



ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
 P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

123' STANDARD TPG BRIDGE REPLACEMENT

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LEGEND

- | | |
|-----------------------------|---------------------------------|
| BRG. = BEARING | LT = LEFT |
| CL = CENTERLINE | O.D. = OUTSIDE DIAMETER |
| DIA. = DIAMETER | OPP. = OPPOSITE |
| EA. = EACH | PL = PLATE |
| EXP. = EXPANSION BEARING | RAD. = RADIUS |
| F.C. = FRACTURE CRITICAL | REINF. = REINFORCED |
| FIX. = FIXED BEARING | RT = RIGHT |
| GALV. = GALVANIZED | SYMM. = SYMMETRIC |
| H.A.S. = HEADED ANCHOR STUD | TPG = THROUGH PLATE GIRDER |
| H.S. = HIGH STRENGTH | TYP. = TYPICAL |
| LB = POUNDS | U.N.O. = UNLESS NOTED OTHERWISE |



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CONSTRUCTION**

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REV.	DATE	BY	REVISION
Δ	09-11-15	DF	ISSUED FOR CONSTRUCTION

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT			
TITLE: COVER SHEET			
DESIGNED BY: AR	SCALE: AS NOTED	S1	AFE NO.:
DRAWN BY: RDL	DATE: 09/11/15		ACAD FILE:
CHECKED BY: JSK			DWG NO. 1 OF 18
APPROVED BY: DMF			

GENERAL REQUIREMENTS

- ALL MATERIAL, FABRICATION, AND ERECTION SHALL BE IN ACCORDANCE WITH CHAPTER 15, STEEL STRUCTURES OF THE CURRENT AREMA MANUAL FOR RAILWAY ENGINEERING. ALL WELDING OPERATION PROCESSES, EQUIPMENT, MATERIALS, QUALIFICATION OF WELDERS, WORKMANSHIP, TESTING AND INSPECTION SHALL BE IN ACCORDANCE WITH THE CURRENT AREMA MANUAL AND THE AMERICAN WELDING SOCIETY BRIDGE WELDING CODE D1.5-2010. THE MORE STRINGENT CODE SHALL APPLY.
- THE FABRICATOR SHALL FURNISH ALL EQUIPMENT, TOOLS, LABOR AND MATERIALS IN CONNECTION WITH THE FABRICATION AND SHIPPING OF ALL BRIDGE STEEL SUPERSTRUCTURE, INCLUDING BEARINGS AND ANCHOR BOLTS, IN ACCORDANCE WITH PLANS AND AS HEREIN SPECIFIED.
- EXCEPT AS MODIFIED HEREIN, THE FURNISHINGS AND FABRICATION OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 15, STEEL STRUCTURES, OF THE AREMA MANUAL FOR RAILWAY ENGINEERING AS CURRENTLY IN FORCE AS OF THE DATE OF RECEIPT OF QUOTATION.
- FABRICATION OF STRUCTURAL STEEL SHALL BE PERFORMED BY A FABRICATOR CERTIFIED UNDER AISC QUALITY CERTIFICATION PROGRAM CATEGORY: INTERMEDIATE.
- ALL WELDING AND OXYGEN CUTTING SHALL BE IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.5-2010, EXCEPT AS MAY BE AMENDED BY THIS SPECIFICATION.
- THE FABRICATION OF STEEL MEMBERS DESIGNATED HEREIN AS FRACTURE CRITICAL MEMBERS AND THE MATERIAL MAKING UP THOSE MEMBERS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE AREMA FRACTURE CONTROL PLAN FOR FRACTURE CRITICAL MEMBERS.
- ERECTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING ERECTION AND THE DESIGN AND DETAILING OF LIFTING ACCESSORIES PER ASME BTH-1-2011 BASED ON ERECTOR'S PROPOSED SUPERSTRUCTURE ERECTION PLAN. ERECTOR SHALL SUBMIT LIFTING PLAN, DETAILS AND CALCULATIONS TO THE ENGINEER FOR APPROVAL. THE SUPERSTRUCTURE ERECTION PLAN SHALL BE COORDINATED WITH THE RAILROAD, AND FINAL ERECTION PLAN AND DETAILS SHALL BE SUBMITTED TO THE ENGINEER AND THE RAILROAD FOR APPROVAL, SIGNED AND SEALED BY AN ALASKA PROFESSIONAL ENGINEER.
- IF ALASKA RAILROAD CORPORATION FORCES ARE TO ERECT BRIDGE, FALSEWORK AND LIFTING PLANS SHALL BE APPROVED BY THE ENGINEERING DEPARTMENT.
- SHOP ASSEMBLY OF ALL STRUCTURAL STEEL IS REQUIRED TO ENSURE PROPER FIT.
- FIELD WELDING OF ANY KIND IS PROHIBITED UNLESS SPECIFICALLY CALLED FOR IN THE PLANS OR APPROVED BY THE ENGINEER.

SHOP DRAWING & WELD PROCEDURES

- THE FABRICATOR SHALL SUBMIT TO THE ENGINEER SHOP DETAIL DRAWINGS, WELDING PROCEDURE SPECIFICATIONS, AND ERECTION PROCEDURES FOR REVIEW, AS TO CONFORMITY TO CONTRACT REQUIREMENTS. SHOP DRAWINGS AND WELD PROCEDURES REQUIRE APPROVAL BY THE ENGINEER BEFORE ANY FABRICATION IS BEGUN.
- ALL SHOP DRAWINGS SHALL BE CHECKED BY THE FABRICATOR BEFORE SUBMITTING THEM FOR APPROVAL. SHOP DRAWINGS SHALL BE MADE IN TRIPLICATE AND SHALL BE REPRODUCIBLE, 24 INCHES BY 36 INCHES IN SIZE, INCLUDING MARGINS. THE MARGIN AT THE LEFT END SHALL BE 1 1/2 INCHES AND THE OTHERS 1/2 INCH WIDE. THESE DRAWINGS SHALL BECOME THE PROPERTY OF, AND SHALL BE DELIVERED TO, THE ALASKA RAILROAD CORPORATION UPON COMPLETION OF THE CONTRACT.
- DURING THE PREPARATION OF SHOP DRAWINGS, THE FABRICATOR SHALL CHECK ALL GENERAL DIMENSIONS OF THE STEEL WORK AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER FOR REVISION AND CORRECTION BEFORE THE FABRICATION IS BEGUN. NO ALLOWANCE SHALL BE MADE TO THE FABRICATOR FOR MATERIAL FABRICATED TO INCORRECT DIMENSIONS NOT SO REPORTED.
- SHOP DRAWINGS SHALL INDICATE THE TYPE AND GRADE OF STEEL USED IN EACH OF THE FABRICATED MEMBERS. MEMBERS SUBJECT TO THE FRACTURE CONTROL PLAN AND CHARPY V-NOTCH TOUGHNESS TESTS SHALL BE DESIGNATED AS SUCH ON THE SHOP DRAWINGS.
- SHOP DRAWINGS SHALL INDICATE NUMBER, LENGTH, GRIP AND LOCATION OF ALL SHOP AND FIELD HIGH STRENGTH FASTENERS.
- ALL WELDING SHALL BE FULLY DETAILED. ONE COPY OF THE PROPOSED WELDING PROCEDURES GIVING COMPLETE DETAILS FOR EACH TYPE AND THICKNESS OF JOINT TO BE USED ON THE PROJECT, WHETHER PREQUALIFIED OR SUBJECT TO QUALIFICATION TESTS, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO SUBMITTING SHOP DRAWINGS. THE SHOP DRAWINGS SUBMITTED FOR FINAL APPROVAL SHALL INDICATE THE WELDING PROCEDURE TO BE USED FOR EACH JOINT. WELDING SYMBOLS SHALL BE THOSE SHOWN IN THE LATEST EDITION OF AMERICAN WELDING SOCIETY (AWS) PUBLICATION A2.4, "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING." SPECIAL CONDITIONS INCLUDING LOCATION OF JOINTS SUBJECT TO NON-DESTRUCTIVE TESTING AND TYPE OF NON-DESTRUCTIVE TESTING SHALL BE FULLY EXPLAINED BY ADDED NOTES OR DETAILS.

- THE FABRICATOR SHALL FURNISH TO THE ALASKA RAILROAD CORPORATION AS MANY PRINTS OF DRAWINGS AS MAY BE NECESSARY TO CARRY OUT THE WORK. THE FABRICATOR SHALL BE RESPONSIBLE FOR THE CORRECTNESS AND COMPLETENESS OF HIS DRAWINGS, REGARDLESS OF ANY REVIEW BY THE ENGINEER. ANY WORK PERFORMED OR MATERIAL ORDERED PRIOR TO APPROVAL BY THE ENGINEER SHALL BE AT THE SOLE RISK OF THE FABRICATOR.

MATERIALS

- STRUCTURAL STEEL A709 GRADE 50W
- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A709, GRADE 50W UNLESS OTHERWISE NOTED. STRUCTURAL STEEL IMPACT TEST REQUIREMENTS SHALL BE T3 FOR NON-FRACTURE CRITICAL MEMBERS AND F3 FOR FRACTURE CRITICAL MEMBERS. BALLAST DECK PLATE, BENT CURB PLATE, KNEE BRACES, STIFFENERS, DIAPHRAGMS, CONNECTION ANGLES, WALKWAY, UTILITY CHASE, SOLE PLATE, AND MASONRY PLATE SHALL BE EXEMPT FROM IMPACT TEST REQUIREMENTS.
 - STEEL DESIGNATED AS FRACTURE CRITICAL STEEL (F.C.) ON THE DRAWINGS SHALL COMPLY WITH THE REQUIREMENTS OF THE AREMA MANUAL CHAPTER 15, SECTION 1.14. ADDITIONALLY AN S2 PRODUCT ANALYSIS (CHEMICAL COMPOSITION) SHALL BE MADE FROM EACH PLATE FOR COMPARISON TO THE PRODUCT ANALYSIS OF THE HEAT.
 - FOR REFERENCE, FRACTURE CRITICAL PLATES SHALL BE MARKED BY STENCIL (NO STAMPING) WITH AN IDENTIFYING NUMBER. IF THE PLATE IS CUT INTO TWO OR MORE PLATES IN THE FINISHED STRUCTURE, EACH INDIVIDUAL PLATE SHALL BE MARKED. LOSS OF IDENTIFICATION OF INDIVIDUAL PLATES WILL BE CAUSE FOR REJECTION OF THE PLATE.
 - IMPERFECTIONS IN SURFACES OF LOW ALLOY PLATES SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A6 EXCEPT THAT REPAIR BY WELDING WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER AFTER THE MATERIAL IS DELIVERED TO THE FABRICATING SHOP. APPROVAL WILL BE LIMITED TO AREAS WHERE THERE WILL BE LESS THAN THE MAXIMUM DESIGN STRESS IN THE FINISHED STRUCTURE. ALL GRINDING, CHIPPING, AND ARC-AIR GOUGING NECESSARY TO CONDITION PLATE SURFACES SHALL BE PERFORMED AT THE MILL IN ACCORDANCE WITH ASTM A6, SECTION 9.2.

STRUCTURAL STEEL A709 GRADE 36
STRUCTURAL STEEL DESIGNATED ON THE PLANS AS A709 GRADE 36 SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.

IDENTIFICATION OF STEEL
ROLLED STEEL SHALL BE MARKED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A6 EXCEPT THAT EACH PIECE OF STEEL SHALL BE STAMPED OR STENCILED AT THE MILL TO CLEARLY SHOW THE HEAT NUMBER. LOSS OF IDENTIFICATION ON PIECES WILL BE CAUSE FOR REJECTION OF THE PIECE.

QUALITY OF ROLLED STEEL
ALL STRUCTURAL STEEL, WHETHER CARBON STEEL OR LOW-ALLOY STEEL, AS IT COMES FROM THE ROLLS SHALL BE FREE FROM SEAMS, FLAWS, CRACKS, LAPS, BLISTERS, RAGGED OR DEFECTIVE EDGES AND OTHER DEFECTS, AND SHALL HAVE A SMOOTH, UNIFORM, WORKMANLIKE FINISH. ALL MATERIAL SHALL BE STRAIGHTENED IN THE MILL BEFORE SHIPPING AND AT THE TIME OF FABRICATION SHALL BE FREE FROM LOOSE MILL SCALE, RUST PITS OR OTHER DEFECTS AFFECTING ITS STRENGTH AND DURABILITY.

ANCHOR ROD & HEADED ANCHOR STUD
ANCHOR RODS SHALL BE ASTM F1554, GRADE 55 AND HEADED ANCHOR STUDS SHALL BE ASTM A108. BOTH SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

HIGH STRENGTH STEEL BOLTS
ALL BOLTS SHALL BE 7/8" DIA. ASTM A325SC TYPE 3, HIGH STRENGTH WITH ASTM A563 GRADE C3 HEAVY HEX NUT UNLESS NOTED OTHERWISE. ASTM F436 TYPE 3 WASHERS SHALL BE PROVIDED UNDER THE TURNED ELEMENT. USE 1 9/16" DIA. BOLT HOLES UNLESS NOTED OTHERWISE. DO NOT REAM DURING FIELD ERECTION. ACCURATELY ALIGN ALL CONNECTIONS.

DESIGN DATA

DESIGN IN ACCORDANCE WITH THE AREMA MANUAL FOR RAILWAY ENGINEERING, 2014: CHAPTER 15, STEEL STRUCTURES

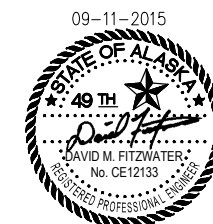
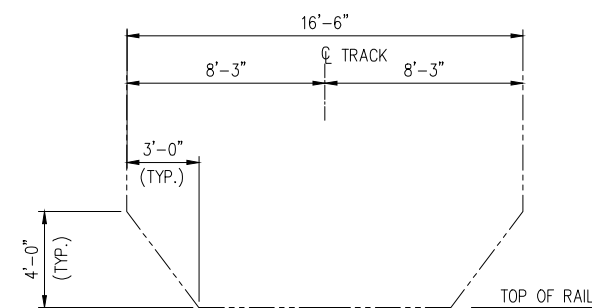
DEAD LOAD:
MAXIMUM 24" AND MINIMUM 15" BALLAST MEASURED TO TOP OF TIE
UTILITIES = 100 LB/FT

LIVE LOAD:
COOPER E-80 & ALTERNATE LOAD WITH DIESEL IMPACT FOR BALLAST DECK
WALKWAY LOAD = 85 PSF

TRACK ECCENTRICITY:
3" BETWEEN CENTERLINE BRIDGE & CENTERLINE TRACK

TABLE OF LIFTING WEIGHTS		
DESCRIPTION	MARK NO.	EST. WEIGHT (LB)
GIRDER LT & GIRDER RT		113,530
FLOORBEAM PANEL	FBP1	11,965
FLOORBEAM PANEL	FBP2 & FBP3	12,995
FLOORBEAM PANEL	FBP4	10,150
KNEE BRACE	KB1	380
KNEE BRACE	KB2	535
KNEE BRACE	KB3	560
CLOSURE PLATE	CP1	*
CLOSURE PLATE	CP2	740
BENT CURB PLATE	BCP1 & BCP5	*
BENT CURB PLATE	BCP2 & BCP4	595
BENT CURB PLATE	BCP3	870
BENT CURB PLATE	BCP6	250
SOLE PLATE	SP1 & SP2	480
MASONRY PLATE	MP1	480
UTILITY CHASE	UC1	30
WALKWAY BRACKET	WB1	70
HANDRAIL PANEL	HP1	155
HANDRAIL PANEL	HP2	180
HANDRAIL PANEL	HP3	280
HANDRAIL PANEL	HP4	155
HANDRAIL PANEL	HP5	145
HANDRAIL PANEL	HP6	135
TOE PLATE	TP1	40
TOE PLATE	TP2 & TP3	30

* VARIES BASED ON PROJECT PLANS AND DIMENSION α



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TESTS AND INSPECTION

- AS PROMPTLY AS PRACTICABLE AFTER ROLLING OF METAL AND BEFORE SHIPPING, MILLS SHALL MAKE THE CHEMICAL ANALYSES AND PHYSICAL TESTS REQUIRED AND SHALL FURNISH CERTIFIED COPIES OF THE TESTS TO THE ENGINEER IN THE NUMBER REQUESTED. CERTIFIED COPIES MUST BE FURNISHED TO THE ENGINEER PRIOR TO USE OF MATERIAL IN THE WORK.
- SHOP INSPECTION OF METAL FABRICATION MAY BE PERFORMED BY THE ALASKA RAILROAD CORPORATION AS THE WORK PROGRESSES WITHOUT EXPENSE TO THE FABRICATOR. THE FABRICATOR SHALL GIVE TWO WEEKS WRITTEN NOTICE TO THE ENGINEER OF THE BEGINNING OF WORK IN THE SHOPS SO INSPECTION MAY BE PROVIDED. NO WORK IN THE SHOP SHALL BE DONE UNTIL THE ENGINEER HAS BEEN SO NOTIFIED.
- THE ENGINEER AND INSPECTOR SHALL HAVE FULL ACCESS TO ALL PARTS OF THE SHOP WHERE MATERIAL IS BEING FABRICATED FOR THE CONTRACT, AND SHALL BE PROVIDED EVERY REASONABLE FACILITY FOR DETERMINING THE CHARACTER OF THE MATERIAL AND WORKMANSHIP.
- THE FABRICATOR SHALL LAY OUT AND ARRANGE THE INDIVIDUAL MEMBERS OR UNITS TO BE INSPECTED SO THAT ERECTION MARKS ON EACH MAY BE READILY DISTINGUISHED AND SO THAT EACH MEMBER OR UNIT IS ACCESSIBLE FOR SUCH MEASUREMENTS AS THE INSPECTOR MAY DEEM NECESSARY. IF THE MATERIAL HAS NOT BEEN INSPECTED AT THE MILL BEFORE BEING DELIVERED TO THE FABRICATING SHOP, THE FABRICATOR SHALL ASSIST THE INSPECTOR BY TURNING THE STEEL TO PERMIT EXAMINATION ON BOTH SIDES.
- FINAL INSPECTION SHALL TAKE PLACE AFTER THE FABRICATION IS COMPLETE, BEFORE SHIPPING.
- WHETHER OR NOT SHOP INSPECTION IS MADE, WORKMANSHIP AND MATERIALS WHICH DO NOT CONFORM TO THE SPECIFICATIONS AND TO RECOGNIZED GOOD PRACTICE MAY BE REJECTED AT ANY TIME PRIOR TO FINAL ACCEPTANCE OF THE WORK.
- NON-DESTRUCTIVE TESTING OF WELDS IS CONSIDERED A PART OF QUALITY CONTROL AND SHALL BE AT THE FABRICATOR'S EXPENSE (SEE WELD INSPECTION OF PROJECT SPECIFICATIONS).
- NONDESTRUCTIVE TESTING OF THE FRACTURE CRITICAL MEMBERS IS TO BE PERFORMED BY AN INDEPENDENT TESTING COMPANY APPROVED BY THE ENGINEER AND CONTRACTED FOR BY THE FABRICATOR. PERSONNEL QUALIFICATION AND CERTIFICATION IS TO BE IN ACCORDANCE WITH CURRENT AREMA CHAPTER 15 FOR FRACTURE CRITICAL MEMBERS. COPIES OF TEST REPORTS ARE TO BE FURNISHED TO THE ENGINEER.

GENERAL FABRICATION

- THE STEEL SHOP FABRICATION SHALL BE GOVERNED BY THE APPLICABLE PROVISIONS OF THE LATEST AREMA SPECIFICATIONS, CHAPTER 15, STEEL STRUCTURES, PART 3, "FABRICATION", EXCEPT AS HEREIN SPECIFIED. THOSE MEMBERS DESIGNATED AS FRACTURE CRITICAL SHALL CONFORM TO THE REQUIREMENTS OF THE FRACTURE CONTROL PLAN SET FORTH IN THE APPLICABLE PARTS OF THE AREMA MANUAL IN ADDITION TO THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
- A PREFABRICATION MEETING SHALL BE HELD TO ESTABLISH SHOP FABRICATION SCHEDULES, MATERIAL SUPPLIES, INSPECTION PROCEDURES, REPAIR PROCEDURES, RECORD KEEPING PROCEDURES, AND ALL OTHER RELATED SUBJECTS. ALL INTERESTED PARTIES SHALL BE INVITED TO ATTEND.
- THE BOTTOM FLANGES OF THE BEAMS MUST BE SQUARE WITH THE VERTICAL AXIS 5 FEET FROM BOTH ENDS OF THE BEAMS.
- THE TOP SURFACE OF THE BEAMS SHALL BE ADJUSTED TO FORM A STRAIGHT LINE AT ANY TRANSVERSE SECTION THROUGHOUT THE SPAN. TOLERANCE IS PLUS OR MINUS 3/8".

