

ESTIMATED BRIDGE QUANTITIES - DESIGN 320

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2402-2720000	EXCAVATION, CLASS 20	CY	2360	
2	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	571.3	
3	2403-7000210	HIGH PERFORMANCE STRUCTURAL CONCRETE	CY	1981.4	
4	2403-7303000	STRUCTURAL CONCRETE COATING	SY	601.9	
5	2404-7775000	REINFORCING STEEL	LB	237273	
6	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	549387	
7	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB	12119	
8	2408-7800000	STRUCTURAL STEEL	LB	1749787	
9	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	LF	41.5	
10	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	LF	41.5	
11	2414-6424119	CONCRETE BARRIER RAILING, AESTHETIC	LF	1794.7	
12	2434-0000100	DISC BEARING ASSEMBLIES	EACH	33	
13	2499-2300001	DECK DRAINS	LS	1.0	
14	2499-9000000	MODULAR EXPANSION JOINT ASSEMBLY	LF	74.3	
15	2499-9000100	MODULAR EXPANSION JOINT ASSEMBLY LEAK TESTING	EACH	2	
16	2501-0201253	PILES, STEEL, HP 12 X 53	LF	1900	
17	2501-0201473	PILES, STEEL, HP 14 X 73	LF	12030	
18	2507-2638620	MACADAM STONE SLOPE PROTECTION	SY	717	
19	2507-2638660	BRIDGE WING ARMORING - MACADAM STONE	SY	22	
20	2526-8285000	CONSTRUCTION SURVEY	LS	1.0	
21	2533-4980005	MOBILIZATION	LS	1.0	
22	2551-0000230	PERMANENT CRASH CUSHION, SEVERE USE (SU)	EACH	1	
23	2551-0000300	PERMANENT CRASH CUSHION SPARE PARTS KIT	EACH	1	
24	2599-9999008	MAINTENANCE CATWALKS AND ACCESS SYSTEM	LB	265808	
25	2599-9999010	GIRDER ERECTION PLAN	LS	1.0	

ITEM NO. ESTIMATE REFERENCE INFORMATION

- 1 EXCAVATION QUANTITIES HAVE BEEN COMPUTED ASSUMING THE PROPOSED GRADING FOR PROJECT NUMBER IM-080-6(243)239--13-52 IS COMPLETED PRIOR TO BRIDGE CONSTRUCTION. IN ALL OTHER LOCATIONS, PIER EXCAVATION QUANTITIES ARE BASED ON EXISTING GROUND CONDITIONS.
- 2 ALL PIER FOOTING CONCRETE IS TO BE CLASS "C".
- 3 THIS BID ITEM INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT, WINGWALLS, PIER COLUMNS AND PIER CAPS. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING AND SUBDRAIN OUTLET AT WEST ABUTMENT AND TOE OF BERM. INCLUDES FURNISHING AND PLACING CONCRETE SEALER AT WEST ABUTMENT AND PIER NO. 5A. INCLUDES THE LABOR AND MATERIAL ASSOCIATED WITH CONSTRUCTING THE CONCRETE RUSTICATION AND AESTHETIC TREATMENTS AT THE WEST ABUTMENT AND PIERS. INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS. INCLUDES ALL RESILIENT JOINT FILLER REQUIRED.
- 4 REFER TO THE "CONCRETE PAINTING NOTES" ON DESIGN SHEET 31 FOR MORE INFORMATION.
- 5 INCLUDES MECHANICAL SPLICERS AT PIER NO. 1.
- 9 INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL, AND THE $\frac{3}{8}$ " BARRIER PLATES WITH THEIR ANCHORAGE SYSTEM. EXCLUDES INSTALLATION OF THE NEOPRENE GLAND.
- 10 INCLUDES INSTALLATION OF NEOPRENE GLAND AND WATER TESTING OF JOINT.
- 11 IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS AND THE CRASH CUSHION END POST 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 AND THE LABOR AND MATERIAL ASSOCIATED WITH CONSTRUCTING THE AESTHETIC TREATMENT. INCLUDES 1,780 FEET OF 3" DIA., 1,780 FEET OF 2" DIA., 5 FEET OF $1\frac{1}{2}$ " DIA., AND 5 FEET OF 1" DIA. RIGID STEEL CONDUIT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES, FITTINGS AND POLYPROPYLENE PULL ROPE. INCLUDES CONCRETE FOR THE CRASH CUSHION END POST. INCLUDES PROVIDING INTEGRAL COLOR AND RUSTICATIONS FOR CONCRETE BARRIERS AND THE CRASH CUSHION END POST.
- 12 INCLUDES ALL COSTS OF FURNISHING AND INSTALLING DISC BEARINGS INCLUDING DISC BEARING, SOLE PLATE, MASONRY PLATE, ANCHOR BOLTS, NEOPRENE PAD, GUIDE BARS, AND STAINLESS STEEL. INCLUDES TAPERED MASONRY PLATES AT EXTERIOR GIRDERS. SEE DESIGN SHEETS 58 THRU 60 FOR DETAILS.

- 13 REFER TO THE DRAINAGE DETAIL SHEETS FOR LOCATION, MATERIALS, AND DETAILS OF CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT, LABOR, AND PERFORMANCE OF ALL WORK ASSOCIATED WITH THE FABRICATION AND INSTALLATION OF 3 TYPE 1 AND 7 TYPE 2 DECK DRAINS WITH TRENCH GRATES PER PLAN. INCLUDES COST OF FURNISHING AND PLACING SPLASH BASINS (INCLUDING EXCAVATION, EROSION STONE OR CLASS "E" REVETMENT AND ENGINEERING FABRIC).
- 14 INCLUDES ALL LABOR AND MATERIAL ASSOCIATED WITH THE FABRICATION AND INSTALLATION OF THE MODULAR EXPANSION JOINT INCLUDING THE ANCHORAGE SYSTEM, NEOPRENE GLANDS, TEMPORARY ERECTION MATERIALS AND THE BARRIER COVER PLATES AND THEIR ANCHORAGE SYSTEMS. REFER TO DEVELOPMENTAL SPECIFICATIONS FOR MODULAR EXPANSION JOINT ASSEMBLY.
- 16,17 PILING SHALL BE GRADE 50. INCLUDES THE COST OF DRILLING OR TORCH CUTTING HOLES IN PILING AND INSTALLING PILE UPLIFT ANCHORS AT THE WEST ABUTMENT AND PIERS AS DETAILED IN THE PLANS.
- 18 INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, MACADAM STONE, CONCRETE CURB AND REINFORCING, POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE OF ABUTMENT FOOTING, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING.
- 19 INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, MACADAM STONE, CONCRETE CURB AND REINFORCING, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING FOR WING ARMORING.
- 22 CRASH CUSHION IS FOR PERMANENT, SEVERE USE INSTALLATION. SEE DESIGN SHEET 6 FOR LOCATION.
- 24 INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING MAINTENANCE CATWALKS AND INSPECTION CABLES AND ATTACHMENTS PER PLAN. INCLUDES 2,445 FEET OF $\frac{1}{2}$ " DIAMETER GALVANIZED WIRE ROPE FOR GIRDER INSPECTION CABLES. WEIGHT OF GALVANIZED COATING IS NOT INCLUDED IN WEIGHT TOTAL AND IS INCIDENTAL TO THE BID ITEM QUANTITY "MAINTENANCE CATWALKS AND ACCESS SYSTEM".

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

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DESIGN FOR 0° SKEW

873'-6 x VARIES CONTINUOUS

WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

ESTIMATED QUANTITIES

STA. 2536+28.27 (E RAMP B)

APRIL 2018

SUMMARY OF CONCRETE QUANTITIES

LOCATION	STRUCTURAL CONCRETE (BRIDGE)	HPC STRUCTURAL CONCRETE
BRIDGE DECK	-	1,133.8
WEST ABUTMENT	-	110.2
PIER NO. 1	207.4	140.0
PIER NO. 2	125.1	171.7
PIER NO. 3	90.0	124.0
PIER NO. 4	102.9	197.2
PIER NO. 5A	45.9	104.5
TOTAL (CU. YDS.)	571.3	1,981.4

SUMMARY OF REINFORCING STEEL

LOCATION	NON-COATED REINFORCING STEEL	STAINLESS STEEL REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
BRIDGE DECK	-	-	460,721
BARRIER RAIL	-	11,417	52,005
BARRIER RAIL END SECTIONS	-	384	644
CRASH CUSHION END POST	-	245	418
WEST ABUTMENT	-	73	12,802
PIER NO. 1	68,918	-	-
PIER NO. 2	64,494	-	-
PIER NO. 3	41,513	-	-
PIER NO. 4	57,463	-	-
PIER NO. 5A	4,885	-	22,797
TOTAL (LBS.)	237,273	12,119	549,387

SUMMARY OF EXCAVATION

LOCATION	CLASS 20 EXCAVATION
WEST ABUTMENT	215
PIER NO. 1	620
PIER NO. 2	300
PIER NO. 3	275
PIER NO. 4	640
PIER NO. 5A	310
TOTAL (CU. YDS.)	2,360

SUMMARY OF FOUNDATIONS

LOCATION	SUBSTRUCTURE TYPE	FOUNDATION TYPE	NUMBER	LENGTH (LIN. FT.)	TOTAL (LIN. FT.)
WEST ABUTMENT	STUB ABUTMENT	HP 12 x 53	19	100	1,900
PIER NO. 1	TEE PIER	HP 14 x 73	38	75	2,850
PIER NO. 2	TEE PIER	HP 14 x 73	33	80	2,640
PIER NO. 3	TEE PIER	HP 14 x 73	24	85	2,040
PIER NO. 4	TEE PIER	HP 14 x 73	34	90	3,060
PIER NO. 5A	TEE PIER	HP 14 x 73	16	90	1,440
TOTAL HP 12 x 53 (LIN. FT.)					1,900
TOTAL HP 14 x 73 (LIN. FT.)					12,030

SUMMARY OF BEARINGS

LOCATION	BEARING TYPE	NUMBER	ASSOCIATED BID ITEM
WEST ABUTMENT	DISC BEARING ASSEMBLY	4	EACH
PIER NO. 1	DISC BEARING ASSEMBLY	4	EACH
PIER NO. 2	DISC BEARING ASSEMBLY	4	EACH
PIER NO. 3	DISC BEARING ASSEMBLY	5	EACH
PIER NO. 4	DISC BEARING ASSEMBLY	8	EACH
PIER NO. 5 BACK	DISC BEARING ASSEMBLY	4	EACH
PIER NO. 5A BACK	DISC BEARING ASSEMBLY	4	EACH
TOTAL (EACH)		33	

SUMMARY OF STRUCTURAL STEEL

LOCATION	TOTAL (LBS.)
① WELDED GIRDERS	1,555,525
② MISCELLANEOUS STEEL	194,262
TOTAL (LBS.)	1,749,787

① GIRDER WEIGHT INCLUDES STUDS, BEARING STIFFENERS, JACKING STIFFENERS, INTERMEDIATE STIFFENERS, CROSS FRAME STIFFENERS, SPLICE PLATES, BOLTS, WELDS AND FLANGE DEFLECTORS.

② MISCELLANEOUS STEEL INCLUDES ALL CROSS FRAME, DIAPHRAGM AND SIGN TRUSS SUPPORT MATERIAL, INCLUDING BOLTS AND WELDS.

DESIGN FOR 0° SKEW

873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

SUMMARY OF ITEMIZED QUANTITIES

STA. 2536+28.27 (E RAMP B)

APRIL 2018

SPECIFICATIONS:

DESIGN:	AASHTO LRFD 7TH ED, SERIES OF 2016, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.
CONSTRUCTION:	IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS, INCLUDING THE FOLLOWING SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT: -"DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES", -"DEVELOPMENTAL SPECIFICATIONS FOR MASS CONCRETE-CONTROL OF HEAT OF HYDRATION", -"DEVELOPMENTAL SPECIFICATIONS FOR MODULAR EXPANSION JOINT ASSEMBLY", -"SPECIAL PROVISIONS FOR E-BUILDER", -"DEVELOPMENTAL SPECIFICATIONS FOR PROGRESS SCHEDULING", -"DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING", -"DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION", -"SPECIAL PROVISIONS FOR GIRDER ERECTION PLAN", -"SPECIAL PROVISIONS FOR AESTHETIC TREATMENT OF CONCRETE BARRIER".

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH ED, SERIES OF 2016, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

- REINFORCING STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 5, GRADE 60.
- CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, $f'_c = 4.0$ KSI.
- STRUCTURAL STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 6, ASTM A709 GRADE 50W (AASHTO M270 GRADE 50W), EXCEPT AS NOTED.
- FATIGUE STRESSES BASED ON INFINITE LIFE.

GENERAL NOTES:

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

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

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.

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709 GRADE 50W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH ARTICLE 2408.02, Q, OF THE STANDARD SPECIFICATIONS.

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".

CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03, A, 2 OF THE STANDARD SPECIFICATIONS. CAST-IN-PLACE BARRIER RAILS AND THE CRASH CUSHION END POST SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD) OR THE CRASH CUSHION END POST. THE CONCRETE BARRIERS AND THE CRASH CUSHION END POST ARE TO BE INTEGRALLY COLORED. SEE "SPECIAL PROVISIONS FOR AESTHETIC TREATMENT OF CONCRETE BARRIER" FOR ADDITIONAL INFORMATION.

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

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

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

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THE STEEL GIRDER DEFLECTIONS SHOWN IN THE DEFLECTION DIAGRAMS AND MISCELLANEOUS DATA TABLES IN THESE PLANS WERE COMPUTED ASSUMING THAT THE INSPECTION WALKWAYS WOULD BE INSTALLED PRIOR TO CONCRETE DECK SLAB. IF AN ALTERNATE SEQUENCE IS CHOSEN WHEN ERECTING THE BRIDGE, THE CONTRACTOR SHALL PROVIDE CALCULATIONS FOR REVISED CAMBER AND BLOCKING DATA, DEFLECTION DATA AND GIRDER LINE HAUNCH DATA WITH THE SHOP DRAWINGS.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. SEE COORDINATED OPERATIONS TAB III-OI ELSEWHERE IN THESE PLANS FOR A LIST OF PROJECTS.

IN ACCORDANCE WITH IOWA DOT STANDARD SPECIFICATIONS SECTION 1105, THE CONTRACTOR SHALL SUBMIT A GIRDER ERECTION PLAN (GEP) CONSISTING OF ERECTION PLANS, ERECTION PROCEDURES, AND ERECTION ENGINEERING CALCULATIONS TO THE ENGINEER ACCORDING TO SPECIAL PROVISION "GIRDER ERECTION PLAN".

FANT LINES ON PLANS INDICATE THE EXISTING ROADWAYS AND STRUCTURES.
GUARDRAIL IS TO BE PLACED BY PROJECT IM-080-6(243)239--13-52.

ROADWAY EXCAVATION IS TO BE DONE AS PART OF THE TIED PROJECT IM-080-6(243)239--13-52. EXCAVATION QUANTITIES FOR THE PIERS ARE BASED ON THE ASSUMPTION THAT ROADWAY EXCAVATION WILL HAVE BEEN COMPLETED AND ABUTMENT FILLS ARE IN PLACE PRIOR TO STARTING CONSTRUCTION OF THE ABUTMENTS AND PIERS.

THE APPROACH FILLS AS SHOWN ARE TO BE DONE AS PART OF THE TIED PROJECT IM-080-6(243)239--13-52 AND 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.

THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SUFFICIENT TEMPORARY BRACING TO MINIMIZE LATERAL DEFLECTION AND ROTATION OF EXTERIOR STEEL GIRDERS DURING DECK PLACEMENT. LATERAL DEFLECTION AND ROTATION OF EXTERIOR GIRDERS MAY RESULT IN THIN DECKS AND AN UPWARDS SHIFT IN BAR MATS WHICH CAN DECREASE CONCRETE COVER. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO MINIMIZE LATERAL DEFLECTION AND ROTATION OF EXTERIOR GIRDERS DURING DECK PLACEMENT. TEMPORARY BRACING SHALL NOT BE WELDED TO THE STEEL GIRDERS OR ITS ATTACHMENTS INCLUDING THE STUDS.

ABUTMENT PILES SHALL NOT BE DRIVEN FOR A MINIMUM OF 6 MONTHS FOLLOWING THE COMPLETION OF THE APPROACH FILL AND 4'-0 SURCHARGE. THE TIME PERIOD BETWEEN THE COMPLETION OF THE APPROACH FILL SURCHARGE AND DRIVING PILES MAY BE CHANGED AS ORDERED BY THE ENGINEER BASED UPON REVIEW OF THE SETTLEMENT PLATES.

RESEARCHERS FROM IOWA STATE UNIVERSITY WILL BE OBSERVING PLACEMENT OF DECK CONCRETE FOR THIS PROJECT. CONTRACTOR IS REQUIRED TO CONTACT BRENT PHARES AT (515) 294-5879 APPROXIMATELY 3 DAYS PRIOR TO DECK CONCRETE PLACEMENT AND WHENEVER A CHANGE IN DECK PLACEMENT SCHEDULE IS MADE. ACTIVITIES BY IOWA STATE UNIVERSITY WILL BE TO OBSERVE ONLY AND WILL NOT IMPACT CONSTRUCTION ACTIVITIES.

SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH 1105.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

1	STRUCTURAL STEEL
2	BEARINGS
3	EXPANSION JOINTS AND SLIDER PLATES
4	DECK DRAINS
5	MAINTENANCE CATWALKS AND INSPECTION CABLE
6	FORMWORK FOR AESTHETIC TREATMENT AT PIERS, ABUTMENTS AND BARRIERS
7	ERCTION PLANS

BRIDGE DECK DIMENSIONS TABLE

	ITEM	UNITS	QUANTITY
1	DECK LENGTH	L.F.	876.5
2	MINIMUM DECK WIDTH	L.F.	43.2
3	MAXIMUM DECK WIDTH	L.F.	80.4
4	DECK AREA	S.F.	42,540

1. DECK LENGTH IS MEASURED FROM FACE OF PAVING NOTCH TO PIER NO. 5A ALONG BASELINE RAMP B.
- 2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO BASELINE RAMP B.
4. DECK AREA IS TO BE BASED ON THE DECK LENGTH AND OUT-TO-OUT DECK DIMENSIONS.

ALL PLAN DIMENSIONS ARE HORIZONTAL UNLESS NOTED OTHERWISE.

THE TIED ROAD PLANS, PROJECT NO. IM-080-6(243)239--13-52 CONTAIN THE POLLUTION PREVENTION PLAN.

TRAFFIC CONTROL PLAN:

THE STRUCTURE IS BEING CONSTRUCTED ON A RELOCATION AND THE ROAD WILL NOT BE OPEN TO TRAFFIC UNTIL AFTER COMPLETION OF CONSTRUCTION. SEE TIED PROJECT IM-080-6(243)239--13-52 FOR TRAFFIC CONTROL PLAN.

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873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
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GENERAL NOTES

STA. 2536+28.27 (RAMP B)

APRIL 2018

GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS:

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 SURFACE USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC 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. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ATTACHING FORM LINERS TO THE CONCRETE FORMS. 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 MANUFACTURER'S RECOMMENDATIONS. DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

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.

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 ANY SURFACE DEFECTS AT NO ADDITIONAL COST TO THE PROJECT.

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.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN 1/2 INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS IF APPLICABLE AND AT HIGH POINTS OF FINISHED WALL.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO USE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (BRIDGE)".

GENERAL NOTES FOR CONCRETE RUSTICATION:

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, NYLON, PLASTIC OR OTHER NONPOROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE PORE PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED, SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS, AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIDIGLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS, DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE. DO NOT LOCATE FORM TIES WITHIN CONCRETE RUSTICATIONS.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS. PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH OR BE SLIGHTLY LIGHTER THAN SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE PROJECT.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM "STRUCTURAL CONCRETE (BRIDGE)".

FUTURE JACKING NOTES:

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

THE JACKING STIFFENERS ARE DESIGNED BASED ON THE COMBINED DEAD AND LIVE LOAD REACTIONS TABULATED IN THE MOMENT AND REACTION TABLES LISTED IN THESE PLANS.

JACKING IS ASSUMED TO BE ACCOMPLISHED BY APPLICATION OF ONE JACK PLACED ON EACH SIDE OF BEARING ASSEMBLY AT CONTINUOUS SUPPORTS AND BY APPLICATION OF A SINGLE JACK PLACED IN FRONT OF BEARING ASSEMBLY AT END SUPPORTS.

JACKS ARE ASSUMED TO BE CENTERED UNDER THE WEB AND JACKING STIFFENER LOCATIONS SHOWN IN THESE PLANS. SHIM PLATES ARE ASSUMED TO BE USED TO PROVIDE A LEVEL JACKING SURFACE AND TO LIMIT BEARING STRESSES ON CONCRETE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE JACKING TO SIZE AND DESIGN THE REQUIRED JACKING EQUIPMENT AND CRIBBING AND TO ESTABLISH THE PROCEDURE FOR JACKING AND BEARING REPLACEMENT OR REPAIRS SUBJECT TO APPROVAL OF THE ENGINEER. THE ACTUAL DESIGN LOADINGS SHALL BE BASED ON THE LOADINGS EXPECTED FROM THE CONTRACTOR'S PROPOSED JACKING AND MAINTENANCE OF TRAFFIC PLAN AND SHOULD CONSIDER ANY ADDITIONAL DEAD LOAD PRODUCED BY IMPOSING DIFFERENTIAL DISPLACEMENTS.

WHEN JACKING AT EXPANSION JOINTS, CONSIDERATION SHOULD BE GIVEN TO PROTECTING ANY BARRIER COVER PLATES, EMBEDDED CONDUIT, AND EXPANSION JOINTS THAT WILL REMAIN.

CONSIDERATION SHALL BE GIVEN TO ANY THERMAL MOVEMENTS AND VIBRATIONS THAT MAY OCCUR DURING THE PERIOD THAT THE STRUCTURE IS RESTING ON JACKS OR CRIBBING.

FUTURE MAINTENANCE OPERATIONS SHALL BE CONDUCTED IN A MANNER SUCH THAT THE STRUCTURE WILL NOT BE DAMAGED.

WEATHERING STEEL NOTES:

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

DECK DRAINS INCLUDING PLATES WELDED TO THE DRAIN FOR DRAIN SUPPORT ARE TO BE GRADE 36 STEEL.

ALL PIECES COMPRISING THE ABUTMENT AND PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON DESIGN SHEET 59.

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

THE FINISH ON DECK DRAINS, BEARINGS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND SECTION 2408, OF THE STANDARD SPECIFICATIONS. EXTERIOR SURFACES OF ALL GALVANIZED COMPONENTS WHICH ARE DESIGNATED IN THE CONTRACT DOCUMENTS TO BE PAINTED SHALL BE PREPARED ACCORDING TO ARTICLE 2509.03, OF THE STANDARD SPECIFICATIONS.

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

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

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, CRAFCO ROAD SAVER SILICONE, AND CSL342 JOINT SEALANT.

PAINTED SURFACES SHALL BE PROTECTED FROM DAMAGE DURING SHIPMENT AND DURING ERECTION. PADDING OR OTHER MATERIAL APPROPRIATE FOR PROTECTING PAINTED SURFACES SHALL BE PLACED BETWEEN THE DECK FORMWORK BRACING AND THE EXTERIOR GIRDER FACE DURING CONSTRUCTION OF THE DECK. AFTER ERECTION OF THE BRIDGE, PAINTING OF EXTERIOR FASTENERS AND TOUCHUP OF PAINTED SURFACES SHALL BE IN ACCORDANCE WITH SECTION 2408.02, Q, OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 0° SKEW

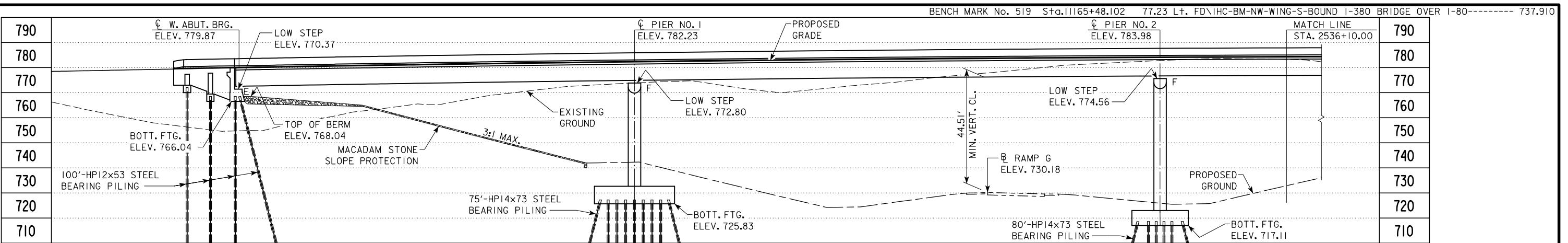
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

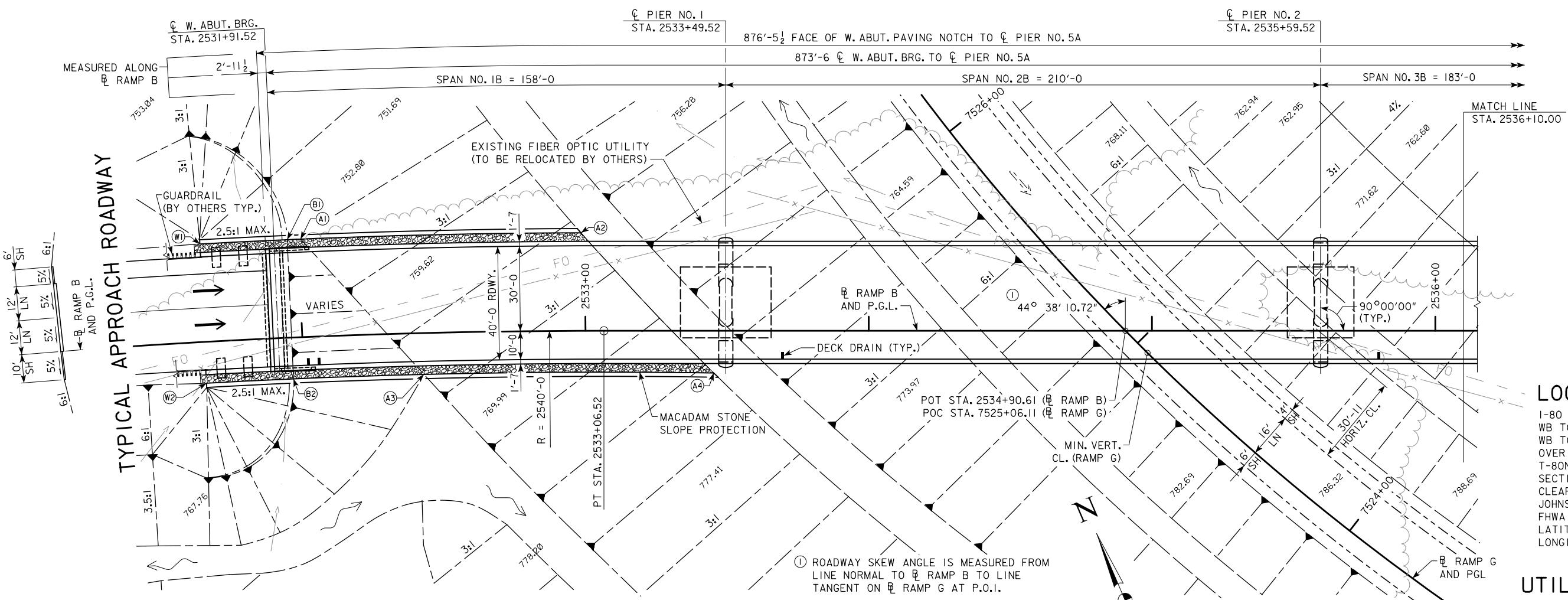
GENERAL NOTES

STA. 2536+28.27 (E RAMP B)

APRIL 2018



LONGITUDINAL SECTION ALONG RAMP B



BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

NOTES:
ALL UNITS ARE IN FEET UNLESS NOTED OTHERWISE.
RAMP B PGL CONTROLS ALL ELEVATIONS ON DESIGN NO. 320. FOR DETAILS, SEE DESIGN SHEET 74.
FOR SUPERELEVATION INFORMATION AND ADDITIONAL DECK GEOMETRY CONTROL, SEE DESIGN SHEET 74.

FOR DECK DRAIN LOCATIONS, SEE DESIGN SHEET 82.
FOR SIGN SUPPORT DETAILS, SEE DESIGN SHEETS 65 THRU 68.
LOW STEP ELEVATIONS DEPEND ON FINAL BEARING HEIGHTS. FINAL BEARING HEIGHTS AND PEDESTAL ELEVATIONS SHALL BE DETERMINED BY BEARING MANUFACTURER AND CONTRACTOR.

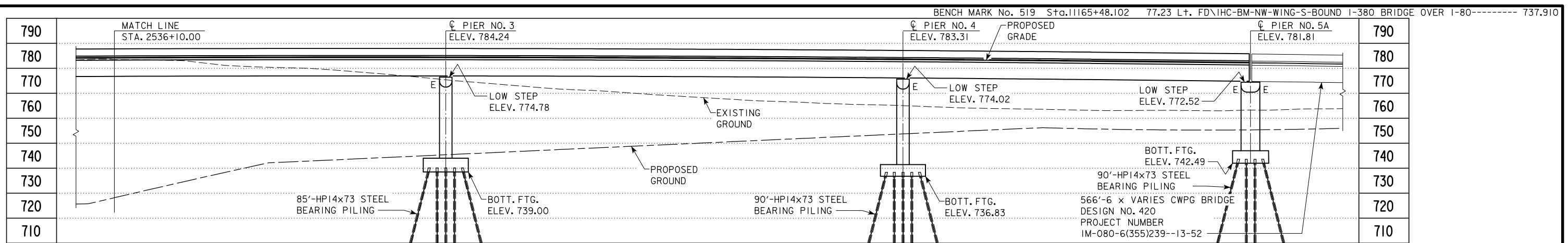
MINIMUM VERTICAL CLEARANCE

RAMP G
OVERHEAD STATION = 2534+99.12, 8.50' RT.
OVERHEAD ELEVATION = 783.38
DEPTH OF SUPERSTRUCTURE = 8.42'
UNDERPASS STATION = 7524+94.09, 0.00' RT.
UNDERPASS ELEVATION = 730.45
MINIMUM VERTICAL CLEARANCE = 44.51'

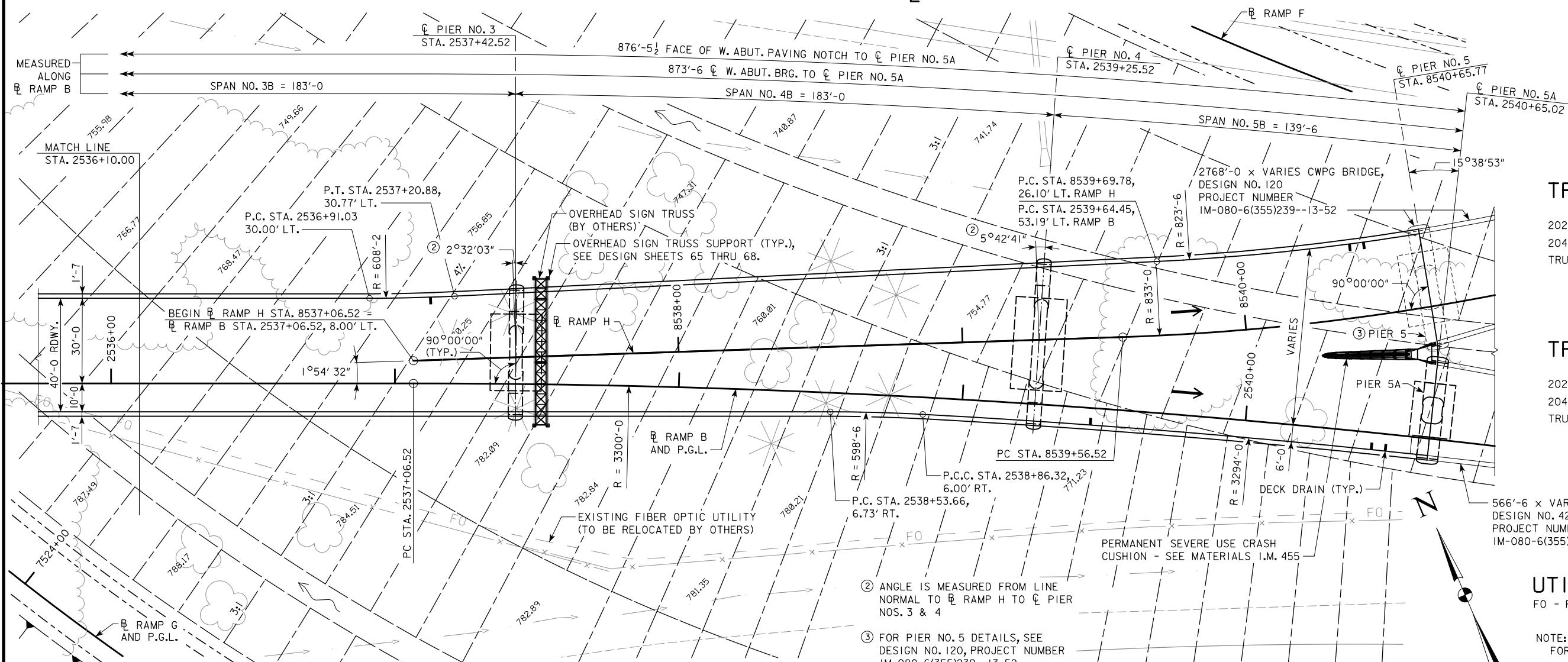
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 139'-6 SPANS
SITUATION PLAN

STA. 2536+28.27 (RAMP B)

APRIL 2018



LONGITUDINAL SECTION ALONG B RAMP B



SITUATION PLAN

$$\underline{G1 = -2.2758\% \quad G2 = +1.4515\%}$$

VPI STA = 7547+50.0
VPI ELEV = 679.11
VC = 1000'

PROPOSED PROFILE GRADE RAMP G

PROPOSED PROFILE GRADE RAMP B

The Key Plan diagram illustrates a highway interchange. A bridge is shown crossing over two major roads: Interstate 380 (I-380) and Interstate 80 (I-80). The bridge is labeled "BRIDGE LOCATION". An "N" symbol indicates the north direction. The diagram shows various ramps and the complex interchange structure.

DESIGN FOR 0° SKEW

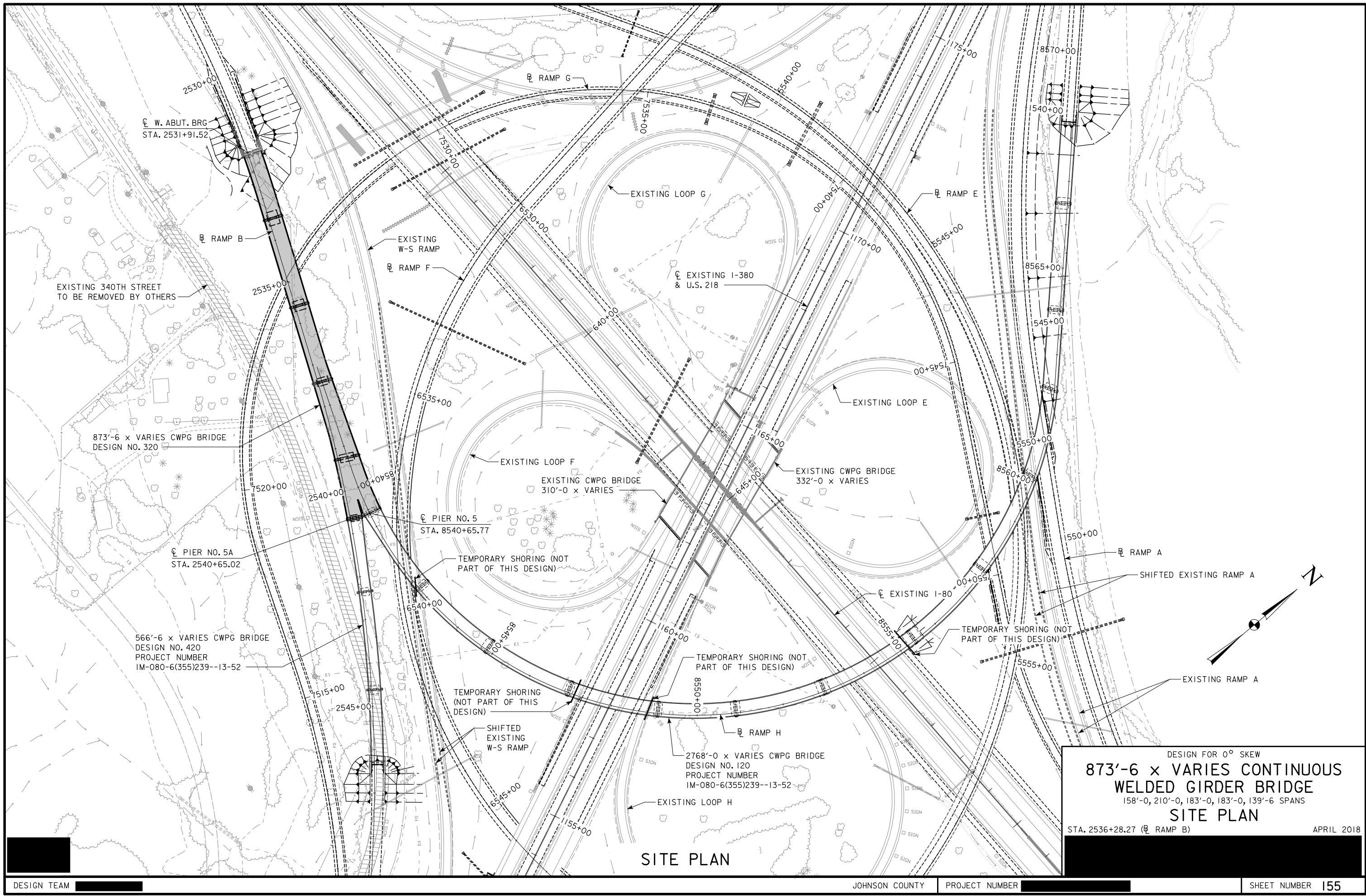
APRIL 2018

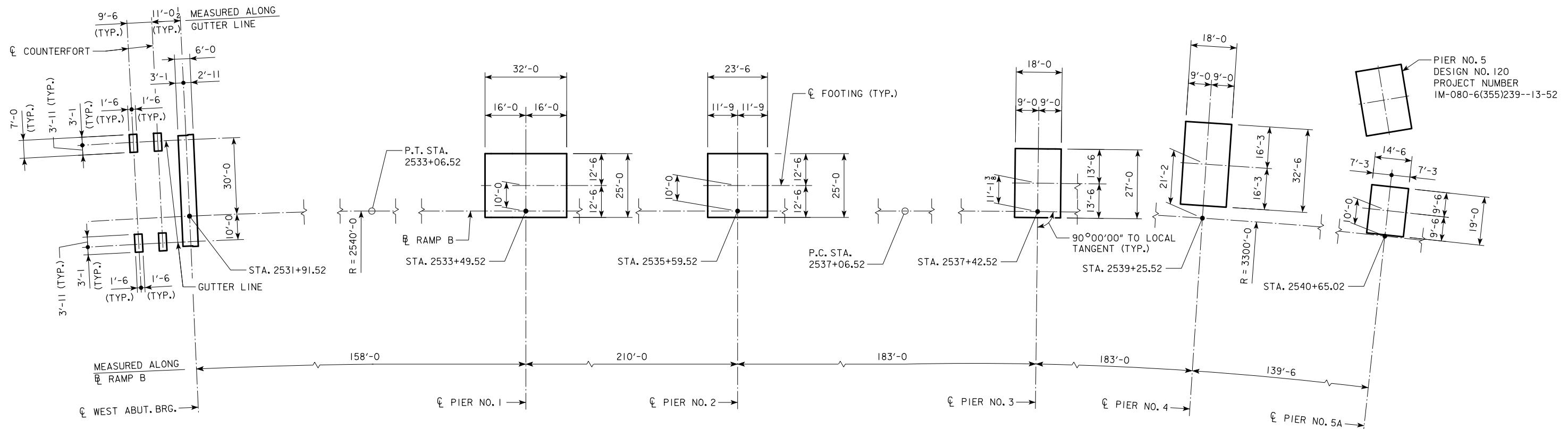
DESIGN TEAM

JOHNSON COUNTY

PROJECT NUMBER

SHEET NUMBER 154





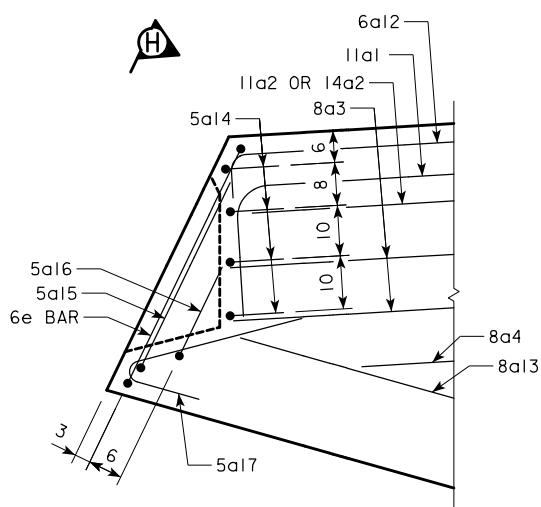
STAKING DIAGRAM

DESIGN FOR 0° SKEW

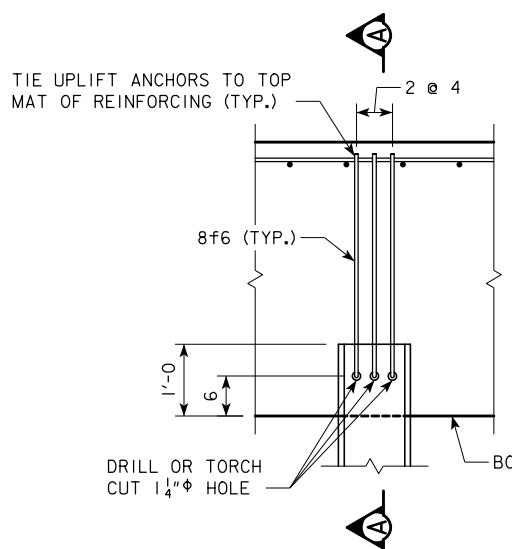
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
STAKING DIAGRAM**

STA. 2536+28.27 (B RAMP B)

APRIL 2018

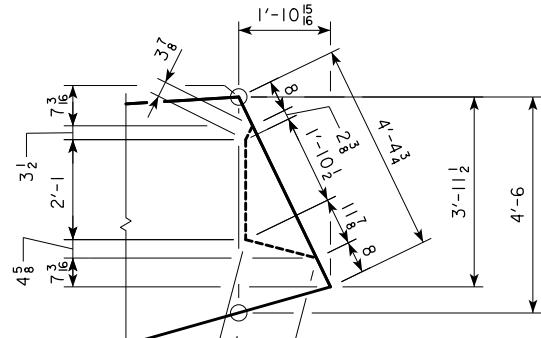


CAP END REINFORCEMENT DETAIL
(SURFACE REINFORCING AND CAP STIRRUPS NOT SHOWN FOR CLARITY)

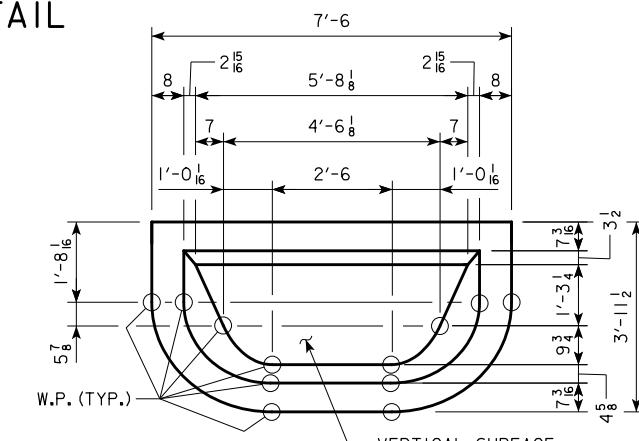


SECTION A-A

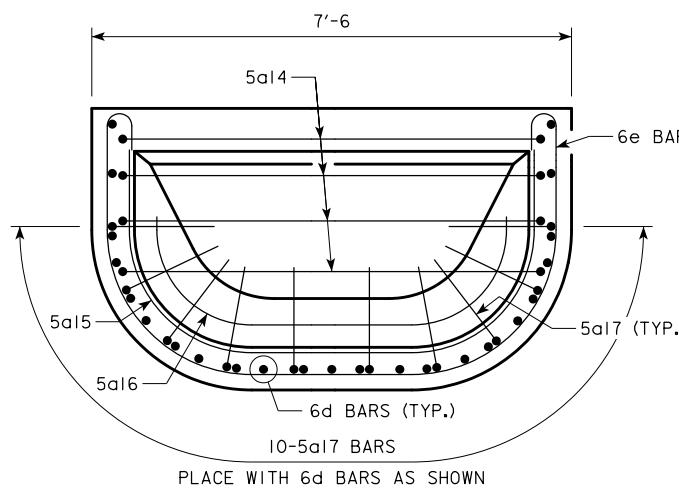
PILE UPLIFT ANCHOR DETAIL



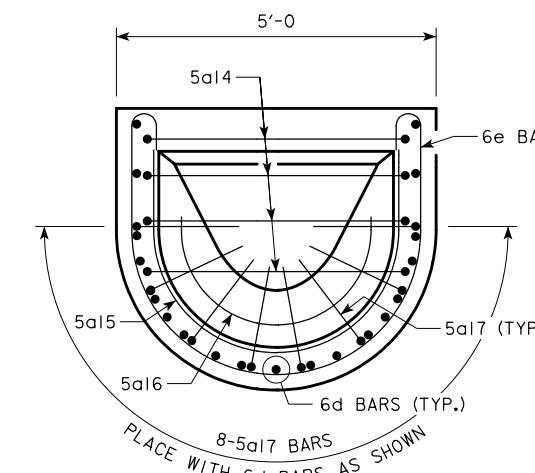
DETAIL 1



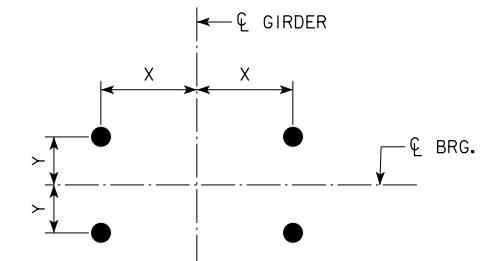
DETAIL 2
(SHOWING PIER NO. 5A)



VIEW H-H
(SHOWING PIER NO. 5A)



VIEW H-H
(SHOWING PIER NOS. 1 THRU 4)



ANCHOR BOLT LOCATION
(FOR ADDITIONAL DETAILS AND NOTES,
SEE DISC BEARING DETAILS SHEETS)

ANCHOR BOLT LOCATION		
LOCATION	X (IN.)	Y (IN.)
PIER NOS. 1-4	16	6
PIER NOS. 5 BK. & 5A BK.	16	5.5

MECHANICAL SPLICING ASSEMBLY NOTES:

THE VERTICAL COLUMN BARS SHALL BE SPLICED AT THE LOCATIONS SHOWN ON THE PIER 1 DETAIL SHEETS USING MECHANICAL SPLICE ASSEMBLIES. MECHANICAL SPLICE ASSEMBLIES CONSIST OF MECHANICAL SPlicerS AND REINFORCING SPLICE BARS AS REQUIRED TO FACILITATE THE USE OF THE MECHANICAL SPlicer. THE MECHANICAL SPLICE ASSEMBLY USED SHALL MEET THE REQUIREMENTS OF MATERIALS I.M. 451, APPENDIX E.

THE COST OF ALL SPLICE ASSEMBLIES IS TO BE INCLUDED IN THE PRICE BID FOR "REINFORCING STEEL" AND NO SEPARATE PAYMENT WILL BE MADE. THE WEIGHT OF MECHANICAL SPLICE ASSEMBLIES IS NOT INCLUDED IN THE QUANTITY SHOWN FOR "REINFORCING STEEL".

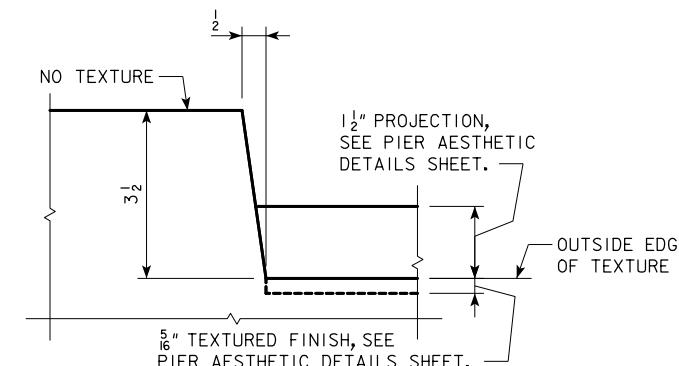
PIER NOTES:

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

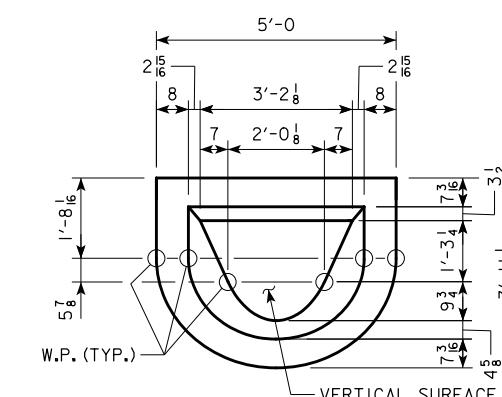
ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.

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

PIER BEARING PEDESTAL REINFORCING (M & N BARS) PLACEMENT SHALL BE ADJUSTED SLIGHTLY TO CLEAR PIER CAP REINFORCING AS NEEDED.



DETAIL 3



DETAIL 2
(SHOWING PIER NOS. 1 THRU 4)

GIRDER

X

Y

GIRD.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
GENERAL PIER NOTES & DETAILS
STA. 2536+28.27 (E RAMP B)

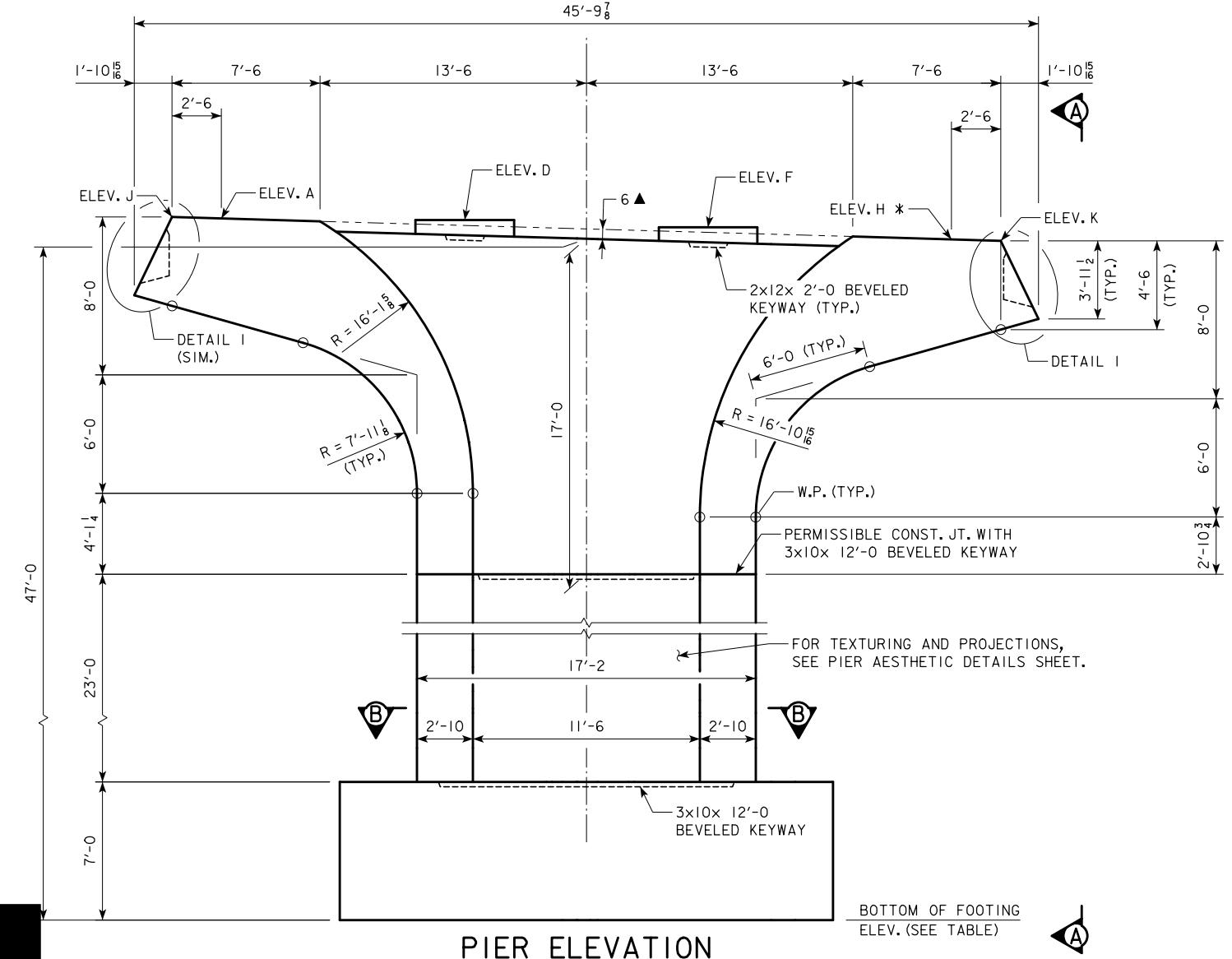
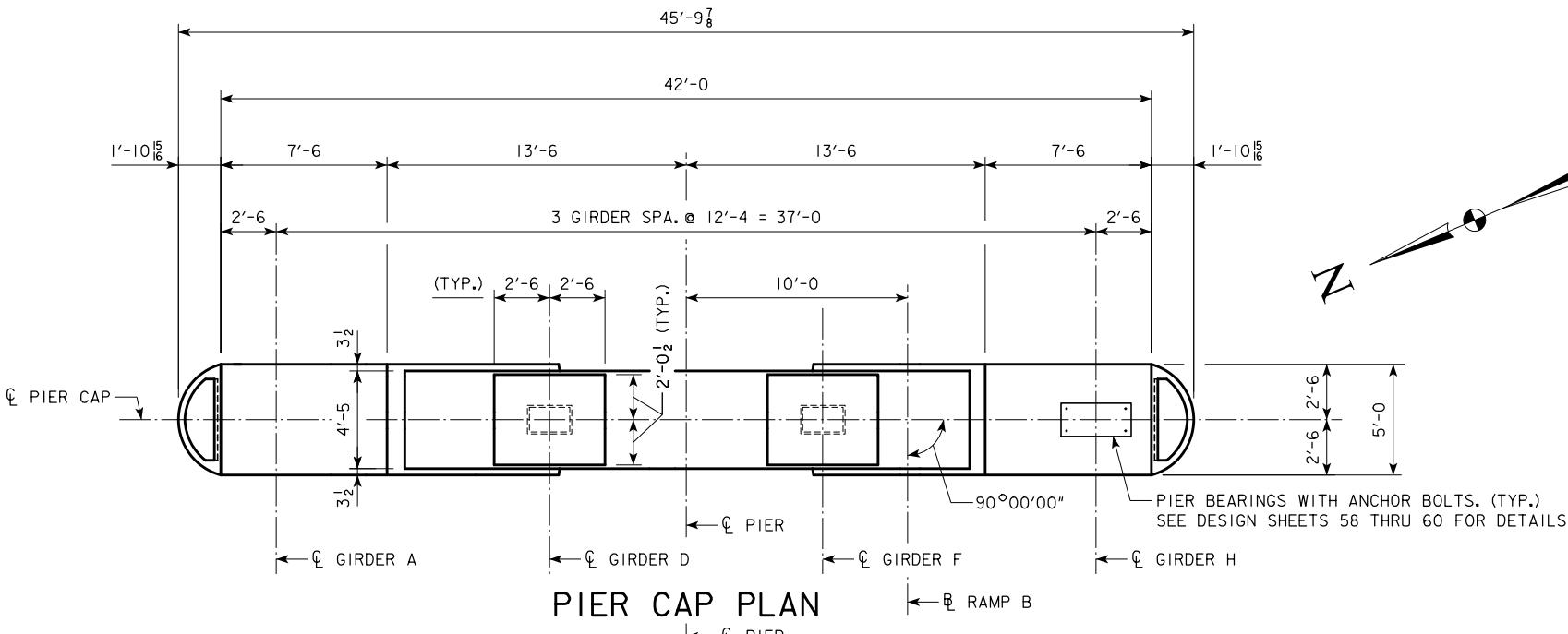
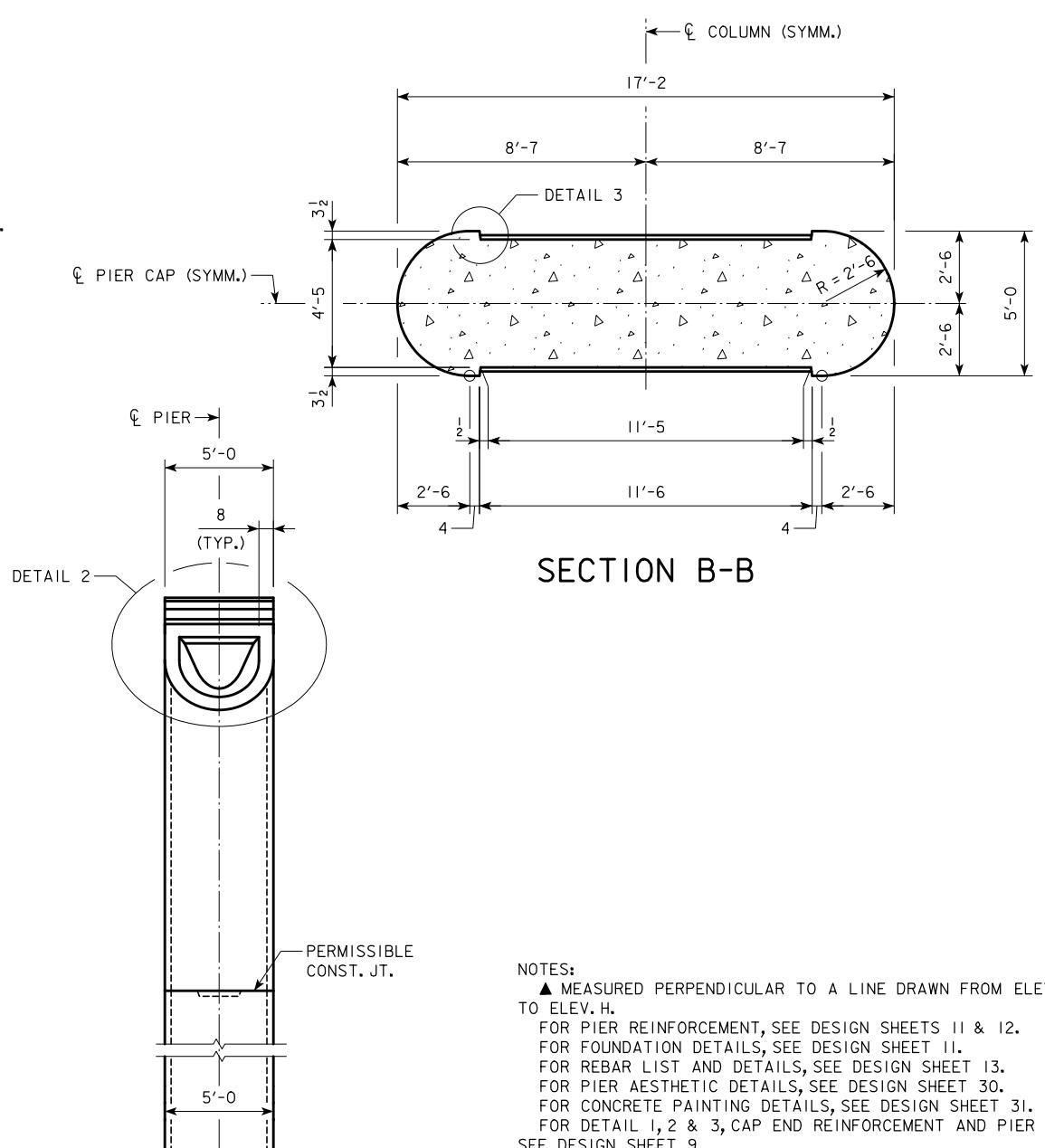
APRIL 2018

PIER ELEVATIONS

LOCATION	PLAN **	AS-BUILT
ELEV. A	773.86	
ELEV. D	773.53	
ELEV. F	773.17	
ELEV. H*	772.80	
ELEV. J	773.94	
ELEV. K	772.73	
BOTT. OF FTG.	725.83	

* LOW STEP

** ELEVATIONS AND PEDESTAL HEIGHT DEPENDENT ON FINAL BEARING HEIGHT, WHICH SHALL BE DETERMINED BY BEARING MANUFACTURER. CONTRACTOR SHALL VERIFY BEARING HEIGHT WITH MANUFACTURER, AND ADJUST ELEVATIONS IF NECESSARY, PRIOR TO PLACING CONCRETE.

**VIEW A-A**

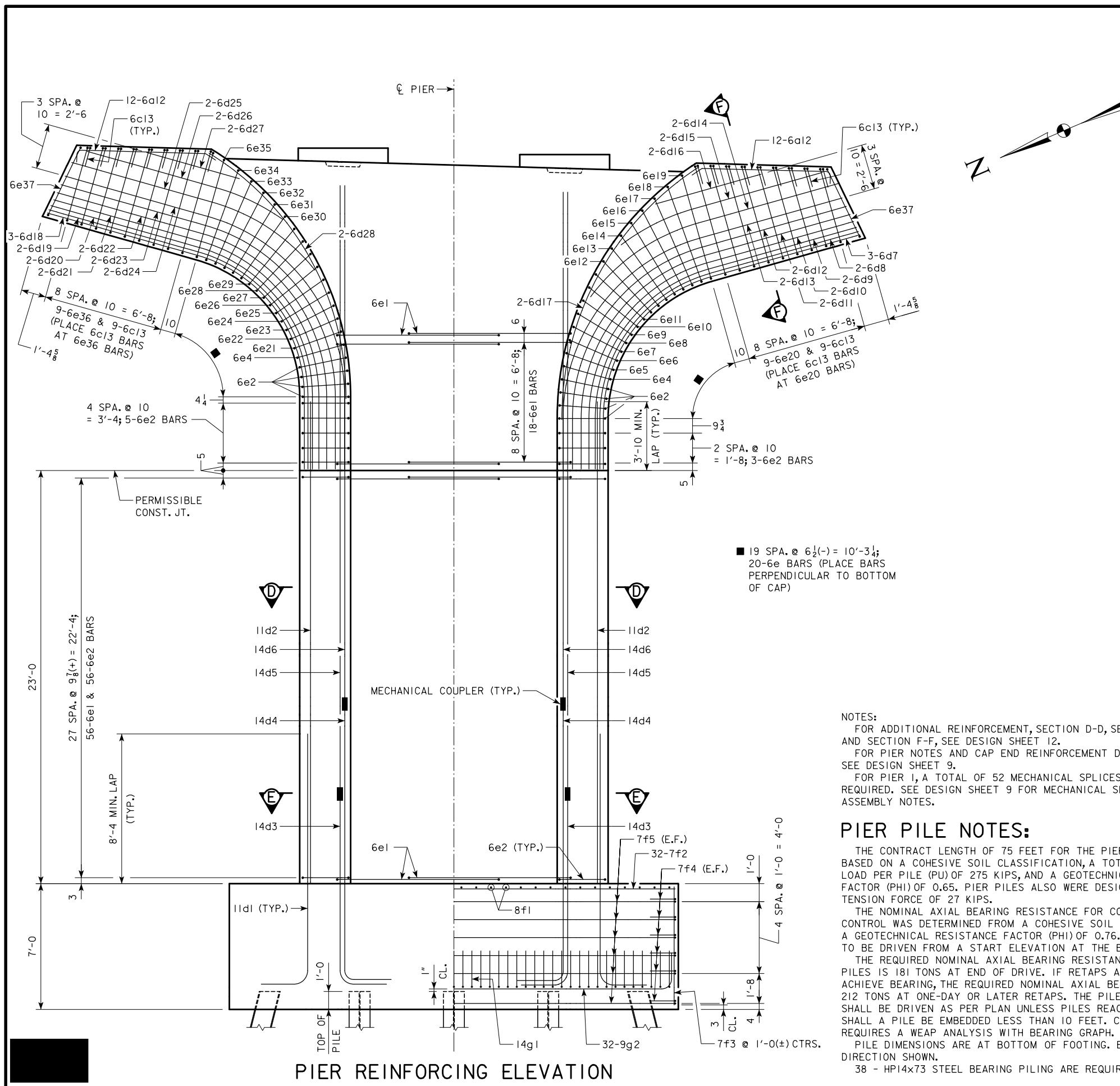
NOTES:

- ▲ MEASURED PERPENDICULAR TO A LINE DRAWN FROM ELEV. A TO ELEV. H.
- FOR PIER REINFORCEMENT, SEE DESIGN SHEETS 11 & 12.
- FOR FOUNDATION DETAILS, SEE DESIGN SHEET 11.
- FOR REBAR LIST AND DETAILS, SEE DESIGN SHEET 13.
- FOR PIER AESTHETIC DETAILS, SEE DESIGN SHEET 30.
- FOR CONCRETE PAINTING DETAILS, SEE DESIGN SHEET 31.
- FOR DETAIL 1, 2 & 3, CAP END REINFORCEMENT AND PIER NOTES, SEE DESIGN SHEET 9.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 1 DETAILS

STA. 2536+28.27 (RAMP B)

APRIL 2018



- 19 SPA. @ $6\frac{1}{2}(-) = 10'-3\frac{1}{4}$; 20-6e BARS (PLACE BARS PERPENDICULAR TO BOTTOM OF CAR)

NOTES:
FOR ADDITIONAL REINFORCEMENT, SECTION D-D, SECTION E-E
AND SECTION F-F, SEE DESIGN SHEET 12.
FOR PIER NOTES AND CAP END REINFORCEMENT DETAIL,
SEE DESIGN SHEET 9.

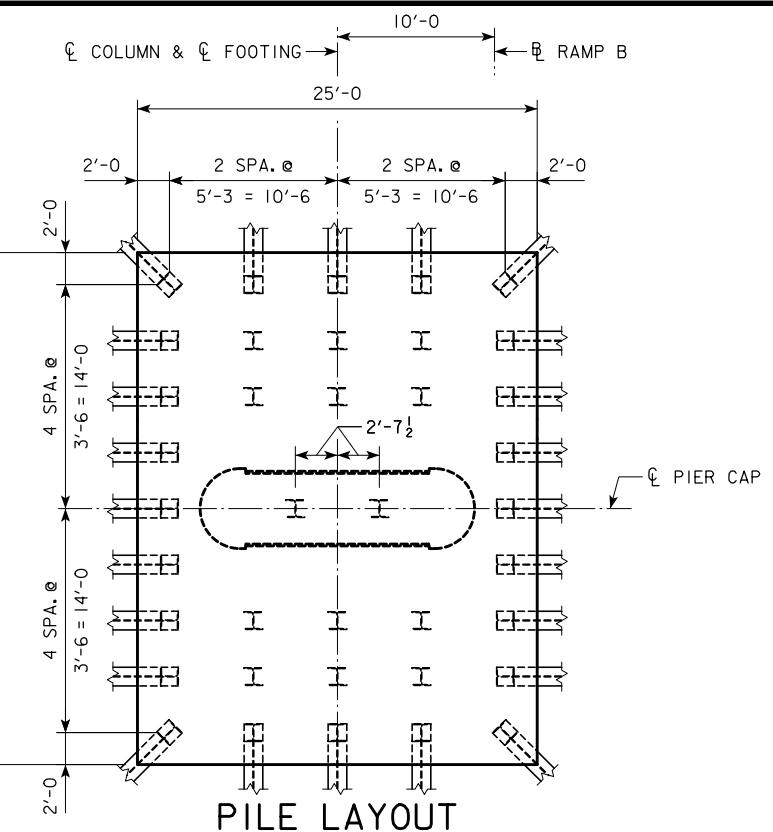
PIER PILE NOTES

THE CONTRACT LENGTH OF 75 FEET FOR THE PIER NO. I PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (P_U) OF 275 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PIER PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 27 KIPS.

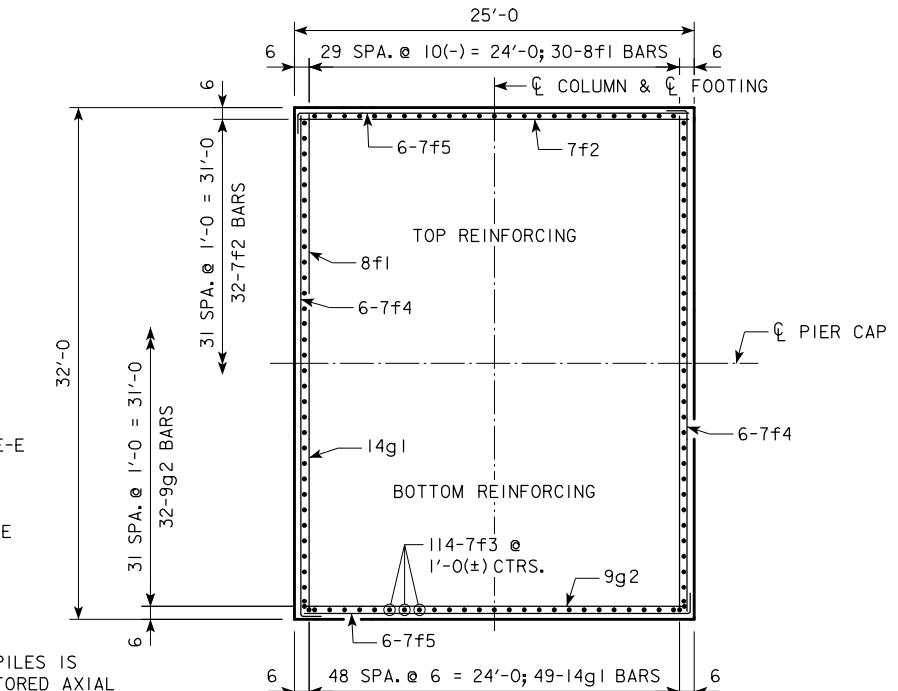
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (ϕ) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING

TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. I
PILES IS 181 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO
ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS
212 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH
SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE
SHALL A PILE BE EMBEDDED LESS THAN 10 FEET. CONSTRUCTION CONTROL
REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

- REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.
- PILE DIMENSIONS ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN DIRECTION SHOWN.



PILE LAYOUT

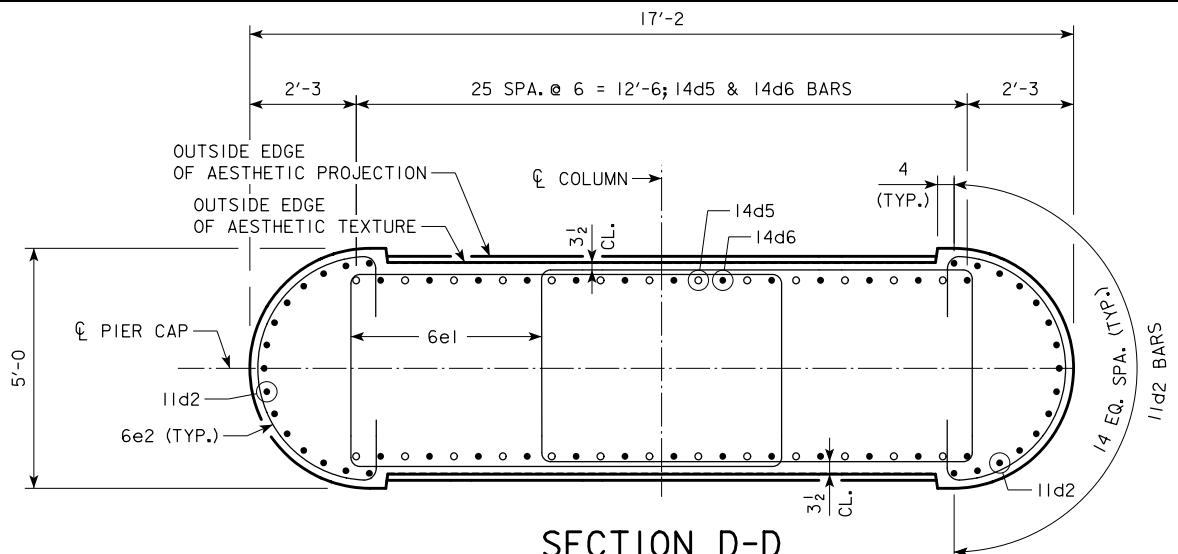


FOOTING REINFORCING LAYOUT

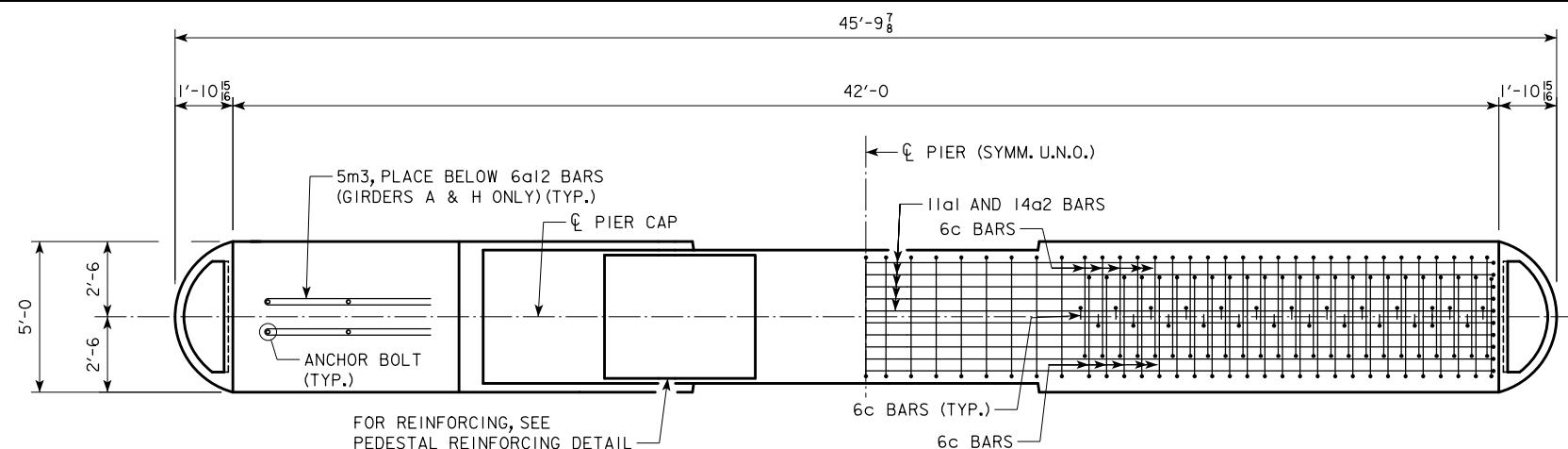
DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
PIER NO. I DETAILS**

STA 3536 L38 23 (B) RAMP B

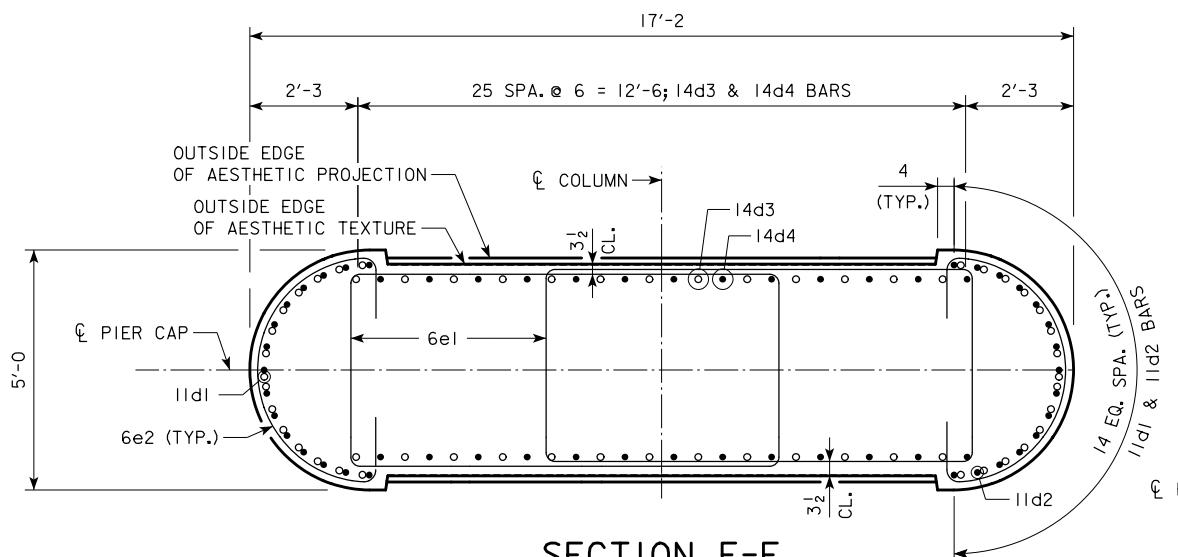
APRIL 2018



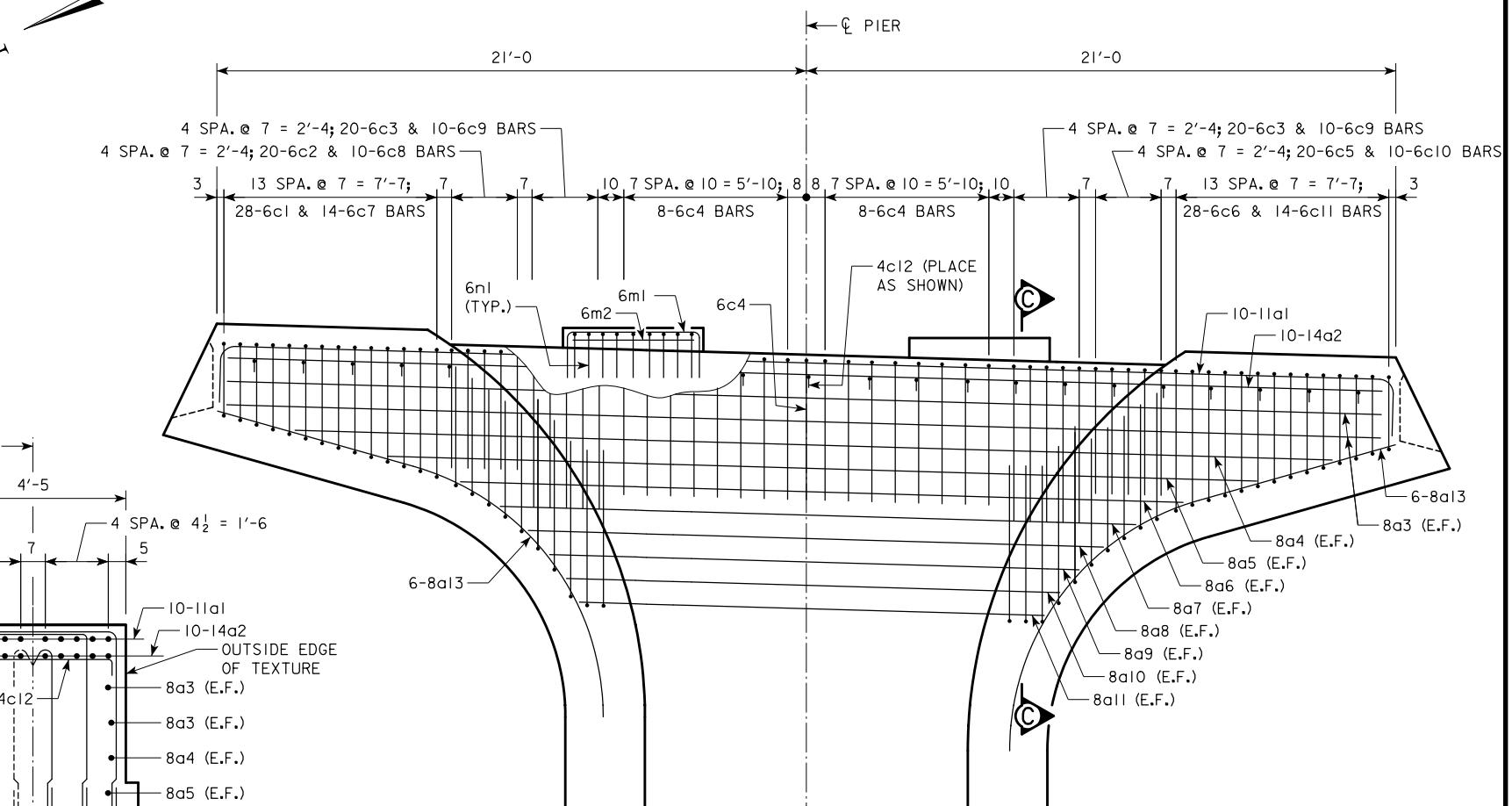
SECTION D-D



PIER CAP REINFORCING PLAN

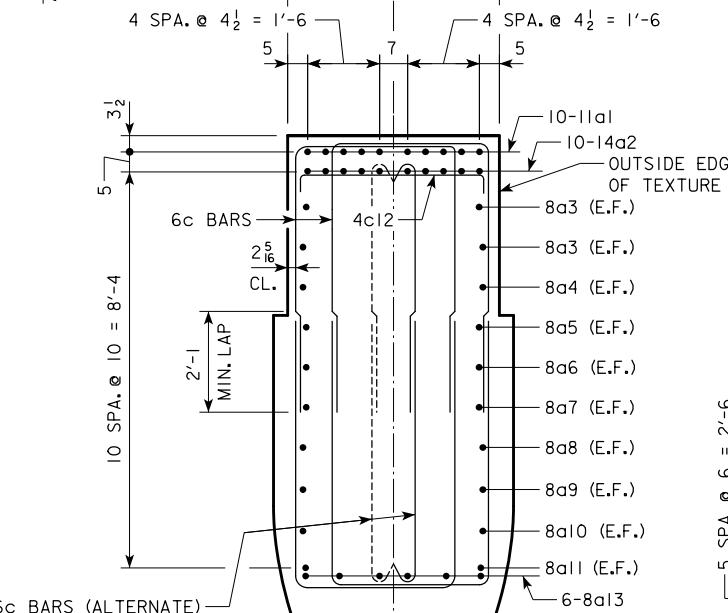


SECTION E-E



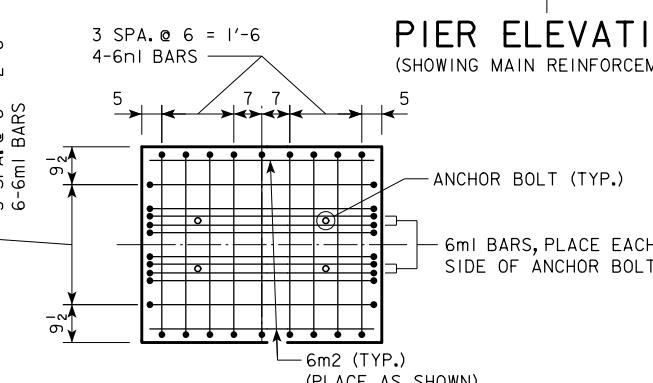
PIER ELEVATION (SHOWING MAIN REINFORCEMENT)

NOTE:
FOR LOCATION OF SECTION D-D, SECTION E-E AND
SECTION F-F SEE DESIGN SHEET II



SECTION C-C

(PEDESTAL NOT SHOWN)
(SD AND CS BARS NOT SHOWN FOR CLARITY)



(PLACE AS SHOWN)

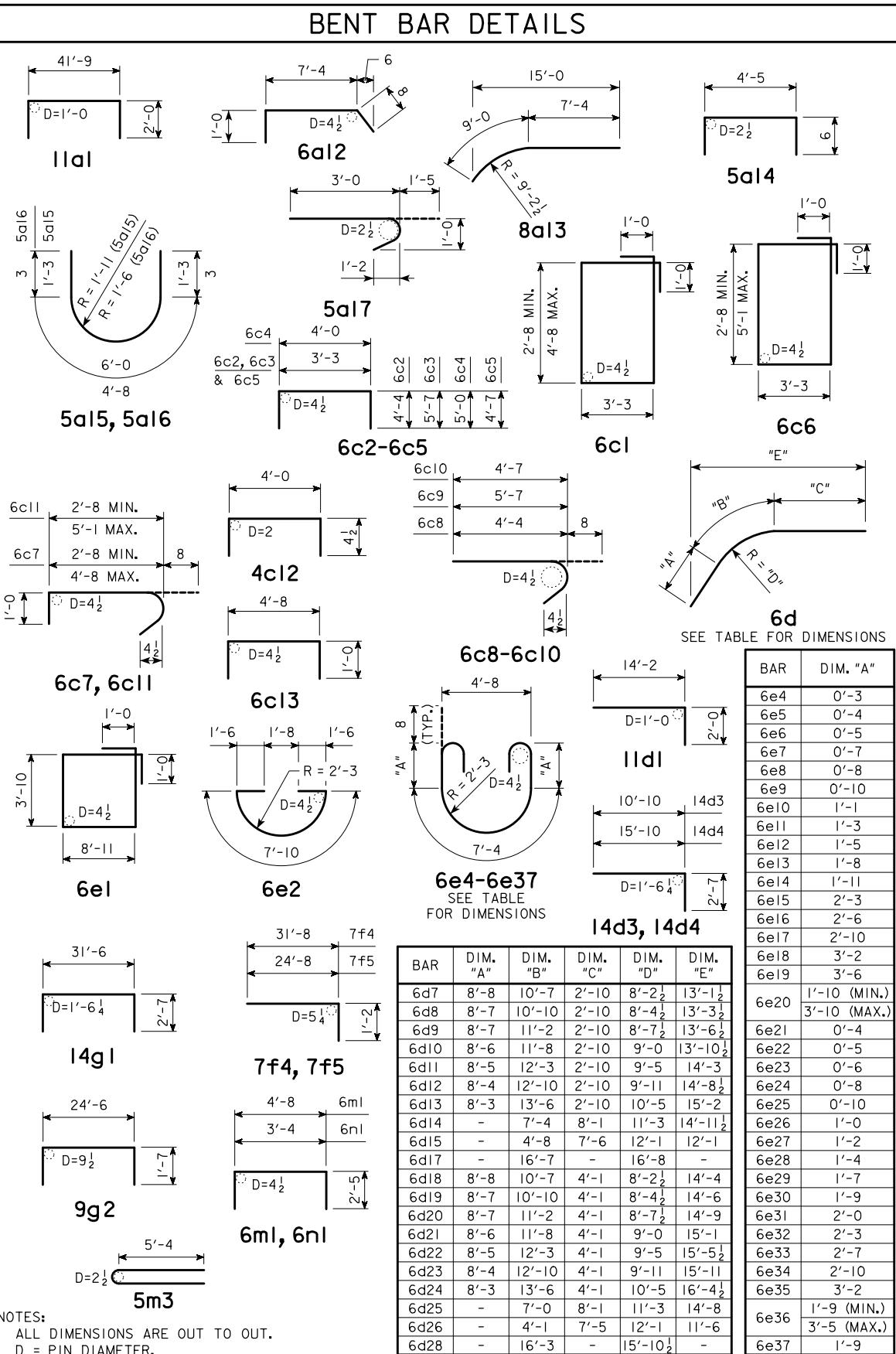
PEDESTAL REINFORCING DETAIL

DESIGN FOR 0° SKEW
**873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. I DETAILS**

PIER M

APPENDIX

BENT BAR DETAILS



REINFORCING BAR LIST - PIER NO. I

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL	□	10	45'-9	2,431
14a2	CAP, TOP, LONGITUDINAL	—	10	41'-3	3,156
8a3	CAP, SIDES, LONGITUDINAL	—	4	41'-3	441
8a4	CAP, SIDES, LONGITUDINAL	—	2	37'-9	202
8a5	CAP, SIDES, LONGITUDINAL	—	2	31'-8	169
8a6	CAP, SIDES, LONGITUDINAL	—	2	26'-3	140
8a7	CAP, SIDES, LONGITUDINAL	—	2	22'-11	122
8a8	CAP, SIDES, LONGITUDINAL	—	2	20'-9	111
8a9	CAP, SIDES, LONGITUDINAL	—	2	19'-1	102
8a10	CAP, SIDES, LONGITUDINAL	—	2	17'-9	95
8a11	CAP, SIDES, LONGITUDINAL	—	2	16'-9	89
6a12	CAP, TOP, LONGITUDINAL	□	24	9'-0	324
8a13	CAP, BOTTOM, LONGITUDINAL	⟩	12	16'-4	523
5a14	CAP, END	□	8	5'-5	45
5a15	CAP, END	○	2	8'-6	18
5a16	CAP, END	○	2	5'-2	11
5a17	CAP, END	⟩	16	4'-5	74
6c1	CAP, HOOPS	□	28	VARIABLES	666
6c2	CAP, HAIRPINS, VERTICAL	□	20	11'-11	358
6c3	CAP, HAIRPINS, VERTICAL	□	40	14'-5	866
6c4	CAP, HAIRPINS, VERTICAL	□	17	14'-0	357
6c5	CAP, HAIRPINS, VERTICAL	□	20	12'-5	373
6c6	CAP, HOOPS	□	28	VARIABLES	683
6c7	CAP, TIE	⟩	14	VARIABLES	112
6c8	CAP, TIE	⟩	10	5'-0	75
6c9	CAP, TIE	⟩	20	6'-3	188
6c10	CAP, TIE	⟩	10	5'-3	79
6c11	CAP, TIE	⟩	14	VARIABLES	117
4c12	CAP, TRANSVERSE	□	23	4'-9	73
6c13	CAP, TOP, TRANSVERSE	□	18	6'-8	180
11d1	FOOTING TO COLUMN DOWEL	—	30	16'-2	2,577
11d2	COLUMN, VERTICAL	—	30	26'-10	4,277
14d3	FOOTING TO COLUMN DOWEL	—	26	13'-5	2,669
14d4	FOOTING TO COLUMN DOWEL	—	26	18'-5	3,663
14d5	COLUMN, VERTICAL	—	26	33'-9	6,713
14d6	COLUMN, VERTICAL	—	26	28'-9	5,718
6d7	CAP SURFACE, LONGITUDINAL	⟩	3	22'-1	100
6d8	CAP SURFACE, LONGITUDINAL	⟩	2	22'-3	67
6d9	CAP SURFACE, LONGITUDINAL	⟩	2	22'-7	68
6d10	CAP SURFACE, LONGITUDINAL	⟩	2	23'-0	69
6d11	CAP SURFACE, LONGITUDINAL	⟩	2	23'-6	71
6d12	CAP SURFACE, LONGITUDINAL	⟩	2	24'-0	72
6d13	CAP SURFACE, LONGITUDINAL	⟩	2	24'-7	74
6d14	CAP SURFACE, LONGITUDINAL	⟩	2	15'-5	46
6d15	CAP SURFACE, LONGITUDINAL	⟩	2	12'-2	37
6d16	CAP SURFACE, LONGITUDINAL	—	2	6'-9	20
6d17	CAP SURFACE, LONGITUDINAL	⟩	2	16'-7	50
6d18	CAP SURFACE, LONGITUDINAL	⟩	3	23'-4	105
6d19	CAP SURFACE, LONGITUDINAL	⟩	2	23'-6	71
6d20	CAP SURFACE, LONGITUDINAL	⟩	2	23'-10	72
6d21	CAP SURFACE, LONGITUDINAL	⟩	2	24'-3	73
6d22	CAP SURFACE, LONGITUDINAL	⟩	2	24'-9	74
6d23	CAP SURFACE, LONGITUDINAL	⟩	2	25'-3	76
6d24	CAP SURFACE, LONGITUDINAL	⟩	2	25'-10	78
6d25	CAP SURFACE, LONGITUDINAL	⟩	2	15'-1	45
6d26	CAP SURFACE, LONGITUDINAL	⟩	2	11'-6	35
6d27	CAP SURFACE, LONGITUDINAL	—	2	5'-8	17
6d28	CAP SURFACE, LONGITUDINAL	⟩	2	16'-3	49

NON-COATED REINFORCING

CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY
CAP & STEPS (HIGH PERFORMANCE)	76.8
COLUMN (HIGH PERFORMANCE)	63.2
FOOTING	207.4
TOTAL CU. YDS.	347.4

REINF. BAR LIST - PIER NO. I (CONT.)

NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.

DESIGN FOR 0° SKEW

873/ C x VARIES CONTINUOUS

875-6 X VARIES CONTINUOUS

WELDED GIRDER BRIDGE

[58'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS]

PIER NO. 1 DETAILS

TICKET NO. / DETAILS 0576122-07 (B-BAM(B-B)) APRIL 2018

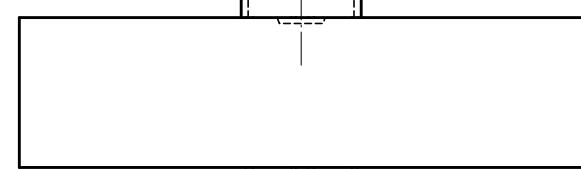
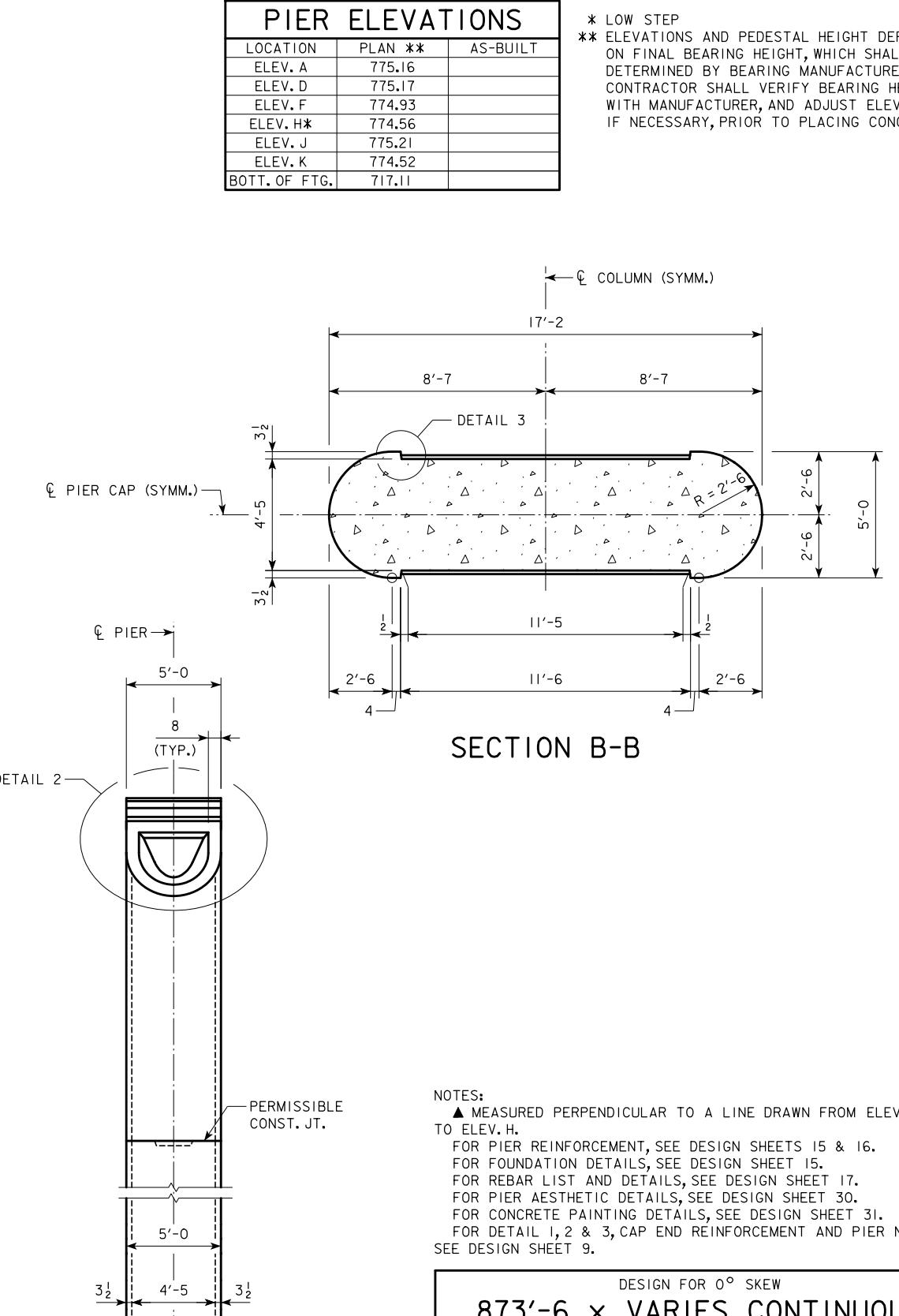
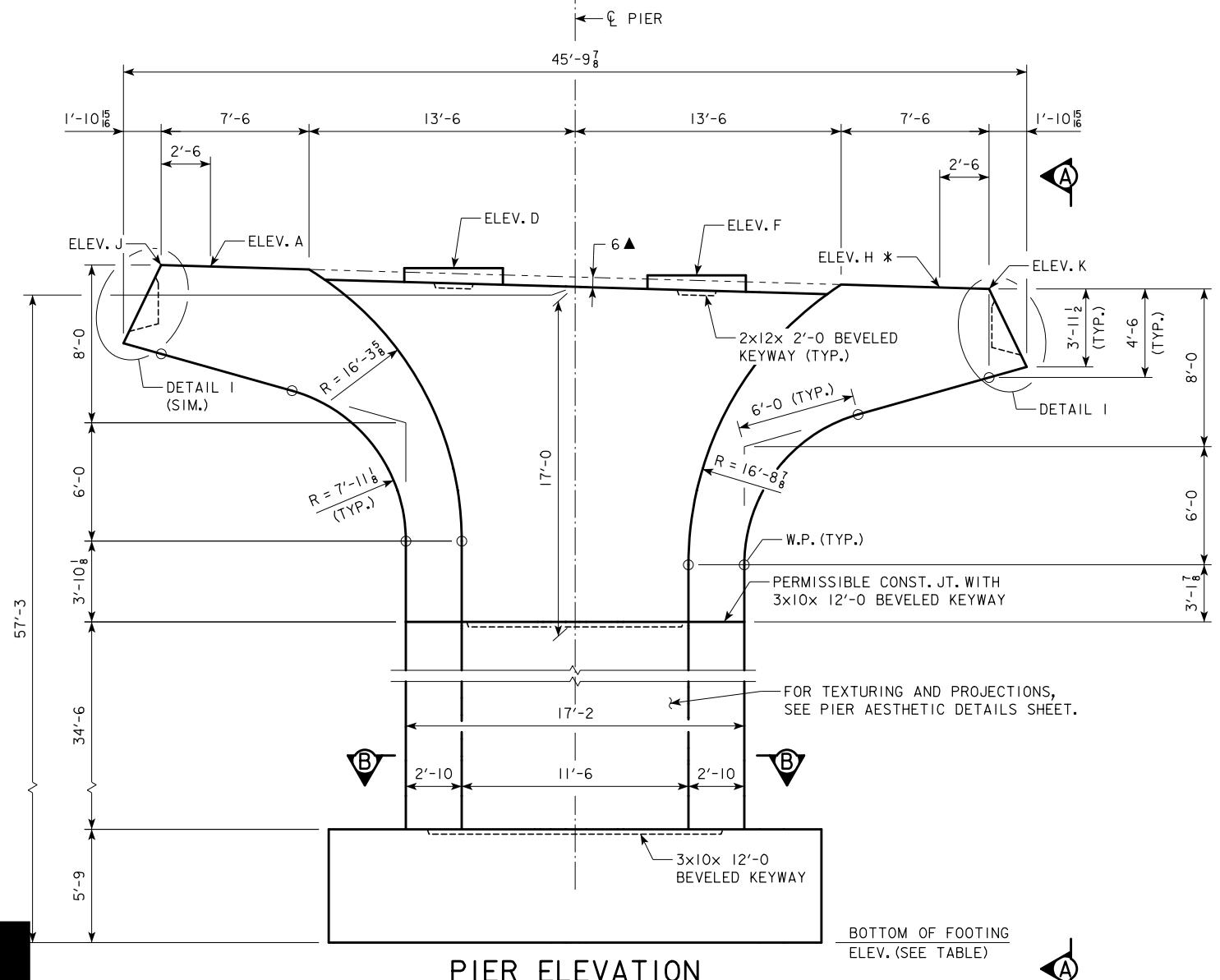
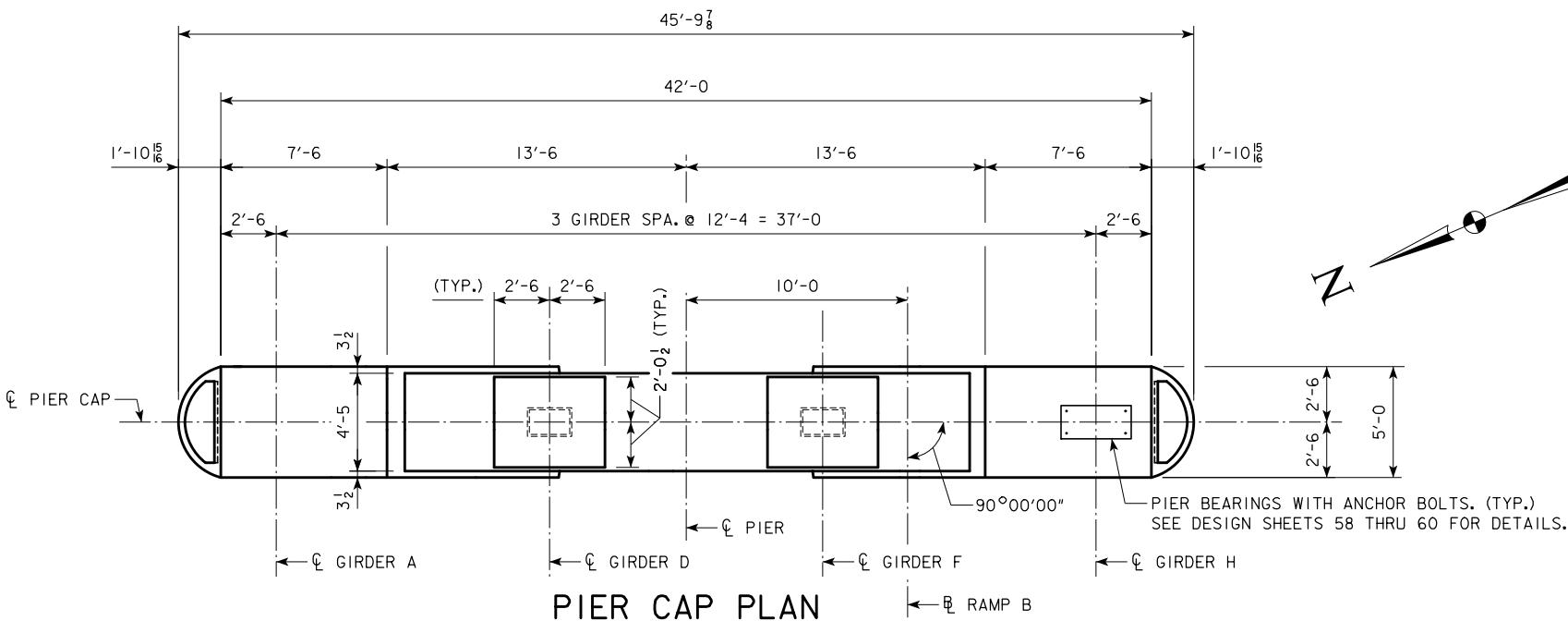
.2536+28.27 (P RAMP B) APRIL 2

PIER ELEVATIONS

LOCATION	PLAN **	AS-BUILT
ELEV. A	775.16	
ELEV. D	775.17	
ELEV. F	774.93	
ELEV. H*	774.56	
ELEV. J	775.21	
ELEV. K	774.52	
BOTT. OF FTG.	717.11	

* LOW STEP

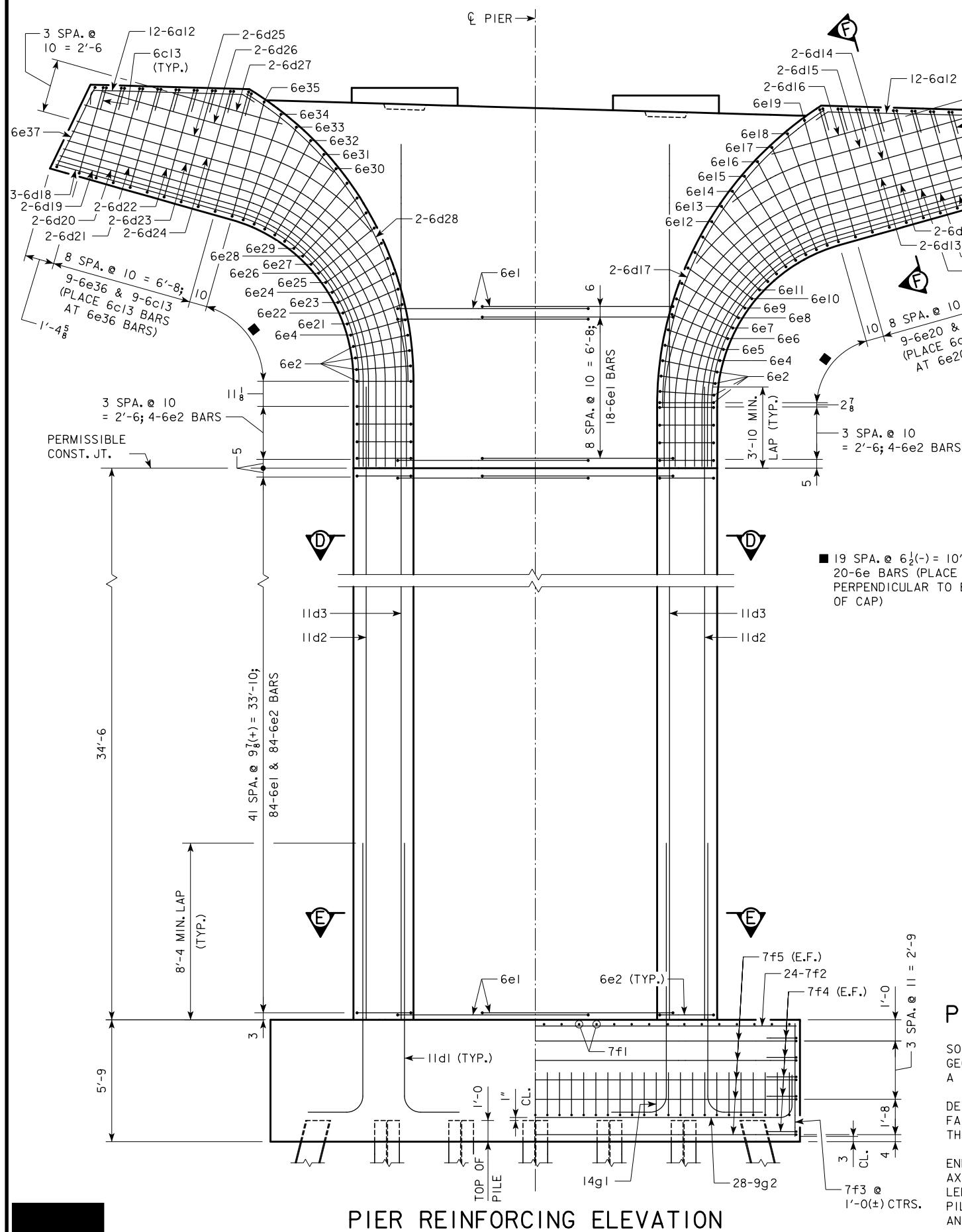
** ELEVATIONS AND PEDESTAL HEIGHT DEPENDENT ON FINAL BEARING HEIGHT, WHICH SHALL BE DETERMINED BY BEARING MANUFACTURER. CONTRACTOR SHALL VERIFY BEARING HEIGHT WITH MANUFACTURER, AND ADJUST ELEVATIONS IF NECESSARY, PRIOR TO PLACING CONCRETE.



NOTES:
 ▲ MEASURED PERPENDICULAR TO A LINE DRAWN FROM ELEV. A TO ELEV. H.
 FOR PIER REINFORCEMENT, SEE DESIGN SHEETS 15 & 16.
 FOR FOUNDATION DETAILS, SEE DESIGN SHEET 15.
 FOR REBAR LIST AND DETAILS, SEE DESIGN SHEET 17.
 FOR PIER AESTHETIC DETAILS, SEE DESIGN SHEET 30.
 FOR CONCRETE PAINTING DETAILS, SEE DESIGN SHEET 31.
 FOR DETAIL 1, 2 & 3, CAP END REINFORCEMENT AND PIER NOTES,
 SEE DESIGN SHEET 9.

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 2 DETAILS
 STA. 2536+28.27 (RAMP B)

APRIL 2018



PIER PILE NOTES

THE CONTRACT LENGTH OF 80 FEET FOR THE PIER NO. 2 PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (P_U) OF 279 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PIER PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 46 KIPS.

A FACTORED TENSION FORCE OF 46 KIPS.
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (ϕ) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. 2 PILES IS 184 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 215 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 20 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

PILE DIMENSIONS ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN DIRECTION SHOWN.
33 - HP14x73 STEEL BEARING PILING ARE REQUIRED.

This diagram illustrates the pile layout for a foundation system. The overall width of the foundation is 25'-0". The distance between columns and footings is 10'-0". A ramp extends from the right side of the foundation. The total height of the foundation is 23'-6". The diagram shows a grid of piles with dimensions: 2'-0, 3'-6" = 10'-6", and 4'-6". A central circular opening is indicated. Labels include 'PILE LAYOUT' at the bottom, 'SEI DE TY' on the right, and 'COLUMN & FOOTING' with a dimension line at the top.

2- PILE LAYOUT

Structural cross-section diagram of a rectangular concrete column with dimensions and reinforcement details:

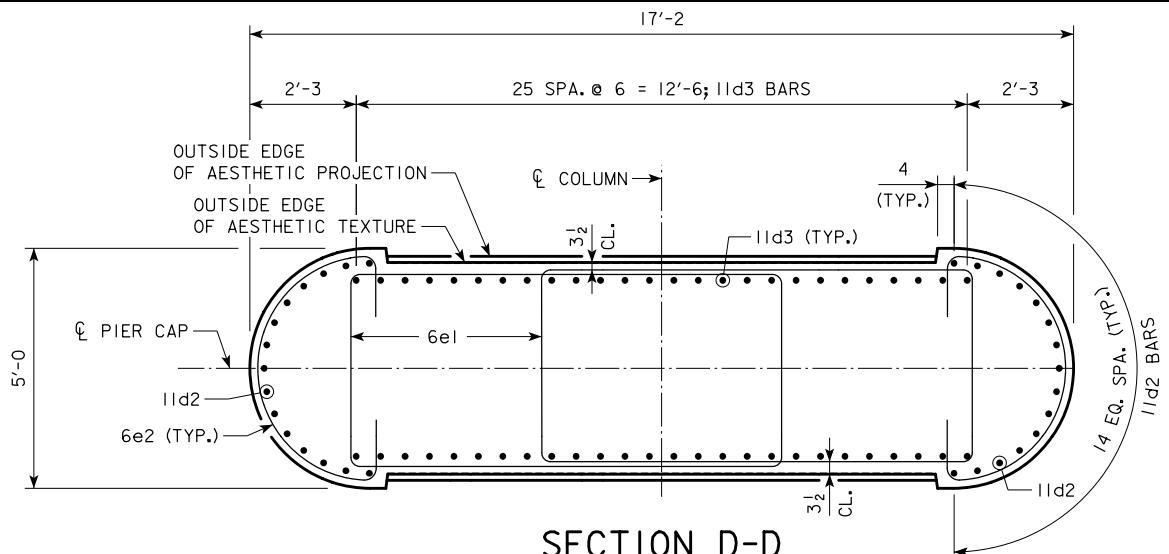
- Overall Dimensions:** Total width = 25'-0", total height = 23'-6".
- Reinforcement:**
 - Top Reinforcing:** 30-7f1 BARS, 6" COLUMN & 6" FOOTING.
 - Bottom Reinforcing:** 98-7f3 @ 1'-0"(±) CTRS.
 - Vertical Reinforcing:** 27 SPA. @ 10 = 22'-6" (28-9g2 BARS), 23 SPA. @ 11 1/4(-) = 22'-6" (24-f2 BARS).
- Concrete Strength:** 5-7f5 (top), 7f2, 7f1, 5-7f4 (left), 14g1 (right), 5-7f4 (bottom right), 9g2 (bottom left), 5-7+5 (bottom center).
- Spacings:** 29 SPA. @ 10(-) = 24'-0".
- Footings:** 6" on all four sides.

FOOTING REINFORCING LAYOUT

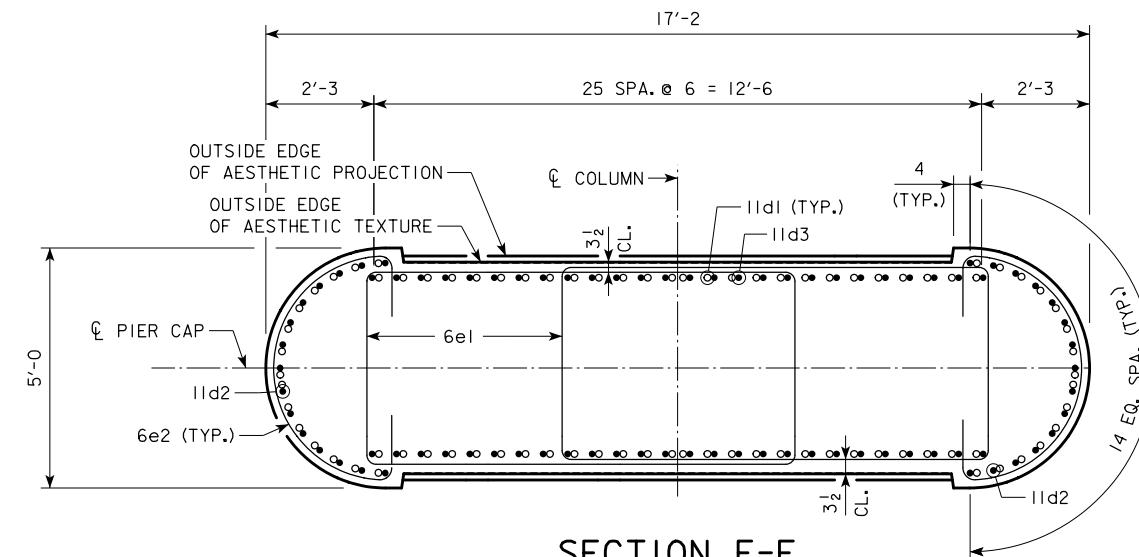
NOTES:
FOR ADDITIONAL REINFORCEMENT,
SECTION D-D, SECTION E-E AND
SECTION F-F, SEE DESIGN SHEET 16.
FOR PIER NOTES AND CAP END
REINFORCEMENT DETAIL, SEE DESIGN
SHEET 8.

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO 2 DETAILS

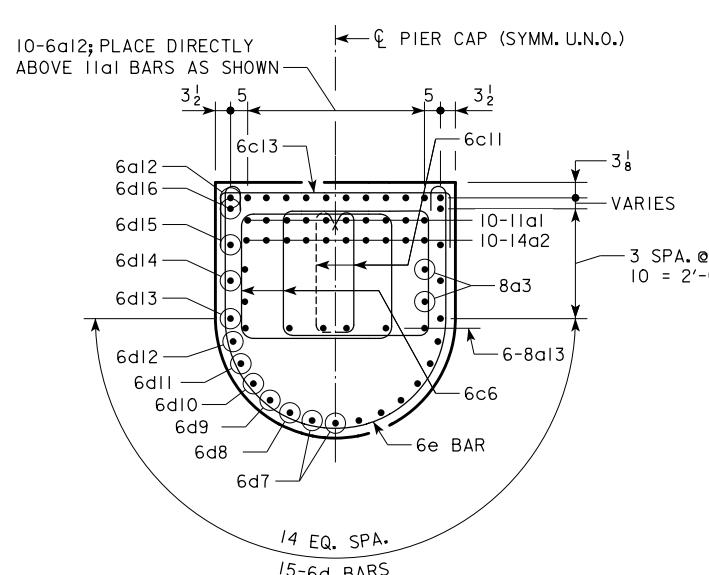
APRIL 2018



SECTION D-D

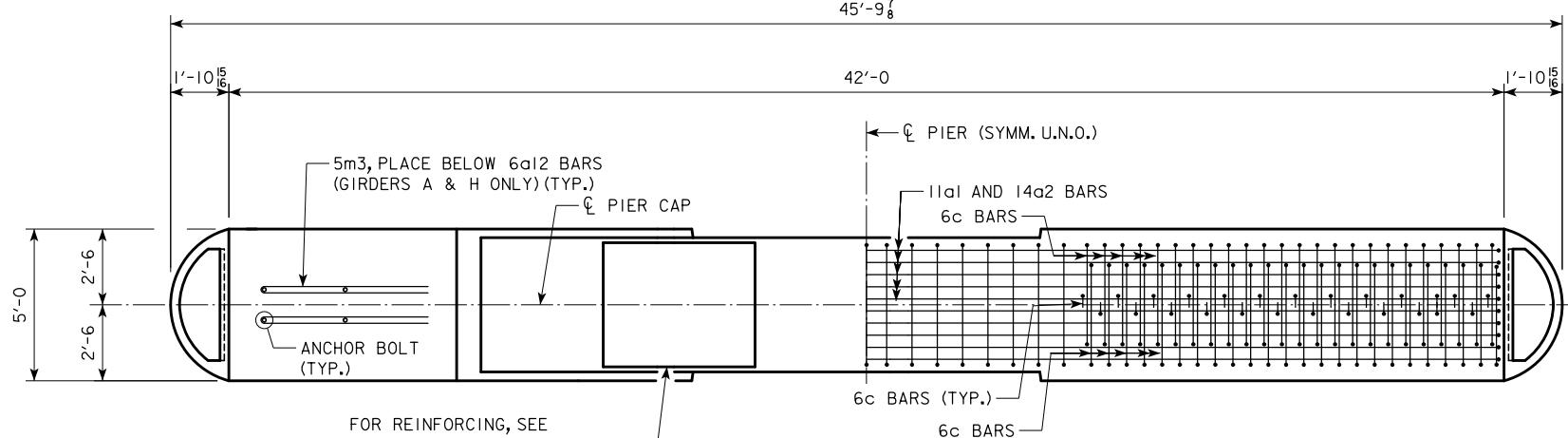


SECTION E-E

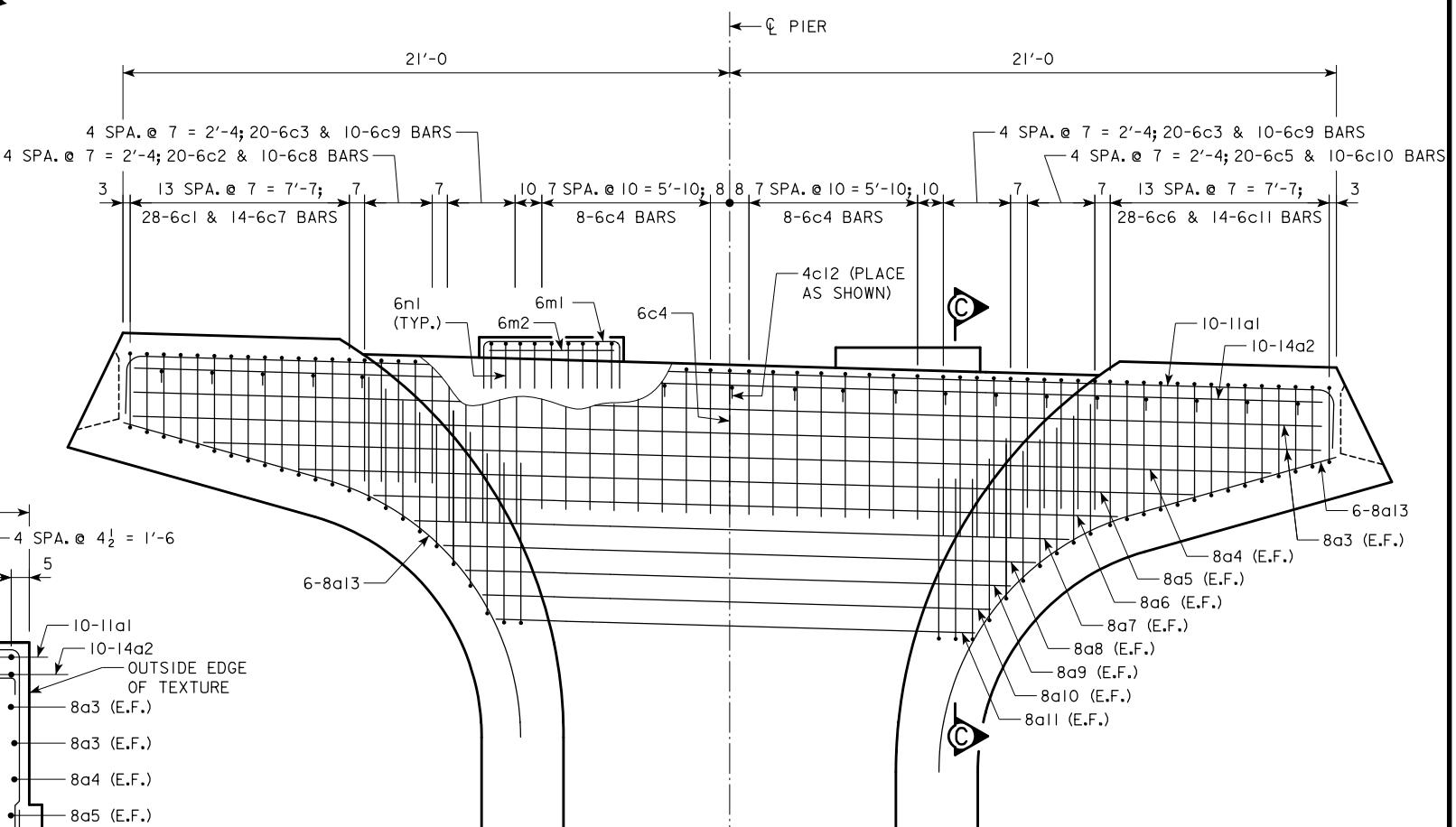


SECTION F-F

(T SIDE SHOWN, RIGHT SIDE SIMILAR)

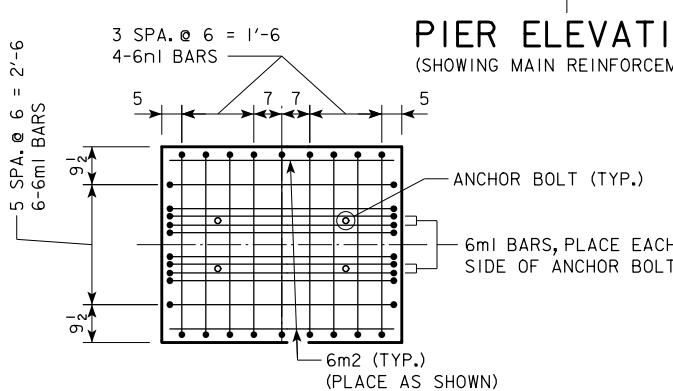


PIER CAP REINFORCING PLAN



PIER ELEVATION (SHOWING MAIN REINFORCEMENT)

NOTE:
FOR LOCATION OF SECTION D-D, SECTION E-E AND
SECTION F-F SEE DESIGN SHEET 15



(PLACE AS SHOWN)

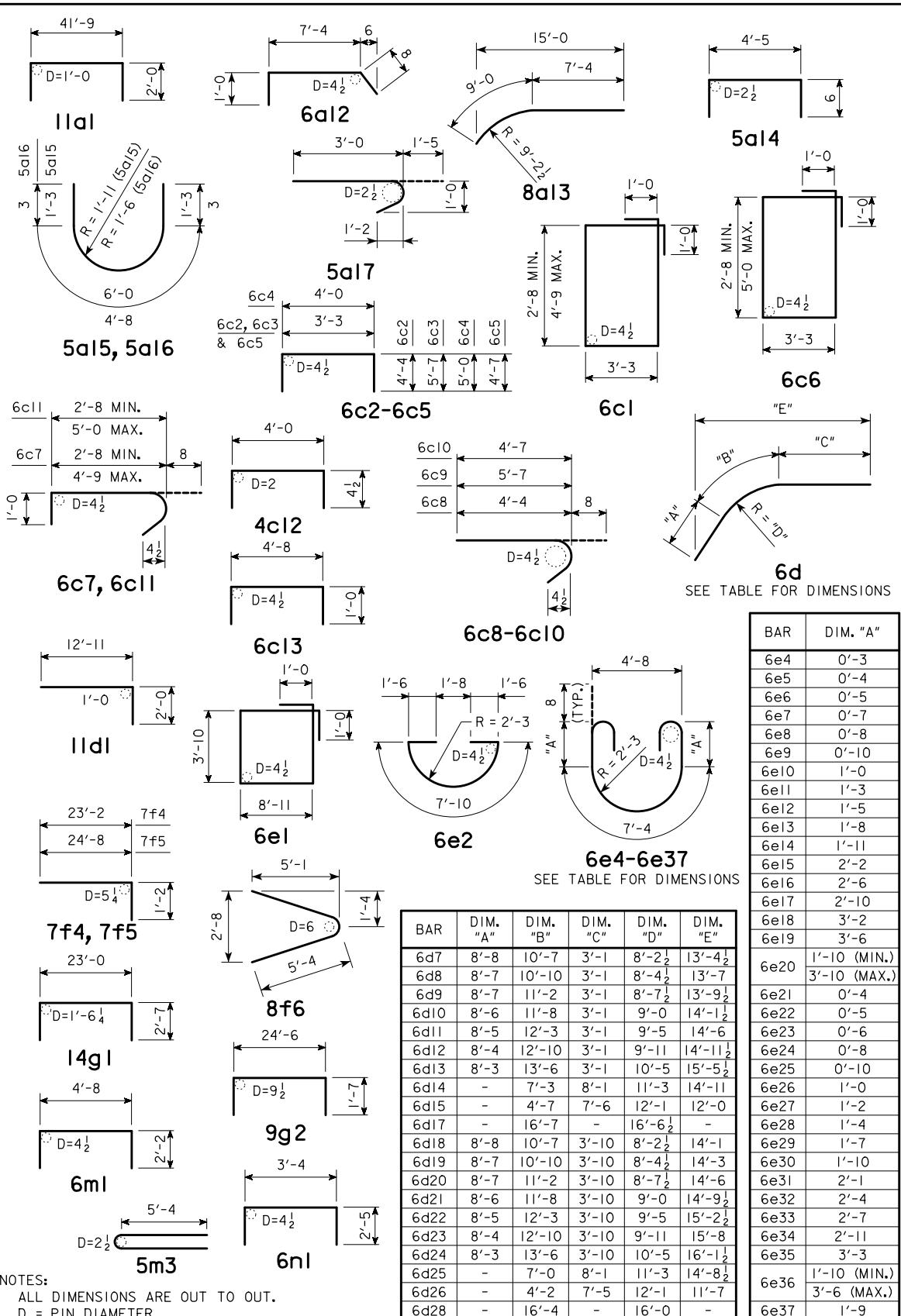
PEDESTAL REINFORCING DETAIL

DESIGN FOR 0° SKEW

**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
PIER NO. 2 DETAILS**

APRIL 2018

BENT BAR DETAILS



REINFORCING BAR LIST - PIER NO. 2

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL	I	10	45'-9	2,431
14a2	CAP, TOP, LONGITUDINAL	—	10	41'-3	3,156
8a3	CAP, SIDES, LONGITUDINAL	—	4	41'-3	441
8a4	CAP, SIDES, LONGITUDINAL	—	2	37'-9	202
8a5	CAP, SIDES, LONGITUDINAL	—	2	31'-8	169
8a6	CAP, SIDES, LONGITUDINAL	—	2	26'-3	140
8a7	CAP, SIDES, LONGITUDINAL	—	2	22'-11	122
8a8	CAP, SIDES, LONGITUDINAL	—	2	20'-9	111
8a9	CAP, SIDES, LONGITUDINAL	—	2	19'-1	102
8a10	CAP, SIDES, LONGITUDINAL	—	2	17'-9	95
8a11	CAP, SIDES, LONGITUDINAL	—	2	16'-9	89
6a12	CAP, TOP, LONGITUDINAL	I	24	9'-0	324
8a13	CAP, BOTTOM, LONGITUDINAL	I	12	16'-4	523
5a14	CAP, END	I	8	5'-5	45
5a15	CAP, END	U	2	8'-6	18
5a16	CAP, END	U	2	5'-2	11
5a17	CAP, END	I	16	4'-5	74
6c11	2'-8 MIN. 5'-0 MAX.				
6c7	2'-8 MIN. 4'-9 MAX.				
6c11	1'-0	D=4 ₁	8		
6c7, 6c11	1'-0	D=4 ₂	8		
6c13	12'-11				
11d1	1'-0	2'-0			
6e1	23'-2	7f4			
6e1	24'-8	7f5			
7f4, 7f5	D=5 ₄	1'-2			
14g1	23'-0				
14g1	D=1'-6 ₄	2'-7			
6m1	4'-8				
6m1	D=4 ₂	2'-2			
5m3	5'-4				
5m3	D=2 ₂	2'-5			
6n1	3'-4				
6n1	D=4 ₂	2'-5			
6e2	8f6	2'-8			
8f6	5'-1	D=6	1'-4		
6e2	24'-6				
9g2	3'-4				
9g2	D=9 ₂	1'-7			
6e37	6e4-6e37	SEE TABLE FOR DIMENSIONS			
6e37	SEE TABLE FOR DIMENSIONS				

NON-COATED REINFORCING

REINFORCING BAR LIST - PIER NO. 2 (CONT.)

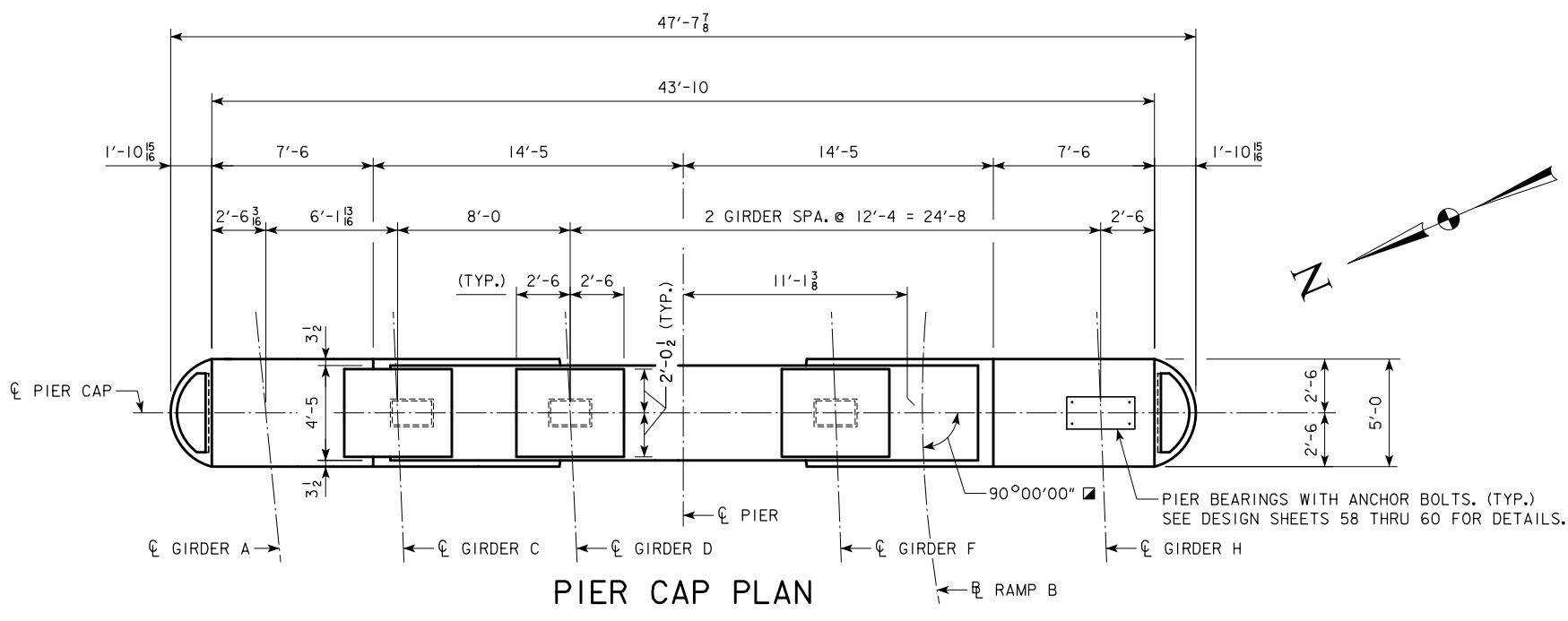
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6e1	COLUMN, HOOPS	□	104	27'-6	4,296
6e2	COLUMN SURFACE, TRANSVERSE	○	100	10'-10	1,627
6e4	CAP SURFACE, TRANSVERSE	○	2	9'-2	28
6e5	CAP SURFACE, TRANSVERSE	○	1	9'-4	14
6e6	CAP SURFACE, TRANSVERSE	○	1	9'-6	14
6e7	CAP SURFACE, TRANSVERSE	○	1	9'-10	15
6e8	CAP SURFACE, TRANSVERSE	○	1	10'-0	15
6e9	CAP SURFACE, TRANSVERSE	○	1	10'-4	16
6e10	CAP SURFACE, TRANSVERSE	○	1	10'-8	16
6e11	CAP SURFACE, TRANSVERSE	○	1	11'-2	17
6e12	CAP SURFACE, TRANSVERSE	○	1	11'-6	17
6e13	CAP SURFACE, TRANSVERSE	○	1	12'-0	18
6e14	CAP SURFACE, TRANSVERSE	○	1	12'-6	19
6e15	CAP SURFACE, TRANSVERSE	○	1	13'-0	20
6e16	CAP SURFACE, TRANSVERSE	○	1	13'-8	21
6e17	CAP SURFACE, TRANSVERSE	○	1	14'-4	22
6e18	CAP SURFACE, TRANSVERSE	○	1	15'-0	23
6e19	CAP SURFACE, TRANSVERSE	○	1	15'-8	24
6e20	CAP SURFACE, TRANSVERSE	○	9	VARIABLES	194
6e21	CAP SURFACE, TRANSVERSE	○	1	9'-4	14
6e22	CAP SURFACE, TRANSVERSE	○	1	9'-6	14
6e23	CAP SURFACE, TRANSVERSE	○	1	9'-8	15
6e24	CAP SURFACE, TRANSVERSE	○	1	10'-0	15
6e25	CAP SURFACE, TRANSVERSE	○	1	10'-4	16
6e26	CAP SURFACE, TRANSVERSE	○	1	10'-8	16
6e27	CAP SURFACE, TRANSVERSE	○	1	11'-0	17
6e28	CAP SURFACE, TRANSVERSE	○	1	11'-4	17
6e29	CAP SURFACE, TRANSVERSE	○	1	11'-10	18
6e30	CAP SURFACE, TRANSVERSE	○	1	12'-4	19
6e31	CAP SURFACE, TRANSVERSE	○	1	12'-10	19
6e32	CAP SURFACE, TRANSVERSE	○	1	13'-4	20
6e33	CAP SURFACE, TRANSVERSE	○	1	13'-10	21
6e34	CAP SURFACE, TRANSVERSE	○	1	14'-6	22
6e35	CAP SURFACE, TRANSVERSE	○	1	15'-2	23
6e36	CAP SURFACE, TRANSVERSE	○	9	VARIABLES	189
6e37	CAP SURFACE, TRANSVERSE	○	2	12'-2	37
7f1	FOOTING, TOP, TRANSVERSE	—	30	23'-2	1,421
7f2	FOOTING, TOP, LONGITUDINAL	—	24	24'-8	1,210
7f3	FOOTING, SIDES, VERTICAL	—	98	5'-4	1,068
7f4	FOOTING, SIDES, TRANSVERSE	—	10	24'-4	497
7f5	FOOTING, SIDES, LONGITUDINAL	—	10	25'-10	528
8f6	PILE UPLIFT ANCHORS	>	12	10'-8	342
14g1	FOOTING, BOTTOM, TRANSVERSE	—	43	28'-2	9,265
9g2	FOOTING, BOTTOM, LONGITUDINAL	—	28	27'-8	2,634
6m1	CAP, PEDESTAL, LONGITUDINAL	I	20	9'-6	285
6m2	CAP, PEDESTAL, LONGITUDINAL	—	4	4'-8	28
5m3	CAP, HAIRPIN	—	4	11'-2	47
6n1	CAP, PEDESTAL, TRANSVERSE	I	18	8'-2	221

REINFORCING STEEL - TOTAL (LBS.) 64,494
 DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 2 DETAILS
 STA. 2536+28.27 (RAMP B) APRIL 2018

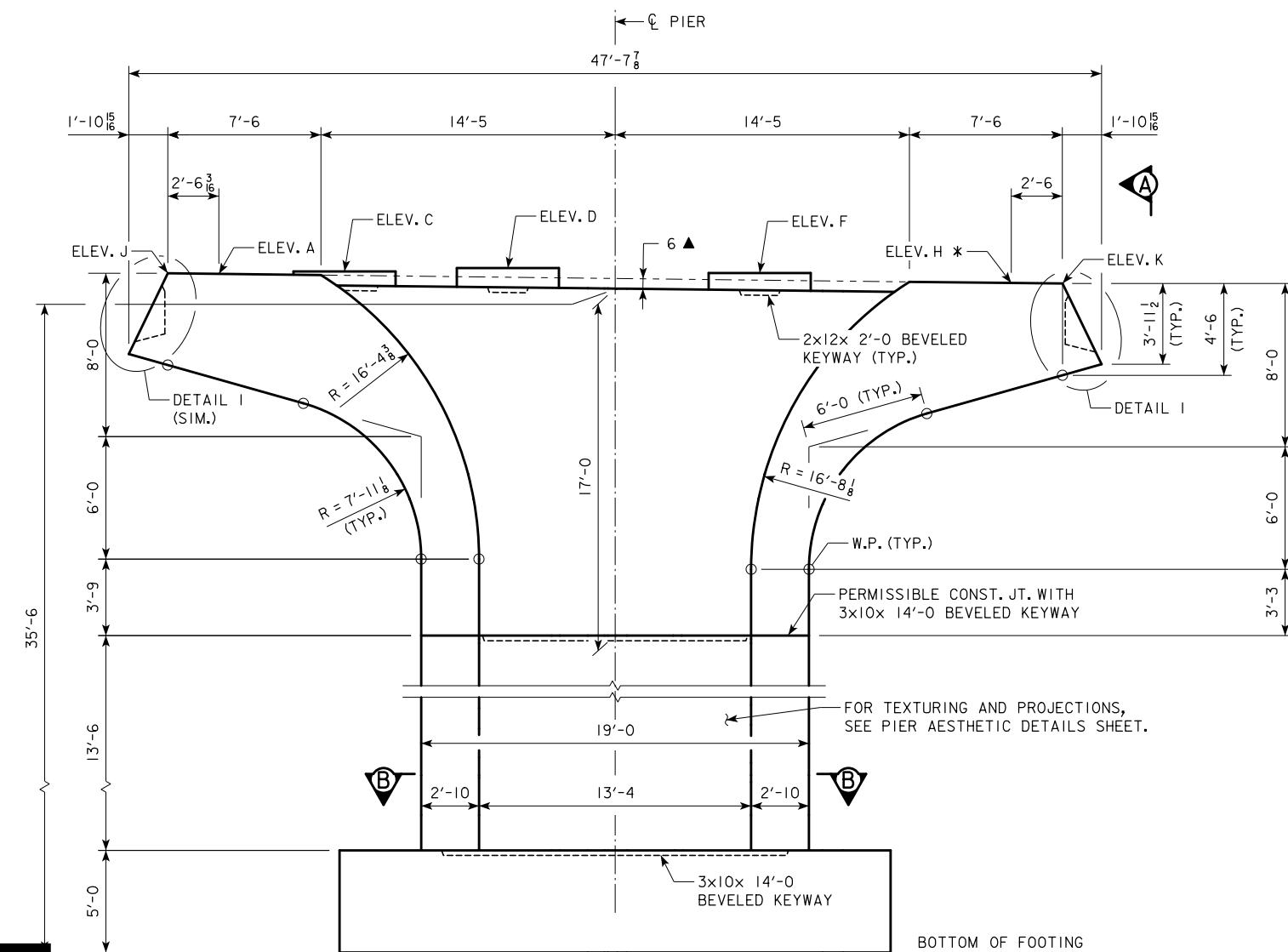
NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.

CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY
CAP & STEPS (HIGH PERFORMANCE)	77.0
COLUMN (HIGH PERFORMANCE)	94.7
FOOTING	125.1
TOTAL CU. YDS.	296.8



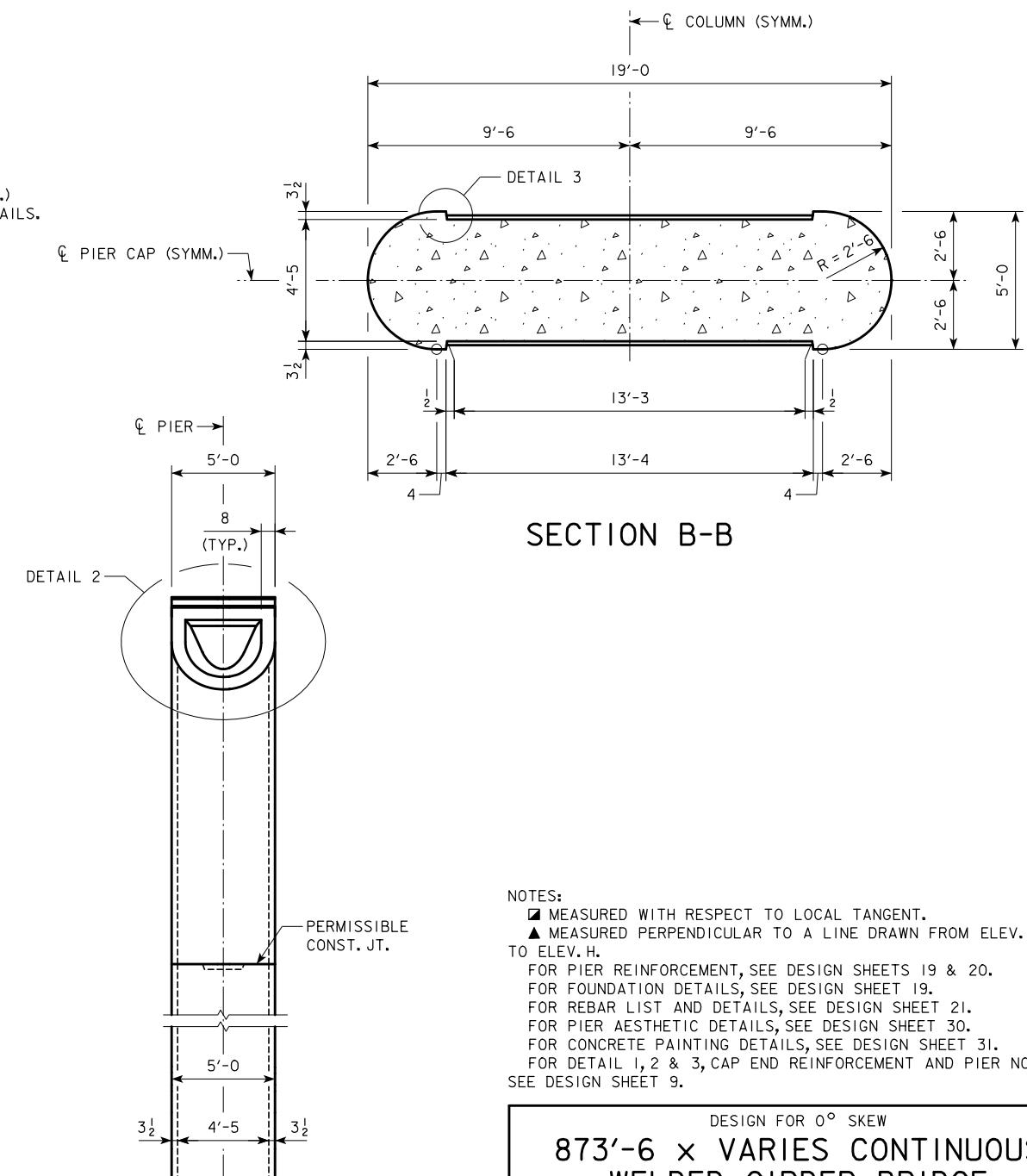
PIER CAP PLAN



PIER ELEVATION

PIER ELEVATIONS		
LOCATION	PLAN **	AS-BUILT
ELEV. A	775.22	
ELEV. C	775.35	
ELEV. D	775.51	
ELEV. F	775.26	
ELEV. H*	774.78	
ELEV. J	775.25	
ELEV. K	774.75	
BOTT. OF FTG.	739.00	

- * LOW STEP
- * ELEVATIONS AND PEDESTAL HEIGHT DEPENDENT ON FINAL BEARING HEIGHT, WHICH SHALL BE DETERMINED BY BEARING MANUFACTURER. CONTRACTOR SHALL VERIFY BEARING HEIGHT WITH MANUFACTURER, AND ADJUST ELEVATIONS IF NECESSARY, PRIOR TO PLACING CONCRETE.



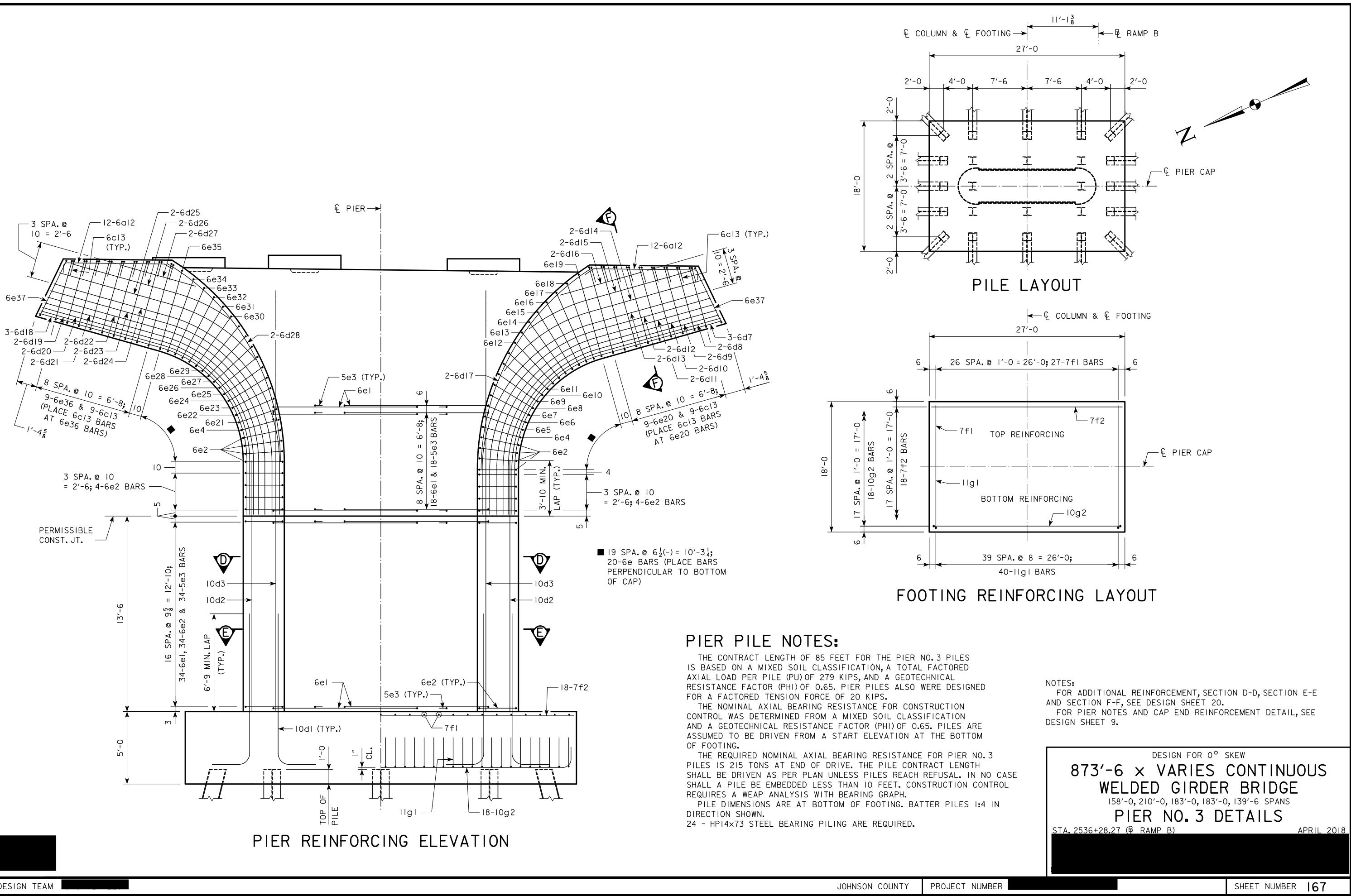
VIEW A-A

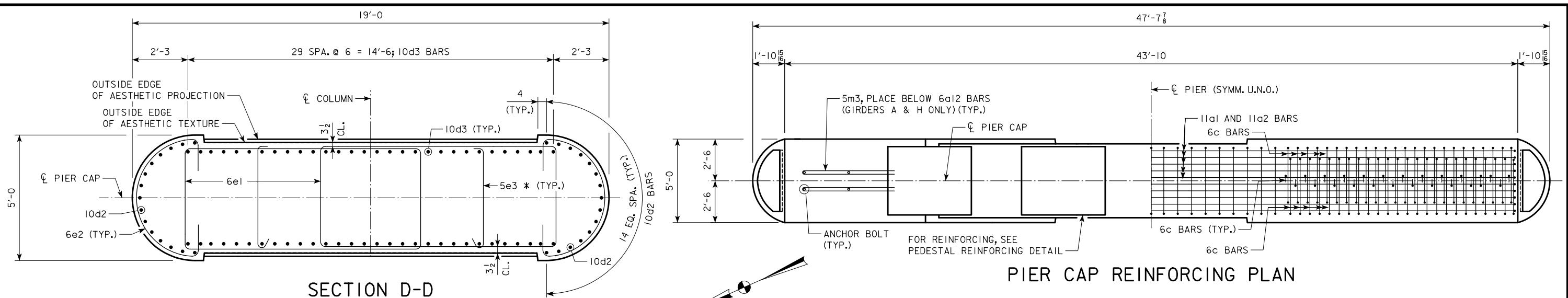
DESIGN FOR 0° SKEW

**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 3 DETAILS**

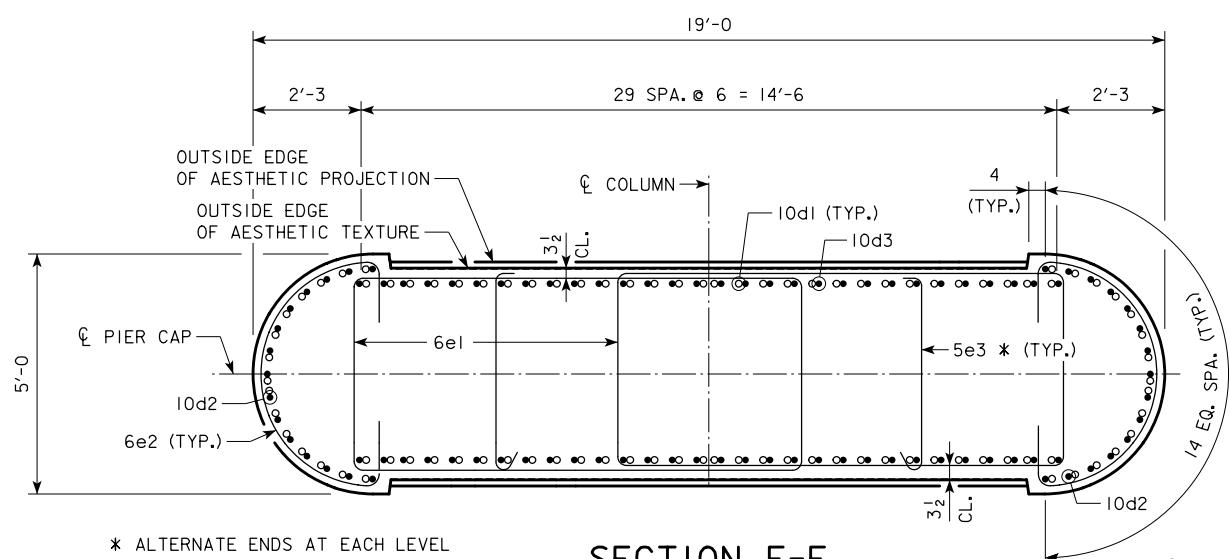
PIER NO.

APRIL 2018



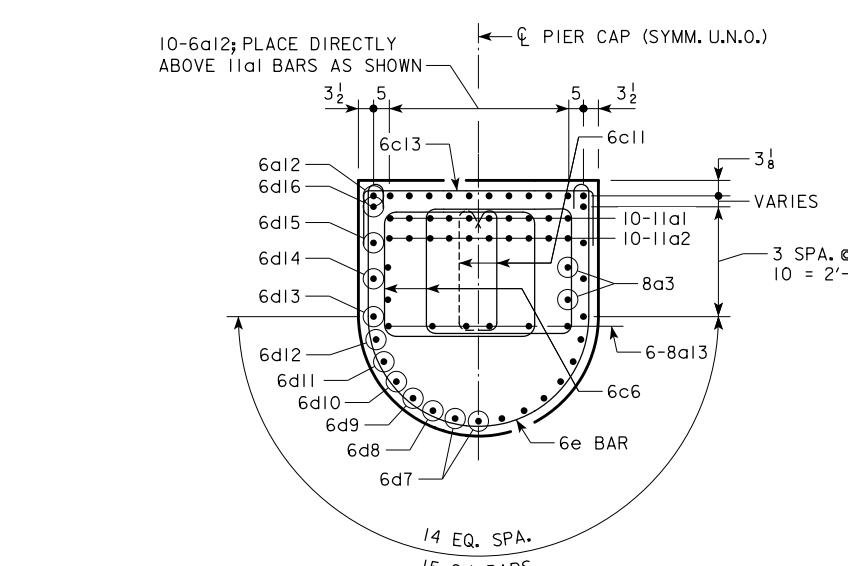


SECTION D-D

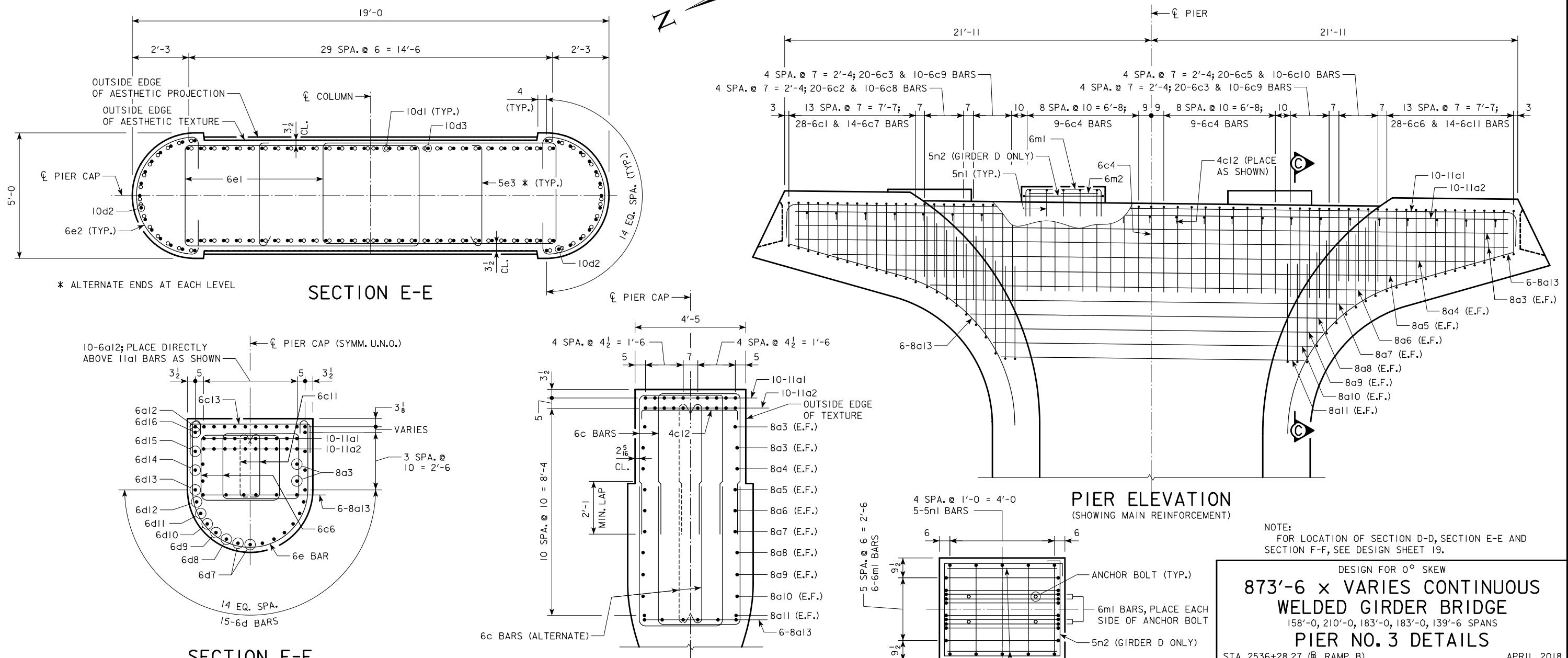


* ALTERNATE ENDS AT EACH LEVEL

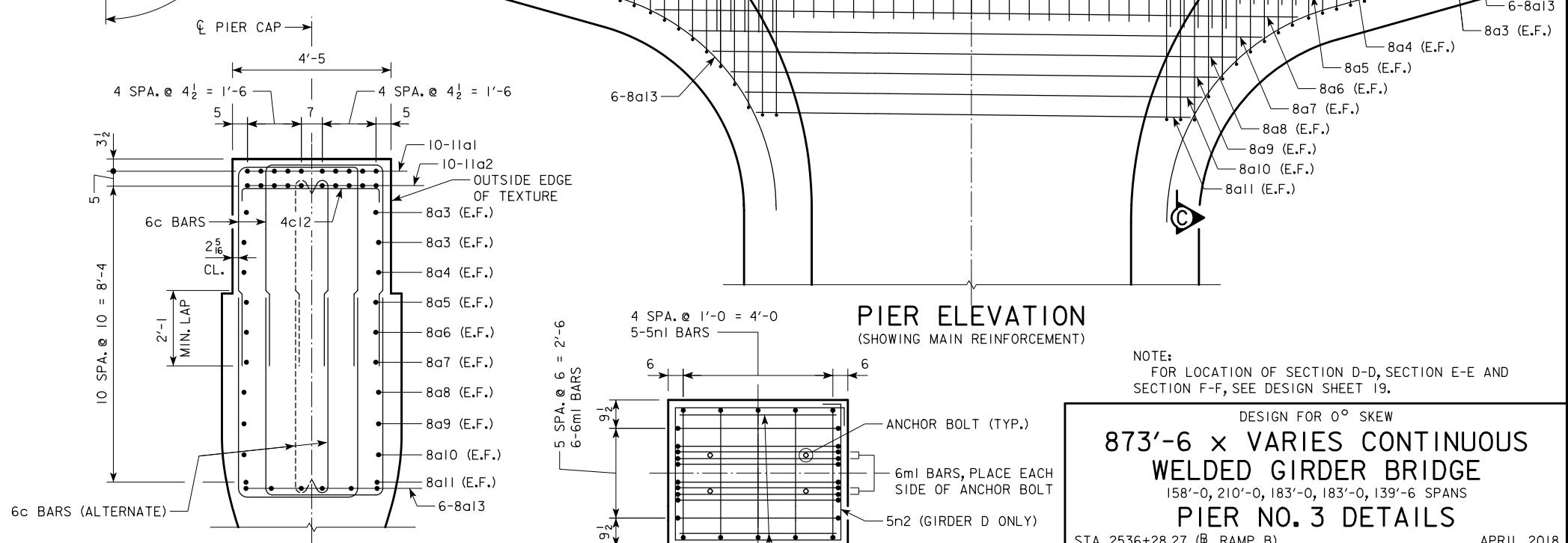
SECTION E-E



SECTION F-F
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



PIER CAP REINFORCING PLAN



PIER ELEVATION
(SHOWING MAIN REINFORCEMENT)

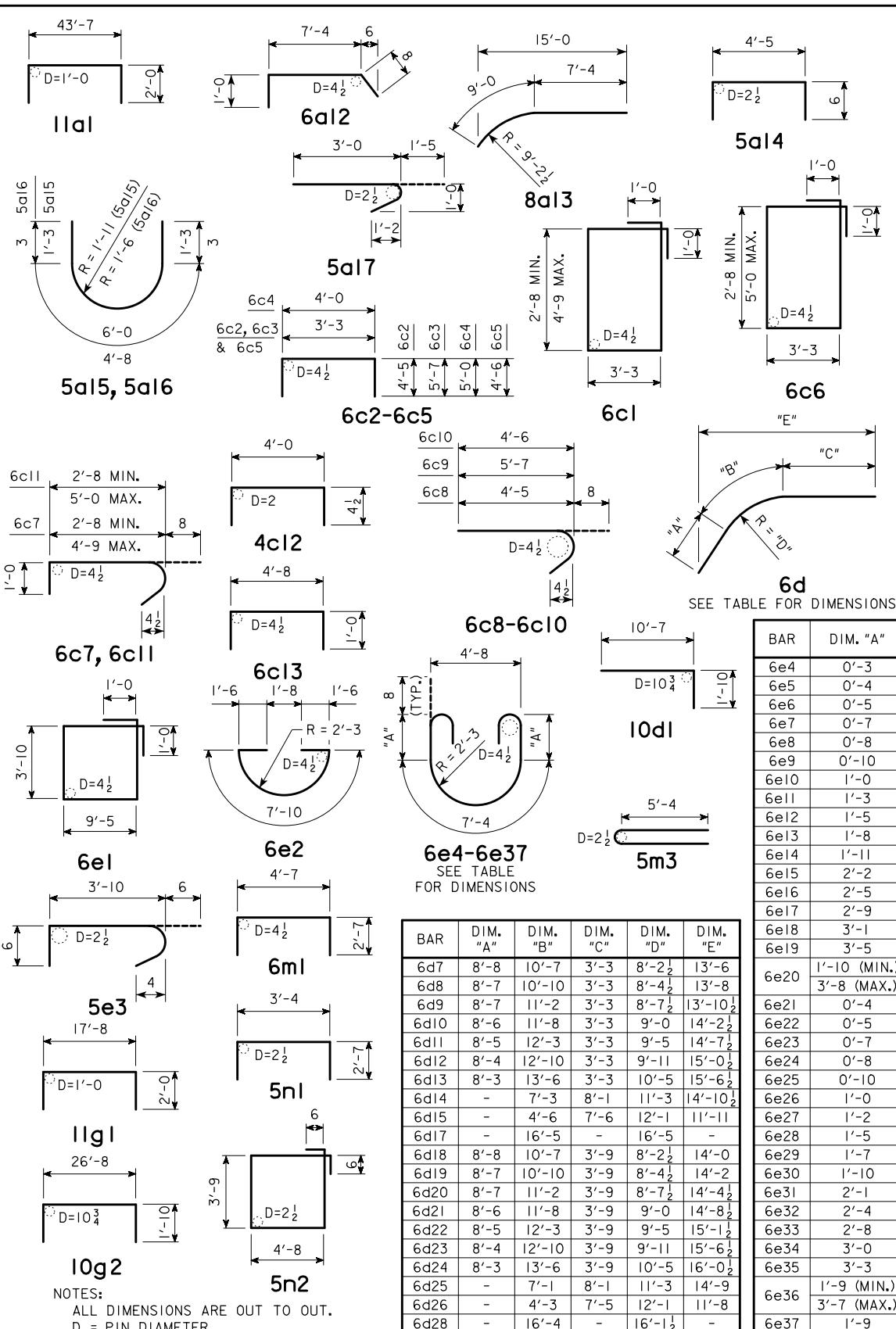
NOTE:
FOR LOCATION OF SECTION D-D, SECTION E-E AND
SECTION F-F, SEE DESIGN SHEET 19.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 3 DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

PEDESTAL REINFORCING DETAIL
(6d & 6e BARS NOT SHOWN FOR CLARITY)

BENT BAR DETAILS



REINFORCING BAR LIST - PIER NO. 3

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL	□	10	47'-7	2,528
11a2	CAP, TOP, LONGITUDINAL	—	10	43'-1	2,289
8a3	CAP, SIDES, LONGITUDINAL	—	4	43'-1	460
8a4	CAP, SIDES, LONGITUDINAL	—	2	39'-6	211
8a5	CAP, SIDES, LONGITUDINAL	—	2	33'-7	179
8a6	CAP, SIDES, LONGITUDINAL	—	2	28'-0	150
8a7	CAP, SIDES, LONGITUDINAL	—	2	24'-9	132
8a8	CAP, SIDES, LONGITUDINAL	—	2	22'-7	121
8a9	CAP, SIDES, LONGITUDINAL	—	2	20'-11	112
8a10	CAP, SIDES, LONGITUDINAL	—	2	19'-7	105
8a11	CAP, SIDES, LONGITUDINAL	—	2	18'-7	99
6a12	CAP, TOP, LONGITUDINAL	□	24	9'-0	324
8a13	CAP, BOTTOM, LONGITUDINAL	□	12	16'-4	523
5a14	CAP, END	□	8	5'-5	45
5a15	CAP, END	□	2	8'-6	18
5a16	CAP, END	□	2	5'-2	11
5a17	CAP, END	□	16	4'-5	74
6c1	CAP, HOOPS	□	28	VARIABLES	669
6c2	CAP, HAIRPINS, VERTICAL	□	20	12'-1	363
6c3	CAP, HAIRPINS, VERTICAL	□	40	14'-5	866
6c4	CAP, HAIRPINS, VERTICAL	□	19	14'-0	400
6c5	CAP, HAIRPINS, VERTICAL	□	20	12'-3	368
6c6	CAP, HOOPS	□	28	VARIABLES	680
6c7	CAP, TIE	□	14	VARIABLES	113
6c8	CAP, TIE	□	10	5'-1	76
6c9	CAP, TIE	□	20	6'-3	188
6c10	CAP, TIE	□	10	5'-2	78
6c11	CAP, TIE	□	14	VARIABLES	116
4c12	CAP, TRANSVERSE	□	25	4'-9	79
6c13	CAP, TOP, TRANSVERSE	□	18	6'-8	180
10d1	FOOTING TO COLUMN DOWEL	□	90	12'-5	4,809
10d2	COLUMN, VERTICAL	—	30	17'-4	2,238
10d3	COLUMN, VERTICAL	—	60	29'-4	7,573
6d7	CAP SURFACE, LONGITUDINAL	⌞	3	22'-6	101
6d8	CAP SURFACE, LONGITUDINAL	⌞	2	22'-8	68
6d9	CAP SURFACE, LONGITUDINAL	⌞	2	23'-0	69
6d10	CAP SURFACE, LONGITUDINAL	⌞	2	23'-5	70
6d11	CAP SURFACE, LONGITUDINAL	⌞	2	23'-11	72
6d12	CAP SURFACE, LONGITUDINAL	⌞	2	24'-5	73
6d13	CAP SURFACE, LONGITUDINAL	⌞	2	25'-0	75
6d14	CAP SURFACE, LONGITUDINAL	⌞	2	15'-4	46
6d15	CAP SURFACE, LONGITUDINAL	⌞	2	12'-0	36
6d16	CAP SURFACE, LONGITUDINAL	⌞	2	6'-6	20
6d17	CAP SURFACE, LONGITUDINAL	⌞	2	16'-5	49
6d18	CAP SURFACE, LONGITUDINAL	⌞	3	23'-0	104
6d19	CAP SURFACE, LONGITUDINAL	⌞	2	23'-2	70
6d20	CAP SURFACE, LONGITUDINAL	⌞	2	23'-6	71
6d21	CAP SURFACE, LONGITUDINAL	⌞	2	23'-11	72
6d22	CAP SURFACE, LONGITUDINAL	⌞	2	24'-5	73
6d23	CAP SURFACE, LONGITUDINAL	⌞	2	24'-11	75
6d24	CAP SURFACE, LONGITUDINAL	⌞	2	25'-6	77
6d25	CAP SURFACE, LONGITUDINAL	⌞	2	15'-2	46
6d26	CAP SURFACE, LONGITUDINAL	⌞	2	11'-8	35
6d27	CAP SURFACE, LONGITUDINAL	—	2	5'-11	18
6d28	CAP SURFACE, LONGITUDINAL	⌞	2	16'-4	49

CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY
CAP & STEPS (HIGH PERFORMANCE)	82.9
COLUMN (HIGH PERFORMANCE)	41.1
FOOTING	90.0
TOTAL CU. YDS.	214.0

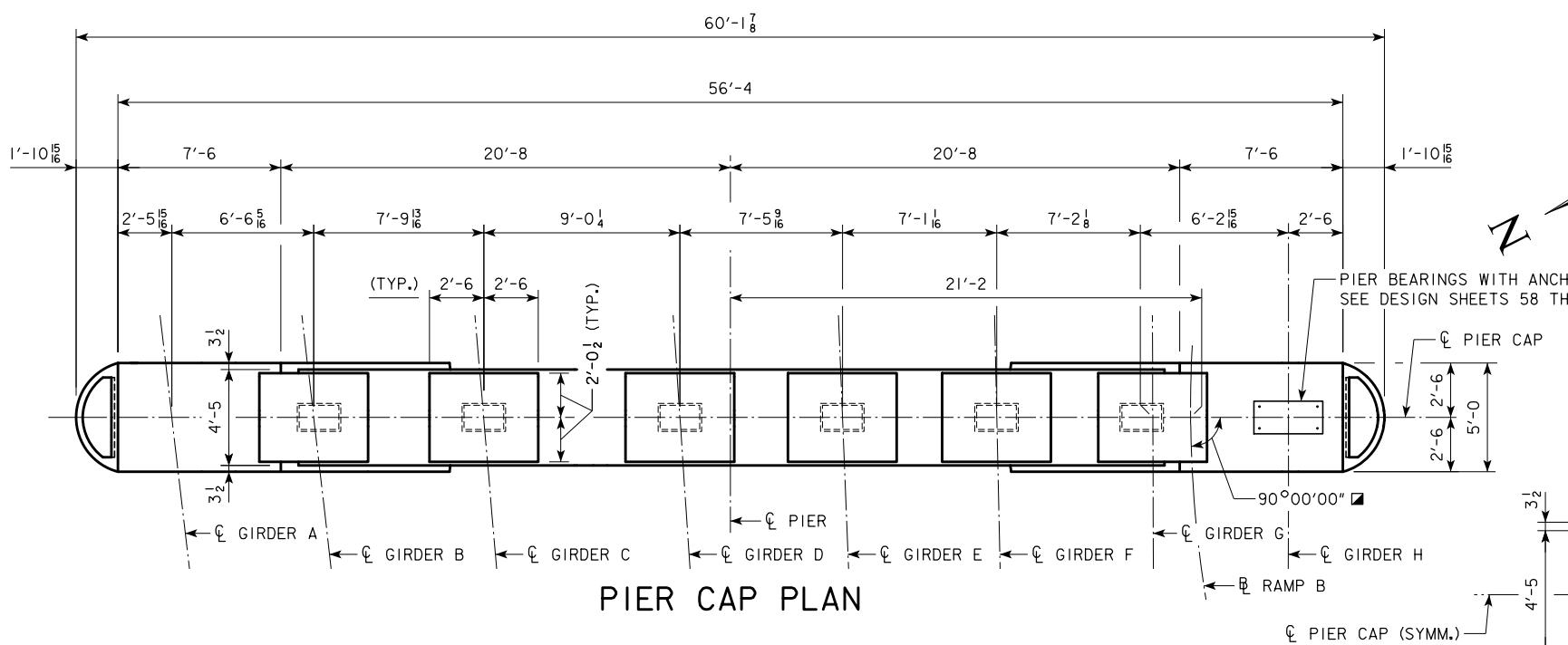
REINF. BAR LIST - PIER NO. 3 (CONT.)

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6e1	COLUMN, HOOPS	□	54	28'-6	2,312
6e2	COLUMN SURFACE, TRANSVERSE	□	50	10'-10	814
5e3	COLUMN, TIES	□	54	4'-10	272
6e4	CAP SURFACE, TRANSVERSE	□	2	9'-2	28
6e5	CAP SURFACE, TRANSVERSE	□	1	9'-4	14
6e6	CAP SURFACE, TRANSVERSE	□	1	9'-6	14
6e7	CAP SURFACE, TRANSVERSE	□	1	9'-10	15
6e8	CAP SURFACE, TRANSVERSE	□	1	10'-0	15
6e9	CAP SURFACE, TRANSVERSE	□	1	10'-4	16
6e10	CAP SURFACE, TRANSVERSE	□	1	10'-8	16
6e11	CAP SURFACE, TRANSVERSE	□	1	11'-2	17
6e12	CAP SURFACE, TRANSVERSE	□	1	11'-6	17
6e13	CAP SURFACE, TRANSVERSE	□	1	12'-0	18
6e14	CAP SURFACE, TRANSVERSE	□	1	12'-6	19
6e15	CAP SURFACE, TRANSVERSE	□	1	13'-0	20
6e16	CAP SURFACE, TRANSVERSE	□	1	13'-6	20
6e17	CAP SURFACE, TRANSVERSE	□	1	14'-2	21
6e18	CAP SURFACE, TRANSVERSE	□	1	14'-10	22
6e19	CAP SURFACE, TRANSVERSE	□	1	15'-6	23
6e20	CAP SURFACE, TRANSVERSE	□	9	VARIABLES	192
6e21	CAP SURFACE, TRANSVERSE	□	1	9'-4	14
6e22	CAP SURFACE, TRANSVERSE	□	1	9'-6	14
6e23	CAP SURFACE, TRANSVERSE	□	1	9'-10	15
6e24	CAP SURFACE, TRANSVERSE	□	1	10'-0	15
6e25	CAP SURFACE, TRANSVERSE	□	1	10'-4	16
6e26	CAP SURFACE, TRANSVERSE	□	1	10'-8	16
6e27	CAP SURFACE, TRANSVERSE	□	1	11'-0	17
6e28	CAP SURFACE, TRANSVERSE	□	1	11'-6	17
6e29	CAP SURFACE, TRANSVERSE	□	1	11'-10	18
6e30	CAP SURFACE, TRANSVERSE	□	1	12'-4	19
6e31	CAP SURFACE, TRANSVERSE	□	1	12'-10	19
6e32	CAP SURFACE, TRANSVERSE	□	1	13'-4	20
6e33	CAP SURFACE, TRANSVERSE	□	1	14'-0	21
6e34	CAP SURFACE, TRANSVERSE	□	1	14'-8	22
6e35	CAP SURFACE, TRANSVERSE	□	1	15'-2	23
6e36	CAP SURFACE, TRANSVERSE	□	9	VARIABLES	189
6e37	CAP SURFACE, TRANSVERSE	□	2	12'-2	37
7f1	FOOTING, TOP, TRANSVERSE	—	27	17'-8	975
7f2	FOOTING, TOP, LONGITUDINAL	—	18	26'-8	981
11g1	FOOTING, BOTTOM, TRANSVERSE	□	40	21'-8	4,605
10g2	FOOTING, BOTTOM, LONGITUDINAL	□	18	30'-4	2,349
6m1	CAP, PEDESTAL, LONGITUDINAL	□	30	9'-9	439</td

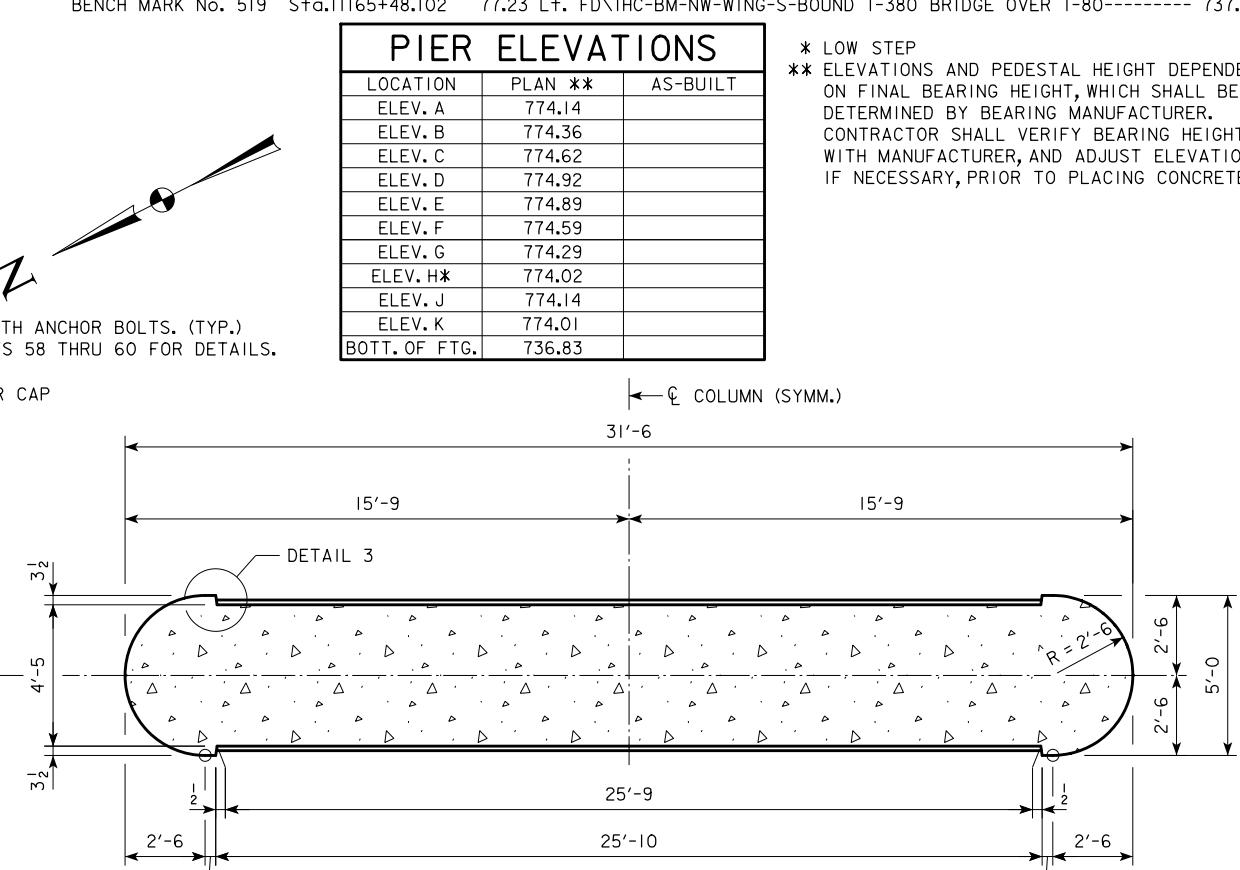
PIER ELEVATIONS

LOCATION	PLAN **	AS-BUILT
ELEV. A	774.14	
ELEV. B	774.36	
ELEV. C	774.62	
ELEV. D	774.92	
ELEV. E	774.89	
ELEV. F	774.59	
ELEV. G	774.29	
ELEV. H*	774.02	
ELEV. J	774.14	
ELEV. K	774.01	
BOTT. OF FTG.	736.83	

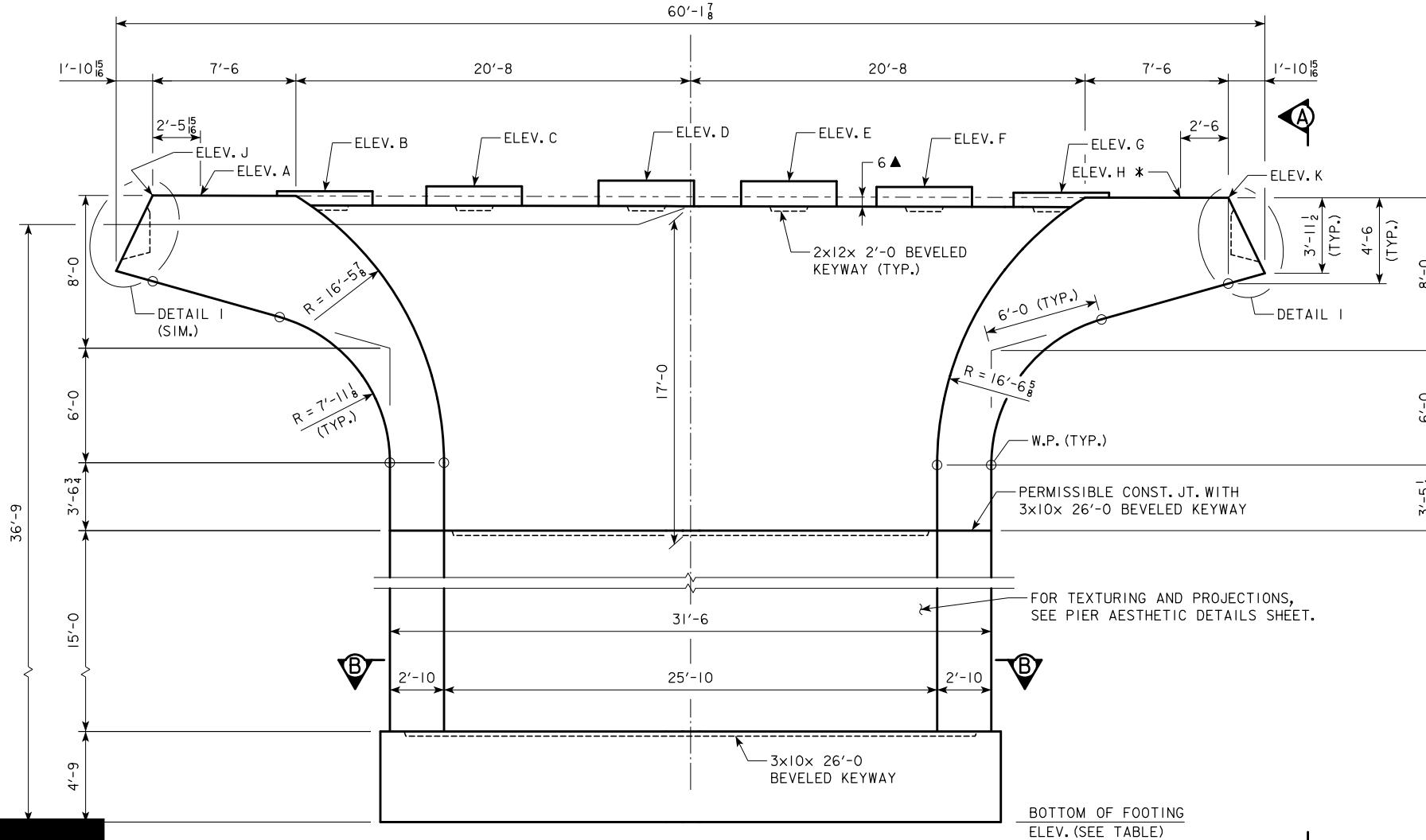
- * LOW STEP
- * ELEVATIONS AND PEDESTAL HEIGHT DEPENDENT ON FINAL BEARING HEIGHT, WHICH SHALL BE DETERMINED BY BEARING MANUFACTURER. CONTRACTOR SHALL VERIFY BEARING HEIGHT WITH MANUFACTURER, AND ADJUST ELEVATIONS IF NECESSARY, PRIOR TO PLACING CONCRETE.



