

GENERAL NOTES:

SPECIFICATIONS

- STRUCTURAL: 2021 A.R.E.M.A. MANUAL FOR RAILWAY ENGINEERING.
- WELDING: IN ACCORDANCE WITH CURRENT A.M.S. BRIDGE WELDING CODE D1-15 AND A.S.E.M.A. MANUAL CHAPTER 15 FOR RAILWAY ENGINEERING. ALL WELD RESISTANCE AND WELDED APPEARANCE.

LOADINGS

- LIVE LOAD: A.R.E.M.A. COOPER E-80 WITH DIESEL IMPACT FOR ROLLING.
- OTHER LOADS AND COMBINATIONS: AS PER A.R.E.M.A. MANUAL FOR RAILWAY ENGINEERING.

DIMENSIONS

- ALL DIMENSIONS ARE MEASURED AT 50°F AND ARE HORIZONTAL.
- STRUCTURAL STEEL

GENERAL:

- FABRICATION AND WORKMANSHIP SHALL CONFORM TO THE 2021 A.R.E.M.A. MANUAL CHAPTER 15 FOR RAILWAY ENGINEERING.
- STRUCTURAL STEEL FABRICATORS SHALL BE CERTIFIED FOR THE TYPE OF STRUCTURE BEING FABRICATED UNDER THE AISC QUALITY MANAGEMENT SYSTEMS (QMS) PROGRAM CATEGORY 18B - INTERMEDIATE BRIDGE. STRUCTURAL STEEL FABRICATORS OF FRACTURE CRITICAL MEMBERS SHALL HAVE A FRACTURE CRITICAL DESIGNATION ON THEIR QUALIFICATION CERTIFICATE. ALL FABRICATORS SHALL BE SUBMITTED TO THE ENGINEER FOR HIS APPROVAL BEFORE BEGINNING ANY WORK.
- ALL RE-ENTRANT CUTS TO BE FILED TO A MINIMUM 1" RADIUS, UNLESS OTHERWISE SHOWN.
- ALL CORNER CUTS TO BE 1" X 1" UNLESS OTHERWISE SHOWN.
- ALL STRUCTURAL STEEL SHALL CONFORM TO A.S.I.M. A709, GRADE 50W, UNLESS NOTED OTHERWISE. ZONE 2 CONDITIONS CONTROL FOR CHAIR V-WITCH TESTING.
- 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 AISC D1-5 - FRACTURE CONTROL PLAN FOR NON-REDUNDANT MEMBERS.
- FRACTURE CRITICAL MEMBERS (FCM) SHALL BE CHAIR V-WITCH (CVN) TESTED, FABRICATING TO AREA TABLE 15-5.3, ZONE 2, P. FURNISHING IN ACCORDANCE WITH AISC D1-5.
- TOP FLANGES, FLOORBEAMS, STIFFENERS, KNEE BRACES, CONNECTION ANGLES AND TABLE 15-5.2, ZONE 2, H FREQUENCY IN ACCORDANCE WITH ASTM A670.

- ALL FASTENERS SHALL BE A.S.I.M. F3129 GRADE 305 SLIP CRITICAL CLASS 8 UNLESS OTHERWISE NOTED. BOLTED CONNECTIONS SHALL USE A.S.I.M. A563, GRADE 0H, HEAVY HEX NUTS AND A.S.I.M. F418 HARDENED STEEL WASHERS OR IN THE EVENT OF A FRACTURE CRITICAL MEMBER, THE FASTENERS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE AISC D1-5 - FRACTURE CONTROL PLAN FOR NON-REDUNDANT MEMBERS.
- NON-FCM GIRDERS, TENSION FLANGE BUTT WELDS: 100% RADIOGRAPHIC TESTING (RT) AND ULTRASONIC TESTING (UT).
- NON-FCM GIRDERS, TENSION FLANGE BUTT WELDS: 100% RT.
- ALL GIRDERS, COMPRESSION FLANGE BUTT WELDS: RT OR UT 75% OF EACH WELD. ALL GIRDERS, COMPRESSION FLANGE BUTT WELDS: RT OR UT 75% OF EACH WELD. COMPRESSION FLANGES: WHEN THE LATER OPTION IS SELECTED, THE TESTED JOINTS SHALL BE DISTRIBUTED EVENLY THROUGHOUT THE WORK AND SHALL TOTAL AT LEAST 75% OF THE TOTAL WELD LENGTH.
- ALL GIRDERS, WEB BUTT WELDS: RT SHALL BE USED TO EXAMINE THE LOWER 1/6 OF ALL BUTT WELDS IN GIRDERS WEBS. AN ADDITIONAL 25% OF THE REMAINDER OF THE WELD LENGTH SHALL ALSO BE TESTED BY RT AT LEAST 30 INCH.
- PRIMARY MEMBERS, FILLET WELDS: 100% MAGNETIC PARTICLE TESTING (MT).
- WELDS SHALL BE GRIND PRIOR TO RADIOGRAPHIC TESTING.
- WELDS REQUIRING REPAIR SHALL BE RE-TESTED AFTER REPAIRS ARE MADE.
- THE FABRICATOR SHALL REPORT THE AMOUNT OF INSPECTION PERFORMED IN CERTAIN FEET, LOCATION AND LENGTH OF DEFECTS, IF ANY, AND FINISH A SPECIFICATION THAT THESE WERE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS.
- IF REJECTABLE DISCONTINUITIES ARE FOUND, THE PROVISIONS OF AWS D1.5 FOR ADDITIONAL TESTING SHALL APPLY.

