

VOLUME I
LOAD RATING REPORT
BASED ON THE 2008 IN-DEPTH INSPECTION

US – 50 over the Great Miami River
BR#: HAM-50-0376L
SFN: 3102521

OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PID # 79892



Inspected: October 6-10, 2008
Rating Report: June 2009 (Revised August 2009)

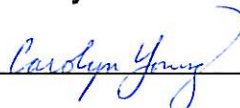


**LOAD RATING REPORT
of
BRIDGE NO. HAM-50-0376 L
SFN: 3102521**

HAMILTON COUNTY, OHIO

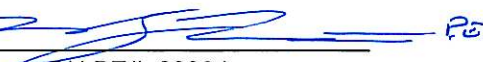
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Inspected on:

October 6, 2008 through October 10, 2008

Prepared for:

**OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 8**

Report Submitted June, 2009
Revised August, 2009

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Ohio Department of Transportation Bridge Load Rating Summary Table

Bridge Project No.: HAM-50-0376 L
Structure File Number: 3102521

Bridge Description	4 simple span Pratt Through Truss. Deck Members consist of rolled steel members. Truss Members consist of built up steel box sections and rolled beams.			
Work Details	As-Inspected Rating			
Spans (C/C Bearings)	191'-4" (Spans 1 and 4), 250'-0" (Spans 2 and 3)			
Bridge Plan Information	Original Plans 1958 Rehabilitation Plans 1989			
Material Strengths	Fy = 33 ksi			
Live Load Distribution (AASHTO 3.23.2)	LL Distribution for Stringers			1.273
Rating Method	Load Factor Rating			
Rating Software	LARS, STAAD.Pro 2007, Excel Workbooks			
Special Assumptions	See Attached Report			
Structure Rating Summary	Vehicle	Rating	Member	Location
	Inventory HS-20-44	39	Interior Stringer	Span 1 or 4
	Operating HS-20-44	64	Interior Stringer	Span 1 or 4
	Ohio Legal Loads %	185%	Interior Stringer	Span 1 or 4
	2F1 (Tons)	39	Interior Stringer	Span 1 or 4
	3F1 (Tons)	46	Interior Stringer	Span 1 or 4
	4F1 (Tons)	50	Interior Stringer	Span 1 or 4
	5C1 (Tons)	83	Interior Stringer	Span 1 or 4
	Truck Train	N/A	Interior Stringer	Span 1 or 4
Gusset Plate Rating Summary	Inventory HS-20-44	24	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	Operating HS-20-44	40	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	Ohio Legal Loads %	110%	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	2F1 (Tons)	56	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	3F1 (Tons)	56	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	4F1 (Tons)	57	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	5C1 (Tons)	62	Lower Chord	L ₄ or L ₆ (Span 2, 3)
	Truck Train	44	Lower Chord	L ₄ or L ₆ (Span 2, 3)
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Date	6/2/2009 (Revised 8/2009)			

TABLE OF CONTENTS

Volume I - Report

Introduction.....	1
Bridge Description	2
<u>Ratings</u>	
Stringer	3
Floorbeam.....	4
Truss	
Modeling Procedures and Assumptions.....	5
Truss Load Rating Summary	6
Gusset Plate	
Rating Assumptions	6
Gusset Plate Load Rating Summary.....	8
Rating Summary	8
Conclusions	9
Recommendations.....	10
 Appendix A: Truss Load Tables	
 Appendix B: Truss Rating Summary Tables	
 Appendix C: Gusset Plate Rating Summary Tables	
 Appendix D: Truss Member Section Loss Tables	
 Appendix E: Floorbeam Section Loss Table	
 Appendix F: Gusset Plate Section Loss Tables	
 Appendix G: CD of Electronic Files	