HANDLING STRUCTURAL STEEL

- EXTRAORDINARY CARE SHALL BE TAKEN IN THE HANDLING OF FRACTURE CRITICAL MEMBERS. LIFTING DOGS, TONGS, GRIPPES, CHAINS, CABLES, OR OTHER LIFTING DEVICES PLACED IN DIRECT CONTACT WITH THE MEMBER WHICH MAY GOUGE, SCRATCH, SCORE, SCRAPE, OR OTHERWISE DAMAGE THE SURFACE, EDGES OR CORNERS SHALL NOT BE USED. PROCEDURES FOR HANDLING FRACTURE CRITICAL MEMBERS USING LIFTING STRAPS, TIMBER CUSHIONS OR OTHER PROTECTIVE DEVICES SHALL BE DEVELOPED, SUBMITTED TO THE ENGINEER, AND RECEIVE WRITTEN APPROVAL BY THE ENGINEER BEFORE HANDLING ANY MATERIAL FOR MOVEMENT, DESIGNATED AS FRACTURE CRITICAL.

CUTTING STRUCTURAL STEEL

GENERAL

- PLATES MAKING UP STRUCTURAL MEMBERS SHALL BE CUT SO THAT THE DIRECTION OF ROLLING IS PARALLEL TO THE LONGITUDINAL AXIS OF THE MEMBER. CUT EDGES SHALL BE GROUND TO ELIMINATE MICRO CRACKS.
- ALL MAIN STRESS CARRYING MEMBERS COMPOSED OF PLATES SHALL HAVE ROLLED EDGES OR MAY BE OXYGEN CUT. A MECHANICAL GUIDE SHALL BE USED IN ALL OXYGEN CUTTING. CUTS SHALL BE MADE IN ACCORDANCE WITH AWS STRUCTURAL WELDING CODE, ARTICLE 3.2 REQUIREMENTS, EXCEPT AS MODIFIED IN THESE SPECIFICATIONS.

REPAIR OF PLATE CUT EDGES

THE CORRECTIVE PROCEDURES DESCRIBED IN TABLE 3.1 OF AWS D1.5-2010 SHALL NOT APPLY TO DISCONTINUITIES IN ROLLED PLATE SURFACES. SUCH DISCONTINUITIES SHALL BE CORRECTED BY THE FABRICATOR IN ACCORDANCE WITH THE PROVISIONS OF MATERIALS IN THESE SPECIFICATIONS.

SHEARING

- SHEARING EDGES, WHERE PERMITTED, SHALL BE LEFT IN A NEAT AND FINISHED CONDITION. A SHEARED EDGE IS DEFINED AS THE TERMINATION OF ANY PART CUT BY SHEARING, WHETHER ON SIDES, ENDS OR OTHERWISE.
- EDGES OF ALL MAIN MATERIAL, IF SHEARED, SHALL BE PLANED TO A DEPTH OF 1/4 INCH. MAIN MATERIAL INCLUDES ALL COMPONENTS, GUSSET AND LATERAL PLATES, BEARING STIFFENERS AND FLOORBEAM END CONNECTORS.
- PLANING MAY BE OMITTED AT THE SHEARED ENDS OF PLATES AND SHAPES WHICH BECOME ENDS OF MAIN STRESS CARRYING MEMBERS AND ARE NOT OTHERWISE SPECIFIED TO BE MILLED.
- OTHER METHODS OF SMOOTHING SHEARED EDGES BY GRINDING OR OTHERWISE, WHICH THE ENGINEER MAY APPROVE AS BEING EQUIVALENT TO THE PLANING SPECIFIED, WILL BE GIVEN CONSIDERATION.

BOLT HOLES

- ALL HOLES FOR 7/8 INCH DIAMETER HIGH STRENGTH BOLTS SHALL BE 15/16 INCH DIAMETER UNLESS OTHERWISE INDICATED ON THE PLANS.
- OPEN HOLES FOR FIELD CONNECTIONS OF THE THROUGH PLATE GIRDER SPAN SHALL BE SUBDRILLED 1/4 INCH DIAMETER UNDERSIZE AND REAMED TO FINAL DIAMETER WITH PARTS FULLY SHOP ASSEMBLED, OR DRILLED FULL SIZE WITH THE PARTS ASSEMBLED.
- ANY OPEN BOLT HOLE SHALL BE FILLED IN IF NOT USED.

SHOP ASSEMBLY AND CAMBER

- THE NEW THROUGH PLATE GIRDER SPAN SHALL BE COMPLETELY SHOP ASSEMBLED AS A SINGLE UNIT. DURING ASSEMBLY, PIECES SHALL BE MATCH MARKED IN ACCORDANCE WITH APPROVED MATCH MARKING DIAGRAMS TO ASSURE THEY WILL BE REASSEMBLED IN AN IDENTICAL MANNER DURING ERECTION AT THE SITE.
- NO INTERCHANGE OF PARTS AFTER REAMING AND DRILLING WILL BE ALLOWED. IN THE REAMING OF FIELD HOLES WITH MEMBERS OR PARTS OF MEMBERS ASSEMBLED THE PARTS SHALL BE THOROUGHLY DRAWN TOGETHER WITH BOLTS SO THAT NO BURRS OR REAMINGS WILL BE LEFT BETWEEN ANY PARTS.
- FLOORBEAMS NEED NOT BE CAMBERED, BUT SHALL BE FABRICATED WITH NATURAL CAMBER UP. CAMBER OF THE THROUGH PLATE GIRDERS SHALL BE AS SHOWN IN THE GIRDER CAMBER DIAGRAM AND IS EQUAL TO THE DEFLECTION PRODUCED BY THE DEAD LOAD ONLY.

MECHANICAL CONNECTION

GENERAL

- BOLTS SHALL BE TIGHTENED BY TURN-OF-THE-NUT METHOD TO OBTAIN THE PROPER BOLT TENSION IN ACCORDANCE WITH AREMA CHAPTER 15, SECTION 3.2.3.
- BOLTS AND NUTS SHALL BE FURNISHED BY THE SAME SUPPLIER TO ENSURE PROPER FIT.
- BOLTS SHALL BE OF SUCH LENGTH THAT THEY WILL EXTEND ENTIRELY THROUGH THEIR NUTS AND APPROXIMATELY 1/4" BEYOND THEM AND THE FULL THREADS SHALL EXTEND NO MORE THAN 3/8" INTO THE GRIP
- ANY OPEN BOLT HOLE SHALL BE FILLED IN WITH HIGH STRENGTH STEEL BOLT IF NOT USED.
- BOLTED PARTS SHALL FIT SOLIDLY TOGETHER WHEN ASSEMBLED AND SHALL NOT BE SEPARATED BY GASKETS OR ANY OTHER INTERPOSED COMPRESSIBLE MATERIAL.
- WHEN ASSEMBLED, ALL JOINT SURFACES, INCLUDING THOSE ADJACENT TO THE BOLT HEADS, NUTS OR WASHERS, SHALL BE FREE OF SCALE, EXCEPT TIGHT MILL SCALE; AND SHALL ALSO BE FREE OF DIRT, LOOSE SCALE, BURRS, OTHER FOREIGN MATERIAL AND OTHER DEFECTS THAT WOULD PREVENT SOLID SEATING OF THE PARTS.
- CONTACT SURFACES WITHIN THE JOINTS SHALL BE FREE OF OIL, PAINT, LACQUER OR RUST INHIBITOR.


BOLT TENSION

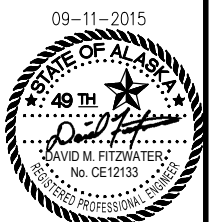
WHEN TESTED WITH THE INSPECTING WRENCH, EACH FASTENER SHALL PROVIDE, WHEN ALL FASTENERS IN THE JOINT ARE TIGHT, AT LEAST THE MINIMUM BOLT TENSION SHOWN IN TABLE 15-3-2 OF AREMA CHAPTER 15, SECTION 15.3.2.3 FOR THE SIZE OF FASTENER USED.

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APPROVED BY: DMF			3 OF 18



WELDING

GENERAL

1. WELDING OF THE STEEL SHALL CONFORM TO THE BRIDGE WELDING CODE, D1.5-2010 OF THE AMERICAN WELDING SOCIETY, EXCEPT FOR THE FOLLOWING MODIFICATIONS AND ADDITIONS.
2. THE WELDING OF MEMBERS DESIGNATED IN MATERIALS SECTION AS FRACTURE CRITICAL MEMBERS SHALL, IN ADDITION TO THE REQUIREMENTS OF THIS ARTICLE, CONFORM TO THE REQUIREMENTS OF THE FRACTURE CONTROL PLAN SET FORTH IN THE APPLICABLE PARTS OF THE AREMA MANUAL.
3. NO TEMPORARY OR PERMANENT WELDS, IF NOT SHOWN ON THE PLANS OR PERMITTED IN THE SPECIFICATIONS, SHALL BE MADE WITHOUT SPECIFIC WRITTEN AUTHORIZATION BY THE ENGINEER. NO ELECTROSLAG OR ELECTROGAS WELDING SHALL BE USED.
4. THE USE OF RECYCLED FLUX WILL NOT BE PERMITTED. ALL FLUX USED IN THE WELDING OF FRACTURE CRITICAL MEMBERS SHALL BE NEW FRESHLY DEPOSITED IN THE FLUX DISPENSING SYSTEM ONLY FROM UNDAMAGED PACKAGES. FLUX FOR FRACTURE CRITICAL MEMBERS SHALL NOT BE PREVIOUSLY USED, REUSED RECYCLED, REPROCESSED OR PICKED UP OFF OF THE WORKING SURFACE BY ANY METHOD AND RE-DEPOSITED BACK INTO THE DISPENSING SYSTEM.
5. ONE COPY OF THE PROPOSED WELDING PROCEDURES GIVING COMPLETE DETAILS FOR EACH TYPE AND THICKNESS OF JOINT TO BE USED ON THE PROJECT, WHETHER PREQUALIFIED OR SUBJECT TO QUALIFICATION TESTS, SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO SUBMITTING SHOP DRAWINGS. THE SHOP DRAWINGS SUBMITTED FOR FINAL APPROVAL SHALL INDICATE THE WELDING PROCEDURE TO BE USED FOR EACH JOINT.
6. ALL COSTS INVOLVED IN QUALIFYING WELDING PROCESSES, JOINT WELDING PROCEDURES, TACKERS, WELDERS AND WELDING OPERATORS, INCLUDING ALL COSTS OF MATERIALS, FURNISHING TEST SPECIMENS, PERFORMING THE SPECIFIED PHYSICAL TESTS AND PREPARING THE REQUIRED TESTS REPORTS SHALL BE BORNE BY THE FABRICATOR. THE QUALIFYING AGENCY SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER. THE FABRICATOR SHALL NOTIFY THE ENGINEER, IN WRITING, AT LEAST ONE WEEK PRIOR TO QUALIFICATION TESTS.
7. ALL PRIMARY SHOP WELDS SHALL BE MADE BY APPROVED AUTOMATIC FEED AND TRAVEL WELDING PROCESSES. NON-COMPLIANCE WITH THE REQUIREMENT WILL BE CAUSE FOR REJECTION OF THE WELDED MATERIAL UNLESS PRIOR APPROVAL IS GRANTED BY THE ENGINEER FOR WELDING THE SPECIFIED JOINTS BY THE USE OF OTHER PROCESSES. THE AUTOMATIC WELDING PROCESS REQUIREMENT FOR PRIMARY SHOP WELDS SHALL BE SHOWN ON THE SHOP DRAWING FOR EACH JOINT. PRIMARY SHOP WELDS ARE DEFINED AS GIRDER FLANGE TO WEB WELDS.
8. ALL WELD METAL MUST BE E70XX ELECTRODE WITH EQUIVALENT CORROSION RESISTANCE AND WEATHERED APPEARANCE AS THE BASE METAL.
9. FIELD OR SHOP WELDING TO THE STRUCTURAL STEEL MEMBERS FOR THE PURPOSE OF ATTACHING CONSTRUCTION ACCESSORIES OR ERECTION HARDWARE SHALL NOT BE PERMITTED.
10. ONLY THE USE OF SUBMERGED ARC WELDING (SAW) OR SHIELDED METAL ARC WELDING (SMAW) SHALL BE PERMITTED. THE USE OF FLUX CORE WELDING IS PROHIBITED.
11. WELDING OF FRACTURE CRITICAL MEMBERS SHALL CONFORM TO AREMA CHAPTER 15, SECTION 1.14.
12. SURFACES AND EDGES TO BE WELDED SHALL BE SMOOTH, UNIFORM, AND FREE FROM FINS, TEARS, CRACKS, OR OTHER DEFECTS WHICH WOULD ADVERSELY AFFECT THE QUALITY OR STRENGTH OF THE WELD.
13. SURFACES TO BE WELDED AND SURFACES WITHIN 2 INCHES TO A WELD SHALL ALSO BE FREE FROM LOOSE OR THICK SCALE, SLAG, RUST, MOISTURE, GREASE, OR OTHER FOREIGN MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. ALL MILL SCALE SHALL BE REMOVED FROM THE SURFACE ON WHICH FLANGE-TO-WEB WELDS ARE TO BE MADE.
14. SHOP WELDED WEB AND FLANGE SPLICES, NOT SHOWN ON THE APPROVED SHOP DRAWINGS, ARE PERMITTED ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER. ALL REQUIRED NONDESTRUCTIVE TESTING OF SUCH WELDS SHALL BE COMPLETED AND APPROVED BEFORE THE SPLICED PIECE IS WELDED TO ANOTHER COMPONENT PART OF THE GIRDER. NO PAYMENT WILL BE MADE FOR SHOP WELDED WEB AND FLANGE SPLICES NOT SHOWN ON APPROVED SHOP DRAWINGS.

WELD INSPECTION

FACILITIES

1. THE FABRICATOR SHALL, AT HIS OWN COST, PROVIDE AN APPROVED INSPECTION SERVICE FOR NON-DESTRUCTIVE TESTING OF ALL WELDS AS SPECIFIED. OTHER COSTS SUCH AS PROVIDING SCAFFOLDING, SUPPORTS, HOISTING EQUIPMENT, LABOR, OTHER NECESSARY MEANS TO MAKE THE WORK READILY AVAILABLE FOR THIS INSPECTION, AS WELL AS THE USUAL VISUAL INSPECTION, AND ANY COST DUE TO DELAYS IN FABRICATION BECAUSE OF THE REQUIRED INSPECTION WILL BE CONSIDERED AS COMPLETELY COVERED BY THE LUMP SUM PRICE QUOTED FOR STRUCTURAL STEEL.
2. ANY NON-DESTRUCTIVE INSPECTION FACILITIES OR SERVICES FURNISHED BY THE FABRICATOR WHICH ARE FOUND TO BE UNSATISFACTORY BY THE ENGINEER SHALL BE IMPROVED OR REPLACED BY THE FABRICATOR SO AS TO PROVIDE A SATISFACTORY LEVEL OF PERFORMANCE, AFTER WHICH RE-INSPECTION OF DESIGNATED WELDED MATERIALS BY ADEQUATE NONDESTRUCTIVE INSPECTION FACILITIES AND SERVICES SHALL BE PERFORMED BY THE FABRICATOR WHEN REQUIRED BY THE ENGINEER.

PERSONNEL

PERSONNEL PERFORMING NON-DESTRUCTIVE TESTING SHALL BE QUALIFIED IN ACCORDANCE WITH THE AMERICAN SOCIETY FOR NON-DESTRUCTIVE TESTING RECOMMENDED PRACTICE NO. SNT-TC-1A. ONLY INDIVIDUALS QUALIFIED FOR NDT LEVEL II OR NDT LEVEL III, OR INDIVIDUALS QUALIFIED FOR NDT LEVEL 1 WORKING UNDER THE SUPERVISION OF AN INDIVIDUAL QUALIFIED FOR NDT LEVEL II OR III, MAY PERFORM NON-DESTRUCTIVE TESTING.

ACCEPTANCE

1. THE ENGINEER'S APPROVAL OF THE WELDS AND OF THE REPAIR OF DEFECTS MUST BE OBTAINED BEFORE MEMBERS WILL BE ACCEPTED FOR SHIPMENT FROM THE SHOP.
2. THE FABRICATOR'S INDEPENDENT INSPECTOR SHALL ASCERTAIN THAT EQUIPMENT, PROCEDURES AND TECHNIQUES CONFORM TO THE REQUIREMENTS OF THE CODE AND THESE SPECIFICATIONS. THE INSPECTOR SHALL BE RESPONSIBLE FOR MAKING NON-DESTRUCTIVE TESTS, SHALL EXAMINE AND INTERPRET TEST RESULTS, APPROVE SATISFACTORY WELDS, DISAPPROVE OR REJECT UNSATISFACTORY WELDS, APPROVE SATISFACTORY METHODS PROPOSED BY THE FABRICATOR FOR REPAIRING UNACCEPTABLE WELDS, AND INSPECT THE PREPARATION AND RE-WELDING OF UNACCEPTABLE WELDS, AND INSPECT THE PREPARATION AND RE-WELDING OF UNACCEPTABLE WELDS. THE INSPECTOR SHALL RECORD THE LOCATIONS OF TESTED AREAS AND THE FINDINGS OF ALL NON-DESTRUCTIVE TESTS, TOGETHER WITH DESCRIPTIONS OF ANY REPAIRS MADE AND SHALL PERIODICALLY FURNISH SUCH RECORDS TO THE ENGINEER AS THE WORK PROGRESSES.
3. THE RESPONSIBILITY FOR INSURING ADEQUATE WORKMANSHIP AND TECHNIQUES SHALL NOT, HOWEVER, BE UPON THE INSPECTOR ALONE. THE FABRICATOR SHALL PROVIDE COMPETENT SUPERVISION OF ALL WELDING TO INSURE ACCEPTABLE QUALITY. THE ENGINEER RESERVES THE RIGHT TO MAKE HIS OWN DETERMINATION AT ANY TIME OF THE ADEQUACY OF ANY WELD, AND TO REJECT WELDS WHICH, IN HIS OPINION, ARE DEFICIENT.
4. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE FABRICATOR TO CHECK FOR CRACKS, UNDERCUTTING, EXCESSIVE WELD METAL, IMPROPER WELD CONTOURS, ETC.
5. THE INSPECTION SERVICE SHALL REPORT THE LOCATION AND LENGTH OF DEFECTS, IF ANY, AND FURNISH A CERTIFICATION THAT INSPECTION TESTS WERE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS.
6. WELDS REQUIRING REPAIR SHALL BE RE-TESTED AFTER REPAIRS ARE MADE.
7. THE INSPECTION SERVICE SHALL REPORT THE AMOUNT OF INSPECTION PERFORMED IN LINEAL FEET, LOCATION AND LENGTH OF DEFECTS, IF ANY, AND FURNISH A CERTIFICATION THAT THESE WERE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS.
8. IF REJECTABLE DISCONTINUITIES ARE FOUND, THE PROVISIONS OF THE CODE FOR ADDITIONAL TESTING SHALL APPLY.
9. NONDESTRUCTIVE TESTING OF WELDS SHALL BE PERFORMED IN ACCORDANCE WITH THE BRIDGE WELDING CODE AWS D1.5-2010, CLAUSE 6.7.6. FOR FRACTURE CRITICAL MEMBERS THE ADDITIONAL REQUIREMENTS OF CLAUSE 12 SHALL BE REQUIRED.

WELDING ON STEEL SPANS

NO FIELD WELDING WILL BE ALLOWED ON THE STEEL SPANS UNLESS AUTHORIZED IN WRITING BY THE ENGINEER OR INDICATED IN PLANS.

BEARINGS & BEARING SURFACE

1. BEARING FABRICATION, FINISHING, TOLERANCES, TESTING REQUIREMENTS AND INSTALLATION REQUIREMENTS SHALL CONFORM TO AREMA CHAPTER 15, PART 5.
2. ELASTOMERIC BEARINGS SHALL BE PREVIOUSLY UNVULCANIZED 100 PERCENT VIRGIN POLYISOPRENE (NATURAL RUBBER), 60 DUROMETER. STEEL LAMINATES SHALL BE ASTM A1011, GRADE 36.
3. SOLE PLATES ON THROUGH PLATE GIRDERS SHALL BE IN FULL CONTACT WITH ELASTOMERIC BEARINGS.
4. METHYL ETHYL KETONE FOR USE IN CLEANING OF ELASTOMERIC BEARINGS SHALL CONFORM TO ASTM D740, TYPE 1 OR TYPE 2.
5. THE SURFACE FINISH OF BEARING AND BASE PLATES AND OTHER BEARING SURFACES THAT ARE TO COME IN CONTACT WITH EACH OTHER OR WITH CONCRETE SHALL MEET THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) SURFACE ROUGHNESS REQUIREMENTS AS DEFINED IN ANSI STANDARD B46.1, "SURFACE ROUGHNESS, WAVINESS, AND LAY" AND AS SHOWN ON THE PLANS, OR IN THE FOLLOWING LISTING:

MASONRY BEARING PLATES (SURFACE IN CONTACT WITH RUBBER)	500
HEAVY PLATES IN CONTACT TO BE WELDED OR BOLTED	250
ROCKING SURFACES OF ROCKER PLATES	250
6. ALL PLATES IN BEARING ASSEMBLIES SHALL BE FLAT AND LEVEL.