SHOPS NOTES:

- ALL HOLES THROUGH MAIN STRUCTURAL MEMBERS ARE TO BE DRILLED FULL SIZE. THE BOTTOM FLANGES OF THE GIRDERS MUST BE SQUARE WITH THE VERTICAL AXIS AT BOTH ENDS OF THE GIRDERS.
- THE TOP SURFACE OF STRINGERS SHALL BE ADJUSTED TO FORM A STRAIGHT LINE AT ANY TRAVEL SECTION THROUGHOUT THE SPAN. (TOLERANCE 1/16" ±)
- FABRICATOR IS TO SHOW WELD CONFIGURATION, JOINT PREPARATION AND WELD PROCEDURE IN THE TAIL OF THE WELD SYMBOL ON ALL DETAIL DRAWINGS.
- ALL SURFACES, INCLUDING PAINTING SURFACES, OF STRUCTURAL STEEL SHALL BE CLEANED PER STEEL STRUCTURES PAINTING SPECIFICATION SSPC-SP-6. PAINTING COULD SPECIFICATIONS SSPC-SP-6.
- FOLLOWING FABRICATION, GALVANIZE ANCHOR BOLTS (INCL. NUTS AND WASHERS) PER A.S.I.M. A123-72239 AS APPLICABLE.
- SPAN SHALL BE FULLY ASSEMBLED TO ASSURE ACCURATE FIT, DISASSEMBLE AS REQUIRED FOR SHIPPING.
- BEARING PLATES ARE TO BE FLAT AND LEVEL AFTER WELDING.
- SHOPS DRAWINGS

- ALL SHOPS DRAWINGS SHALL BE CHECKED BY THE FABRICATOR BEFORE SUBMITTING THEM FOR APPROVAL. THESE DRAWINGS MAY BE SUBMITTED BY EMAIL WITH MAXIMUM FILE SIZE OF 10MB PER EMAIL. THEY CAN ALSO BE TRANSFERRED BY FTP AT FABRICATOR'S DISCRETION. DRAWINGS SHALL INCLUDE A COVER WITH THE FOLLOWING INFORMATION: PROJECT NAME, DRAWING NUMBER, DRAWING TITLE, PROPERTY OF, AND SHALL BE DELIVERED TO THE RAILWAY CO. UPON COMPLETION OF THE CONTRACT.
- DURING THE PREPARATION OF SHOPS 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 FABRICATION IS COMPLETED. DIMENSIONS NOTED ON THE PLANS OR DESCRIBED IN THE CONTRACT SPECIFICATIONS.
- REPAIR OF DAMAGED GALVANIZED SURFACES
- DAMAGED GALVANIZED SURFACES SHALL BE THOROUGHLY CLEANED TO REMOVE ALL CONTAMINANTS INCLUDING ROAD SLUG, WELD SPLATTER AND RUST AND SHALL THEN BE PAINTED WITH TWO COATS OF ZINC DUST - ZINC DUST, TYPE 1, UNLEADED OIL PAINT MEETING FEDERAL SPECIFICATION TT-P-641.
- ANCHOR BOLTS
- ANCHOR BOLTS FOR THE BEARING BRACES SHALL CONFORM TO A.S.I.M. F1554, GR. 105, UNLESS OTHERWISE SHOWN ON THE PLANS OR DESCRIBED IN THE CONTRACT SPECIFICATIONS.