Volume II – Calculations

INTRODUCTION

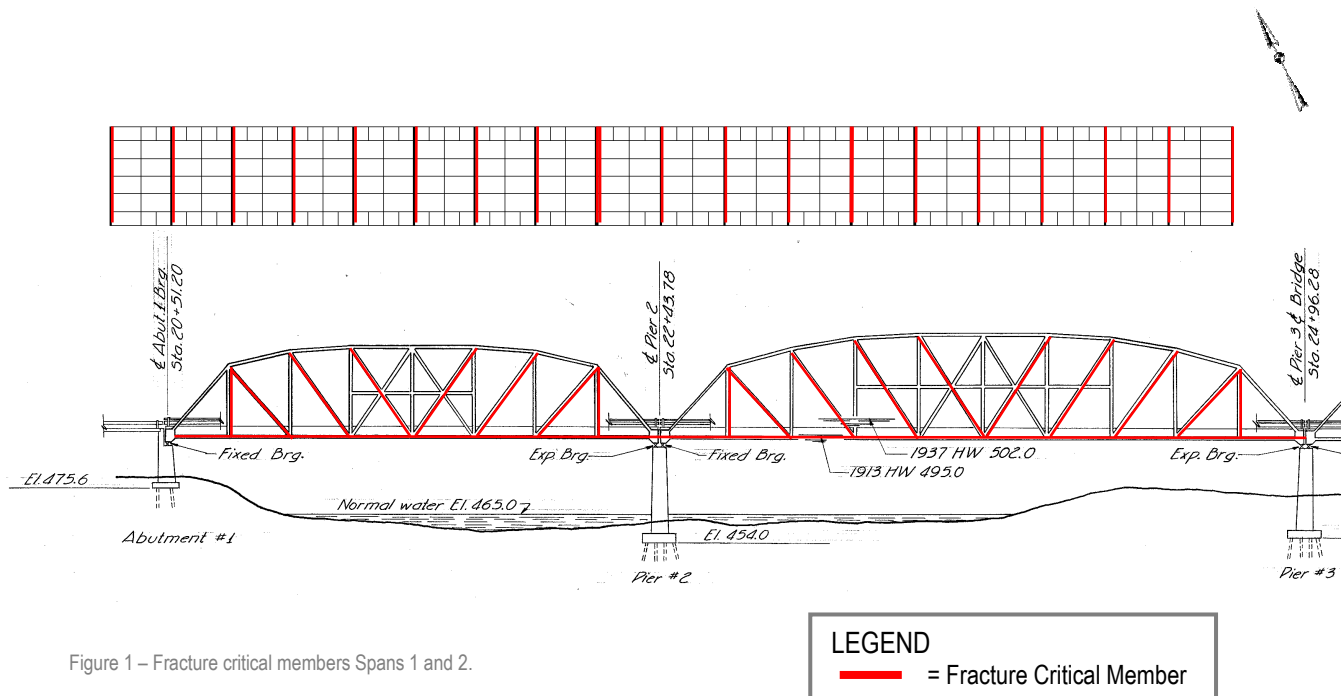
The Ohio Department of Transportation (ODOT) has identified the need to perform analysis and load rating of the deck members, truss members, and gusset plates for the fracture critical structure HAM-50-0376L (see **Location Map**). These components were analyzed under As-Inspected conditions with current dead loads, as well as As-Built conditions for comparison. The Load Ratings were performed utilizing Load Factored Ratings per:

- ODOT *Bridge Design Manual, 2004 Edition*;
- AASHTO *Manual for the Condition Evaluation of Bridges (MCEB), 2nd Edition*;
- AASHTO *Standard Specifications for Highway Bridges, 17th Edition*;
- FHWA *Load Rating Guidance and Examples for Bolted and Riveted Gusset Plates In Truss Bridges*, February 2009 Edition



Location Map

A traditional 2-D truss analysis was performed assuming pinned truss connections. The gusset plates were rated based upon the truss member maximum and minimum axial loads. The truss members', stringers' and floorbeams' maximum live load forces, shears, and rating factors were generated with Load Factor Analysis utilizing LARS Version 3.57 software.



