

STRUCTURAL STEEL REPAIR TABLE

STRUCTURAL STEEL REPAIR NOTES:

REPAIR I.D. NUMBER	BRIDGE	SPAN	GIRDER BAY	REPAIRS REQUIRED	MATERIALS REQUIRED	SHOP DRAWING MARK	REFERENCE SHOP DWG. SHEETS	COMMENTS
N1	11N	1	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
N2	11N	1	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 8' - 6"	L3	E3, S67	
N3	11N	1	G1-G2	REPLACE CORRODED BOLT IN GIRDER 1 BOTTOM FLANGE SPLICE	1 H.S. BOLT	SPLICE "A"	S11	
N4	11N	2	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
N5	11N	2	G1-G2	REPLACE CORRODED BOLTS AT GIRDER 1 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
N6	11N	3	G1-G2	REPLACE CORRODED BOLTS IN CROSS FRAME (TYPE CF4) LOWER GUSSET PLATE AT GIRDER 1	14 H.S. BOLTS		E4	
N7	11N	3	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5 IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1	E3, S67 E3, E9, S21	SEE NOTE 8
N8	11N	3	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5 IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1	E3, S67 E3, E9, S21	SEE NOTE 8
N9	11N	3	G4-G5	REPLACE CORRODED BOLTS AT GIRDER 5 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
N10	11N	3	G4-G5	REPLACE CORRODED BOLTS IN CROSS FRAME (TYPE CF4) LOWER GUSSET PLATE AT GIRDER 5	14 H.S. BOLTS		E4	
N11	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
N12	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 1 IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1	E3, S67 E3, E8, S21	SEE NOTE 8
N13	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 1 IN KIND	L 4 X 4 X 5/16 X 6' - 9 1/4" PL. 5 7/8" X 3/8" X 1' - 0 1/2" 4 H.S. BOLTS	L9 g9	E3, S67 E3, E9, S22	SEE NOTE 8
N14	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
N15	11N	4	G1-G2	REPLACE CORRODED BOLTS AT GIRDER 1 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
N16	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
N17	11N	4	G4-G5	REPLACE LOOSE BOLT IN GIRDER 5 BOTTOM FLANGE SPLICE	1 H.S. BOLT	SPLICE "B"	S11	SEE NOTE 10
N18	11N	4	G3-G4	REPLACE LOOSE BOLT IN GIRDER 4 BOTTOM FLANGE SPLICE	1 H.S. BOLT	SPLICE "B"	S11	SEE NOTE 10
N19	11N	4	G4-G5	REPLACE CORRODED BOLTS AT GIRDER 5 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
N20	11N	4	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 1 IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1	E3, S67 E3, E9, S21	SEE NOTE 8
N21	11N	4	G1-G2	REPLACE CORRODED BOLTS AT GIRDER 1 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
N22	11N	5	G4-G5	REPLACE LOOSE BOLTS IN GIRDER 5 BOTTOM FLANGE SPLICE	4 H.S. BOLTS	SPLICE "B"	S11	
S1	11S	6	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
S2	11S	6	G4-G5	REPLACE ENTIRE CROSS FRAME IN KIND, SHOP DRAWING MARK CF20	2 X L 4 X 4 X 3/8 X 6' - 4 13/16" 2 X L 4 X 4 X 3/8 X 7' - 5 1/4" 4 X PL. 12 3/4 X 3/8 X 1' - 1" 1 X PL. 5 X 3/8 X 0' - 7"	a13 a14 K4 fp4	E3, S53 E3, S53 E3, S53 E3, S53	
S3	11S	5	G4-G5	REPLACE CORRODED BOLTS IN UPPER & LOWER CROSS FRAME (TYPE CF2) GUSSETS AT GIRDER 5	12 H.S. BOLTS		E4	