CLEANING

1. IN ORDER TO PROVIDE A SOUND UNIFORM SURFACE FOR THE FORMATION OF THE PROTECTIVE OXIDE, ALL UNPAINTED STEEL SHALL BE PREPARED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES. THE SURFACE PREPARATION SHALL BE COMPLETED BY THE FABRICATOR PRIOR TO SHIPPING THE STRUCTURAL STEEL.
2. ALL STRUCTURAL STEEL SHALL BE PREPARED BY BLAST CLEANING ACCORDING TO SURFACE PREPARATION SPECIFICATIONS SSPC-SP7, CURRENT EDITION, "BRUSH-OFF BLAST CLEANING". PARTICULAR CARE SHALL BE TAKEN TO REMOVE WELDING FLUX, SLAG AND SPATTER.
3. IN GENERAL, STRUCTURAL STEEL FABRICATED FROM CORROSION RESISTANT STEEL (A709 GRADE 50W) AND GALVANIZED MEMBERS SHALL NOT BE PAINTED. CONTAMINATION OF BLAST CLEANED SURFACES OF A709 GRADE 50W STEEL SHALL BE AVOIDED AND ALL CONTAMINANTS SUCH AS OIL, GREASE, DIRT ACCUMULATIONS AND THE LIKE SHALL BE PROMPTLY REMOVED.

09-11-2015



P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: PROJECT SPECIFICATIONS (3 OF 4)	
DESIGNED BY: AR	SCALE: AS NOTED
DRAWN BY: RDL	S4
CHECKED BY: TSK	
APPROVED BY: DMF	DATE: 09/11/15
AFE NO.: ACAD FILE: DWG NO. 4 OF 18	

ISSUED FOR CONSTRUCTION

	4300 B STREET, SUITE 505 ANCHORAGE, AK 99503 PHONE: 907-315-8306 FAX: 907-274-8644	
	REV.	DATE
	09-11-15	DF
	ISSUED FOR CONSTRUCTION	
	REVISION	

GALVANIZING

- HOT-DIP GALVANIZING SHALL BE APPLIED TO ALL PARTS INDICATED ON THE PLANS OR ELSEWHERE SPECIFIED IN THESE SPECIFICATIONS FOR GALVANIZING.
- ALL ROLLED STEEL SHAPES, PLATES, AND BARS TO BE GALVANIZED SHALL CONFORM TO ASTM STANDARD A123. THE WEIGHT OF THE ZINC COATING PER SQUARE FOOT OF ACTUAL SURFACE SHALL AVERAGE TO LESS THAN 2.0 OZ. AND NO INDIVIDUAL SPECIMEN SHALL SHOW LESS THAN 1.8 OZ.
- DAMAGED GALVANIZED SURFACES SHALL BE THOROUGHLY CLEANED TO REMOVE ALL CONTAMINATES AND SHALL THEN BE REPAIRED PER ASTM A780.
- ALL STEEL HARDWARE (BOLTS, NUTS, WASHERS, ETC.) SHALL BE GALVANIZED PER ASTM A153.

LOADING AND SHIPPING

- ALL MATERIALS SHALL BE CAREFULLY LOADED SO AS TO AVOID DAMAGE IN TRANSIT. MEMBERS WEIGHING MORE THAN THREE TONS SHALL HAVE THE WEIGHT MARKED THEREON. ALL SMALL PARTS SUCH AS RIVETS, BOLTS, PINS, WASHERS, AND SMALL CONNECTION PLATES SHALL BE PACKED IN CONTAINERS, OF ADEQUATE STRENGTH. THE CONTENTS OF EACH UNIT SHALL BE PLAINLY MARKED ON THE TOP OF EACH CONTAINER.
- THE WELDED GIRDERS AND FLOORBEAM PANELS SHALL BE SHIPPED IN AN UPRIGHT POSITION AND BE ADEQUATELY BLOCKED AND BRACED TO PREVENT DAMAGE DURING SHIPPING. THE FABRICATOR SHALL SUBMIT GIRDER LOADING DIAGRAMS TO THE ENGINEER FOR APPROVAL 1 WEEK PRIOR TO THE ANTICIPATED SHIPPING DATE. THESE DIAGRAMS SHALL INCLUDE PROPOSED BLOCKING, BRACING AND TIE-DOWN DETAILS.

EPOXY GROUT

EPOXY GROUT SHALL BE NON-SHRINK AND SHALL CONFORM TO ASTM C1107. THE MINIMUM 28-DAY COMPRESSIVE STRENGTH OF THE GROUT SHALL BE 6,000 PSI.

THE FOLLOWING MATERIALS ARE APPROVED FOR USE:

CLASS A EPOXY:

- AS15-18 A&B LIQUID TYPE EPOXY
- SPEC-BOND 100 EPOXY

CLASS B EPOXY:

- AS23-18 A&B GEL TYPE EPOXY
- SPEC-BOND 200 EPOXY

AS15-18 AND AS23-18 EPOXIES ARE AVAILABLE FROM:
 DELTA PLASTICS CO. OR PERMALITE
 10513 ROAD 236 1537 MONROVIA AVE
 TERRA BELLA, CA 93270 NEWPORT BEACH, CA 92663
 PHONE (559) 535-1332 PHONE (714) 548-1137
 FAX (559) 535-3723 FAX (714) 548-1130

SPEC-BOND EPOXIES ARE AVAILABLE FROM:
 CONSPEC MARKETING & MANUFACTURING CO., INC.
 636 SOUTH 66TH TERRACE
 KANSAS CITY, KS 66111
 PHONE (913) 287-1700
 FAX (913) 287-2716

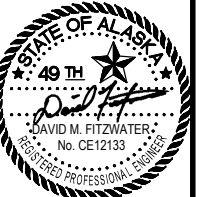
PAYMENT

PAYMENT FOR STRUCTURAL STEEL WILL BE MADE AT THE LUMP SUM PRICE QUOTED FOR "STRUCTURAL STEEL", WHICH SHALL BE FULL COMPENSATION FOR FABRICATING, SHIPPING AND INSTALLING THE METALWORK AND SHALL BE FULL COMPENSATION FOR FURNISHING ALL LABOR, MATERIALS, TOOLS, SUPPLIES, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK INDICATED IN THIS PLAN SET. THIS PRICE PAID SHALL INCLUDE ANCHOR BOLTS, ELASTOMERIC BEARING PADS, FRACTURE CRITICAL TESTING, WELD INSPECTION SERVICES, SURFACE PREPARATION, CLEANING, AND GALVANIZING WHERE REQUIRED. NO ADDITIONAL PAYMENT WILL BE MADE FOR FALSEWORK USED IN SPAN ASSEMBLY DURING FABRICATION OR FOR ANY METAL ADDED FOR ERECTION OR OTHER PURPOSES UNLESS OTHERWISE APPROVED BY THE ENGINEER.

JOINT SEALANT

A PREMIUM POLYURETHANE SEALANT SHALL BE USED TO FILL FLOORBEAM PANEL CLOSURE GAP AFTER FIELD WELDING.

09-11-2015



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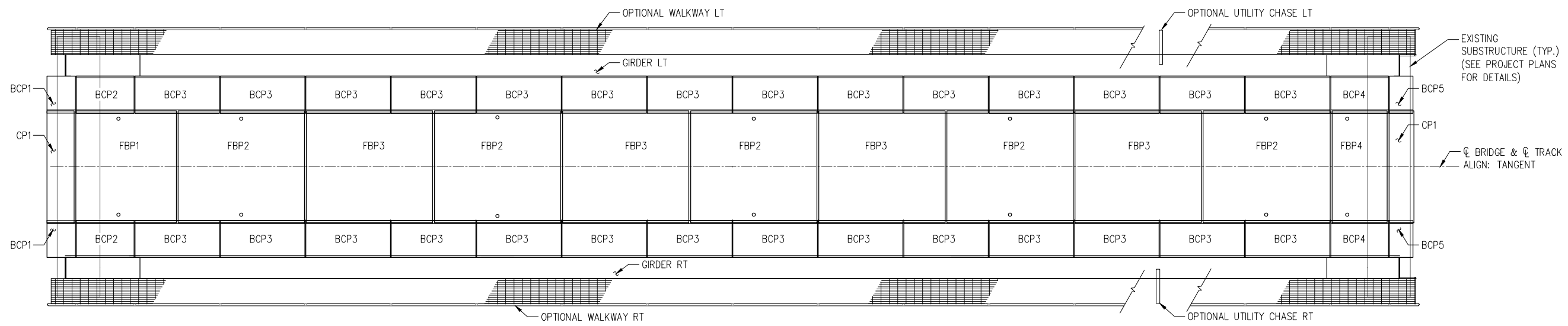
WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
 PHONE: 907-315-8306
 FAX: 907-274-8644

REV.	DATE	BY	REVISION
△	09-11-15	DF	ISSUED FOR CONSTRUCTION

<p>ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500</p>			
<p>PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT</p>			
<p>TITLE: PROJECT SPECIFICATIONS (4 OF 4)</p>			
DESIGNED BY: AR	SCALE: AS NOTED	S5	AFE NO.:
DRAWN BY: RDL	DATE: 09/11/15		ACAD FILE:
CHECKED BY: TSK			DWG NO. 5 OF 18
APPROVED BY: DMF			

RR SOUTH

RR NORTH



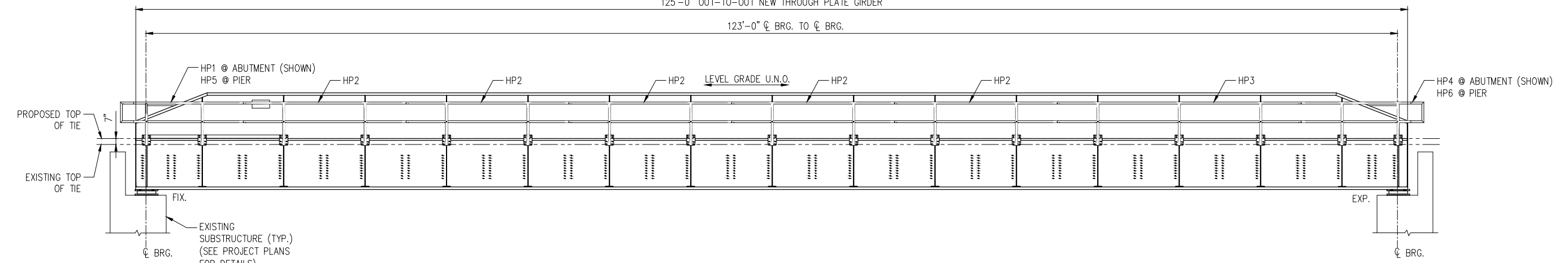
PLAN

3/16" = 1'-0"

BCP = BENT CURB PLATE (SEE SHEET S11)
 CP = CLOSURE PLATE (SEE SHEET S13)
 FBP = FLOORBEAM PANEL (SEE SHEET S12)

125'-0" OUT-TO-OUT NEW THROUGH PLATE GIRDER

123'-0" CL BRG. TO CL BRG.



ELEVATION

3/16" = 1'-0"

HP = HANDRAIL PANEL (SEE SHEETS S15 & S16)

NOTE:

1. FOR MULTIPLE SPAN CONDITION, SEE SHEET S13.
2. PROJECT PLANS TO BE PROVIDED FOR SPECIFIC BRIDGE SITES.

09-11-2015

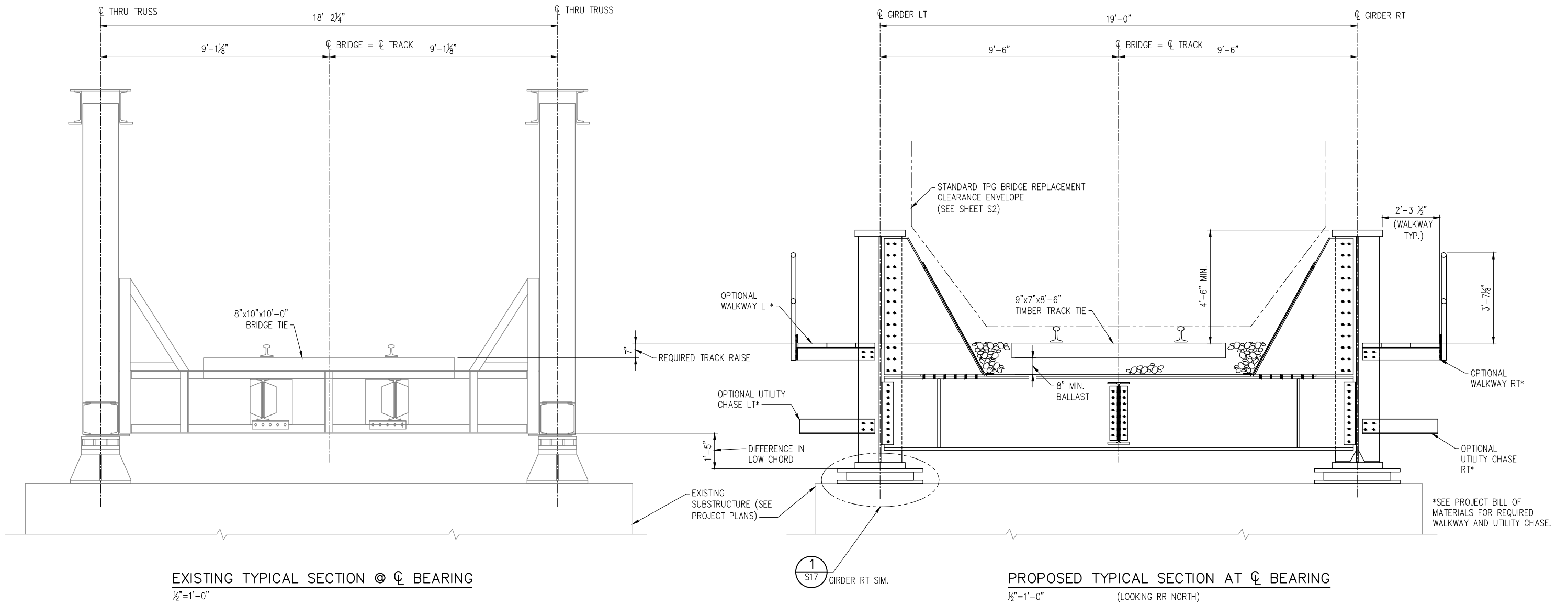


P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: GENERAL PLAN AND ELEVATION	
DESIGNED BY: AR	SCALE: AS NOTED
DRAWN BY: RDL	S6
CHECKED BY: JSK	
APPROVED BY: DMF	DATE: 09/11/15
AFE NO.:	ACAD FILE:
DWG NO.	6 OF 18

ISSUED FOR CONSTRUCTION

WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
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REV.	DATE	BY	REVISION
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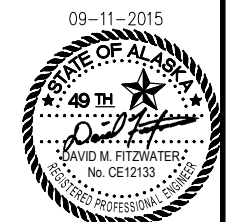


EXISTING TYPICAL SECTION @ CL BEARING
1/2"=1'-0"

PROPOSED TYPICAL SECTION AT CL BEARING
1/2"=1'-0" (LOOKING RR NORTH)

NOTE:

- SEE SHEETS S14 THROUGH S16 FOR WALKWAY & UTILITY CHASE DETAILS.

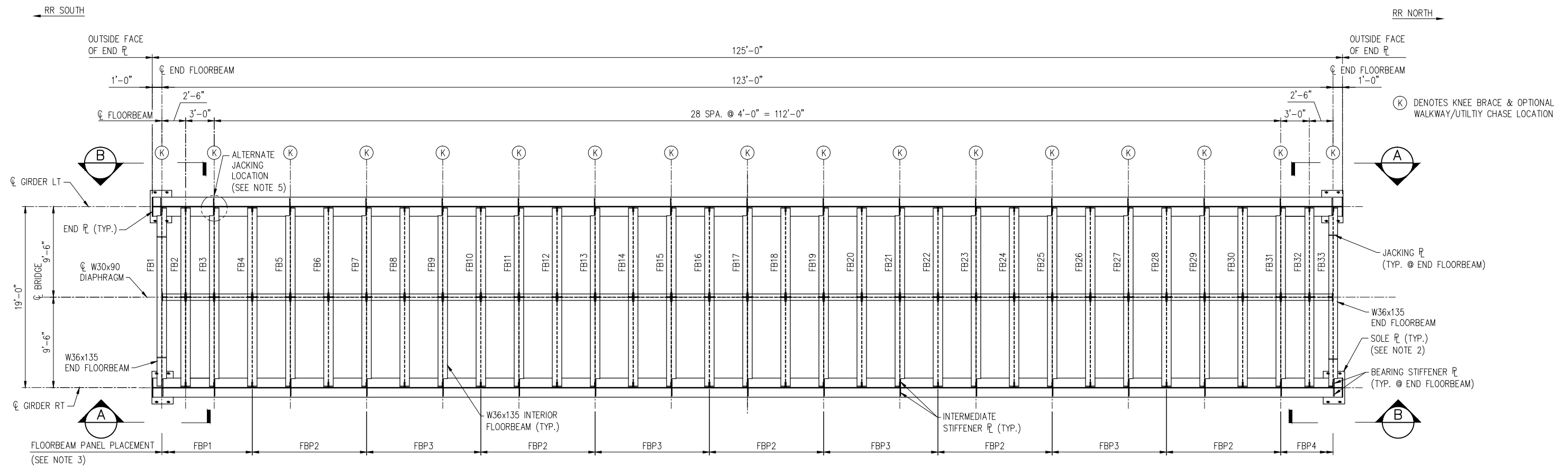


ISSUED FOR CONSTRUCTION

WILSON & COMPANY
4300 B STREET, SUITE 505
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 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: TYPICAL SECTION	
DESIGNED BY: AR DRAWN BY: RDL CHECKED BY: TSK APPROVED BY: DMF	SCALE: AS NOTED DATE: 09/11/15 S7 OF 18
AFE NO.: ACAD FILE: DWG NO.: 7 OF 18	



FRAMING PLAN

1/16" = 1'-0"

BALLAST DECK PLATE NOT SHOWN FOR CLARITY

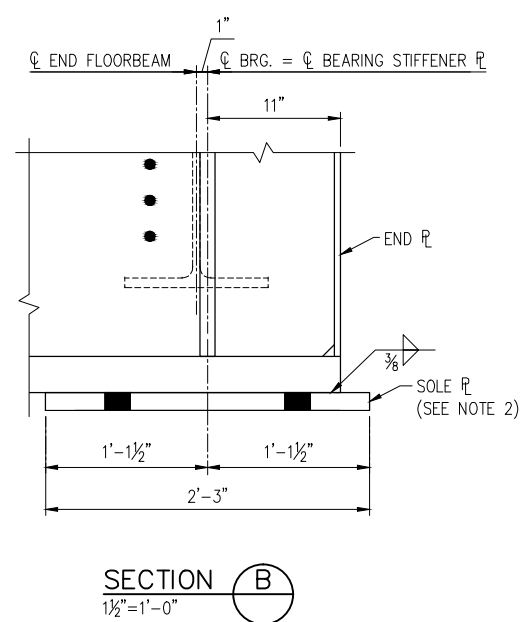
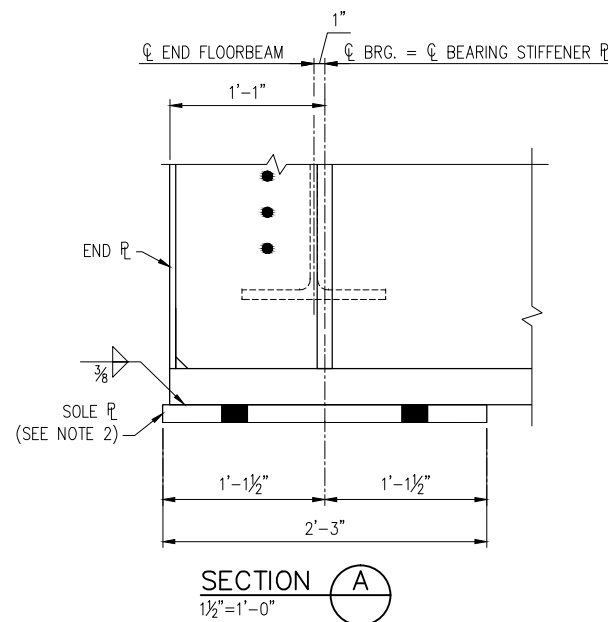


TABLE OF MEMBERS AND LOADING			
MEMBER	SECTION	MOMENT (KIP-FT)	SHEAR (KIP)
END FLOORBEAM	W36x135	DL = 32.9	DL = 7.2
		LL = 241.5	LL = 34.5
		IM = 101.2	IM = 14.5
		TOTAL = 375.6	TOTAL = 56.2
INTERIOR FLOORBEAM	W36x135	DL = 85.0	DL = 9.2
		LL = 395.0	LL = 46.0
		IM = 134.9	IM = 19.3
		TOTAL = 614.9	TOTAL = 74.5
GIRDERS	SEE GIRDER ELEVATION	DL = 7014.1	DL = 228.1
		LL = 9702.5	LL = 354.1
		IM = 2573.6	IM = 94.0
		TOTAL = 19290.2	TOTAL = 676.2

NOTES:

- FLOORBEAM CONNECTIONS AT INTERMEDIATE AND BEARING STIFFENER PLATES ARE TO BE MADE ON OPPOSITE SIDES OF STIFFENERS AT THE 2 GIRDERS.
- SEE SHEET S17 FOR SOLE PLATE DETAILS.
- SEE SHEET S12 FOR FLOORBEAM PANEL DETAILS.
- ALTERNATE BRIDGE JACKING LOCATION UNDER INTERMEDIATE STIFFENERS PLATES ON GIRDER LT AND GIRDER RT AT FB3 AND FB31.