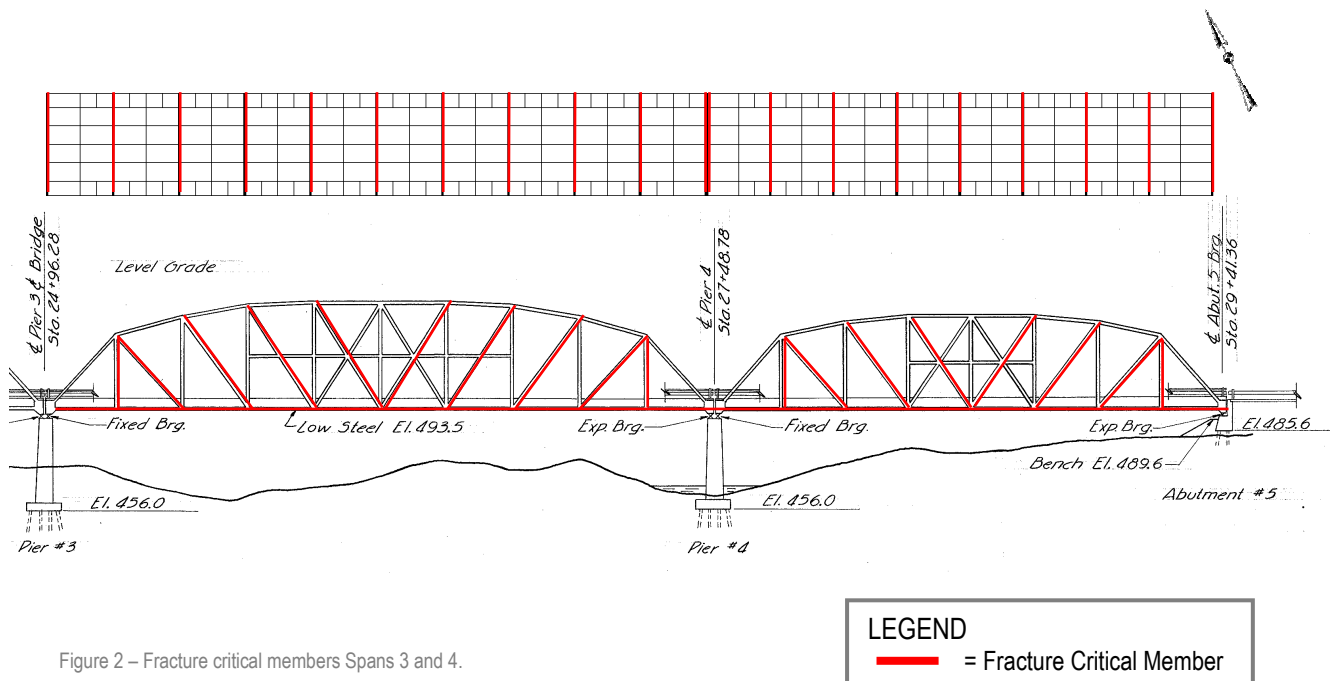
BRIDGE DESCRIPTION

The HAM-50-0376L Bridge carries two lanes of westbound traffic on U.S. Route 50 over the Great Miami River in Hamilton County, Ohio. The bridge was built in 1959. In 1992, the bridge received a new deck; stringers with advanced section loss were strengthened; minor steel repairs were performed; guardrails were brought up to code; and the structural steel was painted.

The structure is comprised of four simply supported truss spans – two 191'4", 8-panel spans at the ends (Spans 1 and 4) and two 250', 10-panel spans in the center (Spans 2 and 3). The trusses are modified camelback Pratt Trusses whose fracture critical members are highlighted in **RED** (see Figures 1 and 2).

The lower chords of the trusses are constructed from 18" double open web sections with intermediate diaphragms. The upper chord and end posts are built-up riveted box sections composed of a top cover plate, channels, and bottom lacing. The diagonals and verticals are rolled wide flange sections. The stringers are rolled wide flange members that frame into and over the floorbeams and act as continuous members. The floorbeams are rolled wide flange beams and are connected to the lower gusset plates by a riveted shear connection.

The HAM-50-0376 Bridge is on a west by northwest alignment. The nomenclature of this bridge will follow the 2008 In-Depth Inspection Report for consistency in accordance with current ODOT standards. All compass directions will be based upon this relative alignment.



RATINGS

Stringers

The stringers of Spans 1 and 4 are the original stringers and consist of rolled 21WF62 beams spaced at 7'-0" on center (see Figure 3). The stringers of Spans 2 and 3 are the original stringers and consist of two rolled sections, 21WF73 and 21WF62, spaced at 7'-0" on center (see Figures 3 and 4). Five locations were strengthened in the 1992 rehabilitation (see Figure 4).

The stringers are framed into the floorbeams (spaced at 23'-11") with a welded top cover plate over the floorbeam acting as continuous members within each span (see Figure 5). The stringers were modeled as continuous noncomposite members. The strengthened stringers were modeled with original stringer properties. LARS was used to generate the maximum shears, maximum moments, and rating factors for the HS-20-44 and Ohio Legal Loads (see Figure 6).