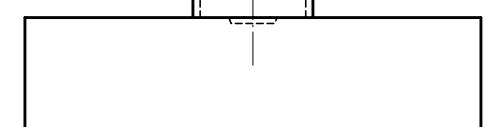
PIER CAP PLAN



SECTION B-B



PIER ELEVATION



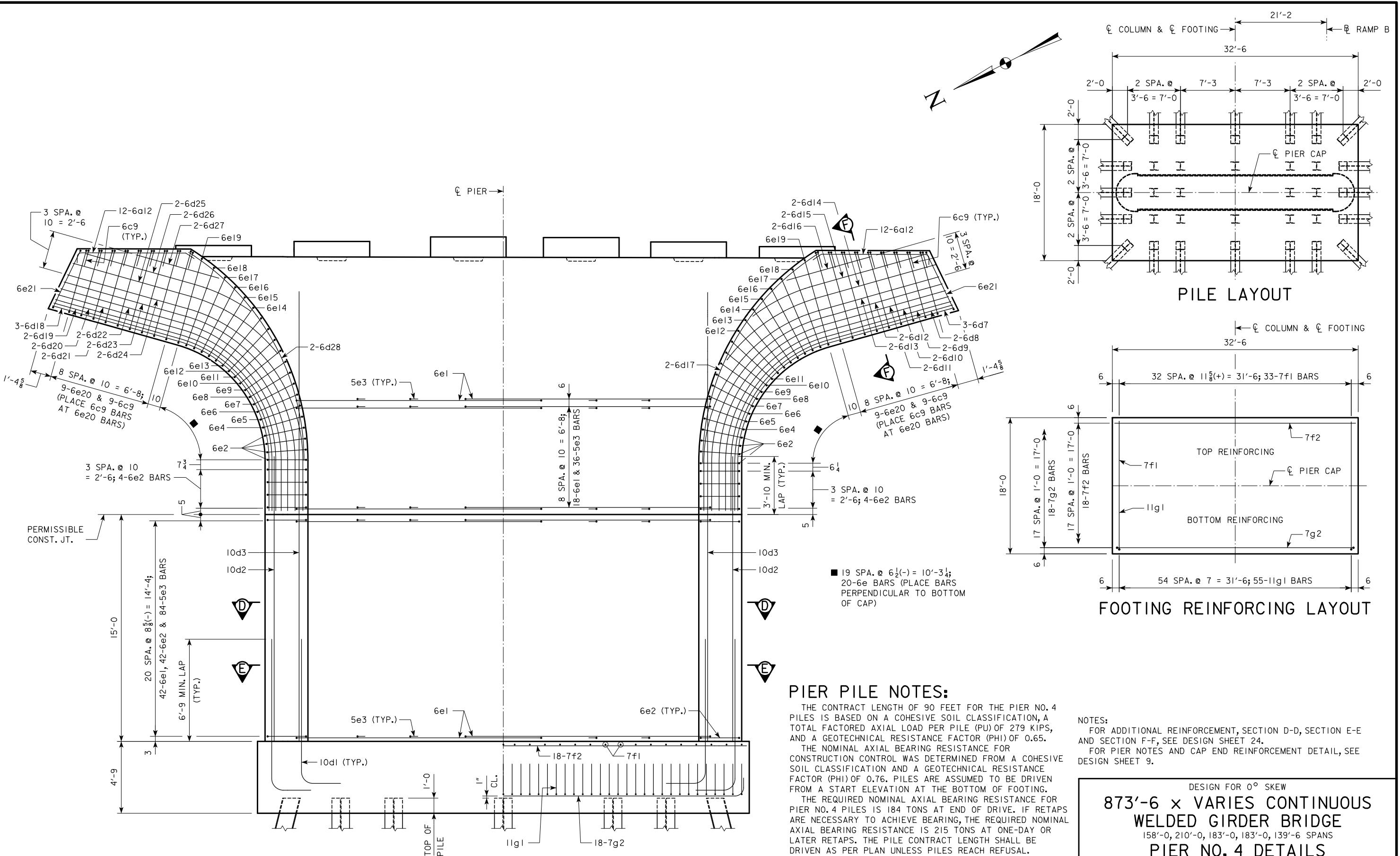
VIEW A-A

NOTES:

- MEASURED WITH RESPECT TO LOCAL TANGENT.
- MEASURED PERPENDICULAR TO A LINE DRAWN FROM ELEV. A TO ELEV. H.
 - FOR PIER REINFORCEMENT, SEE DESIGN SHEETS 23 & 24.
 - FOR FOUNDATION DETAILS, SEE DESIGN SHEET 23.
 - FOR REBAR LIST AND DETAILS, SEE DESIGN SHEET 25.
 - FOR PIER AESTHETIC DETAILS, SEE DESIGN SHEET 30.
 - FOR CONCRETE PAINTING DETAILS, SEE DESIGN SHEET 31.
 - FOR DETAIL 1, 2 & 3, CAP END REINFORCEMENT AND PIER NOTES,
- SEE DESIGN SHEET 9

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
PIER NO. 4 DETAILS

STA 2536+28 27 (B RAMP B) APRIL 2018



PIER REINFORCING ELEVATION

PIER PILE NOTES:

THE CONTRACT LENGTH OF 90 FEET FOR THE PIER NO. 4 PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 279 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. 4 PILES IS 184 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE IS 215 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

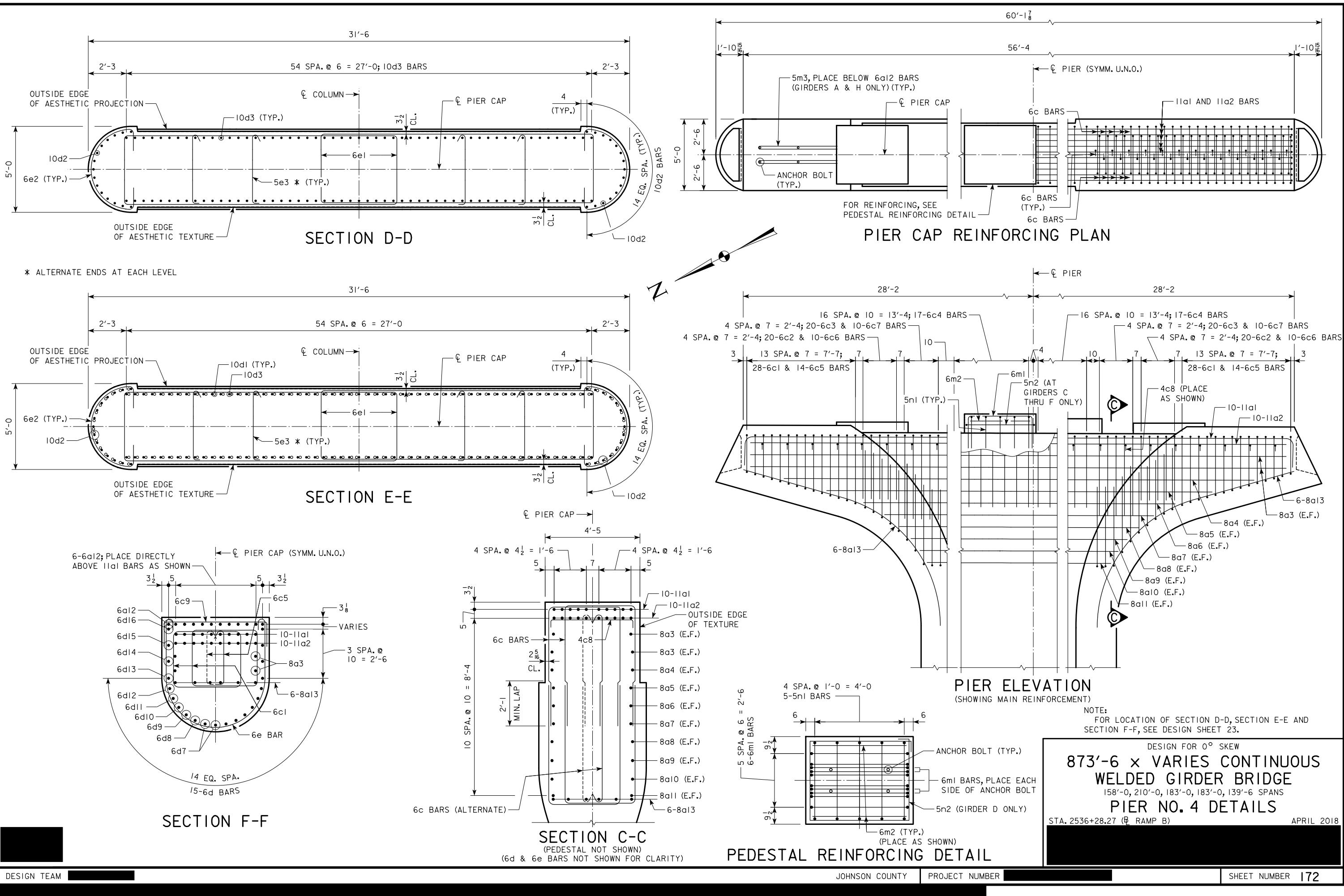
PILE DIMENSIONS ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN DIRECTION SHOWN.

34. UDL4-73 STEEL BEARING PILING ARE REQUIRED

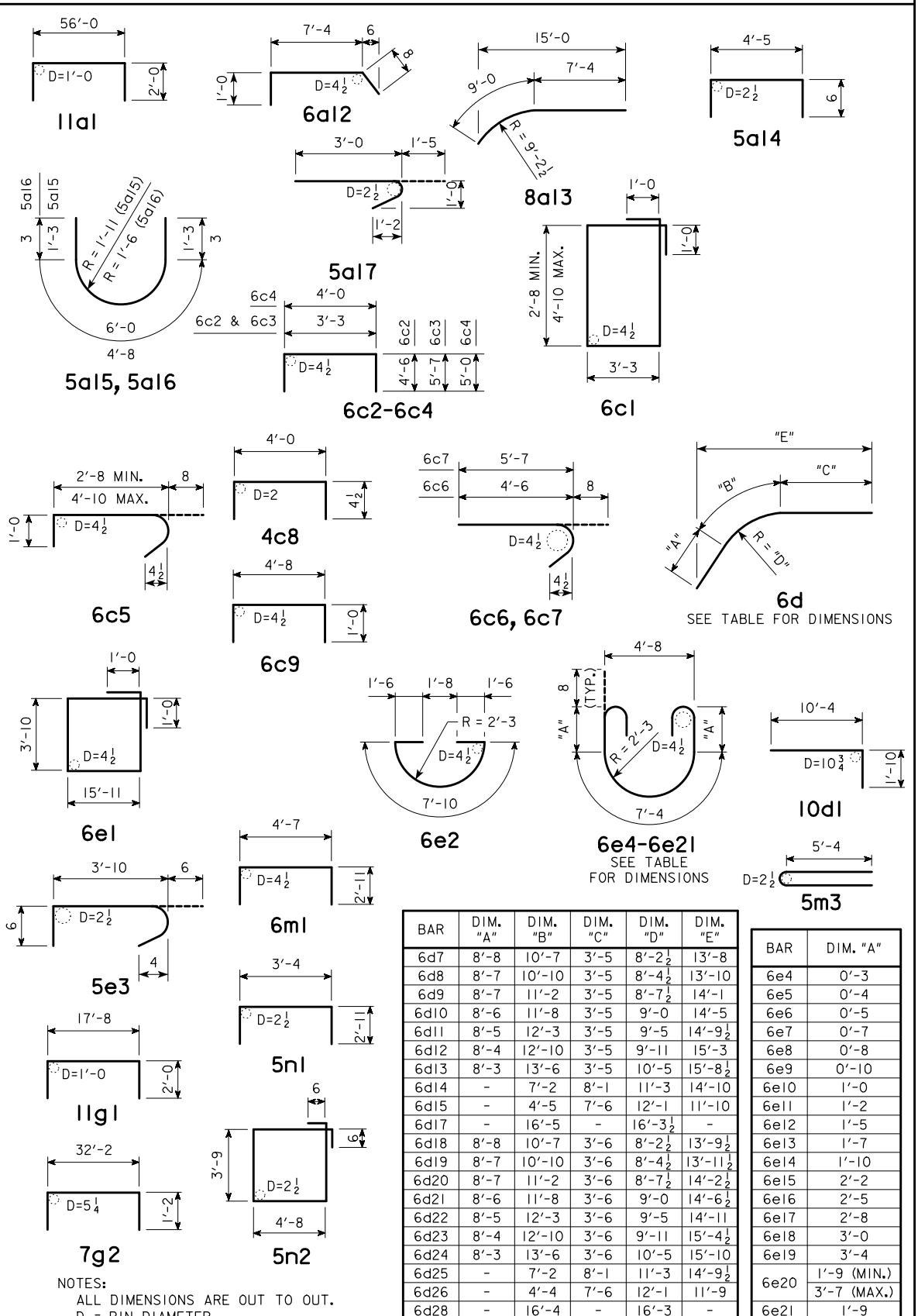
NOTES:
FOR ADDITIONAL REINFORCEMENT, SECTION D-D, SECTION E-E
AND SECTION F-F, SEE DESIGN SHEET 24.
FOR PIER NOTES AND CAP END REINFORCEMENT DETAIL, SEE
DESIGN SHEET 9.

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
PIER NO. 4 DETAILS

STA 2536+28 27 (B RAMP B) APRIL 2018



BENT BAR DETAILS



REINFORCING BAR LIST - PIER NO. 4

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL	□	10	60'-0	3,188
11a2	CAP, TOP, LONGITUDINAL	—	10	55'-6	2,949
8a3	CAP, SIDES, LONGITUDINAL	—	4	55'-6	593
8a4	CAP, SIDES, LONGITUDINAL	—	2	52'-0	278
8a5	CAP, SIDES, LONGITUDINAL	—	2	46'-1	246
8a6	CAP, SIDES, LONGITUDINAL	—	2	40'-6	216
8a7	CAP, SIDES, LONGITUDINAL	—	2	37'-3	199
8a8	CAP, SIDES, LONGITUDINAL	—	2	35'-1	187
8a9	CAP, SIDES, LONGITUDINAL	—	2	33'-5	178
8a10	CAP, SIDES, LONGITUDINAL	—	2	32'-1	171
8a11	CAP, SIDES, LONGITUDINAL	—	2	31'-1	166
6a12	CAP, TOP, LONGITUDINAL	□	24	9'-0	324
8a13	CAP, BOTTOM, LONGITUDINAL	□	12	16'-4	523
5a14	CAP, END	□	8	5'-5	45
5a15	CAP, END	—	2	8'-6	18
5a16	CAP, END	U	2	5'-2	11
5a17	CAP, END	—	16	4'-5	74
6c1	CAP, HOOPS	□	56	VARIABLES	1,346
6c2	CAP, HAIRPINS, VERTICAL	□	40	12'-3	736
6c3	CAP, HAIRPINS, VERTICAL	□	40	14'-5	866
6c4	CAP, HAIRPINS, VERTICAL	□	34	14'-0	715
6c5	CAP, TIE	□	28	VARIABLES	228
6c6	CAP, TIE	□	20	5'-2	155
6c7	CAP, TIE	□	20	6'-3	188
4c8	CAP, TRANSVERSE	□	32	4'-9	102
6c9	CAP, TOP, TRANSVERSE	□	18	6'-8	180
10d1	FOOTING TO COLUMN DOWEL	□	140	12'-2	7,329
10d2	COLUMN, VERTICAL	—	30	18'-10	2,431
10d3	COLUMN, VERTICAL	—	110	30'-11	14,634
6d7	CAP SURFACE, LONGITUDINAL	⌞	3	22'-8	102
6d8	CAP SURFACE, LONGITUDINAL	⌞	2	22'-10	69
6d9	CAP SURFACE, LONGITUDINAL	⌞	2	23'-2	70
6d10	CAP SURFACE, LONGITUDINAL	⌞	2	23'-7	71
6d11	CAP SURFACE, LONGITUDINAL	⌞	2	24'-1	72
6d12	CAP SURFACE, LONGITUDINAL	⌞	2	24'-7	74
6d13	CAP SURFACE, LONGITUDINAL	⌞	2	25'-2	76
6d14	CAP SURFACE, LONGITUDINAL	⌞	2	15'-3	46
6d15	CAP SURFACE, LONGITUDINAL	⌞	2	11'-11	36
6d16	CAP SURFACE, LONGITUDINAL	—	2	6'-3	19
6d17	CAP SURFACE, LONGITUDINAL	⌞	2	16'-5	49
6d18	CAP SURFACE, LONGITUDINAL	⌞	3	22'-9	103
6d19	CAP SURFACE, LONGITUDINAL	⌞	2	22'-11	69
6d20	CAP SURFACE, LONGITUDINAL	⌞	2	23'-3	70
6d21	CAP SURFACE, LONGITUDINAL	⌞	2	23'-8	71
6d22	CAP SURFACE, LONGITUDINAL	⌞	2	24'-2	73
6d23	CAP SURFACE, LONGITUDINAL	⌞	2	24'-8	74
6d24	CAP SURFACE, LONGITUDINAL	⌞	2	25'-3	76
6d25	CAP SURFACE, LONGITUDINAL	⌞	2	15'-3	46
6d26	CAP SURFACE, LONGITUDINAL	⌞	2	11'-10	36
6d27	CAP SURFACE, LONGITUDINAL	—	2	6'-2	19
6d28	CAP SURFACE, LONGITUDINAL	⌞	2	16'-4	49
6f1	FOOTING, TOP, TRANSVERSE	—	33	17'-8	1,192
7f2	FOOTING, TOP, LONGITUDINAL	—	18	32'-2	1,183
11g1	FOOTING, BOTTOM, TRANSVERSE	□	55	21'-8	6,331
7g2	FOOTING, BOTTOM, LONGITUDINAL	□	18	34'-6	1,269
6m1	CAP, PEDESTAL, LONGITUDINAL	□	60	10'-5	939
6m2	CAP, PEDESTAL, LONGITUDINAL	—	12	4'-8	84
5m3	CAP, HAIRPIN	□	4	11'-2	47
5n1	CAP, PEDESTAL, TRANSVERSE	□	30	9'-2	287
5n2	CAP, PEDESTAL, HOOP	□	4	17'-10	74

REINF. BAR LIST - PIER NO. 4 (CONT.)

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6e1	COLUMN, HOOPS	□	62	41'-6	3,865
6e2	COLUMN SURFACE, TRANSVERSE	□	58	10'-10	944
5e3	COLUMN, TIES	□	124	4'-10	625
6e4	CAP SURFACE, TRANSVERSE	□	2	9'-2	28
6e5	CAP SURFACE, TRANSVERSE	□	2	9'-4	28
6e6	CAP SURFACE, TRANSVERSE	□	2	9'-6	29
6e7	CAP SURFACE, TRANSVERSE	□	2	9'-10	30
6e8	CAP SURFACE, TRANSVERSE	□	2	10'-0	30
6e9	CAP SURFACE, TRANSVERSE	□	2	10'-4	31
6e10	CAP SURFACE, TRANSVERSE	□	2	10'-8	32
6e11	CAP SURFACE, TRANSVERSE	□	2	11'-0	33
6e12	CAP SURFACE, TRANSVERSE	□	2	11'-6	35
6e13	CAP SURFACE, TRANSVERSE	□	2	11'-10	36
6e14	CAP SURFACE, TRANSVERSE	□	2	12'-4	37
6e15	CAP SURFACE, TRANSVERSE	□	2	13'-0	39
6e16	CAP SURFACE, TRANSVERSE	□	2	13'-6	41
6e17	CAP SURFACE, TRANSVERSE	□	2	14'-0	42
6e18	CAP SURFACE, TRANSVERSE	□	2	14'-8	44
6e19	CAP SURFACE, TRANSVERSE	□	2	15'-4	46
6e20	CAP SURFACE, TRANSVERSE	□	18	VARIABLES	379
6e21	CAP SURFACE, TRANSVERSE	□	2	12'-2	37
7f1	FOOTING, TOP, TRANSVERSE	—	33	17'-8	1,192
7f2	FOOTING, TOP, LONGITUDINAL	—	18	32'-2	1,183
11g1	FOOTING, BOTTOM, TRANSVERSE	□	55	21'-8	6,331
7g2	FOOTING, BOTTOM, LONGITUDINAL	□	18	34'-6	1,269
6m1	CAP, PEDESTAL, LONGITUDINAL	□	60	10'-5	939
6m2	CAP, PEDESTAL, LONGITUDINAL	—	12	4'-8	84
5m3	CAP, HAIRPIN	□	4	11'-2	47
5n1	CAP, PEDESTAL, TRANSVERSE	□	30	9'-2	287
5n2	CAP, PEDESTAL, HOOP	□	4	17'-10	74

REINFORCING STEEL - TOTAL (LBS.) 57,463

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED
ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.

DESIGN FOR 0° SKEW

873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

PIER NO. 4 DETAILS

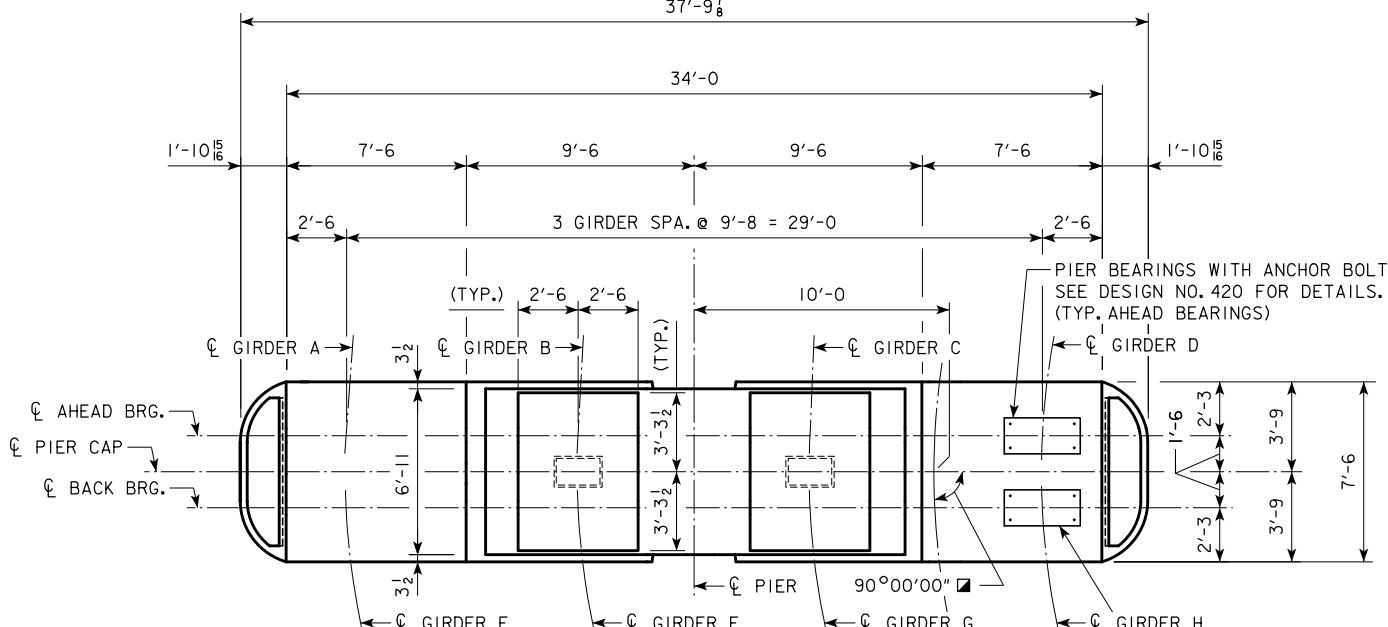
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CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY

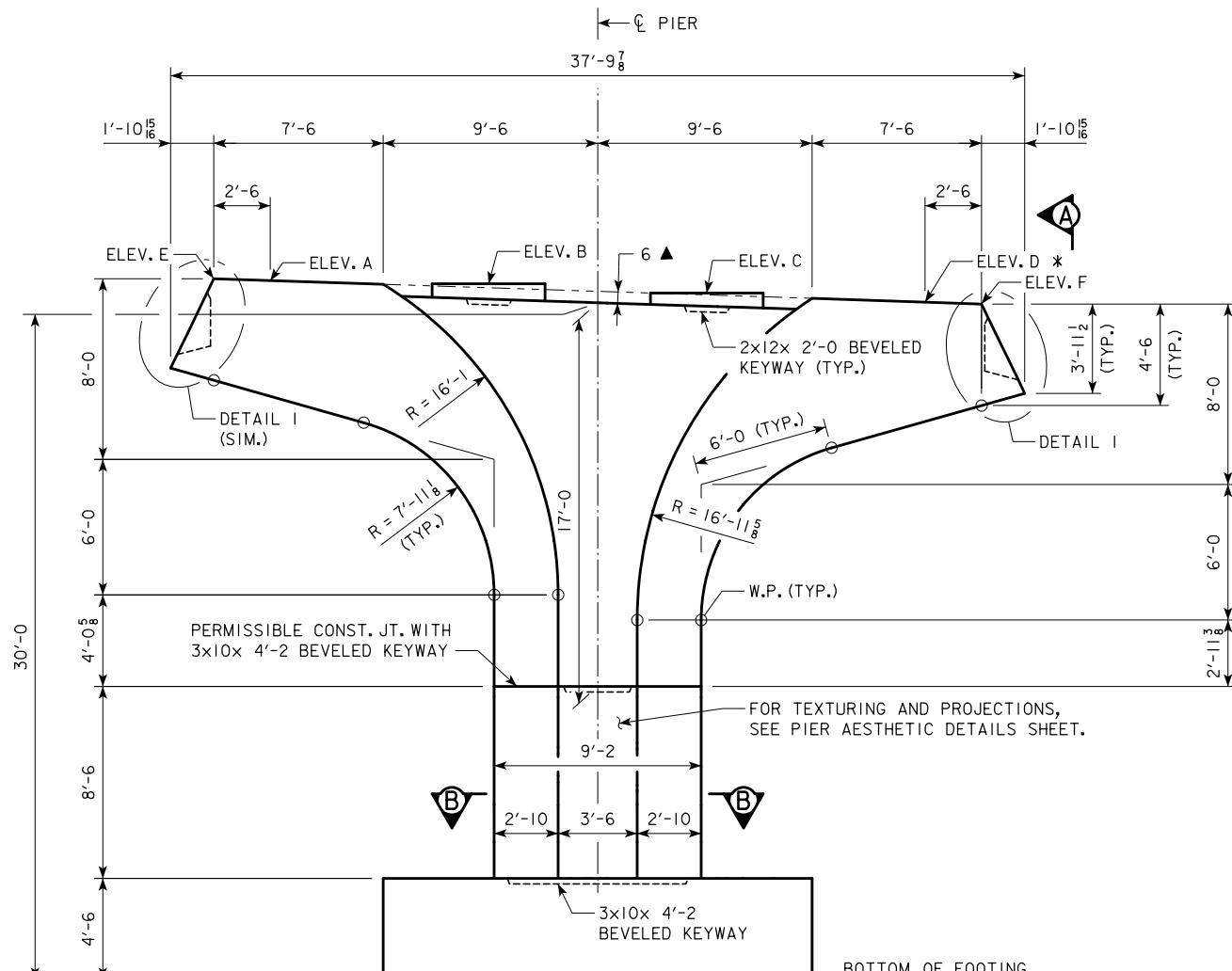
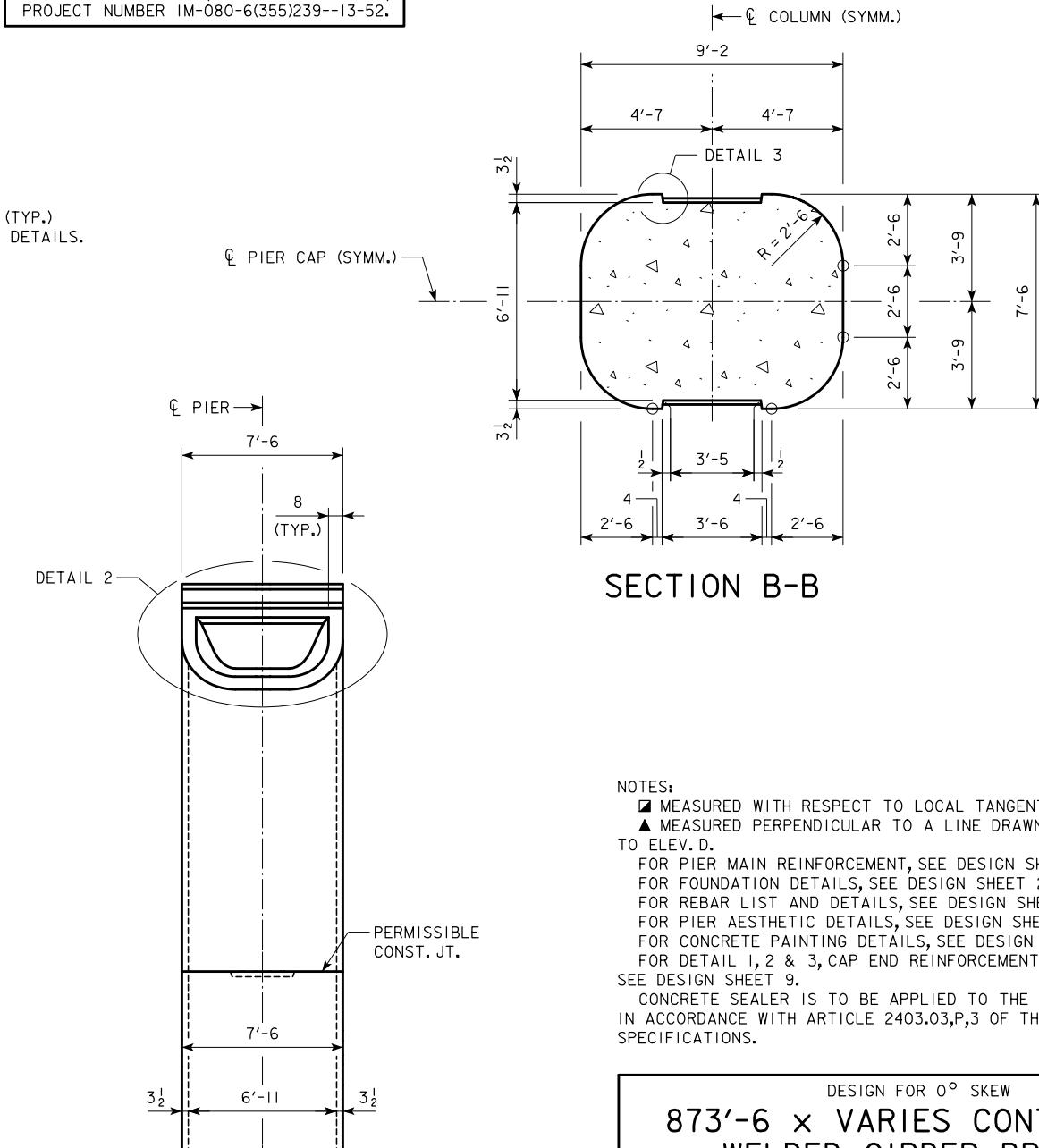
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PIER ELEVATIONS		
LOCATION	PLAN **	AS-BUILT
ELEV. A	773.47	
ELEV. B	773.33	
ELEV. C	772.93	
ELEV. D*	772.52	
ELEV. E	773.55	
ELEV. F	772.44	
BOTT. OF FTG.	742.49	

* LOW STEP
** ELEVATIONS AND PEDESTAL HEIGHT DEPENDENT
ON FINAL BEARING HEIGHT, WHICH SHALL BE
DETERMINED BY BEARING MANUFACTURER.
CONTRACTOR SHALL VERIFY BEARING HEIGHT
WITH MANUFACTURER, AND ADJUST ELEVATIONS
IF NECESSARY, PRIOR TO PLACING CONCRETE.

NOTE:
FOR DETAILS OF AHEAD BEARINGS AND
ANCHOR BOLT LAYOUT, SEE DESIGN NO. 420,
PROJECT NUMBER IM-080-6(355)239-13-52.

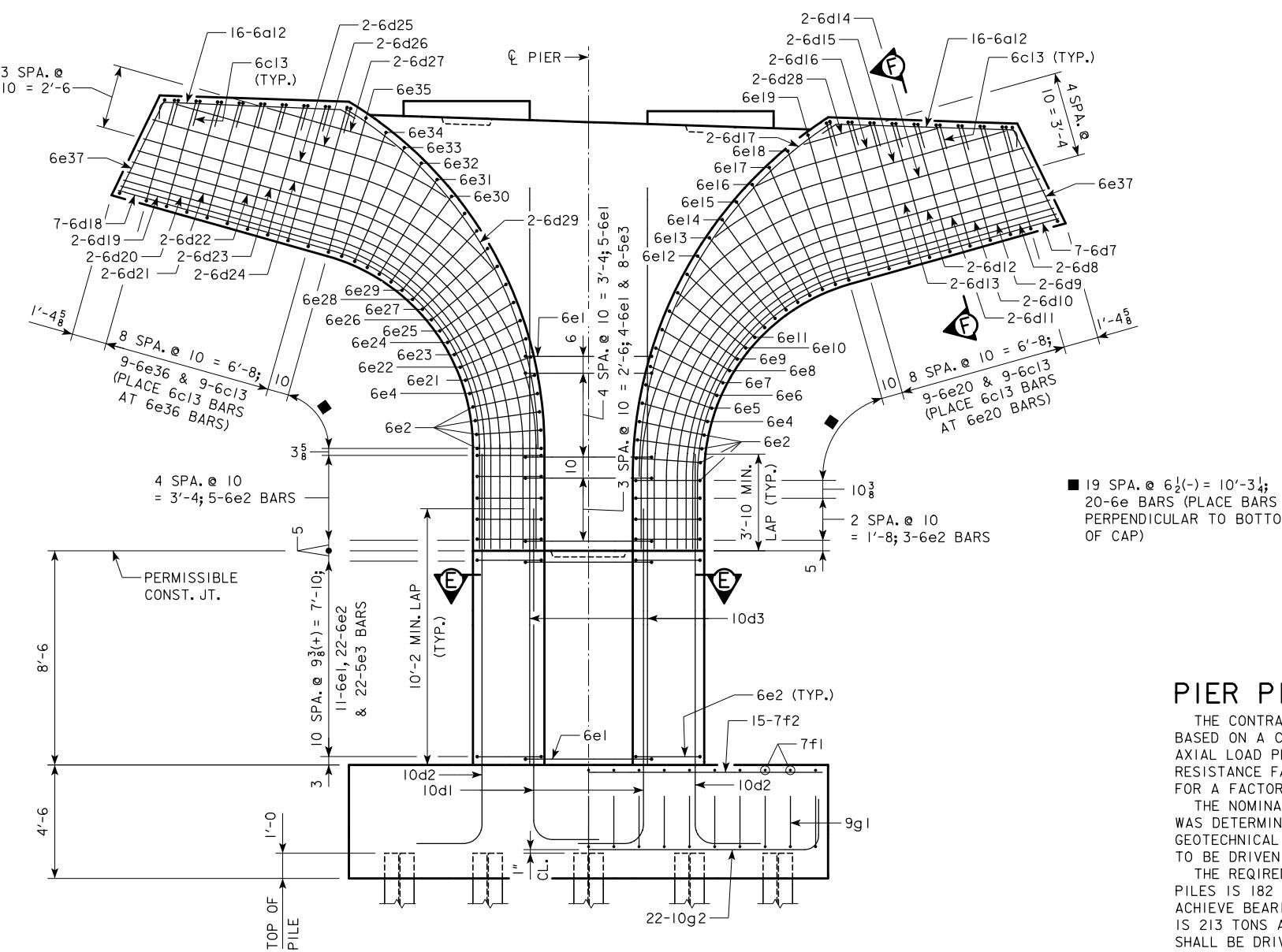
**VIEW A-A**

NOTES:
■ MEASURED WITH RESPECT TO LOCAL TANGENT.
▲ MEASURED PERPENDICULAR TO A LINE DRAWN FROM ELEV. A
TO ELEV. D.
FOR PIER MAIN REINFORCEMENT, SEE DESIGN SHEETS 27 & 28.
FOR FOUNDATION DETAILS, SEE DESIGN SHEET 27.
FOR REBAR LIST AND DETAILS, SEE DESIGN SHEET 29.
FOR PIER AESTHETIC DETAILS, SEE DESIGN SHEET 30.
FOR CONCRETE PAINTING DETAILS, SEE DESIGN SHEET 31.
FOR DETAIL 1, 2 & 3, CAP END REINFORCEMENT AND PIER NOTES,
SEE DESIGN SHEET 9.
CONCRETE SEALER IS TO BE APPLIED TO THE TOP OF PIER CAP
IN ACCORDANCE WITH ARTICLE 2403.03,P,3 OF THE STANDARD
SPECIFICATIONS.

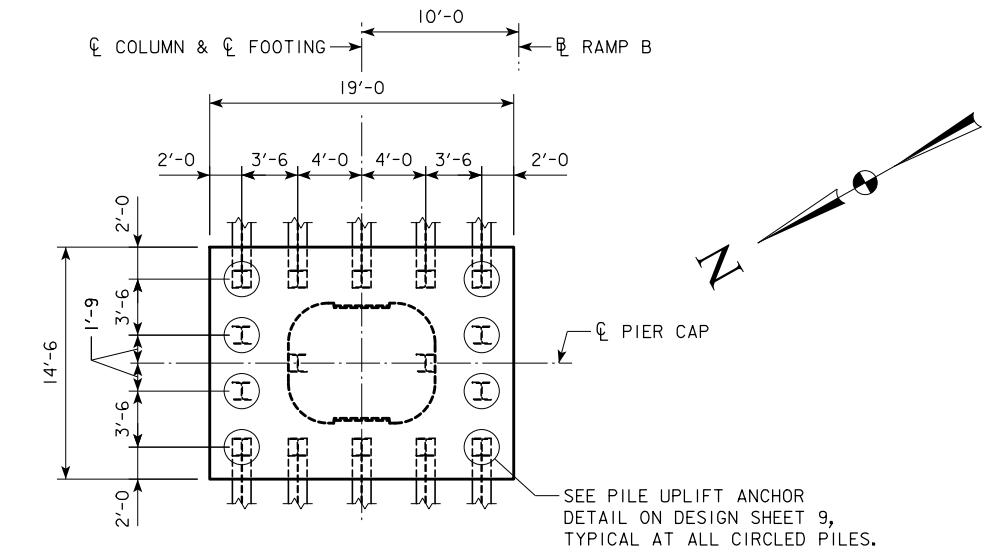
DESIGN FOR 0° SKEW
**873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 5A DETAILS

STA. 2536+28.27 (RAMP B)

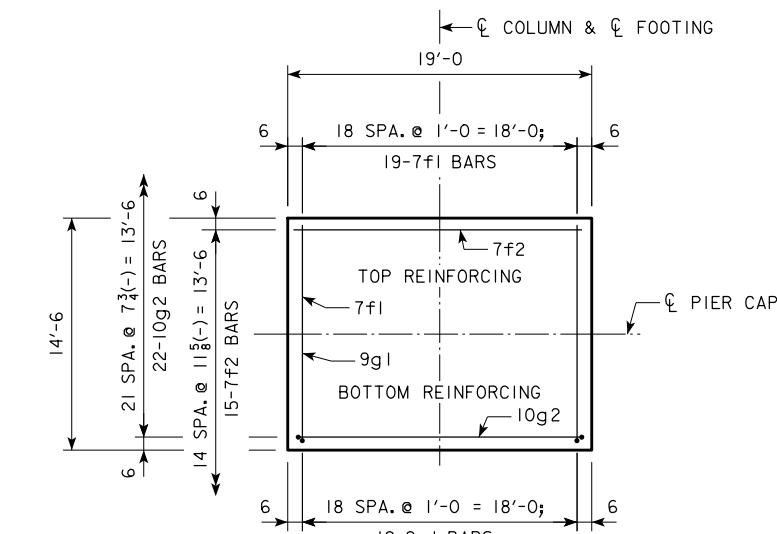
APRIL 2018



PIER REINFORCING ELEVATION



PILE LAYOUT



FOOTING REINFORCING LAYOUT

PIER PILE NOTES

THE CONTRACT LENGTH OF 90 FEET FOR THE PIER NO. 5A PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (P_U) OF 277 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PIER PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 58 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (ϕ) OF 0.76. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.
THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER NO. 5A
PILES IS 182 TONS AT END OF DRIVE. IF RETAPS ARE NECESSARY TO
ACHIEVE BEARING, THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE
IS 213 TONS AT ONE-DAY OR LATER RETAPS. THE PILE CONTRACT LENGTH
SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE
SHALL A PILE BE EMBEDDED LESS THAN 25 FEET. CONSTRUCTION CONTROL
REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.
PILE DIMENSIONS ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN
DIRECTION SHOWN.

NOTES:
FOR ADDITIONAL REINFORCEMENT, SECTION E-E AND SECTION F-F,
SEE DESIGN SHEET 28.
FOR PIER NOTES AND CAP END REINFORCEMENT DETAIL, SEE
DESIGN SHEET 29.

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
PIER NO. 5A DETAILS

DESIGN FOR 0° SKEW

DESIGN FOR A SCREW MATERIALS CONT.

X VARIES CONTINUOUSLY

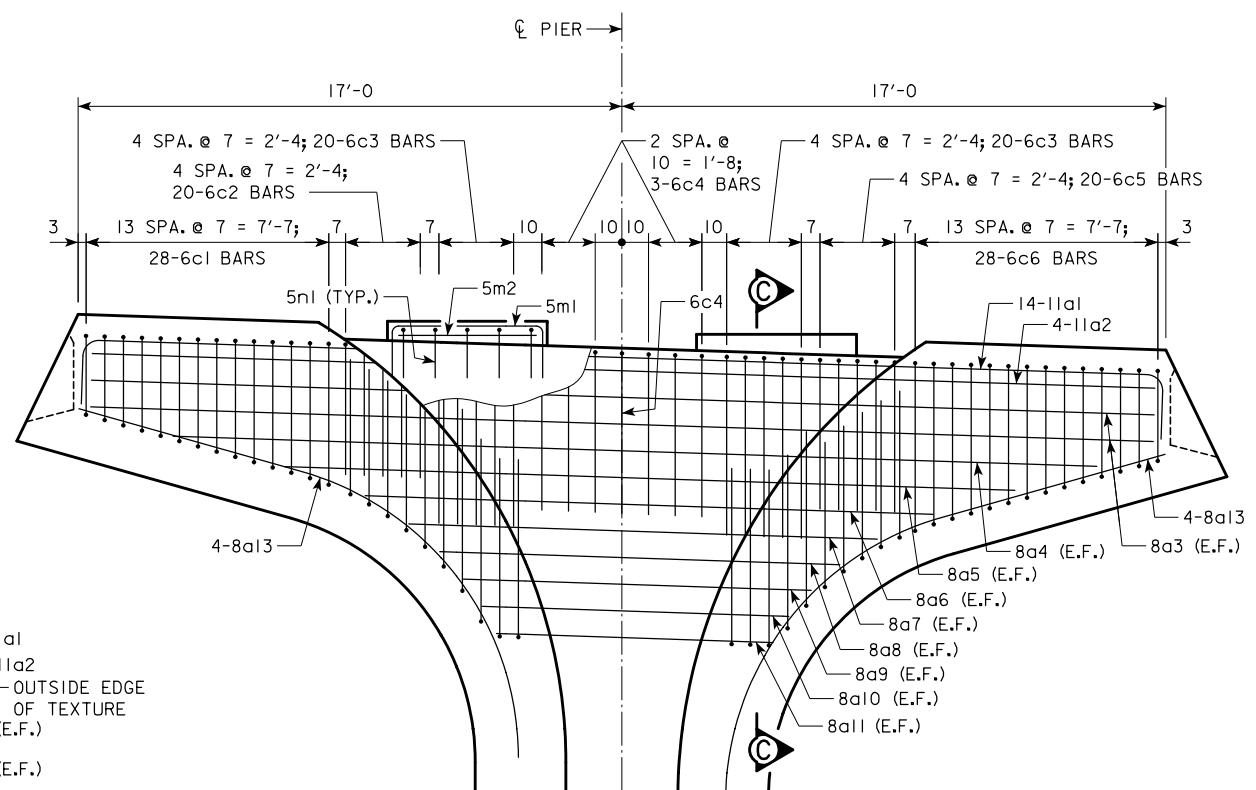
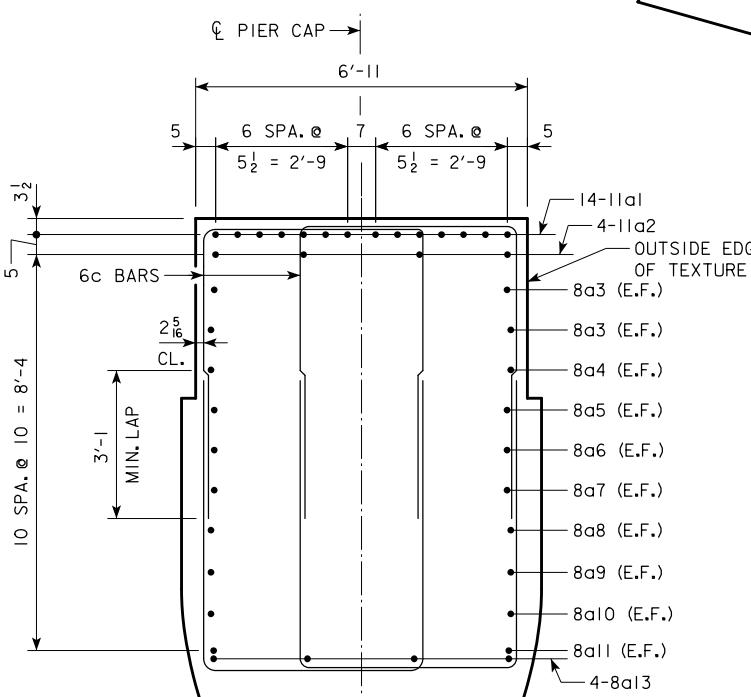
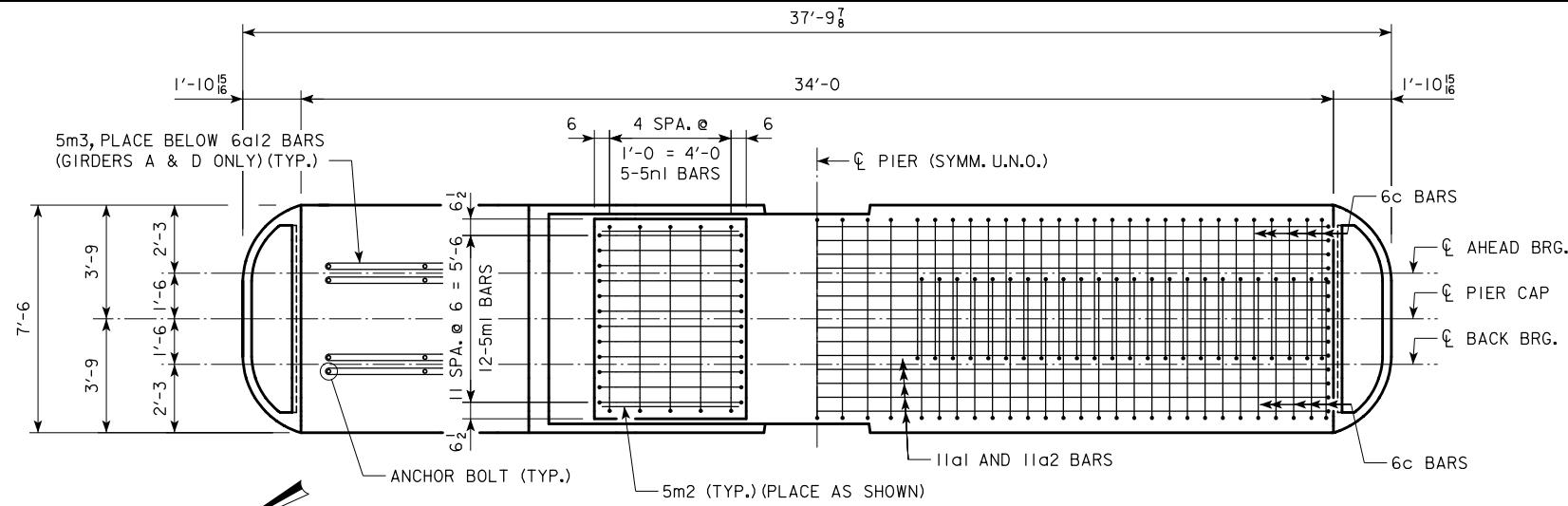
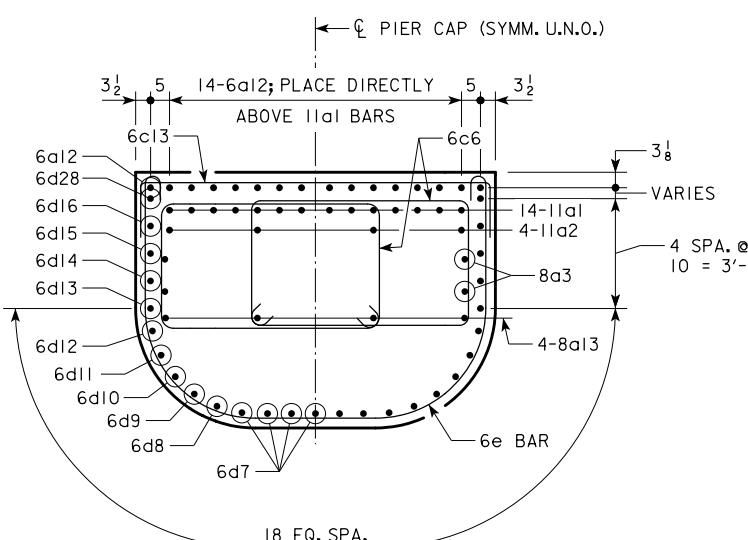
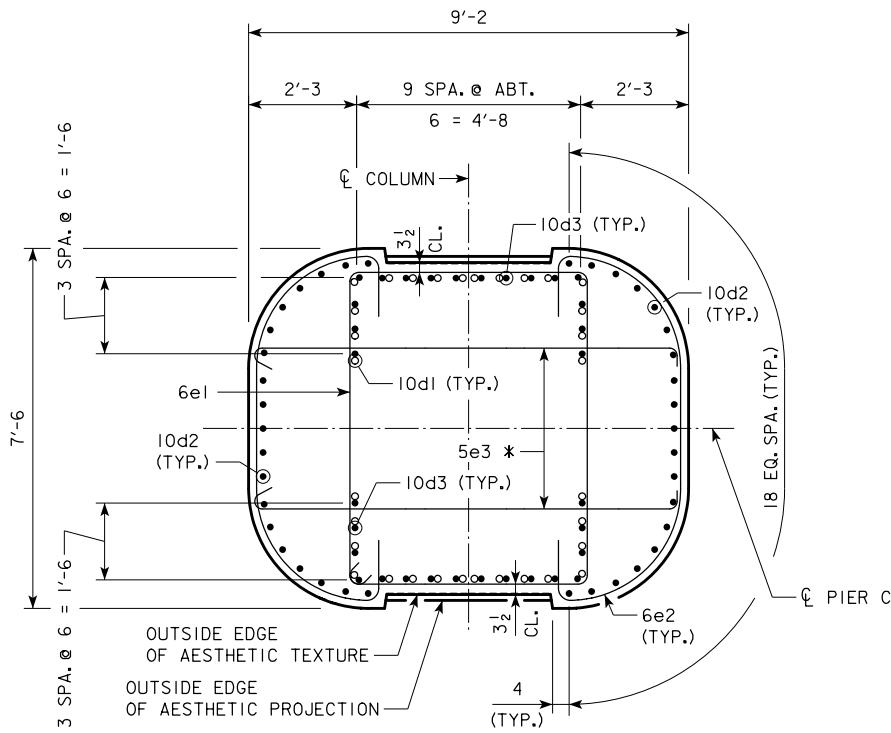
DEF GIRDER BRIDGE

-0- 210'-0- 183'-0- 183'-0- 139'-6 SPANS

FB NO. & DETAILS

ER NO. 5A DETAILS

(E RAMP B) APRIL

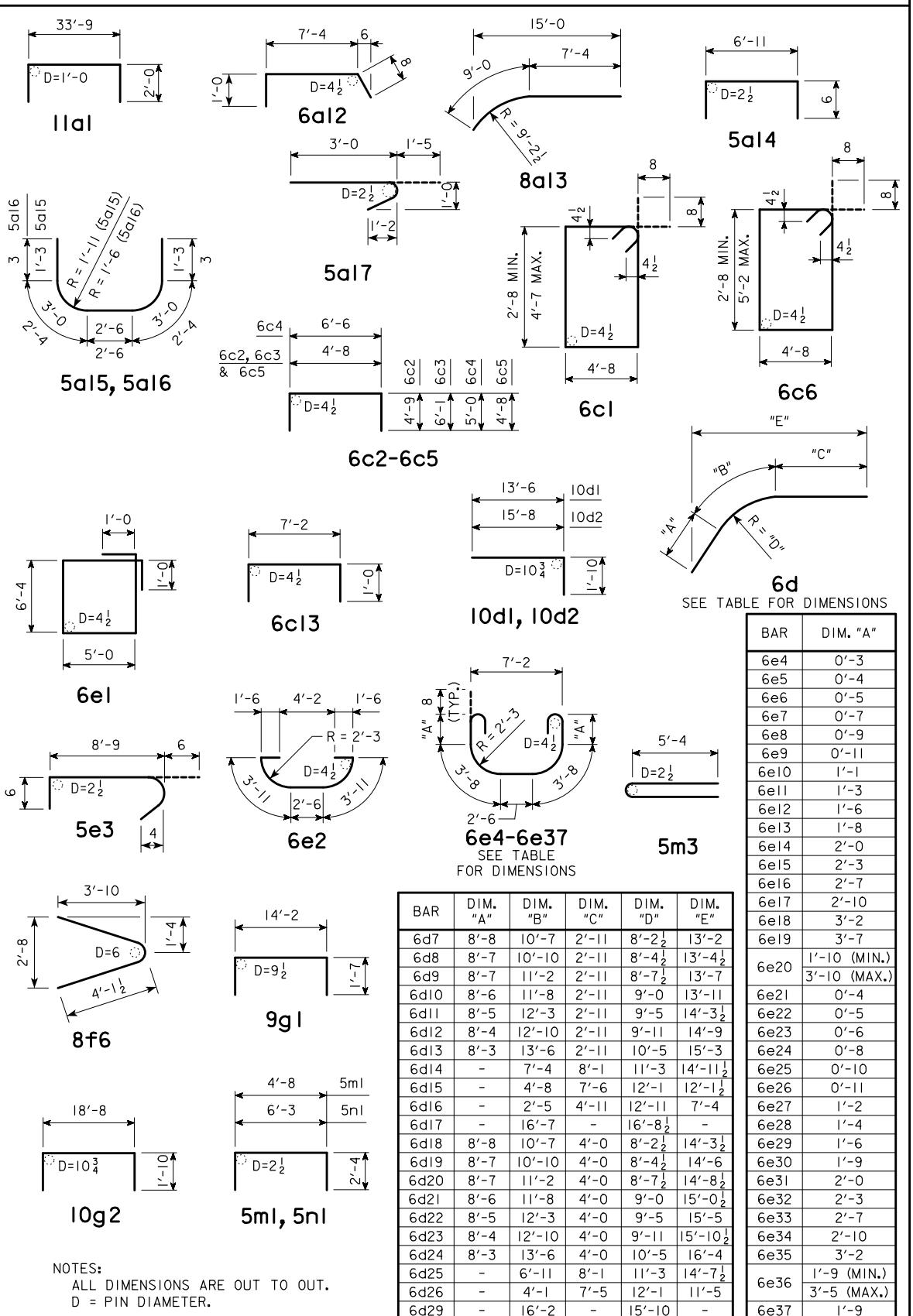


NOTE:
FOR LOCATION OF SECTION E-E AND
SECTION F-F, SEE DESIGN SHEET 27.

DESIGN FOR 0° SKEW
**873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER NO. 5A DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

BENT BAR DETAILS



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

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED
ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.

REINFORCING BAR LIST - PIER NO. 5A

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, TOP, LONGITUDINAL	□	14	37'-9"	2,808
11a2	CAP, TOP, LONGITUDINAL	—	4	33'-3"	707
8a3	CAP, SIDES, LONGITUDINAL	—	4	33'-3"	355
8a4	CAP, SIDES, LONGITUDINAL	—	2	29'-7"	158
8a5	CAP, SIDES, LONGITUDINAL	—	2	23'-7"	126
8a6	CAP, SIDES, LONGITUDINAL	—	2	18'-3"	97
8a7	CAP, SIDES, LONGITUDINAL	—	2	14'-11"	80
8a8	CAP, SIDES, LONGITUDINAL	—	2	12'-9"	68
8a9	CAP, SIDES, LONGITUDINAL	—	2	11'-1"	59
8a10	CAP, SIDES, LONGITUDINAL	—	2	9'-9"	52
8a11	CAP, SIDES, LONGITUDINAL	—	2	8'-9"	47
6a12	CAP, TOP, LONGITUDINAL	□	32	9'-0"	433
8a13	CAP, BOTTOM, LONGITUDINAL	—	8	16'-4"	349
5a14	CAP, END	□	8	7'-11"	66
5a15	CAP, END	□	2	11'-0"	23
5a16	CAP, END	□	2	7'-8"	16
5a17	CAP, END	□	20	4'-5"	92
6c1	CAP, HOOPS	□	28	VARIABLES	754
6c2	CAP, HAIRPINS, VERTICAL	□	20	14'-2"	426
6c3	CAP, HAIRPINS, VERTICAL	□	40	16'-10"	1,011
6c4	CAP, HAIRPINS, VERTICAL	□	7	16'-6"	173
6c5	CAP, HAIRPINS, VERTICAL	□	20	14'-0"	421
6c6	CAP, HOOPS	□	28	VARIABLES	778
6c13	CAP, TOP, TRANSVERSE	□	18	9'-2"	248
10d1	FOOTING TO COLUMN DOWEL	□	32	15'-4"	2,111
10d2	FOOTING TO COLUMN DOWEL	□	38	17'-6"	2,861
10d3	COLUMN, VERTICAL	—	32	24'-4"	3,351
6d7	CAP SURFACE, LONGITUDINAL	✓	7	22'-2"	233
6d8	CAP SURFACE, LONGITUDINAL	✓	2	22'-4"	67
6d9	CAP SURFACE, LONGITUDINAL	✓	2	22'-8"	68
6d10	CAP SURFACE, LONGITUDINAL	✓	2	23'-1"	69
6d11	CAP SURFACE, LONGITUDINAL	✓	2	23'-7"	71
6d12	CAP SURFACE, LONGITUDINAL	✓	2	24'-1"	72
6d13	CAP SURFACE, LONGITUDINAL	✓	2	24'-8"	74
6d14	CAP SURFACE, LONGITUDINAL	✓	2	15'-5"	46
6d15	CAP SURFACE, LONGITUDINAL	✓	2	12'-2"	37
6d16	CAP SURFACE, LONGITUDINAL	✓	2	7'-4"	22
6d17	CAP SURFACE, LONGITUDINAL	✓	2	16'-7"	50
6d18	CAP SURFACE, LONGITUDINAL	✓	7	23'-3"	244
6d19	CAP SURFACE, LONGITUDINAL	✓	2	23'-5"	70
6d20	CAP SURFACE, LONGITUDINAL	✓	2	23'-9"	71
6d21	CAP SURFACE, LONGITUDINAL	✓	2	24'-2"	73
6d22	CAP SURFACE, LONGITUDINAL	✓	2	24'-8"	74
6d23	CAP SURFACE, LONGITUDINAL	✓	2	25'-2"	76
6d24	CAP SURFACE, LONGITUDINAL	✓	2	25'-9"	77
6d25	CAP SURFACE, LONGITUDINAL	✓	2	15'-0"	45
6d26	CAP SURFACE, LONGITUDINAL	✓	2	11'-6"	35
6d27	CAP SURFACE, LONGITUDINAL	—	2	5'-4"	16
6d28	CAP SURFACE, LONGITUDINAL	—	2	2'-6"	8
6d29	CAP SURFACE, LONGITUDINAL	✓	2	16'-2"	49
6e1	COLUMN, HOOPS	□	21	24'-8"	778
6e2	COLUMN SURFACE, TRANSVERSE	□	38	13'-4"	761
5e3	COLUMN, TIES	□	30	9'-9"	305
6e4	CAP SURFACE, TRANSVERSE	□	2	11'-8"	35

EPOXY COATED REINFORCING

LOCATION	QUANTITY
CAP & STEPS (HIGH PERFORMANCE)	85.2
COLUMN (HIGH PERFORMANCE)	19.3
FOOTING	45.9
TOTAL CU. YDS.	150.4

REINF. BAR LIST - PIER NO. 5A (CONT.)

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6e5	CAP SURFACE, TRANSVERSE	□	1	11'-10"	18
6e6	CAP SURFACE, TRANSVERSE	□	1	12'-0"	18
6e7	CAP SURFACE, TRANSVERSE	□	1	12'-4"	19
6e8	CAP SURFACE, TRANSVERSE	□	1	12'-8"	19
6e9	CAP SURFACE, TRANSVERSE	□	1	13'-0"	20
6e10	CAP SURFACE, TRANSVERSE	□	1	13'-4"	20
6e11	CAP SURFACE, TRANSVERSE	□	1	13'-8"	21
6e12	CAP SURFACE, TRANSVERSE	□	1	14'-2"	21
6e13	CAP SURFACE, TRANSVERSE	□	1	14'-6"	22
6e14	CAP SURFACE, TRANSVERSE	□	1	15'-2"	23
6e15	CAP SURFACE, TRANSVERSE	□	1	15'-8"	24
6e16	CAP SURFACE, TRANSVERSE	□	1	16'-4"	25
6e17	CAP SURFACE, TRANSVERSE	□	1	16'-10"	25
6e18	CAP SURFACE, TRANSVERSE	□	1	17'-6"	26
6e19	CAP SURFACE, TRANSVERSE	□	1	18'-4"	28
6e20	CAP SURFACE, TRANSVERSE	□	9	VARIABLES	228
6e21	CAP SURFACE, TRANSVERSE	□	1	11'-10"	18
6e22	CAP SURFACE, TRANSVERSE	□	1	12'-0"	18
6e23	CAP SURFACE, TRANSVERSE	□	1	12'-2"	18
6e24	CAP SURFACE, TRANSVERSE	□	1	12'-6"	19
6e25	CAP SURFACE, TRANSVERSE	□	1	12'-10"	19
6e26	CAP SURFACE, TRANSVERSE	□	1	13'-0"	20
6e27	CAP SURFACE, TRANSVERSE	□	1	13'-6"	20
6e28	CAP SURFACE, TRANSVERSE	□	1	13'-10"	21
6e29	CAP SURFACE, TRANSVERSE	□	1	14'-2"	21
6e30	CAP SURFACE, TRANSVERSE	□	1	14'-8"	22
6e31	CAP SURFACE, TRANSVERSE	□	1	15'-2"	23
6e32	CAP SURFACE, TRANSVERSE	□	1	15'-8"	24
6e33	CAP SURFACE, TRANSVERSE	□	1	16'-4"	25
6e34	CAP SURFACE, TRANSVERSE	□	1	16'-10"	25
6e35	CAP SURFACE, TRANSVERSE	□	1	17'-6"	26
6e36	CAP SURFACE, TRANSVERSE	□	9	VARIABLES	221
6e37	CAP SURFACE, TRANSVERSE	□	2	14'-8"	44
5m1	CAP, PEDESTAL, LONGITUDINAL	□	24	9'-4"	234
5m2	CAP, PEDESTAL, LONGITUDINAL	—	4	4'-8"	19
5m3	CAP, HAIRPIN	□	8	11'-2"	93
5n1	CAP, PEDESTAL, TRANSVERSE	□	10	10'-11"	114
REINFORCING STEEL EPOXY COATED - TOTAL (LBS.)					22,797
7f1					550
7f2					572
8f6					529
9g1					1,120
10g2					2,114
REINFORCING STEEL - TOTAL (LBS.)					4,885

NON-COATED REINF.

7f1	FOOTING, TOP, TRANSVERSE	—	19	14'-2"	550
7f2	FOOTING, TOP, LONGITUDINAL	—	15	18'-8"	572
8f6	PILE UPLIFT ANCHOR	▽	24	8'-3"	529
9g1	FOOTING, BOTTOM, TRANSVERSE	□	19	17'-4"	1,120
10g2	FOOTING, BOTTOM, LONGITUDINAL	□</			

PIER CONCRETE TEXTURE NOTES:

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE PIERS SHOWN IN THIS PLAN. SEE 'GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL DETAILED AND PAID FOR AS PART OF DESIGN NO. I20 OF THIS PROJECT MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'A' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF ALTERNATING 10-INCH AND 4-INCH TALL COURSES OF CUT STONE IN RANDOM LENGTHS WITH SIMULATED MORTAR JOINTS. DEPTH OF TEXTURE SHALL BE 0.3125 INCH.

OBTAIN TEXTURE 'A' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. I2008)
2. FITZGERALD FORMLINERS (PATTERN NO. I7003)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

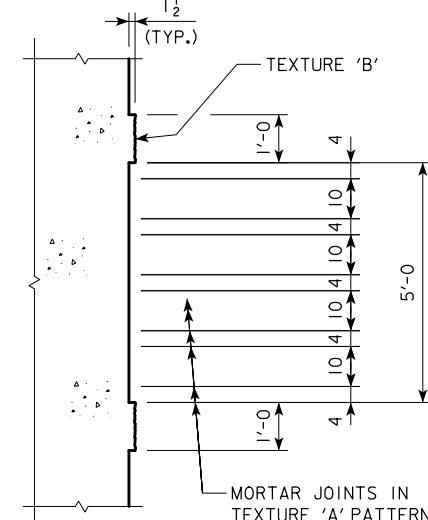
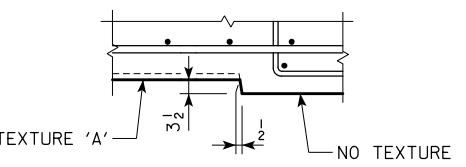
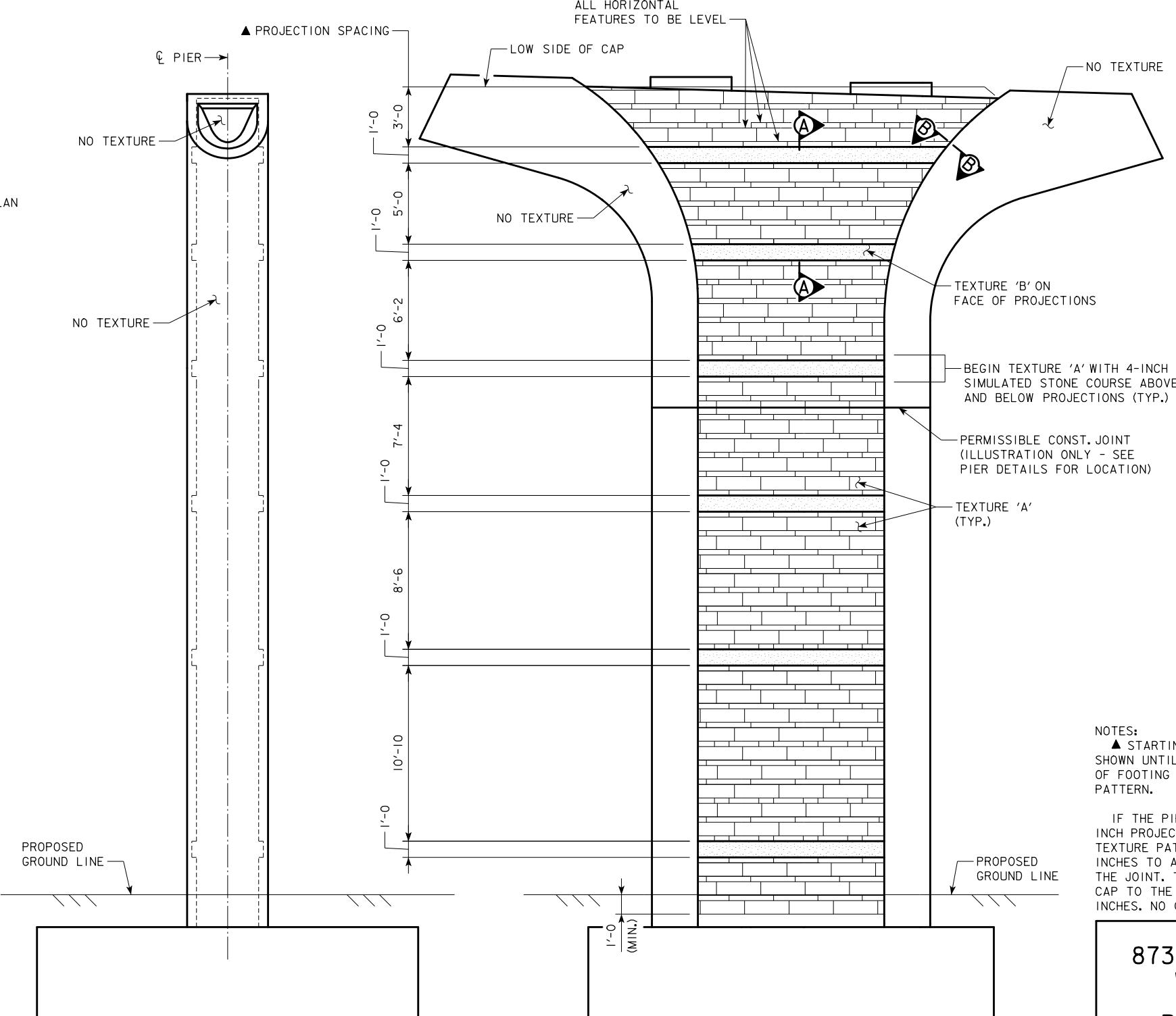
THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF A REALISTIC FRACTURED ROCK FACE WITH NO SIMULATED MASONRY JOINTS. DEPTH OF TEXTURE SHALL BE 1 INCH.

OBTAIN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. T325)
2. FITZGERALD FORMLINERS (PATTERN NO. I7030)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURES AND FORM LINERS AT THE PIER SHALL BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".



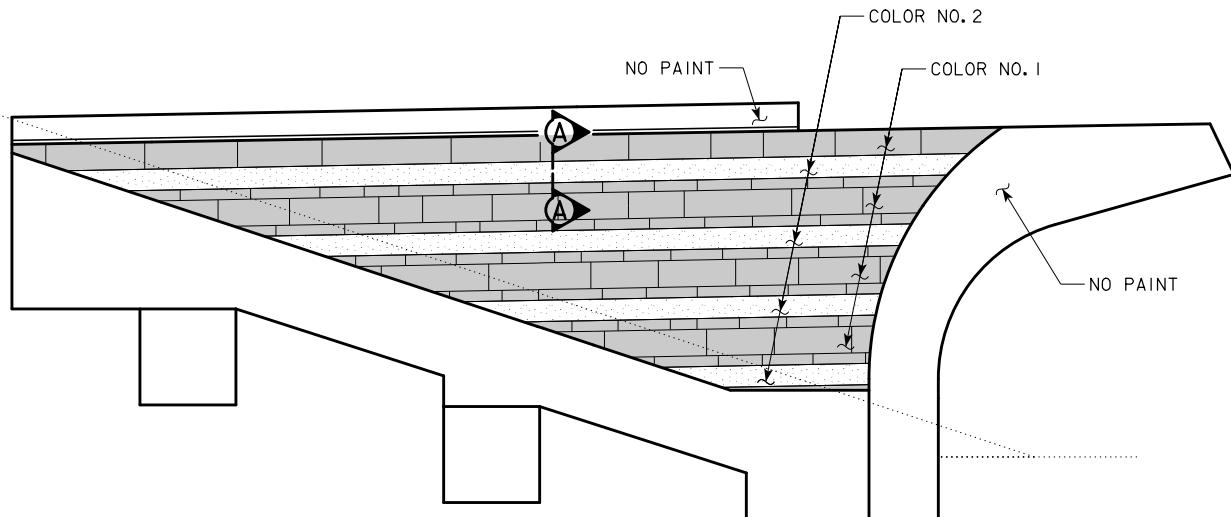
NOTES:
▲ STARTING FROM THE TOP OF CAP, SPACE THE PROJECTIONS AS SHOWN UNTIL THE DISTANCE FROM THE LOWEST PROJECTION TO TOP OF FOOTING IS LESS THAN THE NEXT REQUIRED DIMENSION IN THE PATTERN.

IF THE PIER STEM PERMISSIBLE CONST. JT. OCCURS WITH A 1-1/2 INCH PROJECTION, AT THE CONTRACTOR'S OPTION THE ENTIRE TEXTURE PATTERN MAY BE SHIFTED UP OR DOWN A MAXIMUM OF 6 INCHES TO ALIGN THE TOP OR BOTTOM OF THE PROJECTION WITH THE JOINT. THE 3'-0 DIMENSION FROM THE TOP OF THE PIER CAP TO THE FIRST PROJECTION IS ALLOWED TO VARY BY 6 INCHES. NO OTHER DIMENSIONS SHALL BE CHANGED.

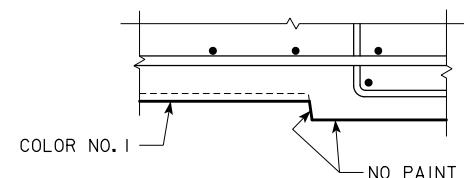
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
PIER AESTHETIC DETAILS

STA. 2536+28.27 (E RAMP B)

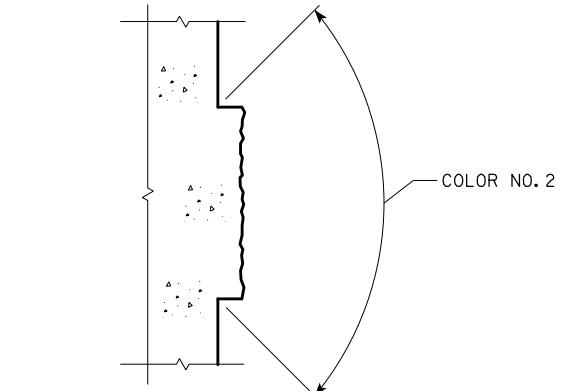
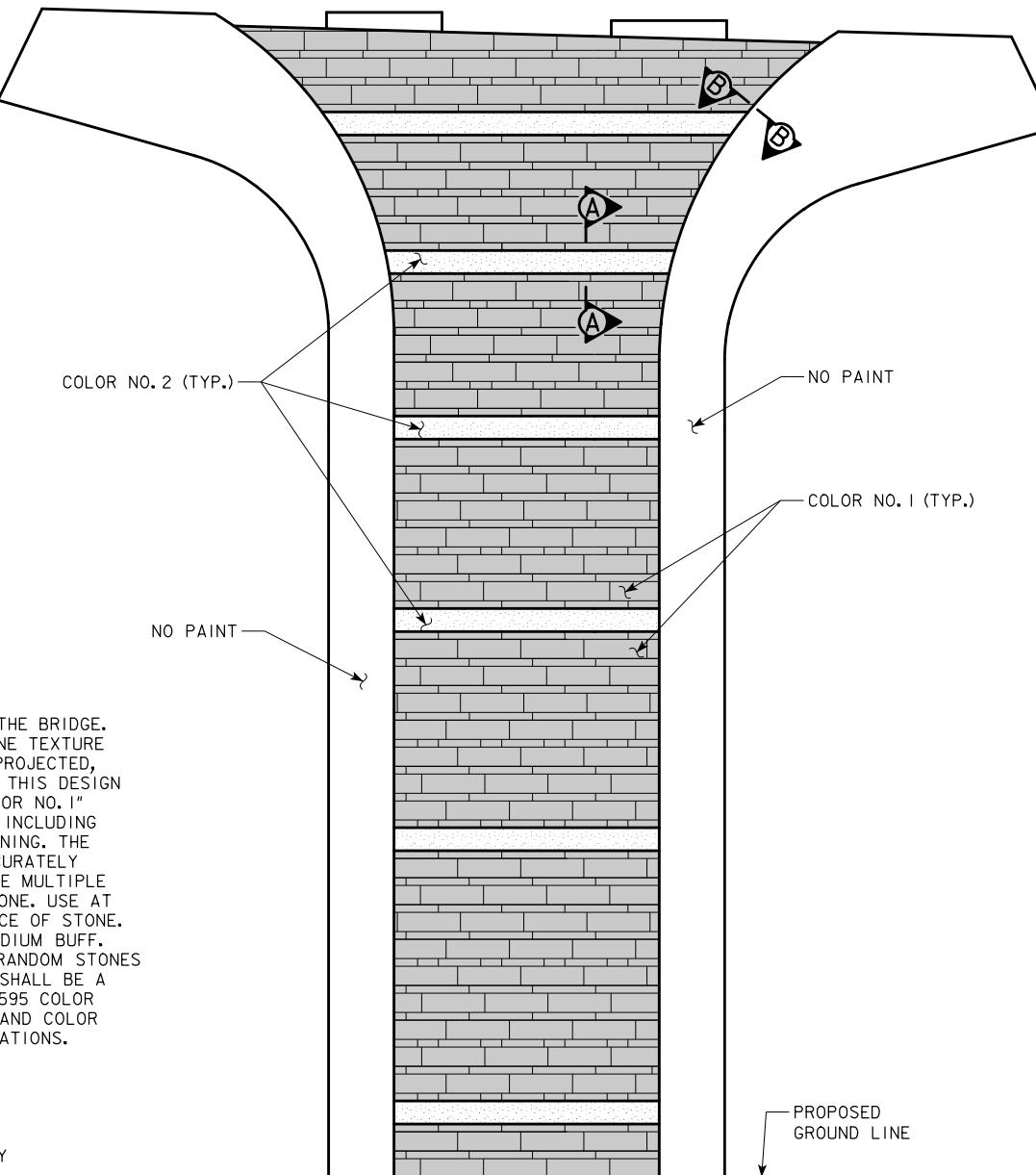
APRIL 2018



ABUTMENT SIDE ELEVATION
(SOUTH WINGWALL SHOWN, NORTH WINGWALL SIMILAR)



PART SECTION B-B



PART SECTION A-A

CONCRETE PAINTING NOTES:

THE TEXTURED SURFACES OF THE ABUTMENT WINGWALLS AND MASKWALLS, AND THE TEXTURED SURFACES OF THE PIER STEMS AS NOTED AND SHOWN IN THE PLANS SHALL BE FINISHED WITH MINERAL SILICATE PAINT CHOSEN FROM THE FOLLOWING LISTED PRODUCTS:

1. KEIM MINERAL COATINGS OF AMERICA: CONCRETAL MINERAL COATING.
2. EDISON COATINGS, INC.: EVERKOTE 300 MINERAL COATING
3. CATHEDRAL STONE PRODUCTS: MASONRE MINERAL COATING
4. APPROVED EQUAL

PRIOR TO BEGINNING PRODUCTION PAINTING, DEMONSTRATE SURFACE PREPARATION METHODS AND PAINT APPLICATION ON THE TEXTURED CONCRETE MOCKUP PANEL LOCATED AT THE BRIDGE SITE. NO PRODUCTION CONCRETE PAINTING MAY BEGIN UNTIL FINAL APPROVAL OF PAINTING RESULTS ON THE MOCKUP. APPROVED MOCKUP SHALL REMAIN IN PLACE NEAR THE BRIDGE FOR COMPARISON TO PRODUCTION PAINTING UNTIL WORK IS COMPLETED.

THE TEXTURED CONCRETE MOCKUP PANEL IS DETAILED AND PAID FOR AS PART OF DESIGN NO. I20 OF THIS PROJECT. THE SURFACE PREPARATION METHODS AND PAINT APPLICATION SHALL BE THE SAME ON ALL DESIGN NUMBERS IN THIS PROJECT AND SHALL NOT COMMENCE UNTIL FINAL APPROVAL OF THE PAINTING RESULTS ON THE MOCKUP.

PRIOR TO CONCRETE COATING APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION". APPLY MINERAL SILICATE PAINT IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING".

THERE ARE TWO COLOR FINISH TYPES TO BE USED ON THE BRIDGE. "COLOR NO. 1" SHALL BE USED ONLY ON THE COURSED STONE TEXTURE 'A' SURFACES, AND "COLOR NO. 2" SHALL BE USED ON THE PROJECTED, FRACTURED FACE TEXTURE 'B' SURFACES. SEE DETAILS ON THIS DESIGN SHEET FOR SPECIFIC COLOR LOCATIONS AND LIMITS. "COLOR NO. 1" SHALL BE A FULL RANGE OF NATURAL LIMESTONE COLORS 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 COLOR SHADES THAT ARE APPARENT IN REAL CUT LIMESTONE. USE AT LEAST THREE COLOR SHADES TO SIMULATE THE APPEARANCE OF STONE. BEGIN WITH A BASE COLOR APPLICATION OF LIGHT OR MEDIUM BUFF. APPLY A SLIGHTLY LIGHTER OR DARKER BASE COLOR TO RANDOM STONES PRIOR TO ADDING THE COLOR VARIATIONS. "COLOR NO. 2" SHALL BE A SINGLE DARK GREYBROWN COLOR TO MATCH SAE-AMS-STD-595 COLOR NUMBER 30099. SUBMIT PRODUCT SPECIFICATION SHEETS AND COLOR SAMPLES AS DESCRIBED IN THE DEVELOPMENTAL SPECIFICATIONS.

COATED SURFACE AREA TABULATION (SY):

COLOR NO. 1:
PIER NOS. 1 THRU 5A: 472.0 SY
WEST ABUTMENT WINGWALLS AND MASKWALLS: 24.5 SY

TOTAL COLOR NO. 1: 496.5 SY

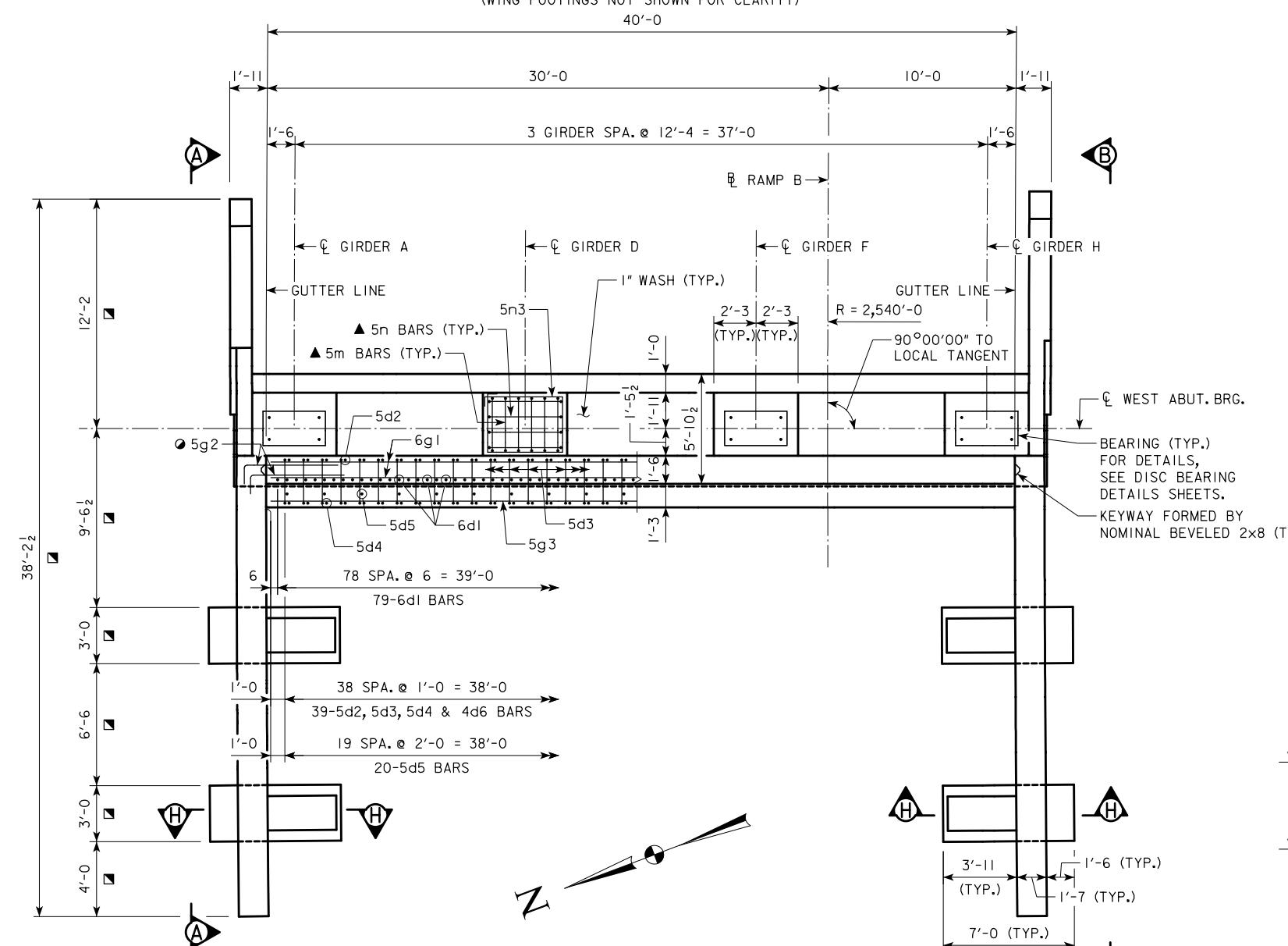
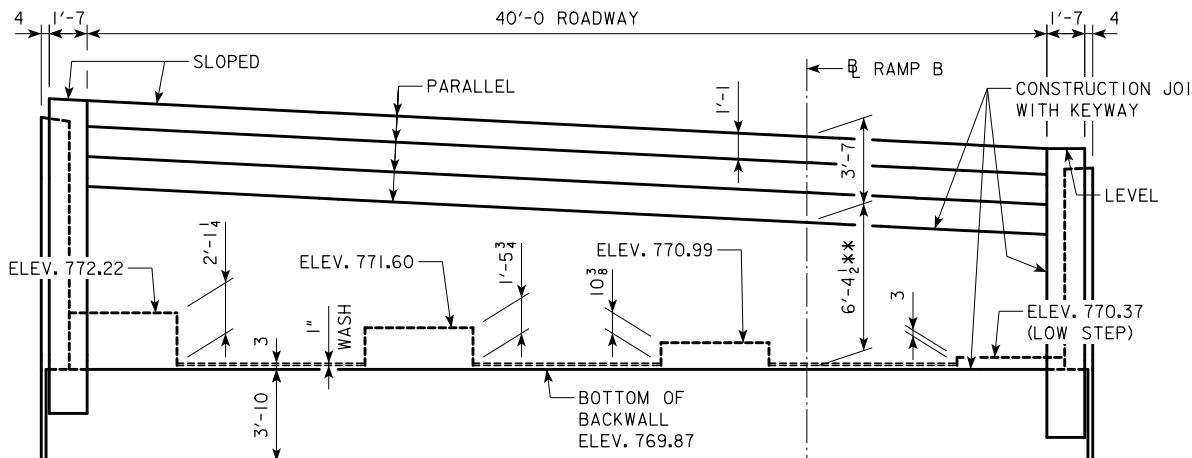
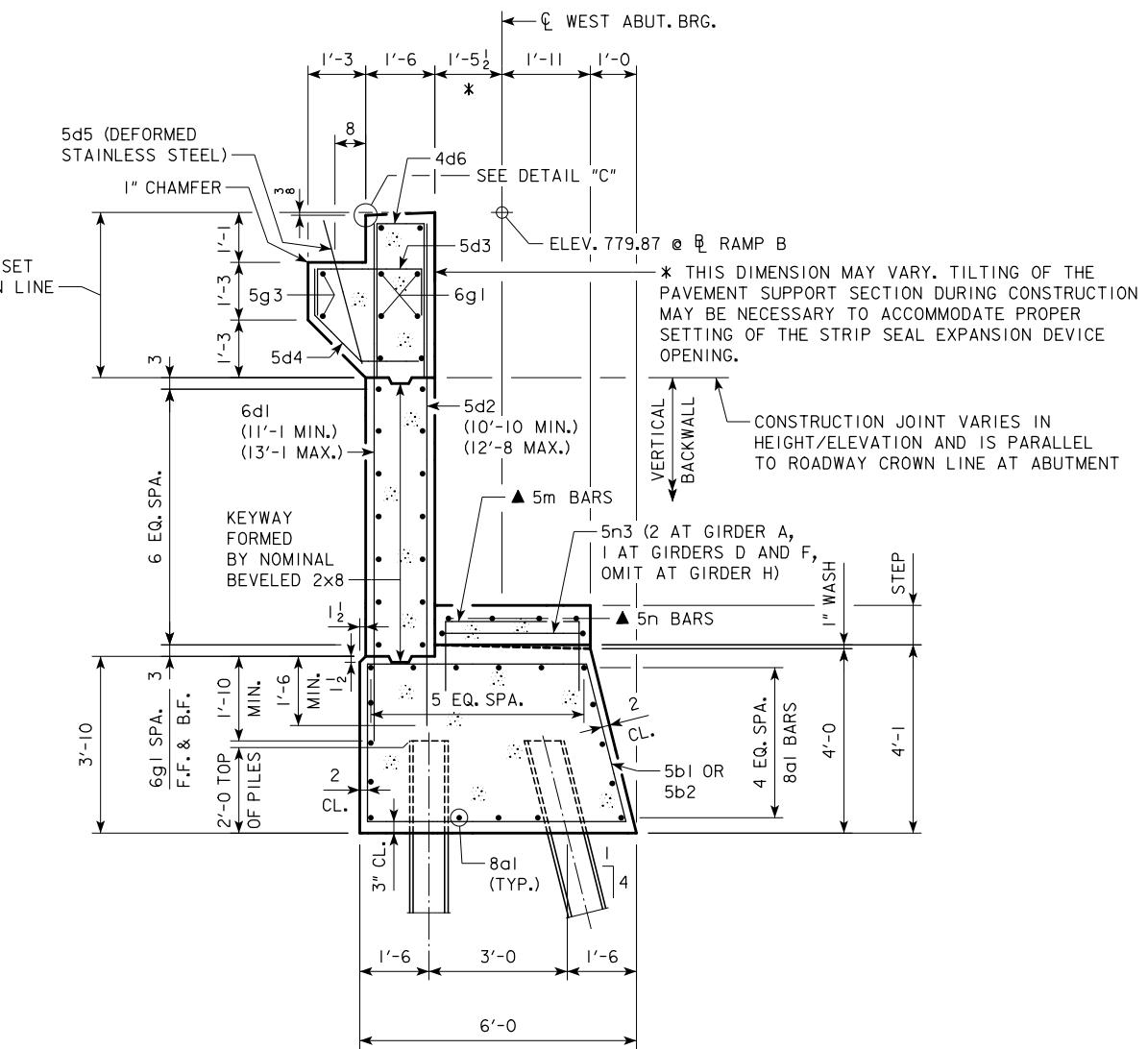
COLOR NO. 2:
PIER NOS. 1 THRU 5A: 91.7 SY
WEST ABUTMENT WINGWALLS AND MASKWALLS: 13.7 SY

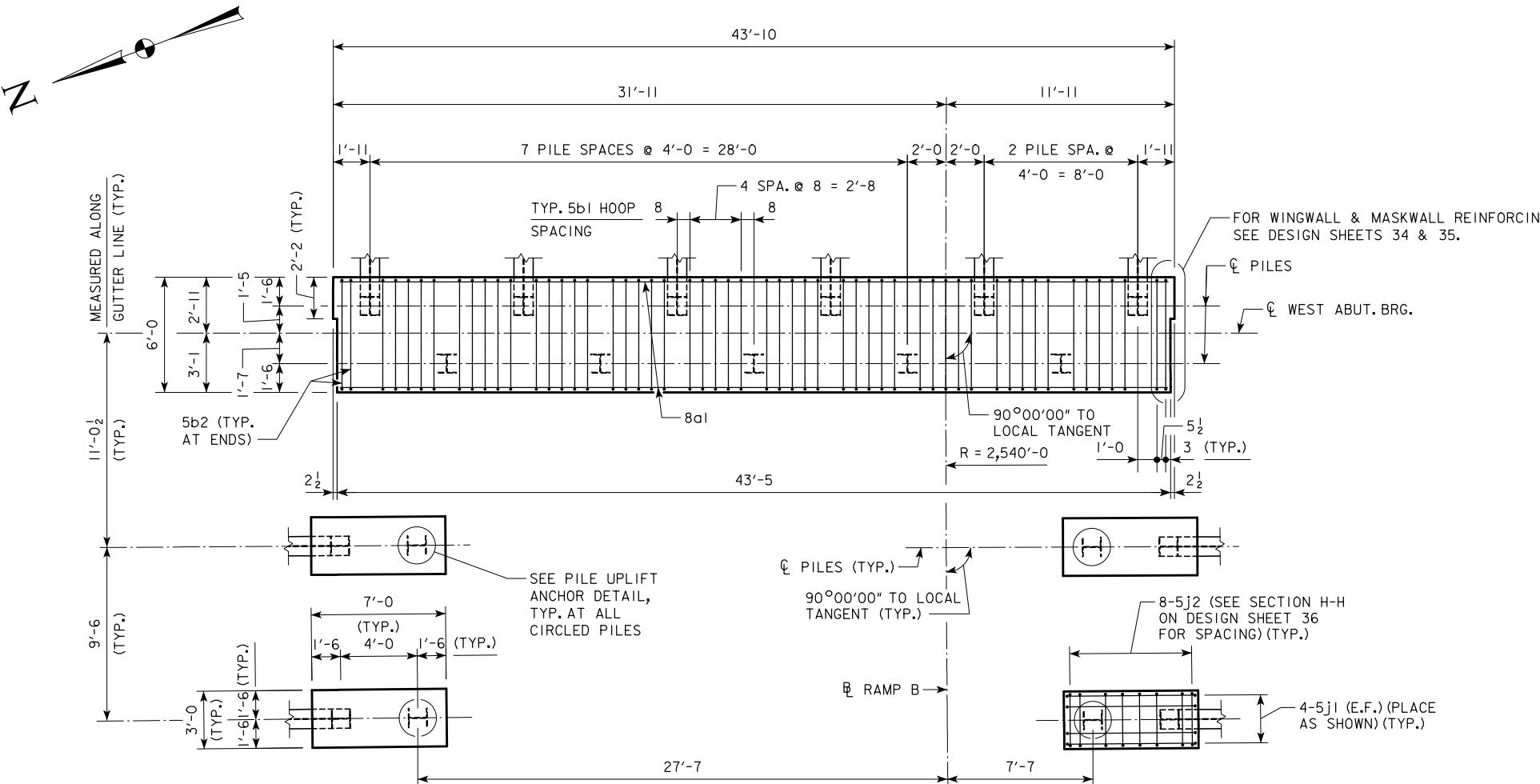
TOTAL COLOR NO. 2: 105.4 SY

ALL COSTS ASSOCIATED WITH SURFACE PREPARATION AND APPLICATION OF MINERAL SILICATE PAINT SHALL BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE COATING".

