFACES IS ALLOWED.

COLORED SEALER COATING SURFACE AREA TABULATION:

WALL NO	159.0 SY	WALL SO	145.6 SY	
WALL NW	34.2 SY	WALL SW	29.8 SY	
WALL NE	38.3 SY	WALL SE	31.8 SY	TOTAL (ALL WALLS) 438.7 SY

ALL COSTS ASSOCIATED WITH CONCRETE SEALER COATING ARE TO BE INCLUDED IN THE BID ITEM "COLORED SEALER COATING FOR STRUCTURAL CONCRETE".

ANTI-GRAFFITI COATING NOTES:

AFTER COLORED SEALER COATINGS APPLICATION AT THE WALLS IS COMPLETE, APPLY ANTI-GRAFFITI COATING TO THE SURFACES RECEIVING COLOR SEALER. ANTI-GRAFFITI COATING SHALL BE PERMANENT AND INVISIBLE. COATING SHALL DRY TO A MATTE OR SATIN, NOT GLOSSY, FINISH. ANTI-GRAFFITI COATING PRODUCTS SHALL BE VERIFIED TO BE COMPATIBLE WITH THE STONE VENEER USED ON THE ABUTMENT WINGS. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION, APPLICATION RATE AND METHODS. DO NOT DAMAGE THE STONE VENEER.

DO NOT ALLOW DRIPS OR OVERSPRAY TO CONTAMINATE UNTREATED SURFACES ADJACENT TO TREATED SURFACES.

ALL COSTS ASSOCIATED WITH THE ANTI-GRAFFITI COATING ARE TO BE INCLUDED IN THE BID ITEM "COLORED SEALER COATING FOR STRUCTURAL CONCRETE".

ANTI-GRAFFITI COATING SURFACE AREA TABULATION:

WALL NO	159.0 SY	WALL SO	145.6 SY	
WALL NW	34.2 SY	WALL SW	29.8 SY	
WALL NE	38.3 SY	WALL SE	31.8 SY	TOTAL (ALL WALLS) 438.7 SY

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11,
279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11

CONCRETE RETAINING WALLS
RETAINING WALL DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 18 FILE NO. 30169 DESIGN NO. 708

REINF. BAR LIST-NW WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		69	4'-1	294
	d2	6	FOOTING TO STEM		69	5'-6	570
	u1	5	STEM, HORIZONTAL		18	19'-10	372
	u2	5	STEM, HORIZONTAL		72	12'-8	951
	v1	5	STEM, VERTICAL		69	7'-6	540
	w1	6	STEM, VERTICAL		69	7'-6	777
	x1	5	STEM, DIAGONAL		4	6'-0	25
	x2	5	STEM, DIAGONAL		4	6'-0	25
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				3554
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		69	6'-8	691
	g1	5	FOOTING, TRANSVERSE		69	6'-8	480
	h1	5	FOOTING, LONGITUDINAL		16	20'-0	334
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	434
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	353
	h4	5	FOOTING, LONGITUDINAL		4	20'-0	83
	h5	5	FOOTING, LONGITUDINAL		2	26'-3	55
	h6	5	FOOTING, LONGITUDINAL		2	27'-5	57
	h7	5	FOOTING, LONGITUDINAL		2	21'-6	45
	h8	5	FOOTING, LONGITUDINAL		2	22'-8	47
	s1	4	FOOTING, TRANSVERSE		69	8'-0	369
			REINFORCING STEEL - TOTAL (LBS)				2948

# EACH PER MARK	BARS h2 R	a	b
2	26'-3	2'-3	26'-9
2	25'-4	2'-3	25'-10 3/4
2	24'-4 3/4	2'-3	25'-0 1/2
2	23'-5 1/2	2'-3	24'-2
2	22'-6 1/2	2'-3	23'-4
2	21'-7 1/4	2'-3	22'-5 1/2
2	20'-8	2'-3	21'-7 1/4
2	19'-9	2'-3	20'-9
	BARS h3		
2	26'-3	0	24'-2
2	25'-4	0	23'-3 3/4
2	24'-4 3/4	0	22'-5 1/2
2	23'-5 1/2	0	21'-7 1/4
2	22'-6 1/2	0	20'-9
2	21'-7 1/4	0	19'-10 1/2
2	20'-8	0	19'-0 1/4
2	19'-9	0	18'-2

MARK	R	a	b
h5	23'-4	2'-3	24'-0
h6	24'-8	2'-3	25'-2

MARK	R	a
h7	23'-4	21'-6
h8	24'-8	22'-8
u2	24'-8	12'-8

REINF. BAR LIST-NO WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		292	4'-1	1244
	d2	6	FOOTING TO STEM		292	5'-6	2412
	u1	5	STEM, HORIZONTAL		116	25'-6	3085
	u2	5	STEM, HORIZONTAL		72	15'-2	1139
	u3	5	STEM, HORIZONTAL		120	12'-6	1565
	v1	5	STEM, VERTICAL		139	8'-0	1160
	v2	5	STEM, VERTICAL		153	8'-4	1330
	w1	6	STEM, VERTICAL		139	8'-0	1670
	w2	6	STEM, VERTICAL		153	8'-4	1915
	x1	5	STEM, DIAGONAL		12	6'-0	75
	x2	5	STEM, DIAGONAL		4	6'-0	25
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				15620
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		292	6'-8	2924
	g1	5	FOOTING, TRANSVERSE		292	6'-8	2030
	h1	5	FOOTING, LONGITUDINAL		100	33'-0	3442
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	523
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	444
	h4	5	FOOTING, LONGITUDINAL		16	VARIES	398
	h5	5	FOOTING, LONGITUDINAL		16	VARIES	435
	h6	5	FOOTING, LONGITUDINAL		16	VARIES	360
	h7	5	FOOTING, LONGITUDINAL		2	31'-7	66
	h8	5	FOOTING, LONGITUDINAL		2	32'-8	68
	h9	5	FOOTING, LONGITUDINAL		2	26'-11	56
	h10	5	FOOTING, LONGITUDINAL		2	27'-11	58
	h11	5	FOOTING, LONGITUDINAL		2	24'-1	51
	h12	5	FOOTING, LONGITUDINAL		2	24'-11	52
	h13	5	FOOTING, LONGITUDINAL		2	26'-10	56
	h14	5	FOOTING, LONGITUDINAL		2	27'-8	58
	h15	5	FOOTING, LONGITUDINAL		2	21'-10	46
	h16	5	FOOTING, LONGITUDINAL		2	22'-8	47
	s1	4	FOOTING, TRANSVERSE		292	8'-0	1560
			REINFORCING STEEL - TOTAL (LBS)				12674