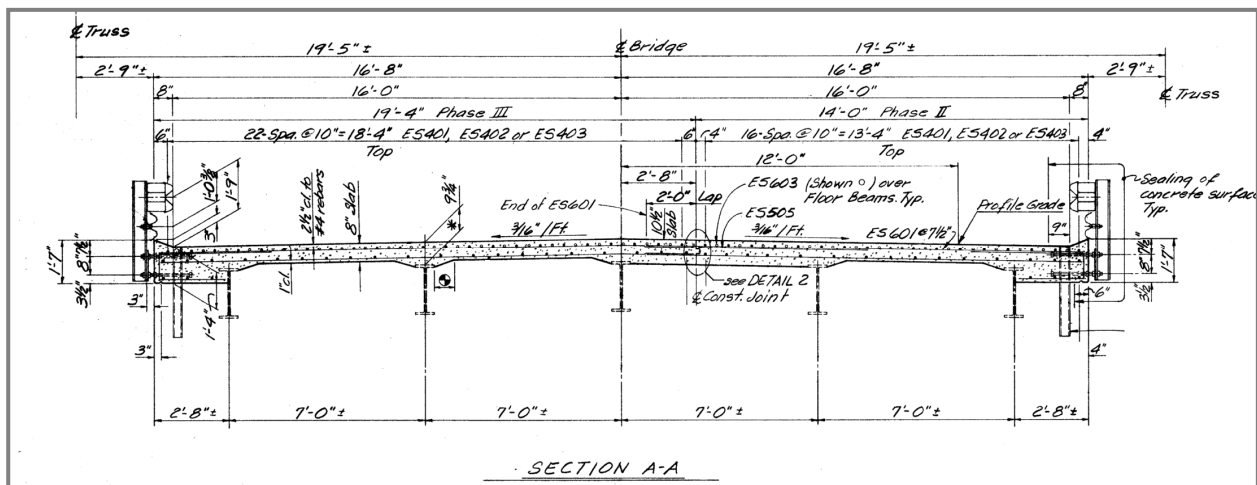


Figure 3 - Typical cross section (floorbeam, lower chord, diagonals, and sway braces not shown).

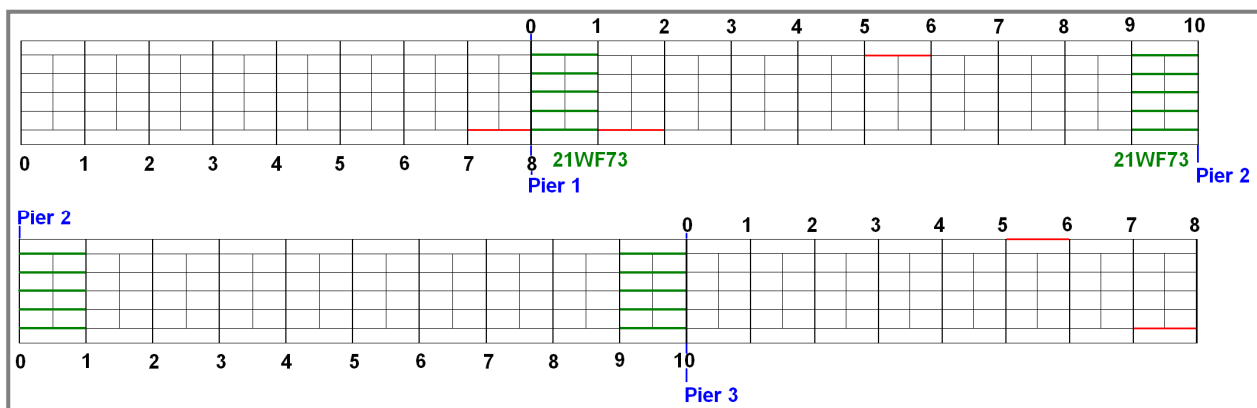


Figure 4 – Framing plan with strengthened stringers in red, 21WF73 stringers are highlighted green, and remaining black stringers are 21WF62 (Spans 1 and 2 above Spans 3 and 4)