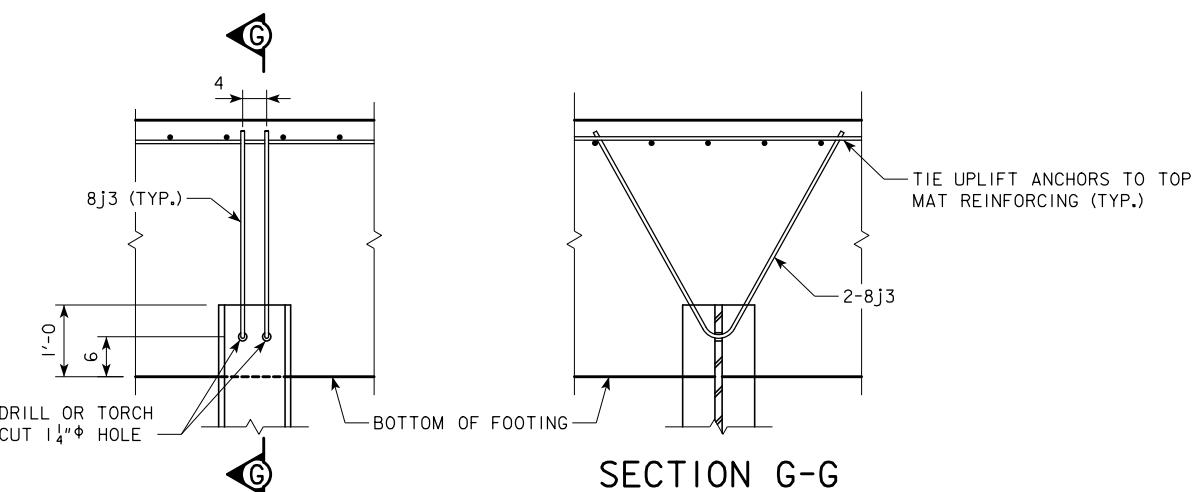
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
CONCRETE PAINTING DETAILS
STA. 2536+28.27 (E RAMP B) APRIL 2018

PIER ELEVATION
(PIER NO. 2 SHOWN, OTHER PIERS SIMILAR)

3'-7 CONSTANT OFFSET
TO ROADWAY CROWN LINE



WEST ABUTMENT PILING LAYOUT



SECTION G-G

PILE UPLIFT ANCHOR DETAIL

NOTE:

THE CONTRACTOR SHALL HOLD 8j3 BARS IN POSITION DURING CONSTRUCTION SUCH THAT THE BARS BEAR AGAINST THE TOP OF THE HOLES PLACED IN THE PILE.

ABUTMENT PILE NOTES:

THE CONTRACT LENGTH OF 100 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 202 KIPS AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. ABUTMENT PILES ALSO WERE DESIGNED FOR A FACTORED TENSION FORCE OF 47 KIPS.

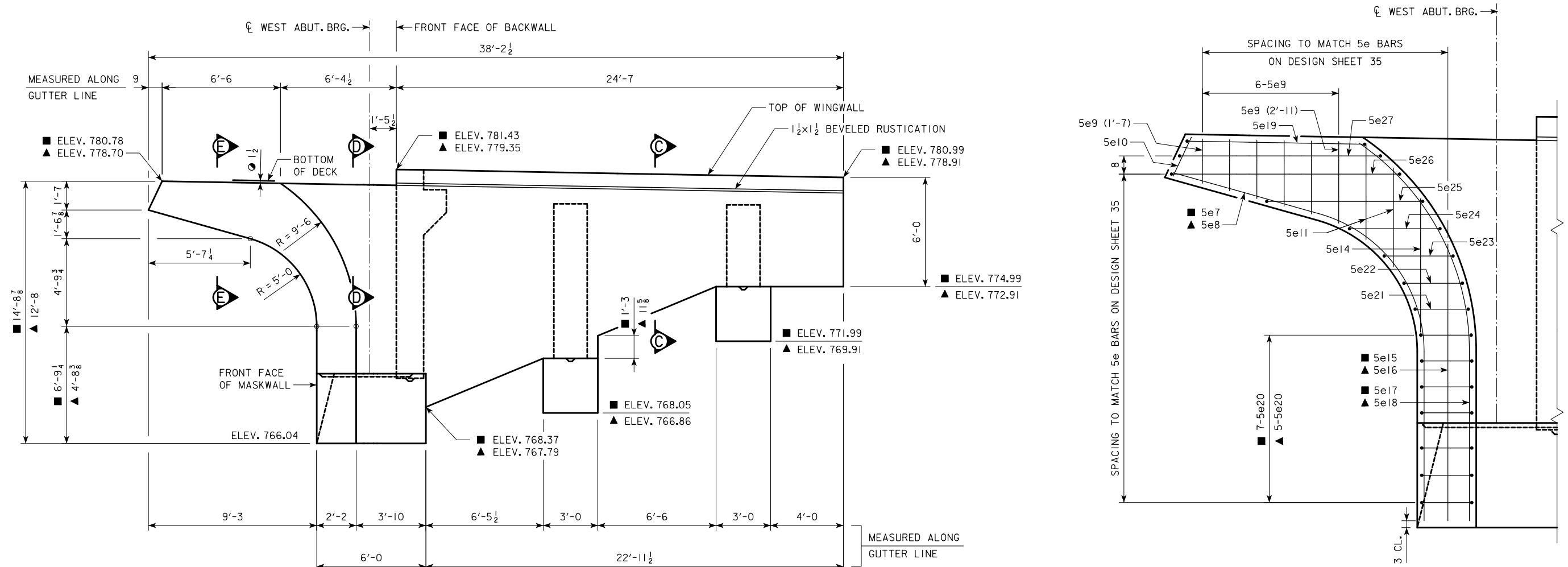
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE WEST ABUTMENT PILES IS 156 TONS AT END OF DRIVE. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. IN NO CASE SHALL A PILE BE EMBEDDED LESS THAN 40 FEET. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

DIMENSIONS SHOWN ON PILING LAYOUT ARE AT BOTTOM OF FOOTING. BATTER PILES 1:4 IN DIRECTION SHOWN.
19-HPI2x53 STEEL BEARING PILING REQUIRED.

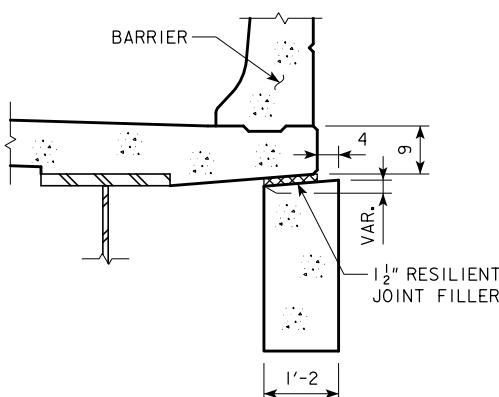
DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
WEST ABUTMENT DETAILS
STA. 2536+28.27 (E RAMP B)

APRIL 2018



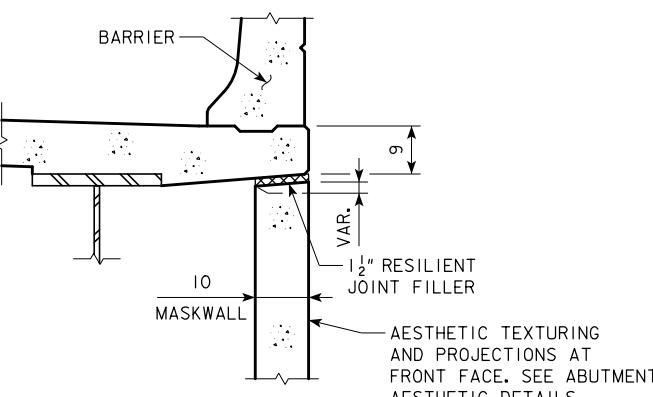
VIEW A-A
NORTH WINGWALL & MASKWALL
SOUTH WINGWALL & MASKWALL (VIEW B-B) SIMILAR UNLESS NOTED

MASKWALL SURFACE REINFORCING DETAIL
NORTH MASKWALL SHOWN, SOUTH MASKWALL SIMILAR UNLESS NOTED



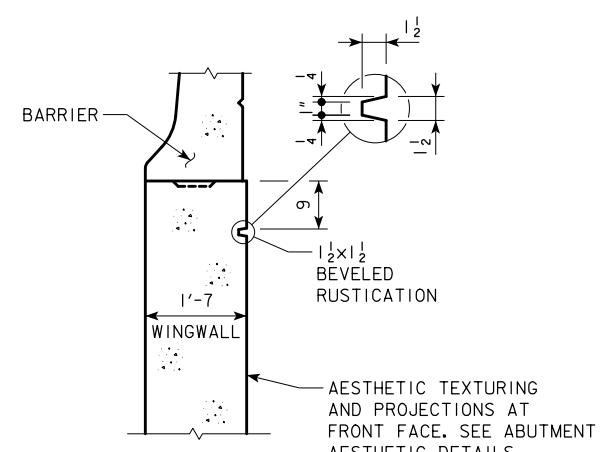
SECTION E-1

SOUTH ABUTMENT MASKWALL SHOWN,
NORTH ABUTMENT MASKWALL SIMILAR



SECTION D-D

SOUTH ABUTMENT MASKWALL SHOWN,
NORTH ABUTMENT MASKWALL SIMILAR



SECTION C-C

SOUTH ABUTMENT WINGWALL SHOWN,
NORTH ABUTMENT WINGWALL SIMILAR

NOTES:

TOP OF WINGWALL OR MASKWALL ELEVATIONS SHOWN ARE AT EDGE OF DECK OR OUTSIDE FACE OF WINGWALL.

FOR ABUTMENT AESTHETIC DETAILS AND NOTES, SEE DESIGN SHEET 37.

FOR CONCRETE PAINTING DETAILS, SEE DESIGN SHEET 31.

○ TO BE FILLED WITH RESILIENT JOINT FILLER.

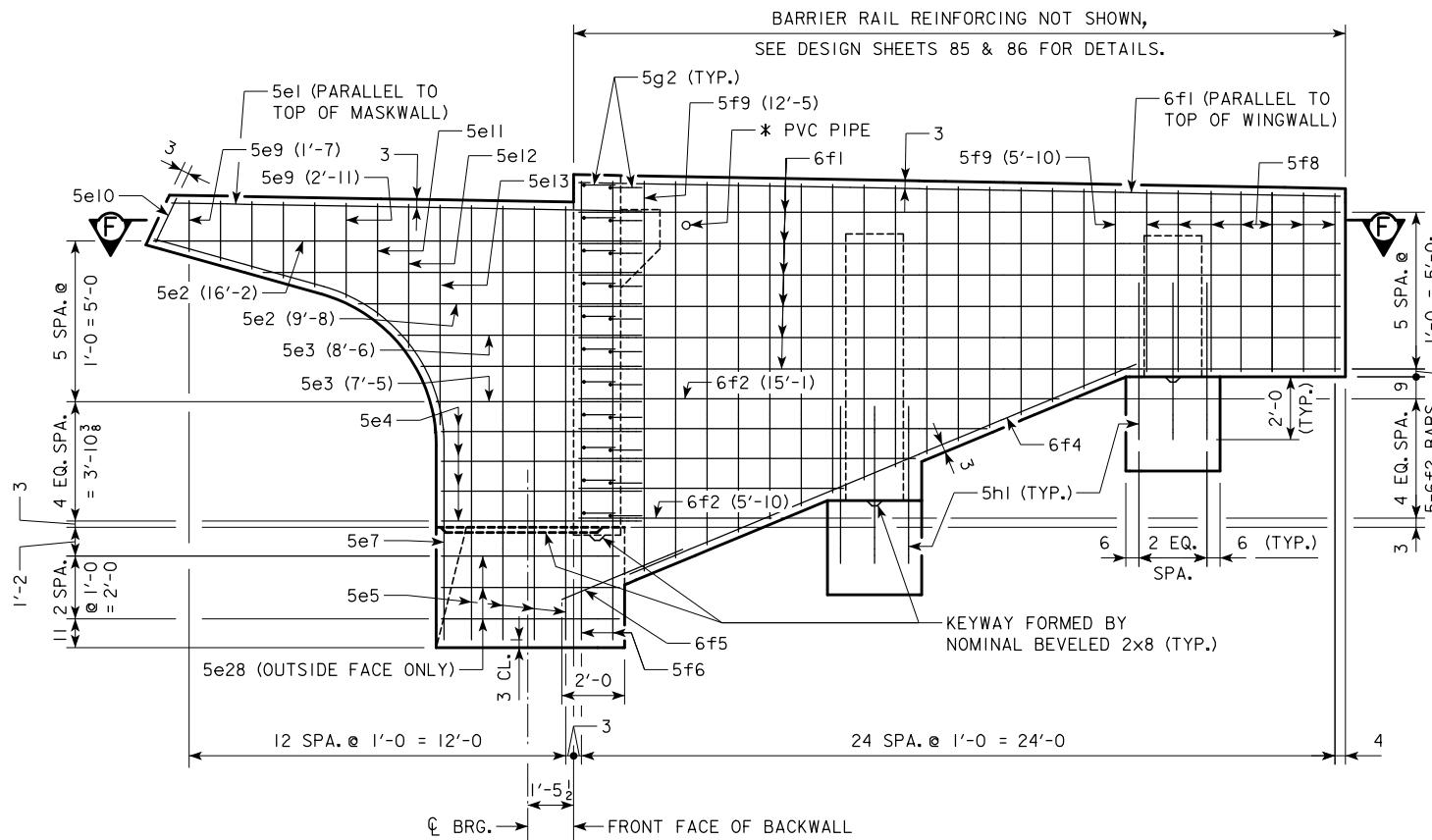
■ NORTH WING OR MASKWALL

▲ SOUTH WING OR MASKWALL

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
WEST ABUTMENT DETAILS

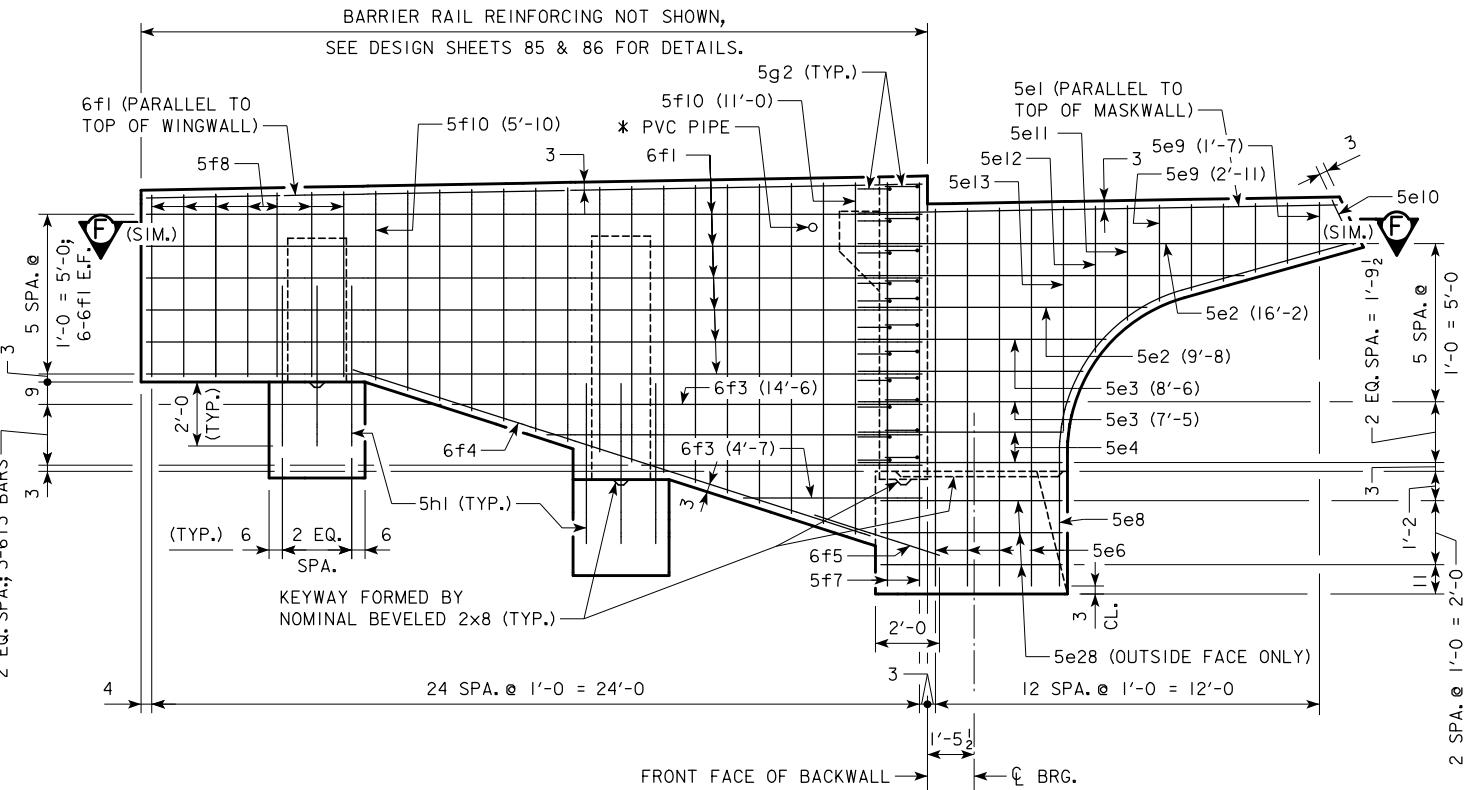
WEST ABSI STA 2536+28 27 (B RAMP B)

APRIL 2018



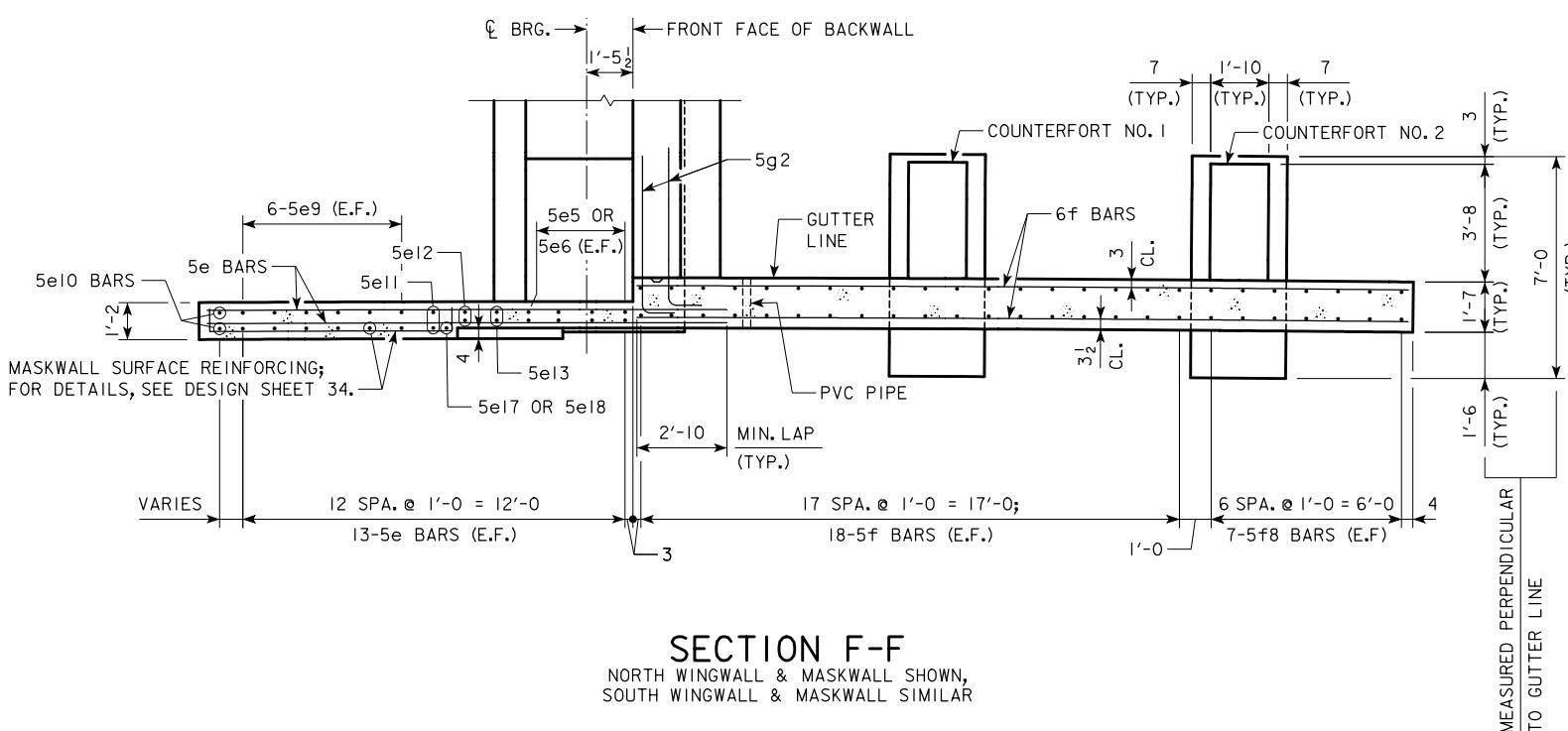
VIEW A-A

(NORTH WINGWALL & MASKWALL)
* SEE PVC PIPE LOCATION DETAIL, THIS SHEET.



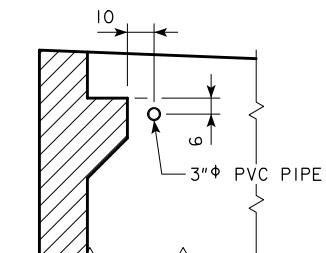
VIEW B-B

(SOUTH WINGWALL & MASKWALL)
* SEE PVC PIPE LOCATION DETAIL, THIS SHEET.



SECTION F-F

**NORTH WINGWALL & MASKWALL SHOWN,
SOUTH WINGWALL & MASKWALL SIMILAR**



PVC PIPE LOCATION DETAIL

NOTES:
FOR LOCATION OF VIEWS A-A AND B-B, SEE DESIGN SHEET 32.
FOR ABUTMENT WINGWALL GEOMETRY AND MASKWALL SURFACE
REINFORCING DETAIL, SEE DESIGN SHEET 34.
FOR COUNTERFORT DETAILS AND REINFORCING BAR DETAILS,
SEE DESIGN SHEET 36.

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
WEST ABUTMENT DETAILS

REINFORCING BAR LIST - WEST ABUTMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	FOOTING, LONGITUDINAL	—	17	43'-1	1,956
5b1	FOOTING, HOOPS	□	50	18'-3	952
5b2	FOOTING, HOOPS	□	4	19'-2	80
6d1	BACKWALL, B.F., VERTICAL	—	79	VARIABLE	1,434
5d2	BACKWALL, F.F., VERTICAL	—	39	VARIABLE	478
5d3	PAVING NOTCH	[]	39	4'-5	180
5d4	PAVING NOTCH	()	39	3'-8	149
4d6	BACKWALL, HAIRPIN, VERTICAL	[]	39	7'-10	204
5e1	MASKWALL, TOP	—	4	15'-10	66
5e2	MASKWALL, HORIZONTAL	—	12	VARIABLE	162
5e3	MASKWALL, HORIZONTAL	—	12	VARIABLE	100
5e4	MASKWALL, HORIZONTAL	—	12	7'-3	91
5e5	MASKWALL, VERTICAL	—	8	14'-1	118
5e6	MASKWALL, VERTICAL	—	8	12'-0	100
5e7	MASKWALL, VERTICAL	()	2	18'-11	39
5e8	MASKWALL, VERTICAL	()	2	16'-10	35
5e9	MASKWALL, VERTICAL	—	24	VARIABLE	56
5e10	MASKWALL, VERTICAL	—	4	1'-5	6
5e11	MASKWALL, VERTICAL	—	6	3'-5	21
5e12	MASKWALL, VERTICAL	—	4	4'-6	19
5e13	MASKWALL, VERTICAL	—	4	6'-11	29
5e14	MASKWALL, VERTICAL	—	2	4'-10	10
5e15	MASKWALL, VERTICAL	—	1	10'-4	11
5e16	MASKWALL, VERTICAL	—	1	8'-3	9
5e17	MASKWALL, VERTICAL	()	1	15'-6	16
5e18	MASKWALL, VERTICAL	()	1	13'-5	14
5e19	MASKWALL, HORIZONTAL	[]	2	8'-2	17
5e20	MASKWALL, HORIZONTAL	[]	12	3'-6	44
5e21	MASKWALL, HORIZONTAL	[]	2	3'-7	7
5e22	MASKWALL, HORIZONTAL	[]	2	3'-9	8
5e23	MASKWALL, HORIZONTAL	[]	2	4'-2	9
5e24	MASKWALL, HORIZONTAL	[]	2	4'-11	10
5e25	MASKWALL, HORIZONTAL	[]	2	7'-2	15
5e26	MASKWALL, HORIZONTAL	[]	2	9'-11	21
5e27	MASKWALL, HORIZONTAL	□	2	17'-6	37
5e28	MASKWALL, HORIZONTAL	—	6	5'-8	35

EPOXY CUAIED BARS

S.S.B.

ABUTMENT NOTES:

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

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

THE MASKWALL IS TO BE POURED BEFORE THE SUPERSTRUCTURE DECK IS POURED.
CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELLED 2X8'S.

CONSTRUCTION JOINT RETWAYS ARE TO BE FORMED WITH BEVELED 2X8'S.
THE PORTION OF THE BACKWALL CONTAINING THE ABUTMENT ANCHORAGE OF THE
EXPANSION DEVICE IS TO BE PLACED AFTER THE BRIDGE DECK IS PLACED.
PAVING NOTCH DOWELS SHALL BE STAINLESS STEEL DEFORMED BAR GRADE 60

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.

GIRDERS ARE TO BE SET BEFORE BACKWALL IS PLACED.

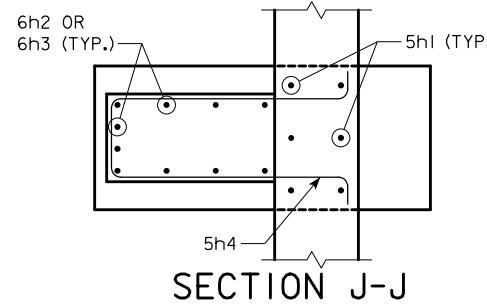
FOR EXCAVATION LIMITS, SEE BACKFILL DETAILS ON DESIGN SHEET 93. WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER/FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

OF THE ANCHOR BOLTS.
CONCRETE SEALER IS TO BE APPLIED TO THE ABUTMENT BRIDGE SEATS IN ACCORDANCE WITH ARTICLE 2403.03,P,3 OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THE REQUIREMENTS OF ARTICLE 2403.03,P,3, SEALER SHALL BE APPLIED TO THE WASH BETWEEN BRIDGE SEATS.

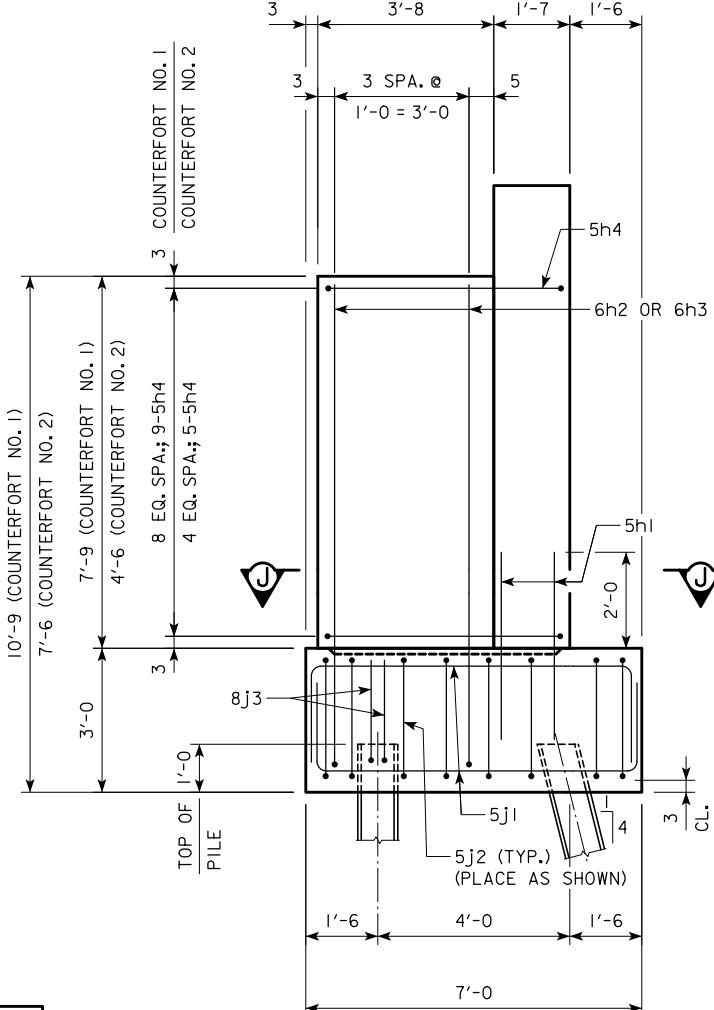
HPC CONCRETE PLACEMENT QUANTITIES

LOCATION	WEST ABUT.
FOOTING AND STEPS	38.2
BACKWALL BELOW CONSTR. JOINT	15.3
BACKWALL ABOVE CONSTR. JOINT	11.4
WINGWALLS	30.7
MASKWALLS	5.3
WINGWALL FTGS.	9.3
TOTAL (C.Y.)	110.2

NOTE:
CONCRETE AND REINFORCING STEEL
QUANTITIES ARE INCLUDED ON THE
SUMMARY OF ITEMIZED QUANTITIES SHEET.

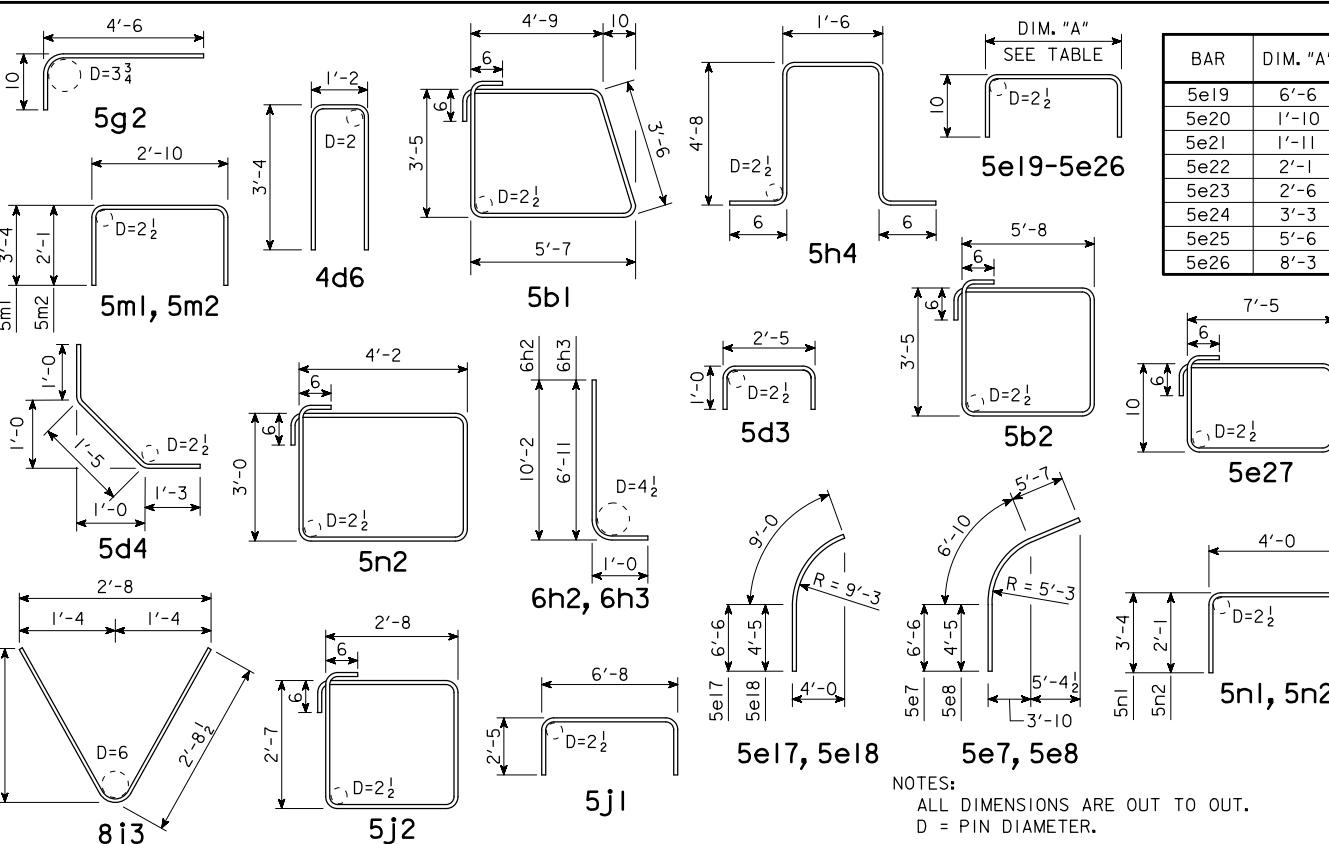


SECTION J-J



SECTION H-H

BENT BAR DETAILS



NOTE: FOR LOCATION OF SECTION H-H, SEE DESIGN SHEET 32.

DESIGN FOR 0° SKEW

**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
WEST ABUTMENT DETAILS**

STA 2536+38 27 (B RAMP B)

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ABUTMENT CONCRETE TEXTURE NOTES:

THE WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE ABUTMENTS SHOWN IN THIS PLAN. SEE 'GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL DETAILED AND PAID FOR AS PART OF DESIGN NO. 120 OF THIS PROJECT MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'A' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF ALTERNATING 10-INCH AND 4-INCH TALL COURSES OF CUT STONE IN RANDOM LENGTHS WITH SIMULATED MORTAR JOINTS. DEPTH OF TEXTURE SHALL BE 0.3125 INCH.

OBTAİN TEXTURE 'A' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. I2008)
2. FITZGERALD FORMLINERS (PATTERN NO. I7003)
3. SUBMIT ALL OTHER MANUFACTURES AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF A REALISTIC FRACTURED ROCK FACE WITH NO SIMULATED MASONRY JOINTS. DEPTH OF TEXTURE SHALL BE 1 INCH.

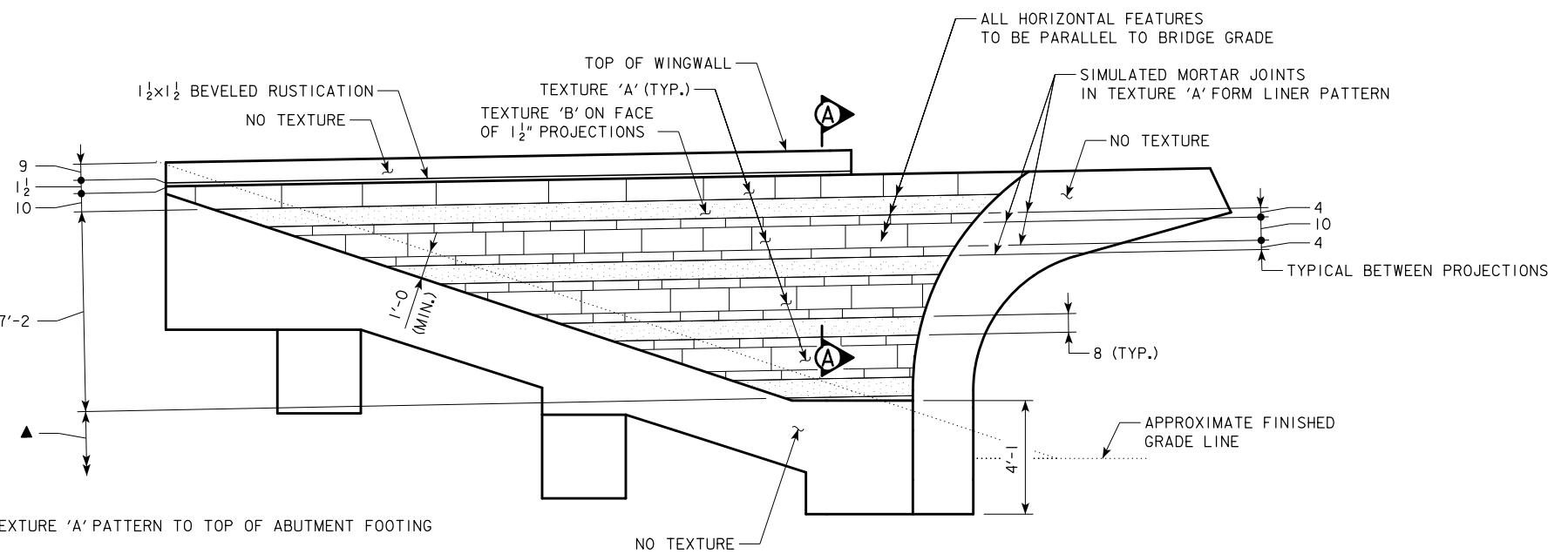
OBTAİN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. T325)
2. FITZGERALD FORMLINERS (PATTERN NO. I7030)
3. SUBMIT ALL OTHER MANUFACTURES AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

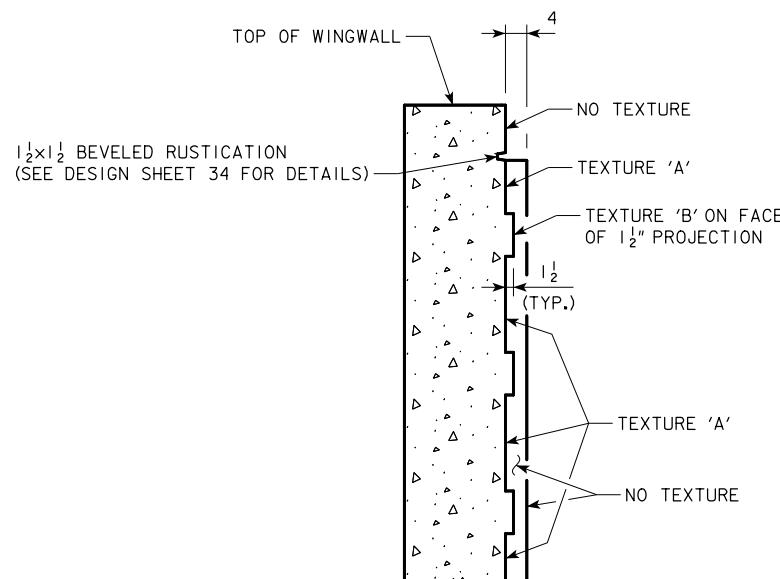
PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

THE ABUTMENT SURFACES AS DESIGNATED IN THE PLANS SHALL ALSO RECEIVE CONCRETE RUSTICATION. SEE 'GENERAL NOTES FOR CONCRETE RUSTICATION' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURES AND FORM LINERS AT THE ABUTMENTS SHALL BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".



ABUTMENT SIDE ELEVATION
(SOUTH WINGWALL SHOWN, NORTH WINGWALL SIMILAR)
(BARRIER RAIL NOT SHOWN)



PART SECTION A-A

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
ABUTMENT AESTHETIC DETAILS
STA. 2536+28.27 (RAMP B)

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SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES $\frac{1}{2}$ " INTEGRAL WEARING SURFACE. FORMS FOR THE BRIDGE DECK AND BARRIER 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 $2\frac{1}{2}$ " CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0" CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0" APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, HIGH BAR CHAIRS, AND DECK BOLSTERS.

ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH STRENGTH BOLTS". UNLESS OTHERWISE NOTED, ALL OPEN HOLES ARE TO BE $\frac{15}{16}$ "^Φ AND ALL BOLTS ARE TO BE $\frac{7}{8}$ "^Φ.

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

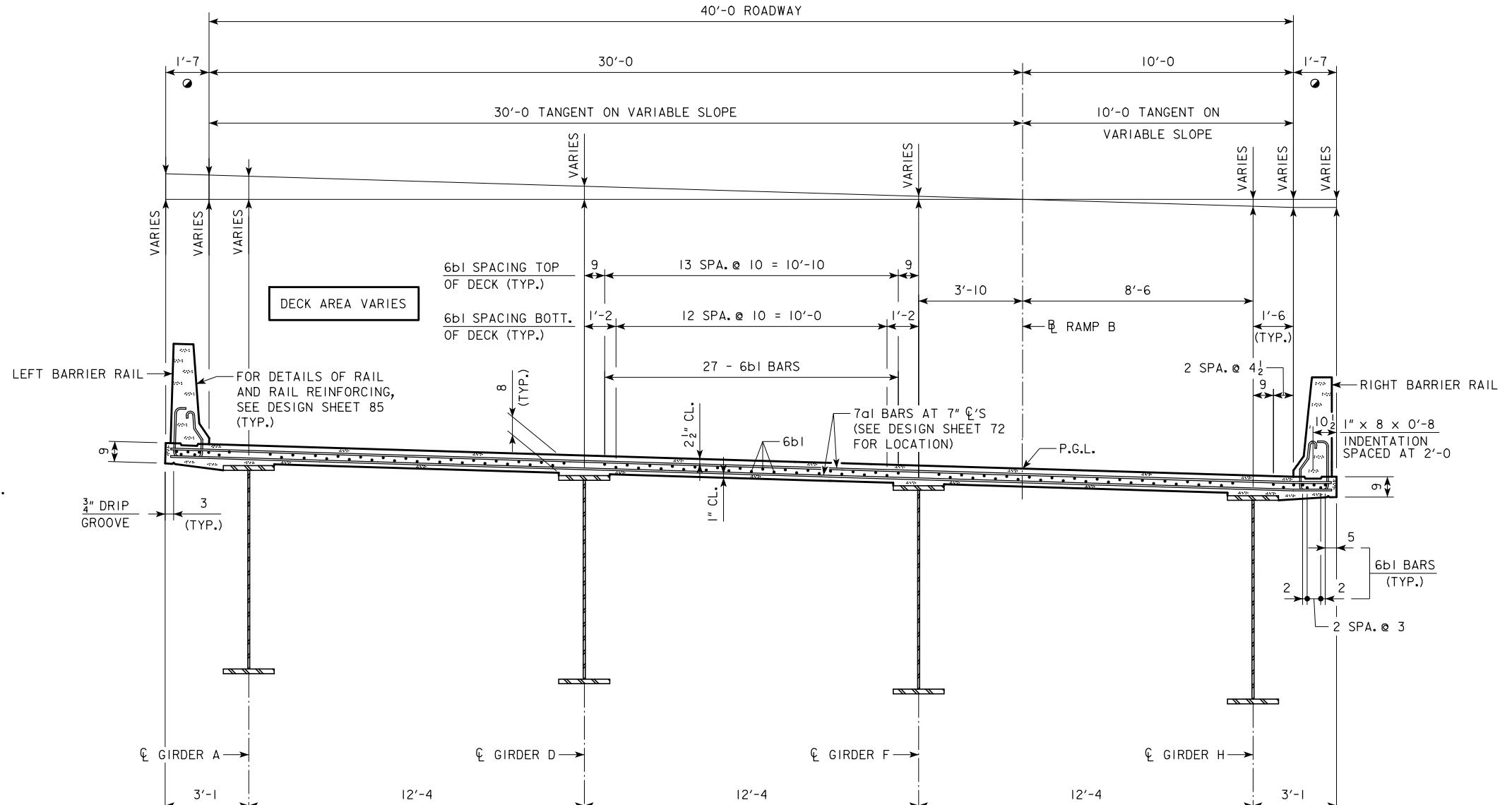
FILL PLATE THICKNESSES SHOWN ON PLANS ARE BASED ON NOMINAL GIRDER DIMENSIONS. THESE THICKNESSES ARE TO BE VERIFIED OR ADJUSTED DURING FABRICATION TO SECURE A CLOSE FIT. EACH FILL PLATE SHALL FIT TO THE NEAREST $\frac{1}{16}$ " IN THICKNESS AND SINGLE PLATES ARE REQUIRED AT EACH FILL LOCATION. GIRDERS 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.

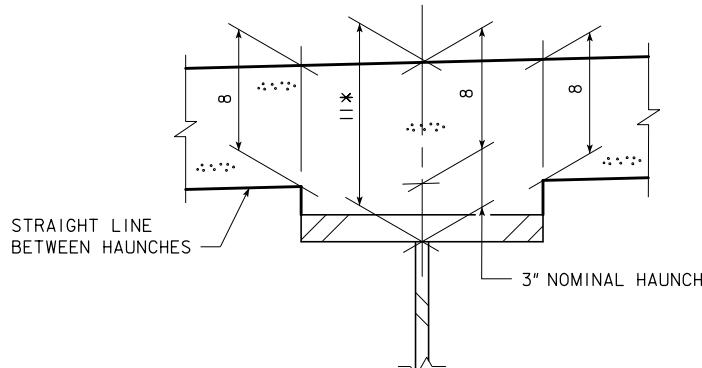
SHOP WELDED FLANGE SPLICES SHALL BE A MINIMUM OF 6 INCHES FROM A STIFFENER, 6 INCHES FROM A WEB SPLICE, AND 4 INCHES FROM A SHEAR CONNECTOR. WEB SPLICES SHALL BE A MINIMUM OF 6 INCHES FROM A STIFFENER. SPLICES SHALL NOT INTERFERE WITH ANY OTHER BRIDGE COMPONENTS. ALL SHOP WELDED BUTT SPLICES SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBJECT TO APPROVAL BY THE ENGINEER.

LONGITUDINAL CONSTRUCTION JOINTS ARE NOT ALLOWED (U.N.O.).



TYPICAL SECTION NEAR PIER NO. 1

(LOOKING AHEAD STATION)
(CROSS FRAMES AND INSPECTION WALKWAYS NOT SHOWN FOR CLARITY)



TYP. DECK & HAUNCH DETAIL

* DIMENSION SHOWN IS MEASURED FROM TOP OF DECK 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 IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

THE MAXIMUM EMBEDMENT OF THE EDGE OF THE TOP FLANGE IN THE DECK SHALL BE $\frac{1}{2}$ INCH. SHEAR STUDS ARE TO HAVE A MINIMUM PENETRATION OF 2 INCHES INTO THE DECK AND BE AT LEAST $2\frac{1}{2}$ INCHES CLEAR OF THE TOP OF THE DECK. THESE REQUIREMENTS WERE USED IN SETTING THE MAXIMUM AND MINIMUM ALLOWABLE FIELD HAUNCH VALUES SHOWN IN THE "MISCELLANEOUS DATA TABLE" ON DESIGN SHEETS 56 & 57.

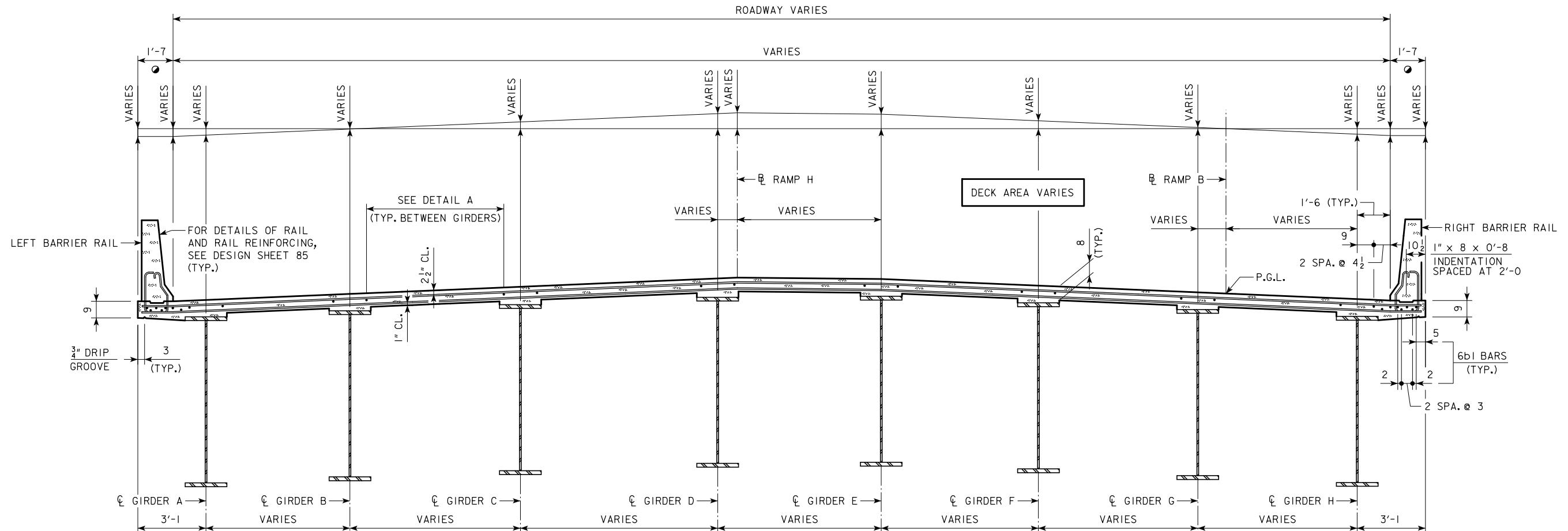
BARRIER RAIL
ORIENTATION DETAIL
(SHOWING "DECK SLOPES
AWAY FROM THE BARRIER RAIL")

BARRIER RAIL
ORIENTATION DETAIL
(SHOWING "DECK SLOPES
TOWARDS THE BARRIER RAIL")

NOTES:
FOR CROSS FRAME DETAILS, SEE DESIGN SHEET 46.
FOR DECK AND TURNDOWN REINFORCING DETAILS, SEE DESIGN SHEETS 69 THRU 74.
FOR TEMPORARY DECK OVERHANG BRACKET DETAIL, SEE DESIGN SHEET 39.
WHERE THE DECK SLOPES TOWARDS THE BARRIER RAIL, THE DECK UNDER THE BARRIER RAIL SHALL BE PLACED LEVEL AND THE BARRIER RAIL SHALL BE PLACED VERTICAL. WHERE THE DECK SLOPES AWAY FROM THE BARRIER RAIL, THE DECK UNDER THE BARRIER RAIL SHALL BE PLACED ALONG THE SAME CROSS SLOPE AS THE DECK AND THE BARRIER RAIL SHALL BE PLACED PERPENDICULAR TO THE TOP OF THE DECK. SEE BARRIER RAIL ORIENTATION DETAILS, THIS SHEET.
FOR DECK SUPERELEVATION, SEE DESIGN SHEET 74.

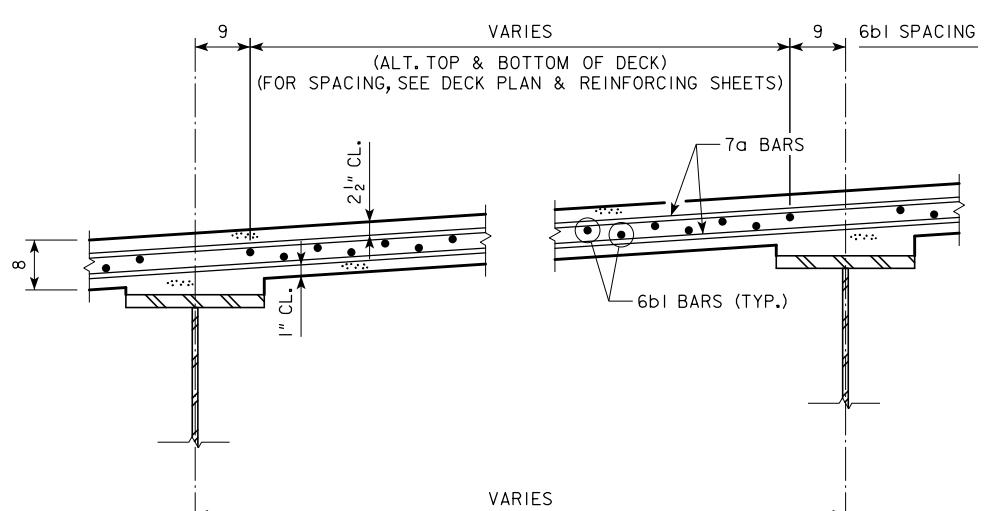
DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
SUPERSTRUCTURE DETAILS
STA. 2536+28.27 (RAMP B)

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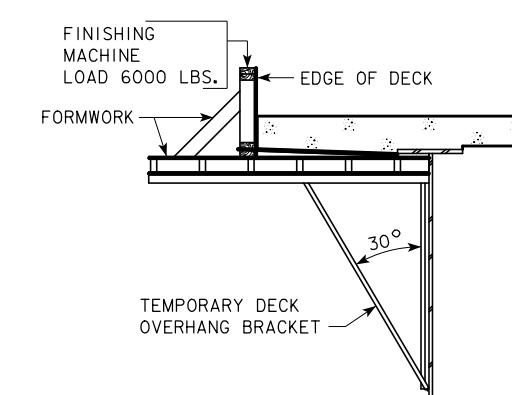


TYPICAL SECTION NEAR PIER NO. 4

(LOOKING AHEAD STATION)
(CROSS FRAMES AND INSPECTION WALKWAYS NOT SHOWN FOR CLARITY)



DETAIL A
(SHOWING DECK REINFORCING)



**TEMPORARY DECK
OVERHANG BRACKET DETAIL**

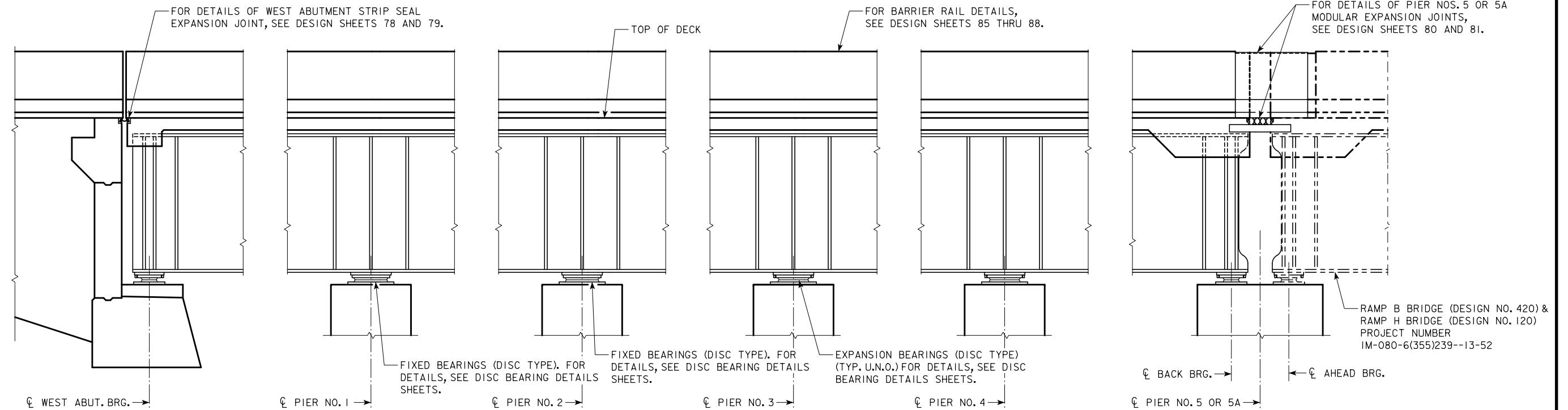
A MAXIMUM FINISHING MACHINE LOAD AND THE ANGLE OF THE DIAGONAL MEMBER OF THE OVERHANG BRACKET SHOWN WERE ASSUMED BY THE DESIGNER. THESE ASSUMPTIONS, IN ADDITION TO OTHER CONSTRUCTION LOADINGS, WERE USED TO CHECK THE STRENGTH OF THE EXTERIOR GIRDER DURING CRITICAL STAGES OF CONSTRUCTION. IF THE FINISHING MACHINE LOAD OR ANGLE OF THE DIAGONAL MEMBER OF THE OVERHANG BRACKET DEVIATE SIGNIFICANTLY FROM VALUES SHOWN, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THIS INFORMATION ON PROPOSED CONSTRUCTION EQUIPMENT TO BE USED.

IF THE VERTICAL HEIGHT OF THE OVERHANG BRACKET IS ADJUSTABLE, THE BASE OF THE BRACKET IS TO BE LOCATED AS CLOSE AS POSSIBLE TO THE BOTTOM FLANGE OF THE GIRDER.

NOTES:
FOR CROSS FRAME DETAILS, SEE DESIGN SHEET 46.
FOR SUPERSTRUCTURE NOTES AND TYPICAL DECK & HAUNCH DETAIL, SEE DESIGN SHEET 38.
FOR PARTIAL SECTION NEAR EXPANSION-EXPANSION PIER, SEE DESIGN SHEET 69.
FOR DECK REINFORCING DETAILS, SEE DESIGN SHEETS 69 THRU 74.
● FOR BARRIER RAIL ORIENTATION DETAILS SEE DESIGN SHEET 38.
▲ ALL OVERHANG DIMENSIONS ARE MEASURED PERPENDICULAR TO EDGE OF DECK.
FOR DECK SUPER ELEVATION, SEE DESIGN SHEET 74.

DESIGN FOR 0° SKEW
**873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
SUPERSTRUCTURE DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018



PART LONGITUDINAL SECTION NEAR BARRIER RAIL

(LOOKING AT LEFT BARRIER) (PIER DIAPHRAGMS AND ABUTMENT DIAPHRAGMS NOT SHOWN)

TEMPERATURE AT TIME OF SETTING *	WEST ABUTMENT	WEST ABUTMENT	PIER NO. 1	PIER NO. 2	PIER NO. 3	PIER NO. 4	BACK BRG. PIER NO. 5 OR 5A	PIER NO. 5 OR 5A
	D	SOLE PLATE	BRG.	BRG. & SOLE PLATE	BRG. & SOLE PLATE	BRG.	BRG.	BRG.
10°F	3 3/4	-3/4	0	0	-1	-1 9/16	-2	1' - 0 1/4
50°F	3	0	0	0	0	0	0	9
90°F	2 1/4	3/4	0	0	1	1 9/16	2	5 3/4

▲ MEASURED PERPENDICULAR TO JOINT

NOTES:

BEARING AND EXPANSION DEVICE SETTINGS SHALL BE MADE IN EARLY MORNING, PREFERABLY BEFORE SUN HEAT AFFECTS LENGTH. FOR EXPANSION DEVICE SETTINGS, SEE DESIGN SHEETS 78 THRU 80.

SET SOLE PLATES IN DIRECTION SHOWN FOR TEMPERATURES ABOVE 50°F., AND IN THE OPPOSITE DIRECTION FOR TEMPERATURES BELOW 50°F.

SETTINGS FOR OTHER TEMPERATURES ARE PROPORTIONAL.

FIXED PIER NOS. 1 AND 2 SOLE PLATES SHALL BE WELDED TO THE GIRDER FLANGES PRIOR TO PIER NOS. 3, 4, 5 AND 5A AND THE WEST ABUTMENT SOLE PLATES.

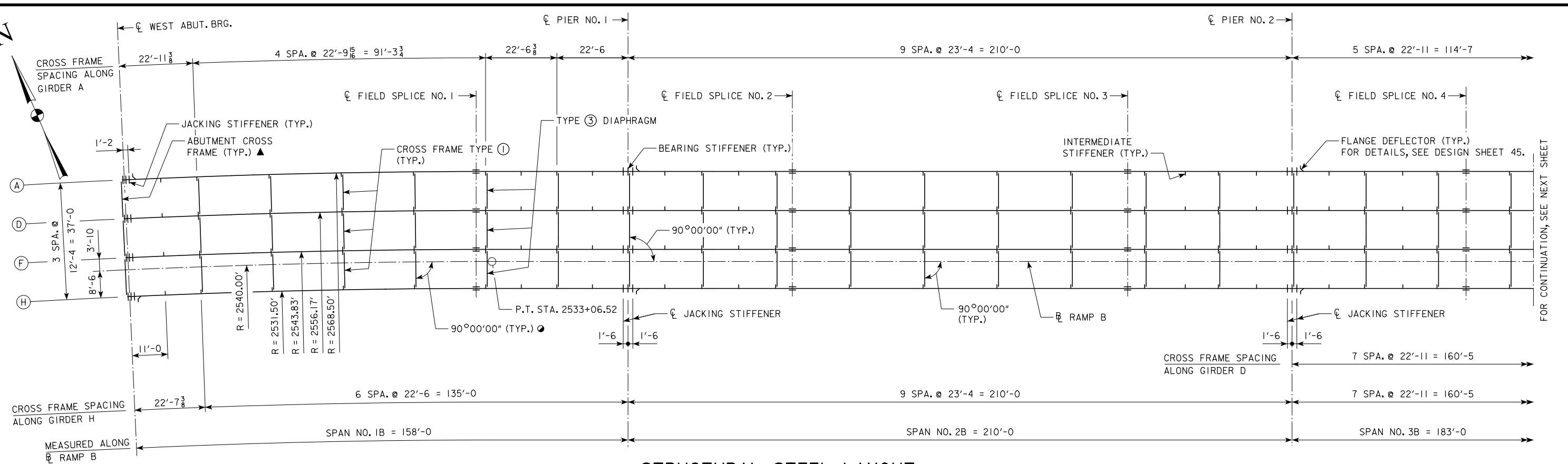
▲ FOR THE FIXED BEARINGS AT PIER NOS. 1 AND 2, THE SOLE PLATES SHALL BE WELDED TO THE GIRDER FLANGE WHEN THE TEMPERATURE OF THE STRUCTURE IS BETWEEN 40°F AND 60°F.

* TEMPERATURE OF STRUCTURE (STEEL AND/OR DECK), NOT AIR TEMPERATURE.

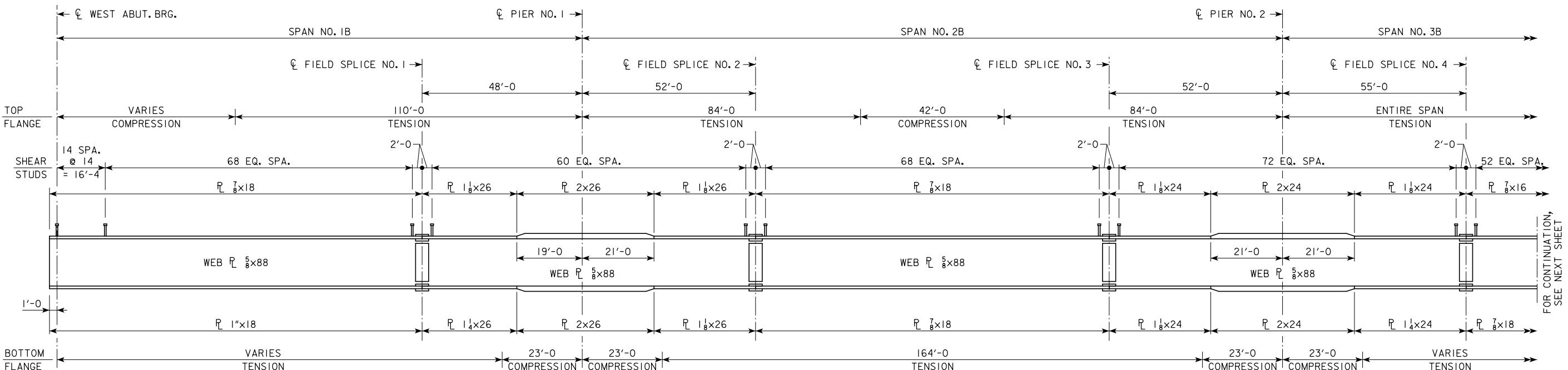
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
LONGITUDINAL SECTION

STA. 2536+28.27 (RAMP B)

APRIL 2018



STRUCTURAL STEEL LAYOUT



NOTES:

ALL DIMENSIONS SHOWN ARE MEASURED IN A HORIZONTAL PLANE UNLESS NOTED OTHERWISE

● MEASURED WITH RESPECT TO LOCAL TANGENT.

▲ CONTRACTOR TO NOTE CROSS FRAME ERECTION AT THESE LOCATIONS MAY REQUIRE SPECIAL CONSIDERATION DURING GIRDER ERECTION. BEARING AND JACKING STIFFENERS MAY CONFLICT WITH CROSS FRAME PLACEMENT AFTER THE GIRDERS ARE ERECTED.

ALL CROSSFRAMES SHALL BE TYPE ① UNLESS NOTED OTHERWISE. ALL INTERMEDIATE STIFFENERS SHALL BE AT EQUAL SPACES BETWEEN CROSS FRAMES UNLESS NOTED OTHERWISE.

CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4152.02, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO ALL CROSS FRAMES, DIAPHRAGMS, CONNECTION STIFFENERS AND CONNECTION PLATES AT CROSS FRAMES AND DIAPHRAGMS.

OVERRIDEN HOLES FOR BOLTED CONNECTIONS SHALL NOT BE ALLOWED UNLESS NOTED OTHERWISE.

THE CONTRACTOR'S ERECTION PLANS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA. ERECTION PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO OR WITH STRUCTURAL STEEL SHOP DRAWINGS.

FOR DRAIN SUPPORT CONNECTIONS FOR DECK DRAINS, SEE DESIGN SHEETS 83 AND 84.

CROSS FRAMES ARE 90° TO GIRDER "D" EXCEPT AT PIER NO. 4, 5 & 6.

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.

FOR LOCATION AND DETAILS OF INSPECTION ACCESS LAYOUT AND FOR LOCATION OF WIRE ROPE SUPPORT BRACKET CONNECTIONS TO GIRDER WEB AND STIFFENERS, SEE DESIGN SHEETS 61 AND 62.

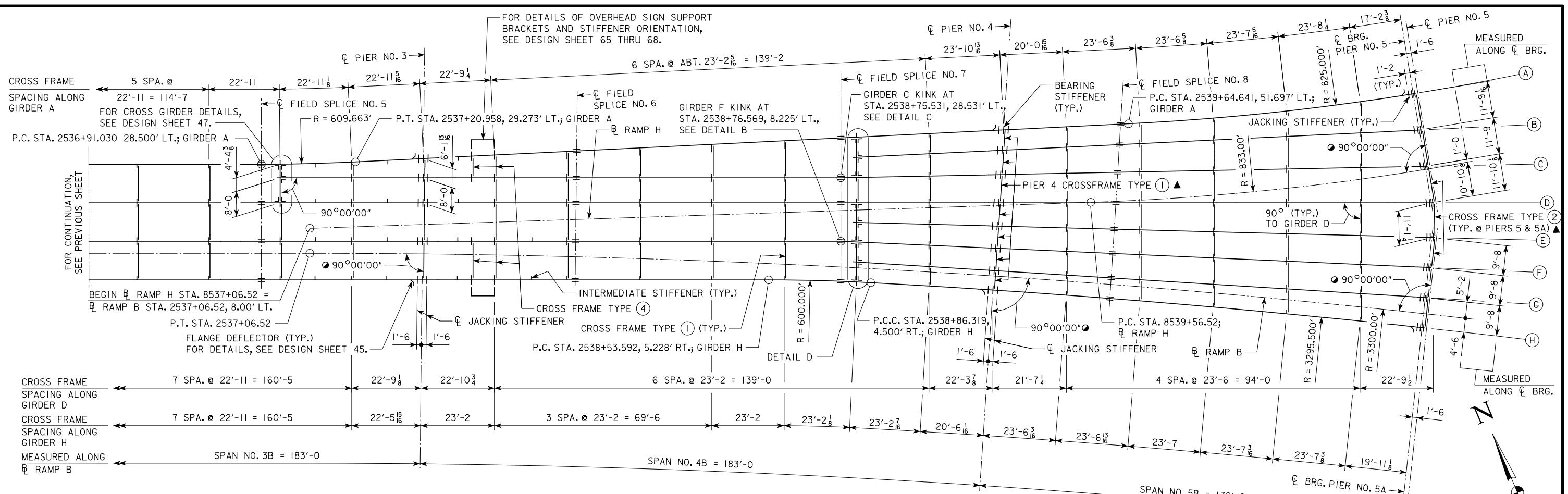
DESIGN FOR 0° SKEW 873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

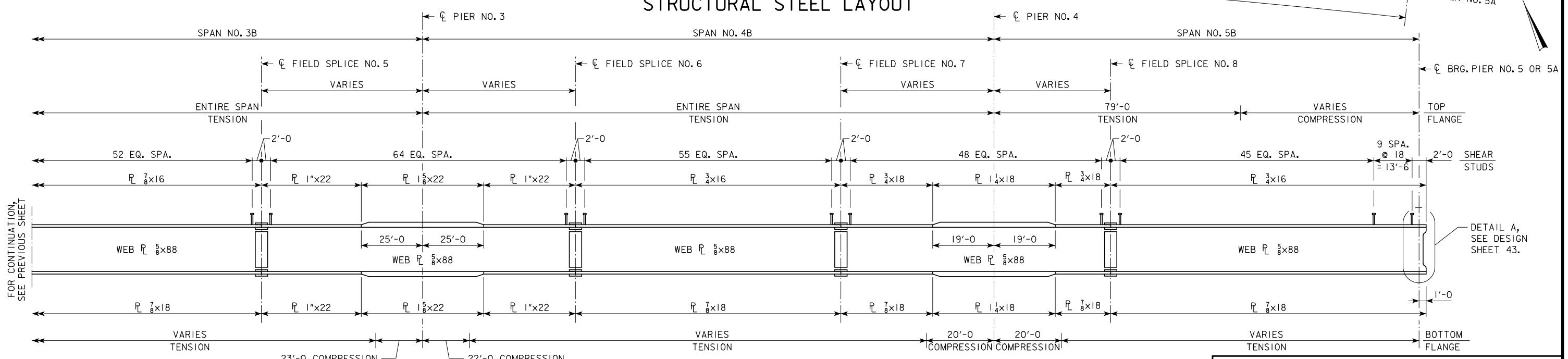
FRAMING PLAN

STA. 2536+28.27 (RAMP B)

APRIL 2018



STRUCTURAL STEEL LAYOUT



GIRDERS A, D, F & H ELEVATION

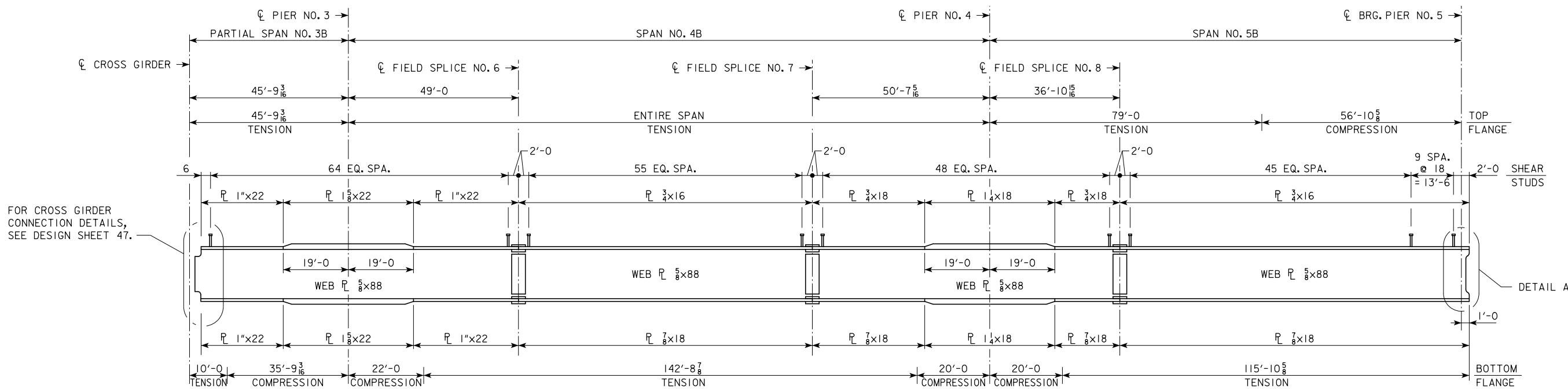
NOTES:
FOR NOTES, SEE DESIGN SHEET 41.
FOR DETAIL D AND PIER NO. 4 DETAIL, SEE DESIGN SHEET 44.

DESIGN FOR 0° SKEW
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
FRAMING PLAN

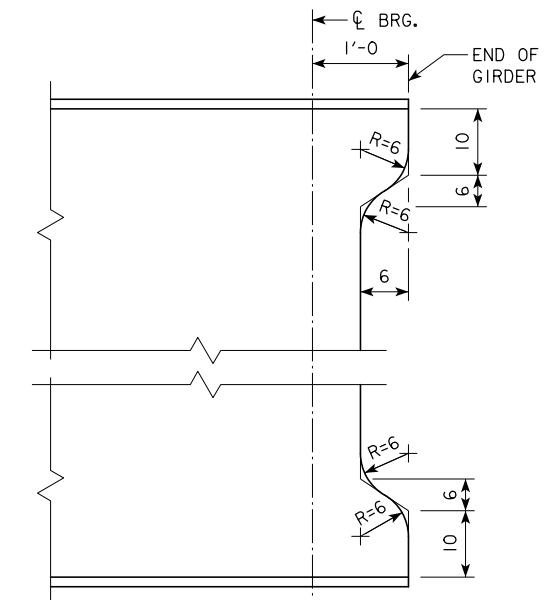
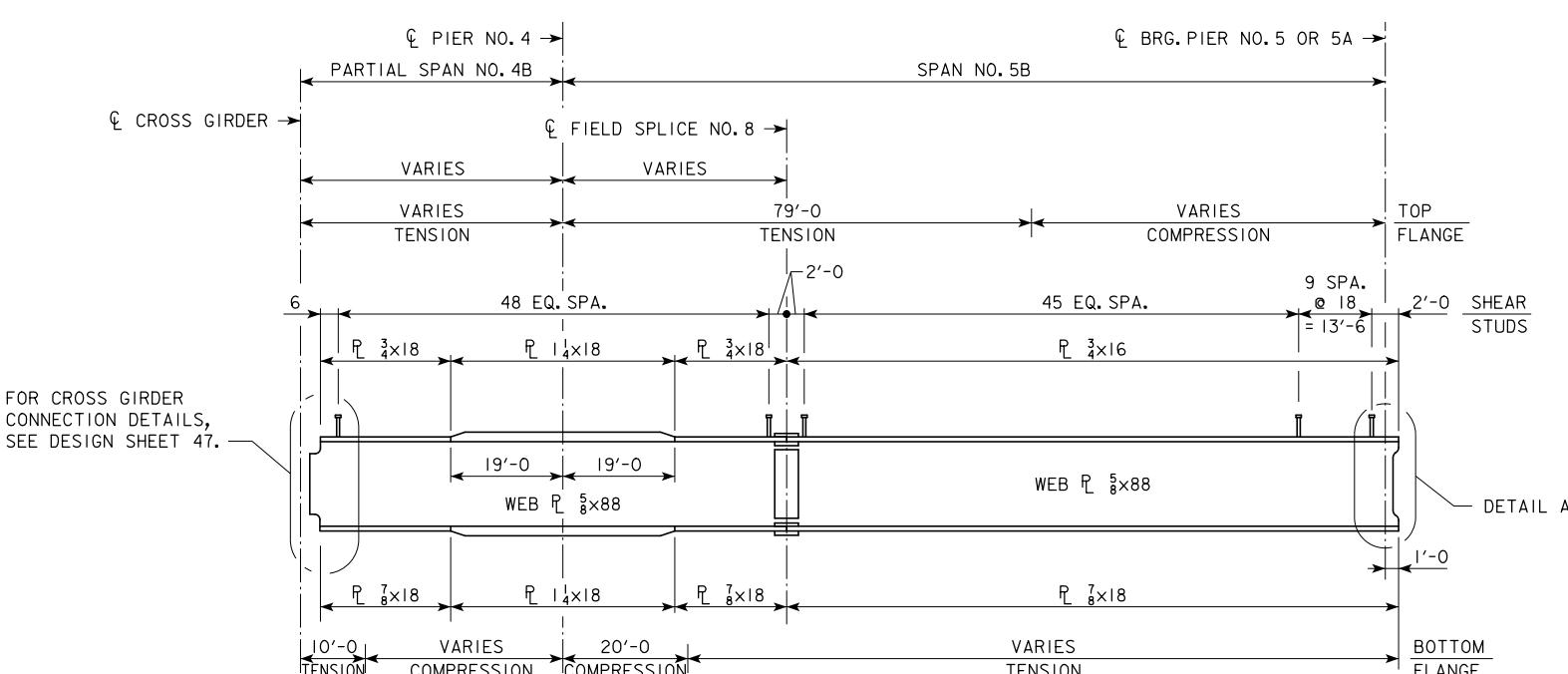
APRIL 2018

DETAIL B
(AT GIRDER F)

DETAIL C



GIRDER C ELEVATION



DETAIL A

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
GIRDER ELEVATION

STA. 2536+28.27 (E RAMP B)

APRIL 2018

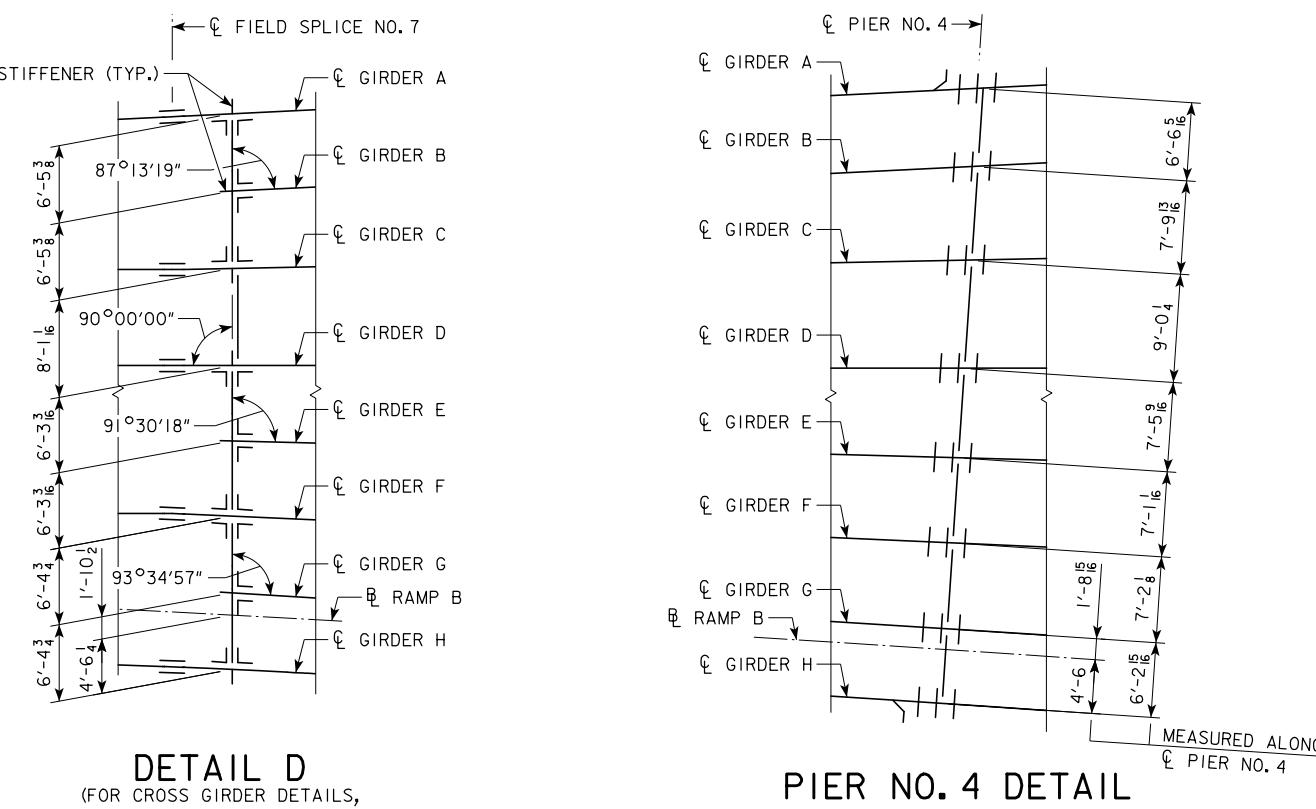
NOTE:
FOR NOTES, SEE DESIGN SHEET 41.