# EACH PER MARK	BARS h2 R	a	b
2	36'-3	2'-3	31'-5
2	35'-4	2'-3	30'-8
2	34'-4 3/4	2'-3	29'-11 3/4
2	33'-5 1/2	2'-3	29'-2 1/2
2	32'-6 1/2	2'-3	28'-5 1/2
2	31'-7 1/4	2'-3	27'-8 3/4
2	30'-8	2'-3	27'-0
2	29'-9	2'-3	26'-3
	BARS h3		
2	36'-3	0	29'-2
2	35'-4	0	28'-5
2	34'-4 3/4	0	27'-8 1/4
2	33'-5 1/2	0	26'-11 1/2
2	32'-6 1/2	0	26'-2 1/2
2	31'-7 1/4	0	25'-5 3/4
2	30'-8	0	24'-9
2	29'-9	0	24'-0
	BARS h4		
2	36'-3	2'-3	23'-8
2	35'-4	2'-3	23'-1
2	34'-4 3/4	2'-3	22'-5 3/4
2	33'-5 1/2	2'-3	21'-8 1/2
2	32'-6 1/2	2'-3	21'-3 1/2
2	31'-7 1/4	2'-3	20'-8 1/4
2	30'-8	2'-3	20'-1
2	29'-9	2'-3	19'-6

MARK	R	a	b
h7	33'-4	2'-3	29'-4
h8	34'-8	2'-3	30'-5
h11	33'-4	2'-3	21'-10
h12	34'-8	2'-3	22'-8

# EACH PER MARK	BARS h5 R	a	b
2	36'-3	0	28'-2
2	35'-4	0	27'-7
2	34'-4 3/4	0	26'-11 3/4
2	33'-5 1/2	0	26'-2 1/2
2	32'-6 1/2	0	25'-9 1/2
2	31'-7 1/4	0	25'-2 1/4
2	30'-8	0	24'-7
2	29'-9	0	24'-0
	BARS h6		
2	36'-3	0	23'-8
2	35'-4	0	23'-1
2	34'-4 3/4	0	22'-5 3/4
2	33'-5 1/2	0	21'-8 1/2
2	32'-6 1/2	0	21'-3 1/2
2	31'-7 1/4	0	20'-8 1/4
2	30'-8	0	20'-1
2	29'-9	0	19'-6

MARK	R	a
h9	33'-4	26'-11
h10	34'-8	27'-11
h13	33'-4	26'-10
h14	34'-8	27'-8
h15	33'-4	21'-10
h16	34'-8	22'-8
u2	34'-8	15'-2
u3	34'-8	12'-6

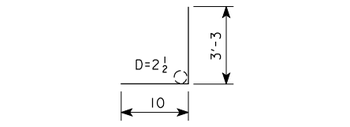
REINF. BAR LIST-NE WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		76	4'-1	324
	d2	6	FOOTING TO STEM		76	5'-6	628
	u1	5	STEM, HORIZONTAL		18	20'-10	391
	u2	5	STEM, HORIZONTAL		72	14'-3	1070
	v1	5	STEM, VERTICAL		76	7'-6	595
	w1	6	STEM, VERTICAL		76	7'-6	856
	x1	5	STEM, DIAGONAL		4	6'-0	25
	x2	5	STEM, DIAGONAL		4	6'-0	25
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				3914
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		76	6'-8	761
	g1	5	FOOTING, TRANSVERSE		76	6'-8	528
	h1	5	FOOTING, LONGITUDINAL		16	21'-0	350
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	487
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	406
	h4	5	FOOTING, LONGITUDINAL		4	21'-0	88
	h5	5	FOOTING, LONGITUDINAL		2	29'-5	61
	h6	5	FOOTING, LONGITUDINAL		2	30'-10	64
	h7	5	FOOTING, LONGITUDINAL		2	24'-8	51
	h8	5	FOOTING, LONGITUDINAL		2	26'-1	54
	s1	4	FOOTING, TRANSVERSE		76	8'-0	406
			REINFORCING STEEL - TOTAL (LBS)				3256

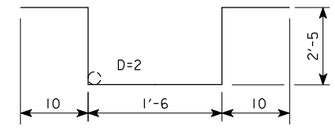
# EACH PER MARK	BARS h2 R	a	b
2	26'-3	2'-3	30'-5
2	25'-4	2'-3	29'-5
2	24'-4 3/4	2'-3	28'-5
2	23'-5 1/2	2'-3	27'-5
2	22'-6 1/2	2'-3	26'-5
2	21'-7 1/4	2'-3	25'-5
2	20'-8	2'-3	24'-5
2	19'-9	2'-3	23'-5
	BARS h3		
2	26'-3	0	27'-10
2	25'-4	0	26'-10
2	24'-4 3/4	0	25'-10
2	23'-5 1/2	0	24'-10
2	22'-6 1/2	0	23'-10
2	21'-7 1/4	0	22'-10
2	20'-8	0	21'-10
2	19'-9	0	20'-10

MARK	R	a	b
h5	23'-3	2'-3	27'-2
h6	24'-8	2'-3	28'-7

MARK	R	a
h7	23'-4	24'-8
h8	24'-8	26'-1
u2	24'-8	14'-3



BARS "d1"



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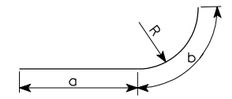

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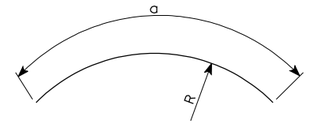
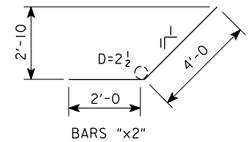


BARS "h" & BARS "U"



BARS "x2"

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

BENT BAR DETAILS

CONCRETE PLACEMENT QUANTITIES

LOCATION	TOTAL (CY)
RETAINING WALL - NO	
FOOTING	111.4
WALL STEM	88.8
RETAINING WALL - NO - TOTAL	200.2
RETAINING WALL - NW	
FOOTING	25.7
WALL STEM	19.2
RETAINING WALL - NW - TOTAL	44.9
RETAINING WALL - NE	
FOOTING	28.8
WALL STEM	21.5
RETAINING WALL - NE - TOTAL	50.3