09-11-2015



ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **123' STANDARD TPG BRIDGE REPLACEMENT**

TITLE: **FRAMING PLAN**

DESIGNED BY: AR
DRAWN BY: RDL
CHECKED BY: TSK/EDA
APPROVED BY: DMF

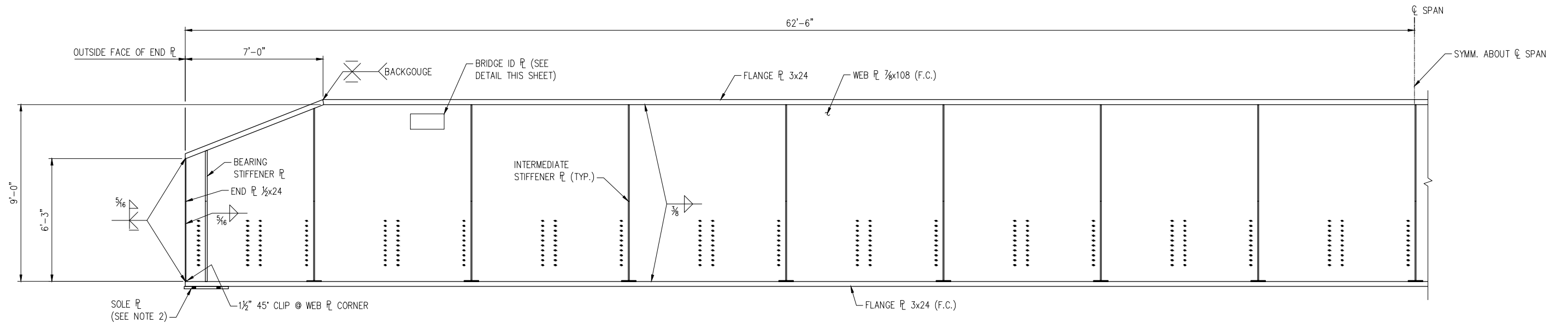
SCALE: AS NOTED
DATE: 09/11/15

AFE NO.:
ACAD FILE:
DWG NO. **S8**
8 OF **18**

ISSUED FOR CONSTRUCTION

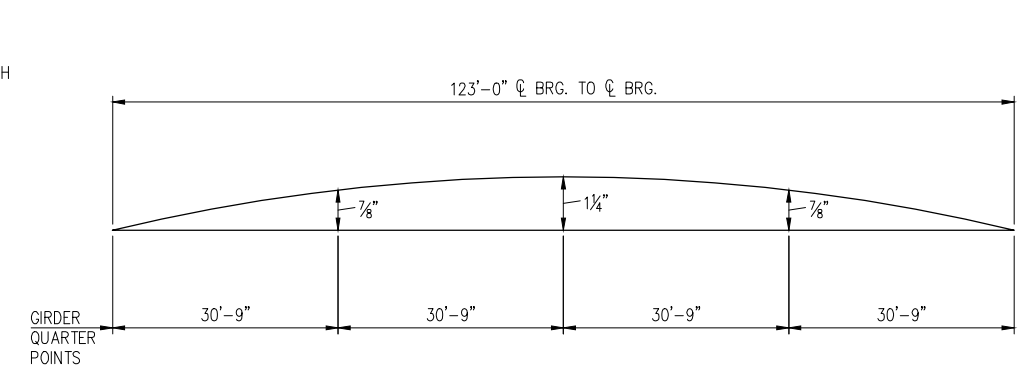
WILSON & COMPANY
4300 B STREET, SUITE 505
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PHONE: 907-315-8306
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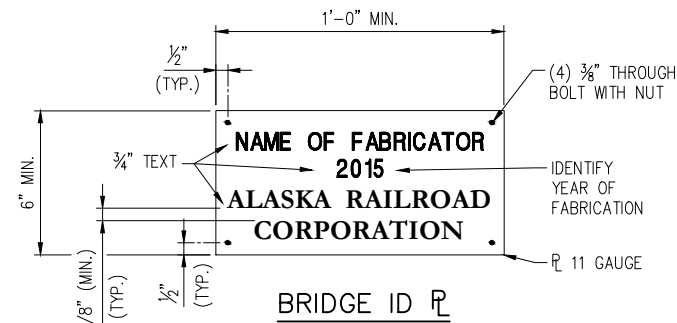
GIRDER ELEVATION

3/8" = 1'-0"



GIRDER CAMBER DIAGRAM

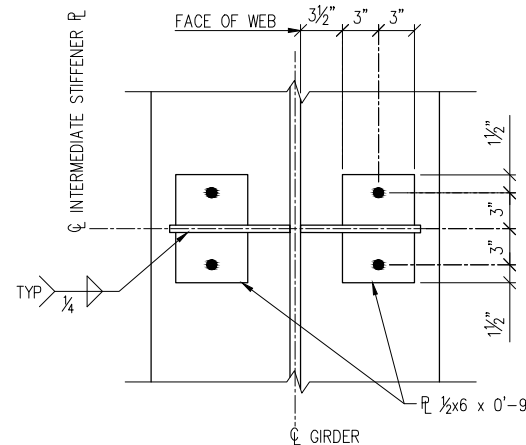
NO SCALE



BRIDGE ID PL

NOTES:

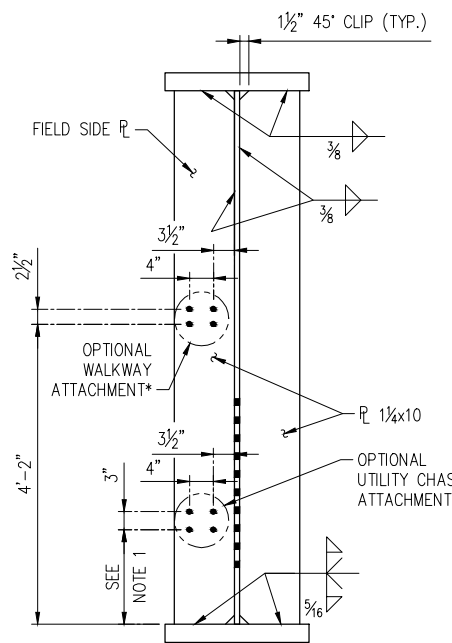
- (1) REQUIRED EACH SPAN.
- PLATE MAY BE CAST OR ENGRAVED.
- ATTACH TO OUTSIDE FACE OF WEB.
- PL AND ATTACHMENTS SHALL BE STAINLESS STEEL.
- SCAR NUT OR TACK WELD TO BOLT AFTER TIGHTENING TO PREVENT UNWANTED PLATE REMOVAL.



SECTION A

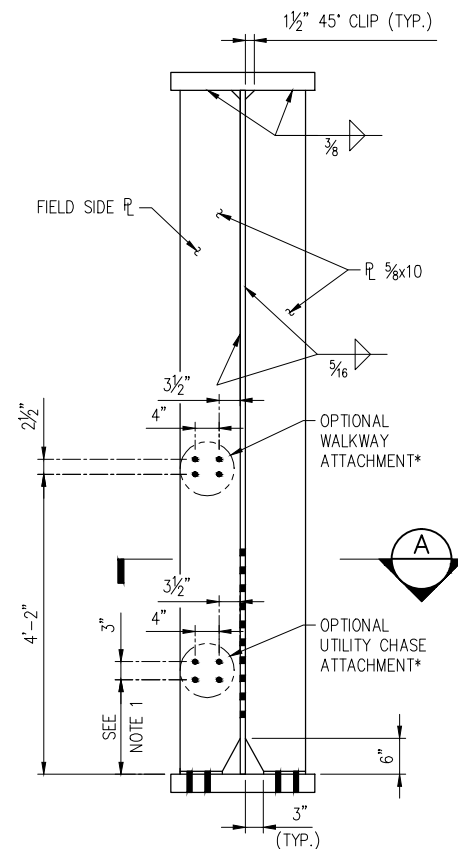
3/4" = 1'-0"

BOLT LOCATIONS TYPICAL EACH SIDE OF WEB



BEARING STIFFENER DETAIL

3/4" = 1'-0"



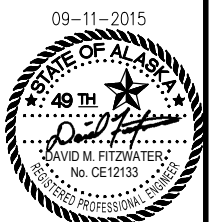
INTERMEDIATE STIFFENER DETAIL

3/4" = 1'-0"

*UTILITY CHASE HOLES NOT REQUIRED IF UTILITY CHASE NOT PROVIDED. WALKWAY HOLES TO BE PUNCHED & FILLED WITH H.S. BOLTS IF NOT USED. SEE PROJECT BILL OF MATERIALS.

NOTES:

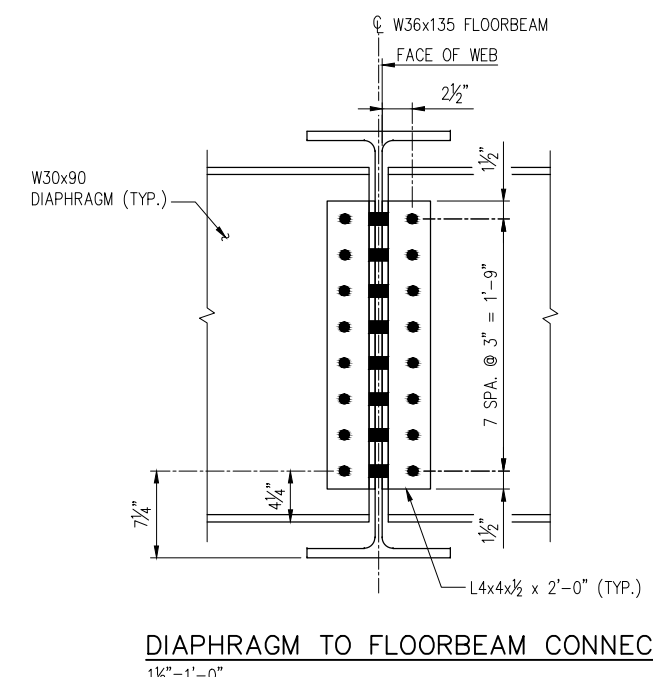
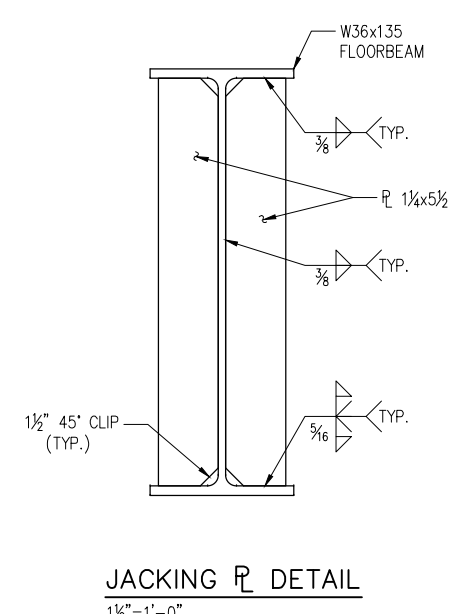
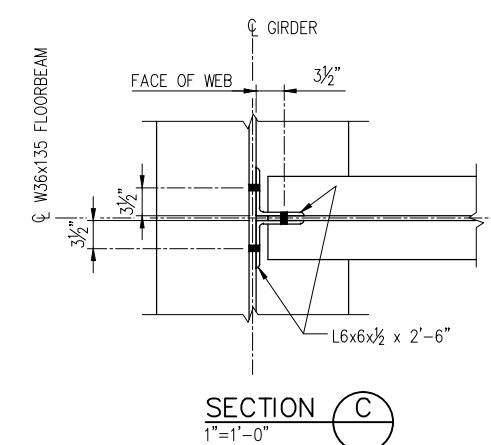
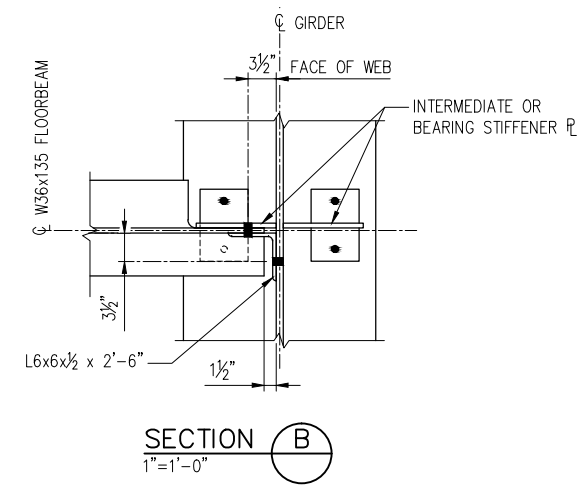
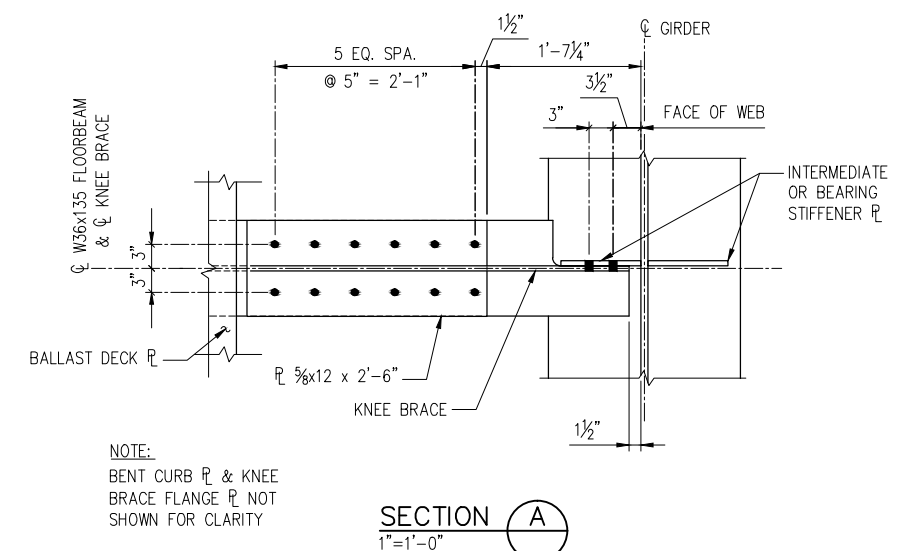
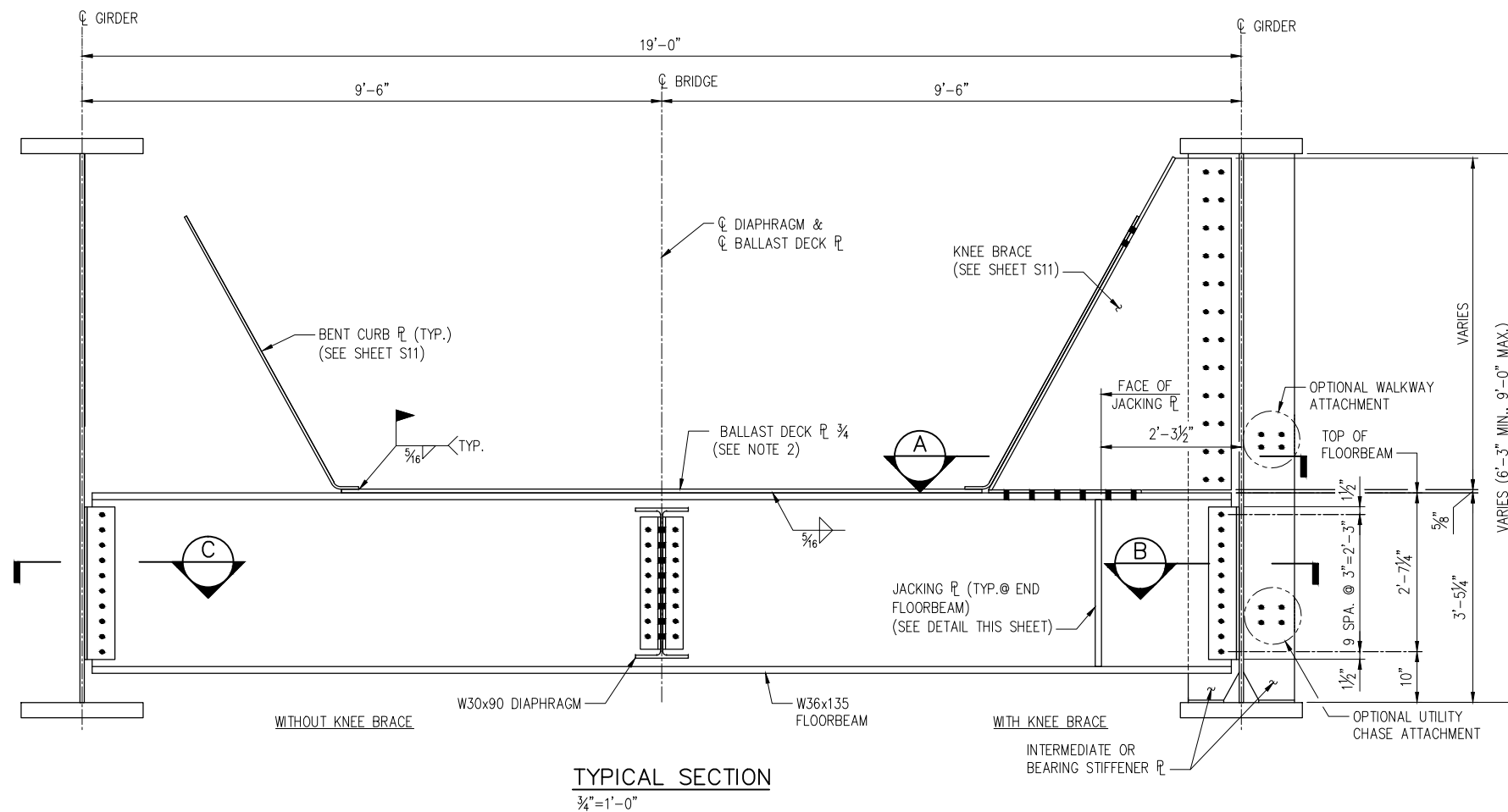
- VERIFY UTILITY LOCATIONS WITH PROJECT PLANS.
- SEE SHEET S8 AND S17 FOR SOLE PLATE DETAILS.
- F.C. DENOTES FRACTURE CRITICAL MEMBERS. SEE PROJECT SPECIFICATIONS, SHEET S2 THROUGH S5.



<p>ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500</p>	
<p>PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT</p>	
<p>TITLE: GIRDER ELEVATION AND DETAILS</p>	
<p>DESIGNED BY: <u>AR</u></p>	<p>SCALE: AS NOTED</p>
<p>DRAWN BY: <u>RDL</u></p>	<p>S9</p>
<p>CHECKED BY: <u>TSK</u></p>	
<p>APPROVED BY: <u>DMF</u></p>	<p>DATE: 09/11/15</p>
<p>REV. DATE BY REVISION</p>	<p>AFE NO.: ACAD FILE: DWG NO. 9 OF 18</p>

ISSUED FOR CONSTRUCTION

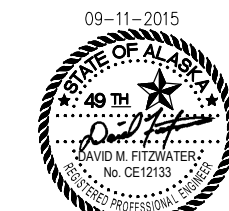
WILSON & COMPANY
4300 B STREET, SUITE 505
ANCHORAGE, AK 99503
PHONE: 907-315-8306
FAX: 907-274-8644



NOTE:

- SEE SHEETS S14 THROUGH S16 FOR WALKWAY AND UTILITY CHASE DETAILS.
- NO ALLOWANCE FOR CORROSION OF BALLAST DECK PLATE IS INCLUDED IN THE DESIGN. SEE PROJECT PLANS FOR REQUIRED WATERPROOFING REQUIREMENTS IF ANY.