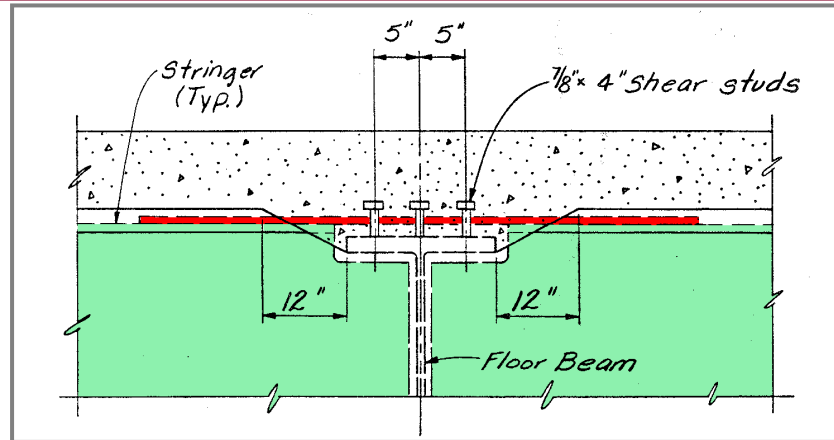


Figure 5 – Stringer (green) made continuous by cover plate (red) over the floorbeam.

The stringers rated above the required rating factor. Section loss was noted on isolated exterior stringers, however the interior stringer rating factors were lower than the as-inspected rating factors for the exterior stringers with loss. The controlling stringer was the interior stringer of Spans 1 or 4 with a HS-20 Inventory Rating of 1.07 and an Operating Rating of 1.79.

As-Built and As-Inspected Stringer Rating Factors									
Member Type	Span	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating
21WF62	1 or 4	Interior	1.07	1.79	2.62	1.99	1.86	2.08	N/A
21WF73/21WF62	2 or 3	Interior	1.14	1.90	2.92	2.19	2.04	2.29	2.17

Figure 6 – Summary Table of rating factors for different stringer types.

Floorbeams

The floorbeams of Spans 1 and 4 are the original floorbeams and consist of rolled 36WF260 beams and 36WF280 beams and are 37'-9 3/4" long. The floorbeams of Spans 2 and 3 are the original floorbeams and consist of rolled 36WF280 beams and 36WF300 beams and are 37'-9 5/8" long. The floorbeams are spaced at 23'-11" on center and frame into the lower gusset plates (see Figures 7 and 8). During the 1992 rehabilitation the floorbeams were retrofitted with shear studs to allow composite action. The maximum moments and load rating factors associated with the moments for the HS-20-44 and Ohio Legal Loads were calculated using LARS (see Figures 9 and 10). The maximum shears and load rating factors associated with the shears for the HS-20-44 and Ohio Legal Loads were calculated by hand.

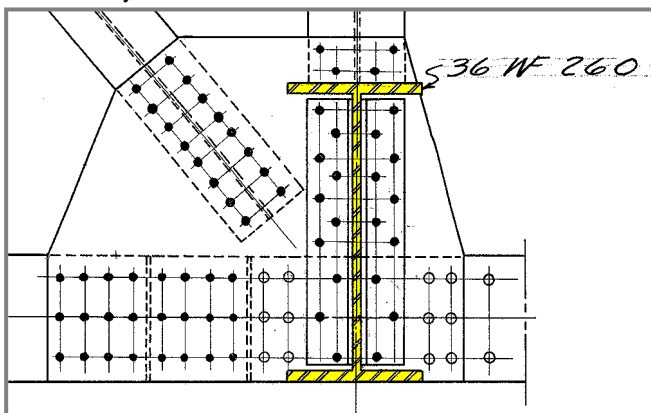


Figure 7 – Example of floorbeam end framed into gusset plate (floorbeam highlighted in yellow).

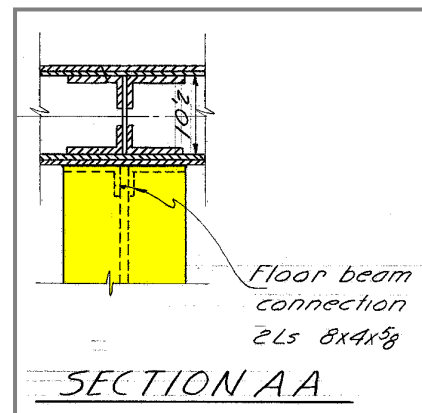


Figure 8 – Section looking down upon gusset and floorbeam connection (floorbeam highlighted yellow)