S4	11S	5	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5 IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2" PL. 8 1/8" X 3/8" X 0' - 8 1/2" 4 H.S. BOLTS	L6 g6c	E3, S67 E3, E9, S21	SEE NOTE 8
S5	11S	5	G1-G2	REPLACE CORRODED BOLTS AT GIRDER 1 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
S6	11S	5	G1-G2	REPLACE ENTIRE CROSS FRAME IN KIND, SHOP DRAWING MARK CF212	2 X L 4 X 4 X 3/8 X 6' - 4 3/16" 2 X L 4 X 4 X 3/8 X 7' - 8 7/16" 4 X PL. 12 3/4 X 3/8 X 1' - 1" 1 X PL. 5 X 3/8 X 0' - 7"	a23 a24 K4 fp4	E3, S61 E3, S61 E3, S61 E3, S61	
S7	11S	5	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2"	L6	E3, S67	
S8	11S	5	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2"	L6	E3, S67	
S9	11S	5	G4-G5	REPLACE CORRODED BOLTS IN LOWER CROSS FRAME (TYPE CF2) GUSSET AT GIRDER 5	6 H.S. BOLTS		E4	
S10	11S	4	G4-G5	REPLACE CORRODED BOLTS AT GIRDER 5 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
S11	11S	4	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2"	L6	E3, S67	
S12	11S	4	G1-G2	REPLACE ENTIRE CROSS FRAME IN KIND, SHOP DRAWING MARK CF220	2 X L 4 X 4 X 3/8 X 6' - 8 3/4" 2 X L 4 X 4 X 3/8 X 8' - 11 3/4" 4 X PL. 12 3/4 X 3/8 X 1' - 1" 1 X PL. 5 X 3/8 X 0' - 7"	a26 a29 K4 fp4	E3, S65 E3, S65 E3, S65 E3, S65	
S13	11S	3	G4-G5	REPLACE CORRODED BOLTS AT GIRDER 5 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
S14	11S	3	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2"	L6	E3, S67	
S15	11S	3	G1-G2	REPLACE ENTIRE CROSS FRAME IN KIND, SHOP DRAWING MARK CF212	2 X L 4 X 4 X 3/8 X 6' - 4 3/16" 2 X L 4 X 4 X 3/8 X 7' - 8 7/16" 4 X PL. 12 3/4 X 3/8 X 1' - 1" 1 X PL. 5 X 3/8 X 0' - 7"	a23 a24 K4 fp4	E3, S61 E3, S61 E3, S61 E3, S61	
S16	11S	3	G1-G2	REPLACE CORRODED BOLTS AT GIRDER 1 LATERAL BRACING ANGLE GUSSET	2 H.S. BOLTS			
S17	11S	3	G4-G5	REPLACE CORRODED BOLTS IN LOWER CROSS FRAME (TYPE CF2) GUSSET AT GIRDER 5	6 H.S. BOLTS		E4	
S18	11S	3	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	
S19	11S	3	G4-G5	REPLACE CORRODED BOLTS IN LOWER CROSS FRAME (TYPE CF2) GUSSET AT GIRDER 5	6 H.S. BOLTS		E4	
S20	11S	2	G4-G5	REPLACE CORRODED BOLTS IN UPPER & LOWER CROSS FRAME (TYPE CF2) GUSSETS AT GIRDER 5	12 H.S. BOLTS		E4	
S21	11S	2	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5 IN KIND	L 4 X 4 X 5/16 X 9' - 3 1/2" PL. 8 1/8" X 3/8" X 0' - 8 1/2" 4 H.S. BOLTS	L6 g6c	E3, S67 E3, E9, S21	SEE NOTE 8
S22	11S	2	G4-G5	REPLACE CORRODED BOLTS IN LOWER CROSS FRAME (TYPE CF2) GUSSET AT GIRDER 5	6 H.S. BOLTS		E4	
S23	11S	2	G1-G2	REPLACE BOTTOM 6 ROWS OF CORRODED BOLTS IN GIRDER 1 WEB SPLICE REPLACE ALL INTERIOR BOTTOM FLANGE SPLICE BOLTS IN GIRDER 1 SPLICE	36 H.S. BOLTS 14 H.S. BOLTS	SPLICE "B" SPLICE "B"	S11 S11	SEE NOTE 10 SEE NOTE 10
S24	11S	2	G1-G2	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 1 IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1	E3, S67 E3, E9, S21	SEE NOTE 8
S25	11S	2	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5	L 4 X 4 X 5/16 X 9' - 7 11/16" PL. 9 5/8" X 3/8" X 0' - 9 5/8" 4 H.S. BOLTS	L1 g1d	E3, S67 E3, E6, S21	SEE NOTE 12