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11

CONCRETE RETAINING WALLS

RETAINING WALL DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 78

7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg

REINF. BAR LIST-SW WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		63	4'-1	268
	d2	6	FOOTING TO STEM		63	5'-6	520
	u1	5	STEM, HORIZONTAL		18	21'-10	410
	u2	5	STEM, HORIZONTAL		72	10'-4	776
	v1	5	STEM, VERTICAL		63	7'-6	493
	w1	6	STEM, VERTICAL		63	7'-6	710
	x1	5	STEM, DIAGONAL		4	6'-0	25
	x2	5	STEM, DIAGONAL		4	6'-0	25
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				3227
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		63	6'-8	631
	g1	5	FOOTING, TRANSVERSE		63	6'-8	438
	h1	5	FOOTING, LONGITUDINAL		16	21'-10	364
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	369
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	289
	h4	5	FOOTING, LONGITUDINAL		4	21'-10	91
	h5	5	FOOTING, LONGITUDINAL		2	22'-4	47
	h6	5	FOOTING, LONGITUDINAL		2	23'-4	49
	h7	5	FOOTING, LONGITUDINAL		2	17'-7	37
	h8	5	FOOTING, LONGITUDINAL		2	18'-7	39
	s1	4	FOOTING, TRANSVERSE		63	8'-0	337
			REINFORCING STEEL - TOTAL (LBS)				2691

# EACH PER MARK	BARS h2 R	a	b
2	26'-3	2'-3	22'-3
2	25'-4	2'-3	21'-6 1/2
2	24'-4 3/4	2'-3	20'-10
2	23'-5 1/2	2'-3	20'-1 3/4
2	22'-6 1/2	2'-3	19'-5 1/4
2	21'-7 1/4	2'-3	18'-9
2	20'-8	2'-3	18'-0 1/2
2	19'-9	2'-3	17'-4
	BARS h3		
2	26'-3	0	19'-9
2	25'-4	0	19'-0 1/2
2	24'-4 3/4	0	18'-4
2	23'-5 1/2	0	17'-7 3/4
2	22'-6 1/2	0	16'-11 1/4
2	21'-7 1/4	0	16'-3
2	20'-8	0	15'-6 1/2
2	19'-9	0	14'-10

MARK	R	a	b
h5	23'-4	2'-3	20'-1
h6	24'-8	2'-3	21'-1

MARK	R	a
h7	23'-4	17'-7
h8	24'-8	18'-7
u2	24'-8	10'-4

REINF. BAR LIST-SO WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		266	4'-1	1133
	d2	6	FOOTING TO STEM		266	5'-6	2197
	u1	5	STEM, HORIZONTAL		96	25'-8	2568
	u2	5	STEM, HORIZONTAL		20	7'-7	158
	u3	5	STEM, HORIZONTAL		80	13'-0	1085
	u4	5	STEM, HORIZONTAL		20	19'-8	410
	u5	5	STEM, HORIZONTAL		108	9'-0	1014
	u6	5	STEM, HORIZONTAL		20	7'-7	158
	v1	5	STEM, VERTICAL		137	8'-3	1179
	v2	5	STEM, VERTICAL		129	8'-0	1076
	w1	6	STEM, VERTICAL		137	8'-3	1698
	w2	6	STEM, VERTICAL		129	8'-0	1550
	x1	5	STEM, DIAGONAL		16	6'-0	100
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				14326
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		266	6'-8	2664
	g1	5	FOOTING, TRANSVERSE		266	6'-8	1850
	h1	5	FOOTING, LONGITUDINAL		100	32'-0	3338
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	457
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	378
	h4	5	FOOTING, LONGITUDINAL		16	VARIES	283
	h5	5	FOOTING, LONGITUDINAL		16	VARIES	329
	h6	5	FOOTING, LONGITUDINAL		2	27'-7	58
	h7	5	FOOTING, LONGITUDINAL		2	28'-6	59
	h8	5	FOOTING, LONGITUDINAL		2	22'-10	48
	h9	5	FOOTING, LONGITUDINAL		2	23'-9	50
	h10	5	FOOTING, LONGITUDINAL		2	17'-2	36
	h11	5	FOOTING, LONGITUDINAL		2	17'-9	37
	h12	5	FOOTING, LONGITUDINAL		2	19'-11	42
	h13	5	FOOTING, LONGITUDINAL		2	20'-6	43
	h14	5	FOOTING, LONGITUDINAL		2	14'-11	31
	h15	5	FOOTING, LONGITUDINAL		2	15'-6	32
	h16	5	FOOTING, LONGITUDINAL		16	VARIES	245
	h17	5	FOOTING, LONGITUDINAL		2	15'-1	31
	h18	5	FOOTING, LONGITUDINAL		2	15'-5	32
	h19	5	FOOTING, LONGITUDINAL		16	VARIES	250
	s1	4	FOOTING, TRANSVERSE		266	8'-0	1422
			REINFORCING STEEL - TOTAL (LBS)				11715

# EACH PER MARK	BARS h2 R	a	b
2	36'-3	0	29'-7
2	35'-4	0	28'-11 1/2
2	34'-4 3/4	0	28'-4
2	33'-5 1/2	0	27'-8 1/4
2	32'-6 1/2	0	27'-0 3/4
2	31'-7 1/4	0	26'-5
2	30'-8	0	25'-9 1/2
2	29'-9	0	25'-2
	BARS h3		
2	36'-3	0	24'-10
2	35'-4	0	24'-2 1/2
2	34'-4 3/4	0	23'-7
2	33'-5 1/2	0	22'-11 1/4
2	32'-6 1/2	0	22'-3 3/4
2	31'-7 1/4	0	21'-8
2	30'-8	0	21'-0 1/2
2	29'-9	0	20'-5
	BARS h4		
2	36'-3	2'-3	18'-5
2	35'-4	2'-3	18'-0
2	34'-4 3/4	2'-3	17'-7
2	33'-5 1/2	2'-3	17'-2
2	32'-6 1/2	2'-3	16'-9
2	31'-7 1/4	2'-3	16'-4
2	30'-8	2'-3	15'-11
2	29'-9	2'-3	15'-6