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ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **123' STANDARD TPG BRIDGE REPLACEMENT**

TITLE: **BRIDGE STEEL DETAILS (1 OF 2)**

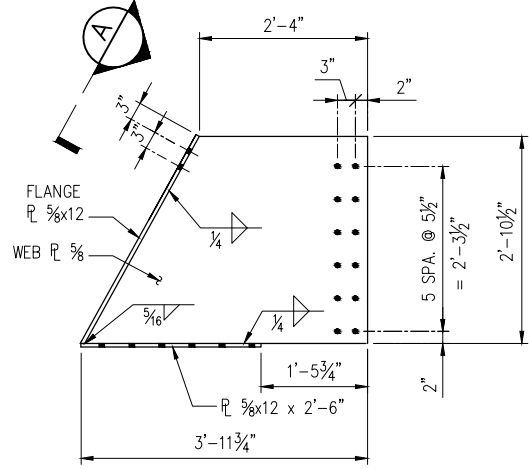
DESIGNED BY: AR
DRAWN BY: RDL
CHECKED BY: EDA
APPROVED BY: DMF

SCALE: AS NOTED
DATE: 09/11/15

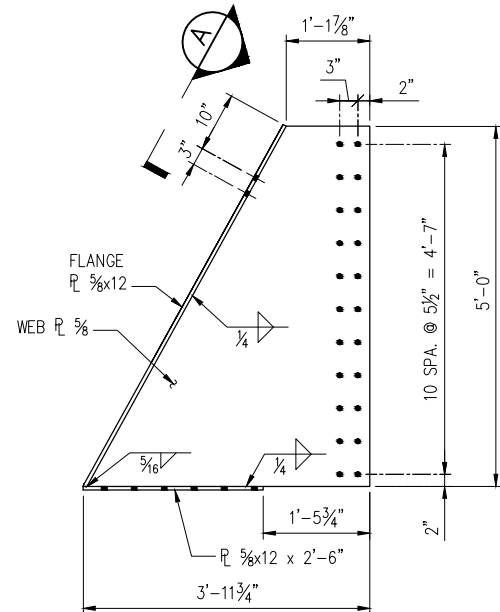
AFE NO.:
ACAD FILE:
DWG NO. **10** OF **18**

WILSON & COMPANY
4300 B STREET, SUITE 505
ANCHORAGE, AK 99503
PHONE: 907-315-8306
FAX: 907-274-8644

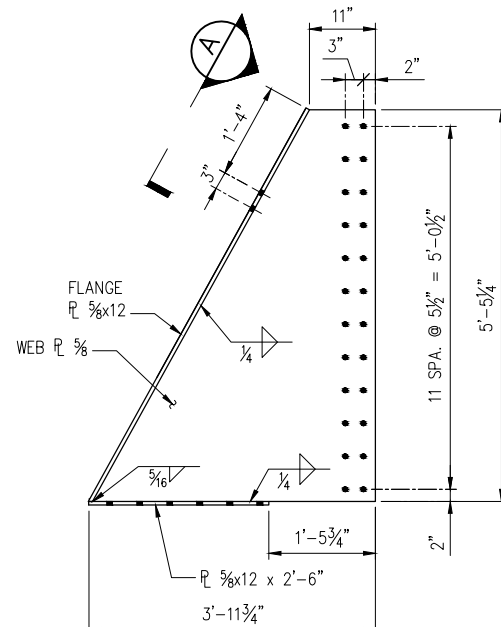
REV.	DATE	BY	REVISION
09-11-15	DF		ISSUED FOR CONSTRUCTION



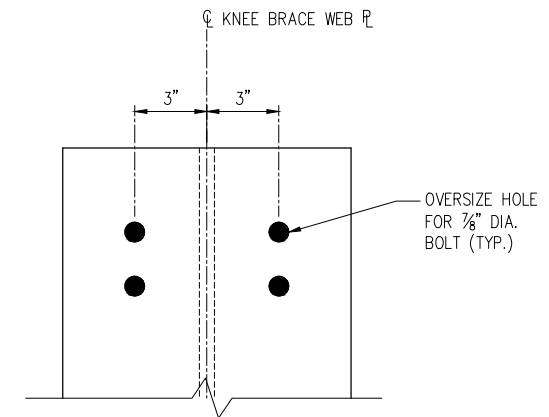
KNEE BRACE KB1
 $\frac{3}{4}$ "=1'-0"
 ATTACHED TO FB1 & FB33



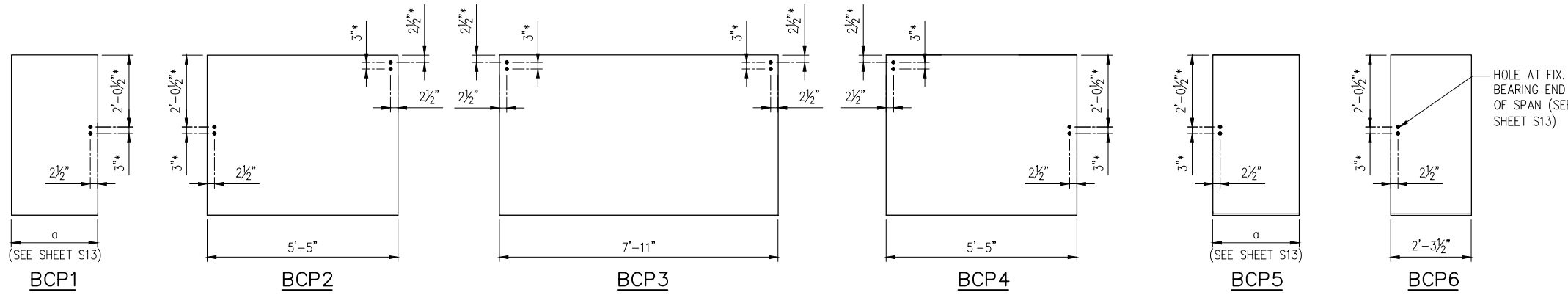
KNEE BRACE KB2
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 ATTACHED TO FB3 & FB31



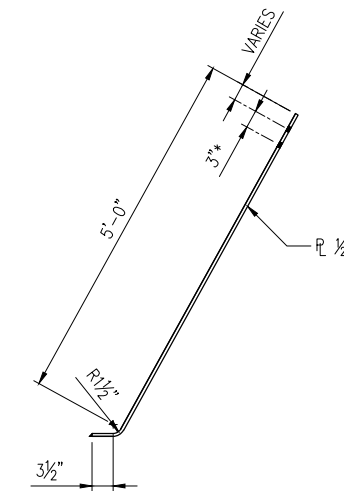
KNEE BRACE KB3
 $\frac{3}{4}$ "=1'-0"
 ATTACHED TO FB5, FB7, FB9, FB11, FB13,
 FB15, FB17, FB19, FB21, FB23, FB25, FB27
 & FB29



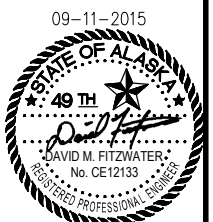
VIEW A
 $\frac{3}{8}$ "=1'-0"



BENT CURB PL ELEVATION
 $\frac{1}{2}$ "=1'-0"
 *DISTANCE MEASURED ALONG PLATE SLOPE TO
 CENTER OF OVERSIZED HOLE FOR 7/8" DIA. BOLT



**BENT CURB PL
 TYPICAL SECTION**
 $\frac{3}{4}$ "=1'-0"

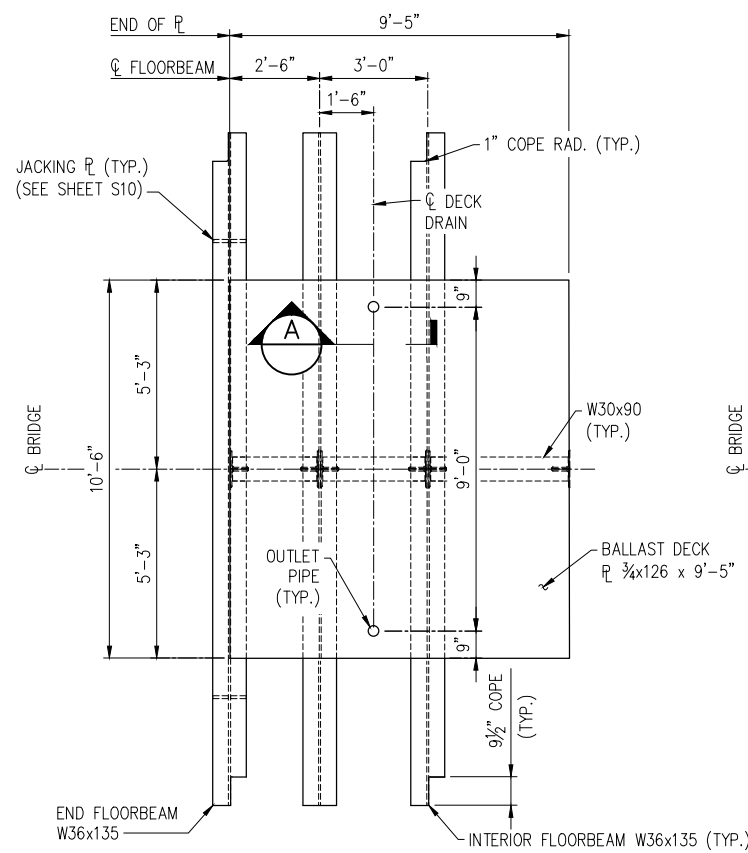


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 CONSTRUCTION**

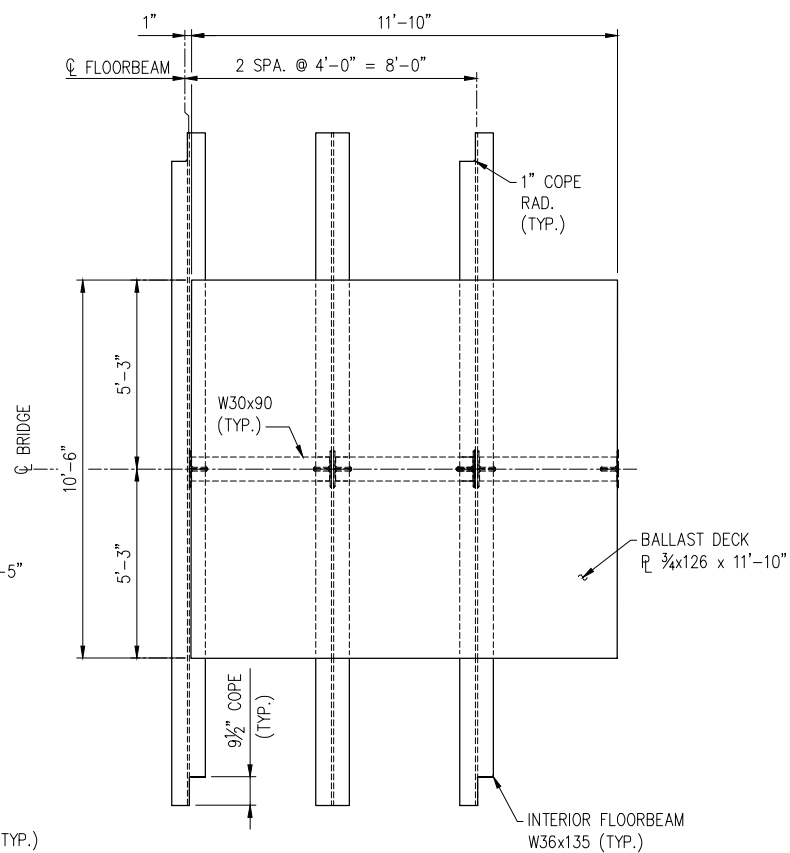
WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
 PHONE: 907-315-8306
 FAX: 907-274-8644

REV.	DATE	BY	REVISION
1	09-11-15	DF	ISSUED FOR CONSTRUCTION

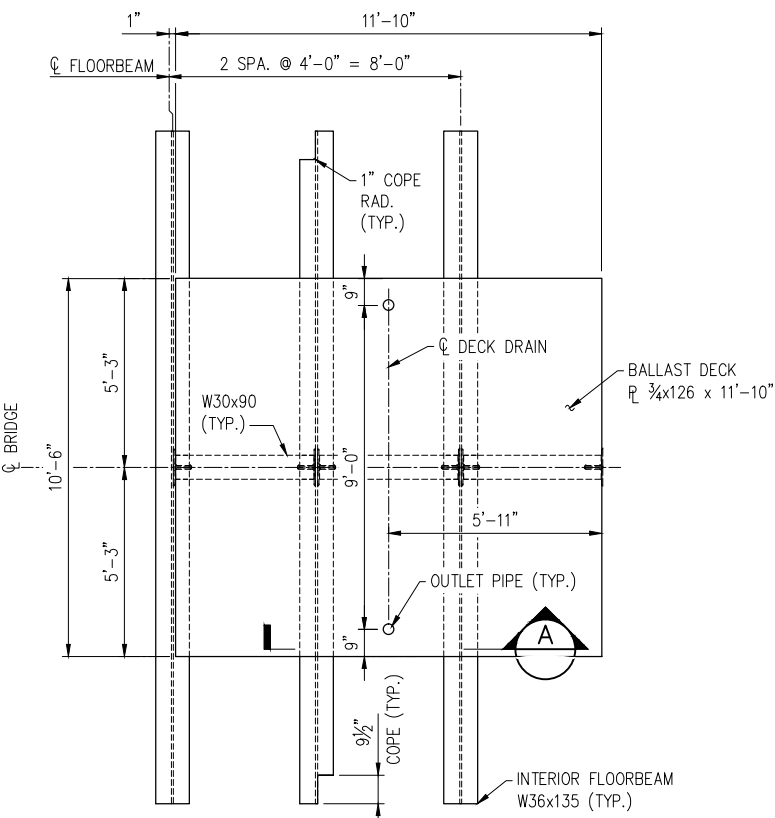
 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: BRIDGE STEEL DETAILS (2 OF 2)	
DESIGNED BY: AR DRAWN BY: RDL CHECKED BY: TKS/EDA APPROVED BY: DMF	SCALE: AS NOTED DATE: 09/11/15 S11 11 OF 18



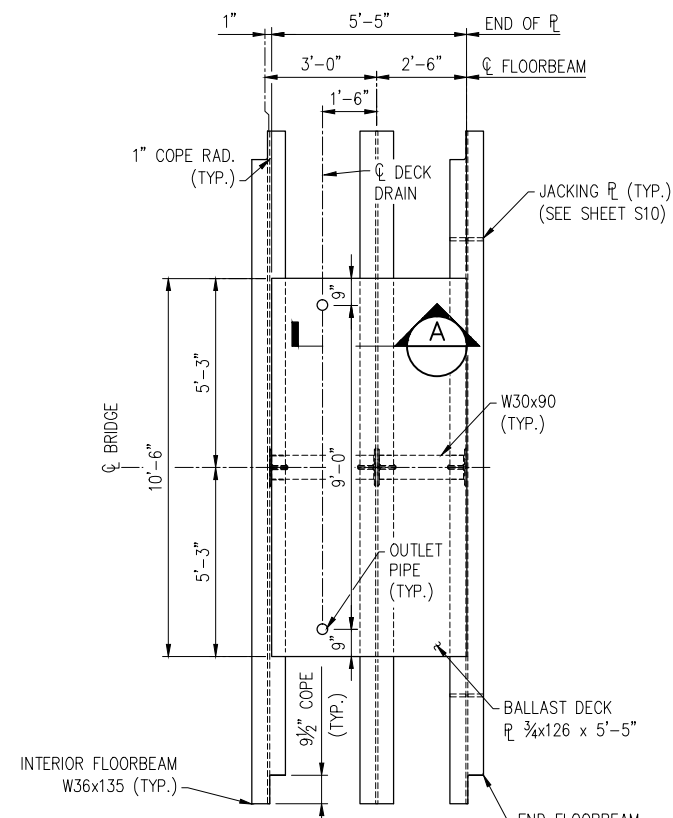
FLOORBEAM PANEL FBP1
 3/8"=1'-0"



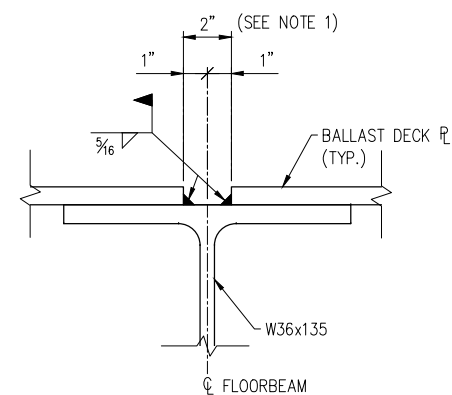
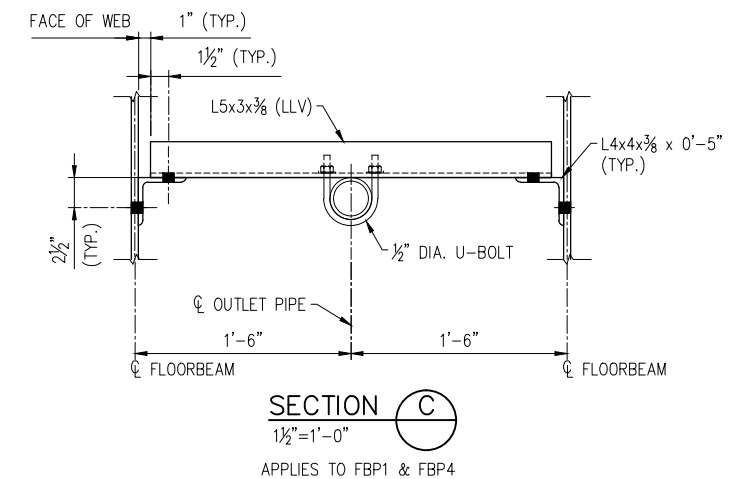
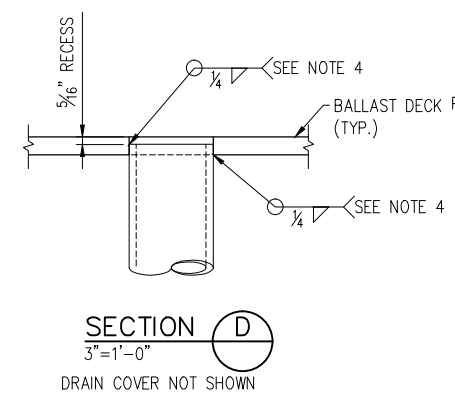
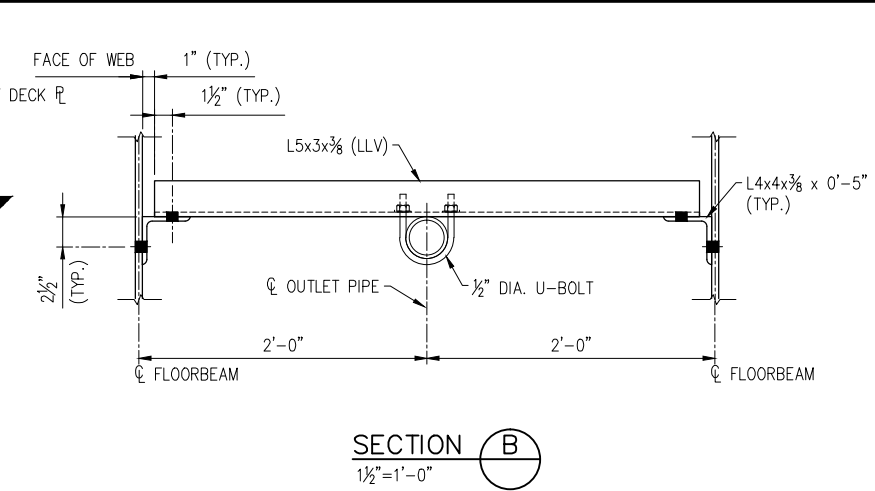
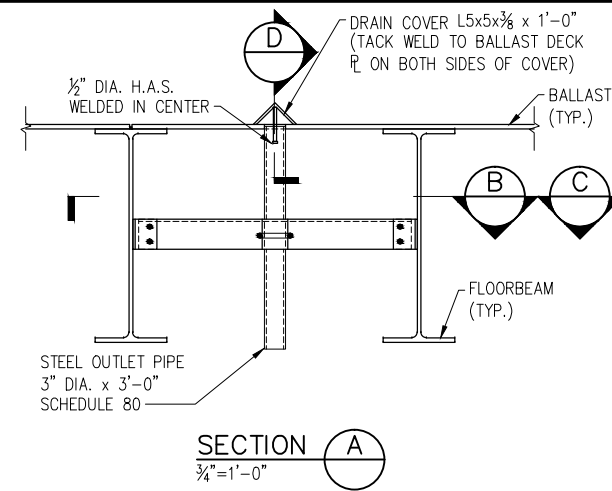
FLOORBEAM PANEL FBP3
 3/8"=1'-0"



FLOORBEAM PANEL FBP2
 3/8"=1'-0"



FLOORBEAM PANEL FBP4
 3/8"=1'-0"



FLOORBEAM PANEL CLOSURE DETAIL
 3"=1'-0"

NOTES:

1. PROVIDE PREMIUM POLYURETHANE SEALANT IN 2" GAP. APPLY SEALANT 6" UP BENT CURB PLATE GAP ON EACH SIDE OF BRIDGE AT FLOORBEAM PANEL CLOSURE LOCATION.
2. STEEL FOR DRAIN PIPE BRACING AND DRAIN COVER SHALL CONFORM TO ASTM A36.
3. ALL ELEMENTS OF DECK DRAIN ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION PER ASTM A123. DECK DRAIN ASSEMBLY INCLUDES L5x3x3/8, L4x4x3/8, U-BOLT & OUTLET PIPE.
4. GRIND GALVANIZING BEFORE WELDING.
5. NO ALLOWANCE FOR CORROSION OF BALLAST DECK PLATE IS INCLUDED IN THE DESIGN. SEE PROJECT PLANS FOR REQUIRED WATERPROOFING REQUIREMENTS IF ANY.