S26	11S	2	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND REPLACE LATERAL BRACING ANGLE GUSSET PLATE AT GIRDER 5	L 4 X 4 X 5/16 X 7' - 1 11/16" PL. 8 1/8" X 3/8" X 1' - 0 3/16" 4 H.S. BOLTS	L5 g5d	E3, S67 E3, E6, S21	SEE NOTE 12
S27	11S	2	G4-G5	REPAIR VERTICAL STIFFENER ON INT. SIDE OF GIRDER 5 WEB AT LAT. BRACING GUSSETS	2 X PL. 5 1/2" X 3/8" X 1' - 0"	h13a	E3, S20, S2	SEE NOTE 13
S28	11S	2	G4-G5	REPLACE ENTIRE CROSS FRAME IN KIND, SHOP DRAWING MARK CF28	2 X L 4 X 4 X 3/8 X 6' - 7" 2 X L 4 X 4 X 3/8 X 8' - 3 1/2" 4 X PL. 12 3/4 X 3/8 X 1' - 1" 1 X PL. 5 X 3/8 X 0' - 7"	a18 a21 K4 fp4	E3, S59 E3, S59 E3, S59 E3, S59	
S29	11S	1	G4-G5	REPLACE LATERAL BRACING ANGLE IN KIND	L 4 X 4 X 5/16 X 9' - 7 11/16"	L1	E3, S67	

- THE STRUCTURAL STEEL REPAIRS TABLE ON THIS SHEET LISTS THE REQUIRED STRUCTURAL STEEL REPAIRS AND REPLACEMENTS THAT WERE IDENTIFIED DURING A DECEMBER 1997 PRELIMINARY INSPECTION. A THOROUGH INSPECTION BY VERMONT AOT PERSONNEL ASSIGNED TO THE PROJECT SHALL BE MADE OF ALL STRUCTURAL STEEL AT THE START OF CONSTRUCTION TO IDENTIFY ANY ADDITIONAL MEMBERS THAT REQUIRE REPAIR. THE RESIDENT ENGINEER MAY SCHEDULE USE OF THE VAOT UNDERBRIDGE INSPECTION VEHICLE TO ASSIST VAOT PERSONNEL IN PERFORMING THIS INSPECTION. THE CONTRACTOR WILL NOT BE ALLOWED TO USE THE VAOT UNDERBRIDGE INSPECTION VEHICLE.
- SEE THE FRAMING PLANS ON SHEETS 9 AND 10 FOR LOCATIONS OF THE REPAIRS LISTED IN THE STRUCTURAL STEEL REPAIRS TABLE ON THIS SHEET.
- SHOP DRAWINGS FROM THE ORIGINAL STEEL FABRICATION ARE INCLUDED IN THIS SET OF PLANS FOR REFERENCE. SEE SHEETS 80 - 101. THE ORIGINAL SHOP DRAWING MARK FOR ALL MEMBERS THAT ARE TO BE REPLACED IN KIND IS INCLUDED IN THE STEEL REPAIRS TABLE, ALONG WITH THE ORIGINAL SHEET NUMBER(S) OF THE SHOP DRAWING(S) THAT THE MEMBER IS DETAILED ON. THE DIMENSIONS OF THE STEEL MEMBERS THAT ARE TO BE REPLACED IN KIND SHOWN IN THE STRUCTURAL STEEL REPAIRS TABLE ARE TAKEN FROM THE ORIGINAL SHOP DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS OF ALL STRUCTURAL STEEL TO BE REPLACED.
- IN THE STRUCTURAL STEEL REPAIRS TABLE ON THIS SHEET, THE GIRDERS ARE NUMBERED FROM LEFT TO RIGHT IN THE DIRECTION OF INCREASING STATIONING FOR BOTH BRIDGE 11N AND BRIDGE 11S.
- ALL NEW STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 36, UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC).
- ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO THE LATEST ANSI/AASHTO/AWS BRIDGE WELDING CODE AND ITS LATEST REVISIONS.
- ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS, AASHTO M164 (ASTM A-325), TYPE 3 UNLESS OTHERWISE NOTED. HOLES SHALL BE 15/16" DIAMETER. CONNECTIONS NOT DETAILED IN THESE PLANS SHALL BE DETAILED BY THE FABRICATOR.
- TO REPLACE A LATERAL BRACING ANGLE GUSSET PLATE, REMOVE EXISTING GUSSET PLATE, GRIND EXISTING WELDS ON GIRDER WEB AND STIFFENER SMOOTH, THEN FIELD WELD NEW GUSSET TO WEB AND STIFFENER USING A 1/4" FILLET WELD ON THE TOP AND BOTTOM OF THE PLATE, AS SHOWN IN THE TYPICAL REPLACEMENT GUSSET ATTACHMENT DETAIL ON SHEET 12.