GIRDER DATA

GIRDER	SPAN NO. 1B				SPAN NO. 2B				SPAN NO. 3B				
	Q W. ABUT. BRG. TO F.S. NO. 1	F.S. NO. 1 TO P.T.	P.T. TO Q PIER NO. 1	SPAN LENGTH	Q PIER NO. 1 TO F.S. NO. 2	F.S. NO. 2 TO F.S. NO. 3	F.S. NO. 3 TO Q PIER NO. 2	SPAN LENGTH	Q PIER NO. 2 TO F.S. NO. 4	F.S. NO. 4 TO F.S. NO. 5 (P.C. GIRDER A)	P.C. TO P.T. (GIRDER A)	F.S. NO. 5 TO Q PIER NO. 3	SPAN LENGTH
A	111'-3 ¹ / ₂	5'-0	43'-0	159'-3 ¹ / ₂	52'-0	106'-0	52'-0	210'-0	55'-0	76'-6 ¹ / ₈	30'-0 ¹³ / ₁₆	51'-10 ⁵ / ₁₆	183'-4 ⁷ / ₁₆
B	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	45'-9 ³ / ₁₆
D	110'-8 ¹³ / ₁₆	5'-0	43'-0	158'-8 ¹³ / ₁₆	52'-0	106'-0	52'-0	210'-0	55'-0	76'-6 ¹ / ₈	-	51'-8	183'-2 ⁸
E	-	-	-	-	-	-	-	-	-	-	-	-	-
F	110'-2 ¹ / ₁₆	5'-0	43'-0	158'-2 ¹ / ₁₆	52'-0	106'-0	52'-0	210'-0	55'-0	76'-6 ¹ / ₈	-	51'-6 ³ / ₈	183'-0 ¹ / ₂
G	-	-	-	-	-	-	-	-	-	-	-	-	-
H	109'-7 ³ / ₈	5'-0	43'-0	157'-7 ³ / ₈	52'-0	106'-0	52'-0	210'-0	55'-0	76'-6 ¹ / ₈	-	51'-4 ¹³ / ₁₆	182'-10 ¹⁵ / ₁₆

GIRDER DATA

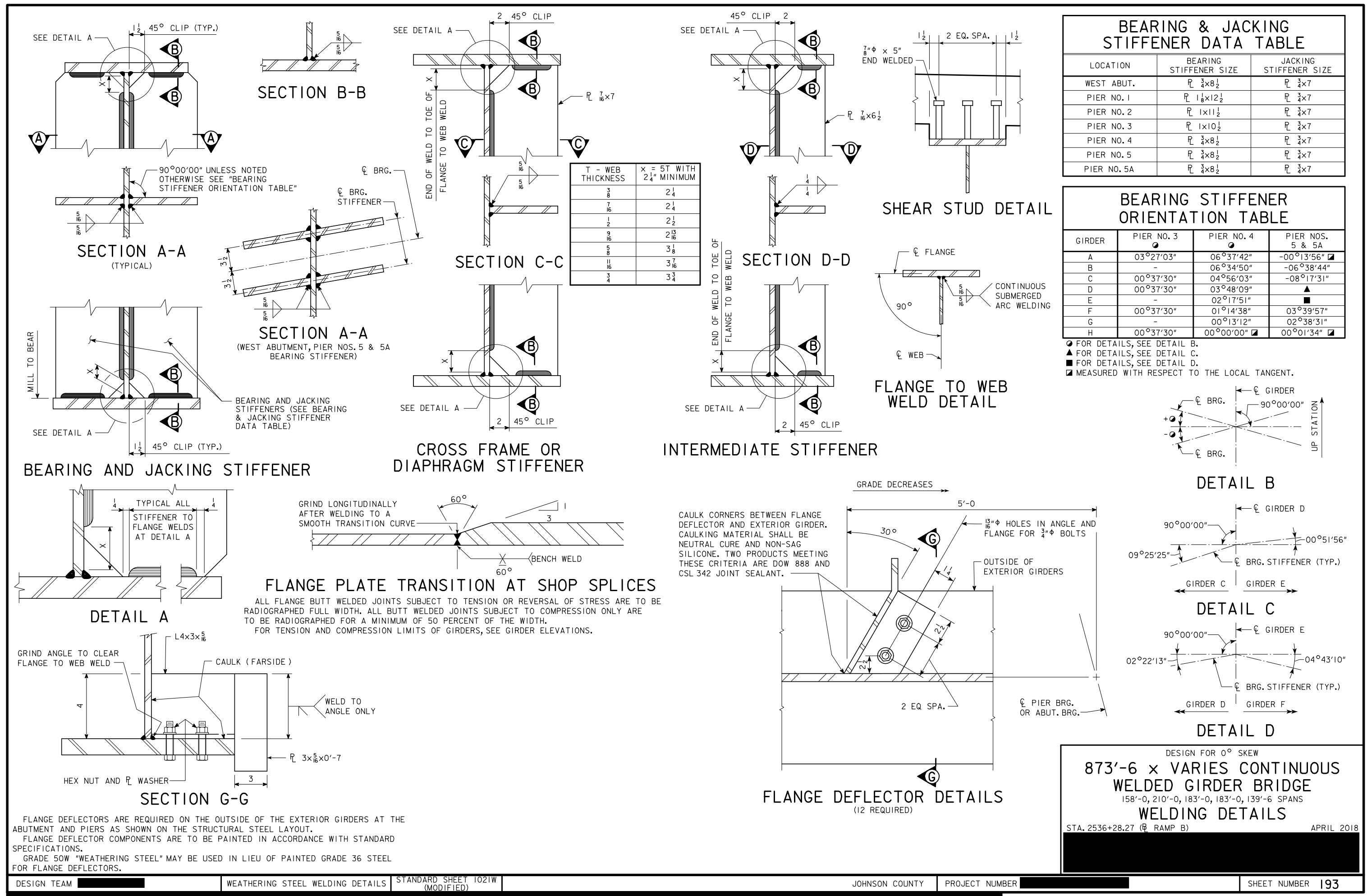
GIRDER	SPAN NO. 4B					SPAN NO. 5B				
	Q PIER NO. 3 TO F.S. NO. 6	F.S. NO. 6 TO P.C. (GIRDER H)	P.C. TO P.C.C. (GIRDER H)	F.S. NO. 6 TO F.S. NO. 7	F.S. NO. 7 TO Q PIER NO. 4	SPAN LENGTH	Q PIER NO. 4 TO F.S. NO. 8	F.S. NO. 8 TO P.C. (GIRDER A)	F.S. NO. 8 TO Q BRG. PIER NO. 5 OR 5A	SPAN LENGTH
A	49'-1	-	-	85'-11 ¹¹ / ₁₆	51'-7 ³ / ₈	185'-10 ¹ / ₁₆	35'-11 ¹⁵ / ₁₆	4'-0	95'-7 ⁵ / ₁₆	131'-7 ⁷ / ₈
B	-	-	-	-	-	46'-7 ¹⁵ / ₁₆	36'-5 ¹ / ₈	-	97'-1 ³ / ₂	133'-6 ¹ / ₈
C	49'-0	-	-	85'-1 ⁹ / ₁₆	50'-7 ⁵ / ₁₆	184'-8 ⁷ / ₈	36'-10 ¹⁵ / ₁₆	-	98'-11 ¹¹ / ₁₆	135'-10 ⁵
D	49'-0	-	-	85'-2 ⁵ / ₈	50'-0	184'-2 ⁵ / ₈	37'-6	-	100'-10 ³	138'-4 ³
E	-	-	-	-	-	45'-0 ¹ / ₁₆	38'-0 ¹ / ₈	-	101'-1 ³ / ₁₆	139'-1 ¹⁵ / ₁₆
F	49'-0	-	-	85'-4 ¹ / ₄	49'-1	183'-5 ¹ / ₄	38'-6 ¹ / ₁₆	-	100'-1 ³ / ₈	138'-7 ¹ / ₁₆
G	-	-	-	-	-	44'-1 ¹⁵ / ₁₆	39'-0 ³ / ₁₆	-	99'-1 ¹⁵ / ₁₆	138'-2 ⁸
H	49'-0	61'-10 ⁹ / ₁₆	32'-8 ⁵ / ₁₆	85'-5 ¹⁵ / ₁₆	48'-2 ¹¹ / ₁₆	182'-8 ⁵ / ₈	39'-5 ¹ / ₂	-	98'-4 ³ / ₁₆	137'-9 ¹¹ / ₁₆

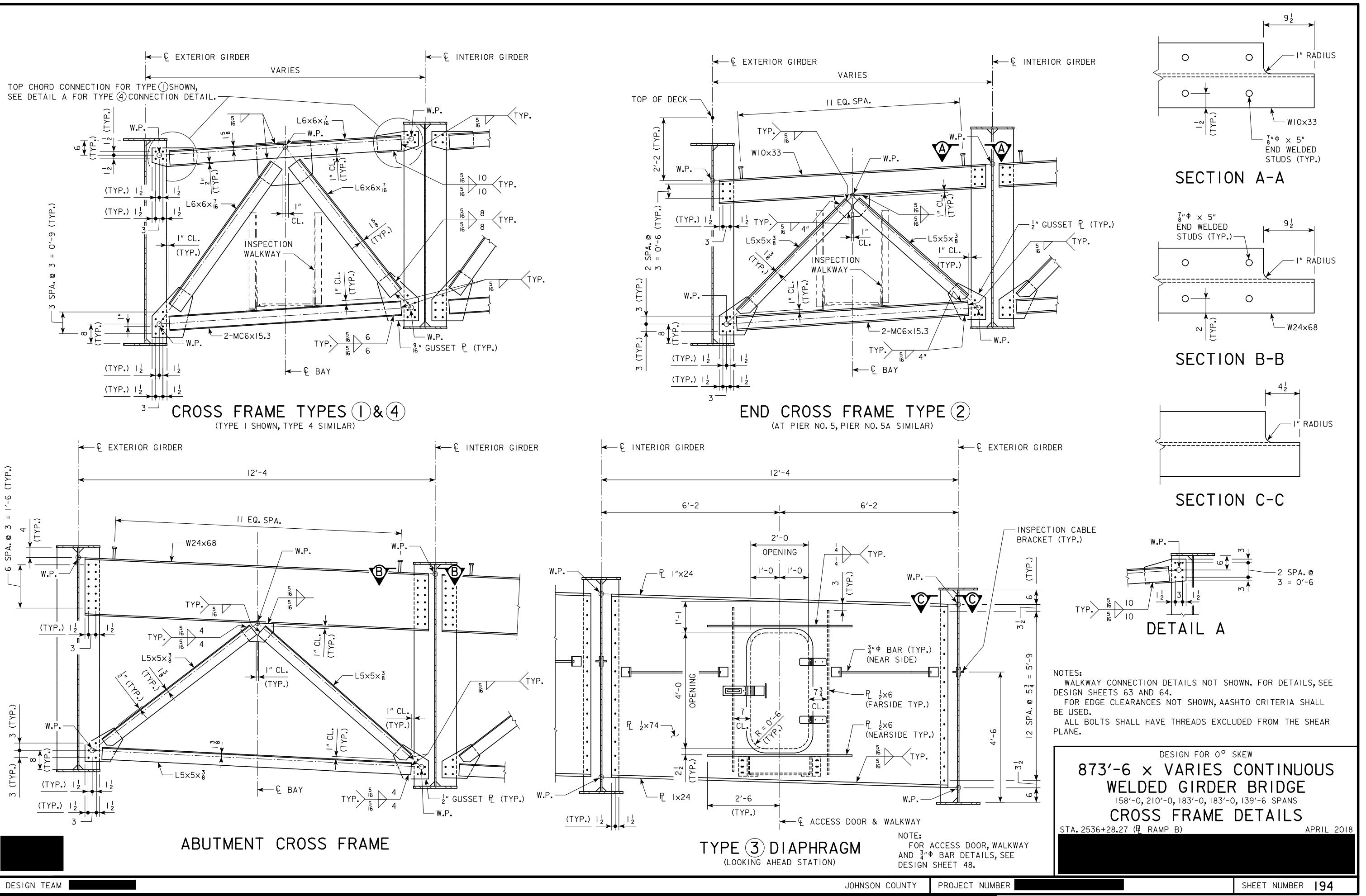


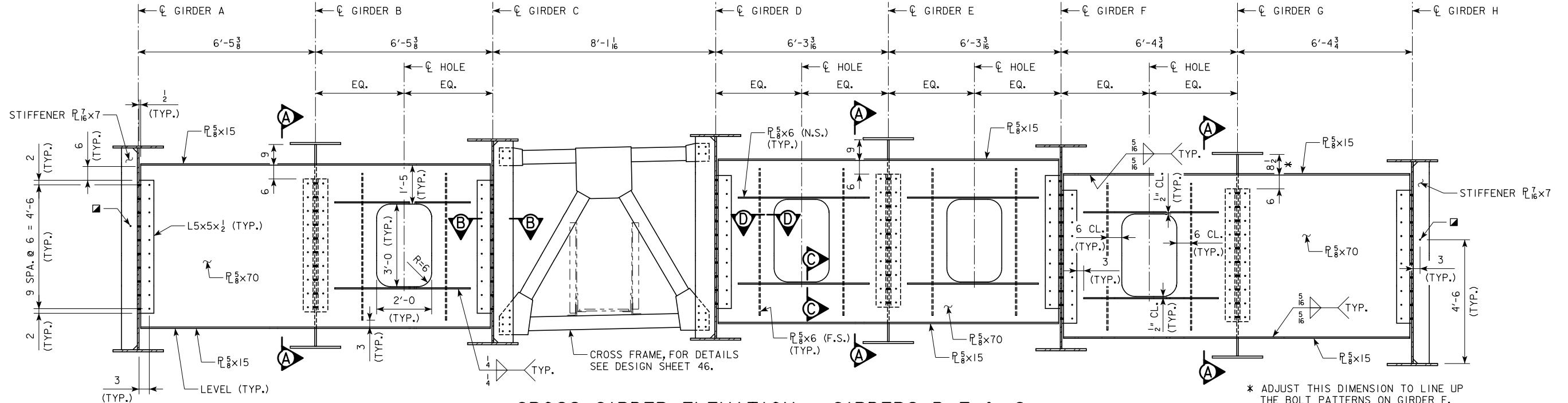
NOTE:
FOR NOTES, SEE DESIGN SHEET 41.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
FRAMING PLAN DETAILS
STA. 2536+28.27 (RAMP B)

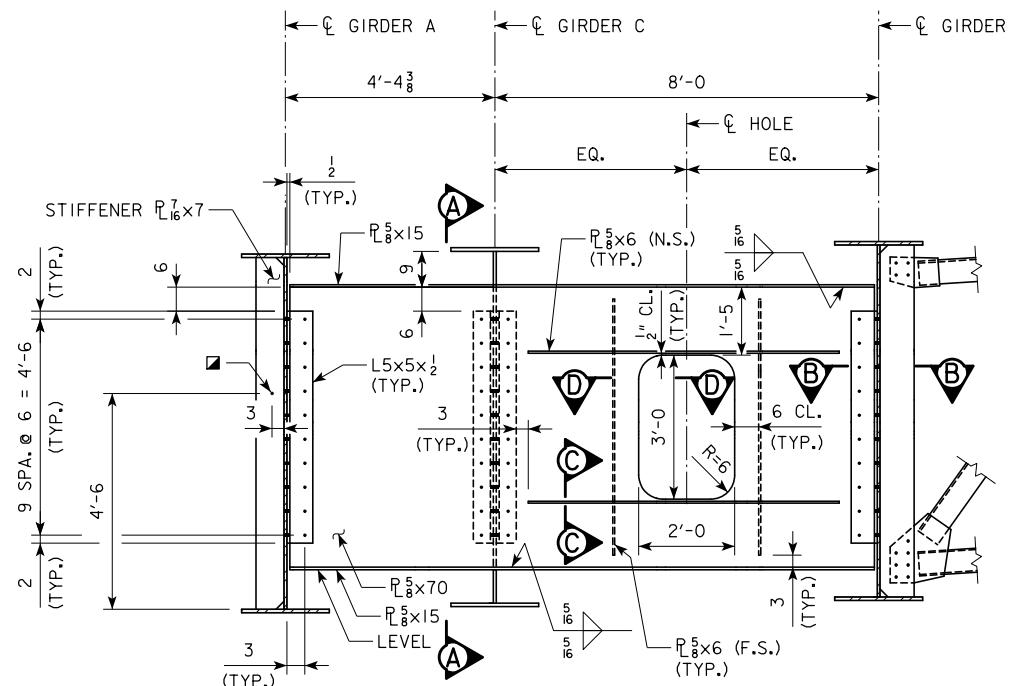
APRIL 2018



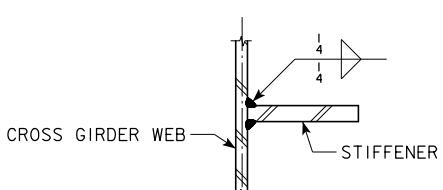




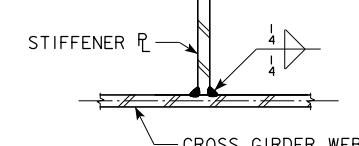
CROSS GIRDER ELEVATION - GIRDERS B, E & G
(LOOKING AHEAD STATION)



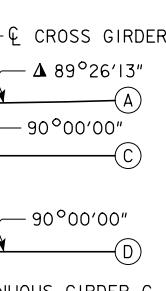
CROSS GIRDER ELEVATION - GIRDERS C
(LOOKING AHEAD STATION)



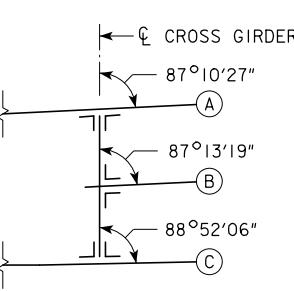
SECTION C-C



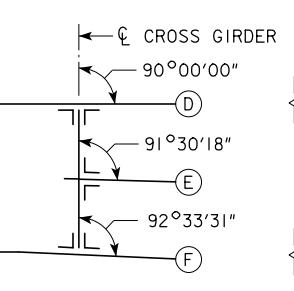
SECTION D-D



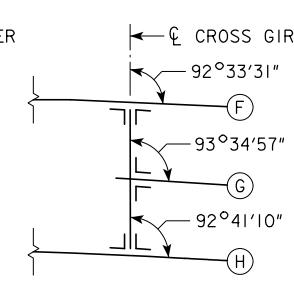
DISCONTINUOUS GIRDER C



DISCONTINUOUS GIRDER B

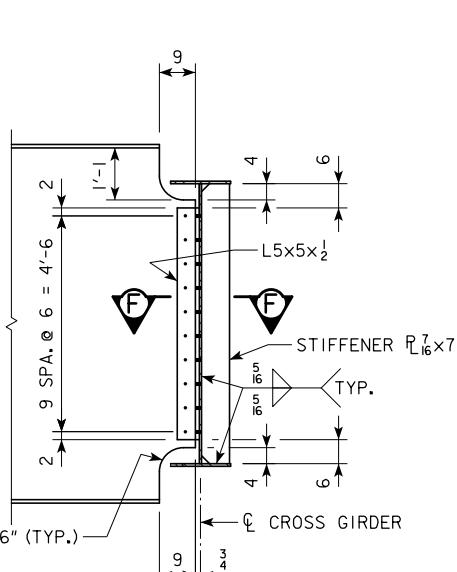


DISCONTINUOUS GIRDER E

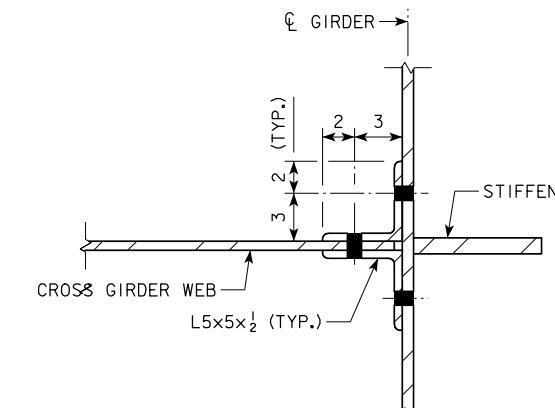


DISCONTINUOUS GIRDER G

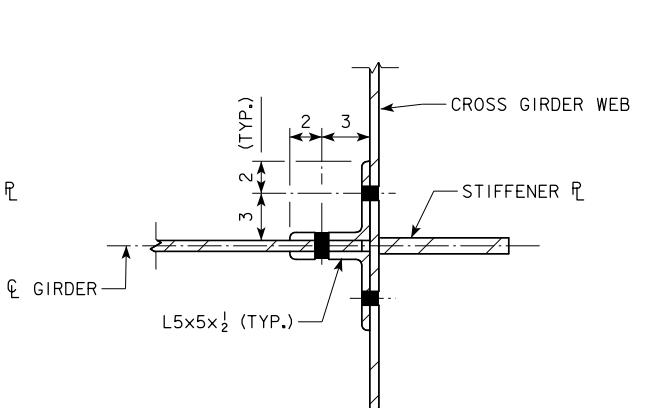
CROSS GIRDER ORIENTATION PLAN



SECTION A-A



SECTION B-B



SECTION F-F

NOTES:
CROSS GIRDERS AND CONNECTION ANGLES SHALL MEET CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4152.02 OF THE STANDARD SPECIFICATION.

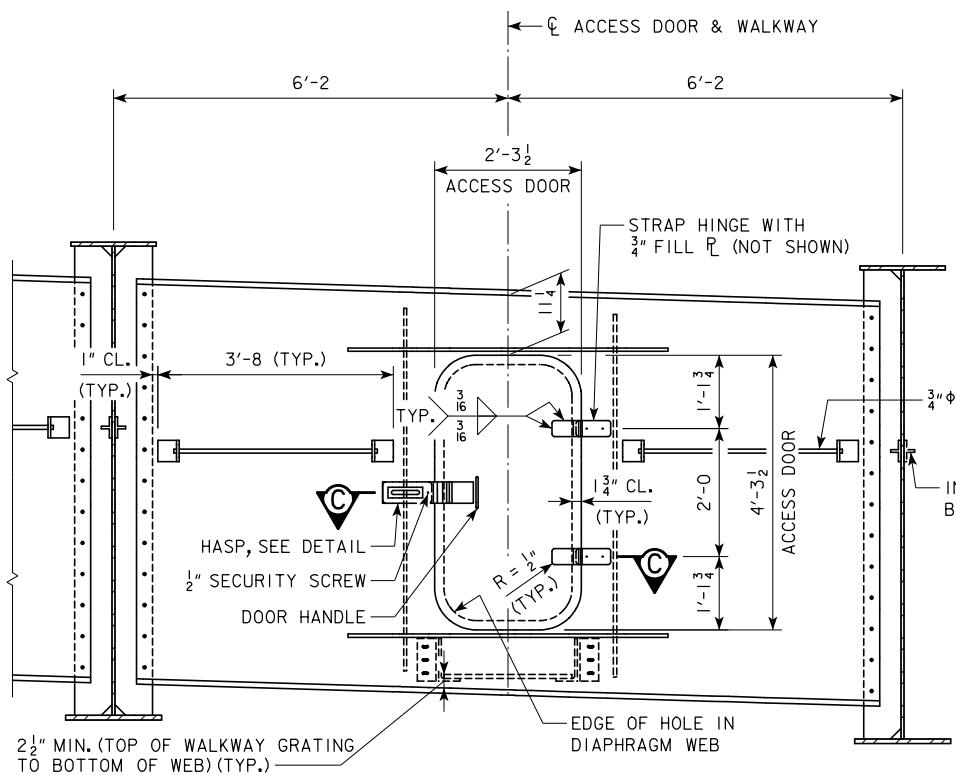
N.S. - NEAR SIDE
F.S. - FAR SIDE

▲ MEASURED WITH RESPECT TO LOCAL TANGENT.
■ $\frac{7}{8}^{\prime\prime}$ HOLE FOR WIRE ROPE, GRIND EDGES SMOOTH TO A $\frac{3}{16}$ " RADIUS. SEE INSPECTION CABLE DETAIL SHEETS FOR DETAILS.

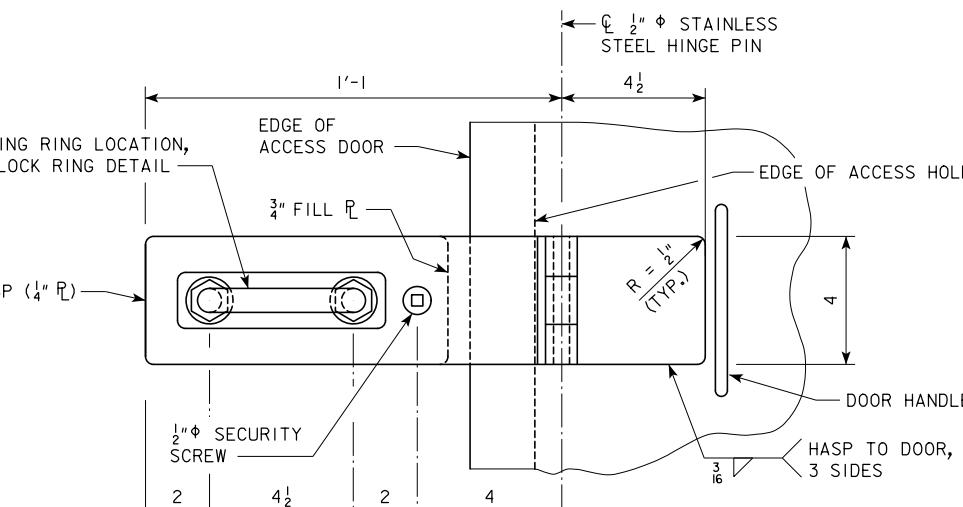
WALKWAYS AND ATTACHMENTS NOT SHOWN FOR CLARITY. SEE INSPECTION WALKWAY DETAIL SHEETS FOR DETAILS.

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
CROSS GIRDER DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018



DOOR HANDLE DETAIL



ACCESS DOOR NOTES:

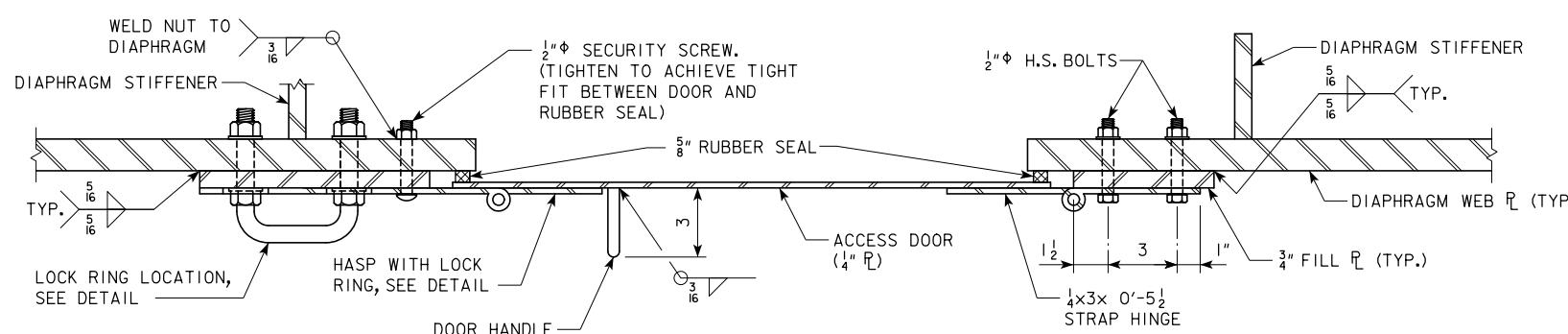
STAINLESS STEEL HINGE PIN SHALL BE ASTM A176 OR ASTM A276. SECURITY SCREWS TO BE KEYED-LOK TYPE AS MANUFACTURED BY BRYCE FASTENER OR APPROVED EQUAL AND SHALL CONFORM TO ASTM F593 (STAINLESS STEEL). CONTRACTOR TO PROVIDE 1aDOT WITH 5 ADDITIONAL SECURITY SCREWS AND 5 COMPATIBLE BITS.

CONTRACTOR TO PROVIDE HEAVY-DUTY CASE HARDENED STEEL PADLOCKS AT ALL ACCESS DOORS. THE LOCKS ARE TO BE KEYED ALIKE SO THE SAME KEY WILL OPEN ALL THE LOCKS. THE LOCKS ARE TO HAVE A $\frac{5}{16}$ " MINIMUM DIAMETER SHACKLE, 5-PIN TUMBLER, AND A MINIMUM VERTICAL CLEARANCE BETWEEN THE SHACKLE AND BODY ONLY AS REQUIRED TO PERMIT INSTALLATION (NO EXCESS CLEARANCE). CONTRACTOR SHALL SUBMIT MANUFACTURER'S INFORMATION TO THE ENGINEER FOR REVIEW AND APPROVAL.

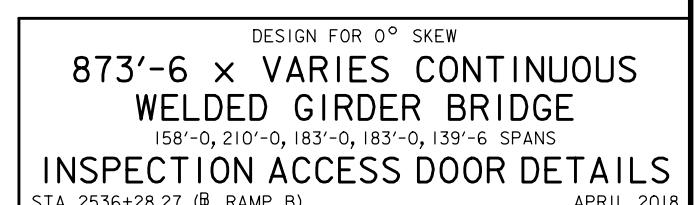
INFORMATION TO THE ENGINEER FOR REVIEW AND APPROVAL.
THE $\frac{5}{8}$ " RUBBER SEAL IS TO BE GLUED TO THE DIAPHRAGM
WITH A MANUFACTURER APPROVED ADHESIVE.
LOCK RING AND TIE-OFF LOCATION HARDWARE SHALL BE

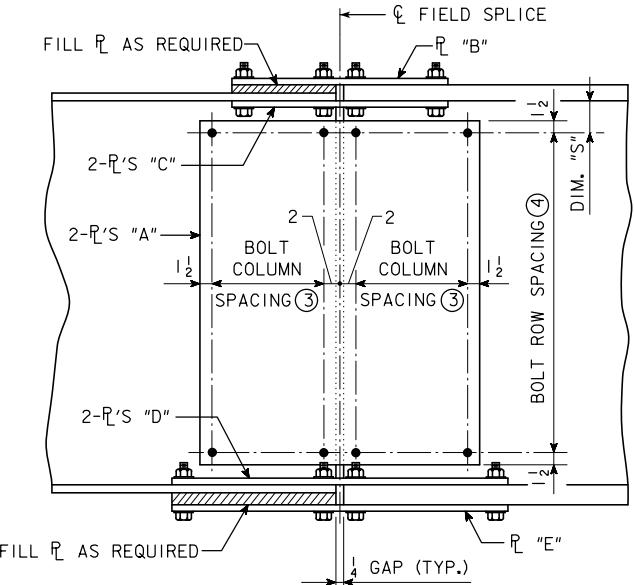
LOCKING AND SET ON LOCATION HARDWARE SHALL BE
GALVANIZED ACCORDING TO ASTM A153, CLASS C.
STAINLESS STEEL HINGE PIN, SECURITY SCREW, BITS, PADLOCKS,
RUBBER SEAL AND ADHESIVE, BOLTS, NUTS, STRAP HINGE AND
HASP SHALL BE INCIDENTAL TO THE RID ITEM "STRUCTURAL STEEL".

NOTE: FOR WALKWAY DETAILS, SEE DESIGN SHEETS 63 & 64.

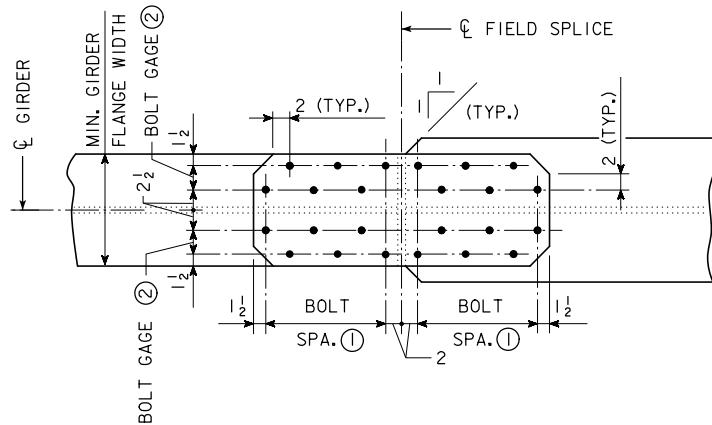


SECTION C-C

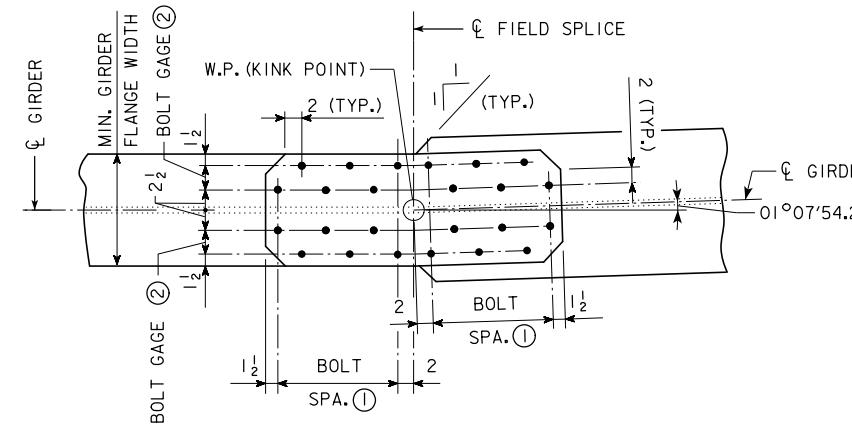




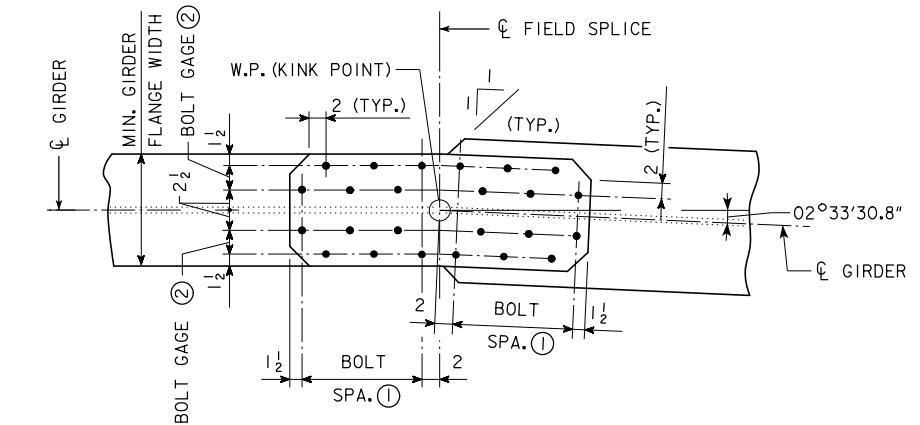
FIELD SPICE ELEVATION



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



FLANGE SPLICE NO. 7 AT GIRDER C



FLANGE SPLICE NO. 7 AT GIRDER F

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	18	$\frac{3}{8} \times 18 \times 3'-7$	$\frac{7}{16} \times 8 \times 3'-7$	9 @ 2 = 1'-6	5	$\frac{3}{8} \times 13 \times 7'-0$	1 @ 3 = 0'-3	27 @ 3 = 6'-9	$3\frac{1}{2}$	18	$\frac{1}{2} \times 8 \times 3'-7$	$\frac{7}{16} \times 8 \times 3'-7$	9 @ 2 = 1'-6	5
2, 3	18	$\frac{3}{8} \times 18 \times 3'-7$	$\frac{7}{16} \times 8 \times 3'-7$	9 @ 2 = 1'-6	5	$\frac{3}{8} \times 13 \times 7'-0$	1 @ 3 = 0'-3	27 @ 3 = 6'-9	$3\frac{1}{2}$	18	$\frac{7}{16} \times 8 \times 3'-7$	$\frac{3}{8} \times 18 \times 3'-7$	9 @ 2 = 1'-6	5
4-8	16	$\frac{3}{8} \times 16 \times 2'-11$	$\frac{7}{16} \times 7 \times 2'-11$	7 @ 2 = 1'-2	4	$\frac{3}{8} \times 13 \times 7'-0$	1 @ 3 = 0'-3	27 @ 3 = 6'-9	$3\frac{1}{2}$	18	$\frac{7}{16} \times 8 \times 3'-7$	$\frac{3}{8} \times 18 \times 3'-7$	9 @ 2 = 1'-6	5

MOMENT AND REACTION TABLE NOTES:

MOMENTS AND REACTIONS ARE UNFACTORED.

DC1 COMPRISSES ALL NON-COMPOSITE DEAD LOADS DUE TO GIRDER, INSPECTION WALKWAY AND DECK DEAD WEIGHT.

DC2 COMPRISSES COMPOSITE DEAD LOAD DUE TO BARRIER RAILS.

DW COMPRISSES COMPOSITE DEAD LOAD DUE TO FUTURE WEARING SURFACE.

MOMENT TABLE (FT-KIPS)

	POSITIVE MOMENT SPAN 1B				NEGATIVE MOMENT PIER NO. 1				POSITIVE MOMENT SPAN 2B				NEGATIVE MOMENT PIER NO. 2				POSITIVE MOMENT SPAN 3B			
	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H
DC1	2302	2129	2087	1984	-6813	-6846	-6774	-6415	2520	2493	2483	2464	-5740	-6101	-6237	-6232	1100	1202	1304	1432
DC2	393	374	354	345	-1165	-942	-928	-1097	429	439	440	427	-1022	-833	-854	-1089	203	238	260	246
DW	317	327	313	274	-841	-905	-895	-791	354	380	379	349	-717	-810	-828	-775	164	190	204	210
LL + IMPACT (TRUCK + LANE)	3601	3599	3151	3692	-5370	-4856	-4337	-5075	4118	3764	3408	4060	-5356	-4905	-4456	-5417	3532	3188	2979	3631
LL + IMPACT (TANDEM + LANE)	3053	3041	2698	3115	-3930	-3510	-3250	-3839	3485	3190	2916	3445	-4020	-3618	-3307	-4011	2978	2706	2535	3072
TOTAL	6613	6429	5905	6295	-14189	-13549	-12934	-13378	7421	7076	6710	7300	-12835	-12649	-12375	-13513	4999	4818	4747	5519

MOMENT TABLE (FT-KIPS)

	NEGATIVE MOMENT PIER NO. 3				POSITIVE MOMENT SPAN 4B				NEGATIVE MOMENT PIER NO. 4				POSITIVE MOMENT SPAN 5B													
	GIRD. A	GIRD. C	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. C	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H
DC1	-3559	-3668	-3937	-4252	-4356	1783	1761	1753	1737	1661	-3445	-3442	-3539	-3500	-3475	-3433	-3350	-3297	1449	1524	1587	1587	1624	1635	1639	1639
DC2	-655	-475	-499	-550	-796	300	257	260	270	292	-566	-366	-328	-279	-276	-321	-365	-553	182	128	95	95	85	113	154	215
DW	-413	-439	-513	-582	-557	242	247	253	269	240	-400	-411	-442	-437	-421	-414	-401	-389	187	208	226	226	220	217	214	205
LL + IMPACT (TRUCK + LANE)	-3507	-3449	-3164	-3627	-4471	3082	2804	2270	2802	3306	-2787	-2630	-2523	-2068	-1958	-2184	-2393	-2779	2229	2268	1934	1624	1642	1882	2106	2237
LL + IMPACT (TANDEM + LANE)	-2496	-2521	-2321	-2580	-3193	2593	2389	1948	2409	2799	-2108	-1921	-1853	-1501	-1415	-1609	-1770	-2094	1893	1882	1663	1400	1390	1578	1817	1895
TOTAL	-8134	-8031	-8113	-9011	-10180	5407	5069	4536	5078	5499	-7198	-6849	-6832	-6284	-6130	-6352	-6509	-7018	4047	4128	3842	3532	3571	3847	4113	4296

REACTION TABLE (KIPS)

	REACTION WEST ABUTMENT				REACTION PIER NO. 1				REACTION PIER NO. 2				REACTION PIER NO. 3				REACTION PIER NO. 4				REACTION PIER NOS. 5 & 5A BACK BEARING												
	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. C	GIRD. D	GIRD. F	GIRD. H	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H	GIRD. A	GIRD. B	GIRD. C	GIRD. D	GIRD. E	GIRD. F	GIRD. G	GIRD. H
DC1 + DC2	105	96	94	96	421	399	398	407	384	372	376	400	272	247	274	301	340	270	230	238	233	230	227	225	259	81	78	82	58	59	79	76	86
DW	12	12	12	11	43	49	49	42	39	46	46	41	25	27	33	38	36	25	26	28	28	27	26	25	24	9	10	10	8	8	9	9	9
LL + IMPACT (TRUCK + LANE)	122	125	124	115	266	262	252	260	266	264	252	265	188	198	199	234	251	170	163	169	157	140	145	155	169	101	106	107	95	93	94	101	99
LL + IMPACT (TANDEM + LANE)	107	116	115	101	195	198	197	191	196	201	197	195	137	151	158	186	183	123	130	129	123	114	120	124	85	96	97	87	84	83	88	81	
TOTAL	239	233	230	222	730	710	699	709	689	682	674	706	485	472	506	573	627	465	419	435	418	397	398	405	452	191	194	199	161	160	182	186	194

DESIGN FOR 0° SKEW

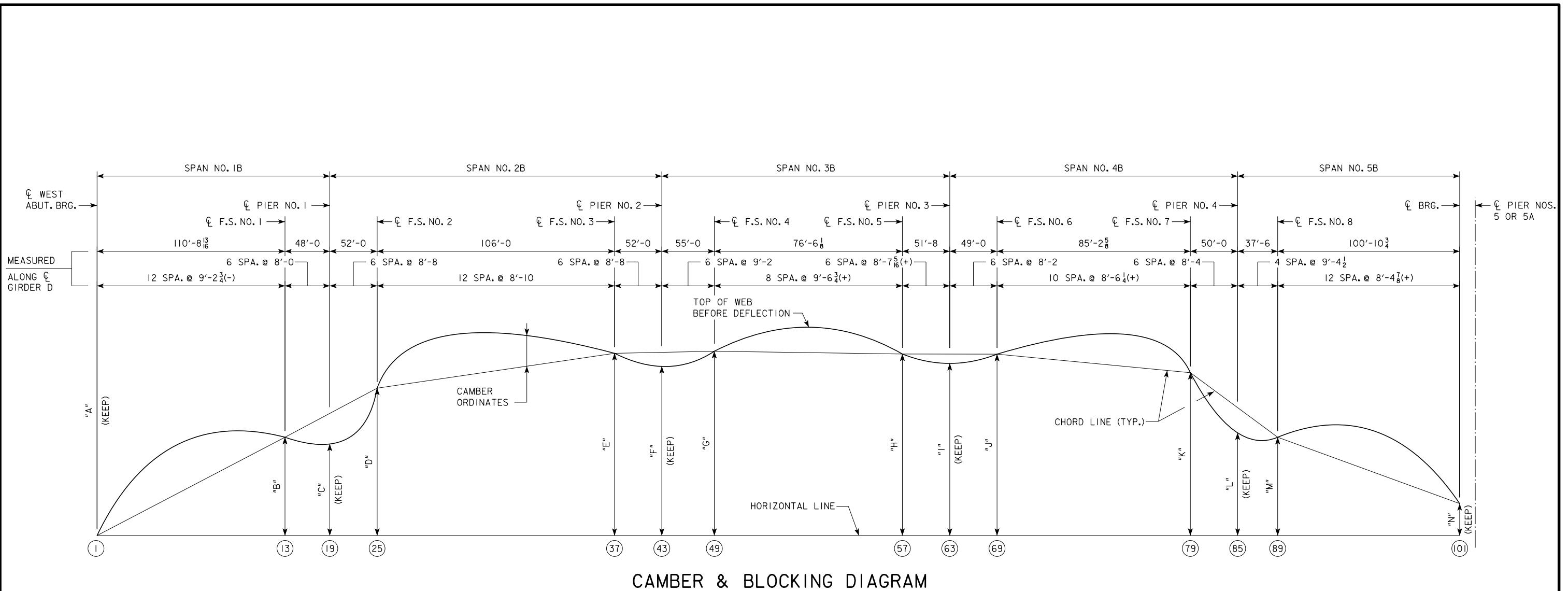
873'-6 x VARIES CONTINUOUS

WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

MOMENT & REACTION TABLES

STA.



CAMBER & BLOCKING DIAGRAM

NOTES:

FOR CAMBER ORDINATES, SEE DESIGN SHEET 52.
FOR DEFLECTION ORDINATES, SEE DESIGN SHEETS 53 & 54.
CAMBER ORDINATES ARE MEASURED FROM A CHORD LINE BETWEEN FIELD SPLICES. UPWARD CAMEBS ARE POSITIVE.
DEFLECTION ORDINATES FOR CAMBER INCLUDE DEFLECTIONS DUE TO ALL DEAD LOADS EXCEPT FUTURE WEARING SURFACE. DOWNWARD DEFLECTIONS ARE POSITIVE.

TOP OF GIRDER ELEVATIONS FOR HAUNCH CALCULATIONS SHALL BE SURVEYED PRIOR TO THE PLACEMENT OF FORMS.

HAUNCH THICKENING DIAGRAM NOT PROVIDED BECAUSE THE HAUNCH DIMENSION FROM BOTTOM OF DECK TO TOP OF GIRDER WEB SHOULD THEORETICALLY BE A CONSTANT DIMENSION. (SEE TYPICAL DECK AND HAUNCH DETAIL, DESIGN SHEET 38). GIRDER WEB SHALL BE CUT TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE CORRECTION.

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

CAMBERS VALUES ARE GIVEN FOR THE GIRDER IN THE NO LOAD POSITION. FOR INDIVIDUAL GIRDER SPAN LENGTHS AND DISTANCE TO FIELD SPLICES, SEE GIRDER FRAMING AND GIRDER ELEVATION SHEETS.

FOR LOCATION OF POINTS, SEE TOP OF DECK DIAGRAMS ON TOP OF DECK ELEVATION SHEETS.

THE DEFLECTIONS SHOWN IN THE DEFLECTION DIAGRAMS AND MISCELLANEOUS DATA TABLES IN THESE PLANS WERE COMPUTED ASSUMING THE INSPECTION WALKWAYS WOULD BE INSTALLED PRIOR TO THE CONCRETE DECK. IF AN ALTERNATE SEQUENCE IS CHOSEN WHEN ERECTING THE BRIDGE, THE CONTRACTOR SHALL PROVIDE CALCULATIONS FOR REVISED CAMBER AND BLOCKING DATA, DEFLECTION DATA AND GIRDER LINE HAUNCH DATA WITH THE SHOP DRAWINGS.

BLOCKING DATA (FEET)														
LINE POINT	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"
GIRDER LINE A	0.00	1.43	1.73	2.41	3.10	3.03	3.15	3.08	3.06	3.14	2.76	1.94	1.40	0.09
GIRDER LINE B	-	-	-	-	-	-	-	-	-	2.05	1.37	0.91	0.00	
GIRDER LINE C	-	-	-	-	-	-	-	1.65	1.69	1.81	1.51	0.93	0.61	0.00
GIRDER LINE D	0.00	1.60	2.02	2.78	3.63	3.66	3.88	3.94	3.96	4.07	3.78	3.34	3.13	2.03
GIRDER LINE E	-	-	-	-	-	-	-	-	-	1.79	1.40	1.14	0.00	
GIRDER LINE F	0.00	1.76	2.27	3.07	3.97	4.03	4.29	4.41	4.33	4.39	4.08	3.62	3.39	2.38
GIRDER LINE G	-	-	-	-	-	-	-	-	-	1.78	1.34	1.08	0.00	
GIRDER LINE H	0.00	1.92	2.52	3.32	4.21	4.28	4.56	4.68	4.47	4.48	4.15	3.67	3.40	2.19

* SEE DESIGN SHEET 77 FOR CAMBER AND BLOCKING LOCATIONS ON DISCONTINUOUS GIRDERS B, C, E AND G.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
CAMBER & BLOCKING

STA. 2536+28.27 (RAMP B)

APRIL 2018

CAMBER ORDINATES (INCHES)

* SEE DESIGN SHEET 77 FOR CAMBER ORDINATE LOCATIONS ON DISCONTINUOUS GIRDERS B-C, E, AND G.

DESIGN FOR 0° SKEW
VARIES CONTINUOUS
GIRDER BRIDGE
-0, 183'-0, 183'-0, 139'-6 SPANS
ER & BLOCKING

STA 2536+28 37 (B RAMP B)

APRIL 2018

DEFLECTION ORDINATES DUE TO WEIGHT OF DECK AND BARRIERS (DOWNWARD DEFLECTIONS ARE POSITIVE) (INCHES)

		SPAN NO. 1B												F.S. NO. 1	SPAN NO. 1B								F.S. NO. 1		SPAN NO. 2B						F.S. NO. 2		SPAN NO. 2B					
LINE	POINT	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	26	27	28	29	30	31						
GIRDER LINE A	0.00	0.48	0.92	1.31	1.61	1.83	1.94	1.95	1.87	1.70	1.46	1.17	0.87	0.61	0.38	0.18	0.05	0.00	0.00	0.17	0.41	0.72	1.09	1.49	1.92	2.35	2.75	3.09	3.36	3.54	3.62							
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE D	0.00	0.45	0.87	1.23	1.51	1.72	1.82	1.83	1.75	1.59	1.36	1.09	0.80	0.55	0.33	0.15	0.03	-0.01	0.00	0.17	0.41	0.72	1.09	1.49	1.92	2.34	2.73	3.07	3.33	3.50	3.57							
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE F	0.00	0.43	0.82	1.16	1.43	1.62	1.72	1.73	1.65	1.50	1.28	1.02	0.74	0.51	0.30	0.13	0.02	-0.02	0.00	0.18	0.42	0.73	1.10	1.50	1.92	2.34	2.73	3.06	3.31	3.48	3.54							
GIRDER LINE G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE H	0.00	0.41	0.78	1.11	1.36	1.54	1.64	1.57	1.42	1.21	0.96	0.70	0.47	0.27	0.11	0.01	-0.02	0.00	0.18	0.44	0.75	1.12	1.53	1.94	2.36	2.74	3.07	3.31	3.47	3.53								
		SPAN NO. 2B					F.S. NO. 3	SPAN NO. 2B					£ PIER NO. 2	SPAN NO. 3B					F.S. NO. 4	SPAN NO. 3B						F.S. NO. 5*	SPAN NO. 3B											
LINE	POINT	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62						
GIRDER LINE A	3.60	3.48	3.27	2.96	2.59	2.17	1.74	1.31	0.91	0.55	0.24	0.00	-0.10	-0.12	-0.08	0.02	0.15	0.30	0.45	0.58	0.66	0.69	0.66	0.58	0.46	0.31	0.18	0.07	-0.02	-0.07	-0.06							
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.16	0.07	-0.01	-0.05	-0.05							
GIRDER LINE D	3.55	3.42	3.20	2.90	2.53	2.11	1.68	1.26	0.86	0.52	0.23	0.00	-0.08	-0.09	-0.03	0.09	0.25	0.42	0.59	0.74	0.84	0.88	0.86	0.78	0.66	0.49	0.34	0.20	0.08	0.00	-0.03							
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE F	3.51	3.38	3.15	2.85	2.47	2.06	1.63	1.21	0.83	0.49	0.21	0.00	-0.06	-0.05	0.03	0.17	0.35	0.55	0.74	0.91	1.03	1.09	1.08	1.00	0.87	0.69	0.51	0.33	0.18	0.06	0.00							
GIRDER LINE G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
GIRDER LINE H	3.49	3.35	3.12	2.81	2.43	2.02	1.59	1.18	0.80	0.47	0.20	0.00	-0.04	-0.01	0.09	0.26	0.46	0.69	0.91	1.10	1.23	1.30	1.30	1.22	1.07	0.88	0.67	0.47	0.27	0.12	0.03							
		£ PIER NO. 3	SPAN NO. 4B					F.S. NO. 6	SPAN NO. 4B					F.S. NO. 7*	SPAN NO. 4B					£ PIER NO. 4	SPAN NO. 5B						F.S. NO. 8	SPAN NO. 5B										
LINE	POINT	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93						
GIRDER LINE A	0.00	0.16	0.36	0.60	0.86	1.14	1.41	1.67	1.88	2.05	2.14	2.17	2.13	2.02	1.84	1.62	1.35	1.07	0.78	0.51	0.28	0.11	0.00	0.02	0.10	0.25	0.43	0.59	0.74	0.86	0.95							
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.15	0.89	0.64	0.41	0.22	0.09	0.00	0.02	0.11	0.26	0.44	0.61	0.76	0.89	0.98							
GIRDER LINE C	0.00	0.14	0.33	0.56	0.82	1.09	1.36	1.61	1.82	1.97	2.06	2.09	2.04	1.92	1.74	1.51	1.25	0.97	0.70	0.45	0.24	0.09	0.00	0.03	0.12	0.28	0.47	0.65	0.81	0.94	1.03							
GIRDER LINE D	0.00	0.13	0.31	0.54	0.79	1.06	1.32	1.57	1.78	1.93	2.02	2.04	1.99	1.87	1.69	1.46	1.19	0.92	0.66	0.42	0.22	0.08	0.00	0.03	0.14	0.31	0.50	0.68	0.85	0.98	1.07							
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.01	0.77	0.55	0.35	0.18	0.07	0.00	0.04	0.15	0.32	0.52	0.71	0.87	1.01	1.10							
GIRDER LINE F	0.00	0.12	0.28	0.50	0.75	1.01	1.28	1.53	1.74	1.89	1.97	1.99	1.93	1.81	1.63	1.39	1.13	0.86	0.61	0.39	0.20	0.07	0.00	0.04	0.16	0.34	0.55	0.73	0.89	1.03	1.12							
GIRDER LINE G	-	-	-	-</																																		

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

* SEE DESIGN SHEET 77 FOR DEFLECTION ORDINATE LOCATIONS ON DISCONTINUOUS GIRDERS B, C, E AND G.

DESIGN FOR 0° SKEW
VARIES CONTINUOUS
D GIRDER BRIDGE
'-0, 183'-0, 183'-0, 139'-6 SPANS
ER & BLOCKING

CAMDLE STA 2E3C L38 37 (B RAMB R)

ABRIL 2018

TABLE OF GIRDER LINE HAUNCH ELEVATIONS

	£ WEST ABUT. BRG.	SPAN NO. 1B												F.S. NO. 1	SPAN NO. 1B							£ PIER NO. 1	SPAN NO. 2B						SPAN NO. 2B					
LINE	POINT	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	26	27	28	29	30	31		
GIRDER LINE A	780.63	780.83	781.03	781.22	781.39	781.56	781.71	781.79	781.86	781.92	781.97	782.01	782.04	782.08	782.11	782.14	782.21	782.28	782.36	782.46	782.57	782.67	782.78	782.89	782.99	783.10	783.20	783.29	783.38	783.45	783.51			
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE D	780.02	780.21	780.41	780.59	780.77	780.93	781.09	781.19	781.29	781.38	781.45	781.52	781.59	781.65	781.70	781.76	781.85	781.94	782.03	782.14	782.26	782.38	782.50	782.62	782.74	782.86	782.98	783.08	783.18	783.27	783.35			
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE F	779.40	779.60	779.79	779.97	780.14	780.31	780.46	780.60	780.72	780.84	780.94	781.04	781.14	781.22	781.30	781.39	781.48	781.57	781.67	781.79	781.91	782.04	782.16	782.29	782.42	782.54	782.66	782.77	782.87	782.96	783.04			
GIRDER LINE G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE H	778.78	778.98	779.17	779.35	779.52	779.68	779.84	780.00	780.15	780.30	780.43	780.56	780.69	780.80	780.90	781.01	781.11	781.20	781.30	781.42	781.54	781.67	781.80	781.92	782.05	782.17	782.29	782.40	782.50	782.59	782.67			
		SPAN NO. 2B					F.S. NO. 3	SPAN NO. 2B					£ PIER NO. 2	SPAN NO. 3B					F.S. NO. 4	SPAN NO. 3B						F.S. NO. 5*	SPAN NO. 3B							
LINE	POINT	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62		
GIRDER LINE A	783.56	783.60	783.63	783.65	783.66	783.67	783.67	783.67	783.66	783.66	783.66	783.66	783.68	783.69	783.71	783.73	783.75	783.77	783.79	783.80	783.80	783.80	783.79	783.77	783.74	783.71	783.68	783.65	783.66	783.67	783.68			
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	783.78	783.75	783.75	783.77	783.78	783.80			
GIRDER LINE D	783.41	783.47	783.51	783.54	783.57	783.59	783.60	783.61	783.64	783.66	783.67	783.70	783.74	783.77	783.81	783.84	783.88	783.91	783.94	783.96	783.98	783.98	783.98	783.97	783.95	783.93	783.91	783.94	783.96	783.96				
GIRDER LINE E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE F	783.11	783.17	783.22	783.26	783.29	783.31	783.33	783.35	783.37	783.39	783.41	783.43	783.47	783.51	783.55	783.59	783.64	783.68	783.72	783.75	783.78	783.80	783.81	783.81	783.81	783.79	783.78	783.76	783.75	783.74	783.73			
GIRDER LINE G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GIRDER LINE H	782.74	782.80	782.85	782.89	782.92	782.94	782.96	782.98	783.00	783.01	783.04	783.06	783.10	783.14	783.18	783.23	783.28	783.32	783.36	783.40	783.43	783.45	783.46	783.45	783.44	783.42	783.40	783.36	783.32	783.28				
	£ PIER NO. 3	SPAN NO. 4B					F.S. NO. 6	SPAN NO. 4B					F.S. NO. 7*	SPAN NO. 4B					£ PIER NO. 4	SPAN NO. 5B						F.S. NO. 8	SPAN NO. 5B							
LINE	POINT	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93		
GIRDER LINE A	783.70	783.72	783.73	783.73	783.73	783.73	783.73	783.72	783.71	783.69	783.67	783.64	783.60	783.55	783.49	783.42	783.35	783.27	783.15	783.00	782.86	782.71	782.57	782.43	782.29	782.15	782.02	781.91	781.80	781.68	781.56			
GIRDER LINE B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	783.44	783.36	783.25	783.13	783.02	782.90	782.79	782.67	782.55	782.43	782.32	782.22	782.13	782.03	781.94		
GIRDER LINE C	783.82	783.85	783.86	783.87	783.88	783.89	783.89	783.90	783.89	783.88	783.87	783.84	783.81	783.77	783.72	783.66	783.60	783.53	783.44	783.34	783.24	783.15	783.06	782.97	782.88	782.80	782.72	782.65	782.59	782.53	782.47			
GIRDER LINE D	783.98	784.01	784.02	784.03	784.04	784.04	784.05	784.05	784.05	784.04	784.02	784.00	783.97	783.93	783.88	783																		

MISCELLANEOUS DATA TABLE

		GIRDER LINE	C. WEST ABUT. BRG.	SPAN NO. 1B												F.S. NO. 1	SPAN NO. 1B						C. PIER NO. 1	SPAN NO. 2B						F.S. NO. 2	SPAN NO. 2B					
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	26	27	28	29	30	31				
ANTICIPATED DEFLECTION DUE TO DECK AND BARRIER (INCHES)		A	0	0	1/16	1/16	5/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	0	0	3/16	7/16	11/16	1/16	1/2	1/16	2/8	2/4	3/16	3/8	3/16	3/5	3/8		
		B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
		C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
		D	0	7/16	7/8	1/4	1/2	1/16	1/13	1/16	1/13	1/4	1/16	1/3	1/16	1/3	1/16	1/16	9/16	5/16	1/8	1/16	0	0	3/16	7/16	3/4	1/16	1/2	1/16	2/16	2/3	3/16	3/5	3/2	3/16
		E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		F	0	7/16	13/16	1/3	1/16	1/7	1/8	1/4	1/3	1/8	1/2	1/4	1	3/4	1/2	5/16	1/8	0	0	3/16	7/16	3/4	1/8	1/2	1/16	2/8	2/4	3/16	3/5	3/2	3/16			
		G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		H	0	7/16	13/16	1/8	1/8	1/6	1/8	1/5	1/8	1/7	1/16	1/3	1/16	1/5	1/16	1/2	4	1/8	0	0	3/16	7/16	3/4	1/8	1/2	1/16	2/8	2/4	3/16	3/5	3/2	3/16		
CROSS SLOPE ADJUSTMENTS (INCHES)		A	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	5/16	5/16	1/4	1/16	1/4	1/16	3/8	1/4	1/16	1/8	1/8		
		B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		D	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	5/16	5/16	1/4	1/16	1/4	1/16	3/8	1/4	1/16	1/8	1/8			
		E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		F	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	5/16	5/16	1/4	1/16	1/4	1/16	3/8	1/4	1/16	1/8	1/8		
		G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		H	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	5/16	5/16	1/4	1/16	1/4	1/16	3/8	1/4	1/16	1/8	1/8		
ALLOWABLE FIELD HAUNCH (INCHES)		MIN.	ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		MAX.	A	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9			
		B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		D	2/9	2/9	2/9	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9		
		E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		F	2/9	2/9	2/9	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9		
		G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ANTICIPATED DEFLECTION DUE TO DECK AND BARRIER (INCHES)		H	2/9	2/9	2/9	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9	2/16	2/9		
CROSS SLOPE ADJUSTMENTS (INCHES)		A	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62			
		B	3/8	3/2	3/4	2/15	2/9	2/16	1/3	1/4	1/5	1/6	1/4	0	-1/8	-1/8	-1/16	0	1/8	5/16	7/16	9/16	11/16	13/16</td												

MISCELLANEOUS DATA TABLE

* SEE DESIGN SHEET 77 FOR MISCELLANEOUS DATA LOCATIONS ON DISCONTINUOUS GIRDERS B, C, E AND G.

DESIGN FOR 0° SKEW

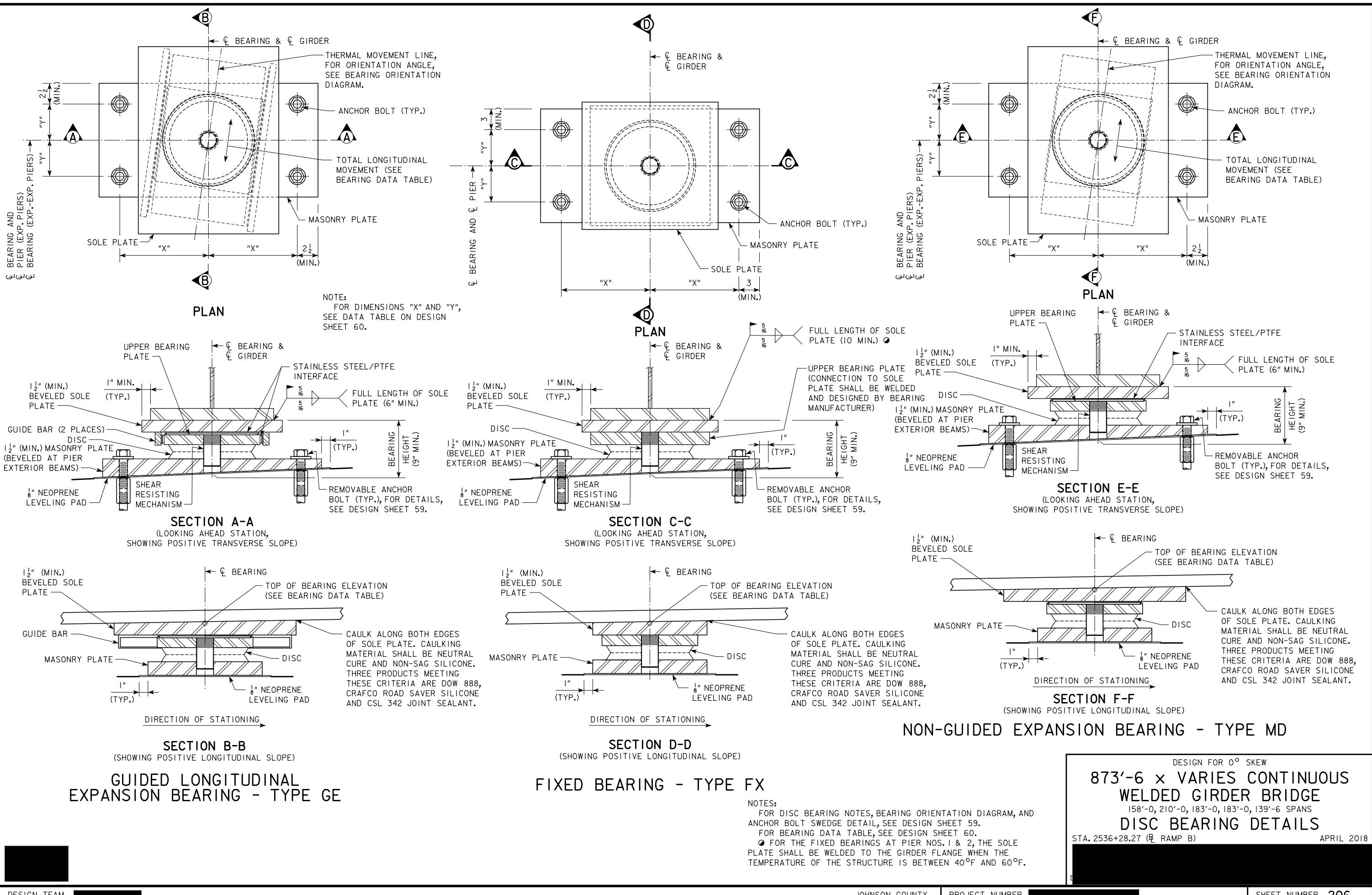
DESIGN FOR 6 SCREW
873'-6 X VARIES CONTINUOUS

WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
EIELD LAUNCH DATA

FIELD A
STA 2570 00-07 (B, BAND B)

APRIL 2018



DISC BEARING NOTES:

THE DISC BEARING ASSEMBLIES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2434 OF THE STANDARD SPECIFICATIONS.
THE SOLE PLATES SHALL BE TAPERED TO THE LONGITUDINAL SLOPE SHOWN IN THE BEARING DATA TABLE 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 MASONRY PLATES AT GIRDERS A AND H AT ALL PIERS AND GIRDERS D AND E AT PIERS 5 AND 5A SHALL BE TAPERED IN THE TRANSVERSE DIRECTION TO THE SLOPE SHOWN IN THE BEARING DATA TABLE.

THE BEARINGS SHALL BE DESIGNED FOR THE LOADS AND MOVEMENTS SHOWN IN THE BEARING DATA TABLE OCCURRING SIMULTANEOUSLY. ALL LOADS SHOWN ARE FACORED LOADS. MINIMUM VERTICAL LOADS SHOWN ARE DUE TO MINIMUM DEAD LOADS (DC) AND L.L. WITH IMPACT CAUSING UPLIFT. MAXIMUM VERTICAL LOADS SHOWN ARE DUE TO DEAD LOADS (DC), FUTURE WEARING COURSE AND UTILITIES (DW) AND L.L. WITH IMPACT.

BEARINGS SHALL BE DESIGNED TO ACCOMMODATE A SERVICE ROTATION OF 0.02 RADIANS IN EACH DIRECTION.

ALL BEARINGS SHALL BE DESIGNED TO BE FULLY REMOVABLE.

FOR GUIDED EXPANSION AND MULTI-DIRECTIONAL BEARINGS, STAINLESS STEEL SURFACES SHALL EXTEND A MINIMUM OF 1 1/2" EACH WAY BEYOND THE SPECIFIED MOVEMENT RANGE. WHERE VALUES OF MOVEMENT ARE NOT SPECIFIED, STAINLESS STEEL SURFACES SHALL EXTEND A MINIMUM OF 1 1/2" BEYOND THE 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).

AT 50°F, THE SOLE PLATE SHALL BE CENTERED OVER THE LOWER BEARING ASSEMBLY. FOR OTHER INSTALLATION TEMPERATURES, THE SOLE PLATE POSITION SHALL BE ADJUSTED AS NOTED ON DESIGN SHEET 40.

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

THE GAP BETWEEN THE GUIDE BARS AND BEARINGS ON THE "GE" TYPE BEARINGS SHALL BE 1/4".

NON-STAINLESS STEEL COMPONENTS OF BEARING ASSEMBLIES SHALL BE OF ASTM A709 GRADE 50W STEEL, EXCEPT MASONRY PLATES MAY BE GRADE 36 AND SHALL BE GALVANIZED PER ASTM A 123.

THE BEARING HEIGHT NOTED IN THE BEARING DATA TABLE REPRESENTS THE ASSUMED TOTAL HEIGHT OF THE BEARING ASSEMBLY PLUS THE 1/8" NEOPRENE LEVELING PAD. THIS HEIGHT WAS USED TO ESTABLISH THE PEDESTAL AND PIER CAP ELEVATIONS AS NOTED ON THE PIER AND ABUTMENT DETAIL SHEETS. THE MINIMUM PEDESTAL HEIGHT, DEPTH OF CAP, AND/OR COLUMN HEIGHT SHALL NOT BE CHANGED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. THE ACTUAL BEARING HEIGHT DETERMINED BY THE BEARING MANUFACTURER SHALL BE USED TO SET THE FINAL TOP OF PEDESTAL AND PIER CAP 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. 9" MINIMUM BEARING HEIGHT SHALL BE PROVIDED TO ACCOMMODATE FUTURE JACKING OPERATIONS FOR BEARING REPLACEMENT.

THE 1/8" NEOPRENE LEVELING PAD SHALL BE 1" LARGER IN EACH DIMENSION THAN THE BEARING SURFACE OF THE MASONRY PLATE. LEVELING PAD SHALL BE OF 50, 60, OR 70 DUROMETER NEOPRENE AND MEET THE REQUIREMENTS OF SECTION 4195.02 OF THE STANDARD SPECIFICATIONS.

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF MATERIALS I.M. 453.08. ANCHOR BOLTS SHALL BE AS PER ASTM F1554, GRADE 105. ANCHOR BOLT LAYOUT SHOWN IN THE DETAILS IS BASED ON PRELIMINARY BEARING DESIGN PROVIDED BY TWO BEARING VENDORS. THE ANCHOR BOLT LAYOUT WAS USED IN SETTING THE GEOMETRY OF THE ABUTMENT AND PIER 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 DISTANCE AS SPECIFIED IN THE BEARING DATA TABLE, NOT INCLUDING THE DEPTH OF THE PEDESTAL CONCRETE. 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.

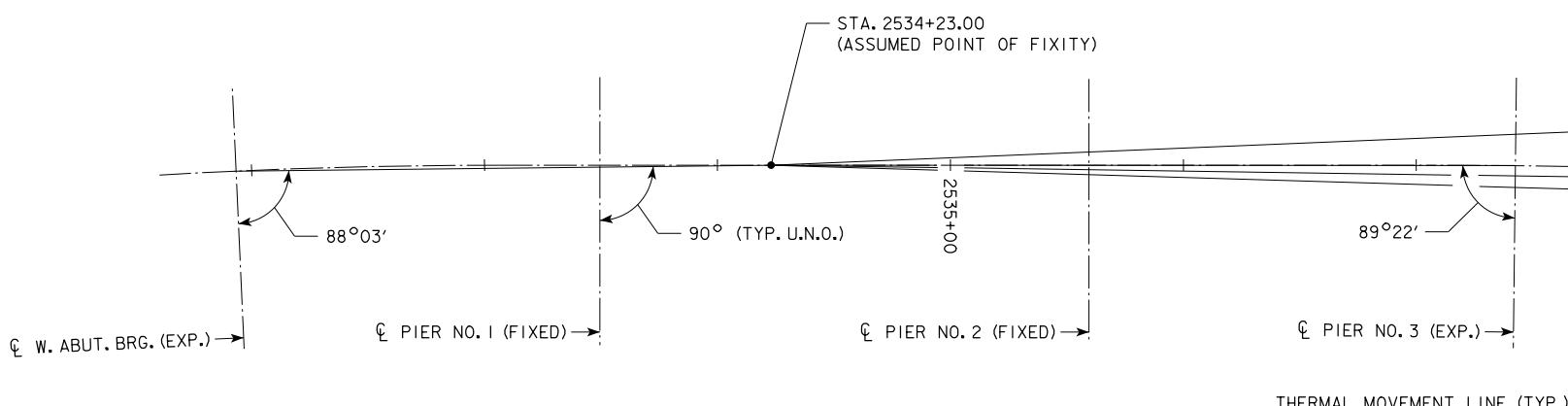
ANCHOR BOLTS ARE TO BE PRESSET IN ACCORDANCE WITH 2405.03, H, 2 OF THE STANDARD SPECIFICATIONS.

HOLE DIAMETER FOR THE ANCHOR BOLTS IN THE MASONRY PLATE SHALL BE 1/4" LARGER THAN THE ANCHOR BOLT DIAMETER.

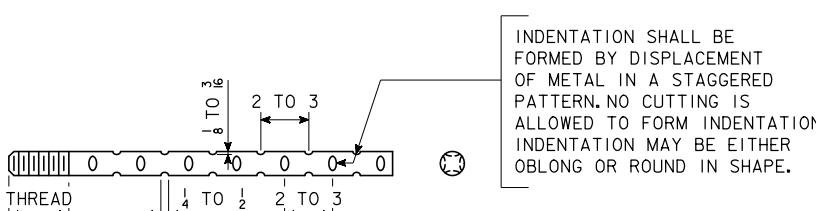
THE COST OF FURNISHING AND INSTALLING THE THREADED COUPLER NUTS SHALL BE INCLUDED IN THE PRICE BID FOR "DISC BEARING ASSEMBLIES".

FIELD WELDING SHALL MEET THE REQUIREMENTS OF MATERIALS I.M. 558.

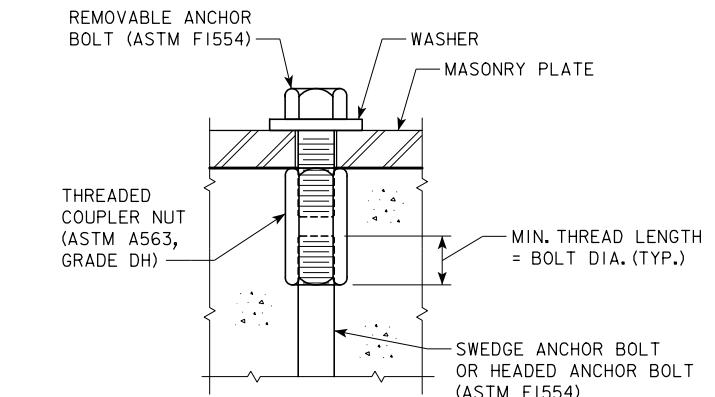
THE LOWER BEARING HORIZONTAL ANCHOR BOLTS SHALL BE FASTENED TO A THREADED COUPLER NUT AS SHOWN. THE COUPLER NUT SHALL MEET THE REQUIREMENTS OF ASTM A563, GRADE DH. IN ADDITION TO THESE REQUIREMENTS, THE ULTIMATE STRENGTH OF THE COUPLER NUT SHALL BE MINIMUM BE 90% OF ULTIMATE TENSILE STRENGTH OF ANCHOR BOLTS AND DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH. THE MINIMUM THREAD ENGAGEMENT SHALL BE THE DIAMETER OF THE BOLT OR THE LENGTH REQUIRED TO DEVELOP THE STRENGTH NOTED. THE THREAD ENGAGEMENT SHALL BE SHOWN ON THE SHOP DRAWINGS. THE CONTRACTOR SHALL ENSURE MINIMUM THREAD ENGAGEMENT OF THE EMBEDDED SWEDGE ANCHOR AND THE REMOVABLE ANCHOR BOLT THRU USE OF INTERNAL STOPS, SIGHT HOLES, OR OTHER MEANS. THE REMOVABLE ANCHOR BOLT SHALL BE INSTALLED WITH RIGHT HAND THREADS.



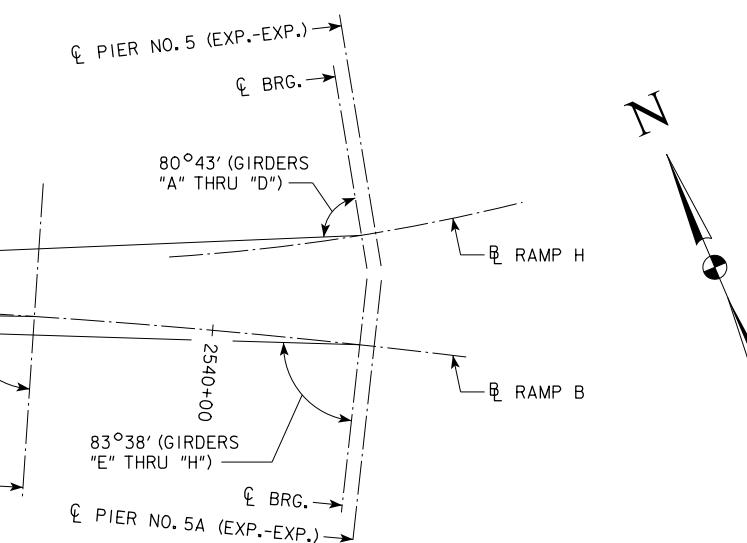
BEARING ORIENTATION



ANCHOR BOLT SWEDGE DETAIL



REMOVABLE ANCHOR BOLT DETAIL



DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DISC BEARING DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

BEARING DATA TABLE

LOCATION	TYPE	GIRDER LINE	TOP OF BEARING ELEVATION	LONGITUDINAL SLOPE OF SOLE PLATE (%)	TRANSVERSE SLOPE OF MASONRY PLATE (%)	BEARING HEIGHT (MIN.) (INCHES)	STRENGTH		EXTREME EVENT		SERVICE		TOTAL LONGITUDINAL MOVEMENT (INCHES)	ANCHOR BOLTS							
							VERTICAL LOAD		HORIZONTAL LOAD (KIPS) <input checked="" type="checkbox"/>		HORIZONTAL LOAD (KIPS) <input checked="" type="checkbox"/>			VERTICAL LOAD		HORIZONTAL LOAD (KIPS) <input checked="" type="checkbox"/>					
							MAX. (KIPS)	MIN. (KIPS)	TRANSV.	LONGIT.	TRANSV.	LONGIT.		MAX. (KIPS)	MIN. (KIPS)	TRANSV.	LONGIT.				
WEST ABUTMENT	GE	"A"	772.97	+1.77	0.00	9	361	25	20	-	21	-	238	61	12	-	2.7	16	6	4-1½"φ	1'-6
		"D"	772.35		0.00																
		"F"	771.74		0.00																
		"H"	771.12		0.00																
PIER NO. 1	FX	"A"	774.61	+1.21	-2.86	9	1057	262	60	98	● 114		731	347	39	77	0.0	16	6	4-2"φ	2'-0
		"D"	774.28		0.00																
		"F"	773.92		0.00																
		"H"	773.55		-2.86																
PIER NO. 2	FX	"A"	775.91	+0.46	-1.62	9	1025	218	53	56	● 74		706	311	29	46	0.0	16	6	4-2"φ	2'-0
		"D"	775.92		0.00																
		"F"	775.68		0.00																
		"H"	775.31		-1.62																
PIER NO. 3	GE	"A"	775.97	-0.18	-1.13	9	917	143	37	-	67	-	626	201	20	-	3.7	16	6	4-1½"φ	1'-6
		"C"	776.10		0.00																
		"D"	776.26		0.00																
		"F"	776.01		0.00																
PIER NO. 4	MD	"A"	775.53	-0.18	-1.13	9	917	143	37	-	67	-	626	201	20	-	3.7	16	6	4-1½"φ	1'-6
		"B"	775.99		-0.21																
		"C"	775.11		0.00																
		"D"	775.37		0.00																
	GE	"E"	775.67	-0.83	0.00	9	672	158	40	-	67	-	465	202	23	-	5.9	16	6	4-1½"φ	1'-6
		"F"	775.64		0.00																
	MD	"G"	775.34		0.00																
		"H"	775.04		0.00																
PIER NO. 5 BACK BEARING	MD	"A"	774.77	-0.98	-0.21	9	672	158	40	-	67	-	465	202	23	-	5.9	16	6	4-1½"φ	1'-6
		"B"	774.89		-0.21																
	GE	"C"	775.11		0.00																
		"D"	775.37		0.00																
PIER NO. 5A BACK BEARING	MD	"E"	774.47	-0.98	+3.76	10.00*	306	29	29	-	33	-	200	53	22	-	7.5	16	5.5	4-1½"φ	1'-6
		"F"	774.39		0.00																
	GE	"G"	774.27		+3.76																
		"H"	774.13		-3.28		294	43	20	-	20	-	194	53	21	-	7.5	16	5.5	4-1½"φ	1'-6
PIER NO. 5A BACK BEARING	MD	"E"	773.73	-1.32	0.00	294	43	20	-	20	-	194	53	21	-	7.5	16	5.5	4-1½"φ	1'-6	
		"F"	773.32		-3.28																

NOTE:
 ● BEARINGS SHALL BE DESIGNED FOR THIS FORCE APPLIED IN ANY SINGLE DIRECTION.
 □ THE TRANSVERSE DIRECTION IS PERPENDICULAR TO G GIRDER. THE LONGITUDINAL DIRECTION IS ALONG G GIRDER.

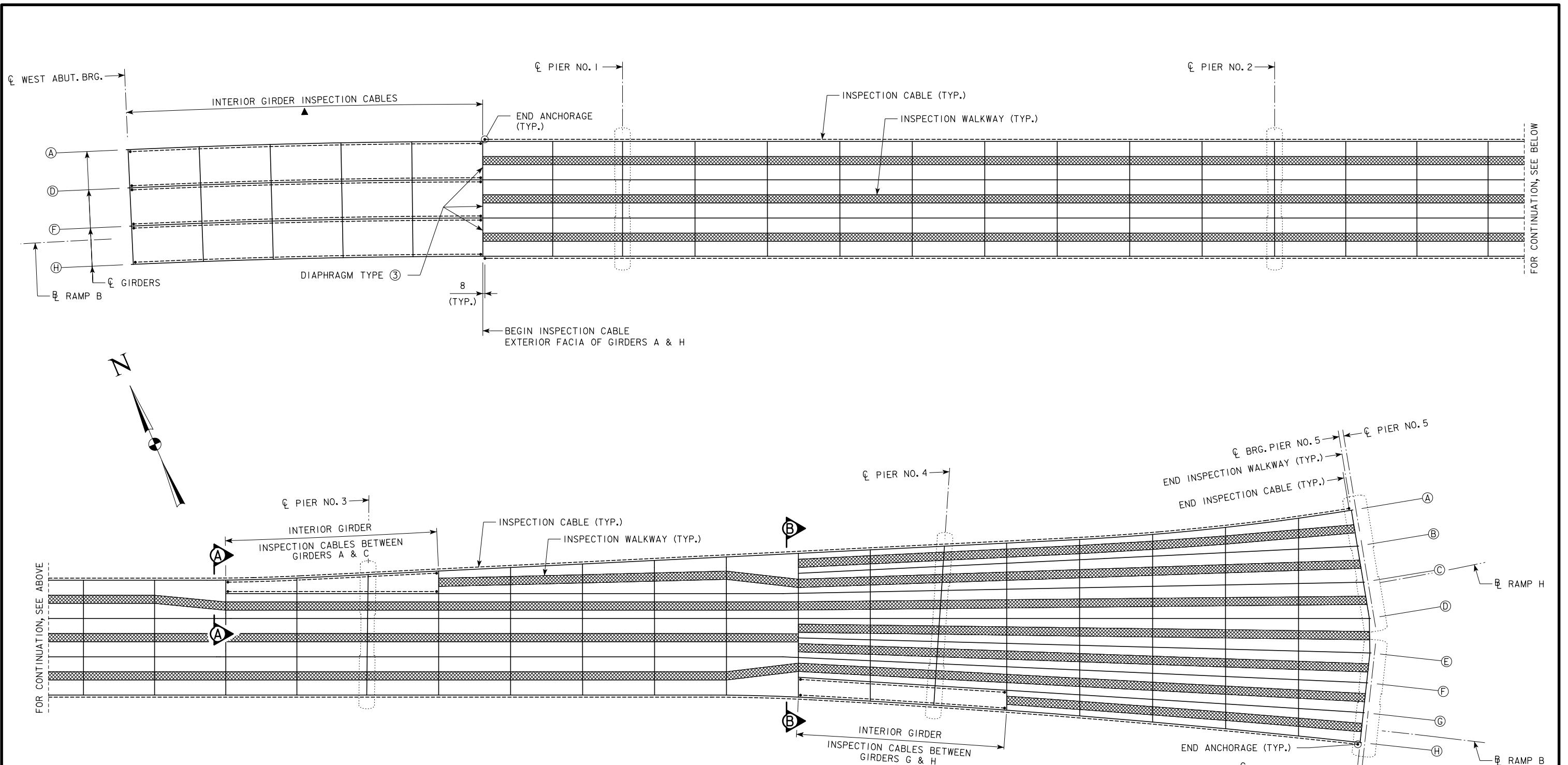
* BEARING HEIGHTS AT PIER NO. 5 SHALL BE COORDINATED BETWEEN THE BACK BEARINGS (DESIGN NO. 320) AND THE AHEAD BEARINGS (DESIGN NO. 120). THE BEARING HEIGHTS SHOWN ON THE PLANS ARE MINIMUMS AND THE BEARING MANUFACTURER MAY INCREASE THE BEARING HEIGHTS SO LONG AS THE HEIGHT DIFFERENTIAL BETWEEN THE BACK AND AHEAD BEARINGS SHOWN IN THE PLANS IS MAINTAINED.

** BEARING HEIGHTS AT PIER NO. 5A SHALL BE COORDINATED BETWEEN THE BACK BEARINGS (DESIGN NO. 320) AND THE AHEAD BEARINGS (DESIGN NO. 420). THE BEARING HEIGHTS SHOWN ON THE PLANS ARE MINIMUMS AND THE BEARING MANUFACTURER MAY INCREASE THE BEARING HEIGHTS SO LONG AS THE HEIGHT DIFFERENTIAL BETWEEN THE BACK AND AHEAD BEARINGS SHOWN IN THE PLANS IS MAINTAINED.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DISC BEARING DETAILS

STA. 2536+28.27 (E RAMP B)

APRIL 2018



INSPECTION ACCESS PLAN

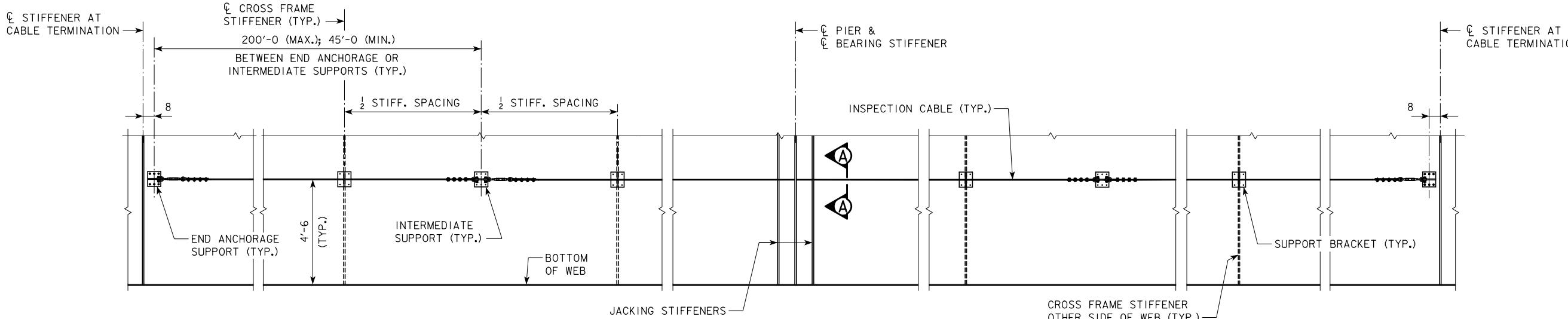
NOTES:

FOR GIRDER GEOMETRY, CROSS FRAME LOCATIONS AND CROSS FRAME TYPES, SEE FRAMING PLAN SHEETS.
FOR CROSS FRAME DETAILS, SEE CROSS FRAME DETAILS SHEET.
FOR INSPECTION CABLE DETAILS, SEE INSPECTION CABLE DETAILS SHEET.
FOR INSPECTION WALKWAY DETAILS, SEE INSPECTION WALKWAY DETAILS SHEETS.
▲ PLACE INSPECTION CABLES ON INTERIOR FACIA OF GIRDER A AND GIRDER H. PLACE INSPECTION CABLES ON EACH FACIA OF GIRDER D AND GIRDER F.
FOR SECTION A-A AND SECTION B-B, SEE DESIGN SHEET 64.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
INSPECTION ACCESS PLANS

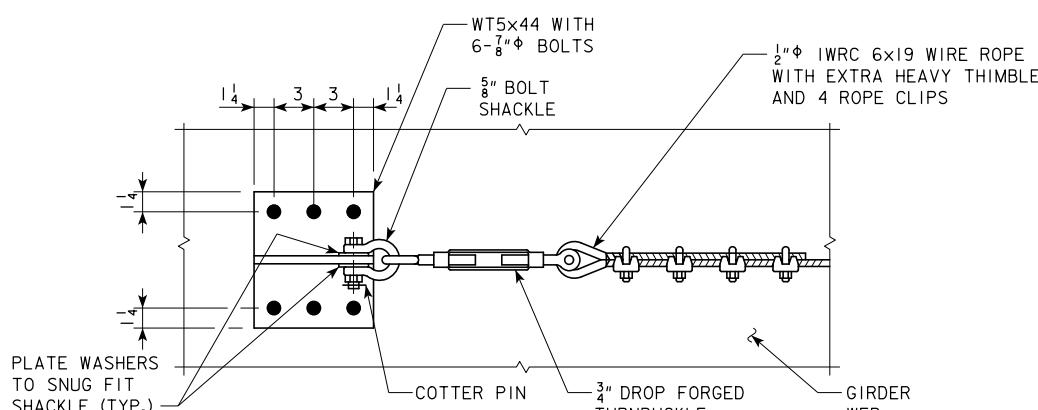
STA. 2536+28.27 (B RAMP B)

APRIL 2018

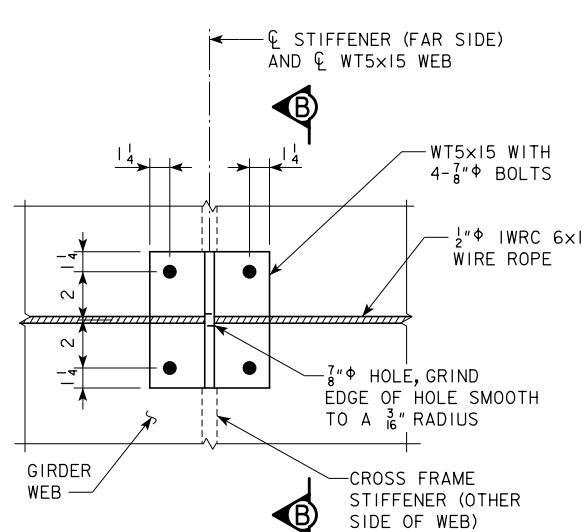


TYPICAL CABLE ELEVATION

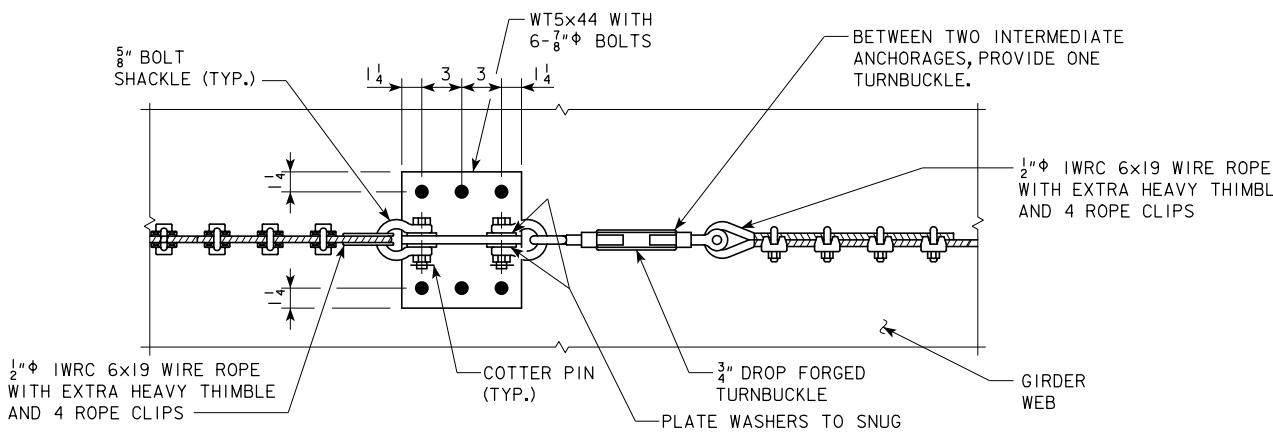
DESIGN STRENGTH:
THE INSPECTION CABLE SYSTEM IS DESIGNED FOR A POINT LOAD OF 10,000 POUNDS BETWEEN END ANCHORAGE SUPPORTS.



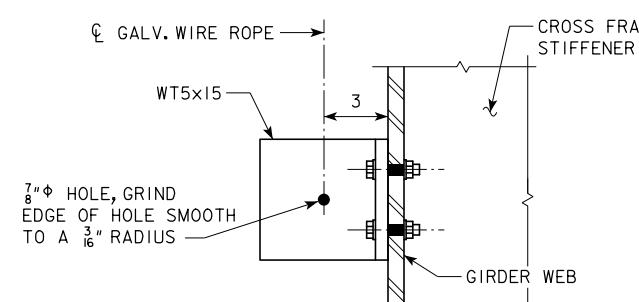
TYPICAL END ANCHORAGE SUPPORT



TYPICAL SUPPORT BRACKET DETAIL



TYPICAL INTERMEDIATE SUPPORT DETAIL



SECTION A-A

INSPECTION CABLE NOTES:
FOR INSPECTION CABLE LOCATION AND LIMITS, SEE DESIGN SHEET 61.

WIRE ROPE SHALL COMPLY WITH FEDERAL SPECIFICATION RR-W-410F.

WIRE ROPE SHALL BE $\frac{1}{2}$ " IWRC GALVANIZED 6x19 WITH A MINIMUM NOMINAL LOAD CAPACITY OF 11.1 TONS.

WIRE ROPE CLIPS SHALL BE CAPABLE OF TRANSFERRING THE FULL CAPACITY OF THE WIRE ROPE. CLIPS SHALL BE INSTALLED IN ACCORDANCE WITH THE CLIP MANUFACTURERS RECOMMENDATIONS.

THE WIRE ROPE SHALL BE TENSIONED AT THE ENDS OF EACH SECTION TO 200 LBS. TO REMOVE SAG. THE END ANCHORAGE CLIPS SHALL BE TIGHTENED PRIOR TO TIGHTENING INTERIOR SUPPORT CLIPS. DO NOT OVER TENSION WIRE ROPE.

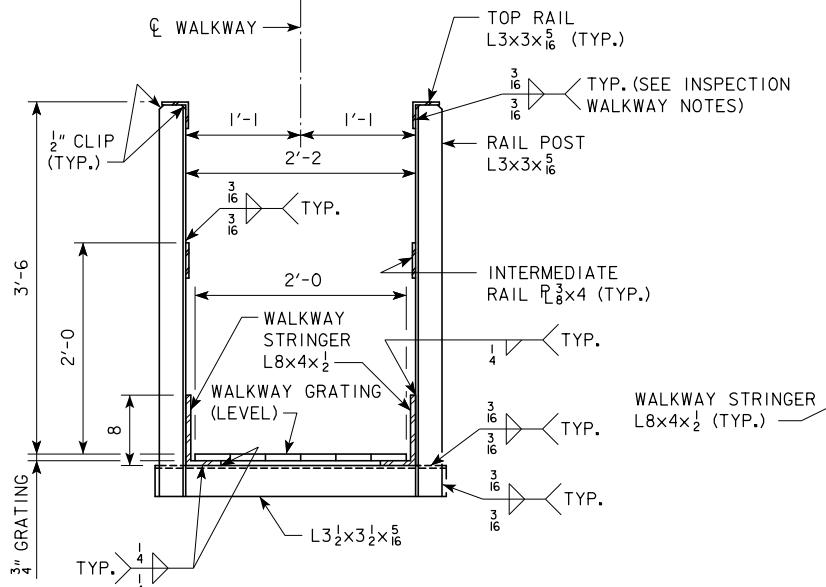
CABLE CLIPS SHALL COMPLY WITH FEDERAL SPECIFICATION FF-C-450D, TYPE I, CLASS I.