BEARINGS

- ALL MATERIAL AND WORKMANSHIP SHALL BE AS PER THE CURRENT BNSF STANDARD CONSTRUCTION SPECIFICATIONS.
- ALL MATERIAL SHALL BE ASTM A109 GR. 50W EXCEPT AS NOTED OTHERWISE.
- MATERIAL FOR PLATE THICKNESS 4" OR MORE SHALL BE ASTM 588 T1 + 46 KSI.
- STEELS SHALL CONFORM TO ASTM F1554 OR 50 STEEL.
- STAINLESS STEEL SHALL CONFORM TO ASTM A80.
- BEARING ASSEMBLY ELEMENTS SHALL BE STRESSED RELIEVED BY HEAT TREATING PRIOR TO FINISH MACHINING. PER CURRENT BNSF STANDARD CONSTRUCTION SPECIFICATIONS.
- TEFLON LAYER SHALL BE COMPOSED OF VIRGIN UNFILLED TFE RESIN, UNFILLED TFE SHEETS OR UNFILLED TFE FIBER, FILLER MATERIAL, SUCH AS WILLED REINFORCEMENT OF ARCEL CHAPTER 15.
- ALL SURFACES IN MOVING CONTACT SHALL BE FINISHED POLISHED TO LESS THAN 20 MICRO-INCHES ROOT MEAN SQUARE (RMS).
- ALL DIMENSIONS SHOWN ARE FINAL DIMENSIONS AFTER MACHINING.
- BEARINGS TO BE SHIP FITTED TO GIRDERS. MATCH MARKED AND ASSEMBLED IN UNITS FOR SHIPPING.
- ANCHOR BOLTS, NUTS AND PLATE WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM B695, CLASS 50.
- ANCHOR BOLT NUTS SHALL BE 4553 OR 4H HEAVY HEX & WASHERS SHALL BE F346 TYPE 1.
- BOLT REMOVAL AND RE-ACCRETION TO GAIN ACCESS TO PROPERLY TIGHTEN BEARING BOLTS IS INCORPORAL TO STEEL ERECTION.
- BEARING SHALL BE INSTALLED ON 1/2" THICK MASONRY PADS HAVING THE SAME DIMENSION AS THE BEARING MASONRY PLATE.
- ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.
- ALL WELDED ASSEMBLIES SHALL BE STRESS RELIEVED AFTER FABRICATION IN D1-5.
- ALL WELDED ASSEMBLIES SHALL BE STRESS RELIEVED AFTER FABRICATION IN D1-5.
- BEARING PADS SHALL BE CLEANED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION AND CURED TO CONCRETE COPS WITH AN APPROVED EPOXY ADHESIVE.

ESTIMATED WEIGHTS AND LENGTHS OF PROPOSED SPANS

SPAN NO.	LENGTH	STEEL WEIGHT (TONS)
64	76'-8"	91
65	76'-8"	91
66	101'-8"	158
67	101'-8"	158
68	101'-8"	158
69	101'-8"	158
70	76'-8"	91
71	76'-8"	91

LIST OF STRUCTURAL STEEL

ITEM	MARK	EST. WEIGHT	REMARKS
01A. 4	76'-8"	91 TONS	DETAILED ON PLAN NOS. 0045-0003, 900-171 THRU 0045-0003, 900-181
4	101'-8"	158 TONS	DETAILED ON PLAN NOS. 0045-0003, 900-182 THRU 0045-0003, 900-197
ESTIMATED WEIGHT OF STRUCTURAL STEEL = 1,993,000 LBS.			

152	WALKWAY BRACKET, ASTM A109 GR. 36, GALV.	SM83-9-1	DETAILED ON PLAN NO. 0045-0003, 900-159
64	WALKWAY BRACKET, ASTM A109 GR. 36, GALV.	SM83-9-2	DETAILED ON PLAN NO. 0045-0003, 900-159
16	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-3	DETAILED ON PLAN NO. 0045-0003, 900-159
4	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-1	DETAILED ON PLAN NO. 0045-0003, 900-159
16	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-2	DETAILED ON PLAN NO. 0045-0003, 900-159
4	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-3	DETAILED ON PLAN NO. 0045-0003, 900-159
16	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-4	DETAILED ON PLAN NO. 0045-0003, 900-159
4	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-5	DETAILED ON PLAN NO. 0045-0003, 900-159
16	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-6	DETAILED ON PLAN NO. 0045-0003, 900-159
4	HANDRAIL BRACKET, BLACK PIPE GALV.	SM83-9-7	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202
100	WALKWAY GRATING 12 GA. GALV.	9'-0"	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202
12	WALKWAY GRATING 12 GA. GALV.	13'-0"	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202
28	WALKWAY GRATING 12 GA. GALV.	9'-0"	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202
48	WALKWAY GRATING 11 GA. GALV.	13'-0"	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202
16	WALKWAY GRATING 11 GA. GALV.	15'-0"	DETAILED ON PLAN NO. 0045-0003, 900-200 TO 202