09-11-2015



ALASKA RAILROAD CORPORATION
 ENGINEERING SERVICES
 P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

**123' STANDARD TPG
 BRIDGE REPLACEMENT**

FLOORBEAM PANEL DETAILS

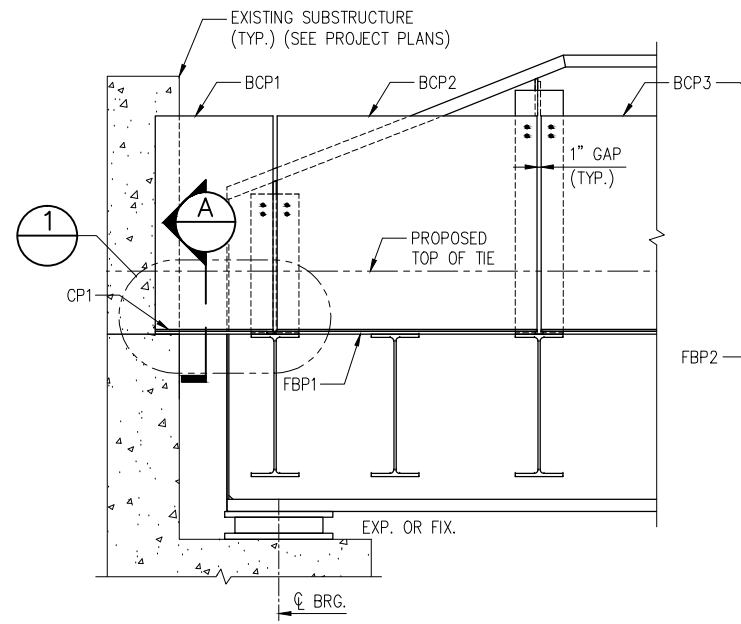
**ISSUED FOR
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WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
 PHONE: 907-315-8306
 FAX: 907-274-8644

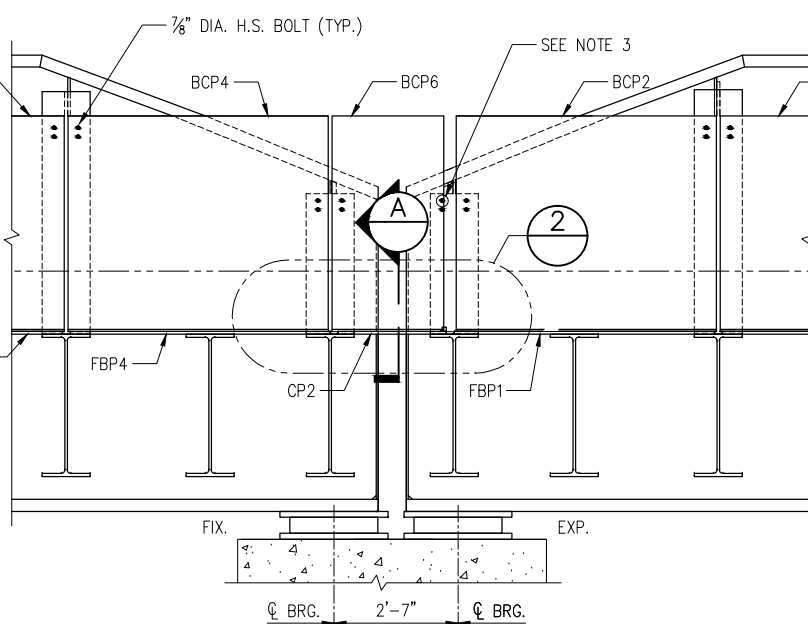
REV.	DATE	BY	REVISION
09-11-15	DF		ISSUED FOR CONSTRUCTION

DESIGNED BY: AR	SCALE: AS NOTED
DRAWN BY: RDL	DATE: 09/11/15
CHECKED BY: JSK	
APPROVED BY: DMF	

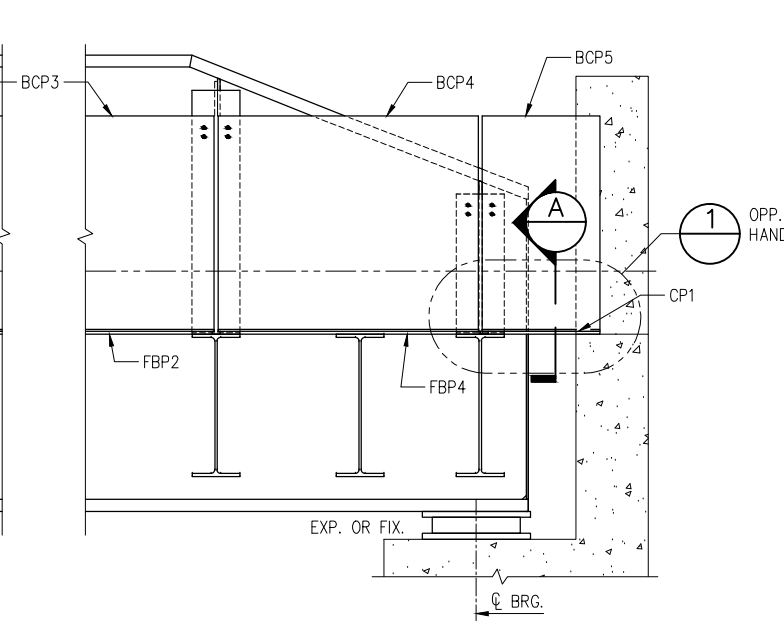
S12	AFE NO.:
	ACAD FILE:
	DWG NO. 12 OF 18



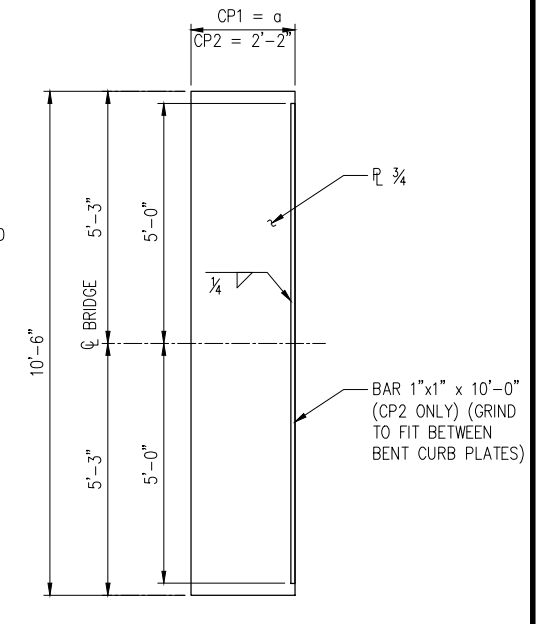
GIRDER END @ ABUTMENT - LONGITUDINAL SECTION
 $\frac{1}{2}''=1'-0''$



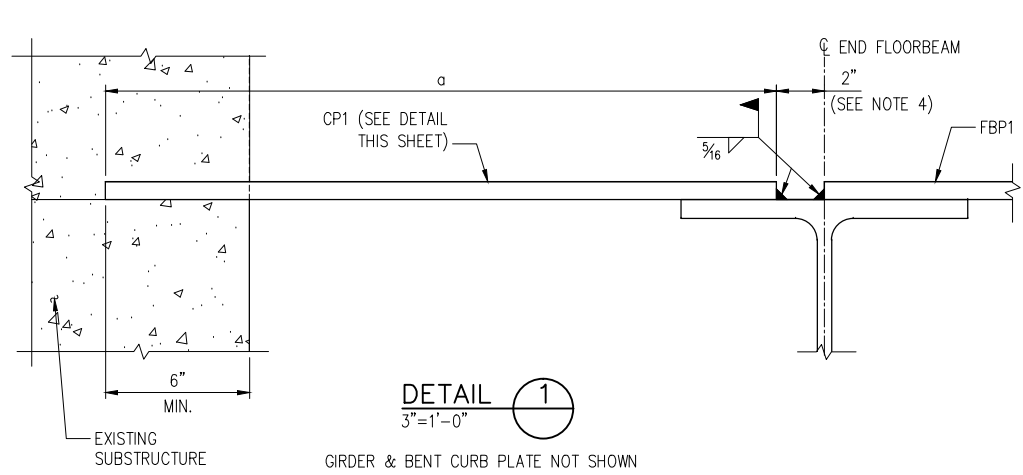
GIRDER ENDS @ PIER - LONGITUDINAL SECTION
 $\frac{1}{2}''=1'-0''$



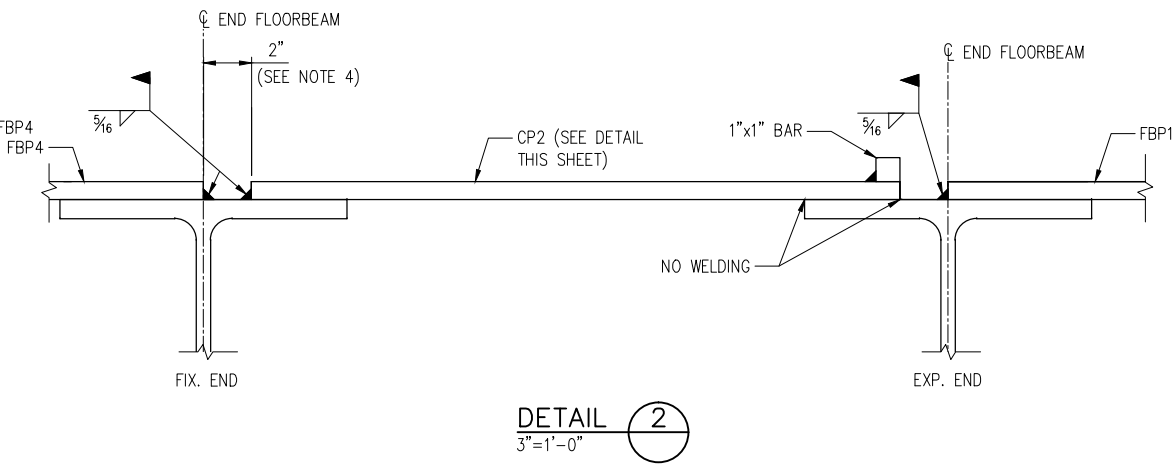
GIRDER END @ ABUTMENT - LONGITUDINAL SECTION
 $\frac{1}{2}''=1'-0''$



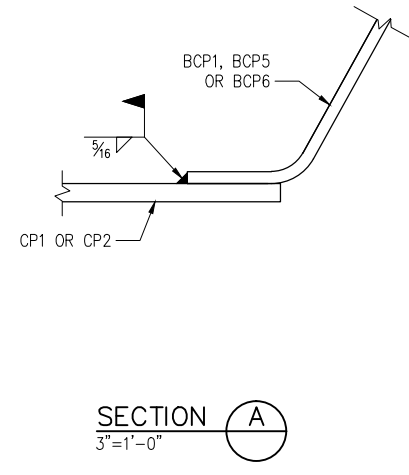
CLOSURE PLATE
 $\frac{1}{2}''=1'-0''$



DETAIL 1
 $\frac{3}{8}''=1'-0''$
 GIRDER & BENT CURB PLATE NOT SHOWN

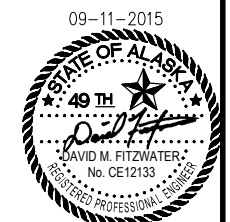


DETAIL 2
 $\frac{3}{8}''=1'-0''$
 GIRDER & BENT CURB PLATE NOT SHOWN



SECTION A
 $\frac{3}{8}''=1'-0''$

- NOTES:**
1. VERIFY DIMENSION α WITH PROJECT PLANS.
 2. SEE SHEET S11 FOR BENT CURB PLATE DETAILS.
 3. HOLES IN KNEE BRACE FLANGE SHALL BE FILLED WITH COUNTERSUNK BOLT.
 4. PROVIDE PREMIUM POLYURETHANE SEALANT IN 2" GAP. APPLY SEALANT 6" UP BENT CURB PLATE GAP ON EACH SIDE OF BRIDGE AT FLOORBEAM PANEL CLOSURE LOCATION.

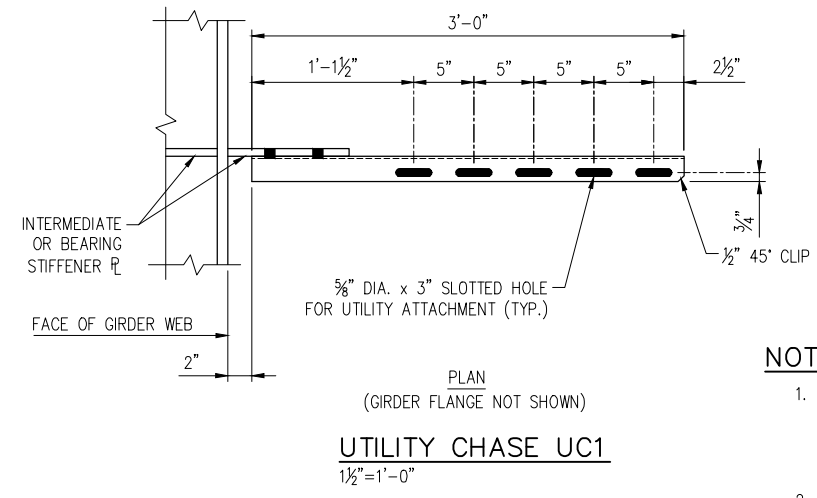
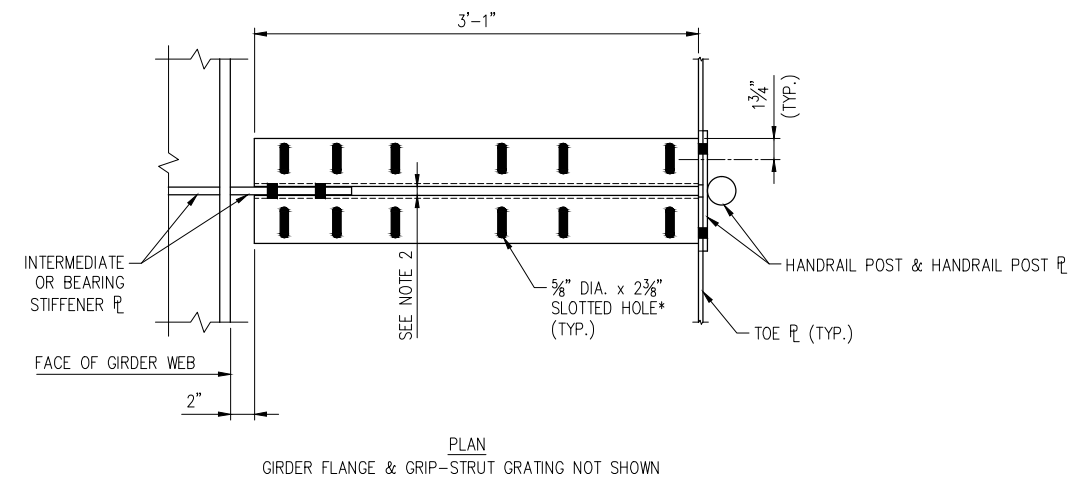
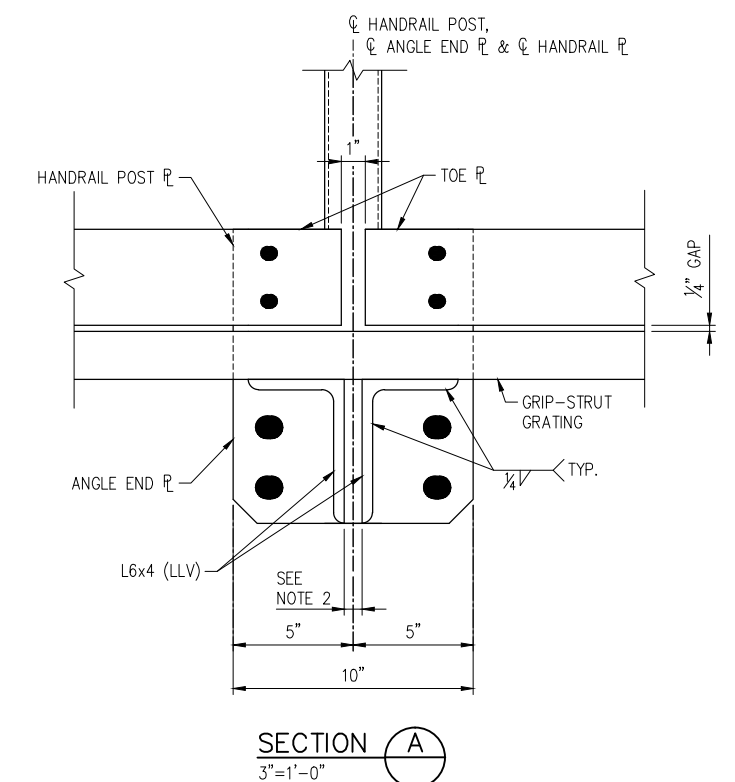
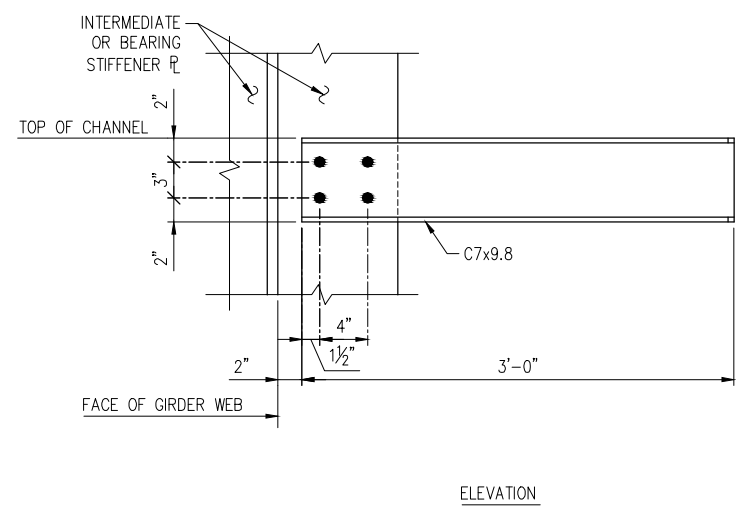
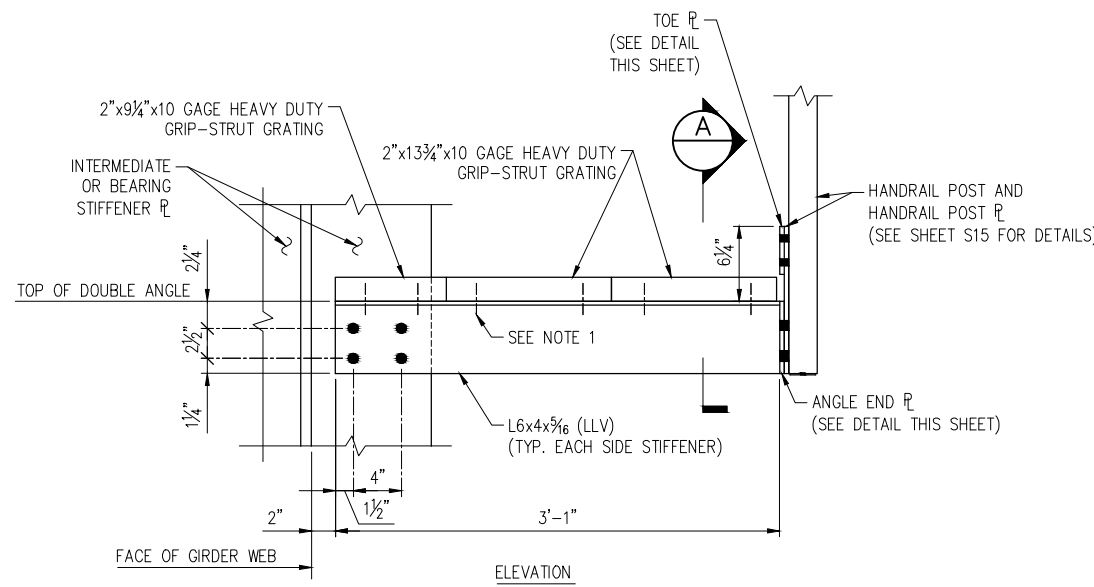


ISSUED FOR CONSTRUCTION

WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
 PHONE: 907-315-8306
 FAX: 907-274-8644