BOLT SHACKLE SHALL COMPLY WITH FEDERAL SPECIFICATION RR-C-271F TYPE IVA, GRADE A, CLASS 3, GALVANIZED. EXTRA HEAVY THIMBLE, WIRE ROPE CLIPS AND DROP FORGED TURNBUCKLE SHALL BE GALVANIZED.

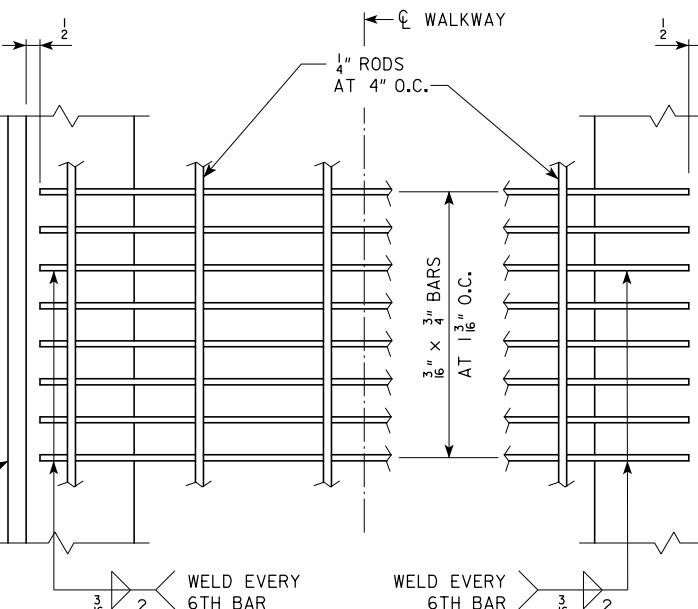
WT BRACKETS SHALL BE ASTM A709 GRADE 50W.

THE COST OF FURNISHING AND INSTALLING THE INSPECTION CABLE SYSTEM SHALL BE INCLUDED IN THE PRICE BID FOR "MAINTENANCE CATWALKS AND ACCESS SYSTEM".

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
INSPECTION CABLE DETAILS
STA. 2536+28.27 (RAMP B) APRIL 2018



TYPICAL WALKWAY SECTION



WALKWAY GRATING DETAIL PLAN

INSPECTION WALKWAY NOTES:

DESIGN LIVE LOAD IS 60 PSF UNIFORM LOAD OR A SINGLE 500 LB CONCENTRATED LOAD.

ALL STRUCTURAL STEEL OTHER THAN THE WALKWAY GRATING SHALL BE ASTM A709 GRADE 50. ALL BOLTS SHALL BE HIGH STRENGTH.

WALKWAY GRATING SHALL BE WELDED TYPE WITH $\frac{3}{4} \times \frac{3}{16}$ " BEARING BARS AT $1\frac{3}{16}$ " CENTERS AND $\frac{1}{4}$ " CROSS RODS AT 4" MAXIMUM CENTERS.

ALL WALKWAY STEEL, BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AFTER FABRICATION. GRATINGS SHALL BE GALVANIZED AFTER WELDING TO THE STRINGERS.

ALL WALKWAY STRINGERS SHALL HAVE MILL CAMBER TURNED UPWARD.

WALKWAYS SHALL BE PLACED ON CHORDS BETWEEN SUPPORTS AND CENTERED BETWEEN GIRDERS AT SUPPORTS.

THE TOP RAIL SHALL BE SMOOTH SURFACED.

THE TOP RAIL AND INTERMEDIATE RAIL MAY BE BOLTED TO THE RAIL POSTS AT THE CONTRACTOR'S OPTION USING $\frac{3}{4}$ " H.S. BOLTS.

RAILING POSTS SHALL BE SPACED EQUALLY BETWEEN SUPPORTS AT 8'-6" MAXIMUM.

ALL BOLTS SHALL BE $\frac{3}{4}$ " DIAMETER UNLESS OTHERWISE NOTED.

HOLDS FOR $\frac{3}{4}$ " BOLTS SHALL BE $1\frac{3}{16}$ " DIAMETER, UNLESS OTHERWISE NOTED.

WALKWAY STRINGERS SHALL HAVE VERTICAL SHORT SLOTTED HOLES FOR CONNECTIONS AT SUPPORTS.

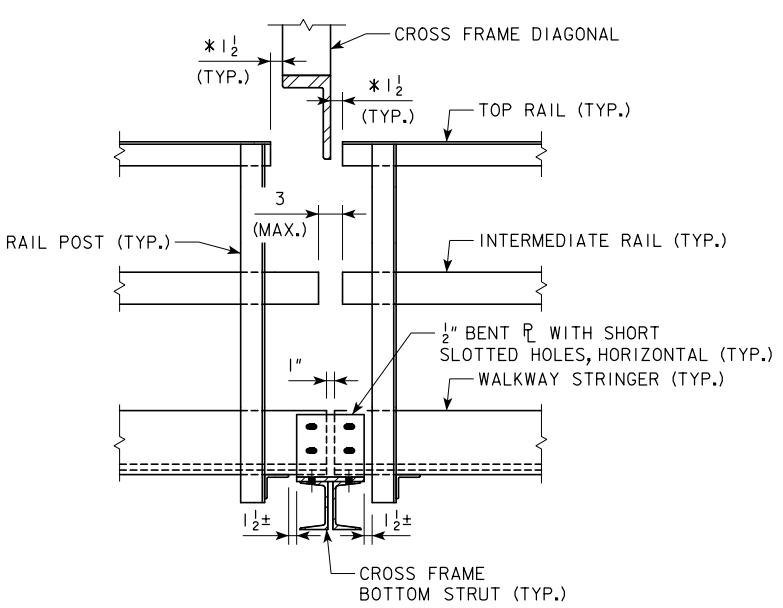
BOLT HEADS SHALL BE PLACED ON THE WALKWAY SIDE.

FOR BOLT SPACINGS AND EDGE CLEARANCES NOT SHOWN, AASHTO

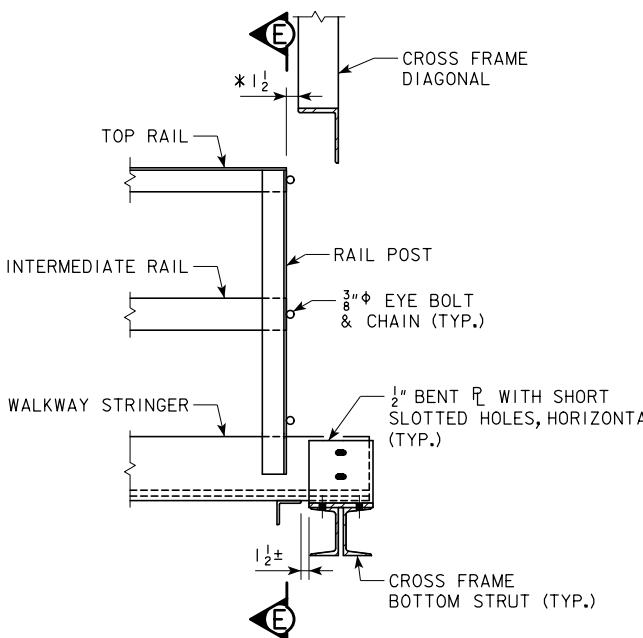
CRITERIA SHALL BE USED.

WASHERS FOR SLOTTED HOLES SHALL BE $\frac{5}{8}$ " MINIMUM THICKNESS STRUCTURAL PLATE WASHERS COMPLETELY COVERING THE SLOTTED HOLES.

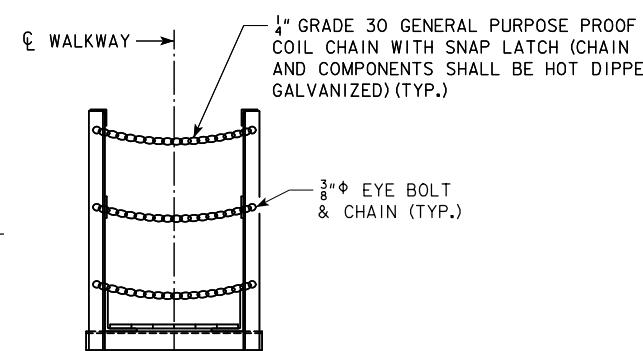
HARDENED WASHERS FOR USE WITH HIGH STRENGTH BOLTS SHALL BE PLACED OVER THE OUTER SURFACE OF THE PLATE WASHER.



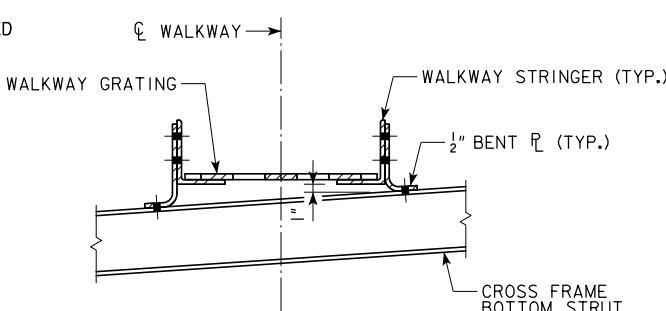
TYPICAL ELEVATION
AT INTERIOR CROSSFRAME



ELEVATION AT PIER
NOS. 5 & 5A CROSS FRAME



SECTION E-E

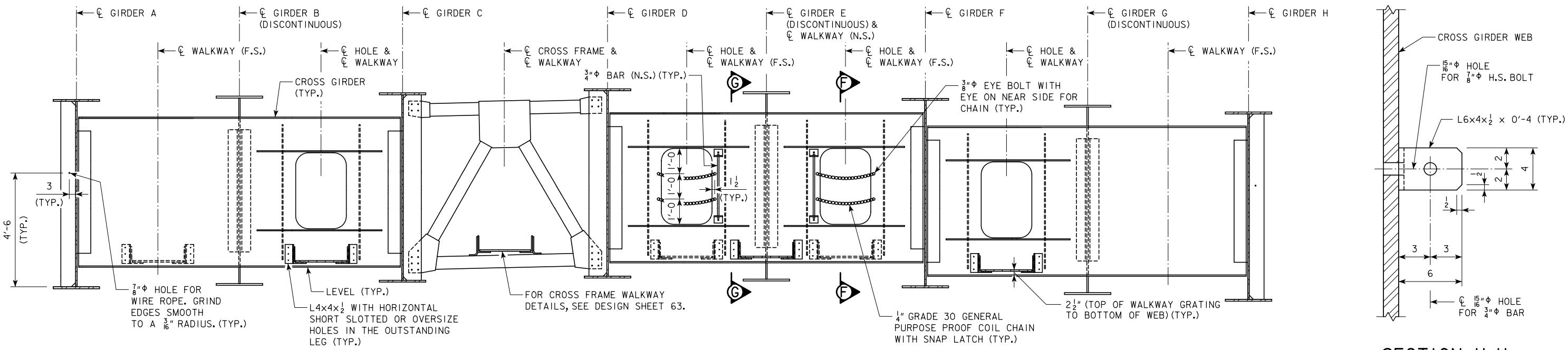


PARTIAL SECTION AT CROSS FRAME

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
INSPECTION WALKWAY DETAILS
STA. 2536+28.27 (RAMP B)

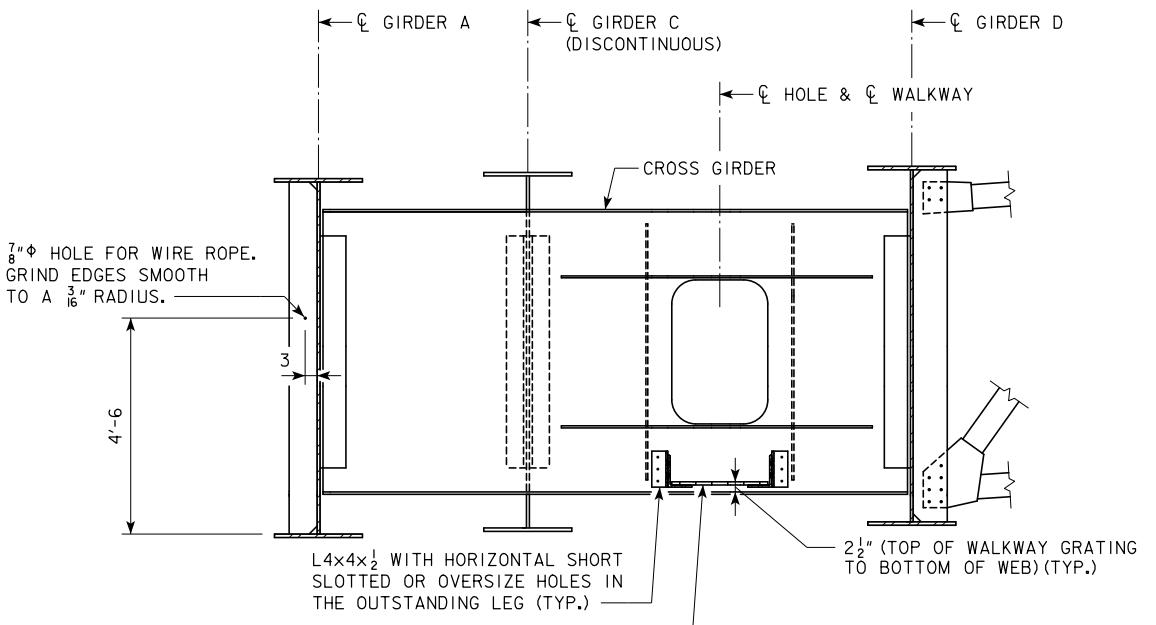
APRIL 2018

* DIMENSION TO BE USED FOR DIMENSION BETWEEN TOP RAIL OR RAIL POST AND HORIZONTAL LEG OF CROSS FRAME DIAGONAL AT LOCATIONS WHERE HORIZONTAL LEG OF CROSS FRAME DIAGONAL CONFLICTS WITH TOP RAIL OR RAIL POST.

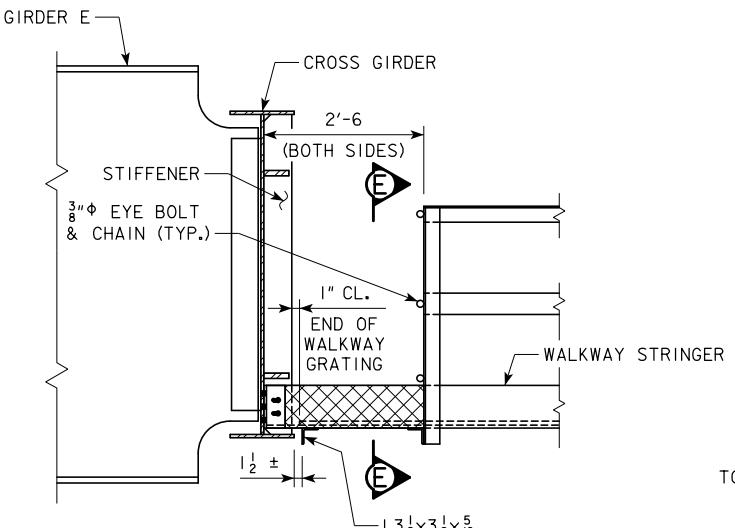


SECTION B-B

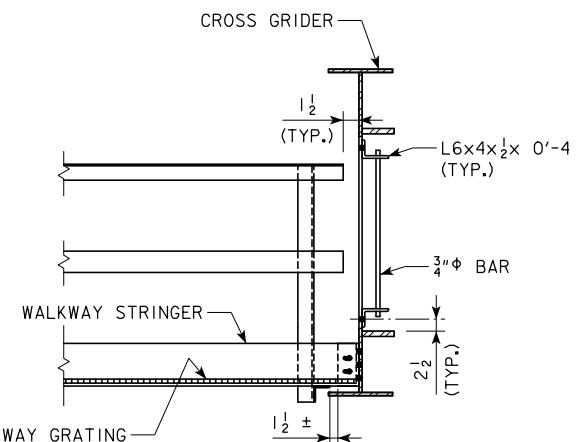
N.S. - NEAR SIDE
F.S. - FAR SIDE



SECTION A-A

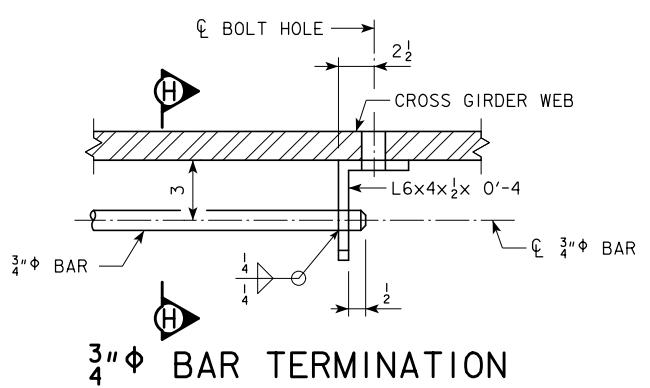


SECTION E-E



SECTION F-F

NOTES:
FOR LOCATION OF SECTION A-A AND SECTION B-B,
SEE DESIGN SHEET 6I.
FOR INSPECTION WALKWAY NOTES AND SECTION E-E,
SEE DESIGN SHEET 63.
PAINT EACH SIDE OF VERTICAL LEGS OF ANGLES.
PAINT AFTER GALVANIZING IN ACCORDANCE WITH
ARTICLE 2509 OF THE STANDARD SPECIFICATIONS.
PAINT COLOR SHALL CONFORM TO FEDERAL STANDARD
595B, COLOR NUMBER 13591 (SAFETY YELLOW).



DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
INSPECTION WALKWAY DETAILS
STA. 2536+28.27 (RAMP B)

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SIGN TRUSS SUPPORT NOTES:

OVERHEAD SIGN TRUSS SUPPORT BRACKETS ARE DESIGNED FOR 33 LB/FT² WIND PRESSURE ON SUPPORT MEMBERS AND SIGNS. THE MAXIMUM ALLOWABLE TOTAL SIGN AREA IS 760 FT² FOR A 50-Ft SPAN SOST-II STANDARD TRUSS WITH THE CENTROID OF THE TOTAL SIGN AREA CENTERED BOTH VERTICALLY AND HORIZONTALLY ON THE HORIZONTAL SPACE TRUSS.

STRUCTURAL STEEL FOR SIGN TRUSS SUPPORT (SHAPES, PLATES AND BARS) SHALL COMPLY WITH ASTM A709, GRADE 50W.

FOR SIGN TRUSS DETAILS AND NOTES, SEE IOWA DOT MODIFIED STANDARD SOST-II DESIGN PLANS IN PROJECT IM-080-6(399)239--13-52.

ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH STRENGTH FASTENERS." UNLESS OTHERWISE NOTED, ALL OPEN HOLES ARE TO BE $\frac{15}{16}$ "^Φ AND BOLTS ARE TO BE $\frac{7}{8}$ "^Φ.

CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 4152.02 SHALL APPLY TO SIGN TRUSS SUPPORT BRACKETS, SPREADER BEAMS, MC18'S, AND SPLICE PLATES.

COMPRESSIBLE-WASHER-TYPE DIRECT TENSION INDICATORS SHALL BE INSTALLED TO PROVE THE BOLT TENSION. THE DIRECT TENSION INDICATORS (DTI'S) SHALL BE SUPPLIED IN ACCORDANCE WITH ASTM F959-02 EXCEPT FOR THE COMPRESSIVE STRENGTH WHICH IS NON-STANDARD. THE DTI'S SHALL BE ZINC COATED. THE DTI SUPPLIER SHALL PROVIDE INSPECTION AND ACCEPTANCE CRITERIA TO INSTALL THE BOLTS TO THE PRETENSION SPECIFIED. AT A MINIMUM, INSPECTION AND ACCEPTANCE SHALL BE ACCOMPLISHED THROUGH THE USE OF FEELER GAUGES TO MEASURE THE COMPRESSED GAPS IN THE INSTALLED DTI'S.

THE DTI SUPPLIER SHALL PROVIDE A TEST REPORT FOR ESTABLISHING THE INSPECTION AND ACCEPTANCE CRITERIA. AT A MINIMUM, THE DTI SUPPLIER SHALL TEST AN ADDITIONAL 5 DTI'S UNDER HARDENED FLAT WASHERS, SIMILAR TO THOSE THAT WILL BE USED IN PRODUCTION, AT A LOAD OF 75 KIPS IN ORDER TO DETERMINE THE INPECTION AND ACCEPTANCE CRITERIA.

THREE ADDITIONAL DTI'S, FROM THE SAME LOT, AND HARDENED WASHERS SHALL BE SUPPLIED TO THE STATE'S OFFICE OF CONSTRUCTION AND MATERIALS.

ANCHOR BOLT NUT TIGHTENING PROCEDURE:

1. THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE NUTS WITHOUT PAUSE OR DELAY. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR.
2. PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES SHALL NOT BE USED.
3. BASE PLATE, SPREADER BEAM, ANCHOR PLATE, ANCHOR BOLTS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.
4. PRIOR TO ANCHOR BOLT INSTALLATION, APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS AND WASHERS.
5. THE CONTRACTOR SHALL INSTALL THE ANCHOR BOLTS TO A PRETENSION OF BETWEEN 70 AND 80 KIPS. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE OF THE BOLT PATTERN, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.
6. LUBRICATE, PLACE AND TIGHTEN THE BOTTOM JAM NUTS TO SNUG TIGHT. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAETER BUT NOT LESS THAN 18 INCHES. APPLY FORCE AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING.
7. PLACEMENT OF BASE PLATE NUTS WILL BE COMPLETED BY OTHERS IN A FUTURE CONTRACT.

ANCHOR BOLT NOTES:

EIGHT ANCHOR BOLTS WITH ASSOCIATED NUTS (6 PER BOLT), WASHERS (4 PER BOLT), AND DTI WASHERS (1 PER BOLT) ARE REQUIRED FOR EACH OF FOUR SIGN TRUSS SUPPORT BRACKETS.

ALL NUTS AND WASHERS DIRECTLY ABOVE AND BELOW THE SIGN TRUSS BASE PLATES SHALL BE PROVIDED IN THIS CONTRACT AND GIVEN TO THE STATE OF IOWA FOR STORAGE AND FUTURE USE. THESE NUTS AND WASHERS, ALONG WITH THE SIGN TRUSS (INCLUDING THE BASE PLATES), WILL BE INSTALLED BY OTHERS IN A FUTURE CONTRACT.

ALL ANCHOR BOLT MATERIALS AND GALVANIZING SHALL BE IN ACCORDANCE WITH ARTICLE 4187.01, C, 3 OF THE STANDARD SPECIFICATIONS. ANCHOR BOLTS SHALL BE ASTM F1554, GRADE 105, S4 (-20°F).

BENDING OR WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED.

STRUCTURAL ALIGNMENT / TOLERANCE NOTES:

THE PRECISE INSTALLATION AND ALIGNMENT OF THE OVERHEAD SIGN TRUSS SUPPORTS SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

THE SPREADER BEAMS SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN 1 INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

THE SPREADER BEAMS SHALL BE PARALLEL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN 1 INCH, WHEN COMPARING THE FRONT AND REAR ANCHOR BOLT GROUPS.

ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY WITH CENTERS OF ADJACENT GROUPS IN THE SPREADER BEAM WITHIN $\frac{3}{16}$ INCH OF THE PLAN DISTANCE APART.

ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF THE SPREADER BEAM WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

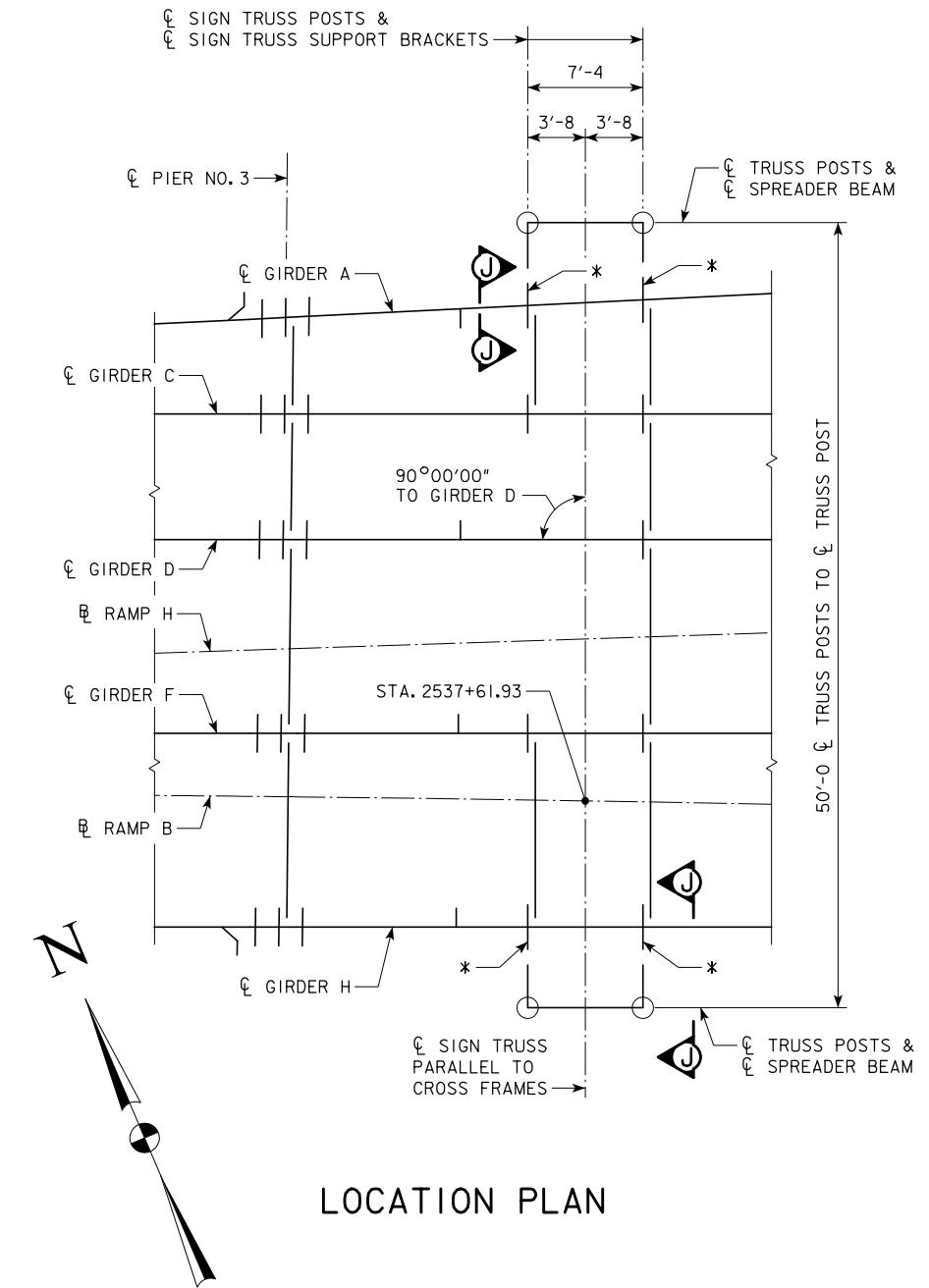
SPECIFICATIONS:

DESIGN: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS 5TH ED, SERIES OF 2009 WITH INTERIMS AND AASHTO LRFD 7TH ED, SERIES OF 2016 EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS 5TH ED, SERIES OF 2009 WITH INTERIMS AND AASHTO LRFD 7TH ED, SERIES OF 2016.

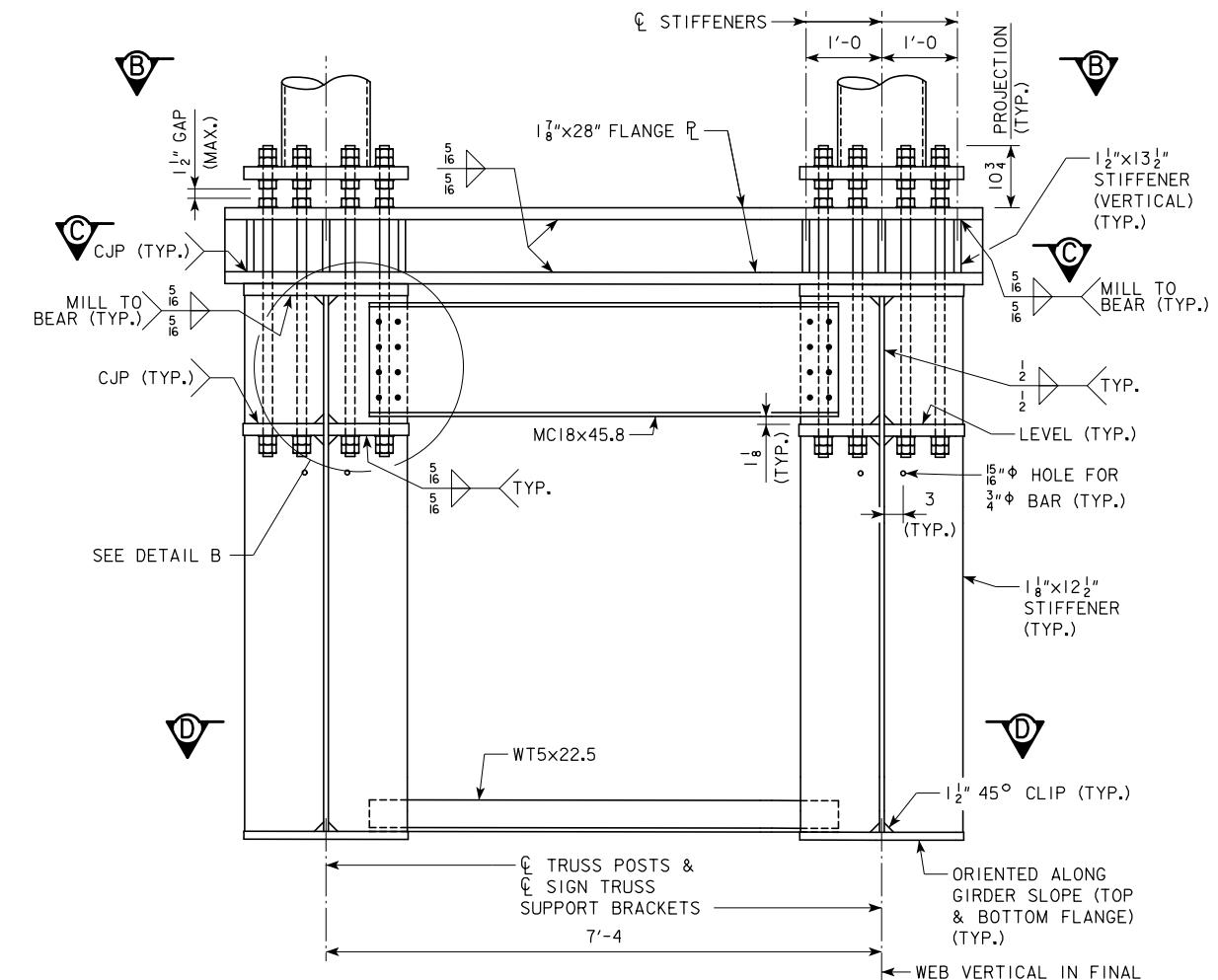
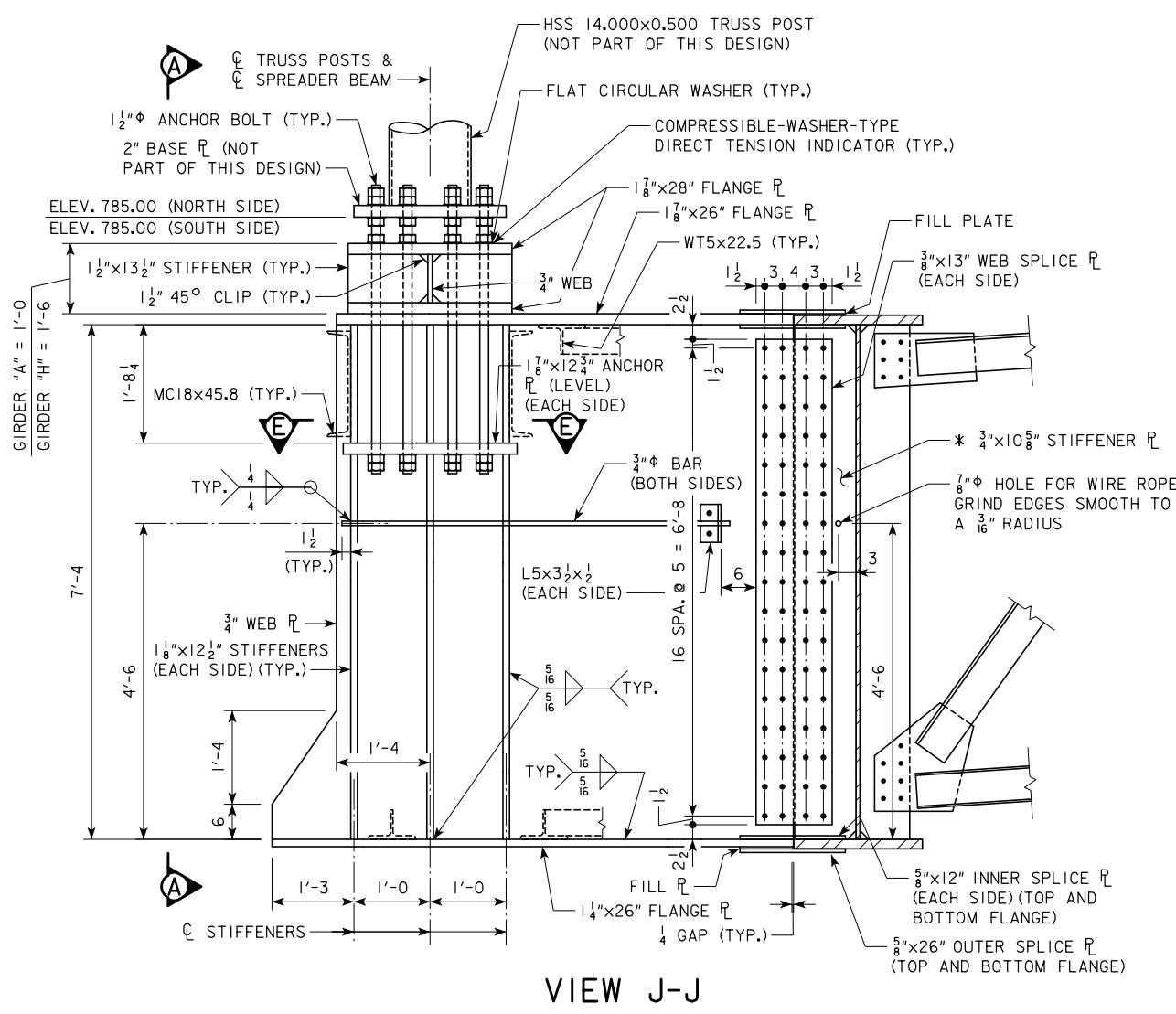


LOCATION PLAN

NOTES:
FOR VIEW J-J, SEE DESIGN SHEET 66.
* $\frac{3}{4}$ " x $10\frac{5}{8}$ " STIFFENERS SHALL BE ORIENTATED VERTICAL IN FINAL CONDITION.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
SIGN SUPPORT DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

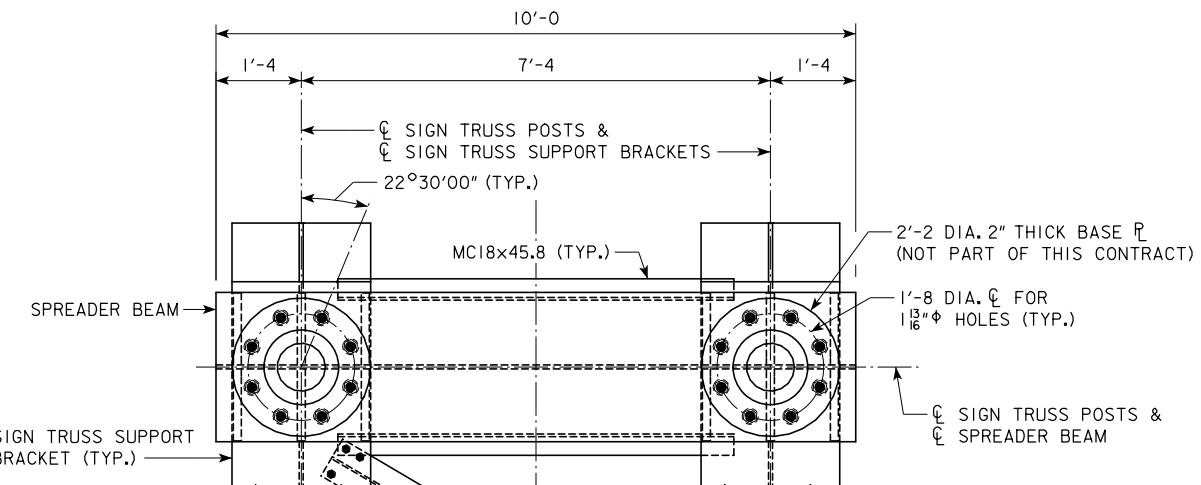


NOTES:
FOR NOTES, SEE DESIGN SHEET 65.
FOR SECTIONS B-B, C-C & D-D, SEE DESIGN SHEET 67.
FOR $\frac{3}{4}$ " BAR CONNECTION DETAIL, DETAIL B, AND SECTION E-E,
SEE DESIGN SHEET 68.
CJP - COMPLETE JOINT PENETRATION GROOVE WELD.
* $\frac{3}{4}'' \times 10\frac{5}{8}''$ STIFFENERS SHALL BE ORIENTATED VERTICAL IN
FINAL CONDITION.
FOR LOCATION OF SIGN TRUSS SUPPORT, SEE DESIGN SHEET 42.

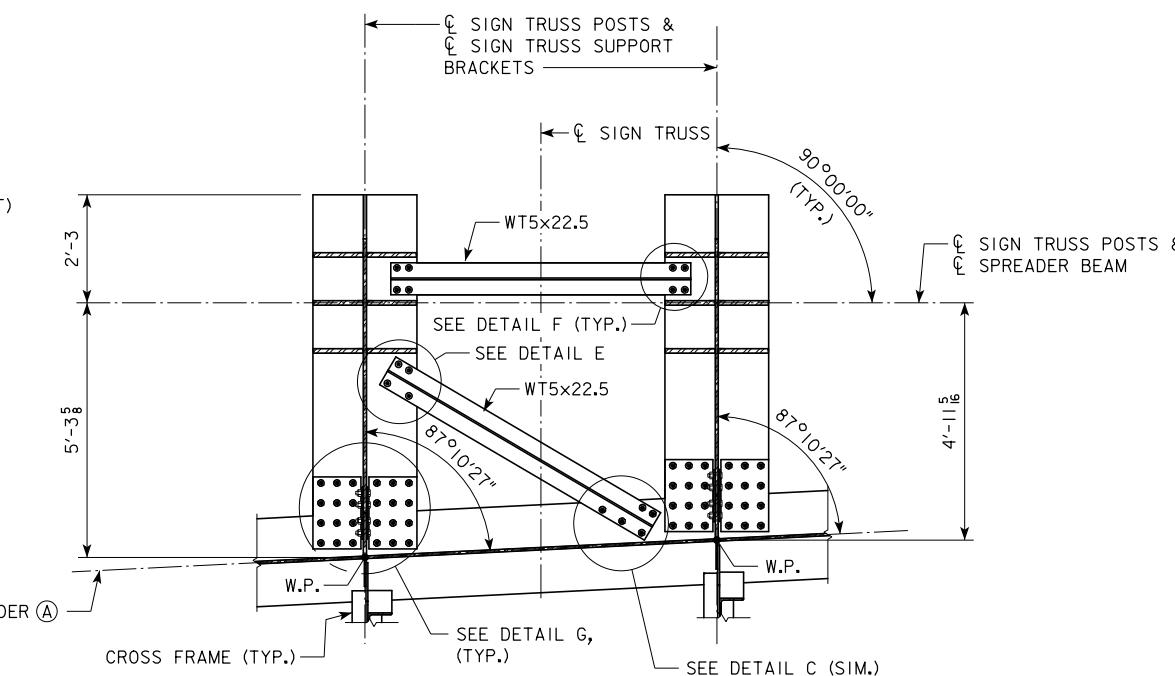
DESIGN FOR 0° SKEW
**873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
SIGN SUPPORT DETAILS

STA. 2536+28.27 (RAMP B)

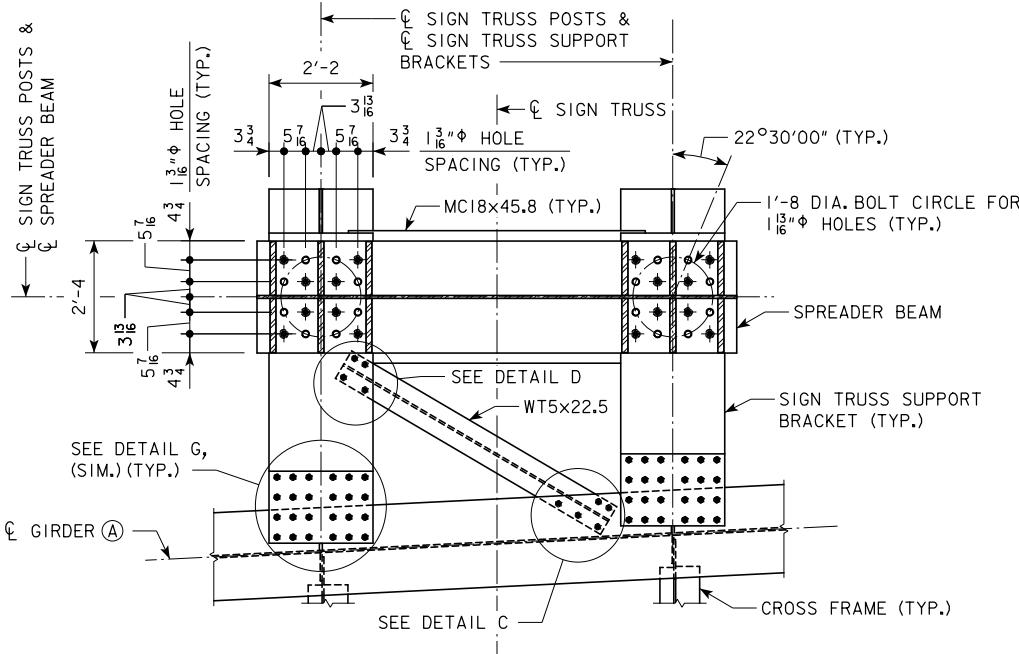
APRIL 2018



SECTION B-B

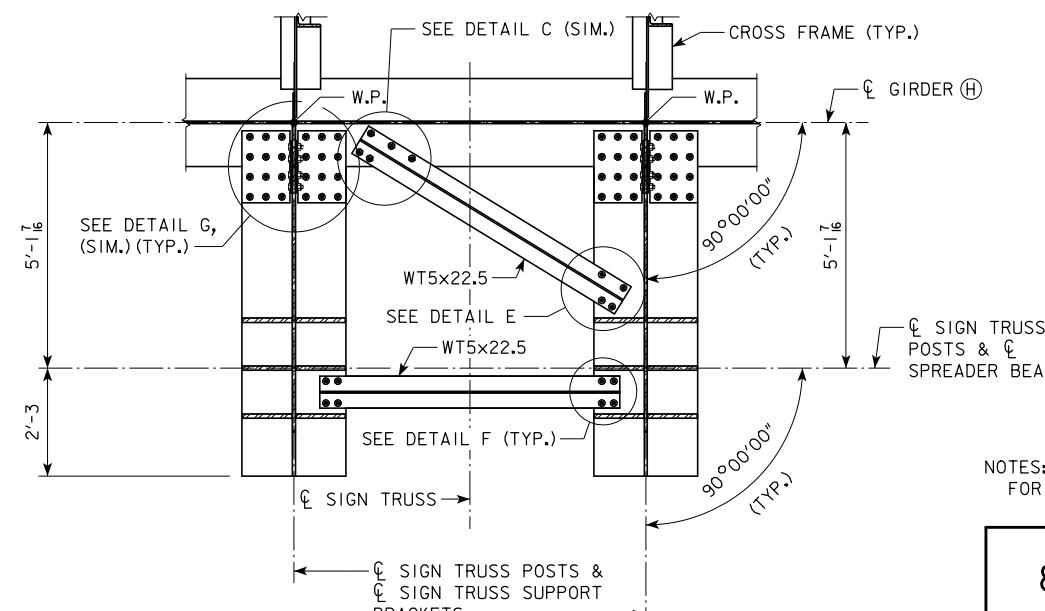


SECTION D-D
(GIRDER A)



SECTION C-C
(GIRDER A SHOWN, GIRDERS H SIMILAR)

SECTION C-C LEGEND:
 • $\frac{13}{16}^{\prime\prime}$ HOLES FOR $\frac{11}{12}^{\prime\prime}$ ANCHOR BOLTS
 • $\frac{13}{16}^{\prime\prime}$ HOLES FOR $\frac{11}{8}^{\prime\prime}$ "HIGH TENSILE STRENGTH BOLTS"



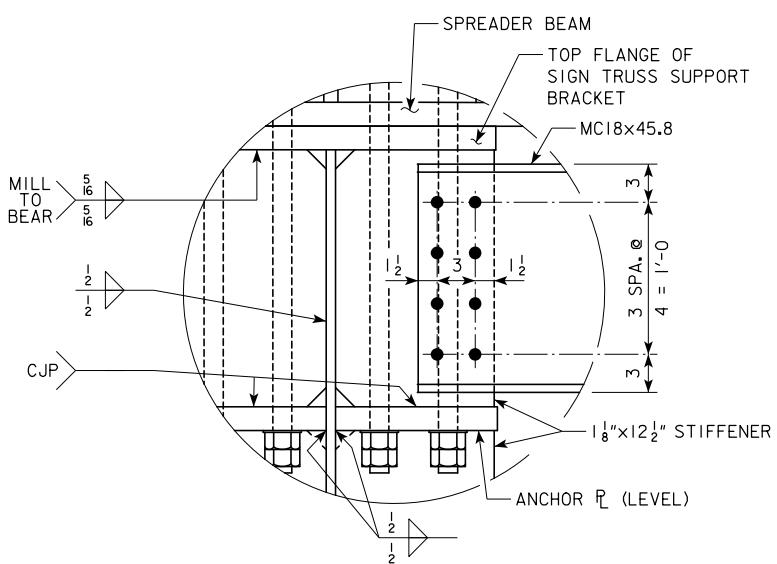
SECTION D-D
(GIRDERS H)

NOTES:
FOR DETAILS C, D, E, F AND G, SEE DESIGN SHEET 68.

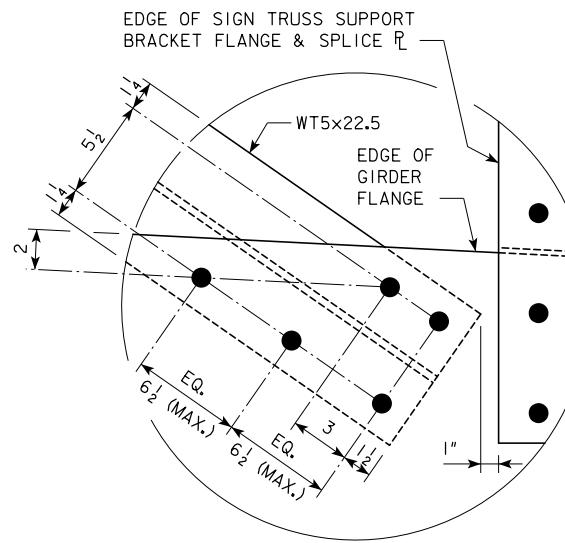
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
 158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
SIGN SUPPORT DETAILS

STA. 2536+28.27 (RAMP B)

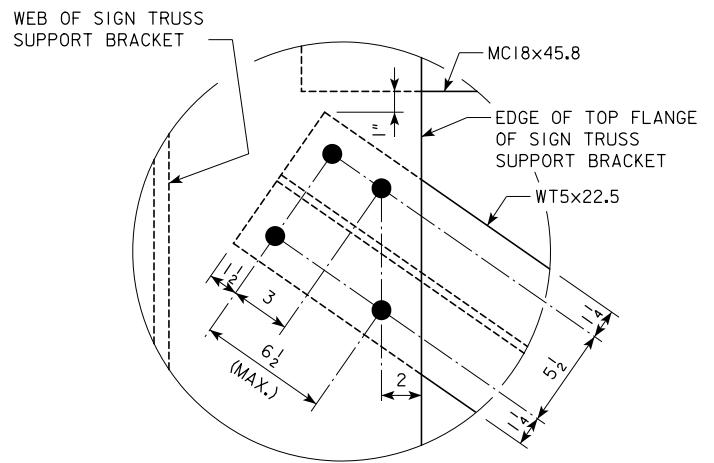
APRIL 2018



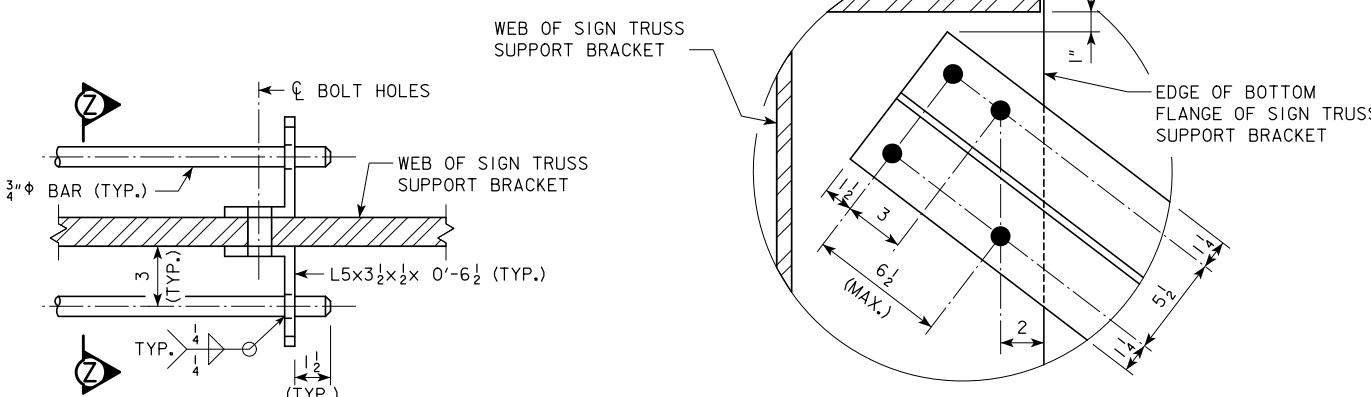
DETAIL B



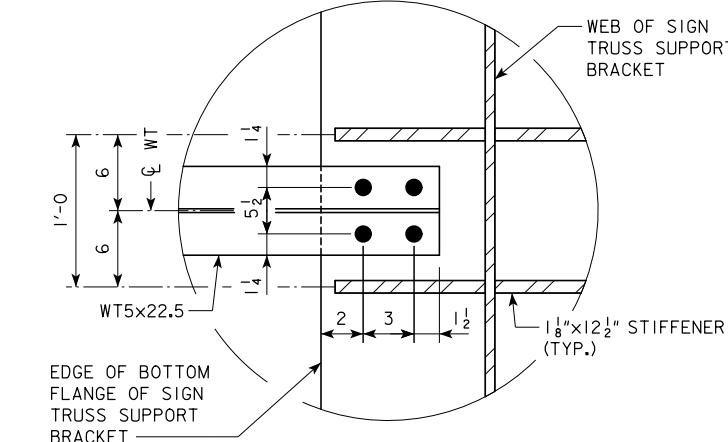
DETAIL C



DETAIL D

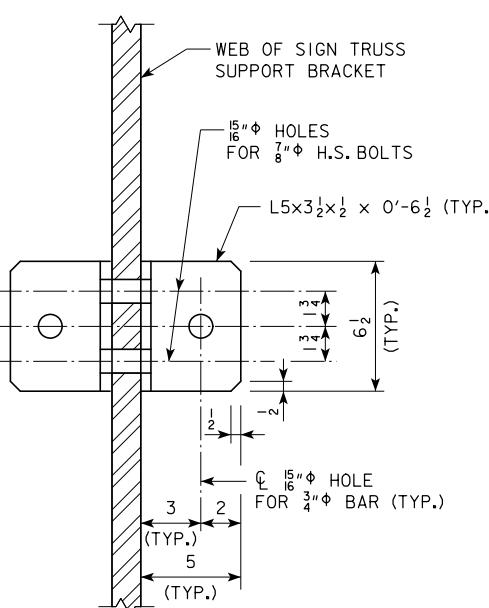


DETAIL E

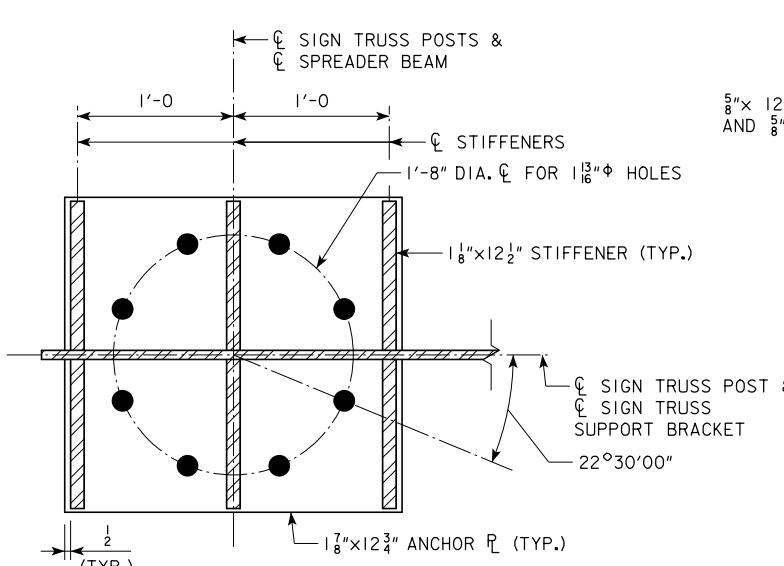


DETAIL F

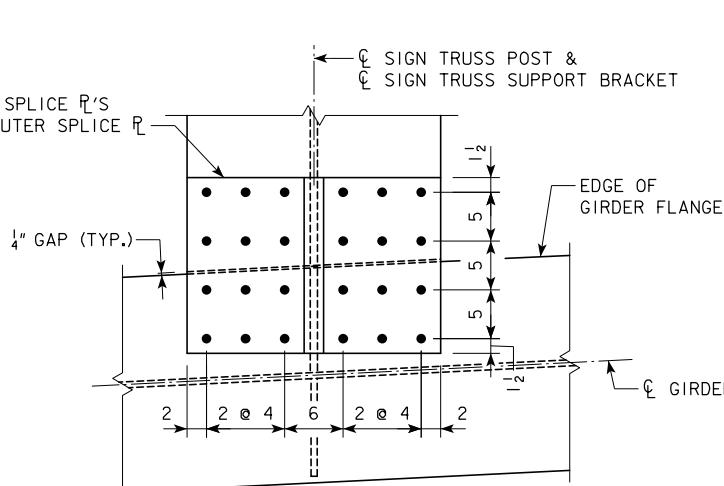
3"Φ BAR CONNECTION DETAIL



SECTION Z-Z



SECTION E-E
(CHANNELS NOT SHOWN)



DETAIL C

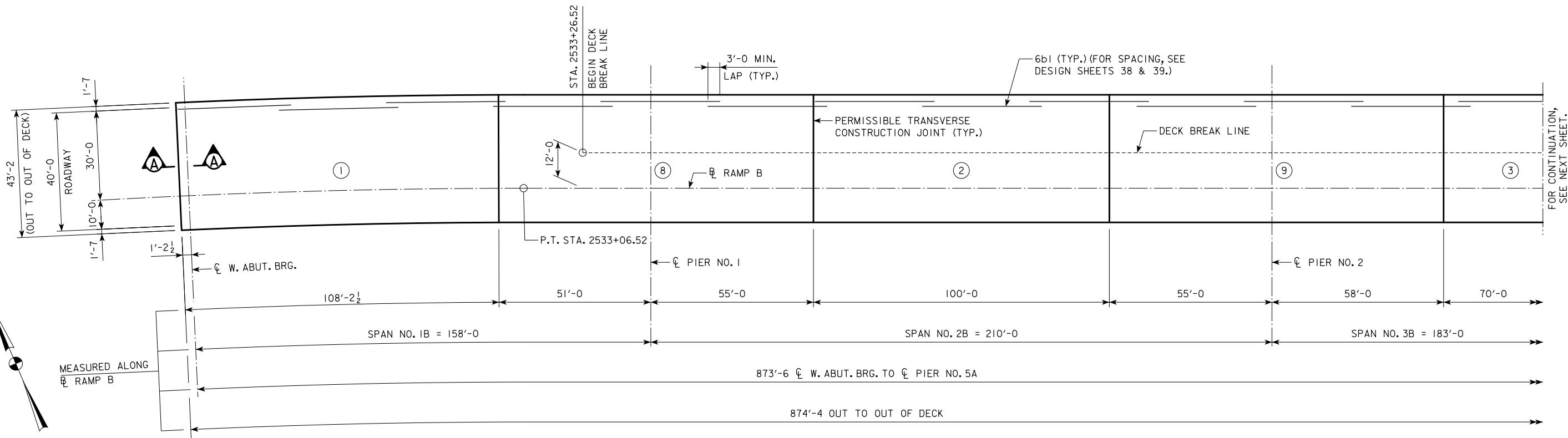
(WEB SPLICING NOT SHOWN)
(BOTTOM FLANGE SPLICING SHOWN
TOP FLANGE SPLICING SIMILAR)

NOTES:
FOR NOTES, SEE DESIGN SHEET 65.
FOR LOCATION OF DETAILS B, C, D, E, F AND G, SEE
DESIGN SHEET 67.
FOR LOCATION OF SECTION E-E SEE DESIGN SHEET 66.

DESIGN FOR 0° SKEW

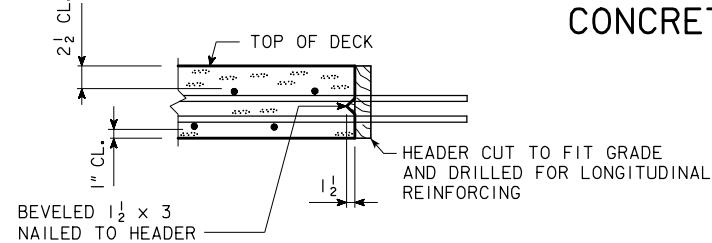
**873'-6" x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
SIGN SUPPORT DETAILS**

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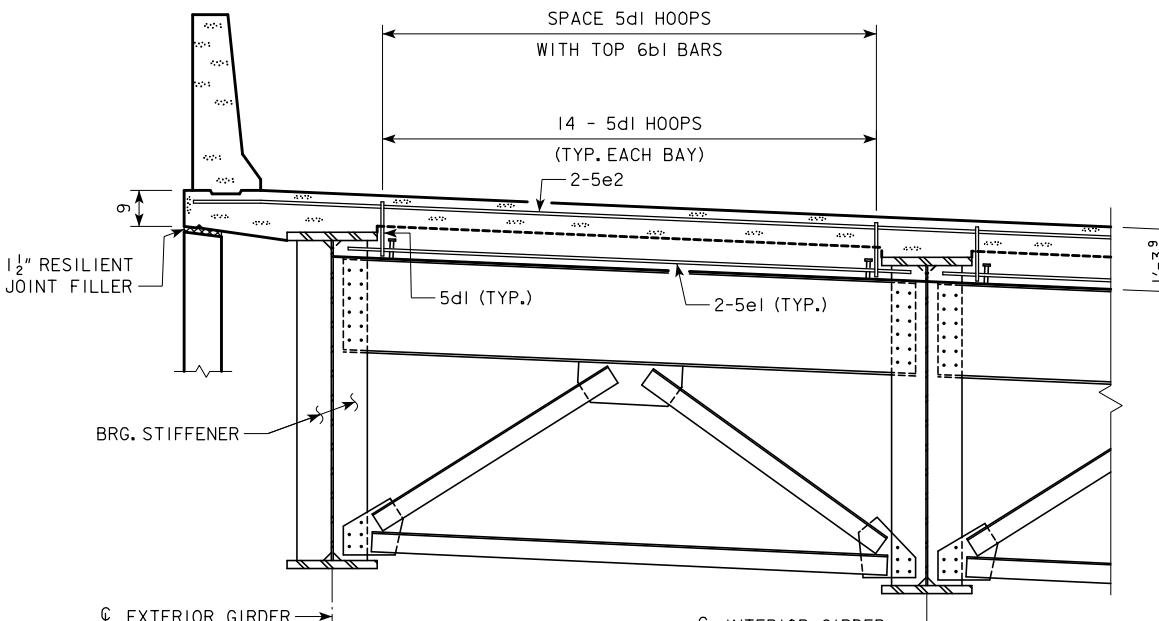


CONCRETE PLACEMENT DIAGRAM & LONGITUDINAL REINFORCING LAYOUT

(FOR CROSS SLOPE GEOMETRICS AND EDGE OF DECK INFORMATION, SEE DESIGN SHEET 74.)

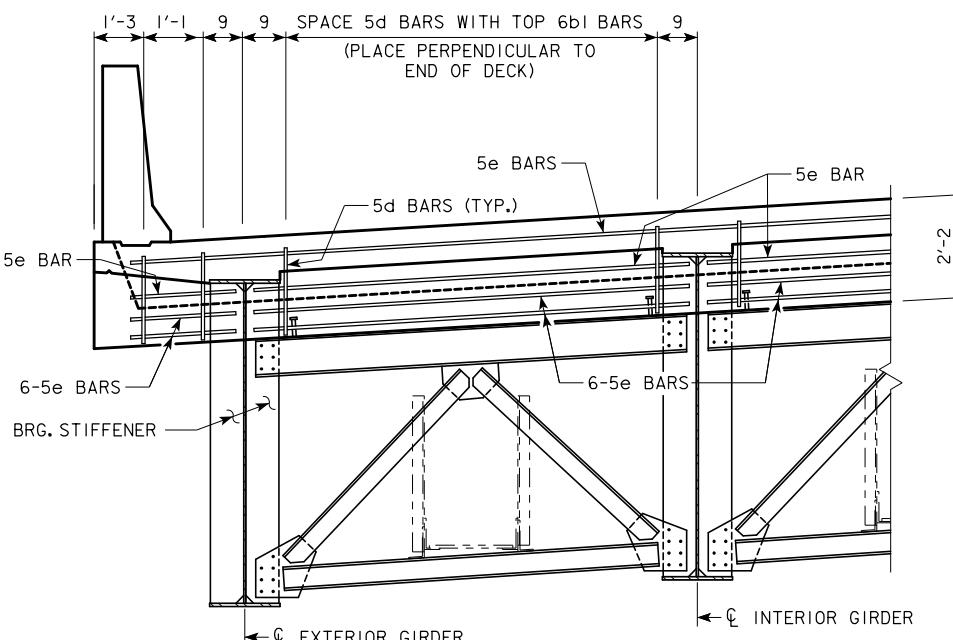


PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT



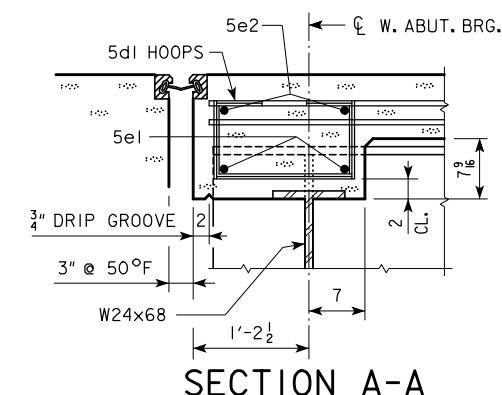
PARTIAL SECTION NEAR ABUTMENT

(DECK REINFORCING AND EXPANSION JOINT NOT SHOWN)



PARTIAL SECTION NEAR EXPANSION-EXPANSION PIER

(DECK REINFORCING AND EXPANSION JOINT NOT SHOWN.)



SECTION A-A

NOTES:
CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. FOR APPROVED ALTERNATE PROCEDURES THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.

FOR CROSS SLOPE GEOMETRICS, SEE DESIGN SHEET 74.

FOR CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 74.

FOR DECK DRAIN LOCATIONS, SEE DESIGN SHEET 82.

ALL DIMENSIONS SHOWN ARE MEASURED IN A HORIZONTAL PLANE UNLESS NOTED OTHERWISE.

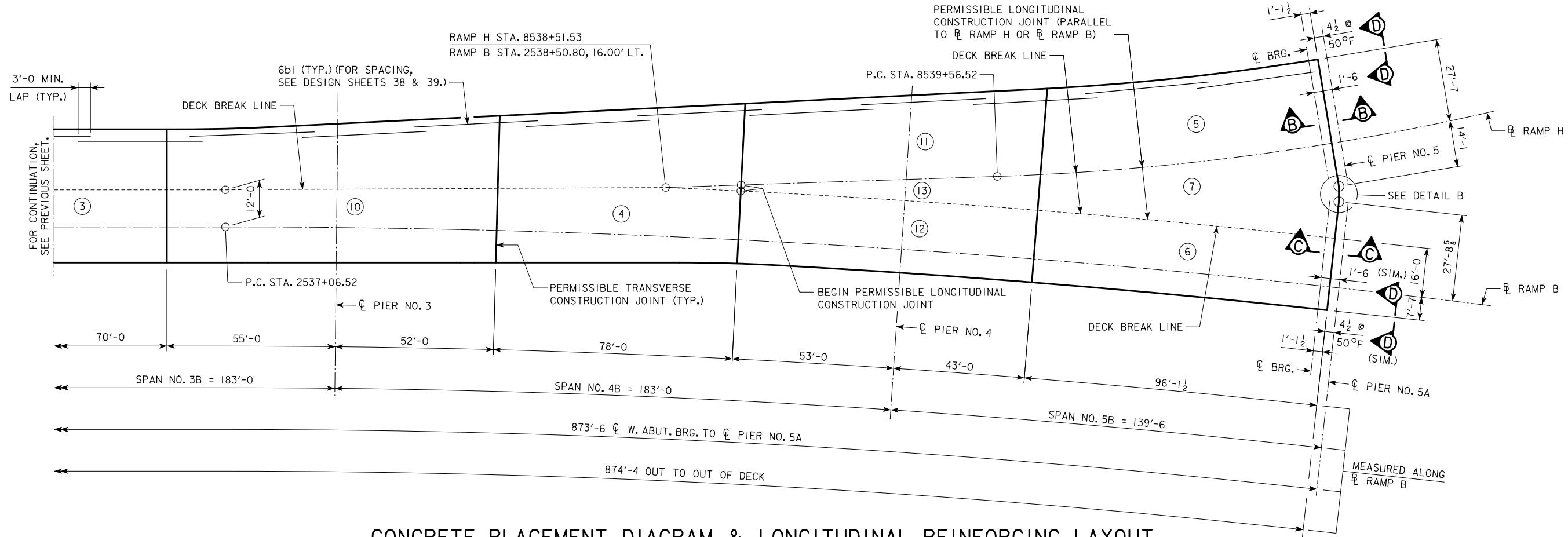
DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDERS BRIDGE

158'-0", 210'-0", 183'-0", 183'-0", 139'-6 SPANS

DECK PLAN & REINFORCING

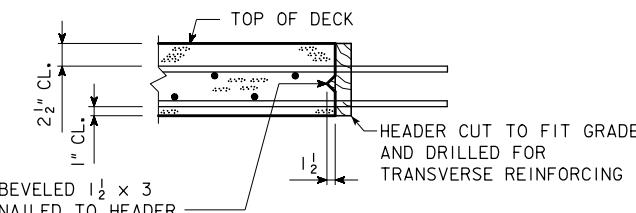
STA. 2536+28.27 (RAMP B)

APRIL 2018

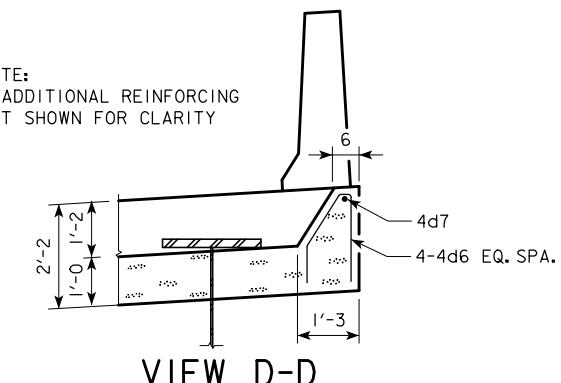


CONCRETE PLACEMENT DIAGRAM & LONGITUDINAL REINFORCING LAYOUT

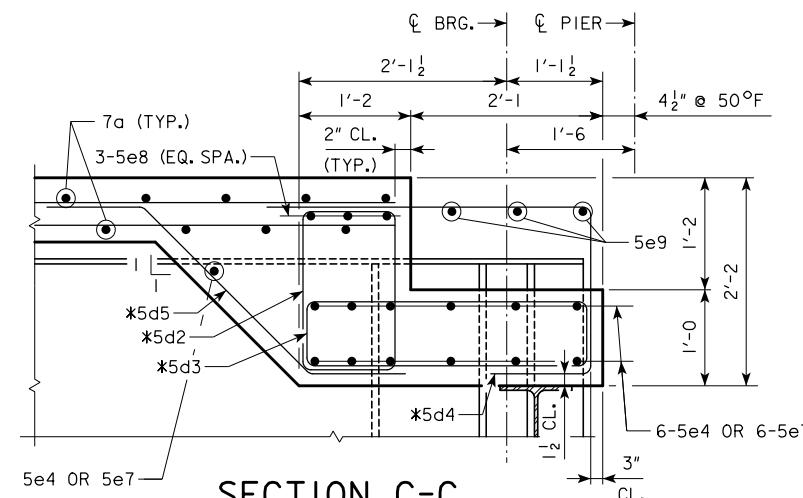
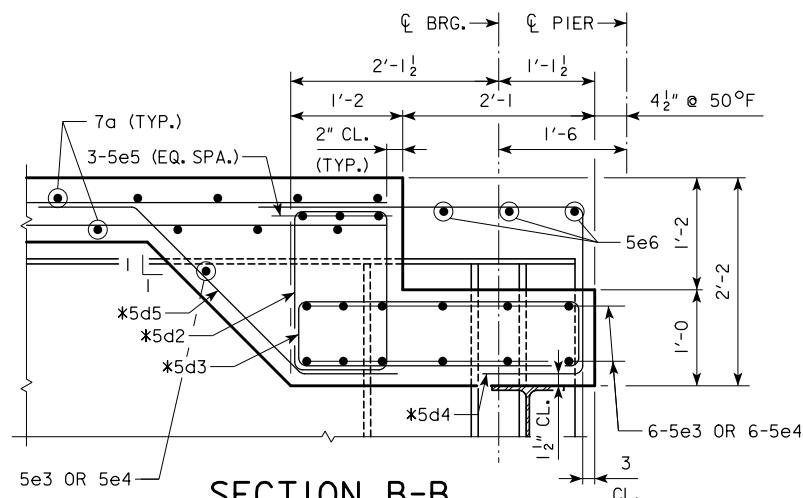
(FOR CROSS SLOPE GEOMETRICS AND EDGE OF DECK INFORMATION, SEE DESIGN SHEET 74.)



NOTE:
ADDITIONAL REINFORCING
NOT SHOWN FOR CLARITY



PERMISSIBLE LONGITUDINAL CONSTRUCTION JOINT



NOTES:

5d4 BARS SHALL BE FIELD CUT OR SPACED AS REQUIRED AT EXPANSION JOINT SUPPORT BOXES.

* PLACE BARS BETWEEN GIRDERS AND 2 BARS OUTSIDE EXTERIOR GIRDERS AT EQUAL SPACING AS SHOWN ON DESIGN SHEET 69.

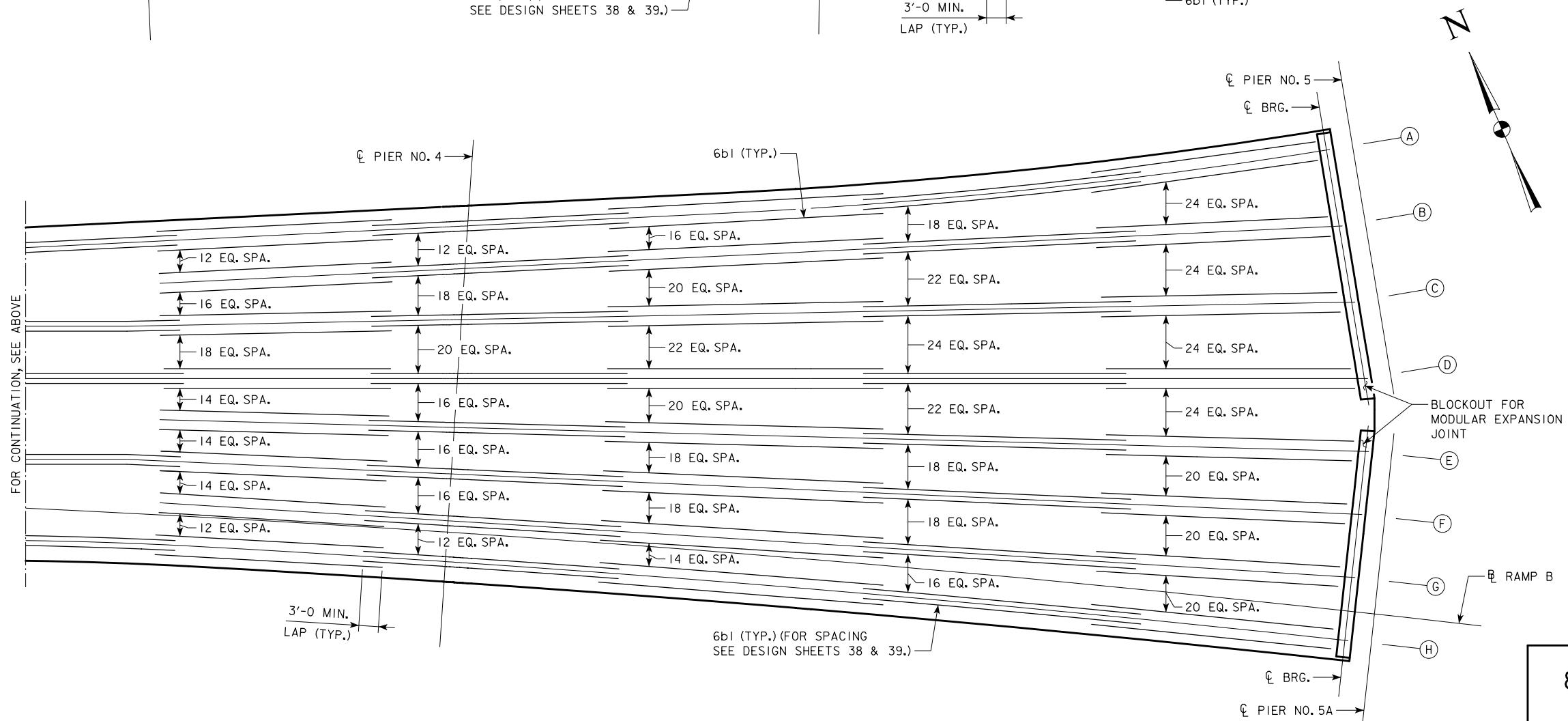
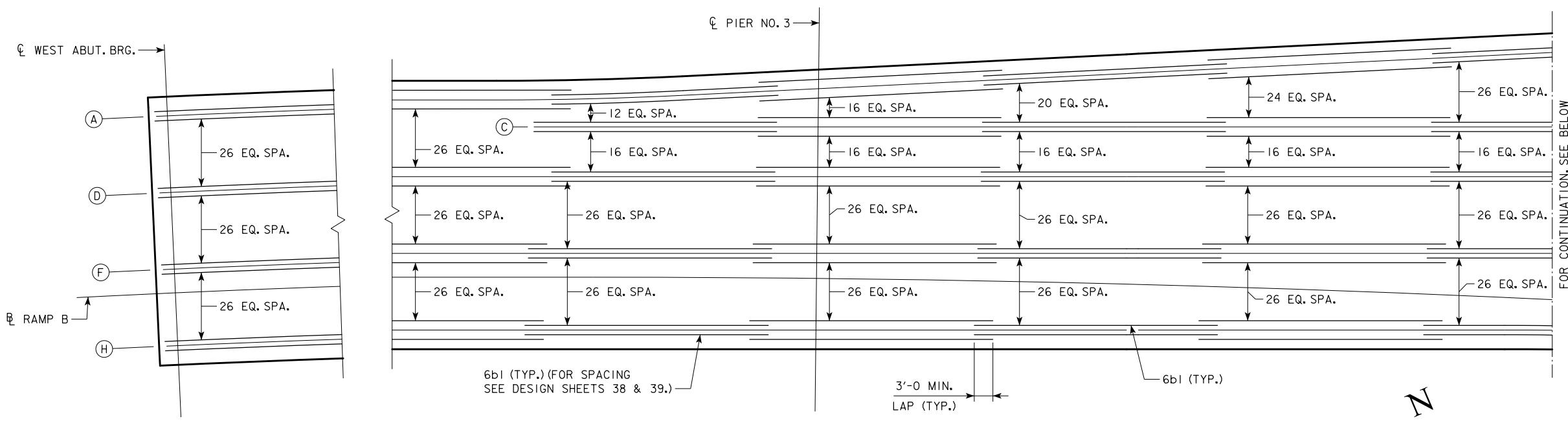
PLACE 5e3 AND 5e7 BETWEEN GIRDERS AND 5e4 OUTSIDE EXTERIOR GIRDERS.

NOTES:
FOR DECK SUPERELEVATION AND GORE GEOMETRICS, SEE DESIGN SHEET 74.
FOR DETAIL B, SEE DESIGN SHEET 73.
FOR ADDITIONAL NOTES, SEE DESIGN SHEET 69.
FOR PARTIAL SECTION NEAR EXPANSION-EXPANSION PIER, SEE DESIGN SHEET 69.
FOR PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT DETAILS, SEE DESIGN SHEET 69.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DECK PLAN & REINFORCING

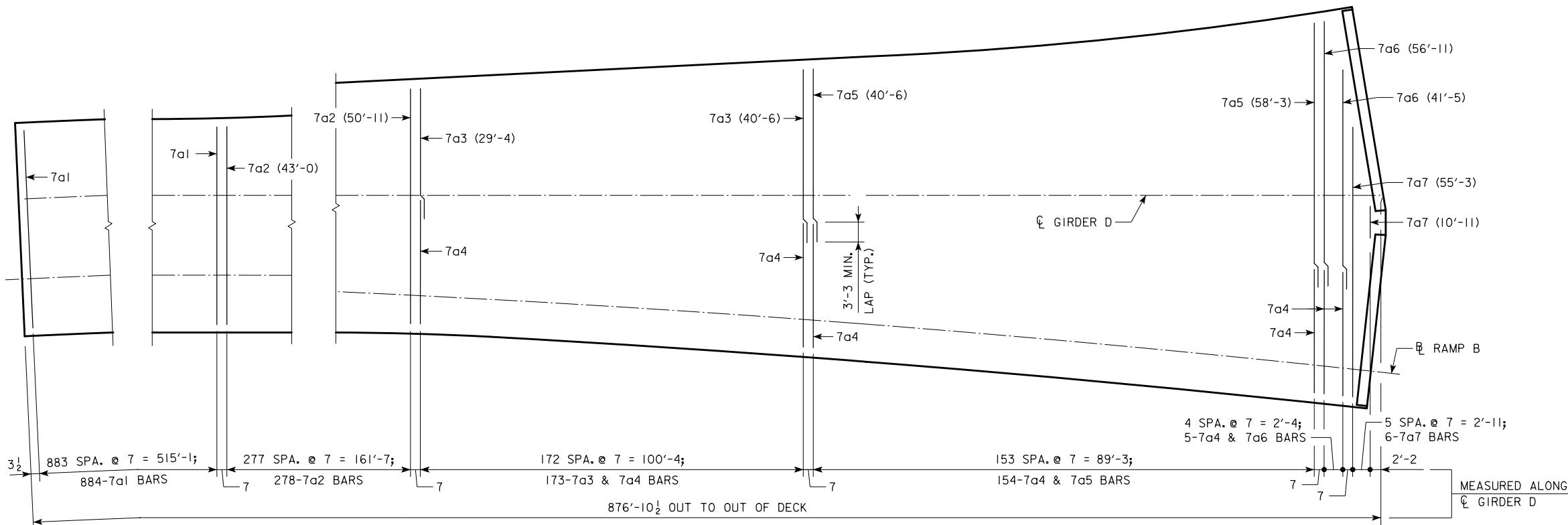
STA. 2536+28.27 (RAMP B)

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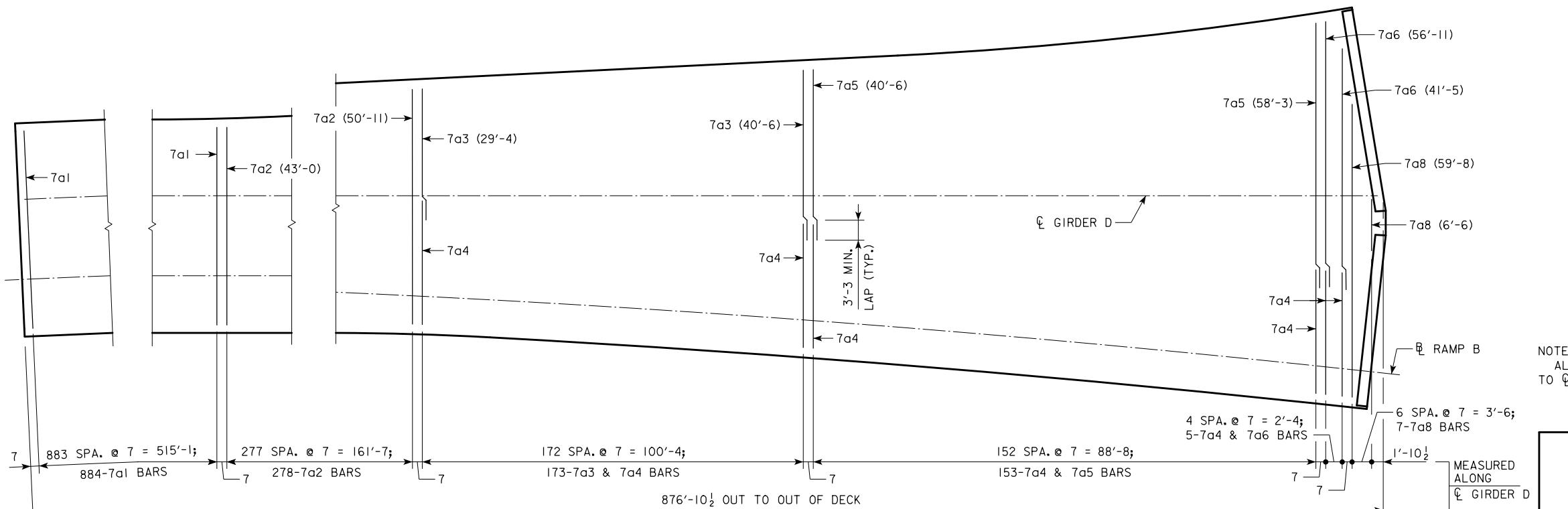


LONGITUDINAL REINFORCING LAYOUT

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
DECK PLAN & REINFORCING



TOP TRANSVERSE REINFORCING LAYOUT



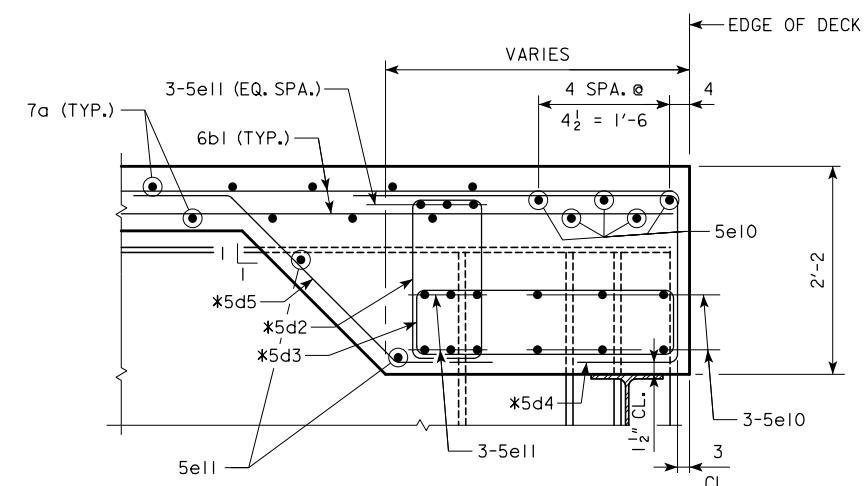
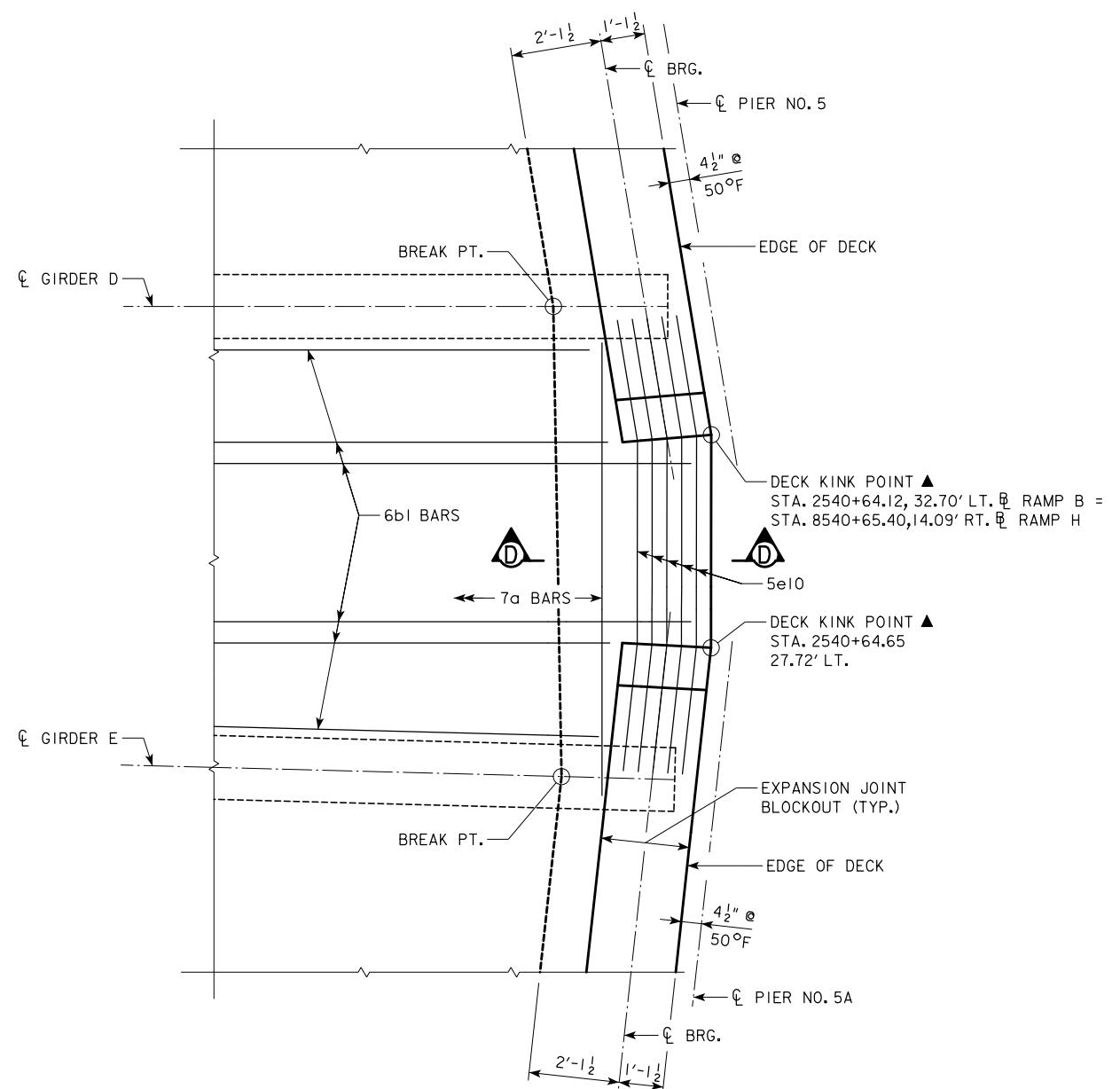
BOTTOM TRANSVERSE REINFORCING LAYOUT

NOTE:
ALL TRANSVERSE REINFORCING SHALL BE PLACED PERPENDICULAR
TO GIRDER D.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DECK PLAN & REINFORCING

STA. 2536+28.27 (RAMP B)

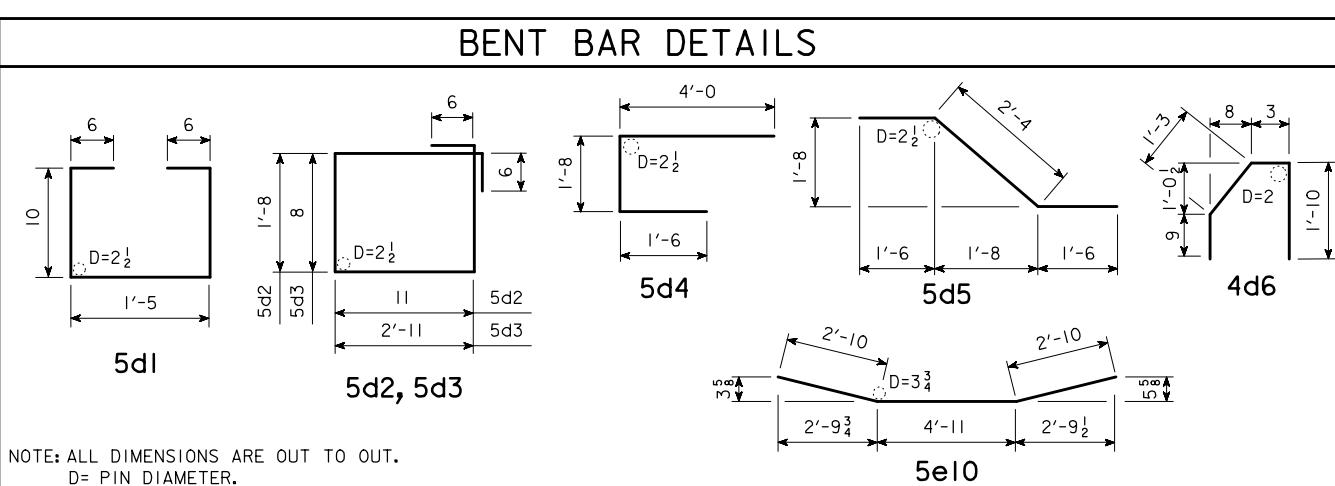
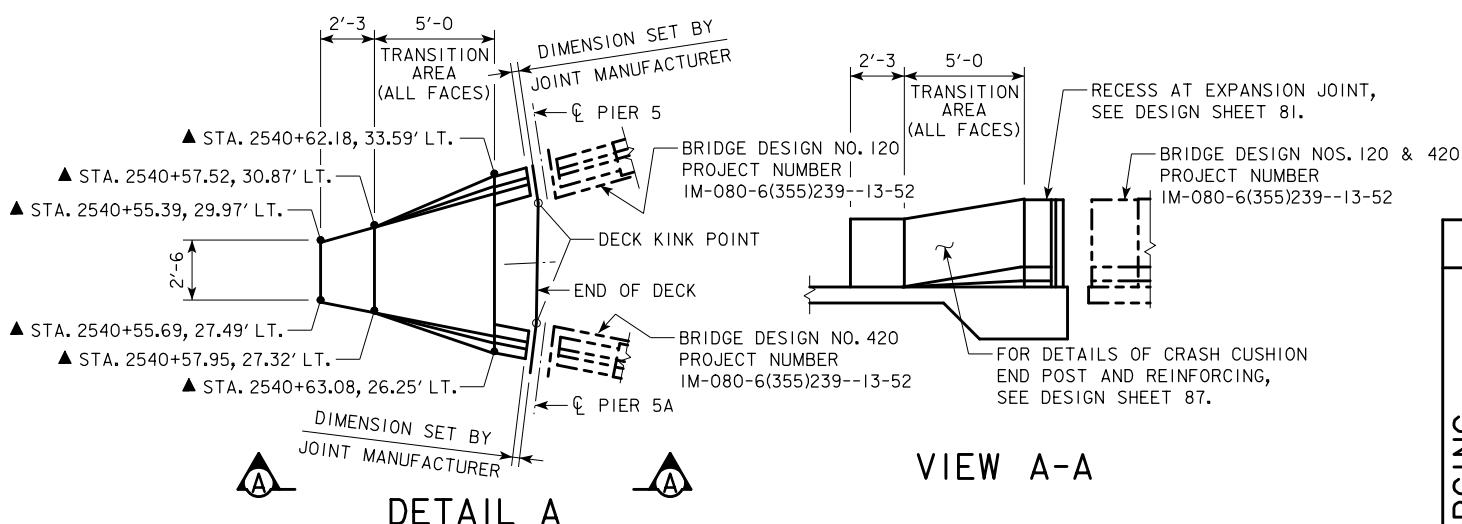
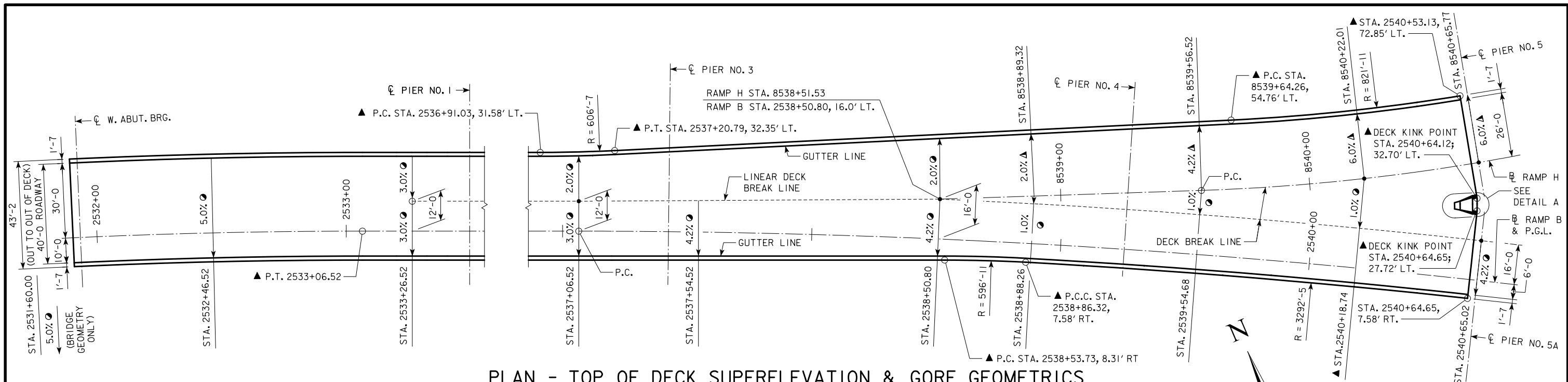
APRIL 2018



SECTION D-D
* PLACE BARS BETWEEN GIRDERS D AND E TO MATCH TOP 6b1 BARS.