ESTIMATED WEIGHT OF MISCELLANEOUS STEEL = 26,500 LBS. (DOES NOT INCLUDE WALKWAY GRATING)

LIST OF DRAWINGS - BR. 3.9

PLAN NO.	TITLE
0045-0003, 900-163	GENERAL NOTES & LIST OF SHEETS
0045-0003, 900-170	EXISTING & PROPOSED ELEVATIONS
0045-0003, 900-171	76'-8" TPG SPAN - FRAMING PLAN
0045-0003, 900-172	76'-8" TPG SPAN - ELEVATIONS & DETAILS
0045-0003, 900-173	76'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (1 OF 3)
0045-0003, 900-174	76'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (2 OF 3)
0045-0003, 900-175	76'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (3 OF 3)
0045-0003, 900-176	76'-8" TPG SPAN - GIRDERS SECTIONS & DETAILS
0045-0003, 900-177	76'-8" TPG SPAN - LATERAL BRACING PLAN & DETAILS
0045-0003, 900-178	76'-8" TPG SPAN - LATERAL BRACING PLAN & DETAILS (1 OF 2)
0045-0003, 900-179	76'-8" TPG SPAN - LATERAL BRACING PLAN & DETAILS (2 OF 2)
0045-0003, 900-180	76'-8" TPG SPAN - BEARING DETAILS
0045-0003, 900-181	76'-8" TPG SPAN - BEARING DETAILS FOR DECK
0045-0003, 900-182	101'-8" TPG SPAN - FRAMING PLAN
0045-0003, 900-183	101'-8" TPG SPAN - ELEVATIONS & DETAILS
0045-0003, 900-184	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (1 OF 4)
0045-0003, 900-185	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (2 OF 4)
0045-0003, 900-186	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (3 OF 4)
0045-0003, 900-187	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (4 OF 4)
0045-0003, 900-188	101'-8" TPG SPAN - INSIDE ELEVATION & DETAILS
0045-0003, 900-189	101'-8" TPG SPAN - INSIDE ELEVATION & DETAILS
0045-0003, 900-190	101'-8" TPG SPAN - INSIDE ELEVATION & DETAILS
0045-0003, 900-191	101'-8" TPG SPAN - INSIDE ELEVATION & DETAILS
0045-0003, 900-192	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (1 OF 2)
0045-0003, 900-193	101'-8" TPG SPAN - TYPICAL SECTIONS & DETAILS (2 OF 2)
0045-0003, 900-194	101'-8" TPG SPAN - FLOORBEAM & STRINGER DETAILS
0045-0003, 900-195	101'-8" TPG SPAN - LATERAL BRACING PLAN & DETAILS (1 OF 2)
0045-0003, 900-196	101'-8" TPG SPAN - LATERAL BRACING PLAN & DETAILS (2 OF 2)
0045-0003, 900-197	101'-8" TPG SPAN - BEARING DETAILS
0045-0003, 900-198	HANDRAIL PANEL DETAILS
0045-0003, 900-199	MISCELLANEOUS DETAILS
0045-0003, 900-200	76'-8" TPG SPAN - TIMBER DECK PLAN & DETAILS
0045-0003, 900-201	101'-8" TPG SPAN - TIMBER DECK PLAN & DETAILS (1 OF 2)
0045-0003, 900-202	101'-8" TPG SPAN - TIMBER DECK PLAN & DETAILS (2 OF 2)



Hanson Professional Services Inc.

DES: 000	DRAWN: CTD & 000	BRIDGE NUMBER 3.9
CHECK: MAF & JEC	BRIDGE ENGINEERING KANSAS CITY, KS	OVER LANE POND BRIDGE NEAR SANDPOINT, MO
DATE: NOV 2021	APPROVED: <i>W. J. Smith</i>	GENERAL NOTES & LIST OF SHEETS
PLAN ITEM: 0045	ASSN. DIRECTOR STRUCTURES DESIGN	PLAN NO. 0045-0003, 900-169
LIN. SEG: 0045		SHEET: 01 OF 34