# EACH PER MARK	BARS h5 R	a	b
2	36'-3	0	20'-11
2	35'-4	0	20'-6
2	34'-4 3/4	0	20'-1
2	33'-5 1/2	0	19'-8
2	32'-6 1/2	0	19'-3
2	31'-7 1/4	0	18'-10
2	30'-8	0	18'-5
2	29'-9	0	18'-0
	BARS h16		
2	36'-3	0	16'-2
2	35'-4	0	15'-9
2	34'-4 3/4	0	15'-4
2	33'-5 1/2	0	14'-11
2	32'-6 1/2	0	14'-6
2	31'-7 1/4	0	14'-1
2	30'-8	0	13'-8
2	29'-9	0	13'-3
	BARS h19		
2	36'-3	7'-3	8'-6
2	35'-4	7'-3	8'-3 1/2
2	34'-4 3/4	7'-3	8'-1
2	33'-5 1/2	7'-3	7'-10 1/4
2	32'-6 1/2	7'-3	7'-7 3/4
2	31'-7 1/4	7'-3	7'-5
2	30'-8	7'-3	7'-2 1/2
2	29'-9	7'-3	7'-0

MARK	R	a
h6	33'-4	27'-7
h7	34'-8	28'-6
h8	33'-4	22'-10
h9	34'-8	23'-9
h12	33'-4	19'-11
h13	34'-8	20'-6
h14	33'-4	14'-11
h15	34'-8	15'-6
u3	34'-8	13'-0
u5	34'-8	9'-0

MARK	R	a	b
h10	33'-4	2'-3	14'-11
h11	34'-8	2'-3	15'-6
h17	33'-4	7'-3	7'-10
h18	34'-8	7'-3	8'-2

MARK	R	a	b
u6	34'-8	2'-9	4'-10

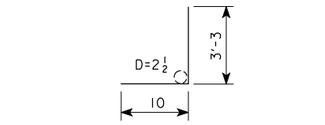
REINF. BAR LIST-SE WALL

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
EPOXY COATED REINF.	d1	5	FOOTING TO STEM		67	4'-1	285
	d2	6	FOOTING TO STEM		67	5'-6	553
	u1	5	STEM, HORIZONTAL		18	21'-10	410
	u2	5	STEM, HORIZONTAL		72	11'-6	864
	v1	5	STEM, VERTICAL		67	7'-6	524
	w1	6	STEM, VERTICAL		67	7'-6	755
	x1	5	STEM, DIAGONAL		4	6'-0	25
	x2	5	STEM, DIAGONAL		4	6'-0	25
			REINFORCING STEEL EPOXY COATED - TOTAL (LBS)				3441
NON-COATED REINF.	f1	6	FOOTING, TRANSVERSE		67	6'-8	671
	g1	5	FOOTING, TRANSVERSE		67	6'-8	466
	h1	5	FOOTING, LONGITUDINAL		16	21'-10	364
	h2	5	FOOTING, LONGITUDINAL		16	VARIES	401
	h3	5	FOOTING, LONGITUDINAL		16	VARIES	321
	h4	5	FOOTING, LONGITUDINAL		4	21'-10	91
	h5	5	FOOTING, LONGITUDINAL		2	24'-3	51
	h6	5	FOOTING, LONGITUDINAL		2	25'-5	53
	h7	5	FOOTING, LONGITUDINAL		2	19'-6	41
	h8	5	FOOTING, LONGITUDINAL		2	20'-8	43
	s1	4	FOOTING, TRANSVERSE		67	8'-0	358
			REINFORCING STEEL - TOTAL (LBS)				2860

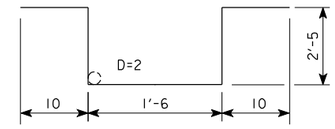
# EACH PER MARK	BARS h2 R	a	b
2	26'-3	2'-3	24'-6
2	25'-4	2'-3	23'-8 1/2
2	24'-4 3/4	2'-3	22'-11
2	23'-5 1/2	2'-3	22'-1 3/4
2	22'-6 1/2	2'-3	21'-4 1/4
2	21'-7 1/4	2'-3	20'-7
2	20'-8	2'-3	19'-9 1/2
2	19'-9	2'-3	19'-0
	BARS h3		
2	26'-3	0	22'-0
2	25'-4	0	21'-2 1/2
2	24'-4 3/4	0	20'-5
2	23'-5 1/2	0	19'-7 3/4
2	22'-6 1/2	0	18'-10 1/4
2	21'-7 1/4	0	18'-1
2	20'-8	0	17'-3 1/2
2	19'-9	0	16'-6

MARK	R	a	b
h5	23'-4	2'-3	22'-0
h6	24'-8	2'-3	23'-2

MARK	R	a
h7	23'-4	19'-6
h8	24'-8	20'-8
u2	24'-8	11'-6



BARS "d1"



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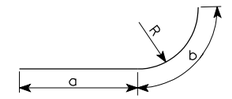
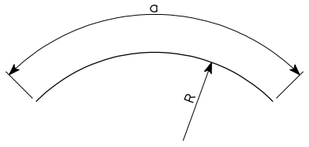
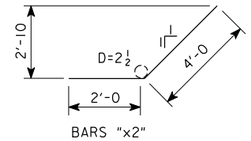


BARS "h"



BARS "h" & BARS "u"



BARS "x2"

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

BENT BAR DETAILS

CONCRETE PLACEMENT QUANTITIES

LOCATION	TOTAL (CY)
RETAINING WALL - SO	
FOOTING	102.4
WALL STEM	82.0
RETAINING WALL - SO - TOTAL	184.4
RETAINING WALL - SW	
FOOTING	23.3
WALL STEM	17.3
RETAINING WALL - SW - TOTAL	40.6
RETAINING WALL - SE	
FOOTING	18.6
WALL STEM	25.0
RETAINING WALL - SE - TOTAL	43.6