- THE CONTRACTOR'S PROPOSED SEQUENCE OF REMOVAL AND REPLACEMENT OF CROSS FRAMES AND LATERAL BRACING SHALL BE REVIEWED BY A LICENSED PROFESSIONAL ENGINEER ENGAGED BY THE CONTRACTOR, TO ENSURE THAT REMOVAL AND REPLACEMENT OPERATIONS WILL NOT CAUSE THE GIRDERS TO BECOME UNSTABLE. A WRITTEN DESCRIPTION OF THE PROPOSED REMOVAL AND REPLACEMENT SEQUENCE, STAMPED BY A LICENSED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL COSTS INCURRED BY THE CONTRACTOR TO ENSURE THAT THE GIRDERS REMAIN STABLE DURING THE PROPOSED REMOVAL AND REPLACEMENT SEQUENCE SHALL BE SUBSIDIARY TO ITEM 506.60, "STRUCTURAL STEEL".
- ONLY ONE BOLT AT A TIME MAY BE REMOVED DURING THE REPLACEMENT OF CORRODED OR LOOSE BOLTS IN GIRDER WEB AND FLANGE SPLICES. THE REPLACEMENT BOLT SHALL BE INSTALLED AND TIGHTENED AS REQUIRED BY THE SPECIFICATIONS BEFORE THE NEXT BOLT IS REMOVED.
- UNLESS OTHERWISE NOTED, REPLACEMENT LATERAL BRACING ANGLES, GUSSET PLATES, AND CROSS FRAMES SHALL BE FABRICATED AS SHOWN IN THE ORIGINAL SHOP DRAWINGS, EXCEPT THAT ALL NOTES IN THE SHOP DRAWINGS RELATED TO PAINTING SHALL BE IGNORED.
- THE DIMENSIONS OF THE REPLACEMENT GUSSET PLATES AT REPAIR NUMBERS S25 AND S26 HAVE BEEN ADJUSTED TO ACCOMMODATE THE PROPOSED STIFFENER REPAIR PLATES. SEE REPAIR NUMBERS S25-S27 REPAIR DETAILS ON SHEET 12. TO REPLACE THE LATERAL BRACING ANGLE GUSSET PLATES, REMOVE EXISTING GUSSET PLATES, GRIND EXISTING WELDS ON GIRDER WEB SMOOTH, INSTALL STIFFENER REPAIR PLATES AS DESCRIBED IN NOTE 13, THEN FIELD WELD NEW GUSSETS TO WEB AND STIFFENER REPAIR PLATES USING A 1/4" FILLET WELD ON THE TOP AND BOTTOM OF THE PLATES.
- TO REPAIR THE WEB STIFFENER AT REPAIR NUMBER S27, GRIND SMOOTH THE EXISTING GUSSET PLATE WELDS, THEN FIELD WELD A STIFFENER REPAIR PLATE TO EACH SIDE OF THE STIFFENER, AS SHOWN IN THE REPAIR NUMBERS S25-S27 REPAIR DETAILS ON SHEET 12.
- THE CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGING THE EXISTING GIRDER WEBS AND STIFFENERS DURING REMOVAL OF EXISTING GUSSET PLATES. ANY DAMAGE TO THE GIRDERS CAUSED BY THE REMOVAL OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- ALL NEW STRUCTURAL STEEL SHALL BE INCLUDED IN ITEM 506.60 "STRUCTURAL STEEL". REMOVAL OF EXISTING LATERAL BRACING, GUSSET PLATES, CROSS FRAMES, AND BOLTS SHALL BE INCLUDED IN ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE".
- THE STRUCTURAL STEEL ON THE EXISTING BRIDGE IS PAINTED WITH A MATERIAL WHICH MAY CONTAIN LEAD. ALL STRUCTURAL STEEL REMOVED FROM THE BRIDGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF IT PROPERLY.

VANASSE HANGEN BRUSTLIN, INC. Bridge Sheet No. 11 Sheet 11 of 101

STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
Town Of HARTFORD	Bridge No. 11N & 11S
Highway No. I-89 NB & SB	Log Sta.
I-89 NB & SB OVER WHITE RIVER, VT 14 & NECR	
STRUCTURAL STEEL REPAIRS TABLE & NOTES	
Designed By T.S. BRYANT	Drawn By B.J. MASSE
Checked By S.M. HODGDON Date 9/98	Bridge Design Supervisor C.D. BAKER Date 9/98
PROJECT HARTFORD	PROJECT NO. IR 089-1(13)
VHB Cad Filename 50699SR1	