NOTES:
FOR LOCATION OF DETAIL B, SEE DESIGN SHEET 70.
▲ STATIONS AND OFFSETS FOR DECK GEOMETRY ARE
ESTABLISHED AT A STRUCTURE TEMPERATURE OF 50°F.

DESIGN FOR 0° SKEW
**873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE**
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DECK PLAN & REINFORCING
STA. 2536+28.27 (▲ RAMP B) APRIL 2018



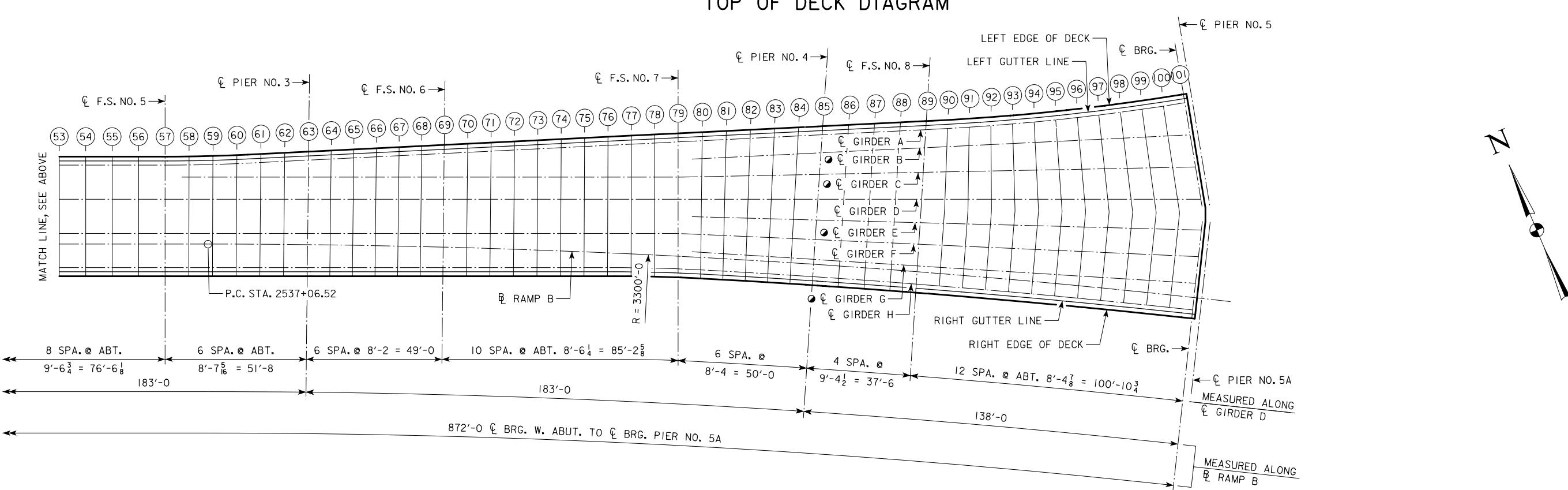
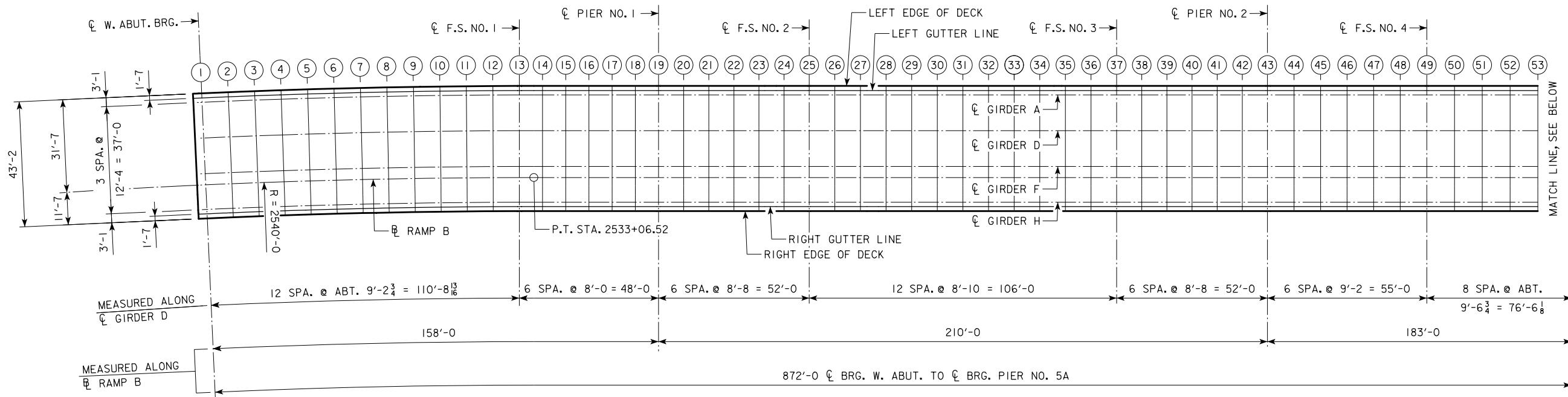
REINFORCING BAR LIST - BRIDGE DECK					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	DECK, TRANSVERSE TOP & BOTTOM	—	1768	42'-10	154,791
7a2	DECK, TRANSVERSE TOP & BOTTOM	—	556	VARIES	53,366
7a3	DECK, TRANSVERSE TOP & BOTTOM	—	346	VARIES	24,694
7a4	DECK, TRANSVERSE TOP & BOTTOM	—	663	25'-0	33,879
7a5	DECK, TRANSVERSE TOP & BOTTOM	—	307	VARIES	30,983
7a6	DECK, TRANSVERSE TOP & BOTTOM	—	10	VARIES	1,005
7a7	DECK, TRANSVERSE TOP	—	6	VARIES	406
7a8	DECK, TRANSVERSE BOTTOM	—	7	VARIES	473
5a9	DECK AT DRAIN	—	40	3'-0	125
6b1	DECK, LONGITUDINAL TOP & BOTTOM	—	2643	39'-5	156,476
5d1	ABUT. DIAPH., HOOPS	□	42	4'-1	179
5d2	EXPAN. PIER DIAPH., HOOPS	□	89	6'-2	572
5d3	EXPAN. PIER DIAPH., HOOPS	□	89	8'-2	758
5d4	EXPAN. PIER DIAPH.	□	89	7'-2	665
5d5	EXPAN. PIER DIAPH.	□	16	4'-1	44
4d6	EXPAN. PIER DIAPH.	□	4	4'-6	12
5e1	ABUT. DIAPH., LONGITUDINAL	—	6	12'-0	75
5e2	ABUT. DIAPH., LONGITUDINAL	—	2	42'-10	89
5e3	EXPAN. PIER DIAPH., LONGITUDINAL	—	39	11'-5	464
5e4	EXPAN. PIER DIAPH., LONGITUDINAL	—	26	2'-9	75
5e5	EXPAN. PIER DIAPH., LONGITUDINAL	—	3	41'-6	130
5e6	EXPAN. PIER DIAPH., LONGITUDINAL	—	3	40'-0	125
5e7	EXPAN. PIER DIAPH., LONGITUDINAL	—	39	9'-4	380
5e8	EXPAN. PIER DIAPH., LONGITUDINAL	—	3	35'-1	110
5e9	EXPAN. PIER DIAPH., LONGITUDINAL	—	3	33'-8	105
5e10	EXPAN. PIER DIAPH., LONGITUDINAL	—	11	10'-7	121
5e11	EXPAN. PIER DIAPH., LONGITUDINAL	—	11	10'-10	124

REINFORCING STEEL EPOXY COATED - TOTAL (LBS.) 460,721

HPC CONCRETE PLACEMENT QUANTITIES	
LOCATION	QUANTITY
SECTION 1, DECK & ABUT. DIAPH.	124.6
SECTION 2, DECK	113.4
SECTION 3, DECK	79.2
SECTION 4, DECK	102.0
SECTION 5, DECK & PIER DIAPH.	72.3
SECTION 6, DECK & PIER DIAPH.	65.3
SECTION 7, DECK & PIER DIAPH.	55.5
SECTION 8, DECK	120.1
SECTION 9, DECK	127.7
SECTION 10, DECK	127.2
SECTION 11, DECK	70.1
SECTION 12, DECK	60.8
SECTION 13, DECK	15.6
TOTAL (CU. YDS.)	1,133.8

NOTES:
ELEVATIONS FOR THE FULL EXTENT OF THE BRIDGE ARE CONTROLLED BY RAMP B P.G.L.
● SUPERELEVATION PERPENDICULAR TO RAMP B.
▲ SUPERELEVATION PERPENDICULAR TO RAMP H.
▲ STATIONS AND OFFSETS FOR DECK GEOMETRY ARE ESTABLISHED AT A STRUCTURE TEMPERATURE OF 50°F.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
QUANTITIES & CROSS SLOPE GEOMETRICS
STA. 2536+28.27 (RAMP B)
APRIL 2018

**NOTES:**

THE NUMBERED POINTS ARE EQUALLY SPACED ALONG EACH LINE OF INTEREST AND BETWEEN THE FIELD SPLICE AND PIER LOCATIONS SHOWN.

FOR GORE GEOMETRICS, SEE DESIGN SHEET 74.

FOR STRUCTURAL STEEL FRAMING, SEE DESIGN SHEETS 41 AND 42.

• FOR TOP OF SLAB ELEVATION LOCATIONS FOR DISCONTINUOUS GIRDERS, SEE DESIGN SHEET 77.

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6" SPANS
TOP OF DECK ELEVATIONS
STA. 2536+28.27 ($\frac{1}{2}$ RAMP B)

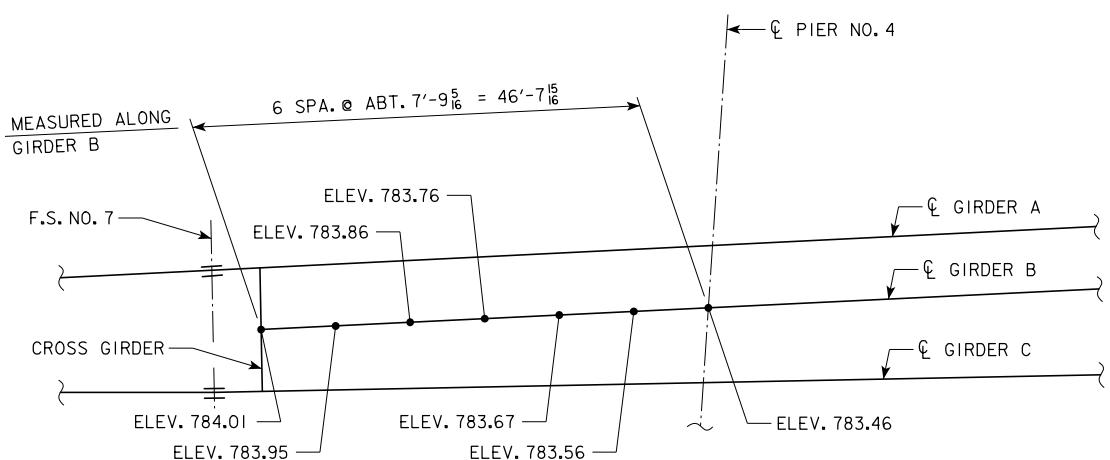
APRIL 2018

TABLE OF TOP OF DECK ELEVATIONS

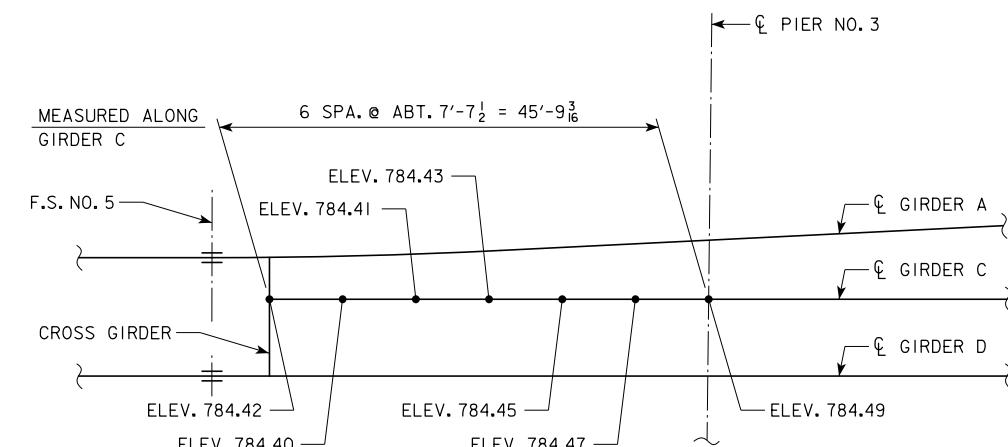
	¢ WEST ABUT. BRG.	SPAN NO. 1B												F.S. NO. 1	SPAN NO. 1B						¢ PIER NO. 1	SPAN NO. 2B						F.S. NO. 2	SPAN NO. 2B				
LINE	POINT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)				
LEFT EDGE OF DECK		781.45	781.61	781.77	781.93	782.08	782.23	782.37	782.44	782.51	782.57	782.64	782.69	782.75	782.80	782.84	782.88	782.96	783.04	783.11	783.19	783.27	783.35	783.42	783.49	783.56	783.63	783.69	783.75				
LEFT GUTTER LINE		781.37	781.54	781.69	781.85	782.00	782.15	782.29	782.37	782.44	782.51	782.57	782.63	782.69	782.74	782.79	782.83	782.91	782.99	783.07	783.15	783.23	783.31	783.39	783.46	783.53	783.60	783.66	783.72				
GIRDER LINE A		781.30	781.46	781.62	781.77	781.92	782.07	782.22	782.30	782.37	782.44	782.51	782.58	782.64	782.69	782.74	782.79	782.87	782.95	783.03	783.12	783.20	783.28	783.35	783.43	783.50	783.57	783.64	783.70				
GIRDER LINE B		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE D		780.68	780.84	781.00	781.16	781.31	781.46	781.60	781.71	781.81	781.91	782.01	782.10	782.19	782.27	782.34	782.42	782.51	782.60	782.70	782.80	782.89	782.99	783.08	783.17	783.25	783.33	783.42	783.49				
GIRDER LINE E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE F		780.07	780.23	780.38	780.54	780.69	780.84	780.99	781.12	781.25	781.38	781.50	781.63	781.74	781.85	781.94	782.04	782.14	782.24	782.34	782.44	782.55	782.64	782.74	782.83	782.92	783.01	783.10	783.18				
GIRDER LINE G		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
B RAMP B		779.87	780.04	780.19	780.35	780.50	780.65	780.79	780.94	781.08	781.21	781.35	781.48	781.60	781.71	781.82	781.93	782.03	782.13	782.23	782.33	782.43	782.53	782.62	782.72	782.81	782.90	782.98	783.07				
GIRDER LINE H		779.45	779.61	779.77	779.92	780.07	780.22	780.37	780.53	780.69	780.85	781.00	781.15	781.30	781.42	781.55	781.67	781.77	781.87	781.97	782.07	782.18	782.27	782.37	782.46	782.55	782.64	782.73	782.81				
RIGHT GUTTER LINE		779.37	779.54	779.69	779.85	780.00	780.15	780.29	780.46	780.62	780.78	780.94	781.09	781.24	781.37	781.50	781.62	781.73	781.83	781.93	782.03	782.13	782.23	782.32	782.42	782.51	782.60	782.68	782.77				
RIGHT EDGE OF DECK		779.37	779.54	779.69	779.85	780.00	780.15	780.29	780.46	780.62	780.78	780.94	781.09	781.24	781.37	781.50	781.62	781.73	781.83	781.93	782.03	782.13	782.23	782.32	782.42	782.51	782.60	782.68	782.77				
		SPAN NO. 2B												F.S. NO. 3	SPAN NO. 2B						¢ PIER NO. 2	SPAN NO. 3B						F.S. NO. 4	SPAN NO. 3B				
LINE	POINT	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)				
LEFT EDGE OF DECK		783.81	783.86	783.92	783.97	784.01	784.06	784.10	784.14	784.17	784.21	784.24	784.26	784.29	784.31	784.33	784.35	784.37	784.38	784.39	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40		
LEFT GUTTER LINE		783.79	783.84	783.90	783.95	784.00	784.04	784.09	784.13	784.16	784.20	784.23	784.26	784.29	784.31	784.33	784.35	784.37	784.38	784.39	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40	784.40			
GIRDER LINE A		783.76	783.82	783.88	783.93	783.98	784.03	784.07	784.12	784.16	784.19	784.22	784.26	784.28	784.31	784.33	784.35	784.37	784.39	784.40	784.41	784.42	784.42	784.42	784.42	784.42	784.42	784.42	784.42	784.42			
GIRDER LINE B		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE C		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE D		783.57	783.64	783.71	783.78	783.85	783.91	783.97	784.03	784.08	784.13	784.18	784.22	784.26	784.30	784.34	784.38	784.41	784.44	784.47	784.49	784.51	784.53	784.55	784.56	784.57	784.58	784.58	784.58				
GIRDER LINE E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
GIRDER LINE F		783.26	783.34	783.41	783.49	783.56	783.62	783.69	783.75	783.81	783.86	783.92	783.97	784.01	784.06	784.10	784.14	784.18	784.21	784.24	784.27	784.30	784.32	784.35	784.36	784.38	784.39	784.40	784.40				
GIRDER LINE G		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
B RAMP B		783.15	783.22	783.30	783.37	783.44	783.51	783.57	783.63	783.69	783.75	783.80	783.85	783.90	783.94	783.98	784.02	784.06	784.10	784.13	784.16	784.19	784.21	784.23	784.25	784.26	784.27	784.29	784.29				
GIRDER LINE H		782.89	782.97	783.04	783.12	783.19	783.25	783.32	783.38	783.44	783.49	783.55	783.60	783.64	783.69	783.73	783.77	783.81	783.84	783.87	783.90	783.93	783.95	783.98	784.01	784.02	784.03	784.03					
RIGHT GUTTER LINE		782.85	782.92	783.00	783.07	783.14	783.21	783.27	783.33	783.39	783.45	783.50	783.55	783.60	783.64	783.68	783.72	783.76	783.80	783.83	783.86	783.89	783.91	783.93	783.95	783.96	783.97	783.99					
RIGHT EDGE OF DECK		782.85	782.92	783.00	783.07	783.14	783.21	783.27	783.33	783.39	783.45	783.50	783.55	783.60	783.64	783.68	783.72	783.76	783.80	783.83	783.86	783.89	783.91	783.93	783.95	783.96	783.97	783.99					
		F.S. NO. 5	SPAN NO. 3B												¢ PIER NO. 3	SPAN NO. 4B						F.S. NO. 6	SPAN NO. 4B						F.S. NO. 7	SPAN NO. 4B			
LINE	POINT	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)	(81)	(82)	(83)	(84)				
LEFT EDGE OF DECK		784.32	784.30	784.28	784.30	784.31	784.32	784.33	784.34	784.33	784																						

NOTES:
FOR TOP OF DECK DIAGRAM, SEE DESIGN SHEET 75.
SEE DETAIL FOR DISCONTINUOUS GIRDER ELEVATIONS ON
DESIGN SHEET 77.

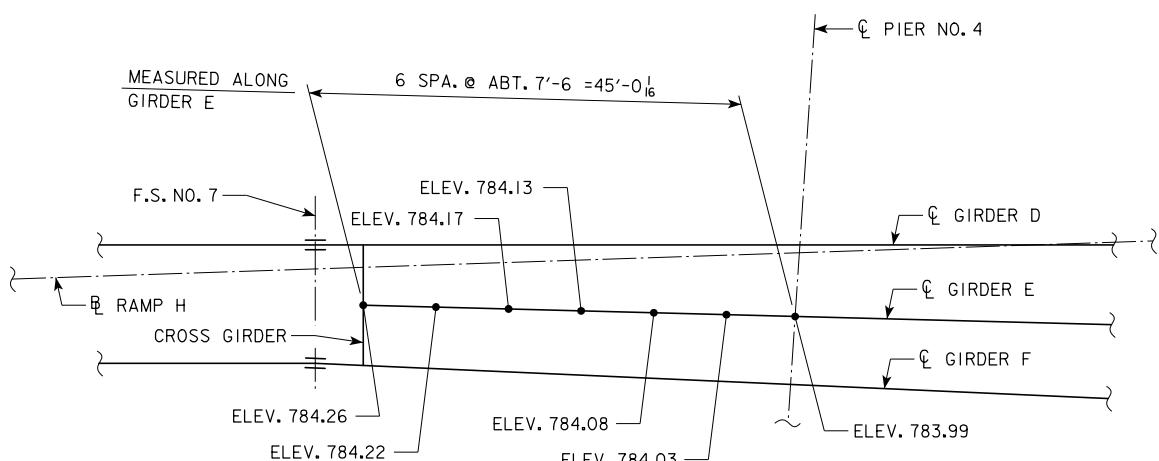
DESIGN FOR 0° SKEW
**6 X VARIES CONTINUOUS
ELDED GIRDER BRIDGE**
58'-0" 210'-0" 183'-0" 183'-0" 139'-6" SPANS



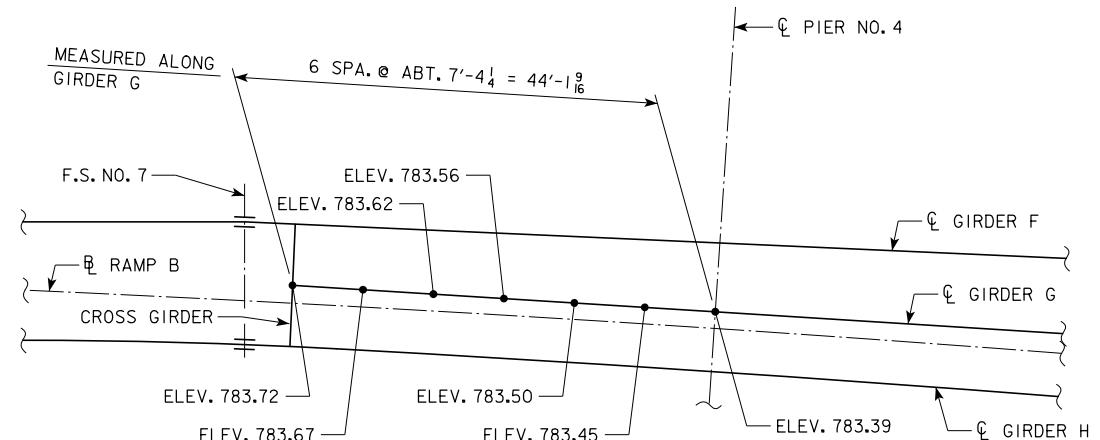
TOP OF DECK ELEVATIONS
(FOR DISCONTINUOUS GIRDER B)



TOP OF DECK ELEVATIONS
(FOR DISCONTINUOUS GIRDER C)



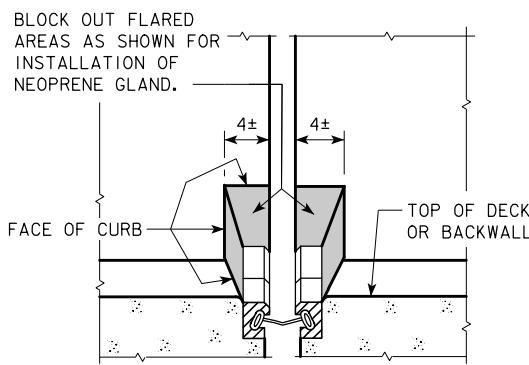
TOP OF DECK ELEVATIONS
(FOR DISCONTINUOUS GIRDER E)



TOP OF DECK ELEVATIONS
(FOR DISCONTINUOUS GIRDER G)

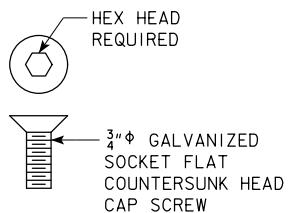
NOTE:
FOR TOP OF DECK DIAGRAM, SEE DESIGN SHEET 75.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
TOP OF DECK ELEVATIONS
STA. 2536+28.27 (RAMP B) APRIL 2018

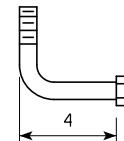


BLOCKOUT DETAIL

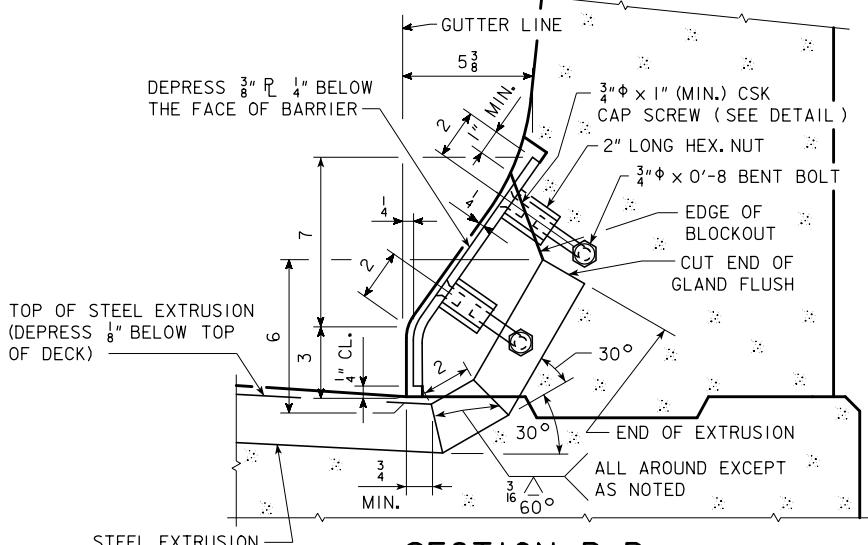
CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE $\frac{3}{8}$ " BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.



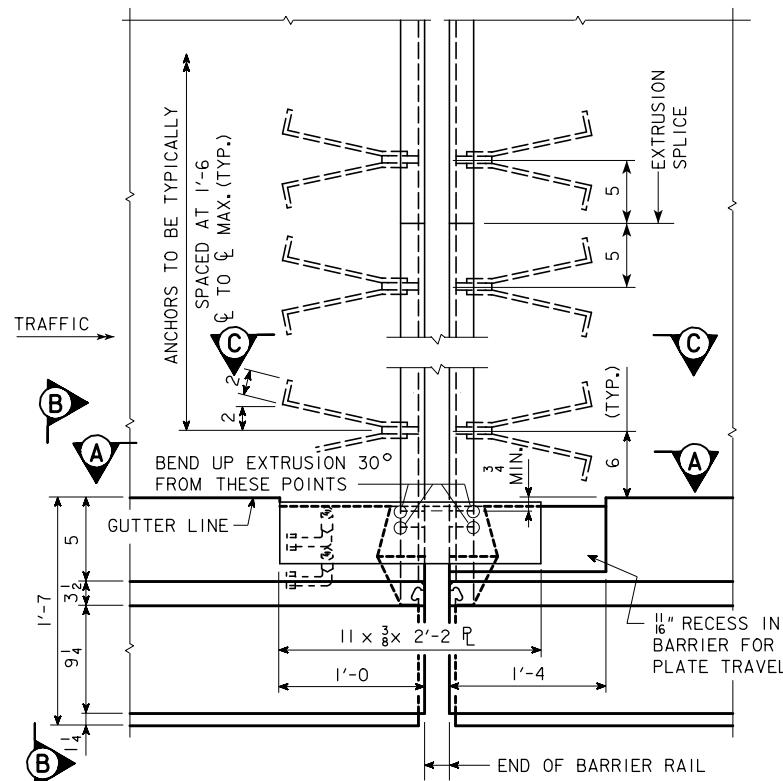
SOCKET FLAT COUNTERSUNK HEAD CAP SCREW DETAIL



BENT BOLT DETAIL

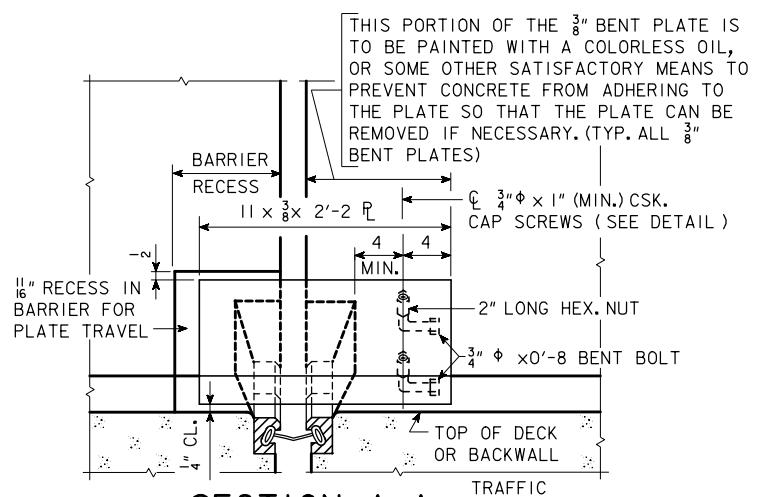


SECTION B-B



PART PLAN VIEW OF EXPANSION DEVICE AT WEST ABUTMENT, 0° SKEW

NOTE: IT IS INTENDED THAT THE $\frac{11}{16}$ INCH RECESSED AREA BE FORMED SO THAT WHEN THE $\frac{3}{8}$ " BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.

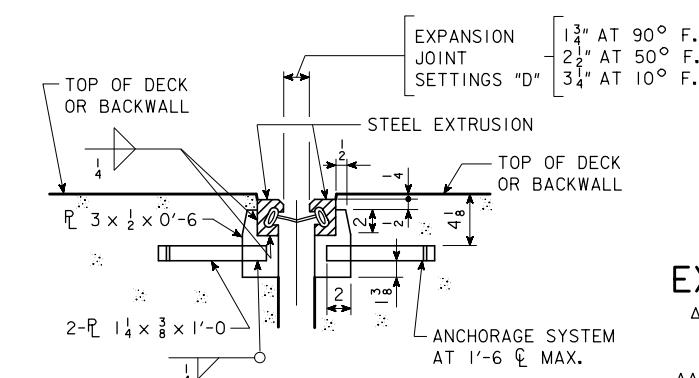


SECTION A-A

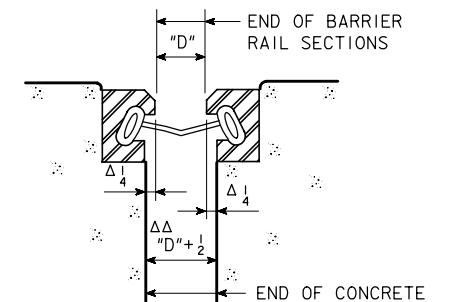
BARRIER PLATE NOTE:

THE MATERIAL USED FOR THE BARRIER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

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



SECTION C-C



EXPANSION OPENING DETAIL

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

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

TABLE OF APPROVED EXPANSION DEVICES

MANUFACTURER	TYPE OF STEEL EXTRUSION	NEOPRENE GLAND	MINIMUM OPENING FOR GLAND INSTALLATION	CORRESPONDING MAXIMUM DECK TEMPERATURE
WATSON-BOWMAN & ACME CORP.	A	SE-400	1 1/2"	105° F.
D.S. BROWN CO.	SSA2	A2R-400	2"	78° F.
APPROVED EQUAL				

NOTE:
SEE DESIGN SHEET 79 FOR EXPANSION DEVICE NOTES CONTAINING THE STEEL EXTRUSION NOTES, NEOPRENE GLAND NOTES, AND WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES.

DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0", 210'-0", 183'-0", 183'-0", 139'-6 SPANS
STRIP SEAL JOINT DETAILS AT WEST ABUTMENT
STA. 2536+28.27 (RAMP B)

APRIL 2018

STEEL EXTRUSION NOTES:

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

THE EXPANSION DEVICE SHALL BE GALVANIZED AFTER WELDING. ALL SLIDER PLATES INCLUDING THEIR ANCHORAGES SHALL BE GALVANIZED.

THE EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$ " BELOW TOP OF THE PLATE. THE MINIMUM GRADE OF STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE ASTM A36.

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

SHOP SPLICES OF THE STEEL EXTRUSION WILL BE PERMITTED. PRIOR TO MAKING SHOP SPLICES STEEL EXTRUSION PIECES SHALL HAVE A MINIMUM LENGTH OF 15 FEET. 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 DETAILED ON THE SHOP DRAWING. 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 INSTALLED.

THE NUMBER OF FEET OF STEEL EXTRUSION INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL INCLUDE THE COST OF FURNISHING BUT NOT THE COST OF INSTALLING THE NEOPRENE GLAND. THE CONTRACT PRICE BID FOR "STEEL EXTRUSION JOINT W/NEOPRENE" SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING STEEL EXTRUSIONS. THIS WORK WILL CONSIST OF FURNISHING ALL REQUIRED MATERIALS, (INCLUDING THE $\frac{3}{8}$ " PLATES AT THE CURBS AND THEIR ANCHORAGE SYSTEMS), AND THE INSTALLATION AND ADJUSTMENT OF THE EXPANSION JOINTS 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.

NEOPRENE GLAND NOTES:

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

THE NEOPRENE GLAND SHALL CONFORM TO ASTM-2628 MODIFIED TO EXCLUDE RECOVER TEST AND COMPRESSION SET.

THE CONTRACTOR SHALL INSTALL THE GLAND ABOVE THE MINIMUM TEMPERATURE OF 45° AND THE MINIMUM JOINT OPENING AND CORRESPONDING MAXIMUM DECK TEMPERATURE SHOWN IN THESE PLANS. THE DECK TEMPERATURE SHALL BE MEASURED BY RECORDING THE SURFACE TEMPERATURES ON THE UNDERSIDE OF THE DECK ADJACENT TO THE JOINTS. IF THE DECK TEMPERATURE DOES NOT FALL WITHIN THE SPECIFIED TEMPERATURE RANGE BEFORE THE CONTRACTOR HAS COMPLETED ALL OTHER REQUIRED WORK, IT WILL BE NECESSARY FOR THE CONTRACTOR TO RETURN TO THE PROJECT SITE TO COMPLETE INSTALLATION AND TESTING OF THE NEOPRENE GLAND. IF THE CONTRACTOR IS REQUIRED TO RETURN TO THE PROJECT SITE AFTER ALL OTHER REQUIRED WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL COMPLETE INSTALLATION AND TESTING OF NEOPRENE GLAND AT NO EXTRA CHARGE TO THE STATE.

THE NUMBER OF FEET OF NEOPRENE GLAND INSTALLED SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT BASED ON PLAN QUANTITIES. THE PRICE FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL BE FULL COMPENSATION FOR INSTALLING AND TESTING OF THE NEW NEOPRENE GLAND. THIS WORK WILL CONSIST OF CLEANING THE EXTRUSION, INSTALLATION OF THE NEOPRENE GLAND AND WATER TIGHT TESTING OF THE EXPANSION JOINT SYSTEM. ALL WORK AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE NEOPRENE GLAND SHALL COMPLY WITH THE RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER. THE PRICE BID FOR "NEOPRENE GLAND INSTALLATION AND TESTING" SHALL INCLUDE ALL WATERTIGHT INTEGRITY TESTING, LEAK REPAIRS AS DIRECTED BY THE ENGINEER, AND SUBSEQUENT WATERTIGHT TESTING UNTIL A LEAK FREE INSTALLATION IS ACHIEVED.

WATERTIGHT INTEGRITY TESTING AND REPAIR NOTES:

AFTER INSTALLATION OF EACH NEOPRENE GLAND, THE CONTRACTOR SHALL PERFORM WATERTIGHT INTEGRITY TESTS AT THE DECK LEVEL TO DETECT ANY LEAKAGE. THE TESTS ARE TO CHECK FOR LEAKAGE AT THE UPTURNED ENDS OF THE EXPANSION DEVICE AND FOR LEAKAGE ALONG THE EXPANSION DEVICE ACROSS THE DECK AND ANY MEDIAN OR SIDEWALKS. THE CONTRACTOR MAY CONDUCT A SINGLE TEST OF THE ENTIRE DEVICE INCLUDING UPTURNED ENDS OR MAY CONDUCT SEPARATE TESTS OF UPTURNED ENDS AND ONE OR MORE TESTS OF OVERLAPPING LENGTHS BETWEEN THE UPTURNED ENDS.

AT EACH UPTURNED END OF THE EXPANSION DEVICE, THE CONTRACTOR SHALL BLOCK OUT ON THE DECK AT LEAST 3 FEET OF THE EXPANSION DEVICE LEADING TO THE UPTURNED END AND FLOOD THE AREA. A MINIMUM WATER DEPTH OF 3" SHALL BE MAINTAINED AT THE GUTTERLINE FOR AT LEAST 30 MINUTES. DURING THE TEST, THE INSPECTOR SHALL OBSERVE FOR ANY OVERFLOW AT THE UPTURNED END. AT THE CONCLUSION OF THE TEST THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF THE INSPECTOR OBSERVES NO OVERFLOW DURING THE TEST AND IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS NEAR THE UPTURNED END.

THE CONTRACTOR SHALL TEST THE EXPANSION DEVICE BETWEEN UPTURNED ENDS BY BLOCKING OUT AND COVERING THE DEVICE WITH PONDED OR FLOWING WATER TO A DEPTH OF AT LEAST 1" AT ALL POINTS, FOR AT LEAST 30 MINUTES. VERTICAL CURB SURFACES MAY BE TESTED WITH AN UNNOZZLED HOSE DELIVERING APPROXIMATELY ONE GALLON PER MINUTE DIRECTED TO FLOW OVER THE ENTIRE CURB HEIGHT FOR 30 MINUTES. AT THE CONCLUSION OF THE TEST, THE INSPECTOR WILL EXAMINE THE UNDERSIDE OF THE JOINT FOR LEAKAGE. THE EXPANSION DEVICE IS CONSIDERED WATERTIGHT IF NO DRIPPING WATER OR WATER DROPLETS ARE VISIBLE IN THE UNDERDECK AREAS ALONG THE FULL LENGTH OF THE EXPANSION JOINT. DAMP CONCRETE THAT DOES NOT SHOW DRIPPING WATER OR WATER DROPLETS IS NOT CONSIDERED A SIGN OF LEAKAGE.

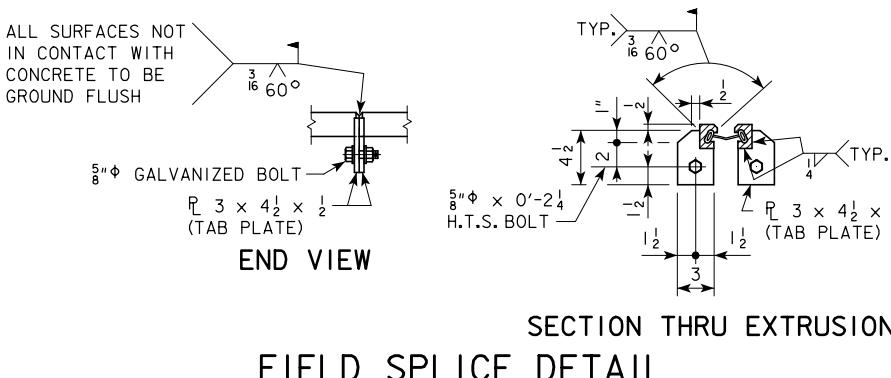
IF THE EXPANSION DEVICE LEAKS AT AN UPTURNED END OR ALONG ITS LENGTH, THE CONTRACTOR SHALL LOCATE THE LEAK(S) AND TAKE REPAIR MEASURES TO STOP THE LEAKAGE. THE REPAIR MEASURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CORRECTIVE WORK.

IF MEASURES TO ELIMINATE LEAKAGE ARE TAKEN, THE CONTRACTOR SHALL PERFORM SUBSEQUENT WATERTIGHT INTEGRITY TESTS SUBJECT TO THE SAME CONDITIONS AS THE ORIGINAL TEST.

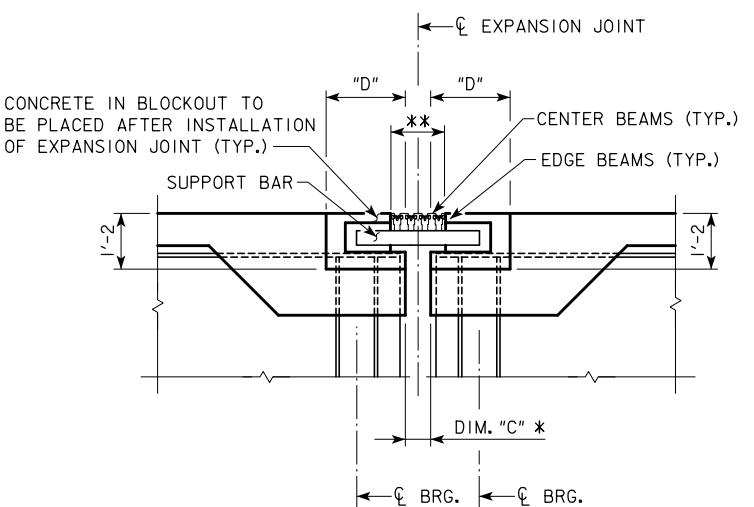
FIELD CONSTRUCTION NOTES:

IF THE STEEL EXTRUSION IS SPLICED IN THE FIELD, THE SPLICE LOCATION SHALL BE DETAILED ON THE SHOP DRAWINGS. THE CONNECTION DETAILS SHALL INCLUDE TAB PLATES AND PREPARED ENDS TO ACCOMMODATE THE NECESSARY WELDING. SEE DETAILS IN THESE PLANS.

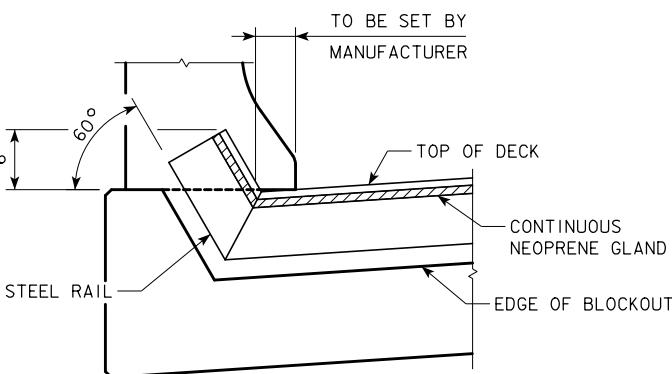
GALVANIZED COATING DAMAGE BY FIELD WELDING SHALL BE REPAIRED IN ACCORDANCE WITH MATERIALS I.M. 410.



DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
STRIP SEAL JOINT DETAILS
STA. 2536+28.27 (E RAMP B) APRIL 2018



SECTION AT PIER
(PERPENDICULAR TO Ⓜ PIER)



SECTION AT CURB

MODULAR 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 MODULAR EXPANSION DEVICE SHALL BE GALVANIZED AFTER WELDING.

THE MODULAR EXPANSION DEVICE IS TO BE PARALLEL TO GRADE.

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

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

SHOP SPLICES OF THE MODULAR EXPANSION DEVICE RAILS WILL BE PERMITTED. PRIOR TO MAKING SHOP SPLICES, PIECES OF MODULAR EXPANSION DEVICE RAILS SHALL HAVE A MINIMUM LENGTH OF 15 FT. THE INDIVIDUAL LENGTH OF PIECES SHALL BE CHOSEN SO THAT A MINIMUM NUMBER OF SPLICES IS REQUIRED. ALL CENTER BEAM SPLICES SHALL BE FULL PENETRATION WELDS, EXCEPT UPTURN SPLICES MAY BE PARTIAL PENETRATION WELDS. ALL EDGE BEAM SPLICES MAY BE PARTIAL PENETRATION WELDS. ALL SURFACES NOT IN CONTACT WITH CONCRETE SHALL BE GROUND FLUSH. NO WELD SHALL BE PERMITTED IN THE INTERNAL SECTION OF THE EXTRUSION WHERE THE NEOPRENE GLAND IS TO BE INSTALLED.

ANCHORAGE FOR MODULAR EXPANSION JOINT AND SPACING OF SUPPORT BRACKETS TO BE DESIGNED BY THE MODULAR EXPANSION JOINT MANUFACTURER.

THERMAL MOVEMENTS OCCUR ALONG A LINE FROM THE ASSUMED POINT OF ZERO MOVEMENT TO THE ADJACENT EXPANSION JOINT. FOR THE ASSUMED ORIENTATION OF EXPANSION JOINT MOVEMENT, SEE THE BEARING ORIENTATION DETAILS ON THE DISC BEARING SHEETS. MANUFACTURER SHALL DESIGN THE EXPANSION DEVICE TO ACCOMMODATE THE THERMAL MOVEMENTS INDICATED AND ELIMINATE RACKING.

MODULAR EXPANSION JOINT ASSEMBLIES SHALL BE INSTALLED AFTER THE GIRDER ERECTION AND DECK CONCRETE PLACEMENT HAS BEEN COMPLETED FOR THE BRIDGE UNITS LOCATED ON EACH SIDE OF THE EXPANSION JOINT.

MOVEMENT & BLOCKOUT TABLE				
LOCATION	TOTAL MOVEMENT (IN)	TEMP. CHANGE FOR $\frac{1}{8}$ INCH ADJUSTMENT ($^{\circ}$ F) Δ	DIM "C" (IN) Δ	DIM "D" (IN) Δ
PIER NO. 5	12.3	1.53	9	25
PIER NO. 5A	12.1	1.55	9	25

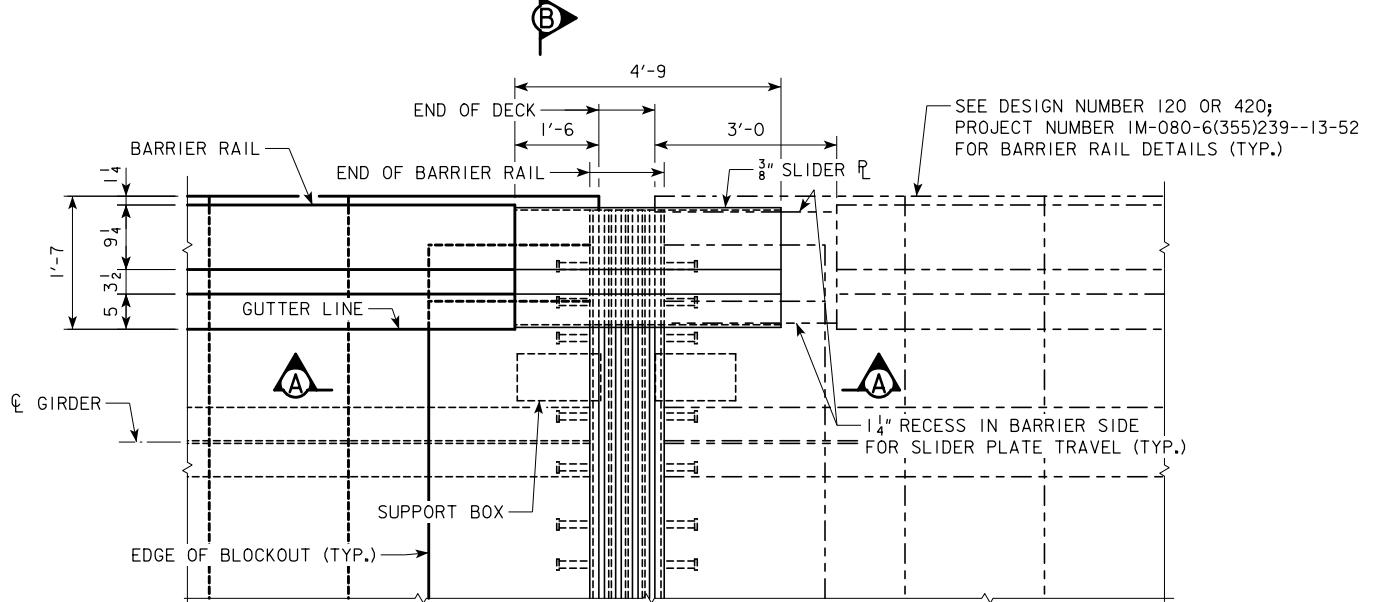
NOTES:

DIMENSIONS MARKED THUS (*) ARE AT 50°F WITH $\frac{1}{8}$ " VARIATION FOR THE TEMPERATURE SHOWN IN THE MOVEMENT TABLE. INCREASE GAP FOR A DECREASE IN TEMPERATURE AND DECREASE GAP FOR AN INCREASE IN TEMPERATURE.

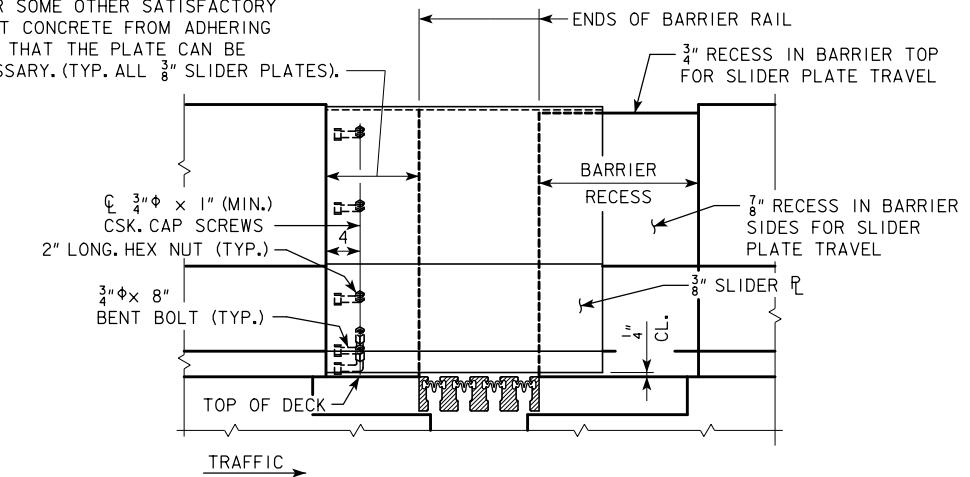
** DIMENSIONS TO BE SET BY JOINT MANUFACTURER.

Δ PERPENDICULAR TO JOINT.

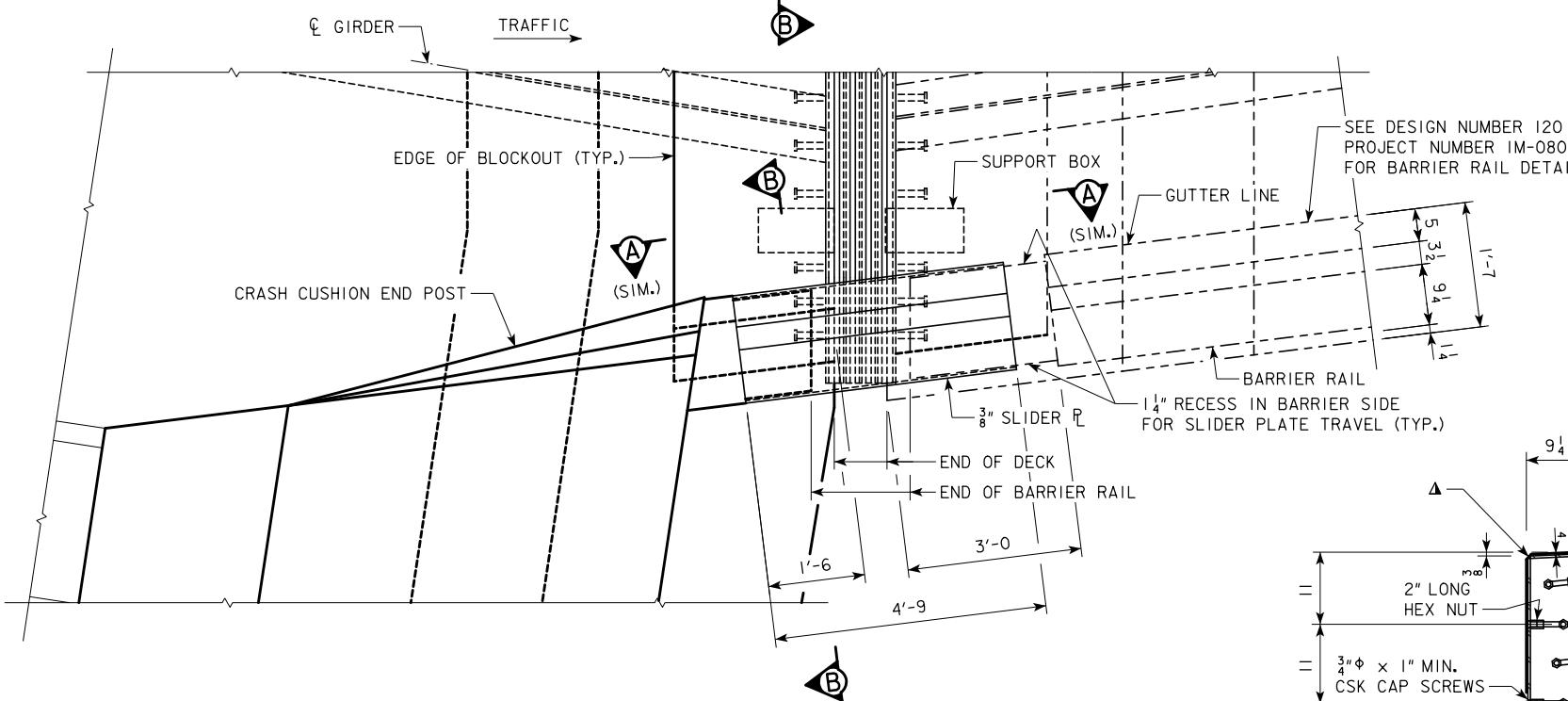
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
MODULAR EXPANSION JOINT DETAILS
STA. 2536+28.27 (E RAMP B) APRIL 2018



THE INSIDE SURFACE OF THIS PORTION OF THE $\frac{3}{8}$ " SLIDER PLATE IS TO BE PAINTED WITH A COLORLESS OIL, OR SOME OTHER SATISFACTORY MEANS TO PREVENT CONCRETE FROM ADHERING TO THE PLATE SO THAT THE PLATE CAN BE REMOVED IF NECESSARY. (TYP. ALL $\frac{3}{8}$ " SLIDER PLATES).

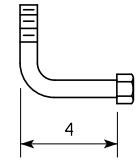
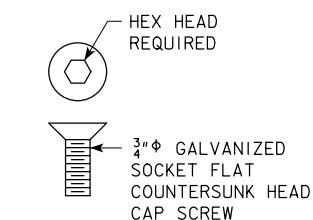


SECTION A-A



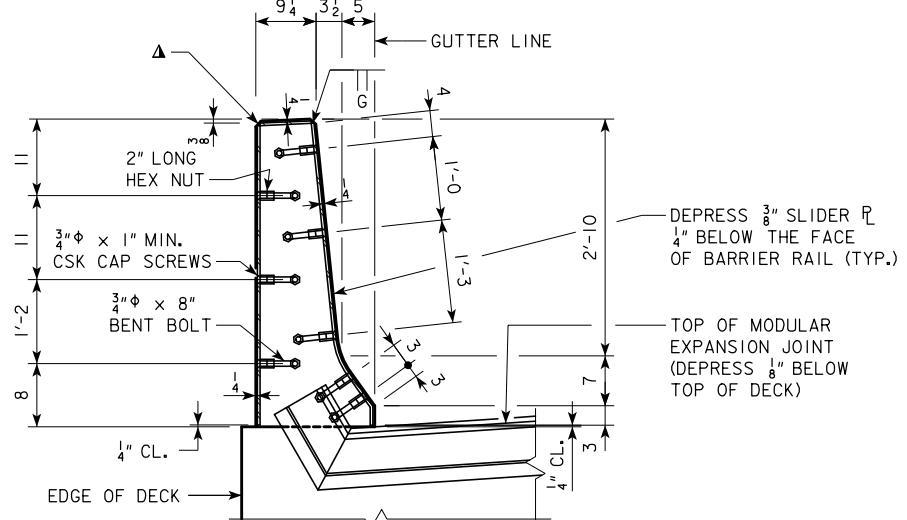
EXPANSION DEVICE PLAN

(PIER NO. 5 SHOWN, PIER NO. 5A SIMILAR)



SOCKET FLAT COUNTERSUNK HEAD CAP SCREW DETAIL

BENT BOLT DETAIL



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

SECTION B-B

(SEE DESIGN SHEET 38 FOR DECK CROSS SLOPE AND BARRIER ORIENTATION)

NOTES:
THE MATERIAL USED FOR THE SLIDER PLATES IS TO BE ASTM A36 STEEL. THE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A307. THE PLATES, BOLTS, NUTS AND CAP SCREWS ARE TO BE GALVANIZED IN ACCORDANCE WITH ARTICLE 4100.07 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR TO NOTE THAT THE CAP SCREW ANCHORAGE SYSTEM FOR THE $\frac{1}{2}$ " BARRIER PLATES ARE ALWAYS TO BE PLACED ON THE ONCOMING TRAFFIC SIDE.

IT IS INTENDED THAT THE RECESSED AREA BE FORMED SO THAT WHEN THE $\frac{3}{8}$ " BENT PLATE IS INSTALLED THE PLATE WILL BE ABLE TO MOVE FREELY IN THIS RECESSED AREA.

CAP SCREWS SHALL BE COUNTERSUNK $\frac{1}{16}$ " BELOW TOP OF THE PLATE.

DESIGN FOR 0° SKEW

873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

MODULAR EXPANSION JOINT DETAILS

STA. 2536+28.27 (RAMP B)

APRIL 2018

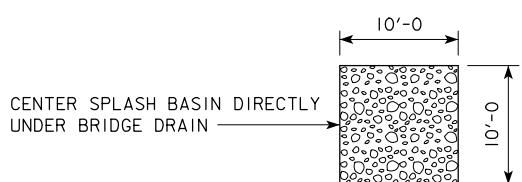
REFER TO DESIGN NO. I20 OF THIS
PROJECT FOR 3D PDF OF TYPE 1
AND TYPE 2 DRAIN DETAILS.

SPLASH BASIN NOTES:

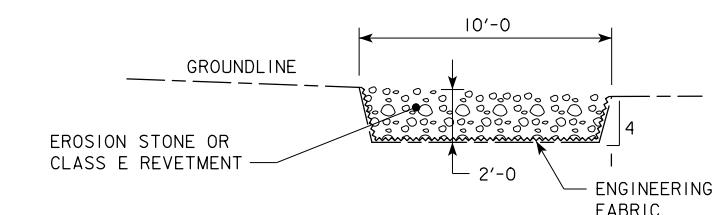
THE COST OF FURNISHING AND PLACING SPLASH BASINS (INCLUDING EXCAVATION, EROSION STONE OR CLASS E REVETMENT, AND ENGINEERING FABRIC) IS TO BE INCLUDED IN THE PRICE BID FOR "DECK DRAINS". NO EXTRA PAYMENT WILL BE MADE. TOTAL NUMBER OF SPLASH BASINS = 8.

TABLE OF DECK DRAINS						
LOCATION	STATION	CROSS SLOPE (%)	* ANGLE "A"	OFFSET FROM RAMP B	DRAIN TYPE	SPLASH BASIN REQUIRED
WEST ABUT. (AHD)	2532+01.52	5.00	2°50'	RIGHT	TYPE 2	NO
WEST ABUT. (AHD)	2532+06.52	5.00	2°50'	RIGHT	TYPE 2	NO
PIER 1 (AHD)	2533+69.52	3.00	1°45'	RIGHT	TYPE 1	YES
PIER 2 (AHD)	2535+79.52	3.00	1°45'	RIGHT	TYPE 1	YES
PIER 3 (BACK)	2537+05.00	1.98	1°10'	LEFT	TYPE 1	YES
PIER 4 (AHD)	2539+45.52	4.20	2°25'	RIGHT	TYPE 2	YES
PIER 5 (BACK)	2540+29.52	6.00	3°25'	LEFT	TYPE 2	YES
PIER 5 (BACK)	2540+34.14	6.00	3°25'	LEFT	TYPE 2	YES
PIER 5A (BACK)	2540+45.02	4.20	2°25'	RIGHT	TYPE 2	YES
PIER 5A (BACK)	2540+50.02	4.20	2°25'	RIGHT	TYPE 2	YES

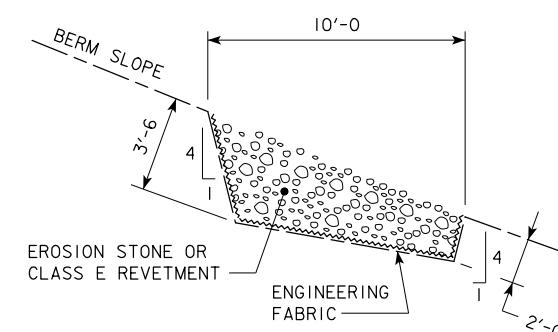
* FOR LOCATION OF ANGLE "A", SEE DESIGN SHEETS 83 AND 84.



SPLASH BASIN UNDER BRIDGE DRAIN
PLAN VIEW



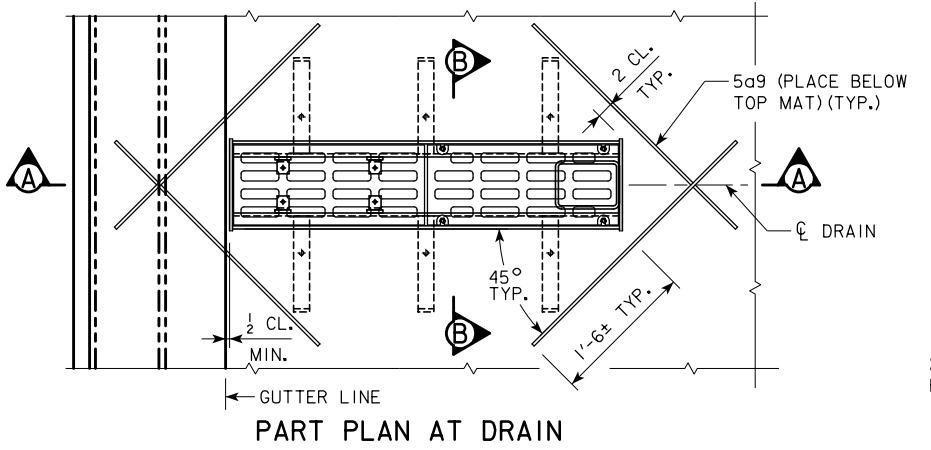
SPLASH BASIN UNDER BRIDGE DRAIN
TYPICAL SECTION



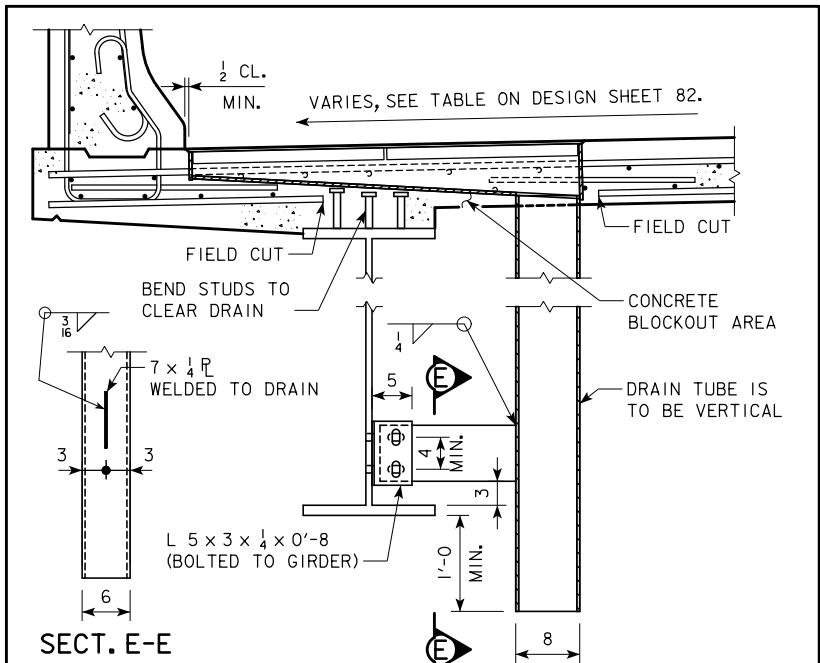
SPLASH BASIN UNDER BRIDGE DRAIN
TYPICAL SECTION FOR BERM SLOPES

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
DRAINAGE DETAILS
STA. 2536+28.27 (RAMP B)

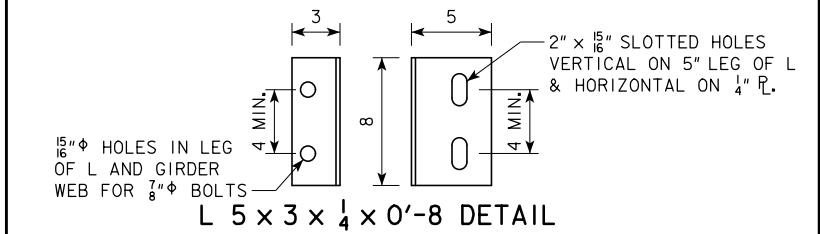
APRIL 2018



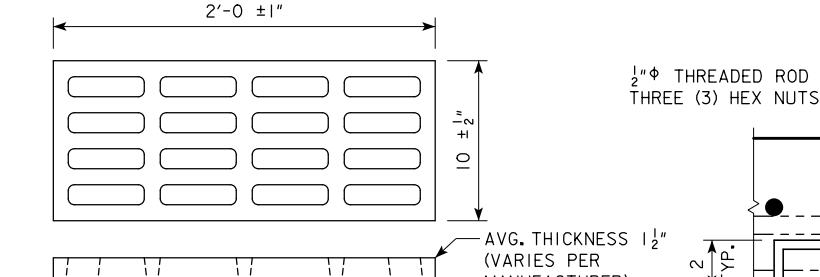
PART PLAN AT DRAIN



PART SECTION A-A



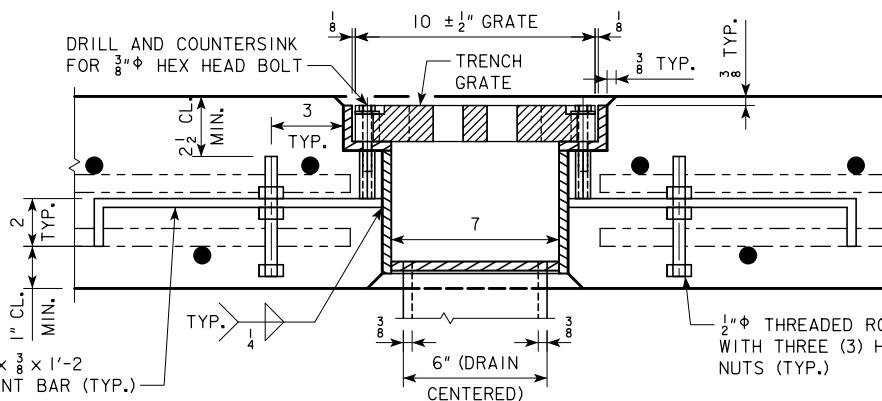
L 5 x 3 x 1/4 x 0'-8 DETAIL



DRAIN TRENCH GRATE DETAILS

(2 GRATES REQUIRED PER DRAIN)

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.



PART SECTION B-B - SHOWING DTL. B OPTION

(DETAIL IS SHOWN USING 10" WIDE GRATE)

DRAIN NOTES

THE DRAINS SHALL BE $\frac{3}{8}$ INCH THICK STEEL. THE DRAIN ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION. THE BID ITEM "DECK DRAIN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

THE DRAIN TRENCH GRATES SHALL BE FERROUS CASTINGS. METAL USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM A48-83 CLASS 35B OR BETTER GRAY IRON CASTINGS IN ACCORDANCE WITH CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS. FINISH OF CASTINGS SHALL BE SMOOTH AND FREE OF DEFECTS. TRENCH GRATES SHALL BE CAPABLE OF CARRYING AASHTO HL-93 LOADING. GALVANIZING OF THE TRENCH GRATES IS NOT REQUIRED.

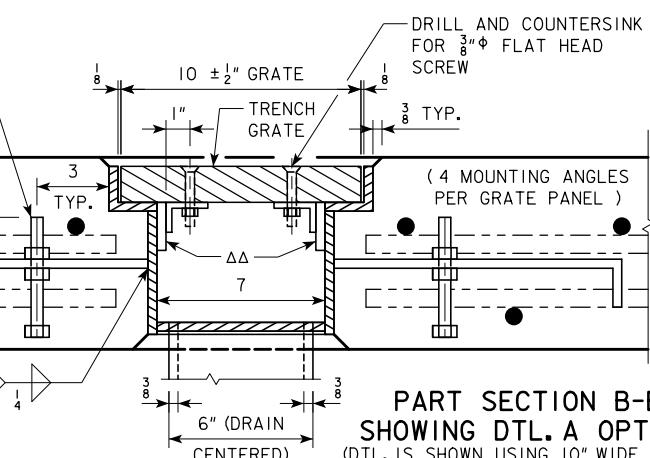
DRAINS SHALL BE CENTERED OVER THE NEAREST BOTTOM TRANSVERSE DECK REINFORCING BAR FROM THE LOCATION DESIGNATED ON THE SITUATION PLAN. THE BOTTOM TRANSVERSE DECK REINFORCING BAR SHALL BE CUT OFF TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. THE TOP TRANSVERSE DECK REINFORCING BARS ON EACH SIDE OF THE DRAIN, SHALL BE SPACED AS NECESSARY TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL DECK REINFORCING BARS THAT CONFLICT WITH THE DRAIN SHALL BE CUT OFF TO PROVIDE 2 INCH CLEARANCE FROM THE DRAIN. ALL CUT ENDS OF BARS SHALL BE COATED WITH EPOXY PATCHING MATERIAL SUPPLIED BY THE MANUFACTURER OF THE EPOXY COATING. LONGITUDINAL DECK REINFORCING BARS SHALL BE SHIFTED AS NECESSARY TO ACCOMMODATE ANCHOR BARS.

MATERIALS

PLATES, BARS, THREADED RODS AND ANGLES SHALL MEET THE REQUIREMENTS ASTM A709 GRADE 36. THE TUBE STEEL SHALL MEET THE REQUIREMENTS ASTM A500 GRADE B.

$\frac{3}{8}$ " ϕ MECHANICALLY GALVANIZED STEEL FLAT HEAD SCREW SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM F835-12.

$\frac{3}{8}$ " ϕ MECHANICALLY GALVANIZED STEEL HEX HEAD BOLT AND HEX NUT SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM A307-12 GRADE A.

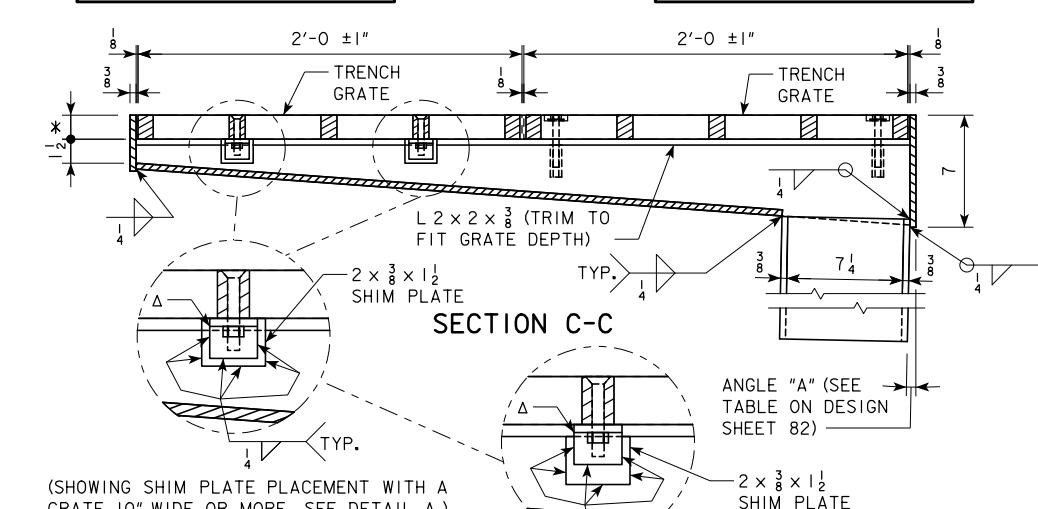


PART SECTION B-B
SHOWING DTL. A OPTION

(DTL. IS SHOWN USING 10" WIDE GRATE)

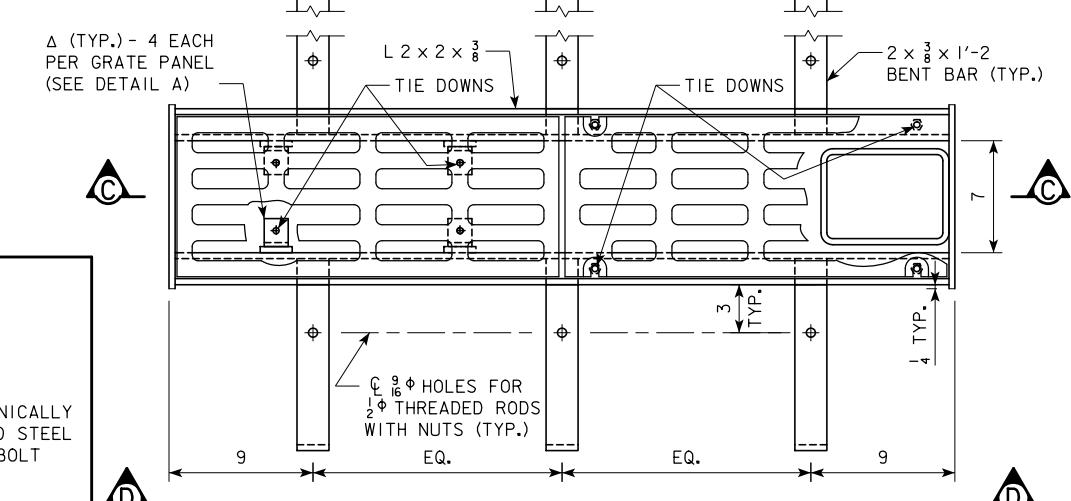
* = DEPTH BASED ON TRENCH GRATE MANUFACTURER.

Δ = $L \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times 0' - \frac{1}{2}$ LONG
(TYP. - SEE DETAIL A).



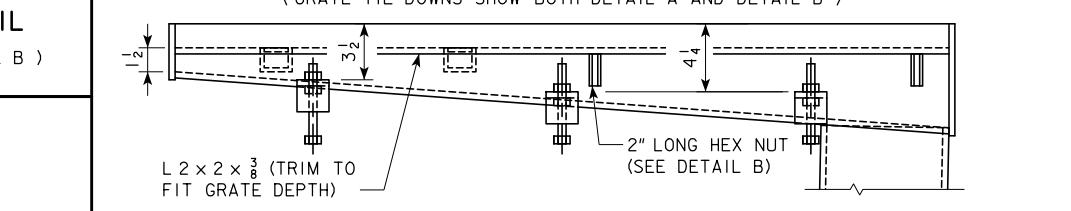
(SHOWING SHIM PLATE PLACEMENT WITH A GRATE 10" WIDE OR MORE. SEE DETAIL A.)

(SHOWING SHIM PLATE PLACEMENT WITH A GRATE LESS THAN 10" WIDE. SEE DETAIL A.)

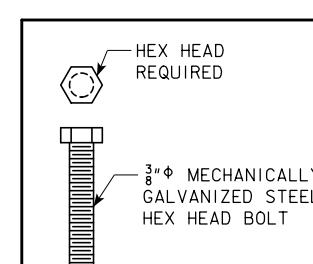


PLAN VIEW OF DRAIN TRENCH

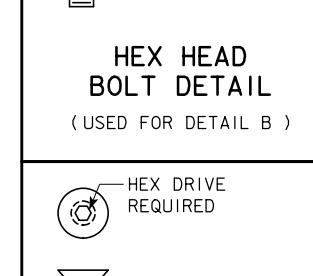
(GRATE TIE DOWNS SHOW BOTH DETAIL A AND DETAIL B)



SIDE VIEW D-D



HEX HEAD
BOLT DETAIL
(USED FOR DETAIL B)



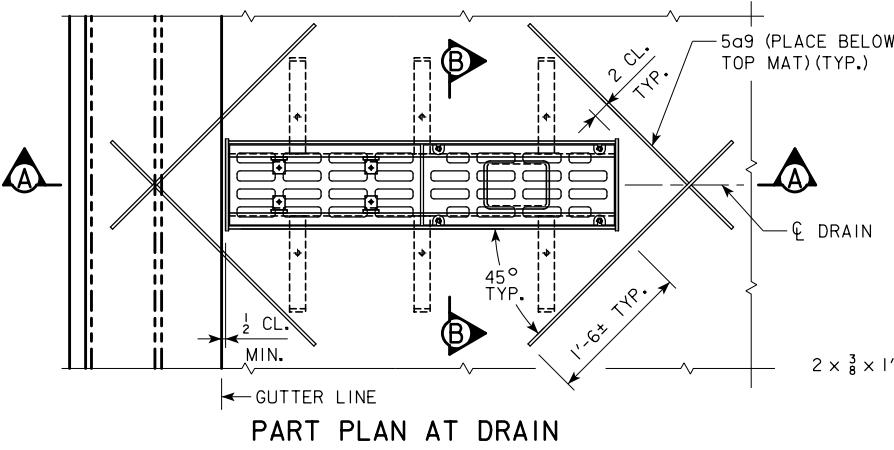
FLAT HEAD
SCREW DETAIL
(USED FOR DETAIL A)

NOTE: 3 TYPE I DRAINS
REQUIRED.

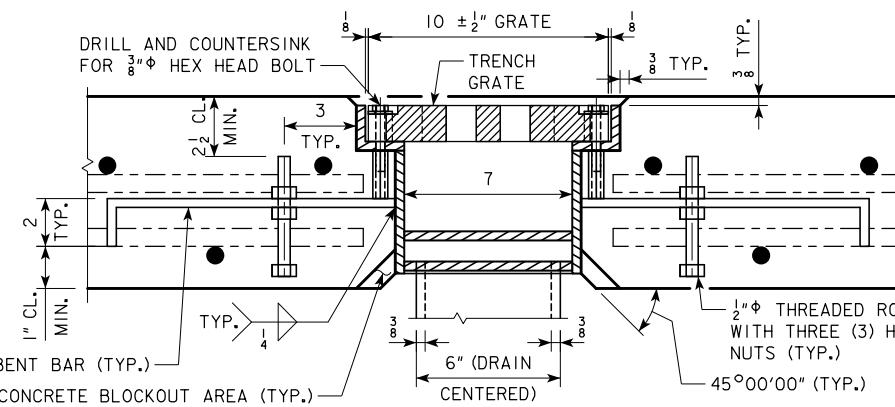
$\Delta\Delta$ = ADJUST SHIM PLATE
ACCORDING TO WIDTH
OF GRATE.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
STA. 2536+28.27 (B RAMP B)

APRIL 2018



PART PLAN AT DRAIN

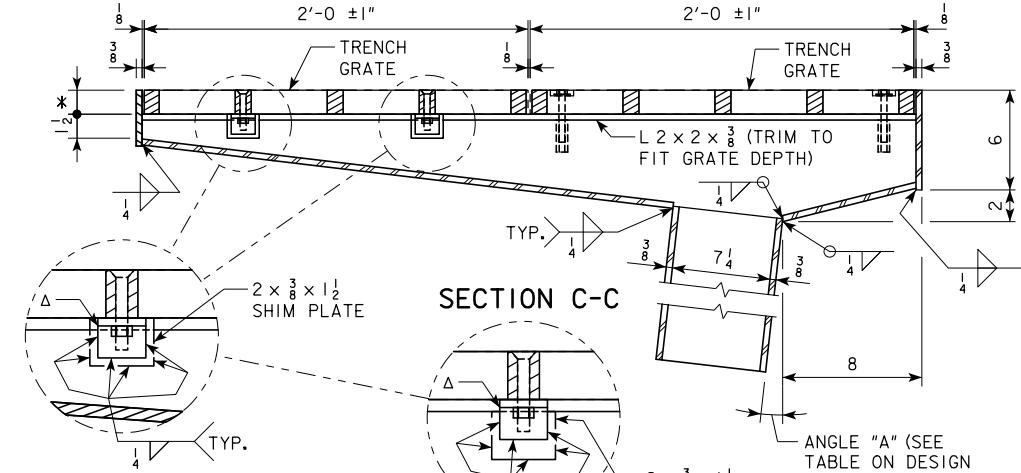


PART SECTION B-B - SHOWING DTL. B OPTION

(DETAIL IS SHOWN USING 10" WIDE GRATE)

* = DEPTH BASED ON TRENCH GRADE MANUFACTURER.

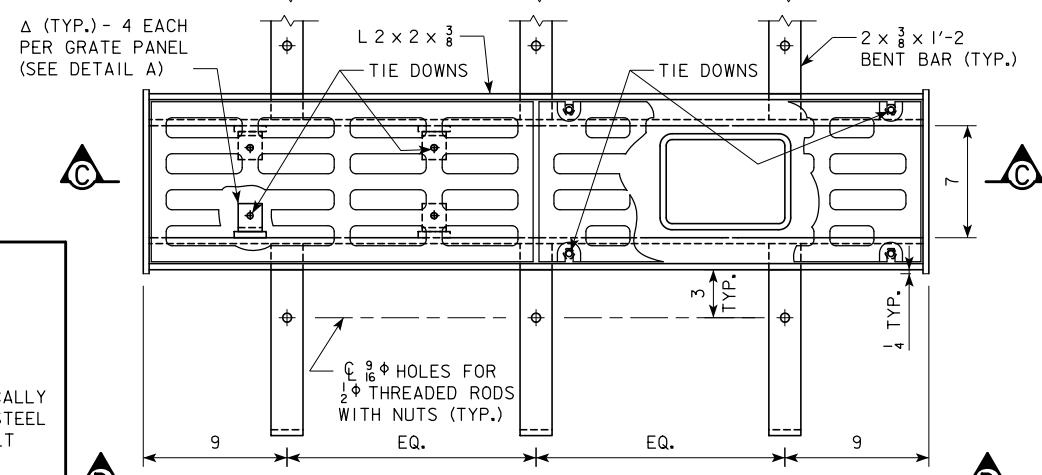
$\Delta = L \frac{1}{2} \times 1 \frac{1}{4} \times 1 \frac{1}{4} \times 0' - 1 \frac{1}{2}$ LONG
(TYP. - SEE DETAIL A).



SECTION C-C

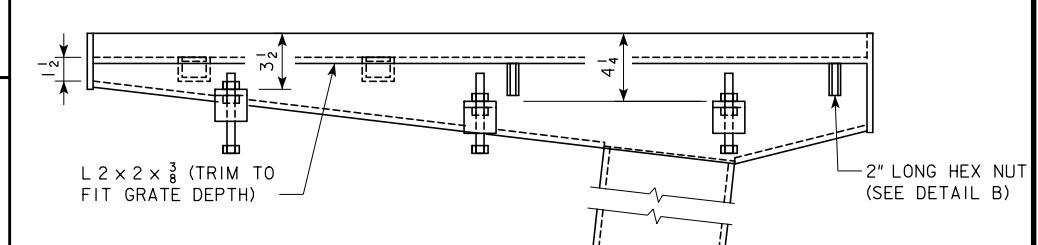
ANGLE "A" (SEE TABLE ON DESIGN SHEET 82)

(SHOWING SHIM PLATE PLACEMENT WITH A GRADE LESS THAN 10" WIDE. SEE DETAIL A.)



PLAN VIEW OF DRAIN TRENCH

(GRATE TIE DOWNS SHOW BOTH DETAIL A AND DETAIL B)

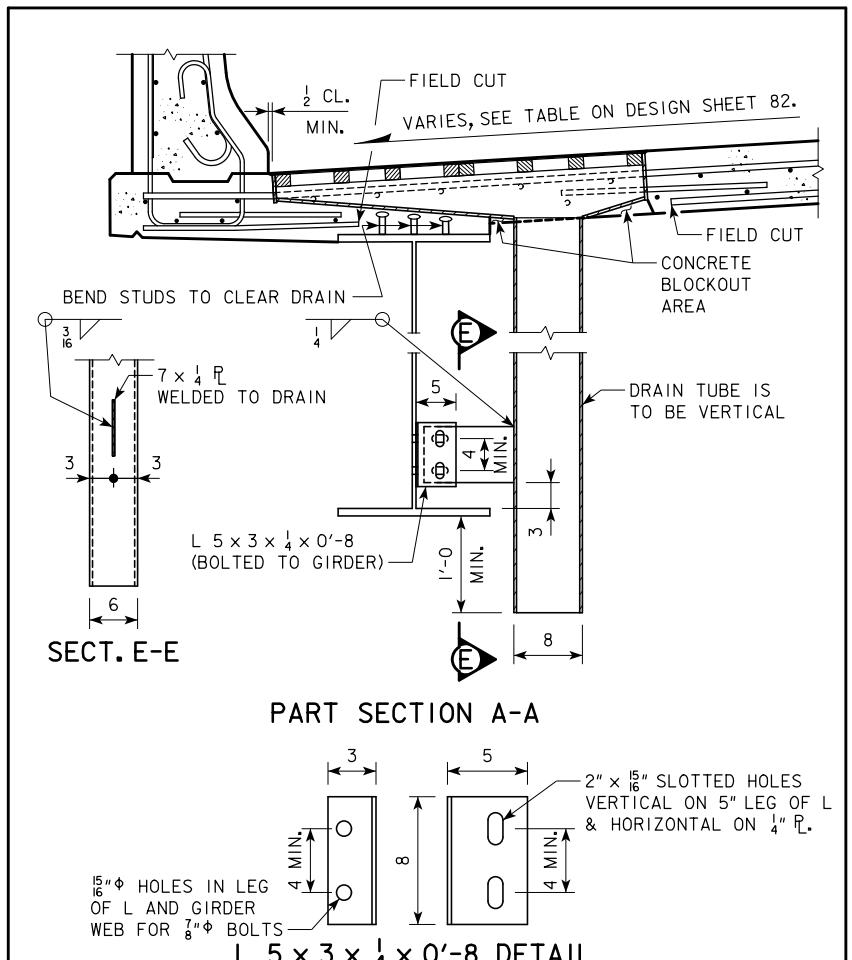


SIDE VIEW D-D

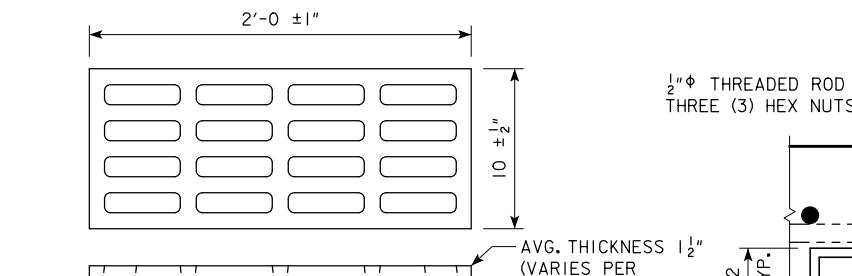
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

DRAINAGE DETAILS-TYPE 2 DRAIN

STA. 2536+28.27 (RAMP B) APRIL 2018



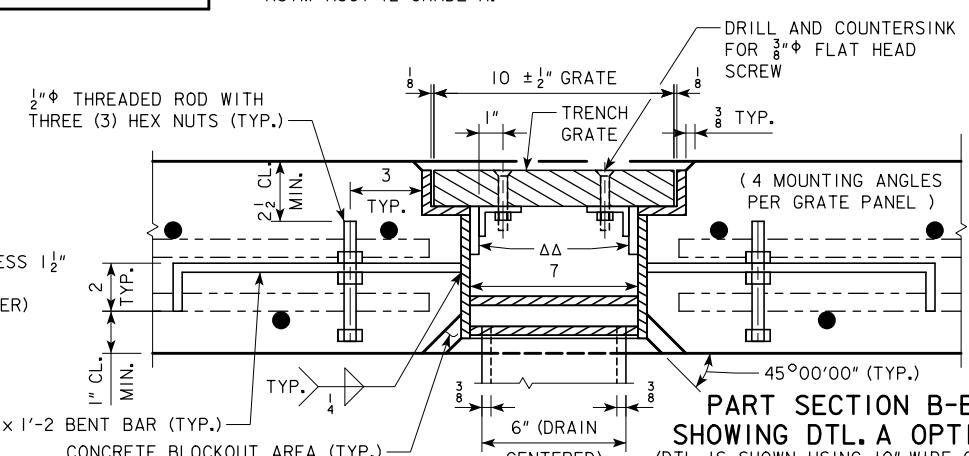
PART SECTION A-A



DRAIN TRENCH GRATE DETAILS

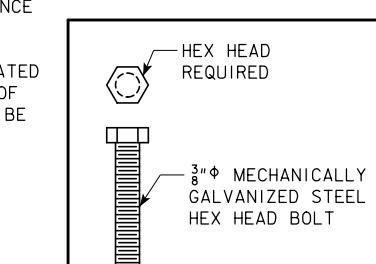
(2 GRATES REQUIRED PER DRAIN)

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.