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11

CONCRETE RETAINING WALLS

RETAINING WALL DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

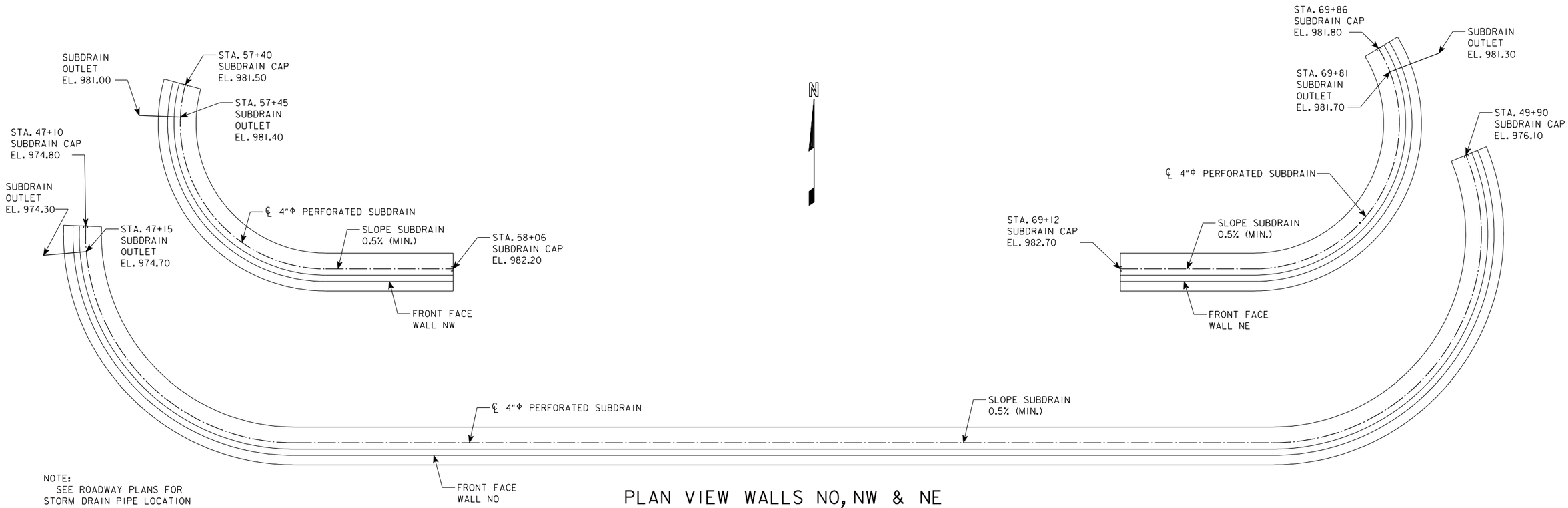
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 79

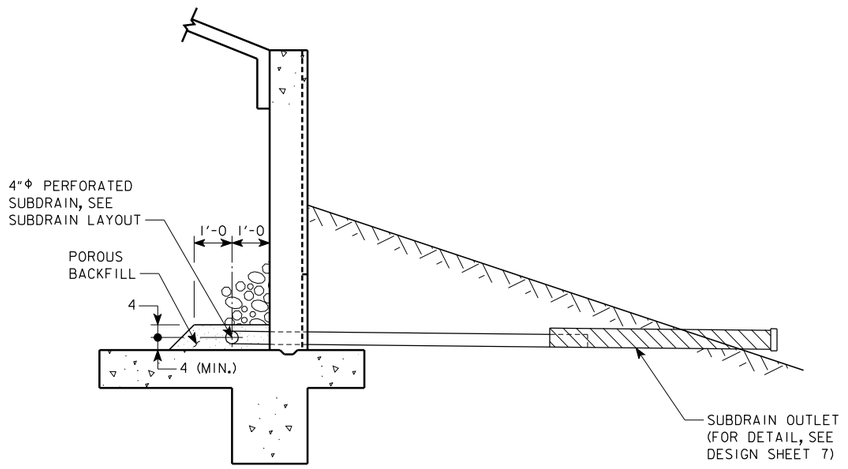
7/25/2007 gclark C:\PWworking\OMA\d0132081\78080308.brg



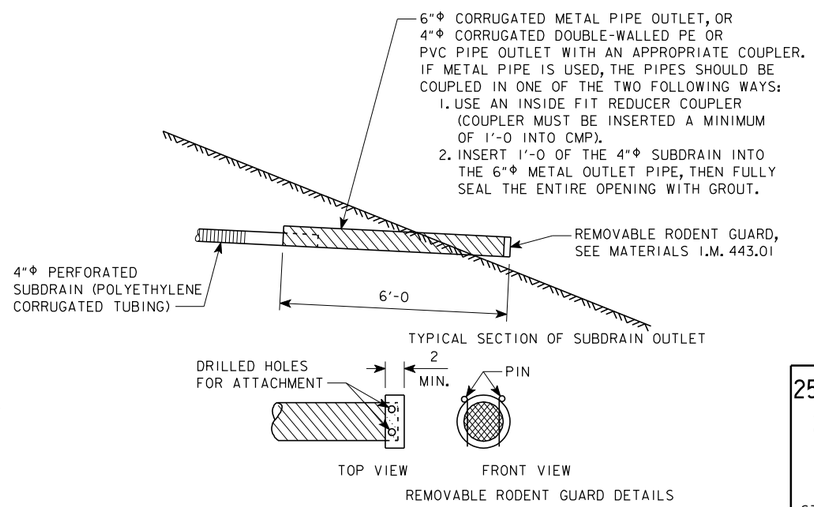
NOTE:
SEE ROADWAY PLANS FOR STORM DRAIN PIPE LOCATION AND ELEVATIONS. COORDINATE SUBDRAIN PLACEMENT AND SLOPE TO DRAIN.

PLAN VIEW WALLS NO, NW & NE

(SHOWING SUBDRAIN LAYOUT, NOT TO SCALE)



TYPICAL SECTION



OUTLET DETAILS

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11

CONCRETE RETAINING WALLS SUBDRAIN DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS | POTTAWATTAMIE COUNTY | PROJECT NUMBER IM-080-1(308)2--13-78 | SHEET NUMBER 80