REV.	DATE	BY	REVISION
09-11-15	DF		ISSUED FOR CONSTRUCTION

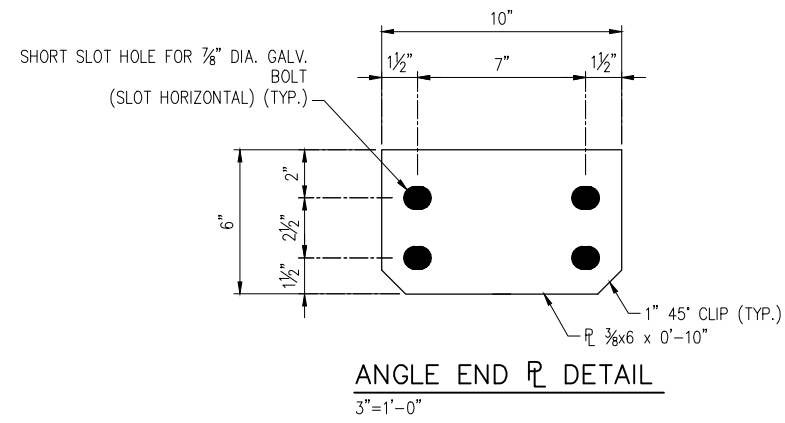
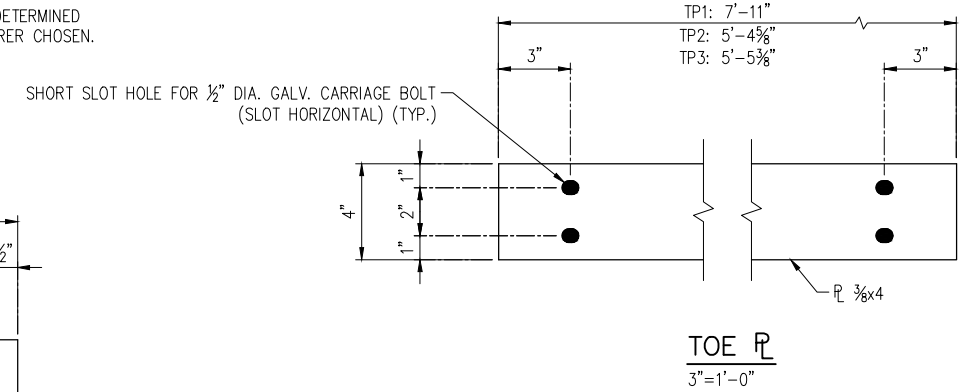
 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: GIRDER END DETAILS	
DESIGNED BY: AR DRAWN BY: RDL CHECKED BY: JSK APPROVED BY: DMF	SCALE: AS NOTED DATE: 09/11/15 S13 13 OF 18



- NOTES:**
1. TYPICAL AT EACH GRATING SLOTTED HOLE CONNECTION: 1/2" DIA. x 3 1/2" CARRIAGE BOLT W/ NUT, STANDARD WASHER, LOCK WASHER & ANCHORING CLIP PER MANUFACTURER'S RECOMMENDATIONS
 2. THE GAP BETWEEN ANGLES SHALL BE 5/8" AT INTERMEDIATE STIFFENER PLATE AND 1 1/4" AT BEARING STIFFENER PLATE.
 3. GRATING BY GRATING PACIFIC OR EQUIVALENT AS APPROVED BY THE ENGINEER.
 4. STRUCTURAL STEEL PLATES, ANGLES, AND CHANNELS SHALL CONFORM TO ASTM A709 GRADE 36.
 5. WALKWAY BRACKET AND UTILITY CHASE SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. BOLTS USED ON TOE PLATE AND ANGLE END PLATE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
 6. AFTER GALVANIZING ALL ELEMENTS SHALL BE FREE OF FINIS, ABRASIONS, ROUGH OR SHARP EDGES AND OTHER SURFACE DEFECTS.
 7. GRATING SHALL BE GALVANIZED BY MANUFACTURER PER MATERIAL REQUIREMENTS.

WALKWAY BRACKET WB1
1 1/2" = 1'-0"

WALKWAY BRACKET INCLUDES (2) L6x4 & ANGLE END PLATE
* BOLT HOLE LOCATIONS SHALL BE DETERMINED BASED ON THE GRATING MANUFACTURER CHOSEN.



- TP1: TO BE USED BETWEEN INTERMEDIATE STIFFENERS
TP2: TO BE USED BETWEEN INTERMEDIATE STIFFENER & BEARING STIFFENER AT: GIRDER RT, RR SOUTH & GIRDER LT, RR NORTH
TP3: TO BE USED BETWEEN INTERMEDIATE STIFFENER & BEARING STIFFENER AT: GIRDER LT, RR SOUTH & GIRDER RT, RR NORTH

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4300 B STREET, SUITE 505
ANCHORAGE, AK 99503
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ENGINEERING SERVICES
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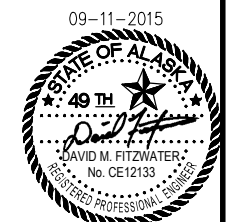
PROJECT: **123' STANDARD TPG BRIDGE REPLACEMENT**

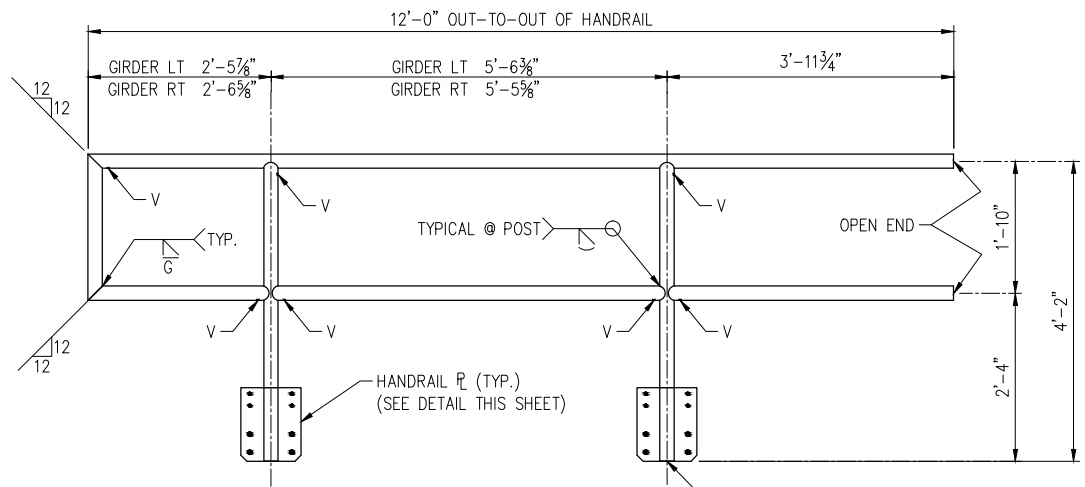
TITLE: **WALKWAY AND UTILITY CHASE DETAILS (1 OF 3)**

DESIGNED BY: JRH
DRAWN BY: KLO
CHECKED BY: TSK
APPROVED BY: DMF

SCALE: AS NOTED
DATE: 09/11/15

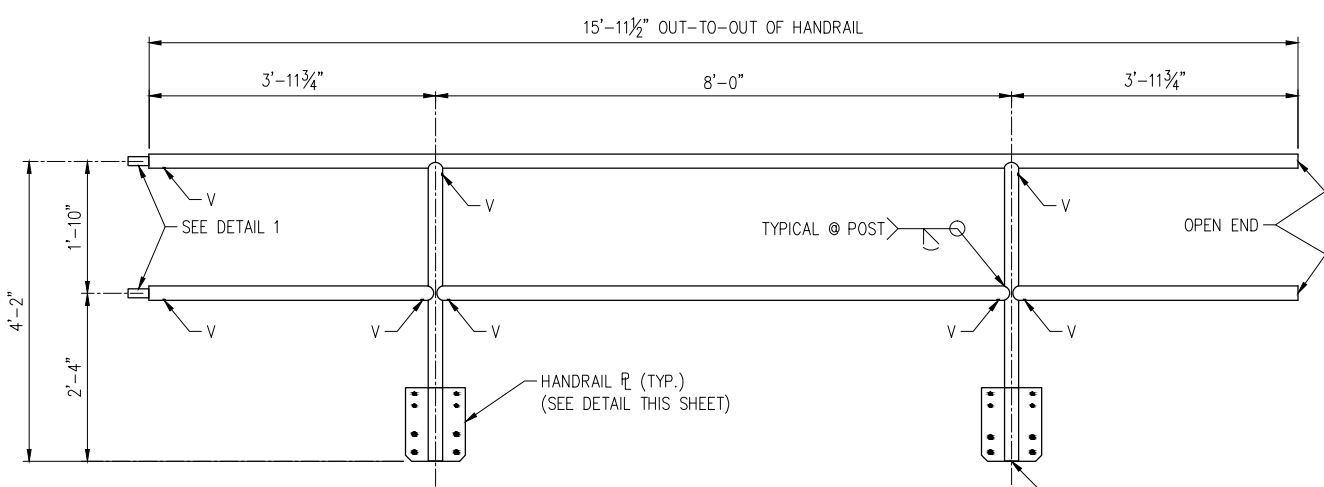
AFE NO.:
ACAD FILE:
DWG NO. **S14** 14 OF 18





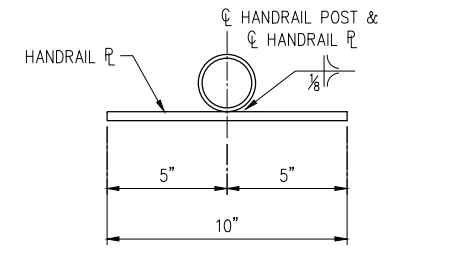
HANDRAIL PANEL HP1
3/4"=1'-0"

HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION

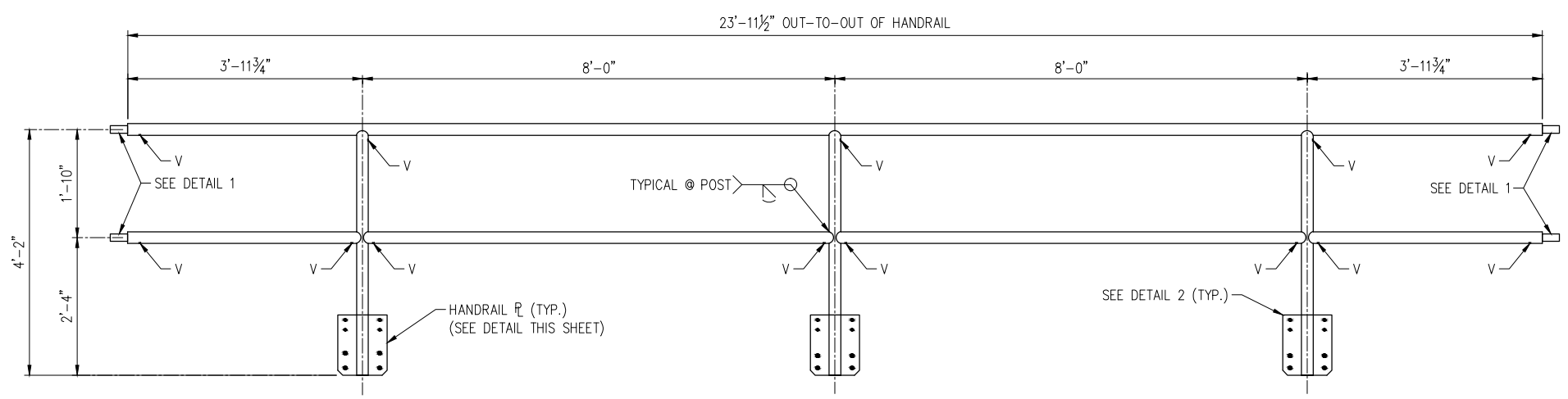


HANDRAIL PANEL HP2
3/4"=1'-0"

HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION

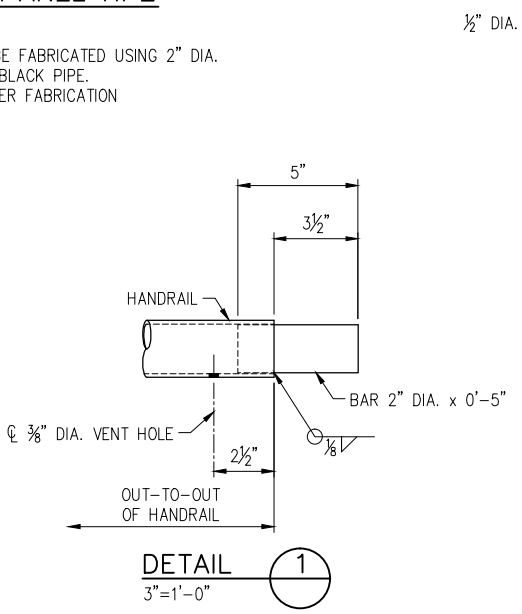


HANDRAIL R CONNECTION DETAIL
3"=1'-0"

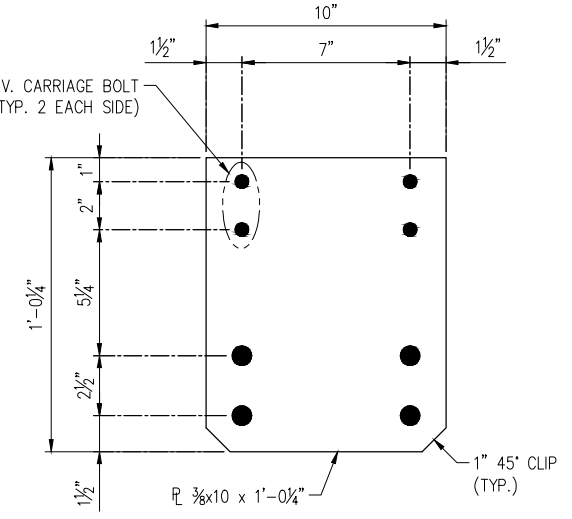


HANDRAIL PANEL HP3
3/4"=1'-0"

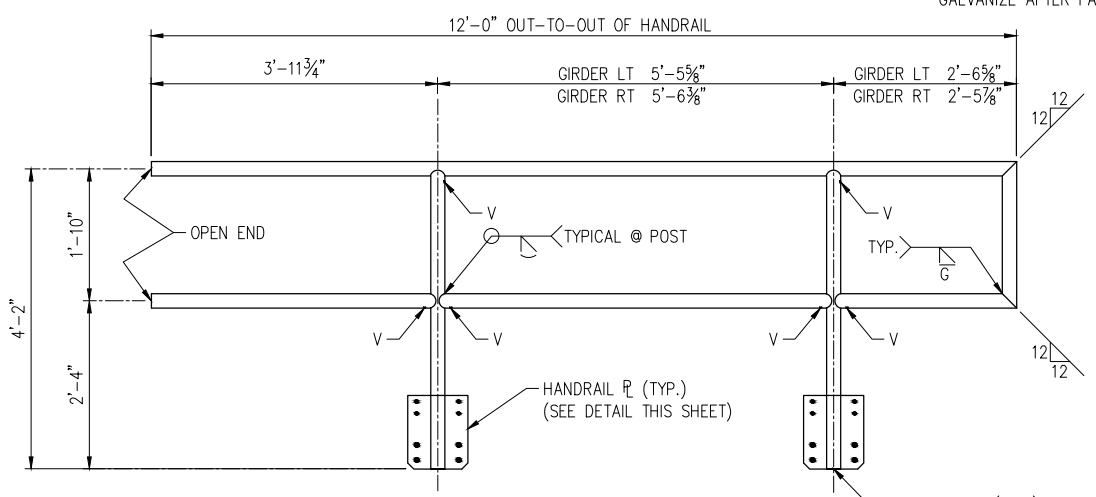
HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION



DETAIL 1
3"=1'-0"

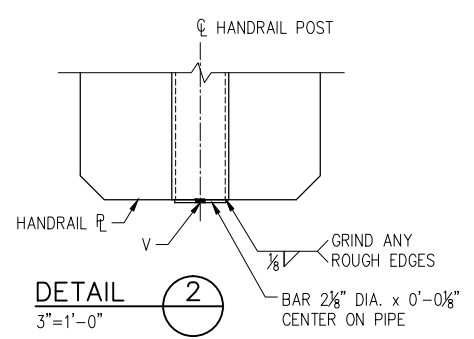


HANDRAIL R DETAIL
3"=1'-0"
(OVERSIZE HOLES IN PLATE)



HANDRAIL PANEL HP4
3/4"=1'-0"

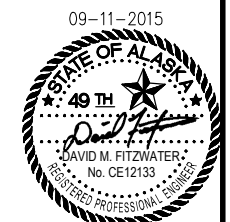
HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION



DETAIL 2
3"=1'-0"

NOTES:

- STRUCTURAL STEEL BARS AND PLATES SHALL CONFORM TO ASTM A36. STANDARD BLACK PIPE SHALL CONFORM TO ASTM A53.
- HANDRAIL PANELS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. BOLTS USED ON HANDRAIL PLATE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153
- AFTER GALVANIZING ALL ELEMENTS SHALL BE FREE OF FINS, ABRASIONS, ROUGH OR SHARP EDGES AND OTHER SURFACE DEFECTS.
- V = 3/8" DIA. DRILLED VENT HOLE 1" FROM JOINT, EXCEPT AS DIMENSIONED IN DETAIL 1.
- HANDRAIL PANELS ON WALKWAY SHALL BE ERECTED PLUMB AND IN-LINE.

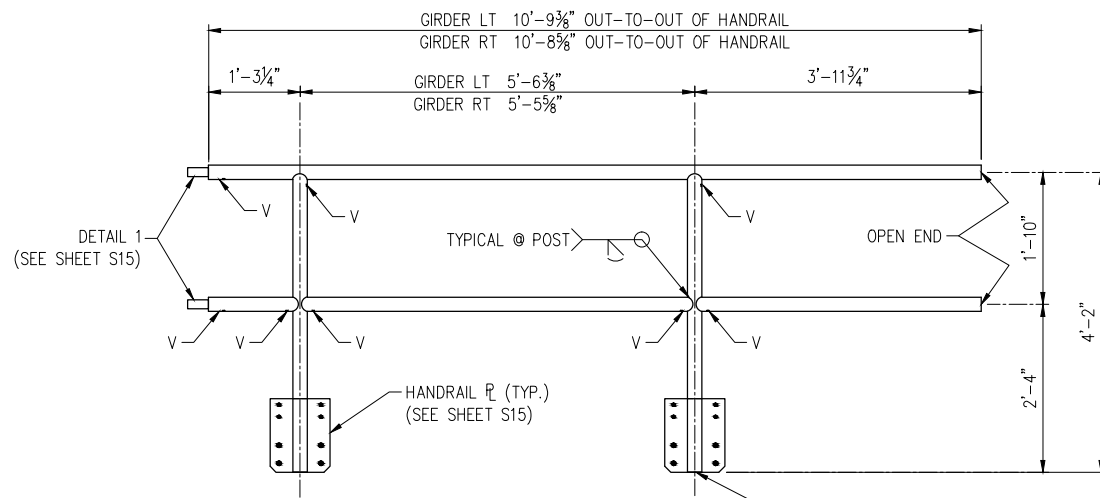


ISSUED FOR CONSTRUCTION

PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
TITLE: WALKWAY AND UTILITY CHASE DETAILS (2 OF 3)	
DESIGNED BY: JRH	SCALE: AS NOTED
DRAWN BY: KLO	DATE: 09/11/15
CHECKED BY: TSK	\$15 DWG NO. 15 OF 18
APPROVED BY: DMF	

WILSON & COMPANY
4300 B STREET, SUITE 505
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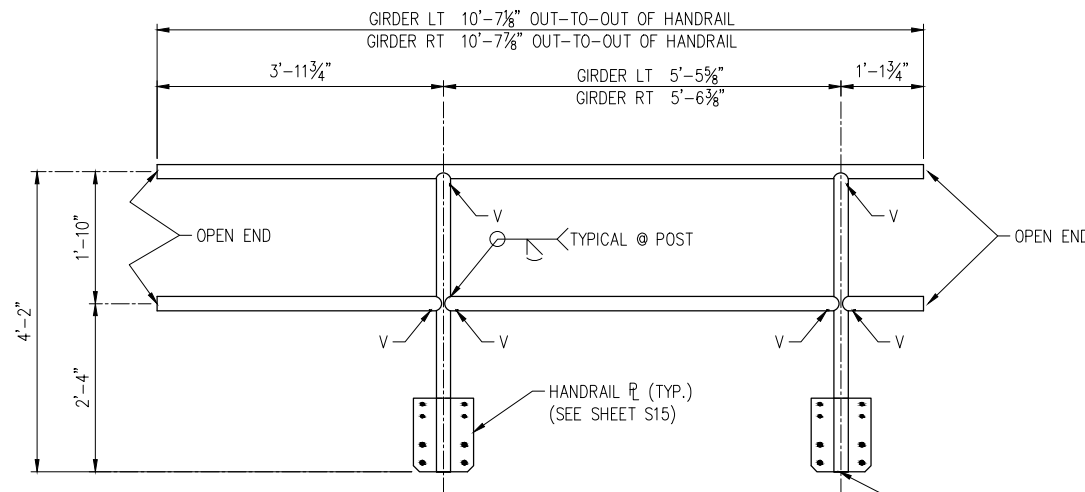
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09-11-15	DF		ISSUED FOR CONSTRUCTION



HANDRAIL PANEL HP5

3/4" = 1'-0"

HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION



HANDRAIL PANEL HP6

3/4" = 1'-0"

HANDRAIL PANELS ARE TO BE FABRICATED USING 2" DIA. STANDARD BLACK PIPE. GALVANIZE AFTER FABRICATION

WALKWAY & HANDRAIL BILL OF MATERIALS

LINE	QUANTITY	UNIT	DESCRIPTION	MARK	SIZE	LENGTH	REMARKS
1	X	EA.	WALKWAY BRACKET, ASTM A36, GALV.	WB1			PER SHEET S14
2	X	EA.	GRIP STRUT SAFETY GRATING, 10 GA.		2" x 9 1/4"	5'-3"	PER SHEET S14
3	X	EA.	GRIP STRUT SAFETY GRATING, 10 GA.		2" x 9 1/4"	7'-10"	PER SHEET S14
4	X	EA.	GRIP STRUT SAFETY GRATING, 10 GA.		2" x 13 3/4"	24'-0"	PER SHEET S14, TRIM TO FIT
5	X	EA.	TOE PLATE, ASTM A36, GALV.	TP1	3/8" x 4"	7'-11"	PER SHEET S14
6	X	EA.	TOE PLATE, ASTM A36, GALV.	TP2	3/8" x 4"	5'-4 3/8"	PER SHEET S14
7	X	EA.	TOE PLATE, ASTM A36, GALV.	TP3	3/8" x 4"	5'-5 3/8"	PER SHEET S14
8	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP1	2" DIA. PIPE	12'-0"	PER SHEET S15
9	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP2	2" DIA. PIPE	15'-11 1/2"	PER SHEET S15
10	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP3	2" DIA. PIPE	23'-11 1/2"	PER SHEET S15
11	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP4	2" DIA. PIPE	12'-0"	PER SHEET S15
12	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP5	2" DIA. PIPE	VARIES	PER SHEET S16
13	X	EA.	HANDRAIL PANEL, ASTM A53, GALV.	HP6	2" DIA. PIPE	VARIES	PER SHEET S16
14	X	LOT	BOLTS, NUTS, WASHERS, & CLIPS TO FASTEN HANDRAIL, SAFETY GRATING, & WALKWAY BRACKET				PER SHEET S14

X - QUANTITIES TO BE FILLED OUT ON A PROJECT BASIS.