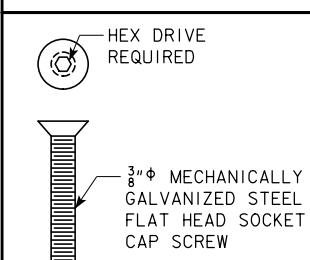


PART SECTION B-B
SHOWING DTL. A OPTION
(DTL. IS SHOWN USING 10" WIDE GRATE)

ΔΔ = ADJUST SHIM PLATE ACCORDING TO WIDTH OF GRATE.

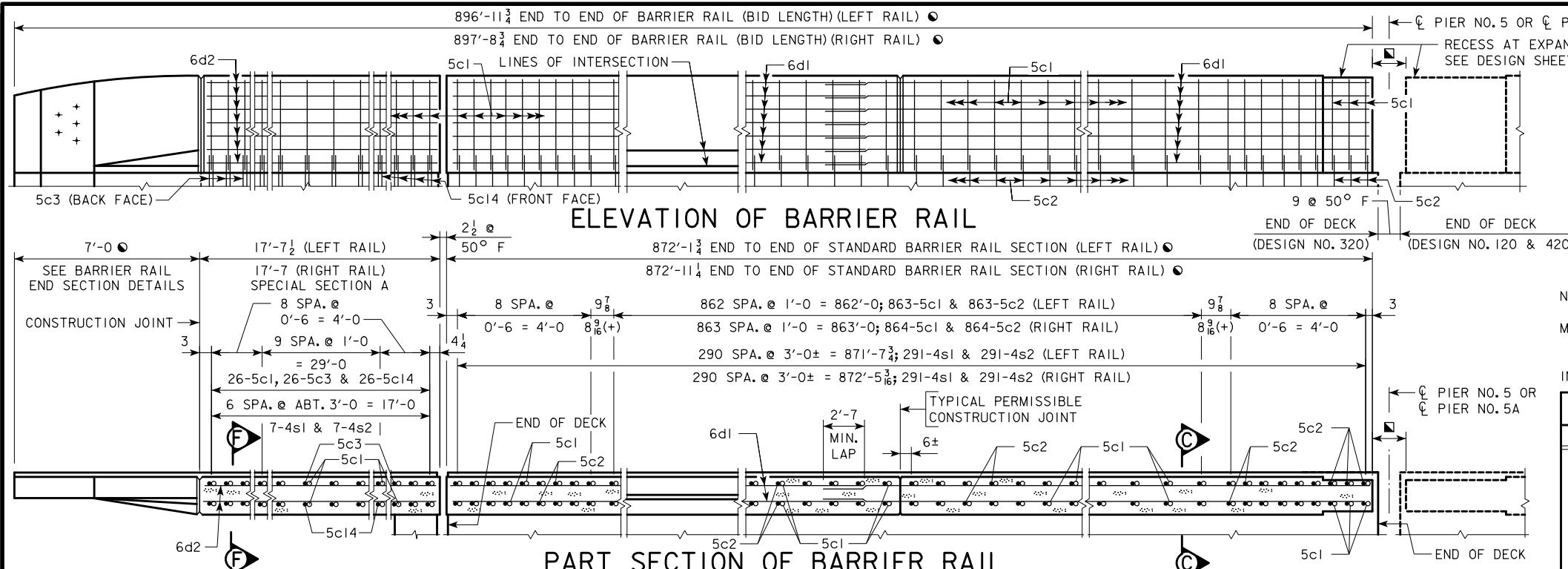


HEX HEAD
BOLT DETAIL
(USED FOR DETAIL B)



FLAT HEAD
SCREW DETAIL
(USED FOR DETAIL A)

NOTE: 7 TYPE 2 DRAINS
REQUIRED.

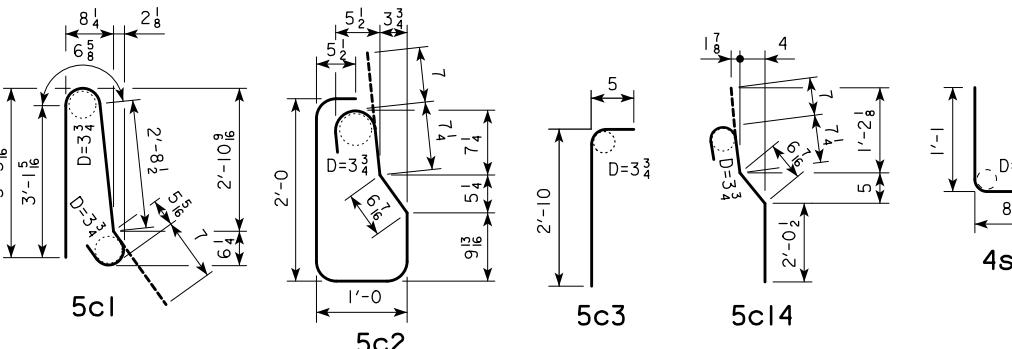


PART SECTION OF BARRIER RAIL

BENT BAR DETAILS

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

NOTE:
REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.



BARRIER RAIL 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.

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

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS.

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 RAILING, AESTHETIC" 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. 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 RAILING.

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

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL 0° GRADE. CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET.

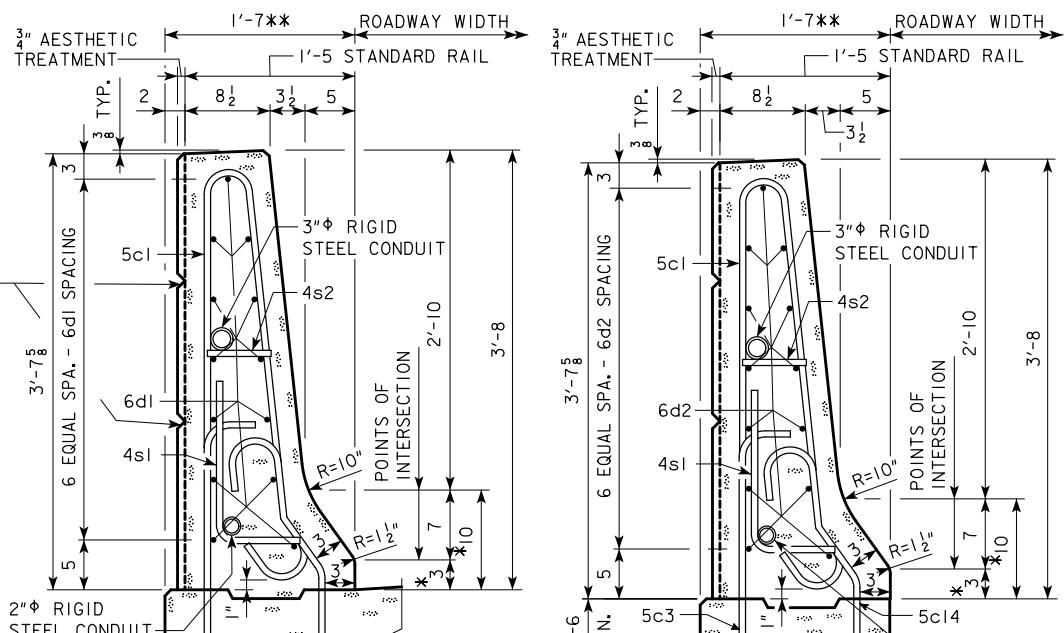
THE GALVANIZED STEEL CONDUIT SHALL BE SECURELY TIED AT EVERY 3'-0 INTERSECTION WITH THE 4si & 4s2 BARS TO AVOID CONTACT WITH THE STAINLESS STEEL REINFORCING.

** FOR BARRIER RAIL ORIENTATION, SEE "BARRIER RAIL ORIENTATION DETAIL" ON DESIGN SHEET 38.

FOR RUSTICATION NOTES, SEE DESIGN SHEET 4.

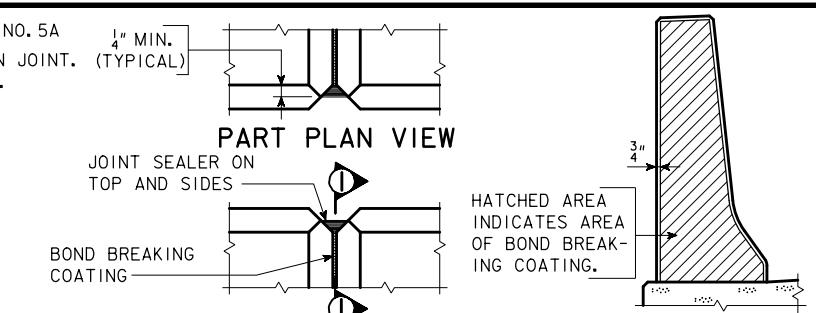
RUSTICATIONS SHALL EXTEND THE FULL LENGTH OF BRIDGE BARRIER, INCLUDING BARRIER END SECTION. FOR RUSTICATION DETAILS AND "BARRIER AESTHETIC NOTES", SEE DESIGN SHEET 88.

RUSTICATION
(TYP.)



PART SECTION C-C

PART SECTION F-F



PART ELEVATION VIEW
BARRIER RAIL JOINT DETAILS

NOTES:
• MEASURED ALONG EDGE OF DECK. FOR BID LENGTH PURPOSES, ASSUME DIMENSION MEASURED TO ENDS OF DECK AT PIER NOS. 5 AND 5A.
□ DIMENSION TO BE SET BY JOINT MANUFACTURER.
4si AND 4s2 BARS NOT SHOWN FOR CLARITY. SEE BARRIER RAIL NOTES FOR ADDITIONAL INFORMATION.

EPOXY COATED REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c1	RAIL, VERTICAL	I	1763	7'-5	13,638
	6d1	RAIL, LONGITUDINAL	—	624	38'-10	36,396
SPECIAL SECTIONS	4si	RAIL, CONDUIT	—	582	1'-9	680
	4s2	RAIL, CONDUIT	—	582	0'-6	194
	5c1	RAIL, VERTICAL	I	52	7'-5	402
	6d2	RAIL, LONGIT.— SPECIAL SECTION A	—	26	17'-3	674
	4si	RAIL, CONDUIT	—	14	1'-9	16
	4s2	RAIL, CONDUIT	—	14	0'-6	5
	EPOXY STEEL TOTAL WEIGHT (LBS.)					52,005

STAINLESS STEEL REINF. STEEL - TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTIONS	5c2	RAIL, VERTICAL	I	1763	6'-0	11,033
SPEC. SECTS.	5c3	RAIL, VERTICAL	I	52	3'-3	176
	5c14	RAIL, VERTICAL	I	52	3'-10	208

STAINLESS STEEL TOTAL (LBS.) 11,417

CONCRETE PLACEMENT SUMMARY

SECTION	QUANTITY
STANDARD SECTION	1,745.08' AT 0.1281 CU. YDS. PER FT.
SPECIAL SECTION A	35.21' AT 0.1281 CU. YDS. PER FT.
BARRIER RAIL AESTHETIC TREATMENT	14.5
TOTAL (CU. YD.)	242.5

CONCRETE BARRIER RAIL QUANTITIES

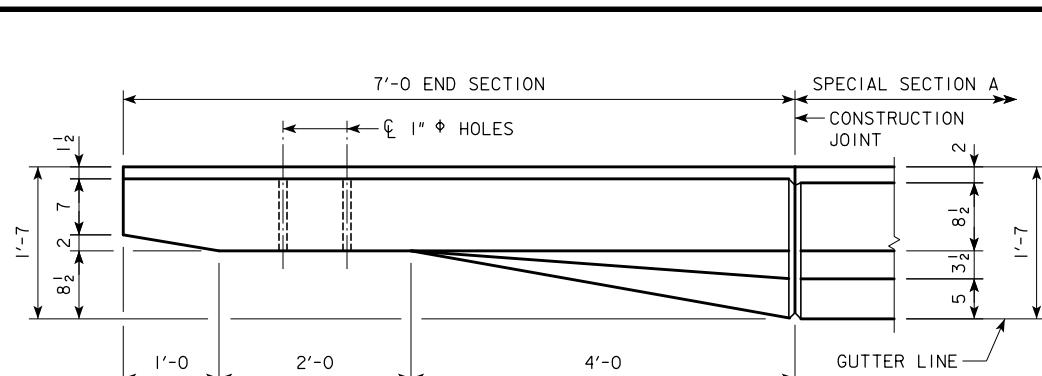
ITEM	UNIT	TOTAL
CONCRETE BARRIER RAILING, AESTHETIC	LIN. FT.	1,794.7

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.

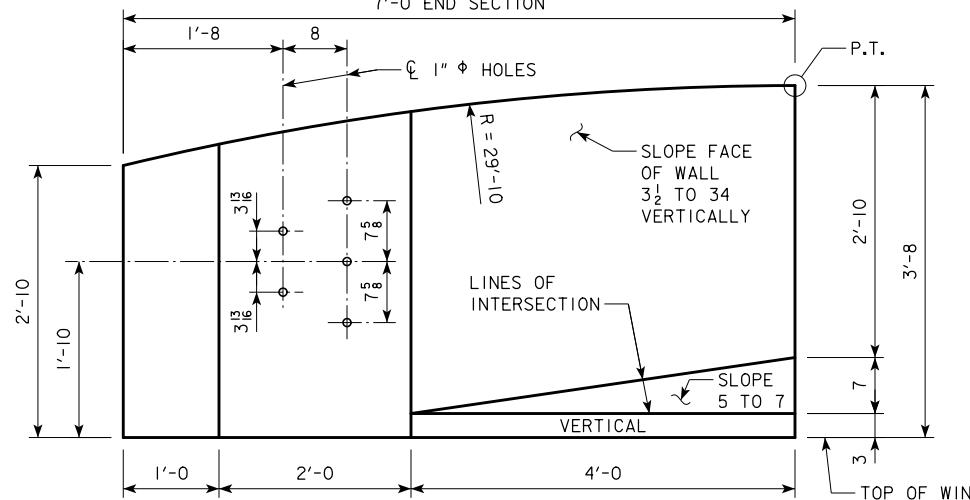
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
BARRIER RAIL DETAILS

STA. 2536+28.27 (RAMP B)

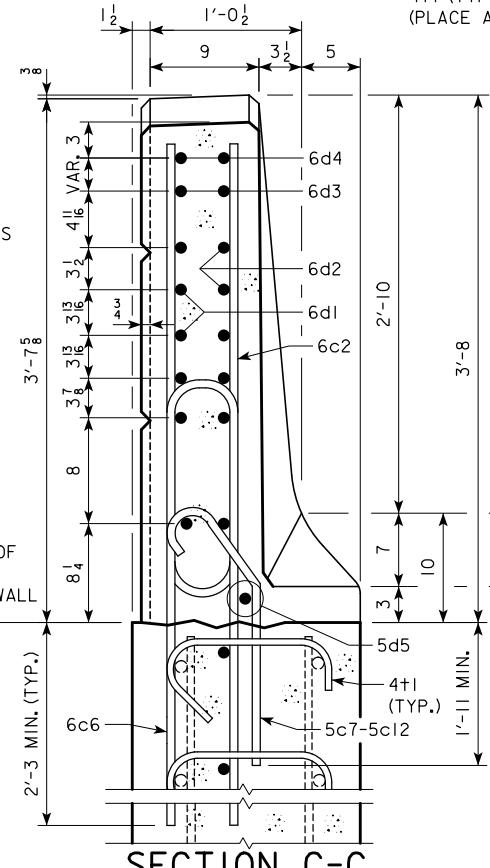
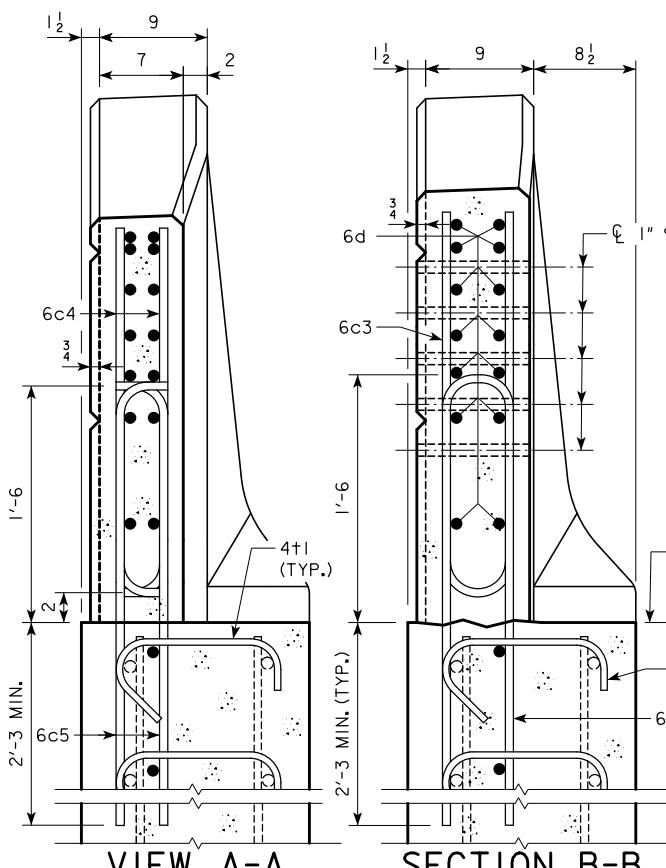
APRIL 2018



PART PLAN VIEW
(AESTHETIC PROJECTION NOT SHOWN)



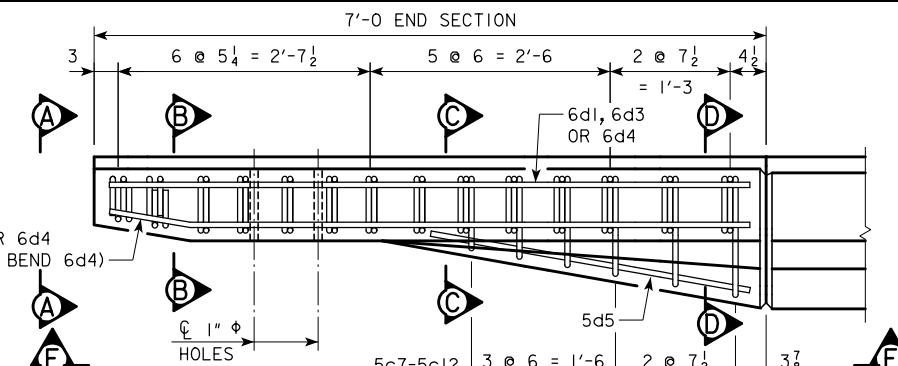
PART ELEVATION VIEW
PROVIDE 5 HOLES FORMED WITH 1" ϕ PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR "CONCRETE BARRIER RAILING, AESTHETIC".



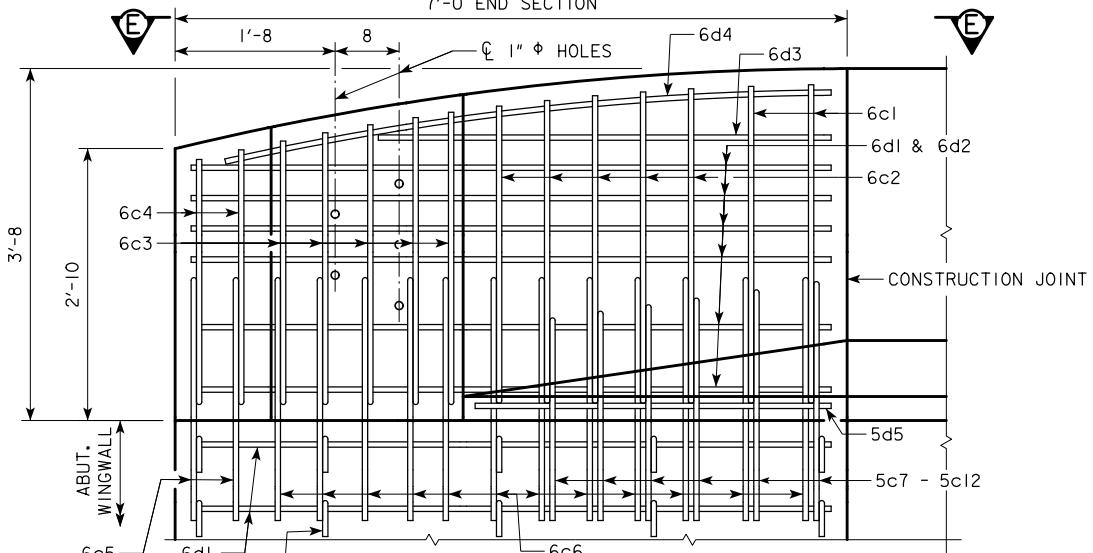
SECTION C-C



SECTION D-D



PART VIEW E-E
(AESTHETIC PROJECTION NOT SHOWN)



PART VIEW F-F

EPOXY COATED REINF. STEEL - ONE END SECT.

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	RAIL, VERTICAL	II	2	6'-11	21
6c2	RAIL, VERTICAL	II	5	VARIABLE	49
6c3	RAIL, VERTICAL	II	5	VARIABLE	45
6c4	RAIL, VERTICAL	Gamma	4	VARIABLE	18
6d1	RAIL, HORIZONTAL	—	8	6'-8	80
6d2	RAIL, HORIZONTAL	—	6	6'-9	61
6d3	RAIL, HORIZONTAL	—	2	4'-5	13
6d4	RAIL, HORIZONTAL	()	2	6'-6	20
5d5	RAIL, HORIZONTAL	—	1	3'-9	4
4+1	RAIL, ABUTMENT WINGWALL TIE BARS	I	10	1'-8 1/4	11
EPOXY REINF. TOTAL WEIGHT (LBS.)					322

STAINLESS STEEL REINF. STEEL - ONE END SECT.

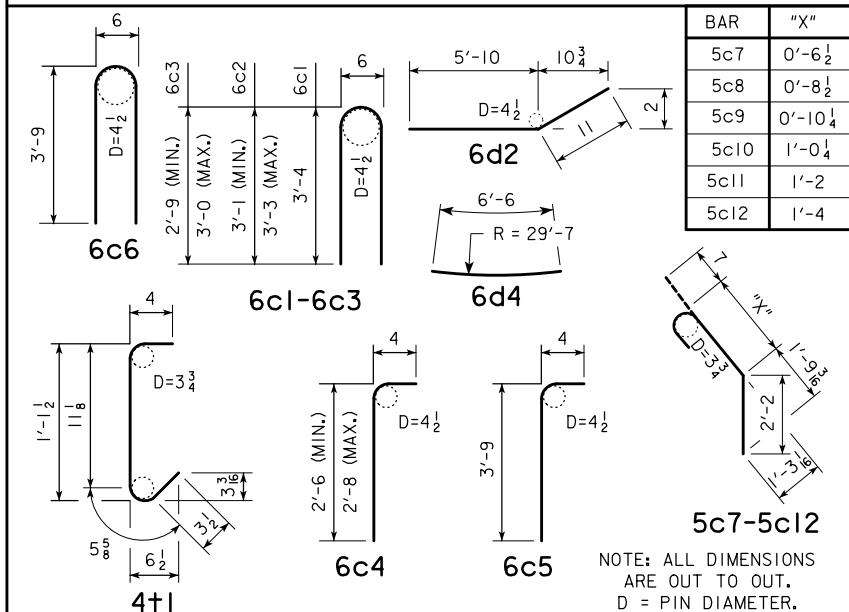
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c5	RAIL, VERTICAL	Gamma	4	4'-1	25
6c6	RAIL, VERTICAL	II	12	8'-0	144
5c7-12	RAIL, VERTICAL	Y	6	VARIABLE	23
STAINLESS STEEL TOTAL WEIGHT (LBS.)					192

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.

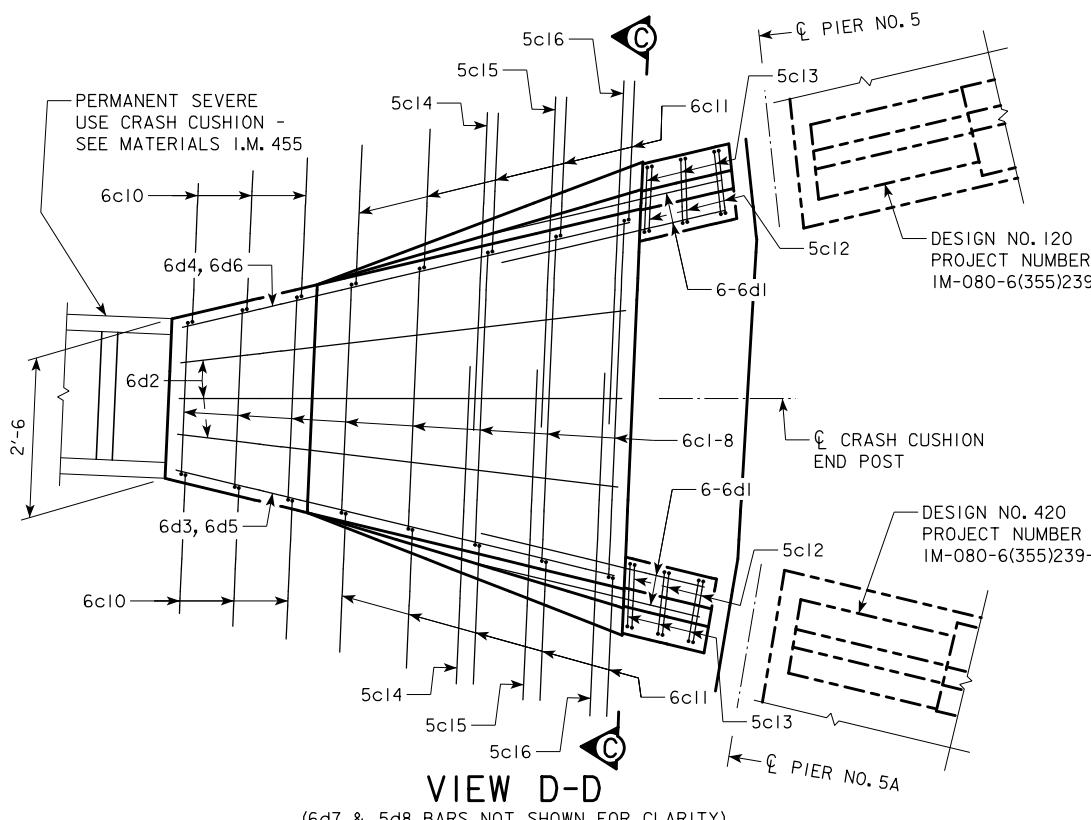
CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
BARRIER RAIL ONE END SECTION	0.78 CU. YD.
BARRIER RAIL ONE END AESTHETIC TREATMENT	0.05 CU. YD.

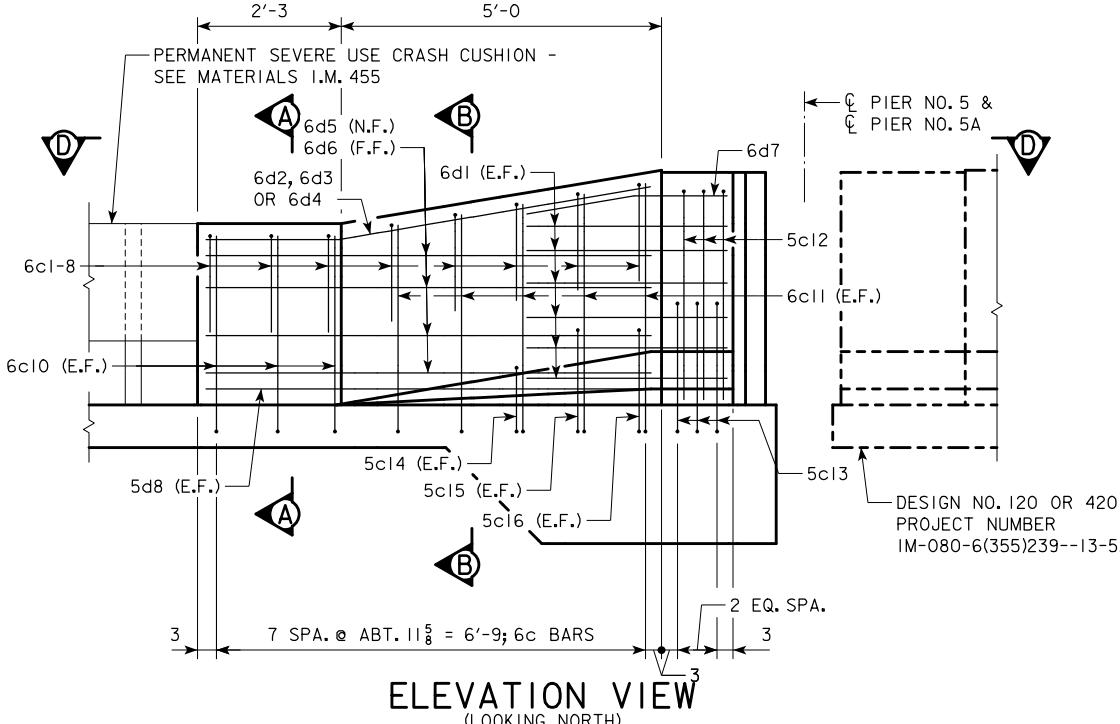
BENT BAR DETAILS



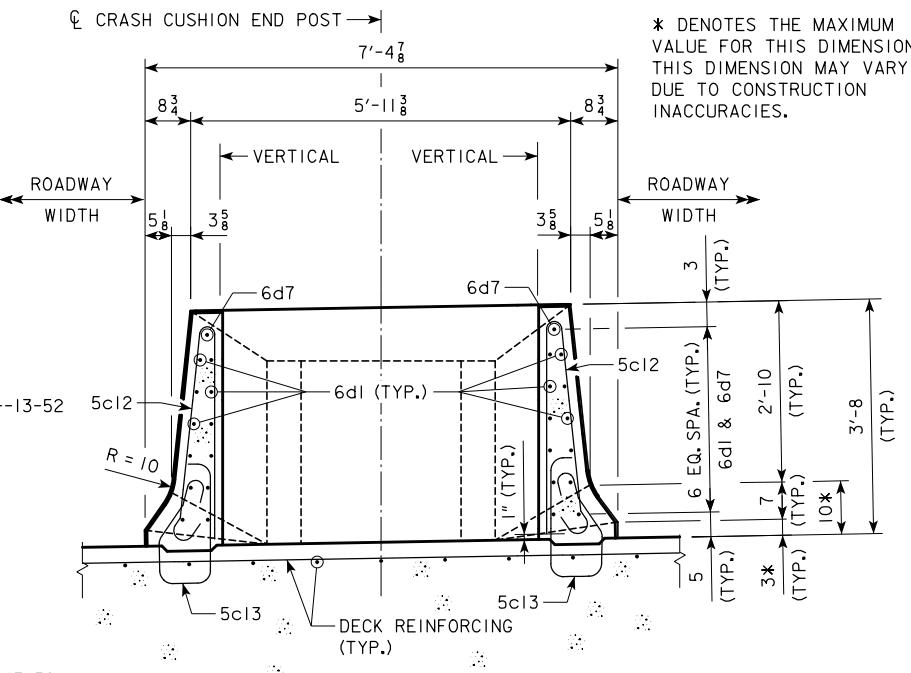
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
BARRIER RAIL END SECTION DETAILS
STA. 2536+28.27 (RAMP B) APRIL 2018



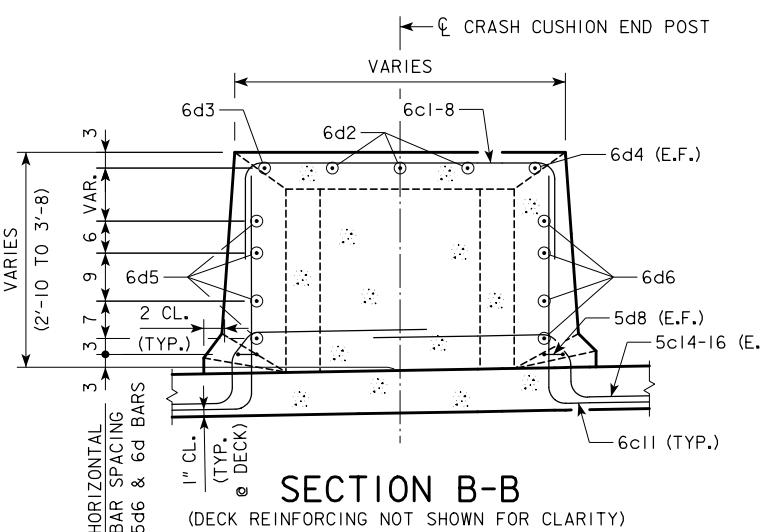
(6d7 & 5d8 BARS NOT SHOWN FOR CLARITY)



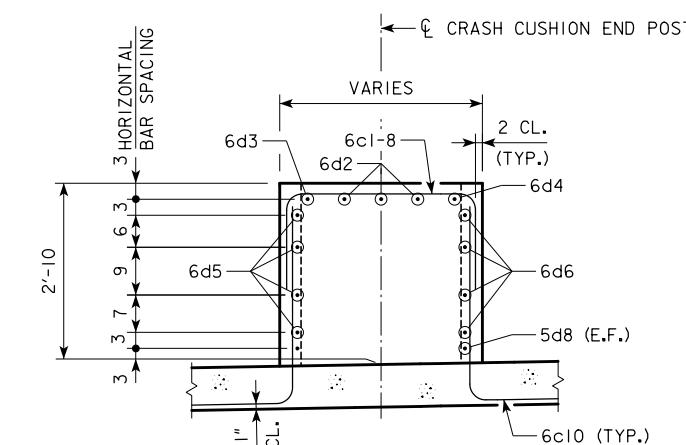
ELEVATION VIEW
(LOOKING NORTH)



SECTION C-C
(SHOWN AT BACK FACE OF CRASH CUSHION END POST)



SECTION B-B
(DECK REINFORCING NOT SHOWN FOR CLARITY)



SECTION A-A
(DECK REINFORCING NOT SHOWN FOR CLARITY)

CONCRETE PLACEMENT SUMMARY	
SECTION	QUANTITY
CRASH CUSHION END POST (FOR INFORMATION ONLY)	4.1 CU. YDS.

NOTES:
REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY OF ITEMIZED QUANTITIES SHEET.
FOR ADDITIONAL DETAILS, SEE DESIGN SHEET 74.
THE BID ITEM "CONCRETE BARRIER RAILING, AESTHETIC" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO CONSTRUCT THE CRASH CUSHION END POST.
FOR REINFORCING BAR LIST AND BAR BENDING DETAILS, SEE DESIGN SHEET 88.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
CRASH CUSHION END POST DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

EPOXY REINF. STEEL-ONE CRASH CUSHION END POST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6cl-8	END BLOCK, TOP	□	8	VARIABLES	81
5c12	RAIL, VERTICAL	△	6	7'-5	46
6d1	RAIL, HORIZONTAL	—	24	3'-6	126
6d2	END BLOCK, HORIZONTAL, TOP	—	3	7'-0	32
6d3	END BLOCK, HORIZONTAL, TOP	—	1	7'-1	11
6d4	END BLOCK, HORIZONTAL, TOP	—	1	7'-2	11
6d5	END BLOCK, HORIZONTAL	—	4	7'-0	42
6d6	END BLOCK, HORIZONTAL	—	4	7'-2	43
6d7	RAIL, HORIZONTAL	—	2	3'-6	11
5d8	END BLOCK, HORIZONTAL	—	2	7'-1	15

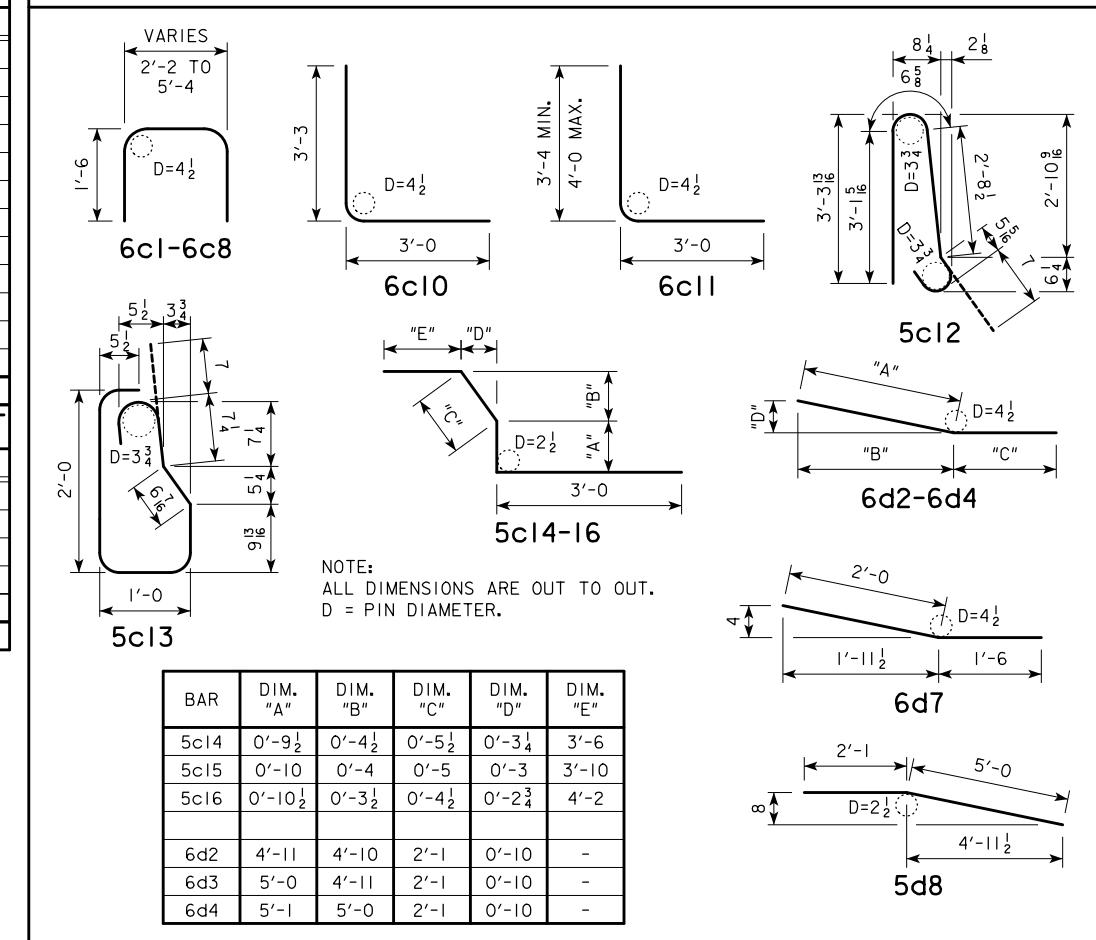
EPOXY STEEL TOTAL WEIGHT (LBS.) 418

STAINLESS STEEL-ONE CRASH CUSHION END POST

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c10	END BLOCK, VERTICAL	□	6	6'-3	56
6c11	END BLOCK, VERTICAL	□	10	VARIABLES	100
5c13	RAIL, VERTICAL	△	6	6'-0	38
5c14-16	END BLOCK, VERTICAL	—	6	VARIABLES	51

STAINLESS STEEL TOTAL (LBS.) 245

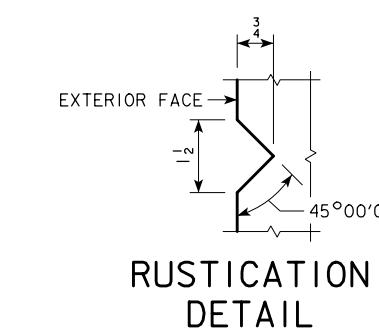
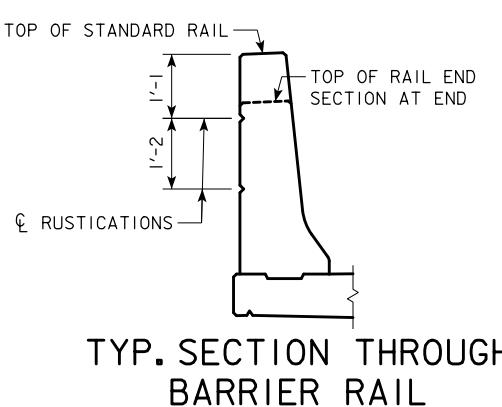
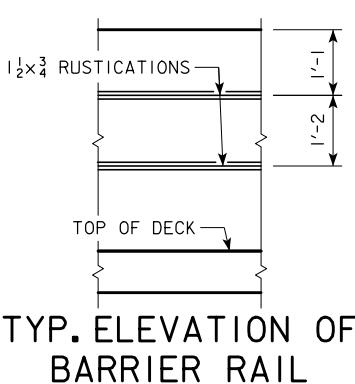
BENT BAR DETAILS



BARRIER AESTHETIC NOTES:

THIS WORK CONSISTS OF USING INTEGRALLY COLORED CONCRETE FOR CONCRETE BARRIERS AND THE CRASH CUSHION END POST SHOWN IN THIS PLAN. THE CONCRETE BARRIER MOCKUP AS DETAILED AND PAID FOR IN DESIGN NO. I20 OF THIS PROJECT MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO THE BEGINNING OF ANY PRODUCTION CONCRETE BARRIER WORK THAT INCLUDES INTEGRALLY COLORED CONCRETE. SEE THE "SPECIAL PROVISIONS FOR AESTHETIC TREATMENT OF CONCRETE BARRIER" FOR MORE REQUIREMENTS REGARDING THE USE OF RUSTICATION AND INTEGRALLY COLORED CONCRETE.

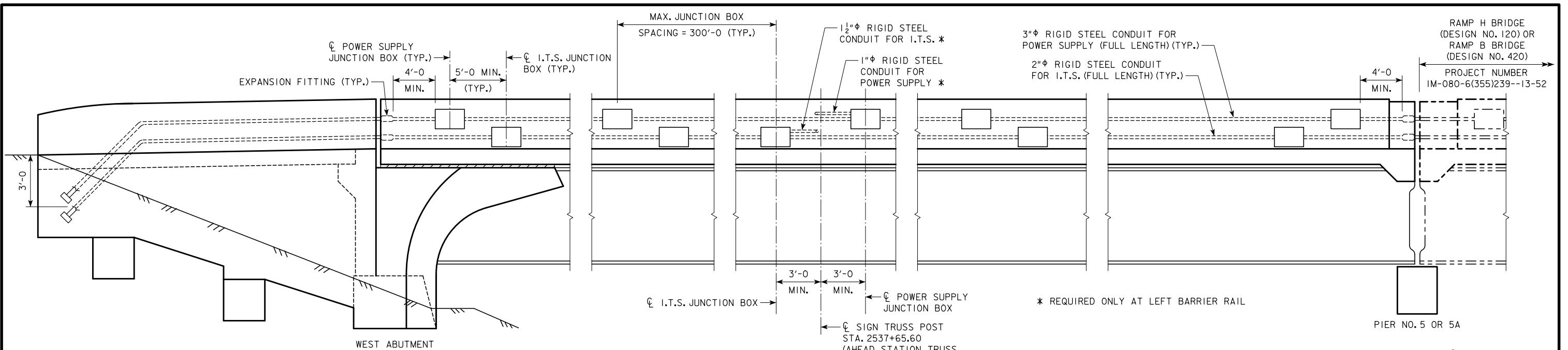
ALL COSTS FOR PROVIDING INTEGRAL COLOR AND RUSTICATION FOR CONCRETE BARRIERS AND THE CRASH CUSHION END POST SHALL BE INCLUDED IN THE BID ITEM "CONCRETE BARRIER RAILING, AESTHETIC".



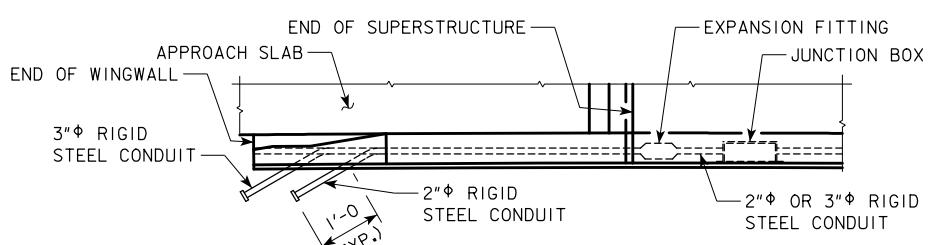
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
BARRIER RAIL DETAILS

STA. 2536+28.27 (RAMP B)

APRIL 2018



EXTERIOR ELEVATION - RIGHT BARRIER RAIL
(LEFT BARRIER RAIL SIMILAR EXCEPT AS NOTED)



LIGHTING NOTES:

SEE LI-104 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.

ALL RIGID STEEL CONDUIT SHALL BE GALVANIZED AND CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 2523.03, N, OF THE STANDARD SPECIFICATIONS.

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 $\frac{1}{4}$ ". 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 THIS SHEET.

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 RAILING.

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

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

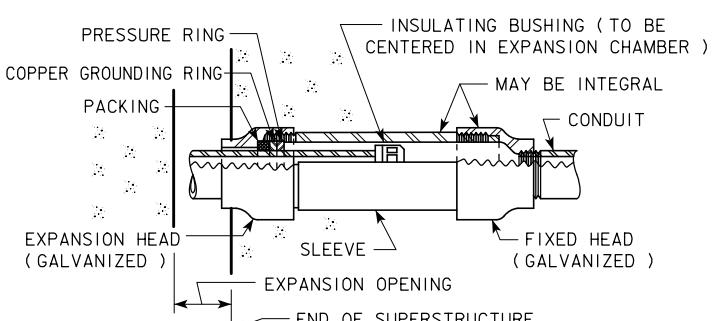
ALL REINFORCING STEEL IS TO BE EPOXY COATED AND GRADE 60.

STAINLESS-STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH THE UNCOATED REINFORCEMENT, BARE METAL FORMING HARDWARE, OR TO GALVANIZED ATTACHMENTS OR GALVANIZED CONDUIT.

ALL CONDUIT SHALL INCLUDE A POLYPROPYLENE PULL ROPE BETWEEN JUNCTION BOXES WITH A MINIMUM 600 POUND TENSILE STRENGTH.

PART PLAN AT WINGWALL

(SOUTH WINGWALL SHOWN, NORTH WINGWALL SIMILAR)

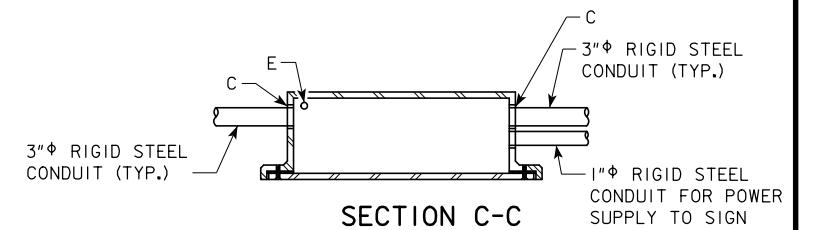


EXPANSION CHAMBER LENGTH IS TO ACCOMODATE THE FOLLOWING MOVEMENTS:
• 3" EACH WAY AT WEST ABUTMENT EXPANSION JOINTS (4 REQUIRED)
• 7" EACH WAY AT PIER NOS. 5 AND 5A EXPANSION JOINTS (4 REQUIRED)

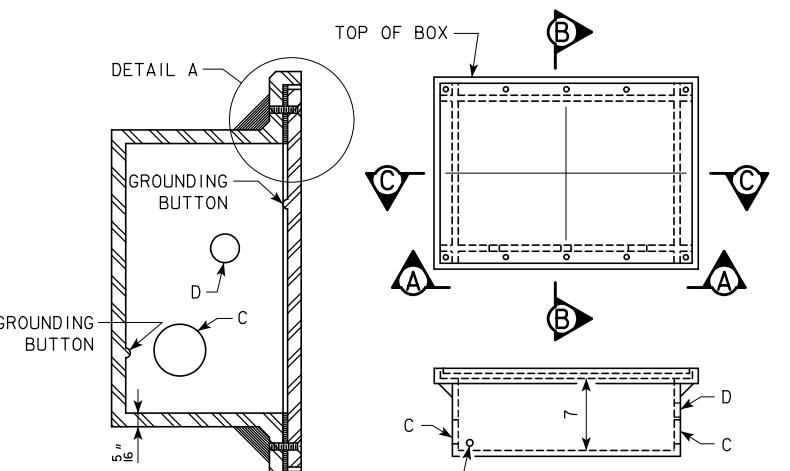
EXPANSION FITTING DETAIL

BOSSED FOR	HOLE	FOR CONDUIT SIZE
5 THREADS	C	3"φ RIGID STEEL
NONE	D	1"φ RIGID STEEL
NONE	E	1"φ COPPER PIPE

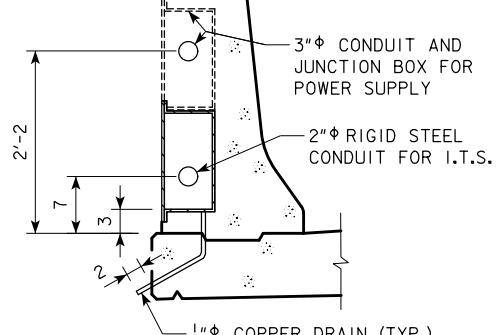
NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR $8\frac{1}{2}$ "φ X 0'-0 $\frac{3}{4}$ BOLTS.



SECTION C-C



LI-104, TYPE I POWER SUPPLY JUNCTION BOX
WATERPROOF, CAST IRON - FLUSH MOUNT



SECTION THRU JUNCTION BOX

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
LIGHTING & I.T.S. CONDUIT DETAILS
STA. 2536+28.27 (E RAMP B)

APRIL 2018

I.T.S. CONDUIT NOTES:

SEE LI-104 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.

I.T.S. CONDUIT SHALL BE LIMITED TO SIX 45° ELBOW BENDS FOR A CABLE PULL FROM HANDHOLE TO HANDHOLE.

RIGID STEEL CONDUIT FOR I.T.S. APPLICATIONS SHALL BE GALVANIZED AND INSTALLED AND PREPARED TO FACILITATE INSTALLATION OF FIBER OPTIC CABLE.

THE MINIMUM INSIDE BEND RADIUS FOR RIGID STEEL CONDUIT USED FOR I.T.S. APPLICATIONS SHALL BE 18".

RIGID STEEL CONDUIT FOR I.T.S. APPLICATIONS SHALL BE CUT AND THREADED TO ELIMINATE EXPOSED THREADS AFTER COMPLETING THE CONNECTIONS; ALL COUPLINGS SHALL BE TIGHTENED UNTIL THE CONDUIT ENDS MEET TO ALLOW A CONTINUOUS INNER SURFACE THROUGHOUT THE ENTIRE LENGTH OF THE CONDUIT RUN. NIPPLES SHOULD BE USED TO ELIMINATE CUTTING AND THREADING SHORT LENGTHS OF CONDUIT.

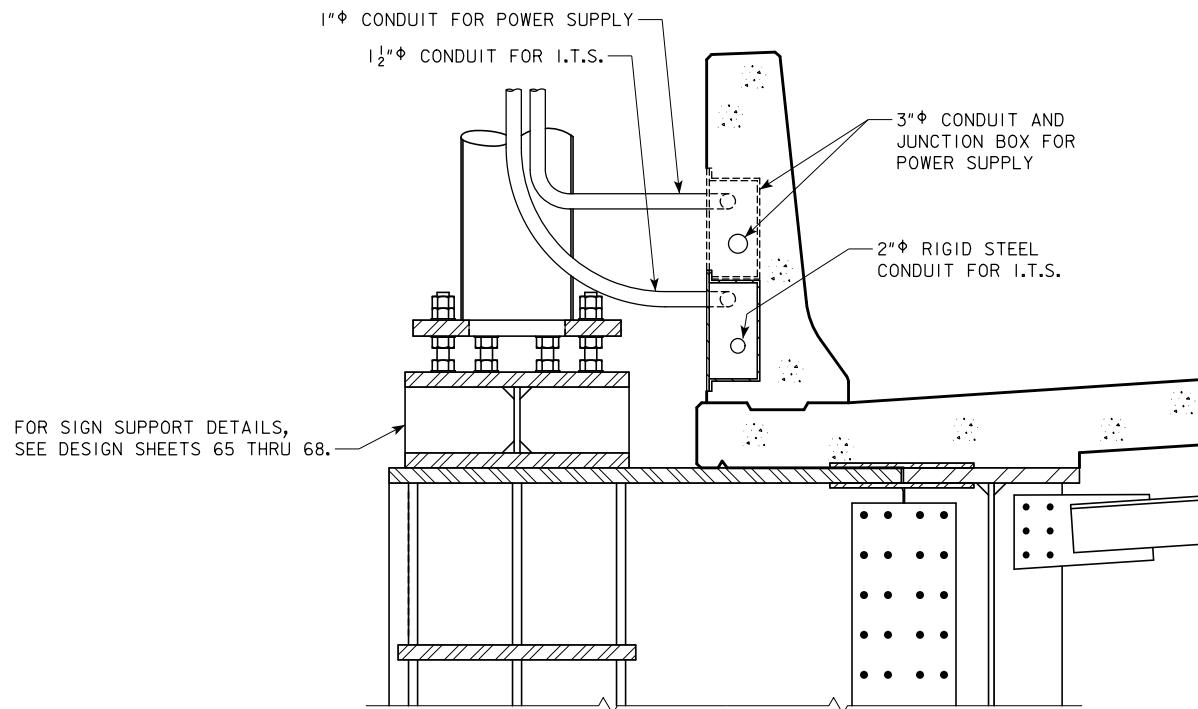
ALL BURRS AND ROUGHENED SURFACES SHALL BE REMOVED FROM CONDUITS AND FITTINGS. ALL CONDUIT RUNS SHALL BE REAMED, CLEANED AND SWABBED FOR INSTALLATION OF FIBER OPTIC CABLE.

ONLY GALVANIZED FITTINGS SHALL BE USED WITH RIGID STEEL CONDUIT. DAMAGED GALVANIZED SURFACES OF RIGID STEEL CONDUIT OR FITTINGS SHALL BE PAINTED WITH AN ACCEPTABLE ZINC-RICH PAINT.

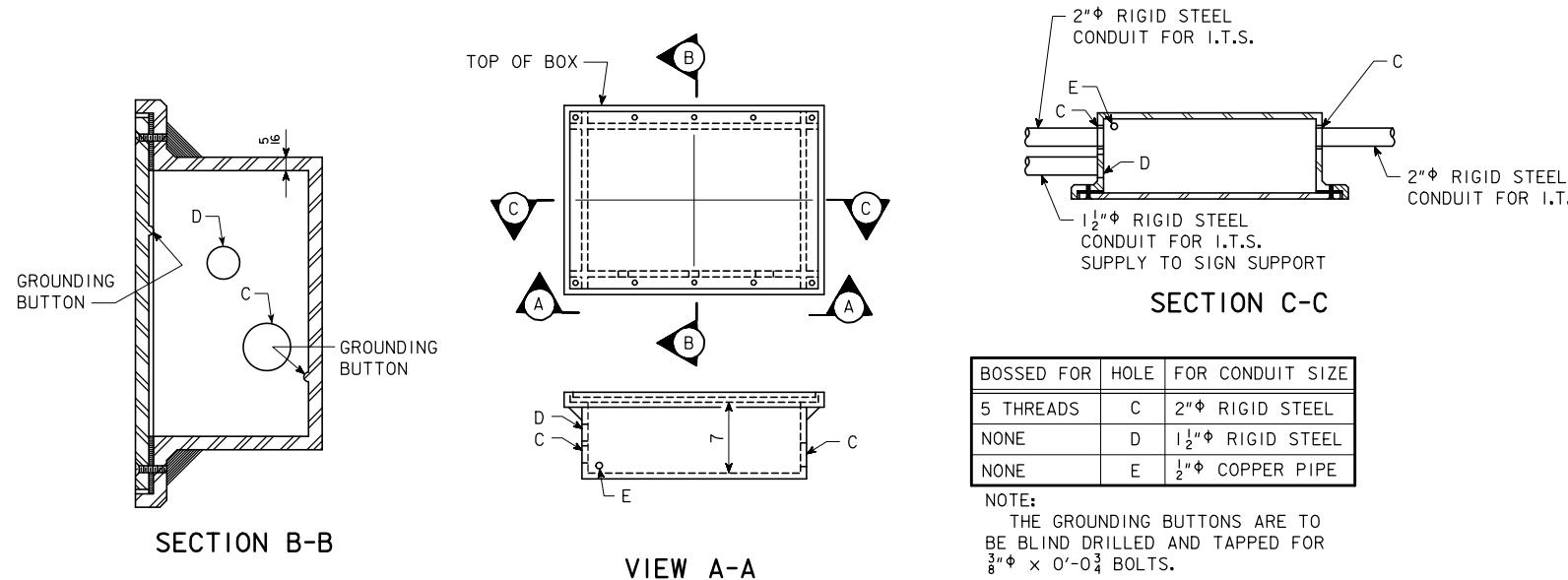
I.T.S. CONDUIT SHALL INCLUDE A POLYPROPYLENE PULL ROPE BETWEEN HANDHOLES WITH A MINIMUM 600 POUND TENSILE STRENGTH.

I.T.S. RIGID STEEL CONDUIT, PULL ROPES AND FITTINGS, INCLUDING LABOR AND ANY ADDITIONAL WORK FOR INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

FOR ADDITIONAL NOTES, SEE LIGHTING NOTES ON DESIGN SHEET 89.

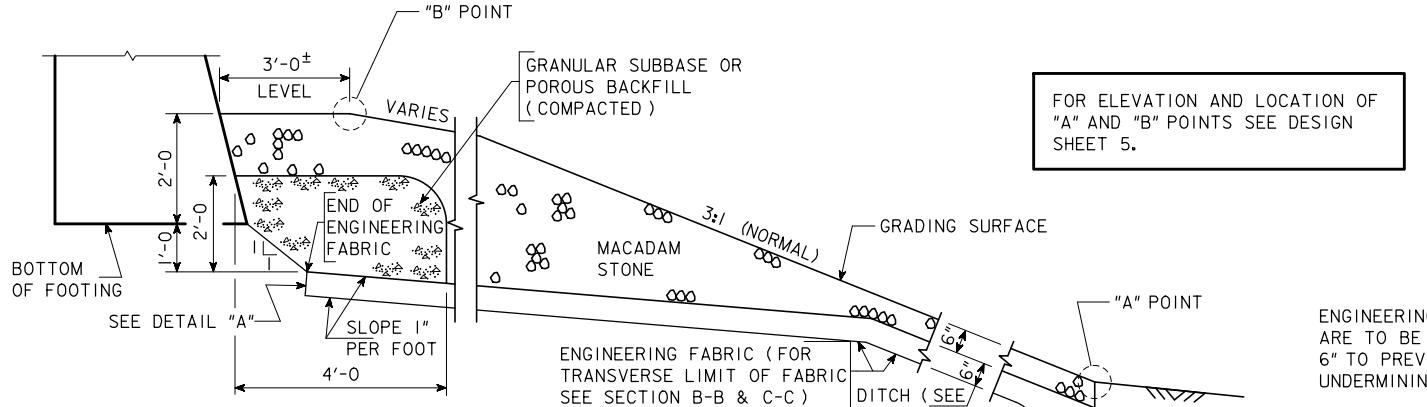


SECTION AT SIGN SUPPORT



LI-104, TYPE I I.T.S. JUNCTION BOX
WATERTIGHT, CAST IRON - FLUSH MOUNT

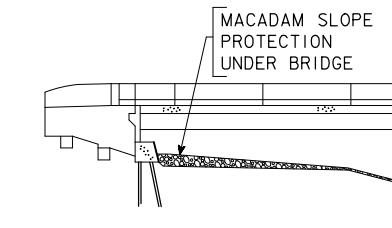
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
LIGHTING & I.T.S. CONDUIT DETAILS
STA. 2536+28.27 (E RAMP B) APRIL 2018



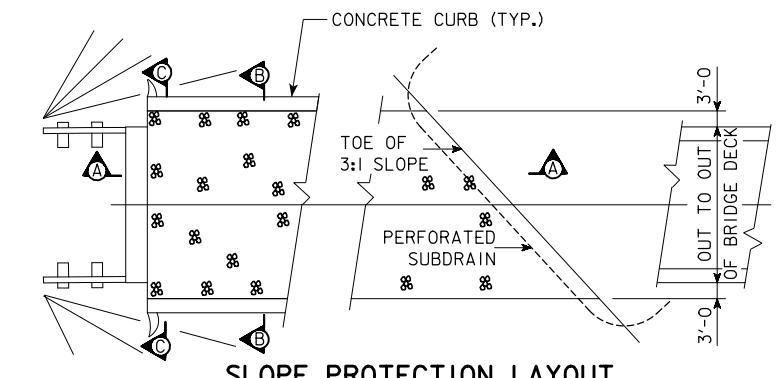
SECTION A-A

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

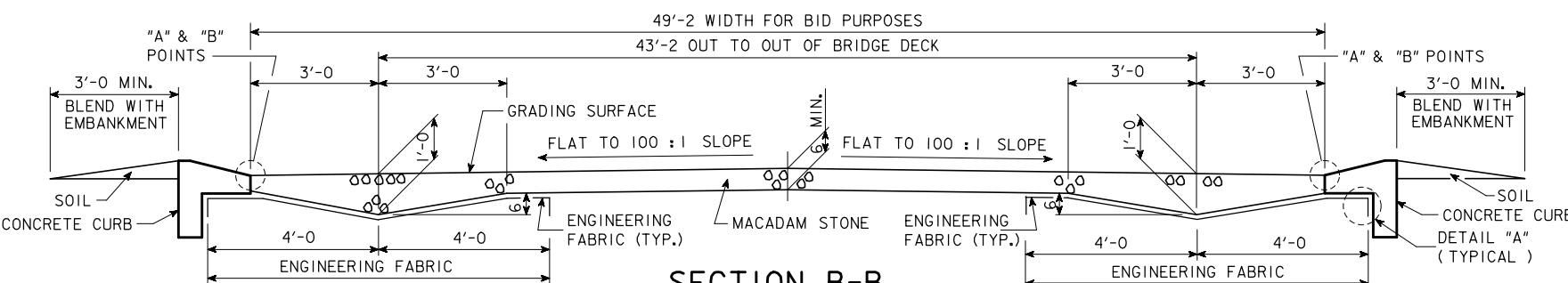
DETAIL "A"



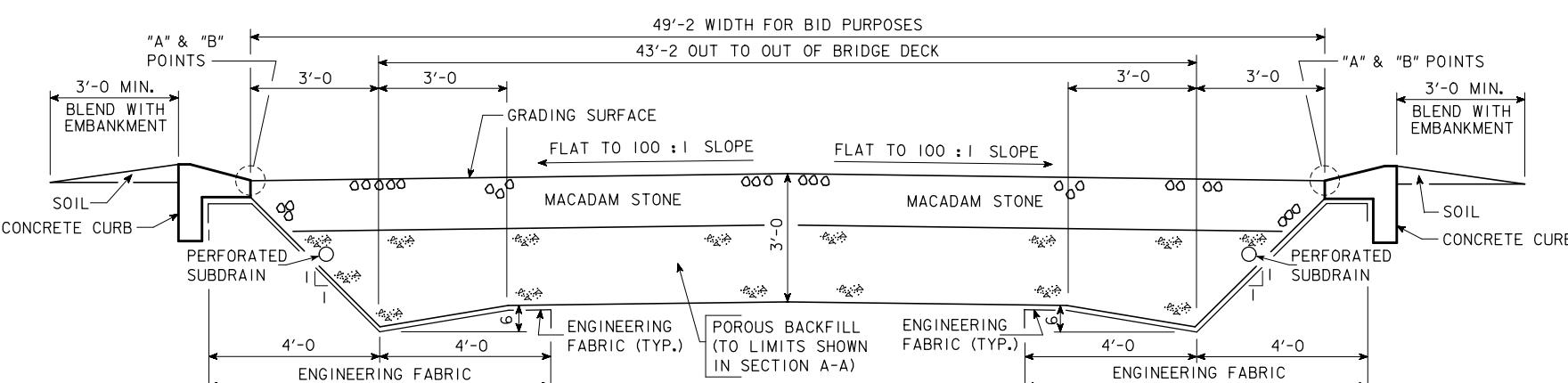
LONGITUDINAL SECTION ALONG C ROADWAY



SLOPE PROTECTION LAYOUT



SECTION B-B

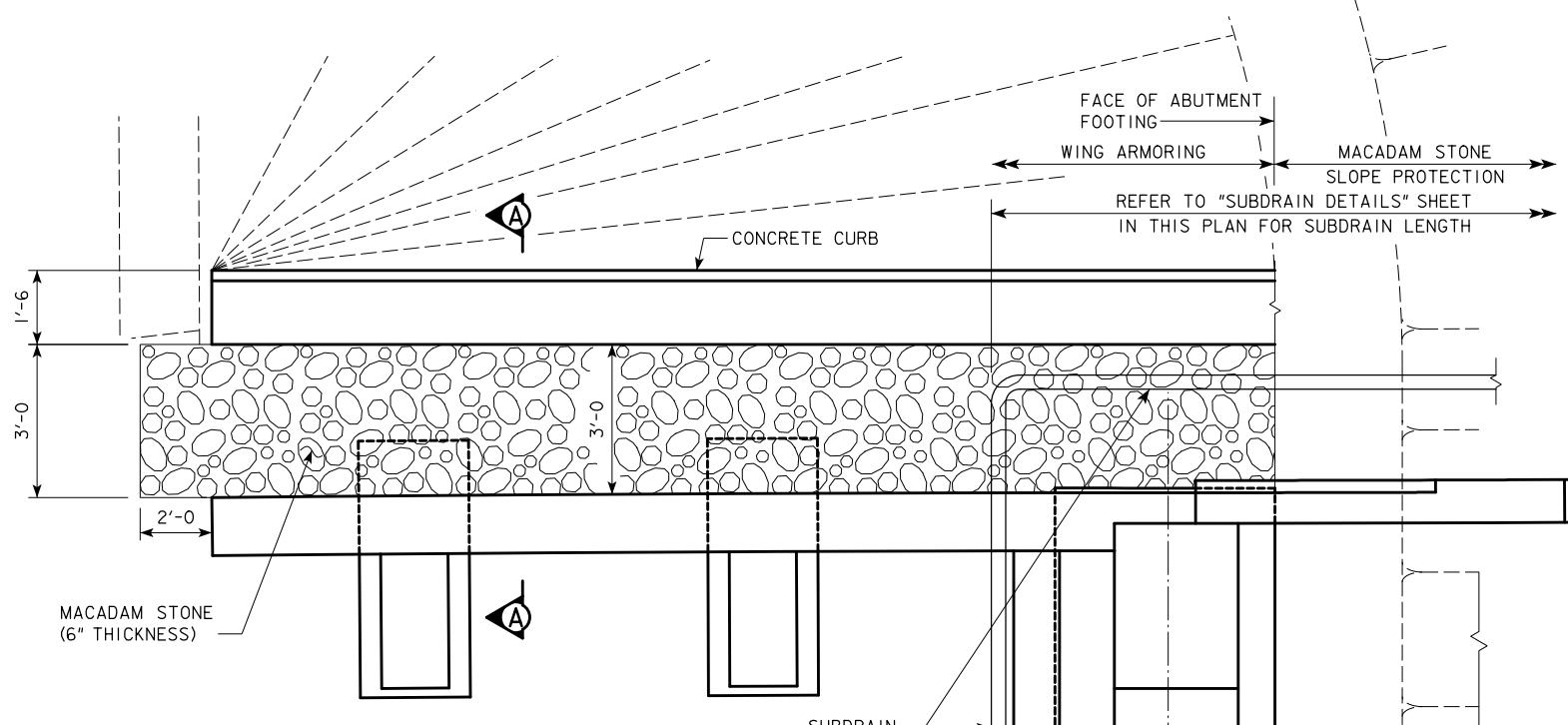


SECTION C-C

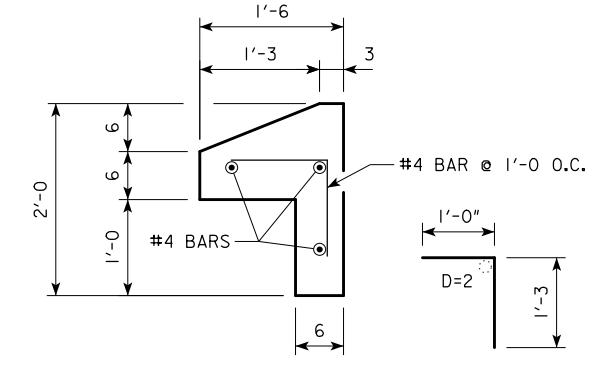
ESTIMATED QUANTITIES		
DESCRIPTION	LOCATION	QUANTITY
MACADAM STONE SLOPE PROTECTION	WEST ABUT.	717 SQ. YDS.
TOTAL		717 SQ. YDS.

ITEMS TO BE INCLUDED IN "MACADAM STONE SLOPE PROTECTION":
EXCAVATING, SHAPING AND COMPACTING
ENGINEERING FABRIC
MACADAM STONE
CONCRETE CURB AND REINFORCING
POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT
FRONT FACE ABUTMENT FOOTING

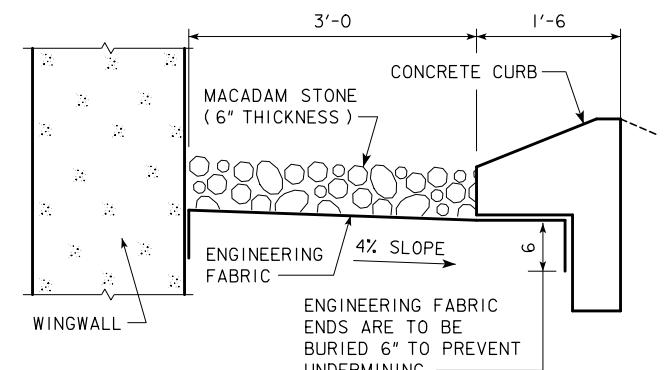
DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDERS BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS
MACADAM STONE SLOPE PROTECTION
STA. 2536+28.27 (RAMP B) APRIL 2018



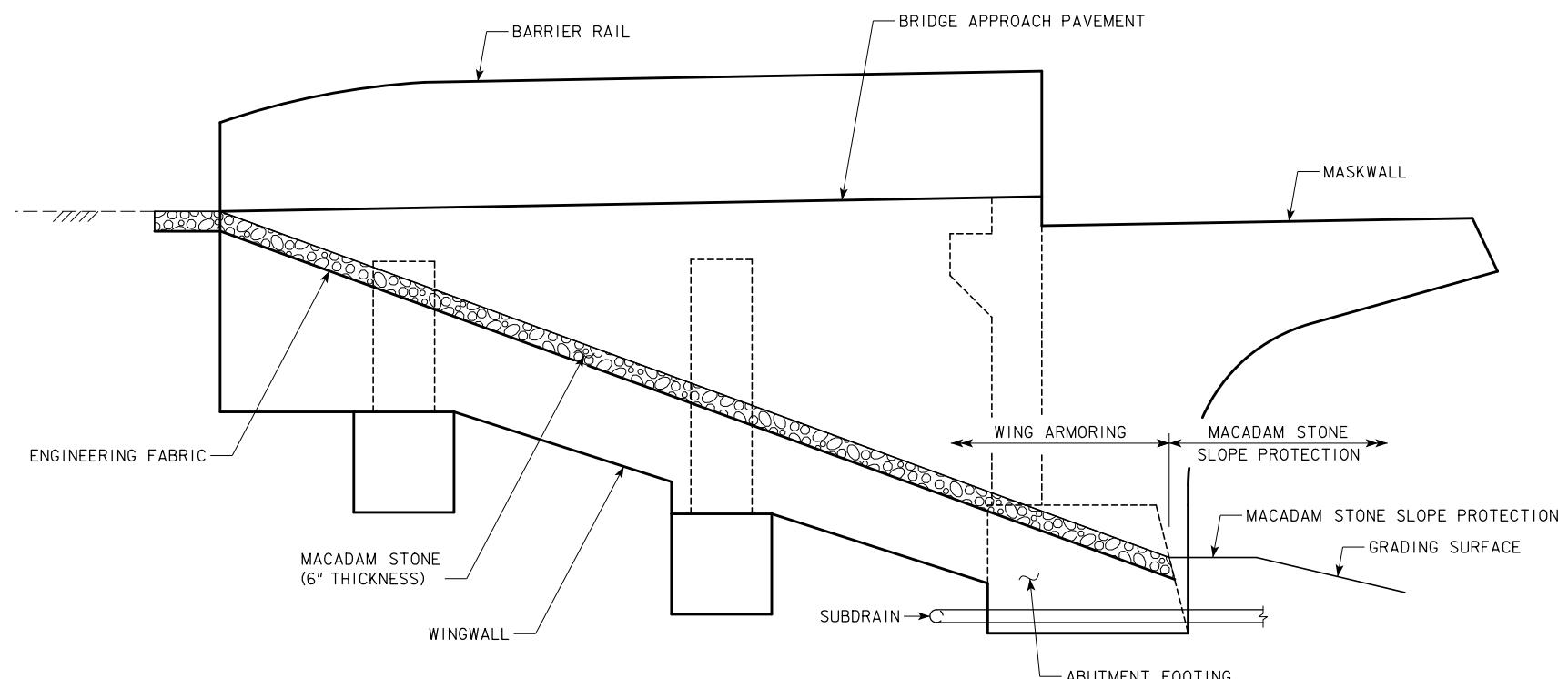
TOP VIEW OF WING ARMORING AT WEST ABUTMENT



CONCRETE CURB DETAIL



SECTION A-A



PROFILE VIEW OF WING
ARMORING AT WEST ABUTMENT

GENERAL NOTES:

MACADAM STONE SHALL BE PLACED ALONG THE SIDE OF THE WINGWALL AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE WEST ABUTMENT. THE MACADAM STONE AT THESE LOCATIONS SHALL BE UNDERLAYERED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

THE MACADAM STONE SHALL BE IN ACCORDANCE WITH SECTION 4122, OF THE STANDARD SPECIFICATIONS, COARSE MATERIAL (NO CHOKING STONE IS ALLOWED).

THE MACADAM STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 6" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, MACADAM STONE, CONCRETE CURB AND REINFORCING, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - MACADAM STONE".

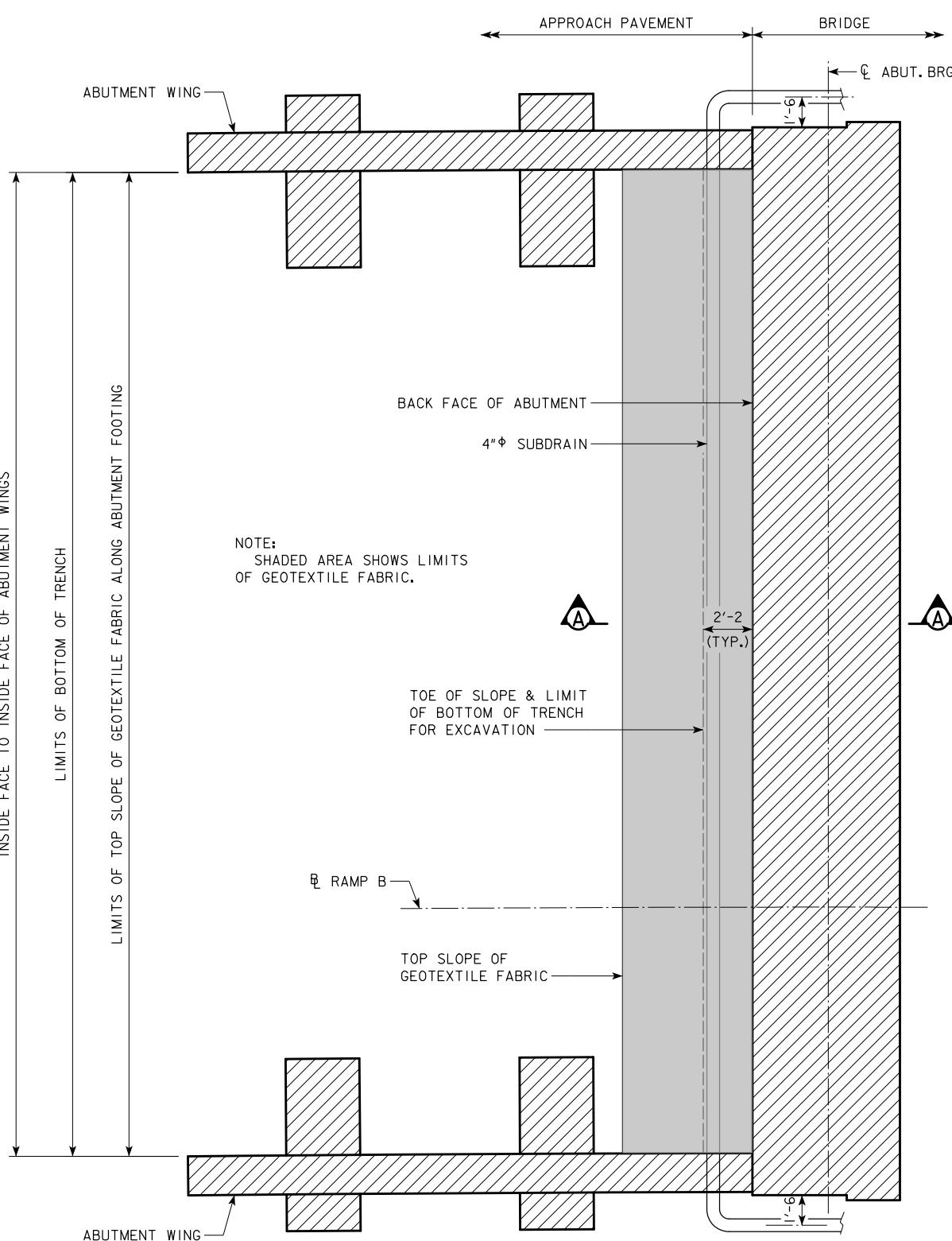
DESIGN FOR 0° SKEW
873'-6" X VARIES CONTINUOUS
WELDED GIRDERS BRIDGE

158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

BRIDGE WING ARMORING

STA. 2536+28.27 (RAMP B)

APRIL 2018



WEST ABUTMENT PLAN

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 SHALL BE 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 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. 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 SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE 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 FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTION WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

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

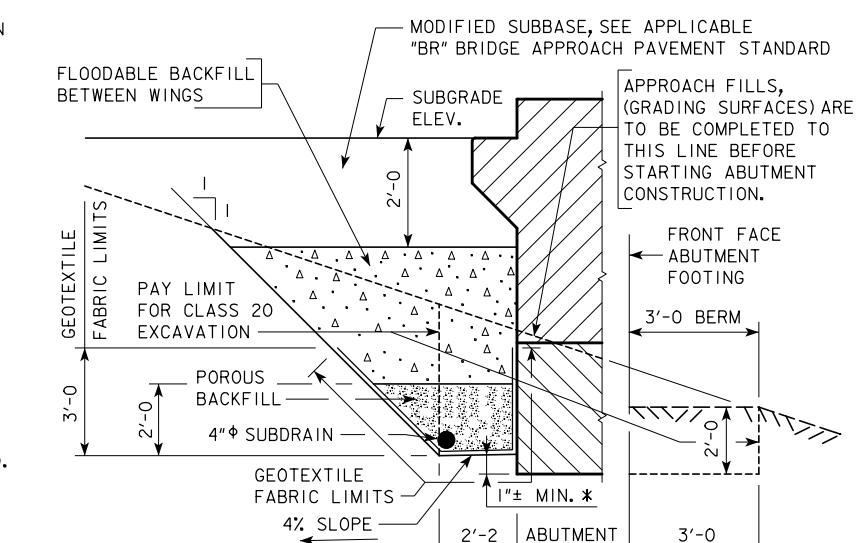
WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR HIGH PERFORMANCE STRUCTURAL CONCRETE.

NOTES:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM APPROACH ROADWAY.

THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. 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.



BACKFILL DETAILS

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

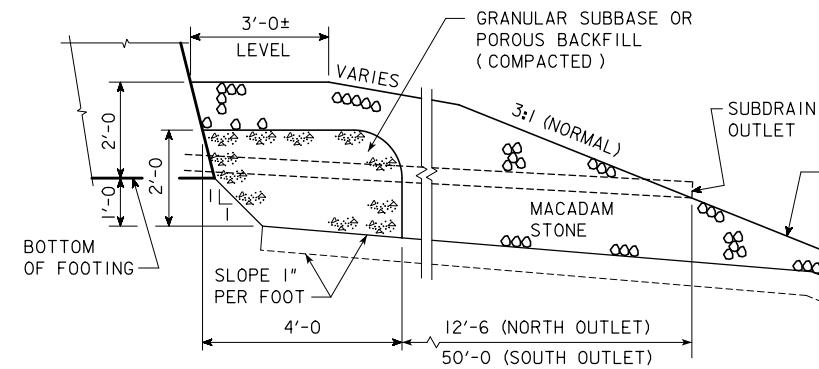
* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.

DESIGN FOR 0° SKEW
873'-6 x VARIES CONTINUOUS
WELDED GIRDER BRIDGE
158'-0, 210'-0, 183'-0, 183'-0, 139'-6 SPANS

ABUTMENT BACKFILL DETAILS
STA. 2536+28.27 (RAMP B)

APRIL 2018

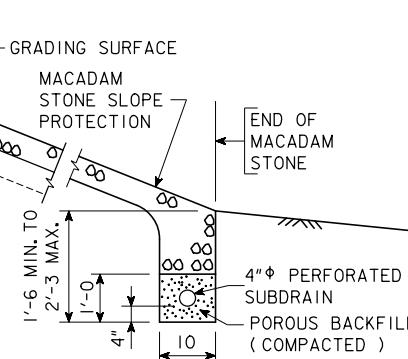
NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT
SHOWN ON THIS SHEET WHICH ARE PERTINENT TO
THIS STRUCTURE.

SUBDRAIN OUTLET DETAIL
(MACADAM STONE SLOPE PROTECTION)

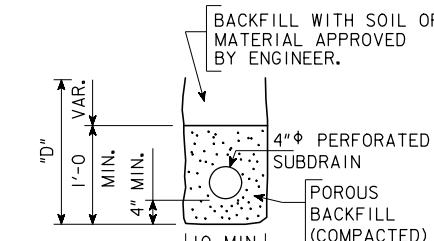
ENGINEERING FABRIC ENDS
ARE TO BE BURIED
6" TO PREVENT
UNDERMINING.



ENGINEERING FABRIC DETAIL



SECTION B-B

SECTION C-C
(TYPICAL)

"D" = DEPTH REQUIRED TO PROVIDE PROPER
FLOW LINE FOR SUBDRAIN.

SUBDRAIN NOTES :

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

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS. THE SUBDRAIN OUTLET SHALL CONSIST OF A 6'-0 LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET.

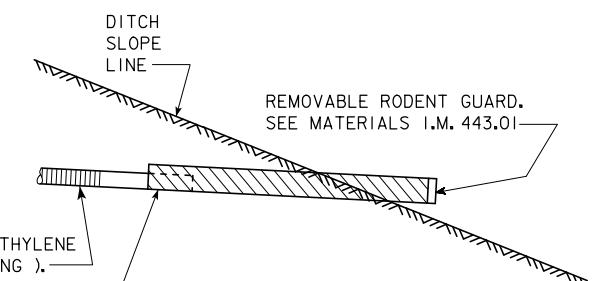
THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE". NO EXTRA PAYMENT WILL BE MADE.

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.

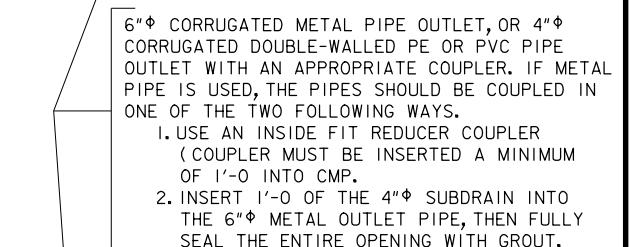
THE UPHILL END OF THE PERFORATED SUBDRAIN AT THE TOE OF SLOPE PROTECTION SHALL BE CAPPED AS APPROVED BY THE ENGINEER.

SUBDRAIN OUTLET ELEVATIONS

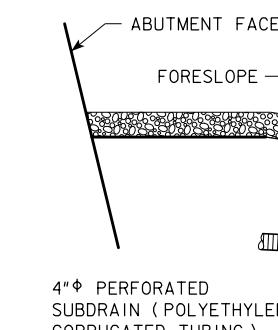
LOCATION	ELEVATION
WEST ABUTMENT, NORTH OUTLET	765.5
WEST ABUTMENT, SOUTH OUTLET	764.7
TOE OF WEST BERM, NORTH OUTLET	740.9
TOE OF WEST BERM, SOUTH OUTLET	739.5



SUBDRAIN OUTLET AT DITCH SLOPE



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.



SUBDRAIN OUTLET AT BERM SLOPE



TOP VIEW

FRONT VIEW

REMOVABLE RODENT GUARD DETAILS
OUTLET DETAILS

DESIGN FOR 0° SKEW

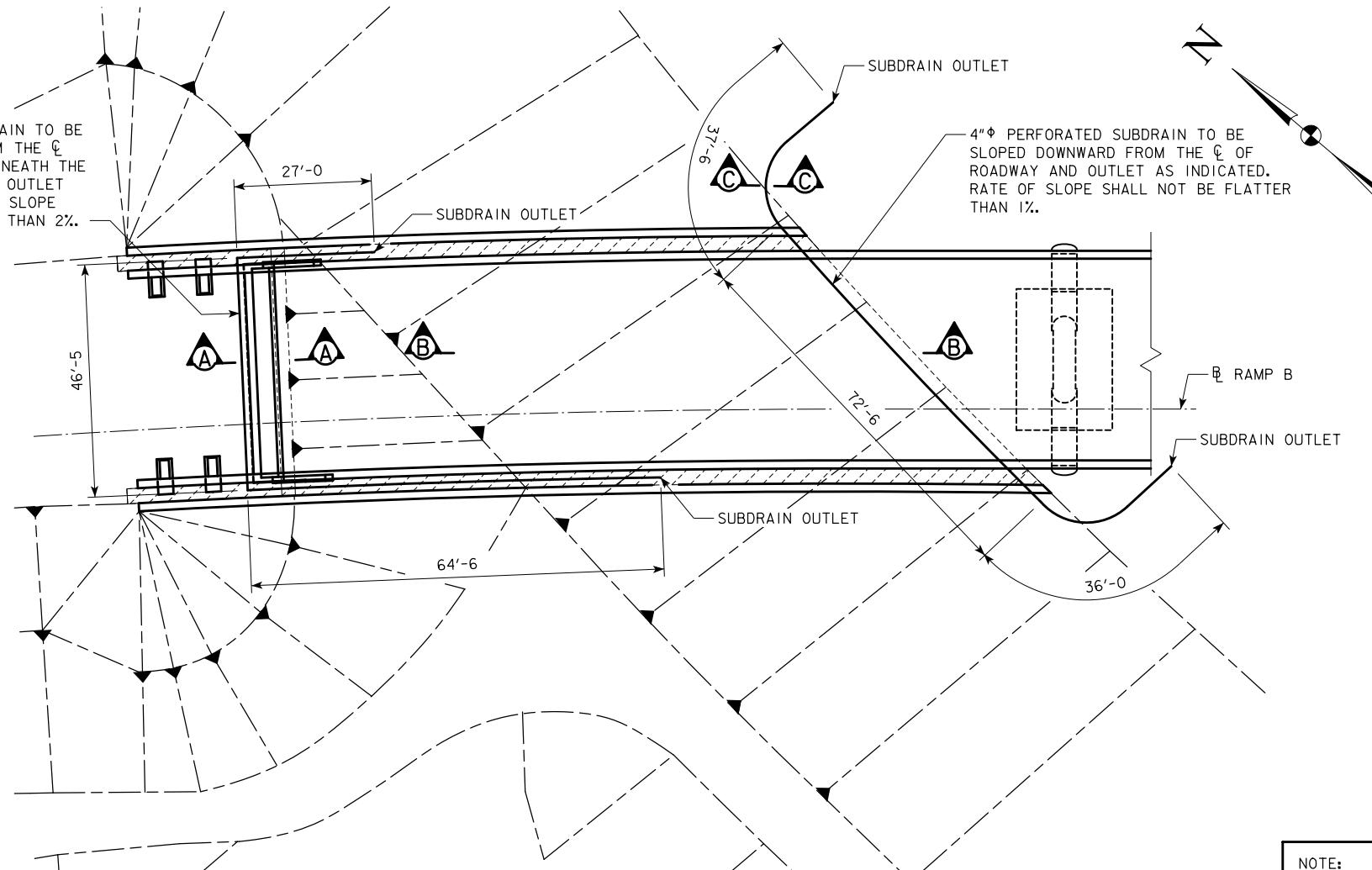
873'-6" X VARIES CONTINUOUS
WELDED GIRDER BRIDGE

158'-0", 210'-0", 183'-0", 183'-0", 139'-6 SPANS

SUBDRAIN DETAILS

STA. 2536+28.27 (E RAMP B)

APRIL 2018

SITUATION PLAN
SHOWING SUBDRAIN LOCATIONS
AT WEST ABUTMENT

NOTE:
SECTION A-A IS SHOWN ON ABUTMENT
BACKFILL DETAILS SHEET.