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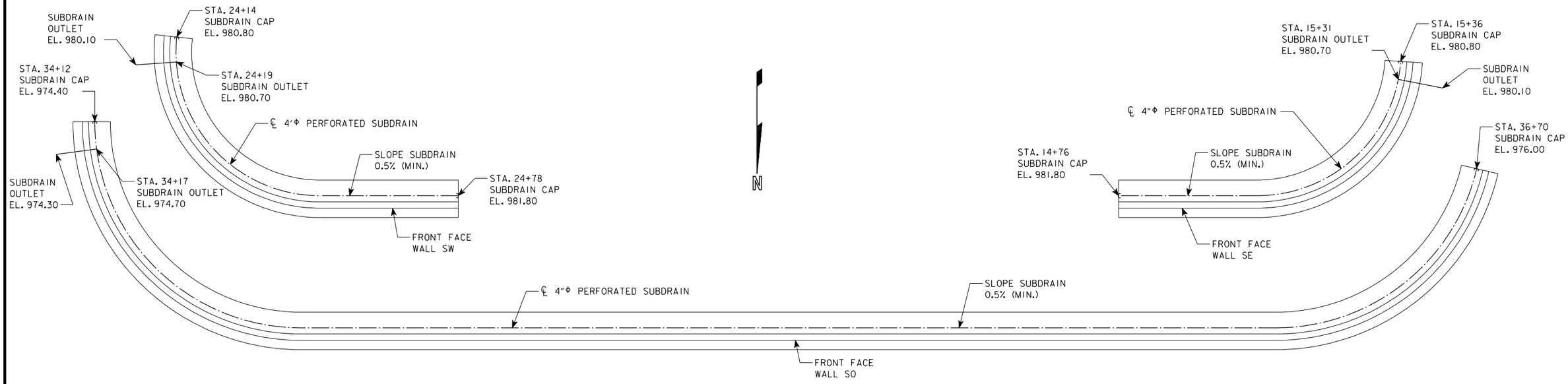
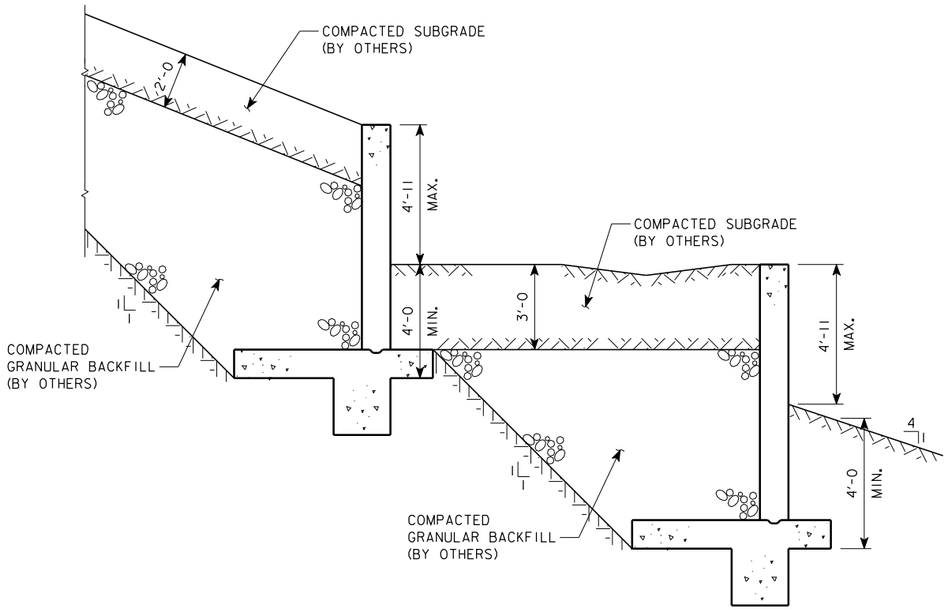


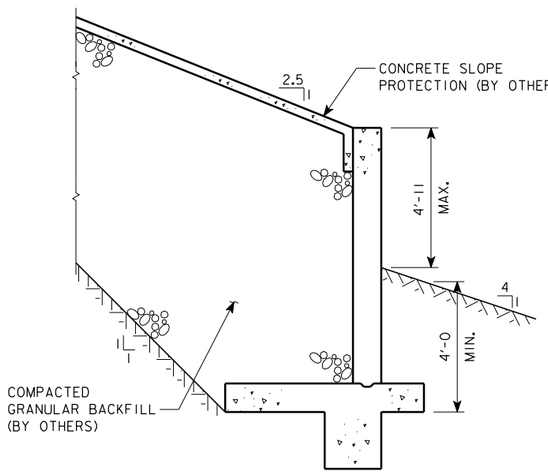
PLAN VIEW WALLS SO, SW & SE

(SHOWING SUBDRAIN LAYOUT, NOT TO SCALE)



TYPICAL SECTION

(OUTSIDE BRIDGE LIMITS)



TYPICAL SECTION

(UNDER BRIDGE)

NOTE:
SEE ROADWAY PLANS FOR STORM DRAIN PIPE LOCATION AND ELEVATIONS. COORDINATE SUBDRAIN PLACEMENT AND SLOPE TO DRAIN.

257'-11 x VAR, 64'-0 x 7'-11, 59'-10 x 7'-11, 279'-11 x VAR, 74'-0 x 7'-11, 66'-2 x 7'-11 CONCRETE RETAINING WALLS SUBDRAIN DETAILS

STA. 40176+95.25 (24TH STREET) JUNE, 2007

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 18 FILE NO. 30169 DESIGN NO. 708