UTILITY CHASE BILL OF MATERIALS

LINE	QUANTITY	UNIT	DESCRIPTION	MARK	SIZE	LENGTH	REMARKS
1	X	EA.	UTILITY CHASE, ASTM A36, GALV.	UC1	C7x9.8	3'-0"	PER SHEET S14
2	X	LOT	BOLTS, NUTS, & WASHERS TO FASTEN UTILITY CHASE				PER SHEET S14

X - QUANTITIES TO BE FILLED OUT ON A PROJECT BASIS.

NOTES:

- STRUCTURAL STEEL BARS AND PLATES SHALL CONFORM TO ASTM A36. STANDARD BLACK PIPE SHALL CONFORM TO ASTM A53.
- HANDRAIL PANELS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. BOLTS USED ON HANDRAIL PLATE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
- AFTER GALVANIZING ALL ELEMENTS SHALL BE FREE OF FINS, ABRASIONS, ROUGH OR SHARP EDGES AND OTHER SURFACE DEFECTS.
- V = 3/8" DIA. DRILLED VENT HOLE 1" FROM JOINT, EXCEPT AS DIMENSIONED IN DETAIL 1, SHEET S15.
- HANDRAIL PANELS ON WALKWAY SHALL BE ERECTED PLUMB AND IN-LINE.

09-11-2015



ISSUED FOR CONSTRUCTION

WILSON & COMPANY
 4300 B STREET, SUITE 505
 ANCHORAGE, AK 99503
 PHONE: 907-315-8306
 FAX: 907-274-8644

REV.	DATE	BY	REVISION
09-11-15	DF		ISSUED FOR CONSTRUCTION

ALASKA RAILROAD CORPORATION
 ENGINEERING SERVICES
 P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

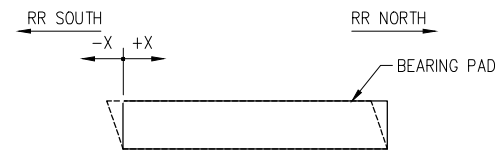
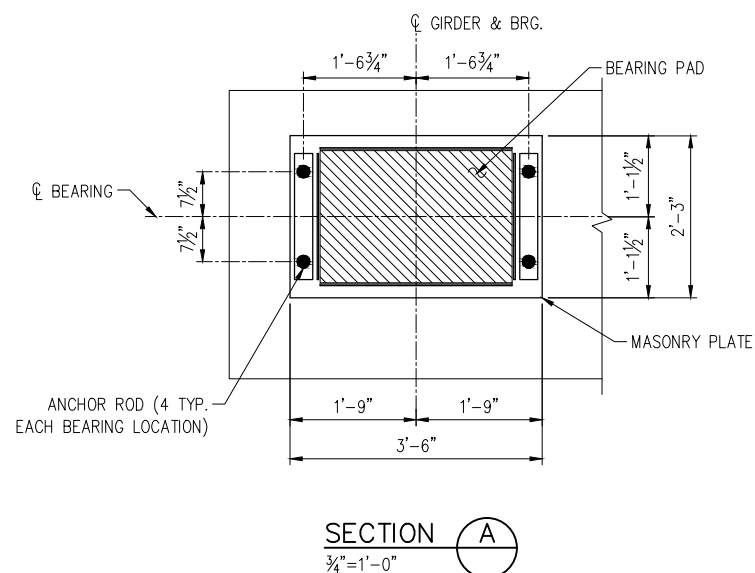
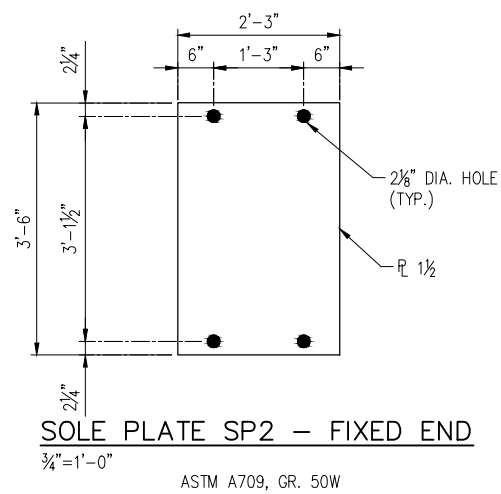
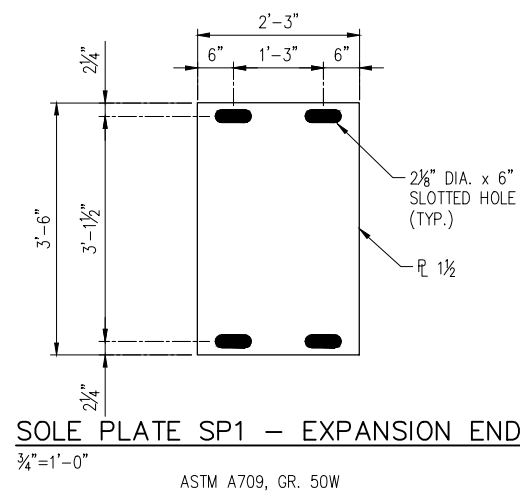
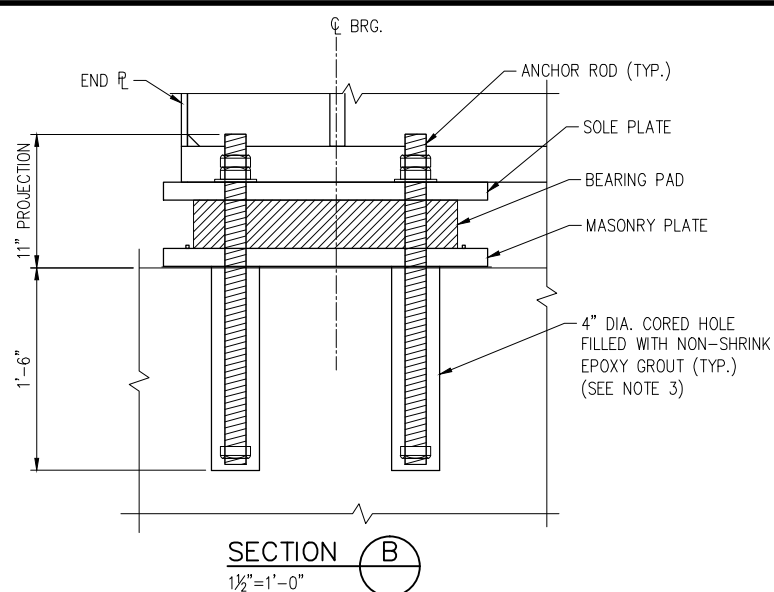
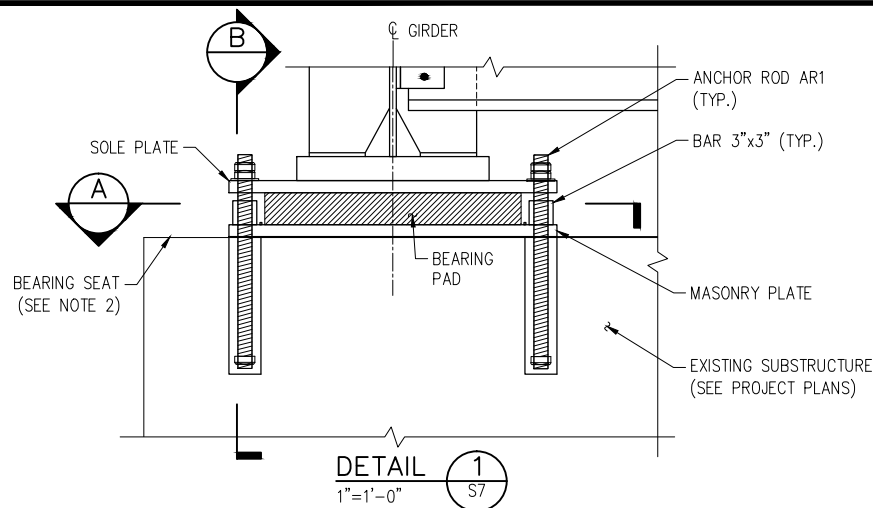
PROJECT: **123' STANDARD TPG BRIDGE REPLACEMENT**

TITLE: **WALKWAY AND UTILITY CHASE DETAILS (3 OF 3)**

DESIGNED BY: JRH
 DRAWN BY: KLO
 CHECKED BY: JSK
 APPROVED BY: DMF

SCALE: AS NOTED
 DATE: 09/11/15

AFE NO.:
 ACAD FILE:
 DWG NO. **S16** OF **18**



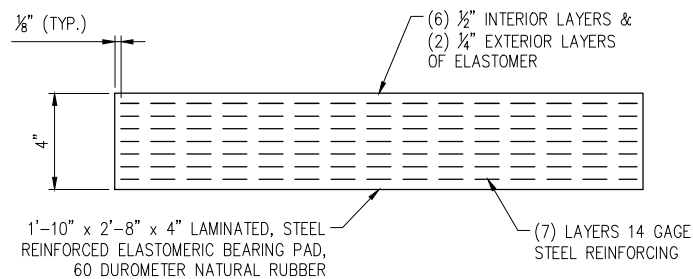
$$x = \frac{3}{4} \left(\frac{T - 17.5}{77.5} \right)$$

T = BRIDGE INSTALLATION TEMPERATURE

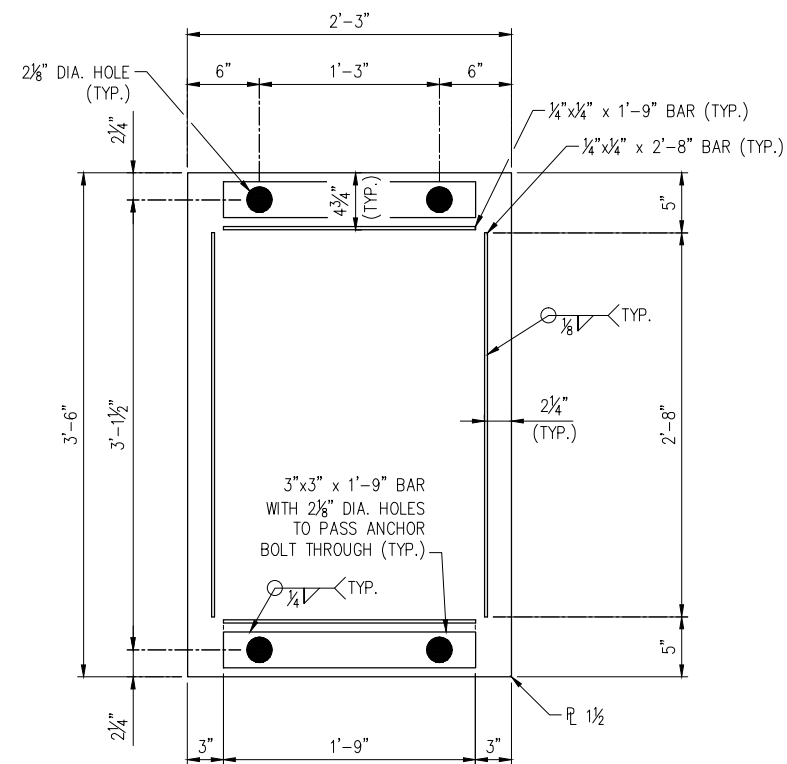
**EXPANSION BEARING PAD
INSTALLATION DETAIL**
NO SCALE

NEUTRAL TEMPERATURE RANGE IS 43° TO -8° FAHRENHEIT.
IF BEARINGS INSTALLED WHEN AMBIENT TEMPERATURE IS OUTSIDE THE NEUTRAL TEMPERATURE RANGE:

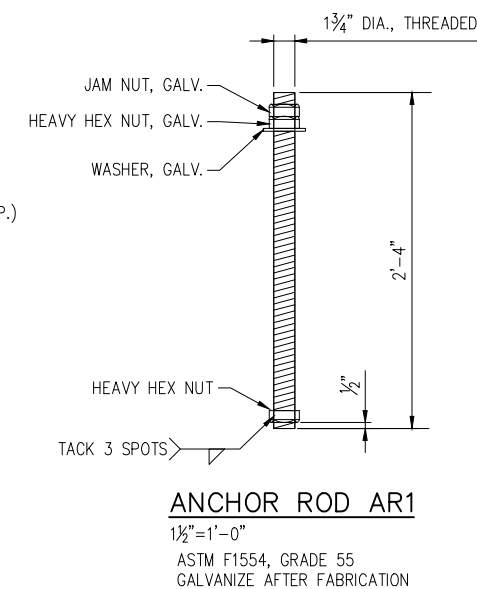
- BEARINGS SHALL BE DEFORMED PER THE EQUATION GIVEN BY X. OR,
- BEARINGS SHALL BE RESET WHEN THE AMBIENT TEMPERATURE IS WITHIN THE NEUTRAL TEMPERATURE RANGE.



BEARING PAD DETAIL
3"=1'-0"



MASONRY PLATE MP1
1 1/2"=1'-0"
ASTM A36
GALVANIZE AFTER FABRICATION



ANCHOR ROD AR1
1 1/2"=1'-0"
ASTM F1554, GRADE 55
GALVANIZE AFTER FABRICATION

NOTES:

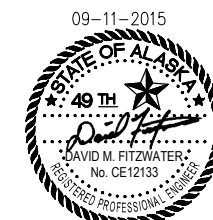
- BEARINGS SHALL BE FABRICATED IN ACCORDANCE WITH CHAPTER 15, PART 5 OF THE CURRENT AREMA MANUAL FOR RAILWAY ENGINEERING.
- LEVEL BEARING SURFACE SHALL BE ACHIEVED WITH THE USE OF NON-SHRINK EPOXY GROUT AS NEEDED.
- HOLE SHALL BE DRY AND FREE OF LAITANCE PRIOR TO ANCHOR BOLT PLACEMENT.

**ISSUED FOR
CONSTRUCTION**

WILSON & COMPANY
4300 B STREET, SUITE 505
ANCHORAGE, AK 99503
PHONE: 907-315-8306
FAX: 907-274-8644

REV.	DATE	BY	REVISION
09-11-15	DF		ISSUED FOR CONSTRUCTION

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		PROJECT: 123' STANDARD TPG BRIDGE REPLACEMENT	
		TITLE: BEARING DETAILS	
DESIGNED BY: AR	SCALE: NONE	S17 17 OF 18	AFE NO.:
DRAWN BY: KLO	DATE: 09/11/15		ACAD FILE:
CHECKED BY: TSK	APPROVED BY: DMF		DWG NO.:



TPG BILL OF MATERIALS

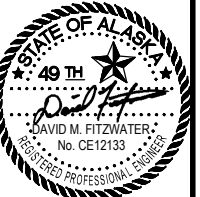
LINE	QUANTITY	UNIT	DESCRIPTION	MARK	SIZE	LENGTH	REMARKS
1	X	LOT	GIRDER LT W/ STIFFENERS & H.S. BOLTS FOR FIELD ERECTION			125'-0"	PER SHEET S8 & S9, CAMBERED FOR DEAD LOAD
2	X	LOT	GIRDER RT W/ STIFFENERS & H.S. BOLTS FOR FIELD ERECTION			125'-0"	PER SHEET S8 & S9, CAMBERED FOR DEAD LOAD
3	X	EA.	FLOORBEAM PANEL, ASTM A709 GR. 50W	FBP1			PER SHEET S12
4	X	EA.	FLOORBEAM PANEL, ASTM A709 GR. 50W	FBP2			PER SHEET S12
5	X	EA.	FLOORBEAM PANEL, ASTM A709 GR. 50W	FBP3			PER SHEET S12
6	X	EA.	FLOORBEAM PANEL, ASTM A709 GR. 50W	FBP4			PER SHEET S12
7	X	LOT	DECK DRAIN ASSEMBLIES, DRAIN COVERS & BOLTS, GALV.				PER SHEET S12, STRUCTURAL STEEL PER ASTM A36
8	X	EA.	KNEE BRACE, ASTM A709 GR. 50W	KB1	5/8" x 47 3/4"	2'-10 1/2"	PER SHEET S11
9	X	EA.	KNEE BRACE, ASTM A709 GR. 50W	KB2	5/8" x 47 3/4"	5'-0"	PER SHEET S11
10	X	EA.	KNEE BRACE, ASTM A709 GR. 50W	KB3	5/8" x 47 3/4"	5'-5 1/4"	PER SHEET S11
11	X	EA.	CLOSURE PLATE, ASTM A709 GR. 50W	CP1	3/4" x a	10'-6"	PER SHEET S13
12	X	EA.	CLOSURE PLATE, ASTM A709 GR. 50W	CP2	3/4" x 26"	10'-6"	PER SHEET S13
13	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP1	1/2" x 63 1/2"	a	PER SHEET S11
14	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP2	1/2" x 63 1/2"	5'-5"	PER SHEET S11
15	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP3	1/2" x 63 1/2"	7'-11"	PER SHEET S11
16	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP4	1/2" x 63 1/2"	5'-5"	PER SHEET S11
17	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP5	1/2" x 63 1/2"	a	PER SHEET S11
18	X	EA.	BENT CURB PLATE, ASTM A709 GR. 50W	BCP6	1/2" x 63 1/2"	2'-3 1/2"	PER SHEET S11
19	X	EA.	BRIDGE PLATE ID, STAINLESS STEEL T-316				PER SHEET S9
20	X	EA.	SOLE PLATE, ASTM A709 GR. 50W	SP1	1 1/2" x 27"	3'-6"	PER SHEET S17
21	X	EA.	SOLE PLATE, ASTM A709 GR. 50W	SP2	1 1/2" x 27"	3'-6"	PER SHEET S17
22	X	EA.	MASONRY PLATE, ASTM A36 GALV.	MP1	1 1/2" x 27"	3'-6"	PER SHEET S17
23	X	EA.	THREADED ANCHOR ROD, ASTM F1554, WITH NUTS AND WASHERS, GALV.	AR1	1 3/4" DIA.	2'-4"	PER SHEET S17
24	X	EA.	LAMINATED, STEEL REINFORCED ELASTOMERIC BEARING PAD, 60 DURO., NATURAL RUBBER		4" x 22"	2'-8"	PER SHEET S17
25	X	EA.	WALKWAY LT				PER WALKWAY & HANDRAIL BILL OF MATERIALS, SHEET S16
26	X	EA.	WALKWAY RT				PER WALKWAY & HANDRAIL BILL OF MATERIALS, SHEET S16
27	X	EA.	UTILITY CHASE				PER UTILITY CHASE BILL OF MATERIALS, SHEET S16

X QUANTITIES TO BE FILLED OUT ON A PROJECT BASIS

NOTE:

VERIFY DIMENSION a WITH PROJECT PLANS

09-11-2015



<p align="center">ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500</p>			
<p align="center">123' STANDARD TPG BRIDGE REPLACEMENT</p>			
<p align="center">BILL OF MATERIALS</p>			
DESIGNED BY: JRH	SCALE: AS NOTED	S18	AFE NO.:
DRAWN BY: KLO	DATE: 09/11/15		ACAD FILE:
CHECKED BY: JSK			DWG NO.:
APPROVED BY: DMF			18 OF 18

ISSUED FOR CONSTRUCTION

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