DESIGN TEAM DLS/HHK/JAS	POTTAWATTAMIE COUNTY	PROJECT NUMBER IM-080-1(308)2--13-78	SHEET NUMBER 81

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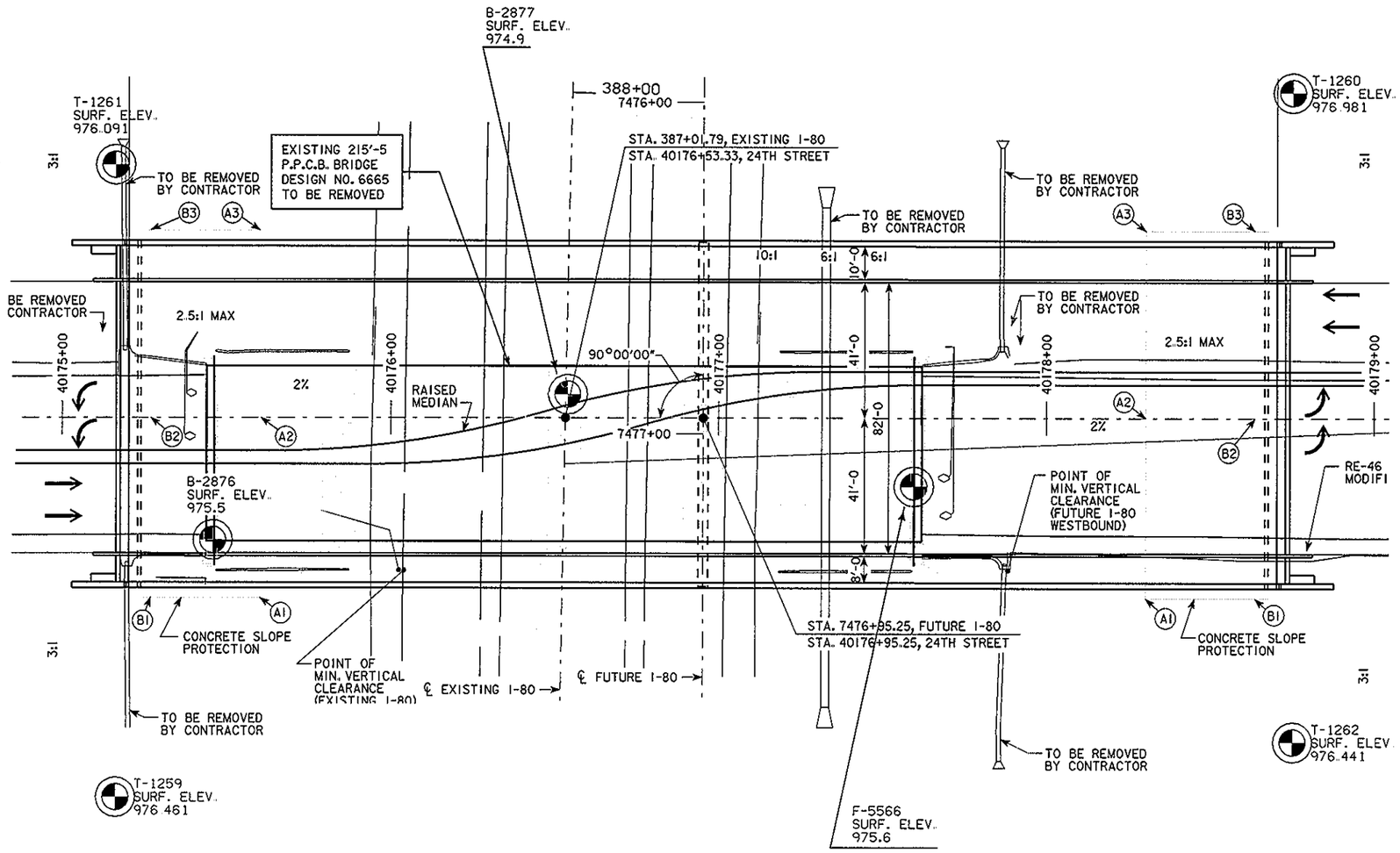


LOCATION

24TH ST OVER I-80
T-74 N R-44 W
SECTION 2/3/10/11
LEWIS TOWNSHIP
POTTAWATTAMIE COUNTY
BRIDGE MAINT. NO. 7801.70080

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Robert L. Stanley
08468
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.

Robert Stanley 6-25-07
Signature Date

Robert L. Stanley
Printed or Typed Name

My license renewal date is December 31, 20 08

Pages or sheets covered by this seal: SPS.01, SPS.02, & SPS.03

Boring No.	Date Drilled	GroundWater Level (Ft.)
T-1259	01/04/06	14.8 PLUGGED
T-1260	01/04/06	17.2 PLUGGED
T-1261	01/05/06	16.4 PLUGGED
T-1262	01/10/06	16.4 PLUGGED
B-2876	04/1967	NA
B-2877	04/1967	NA
F-5566	04/1967	NA

DESIGN FOR 0° SKEW

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

24TH STREET OVER I-80
178'-6 & 175'-0 SPANS

SITUATION PLAN

STA. 40176+93.50 SEPTEMBER, 2006

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

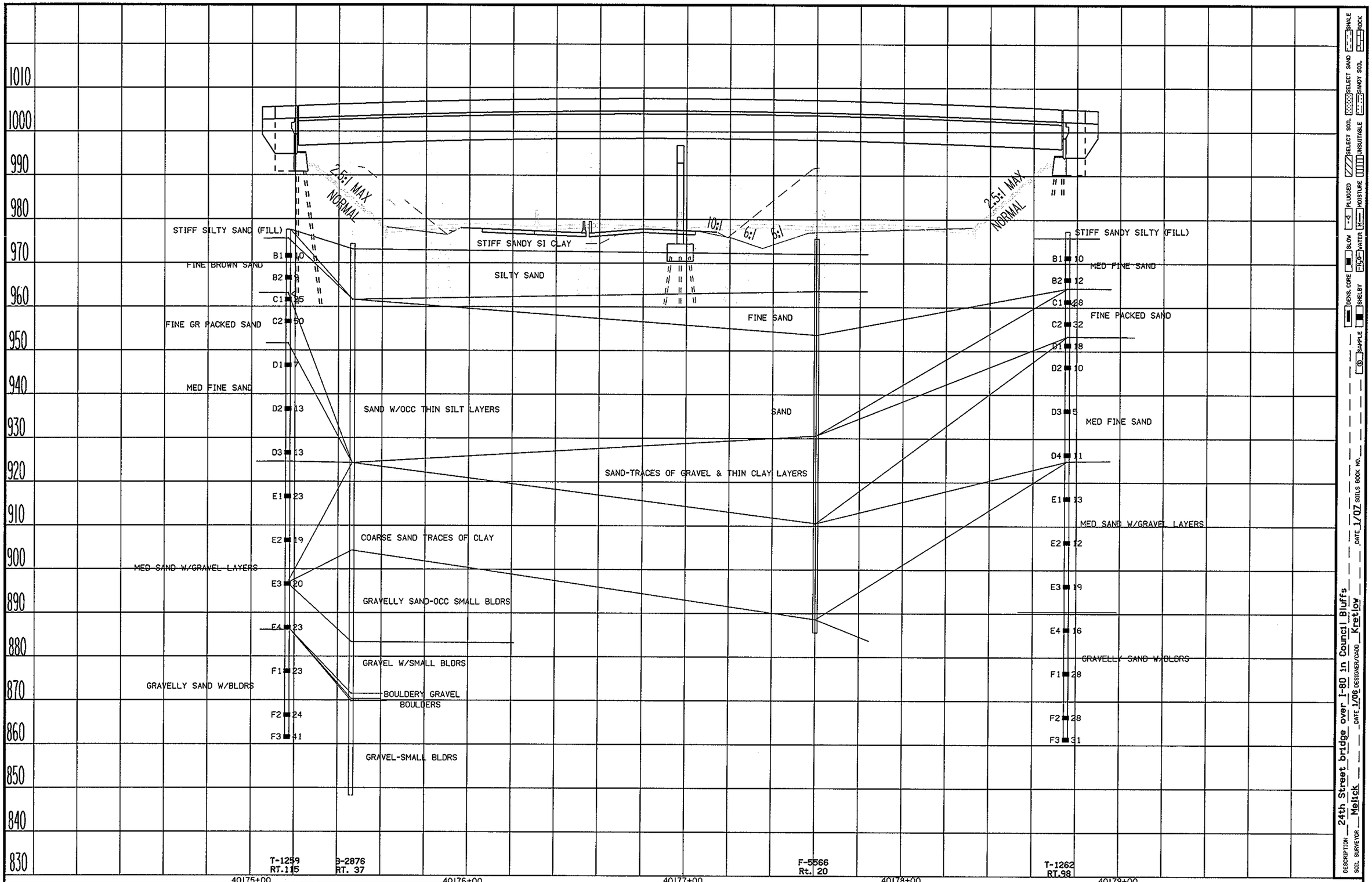
DESIGN SHEET NO. 1 OF 2 FILE NO. 30169 DESIGN NO. 508

DESCRIPTION 24th Street bridge over I-80 in Council Bluffs — DATE 1/07 SOILS BOOK NO. —
SOIL SURVEYOR Mellick — DATE 1/06 DESIGNED/CHKD Kretlow

ROCK | SHALE | SELECT SAND | SANDY SOIL | SELECT SOIL | UNSUITABLE | PLUGGED | MOISTURE | BLOW | WATER | DENS. CORE | SAMPLE | SHELBY

DESIGN TEAM	STANLEY/MEGIVERN/KRETLOW	ENGLISH	IOWA DOT * OFFICE OF DESIGN	POTTAWATTAMIE	COUNTY	PROJECT NUMBER	BRFIM-080-1(308)2--05-78	SHEET NUMBER	SPS.01

25-JUN-2007 12:52 gkretl2 w:\Projects\P8921997\7802901004\Soils_SECTION_2\780508.sps01



DESIGN TEAM	STANLEY/MEGIVERN/KRETLOW	ENGLISH	IOWA DOT * OFFICE OF DESIGN	POTTAWATTAMIE	COUNTY	PROJECT NUMBER	BRFIM-080-1(308)2--05-78	SHEET NUMBER	SPS.02	NBL

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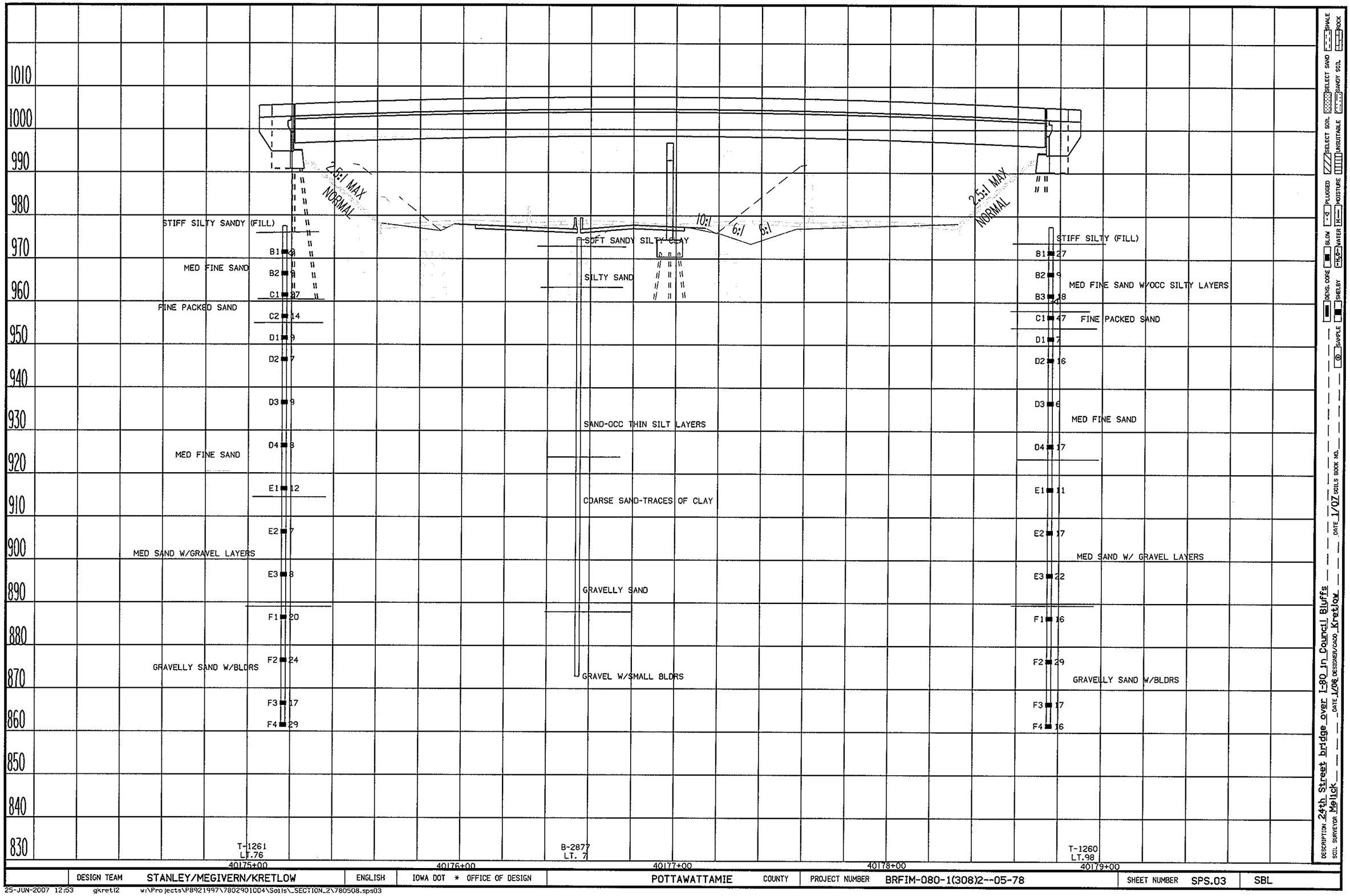

DESIGN TEAM	STANLEY/MEGIVERN/KRETLOW	ENGLISH	IOWA DOT * OFFICE OF DESIGN	POTTAWATTAMIE	COUNTY	PROJECT NUMBER	BRFIM-080-1(308)2--05-78	SHEET NUMBER	SPS.03	SBL

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