As-Built Floorbeam Rating Factors									
Member Type	Span	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating
36WF260	1 or 4	End	1.84	3.07	5.39	3.85	3.67	3.96	N/A
36WF280	1 or 4	Interior	1.41	2.36	4.28	3.00	2.80	3.15	N/A
36WF260	1 or 4	Interior	1.45	2.42	4.25	3.02	2.87	3.20	N/A
36WF280	2 or 3	End	1.96	3.27	5.80	4.13	3.90	4.24	4.24
36WF300	2 or 3	Interior	1.49	2.49	4.57	3.19	2.97	3.34	3.34
36WF280	2 or 3	Interior	1.50	2.50	4.44	3.14	2.97	3.33	3.33

Figure 9 – Summary Table of as built rating levels for different floorbeam types

As-Inspected Floorbeam Rating Factors									
Member Type	Span	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating
36WF260	4	L0 (End)	1.46	2.42	4.25	3.04	2.89	3.12	N/A
36WF280	4	L1 (Interior)	1.38	2.30	4.18	2.92	2.74	3.07	N/A
36WF260	4	L3 (Interior)	1.26	2.09	3.94	2.67	2.40	2.74	N/A
36WF280	2	L10 (End)	1.65	2.76	4.88	3.47	3.29	3.57	3.57
36WF300	3	L1 (Interior)	1.46	2.44	4.48	3.13	2.91	3.28	3.28
36WF280	2	L6 (Interior)	1.38	2.30	4.08	2.89	2.73	3.06	3.06

Figure 10 – Summary Table of worst rating levels for different floorbeam types

The rating factors for the floorbeams were calculated using the maximum moment at the midspan of the floorbeam and maximum shear at the end of the beam. The floorbeams were rated conservatively by applying sections with loss to the moment and shear calculations even if the section was not located exactly at the maximum moment or shear location. All of the floorbeams rated adequately.

Truss

Modeling Procedures and Assumptions

Dead loads, excluding self weight of the stringers and floorbeams, were calculated by hand and input into the LARS model. The LARS software calculated the self weight of the stringers and floorbeams based on input sizes. STAAD was used to generate the dead load reactions on the floorbeams at the stringer locations. The floorbeam reactions at the panel points from the dead loads were calculated by hand and input into the model. The LARS software was unable to correctly analyze the center verticals (U4-L4 of Spans 1 and 4 and U5-L5 of Spans 2 and 3) under Ohio Legal Loads. For these verticals, the live loads were calculated by hand using the influence line generated by LARS, the dead load and capacity was taken from LARS output, and the rating factors were calculated by hand.

Truss Load Rating Summary

Based upon the LARS analysis the following controlling Load Ratings were developed (see Figures 11 and 12).

As-Built Truss Member Rating Factors										
Member Type	Span	Truss	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
				Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	2 or 3	North/South	U4-U5/U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
Lower Chord	2 or 3	North/South	L2-L3/L7-L8	2.27	3.78	12.55	8.26	7.11	5.25	3.66
Diagonal	2 or 3	North/South	U3-L4/U7-L6	1.88	3.33	8.94	5.91	5.10	3.91	3.30
Vertical	2 or 3	North/South	U1-L1/U9-L9	1.70	2.84	5.41	3.66	3.29	3.75	3.75

Figure 11 – As-Built Load Ratings for HAM-50-0376L.

As-Inspected Truss Members Rating Factors										
Member Type	Span	Truss	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
				Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	2 or 3	North	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
Lower Chord	1	North	L0-L1	2.03	3.38	9.11	6.01	5.18	3.92	N/A
Diagonal	2	North	U9-L8	1.62	2.70	8.73	5.74	4.94	3.66	2.72
Vertical	3	North	U9-L9	1.19	1.99	3.80	2.56	2.31	2.63	2.63

Figure 12 – As-Inspected Load Ratings for HAM-50-0376L.

Gusset Plates

Rating Assumptions

The gusset plates were rated on a modified version of the Ohio Department of Transportation (ODOT) provided Load Factor Rating Gusset Plate Excel Workbook. The forces used in the rating are the dead load forces and maximum and minimum live load forces used in the truss member rating. Below are list of assumptions made in the rating. See Figure 13 for an overview of how measurements were taken on the gusset plates.

- Shop drawings for HAM-50-0376L were unavailable. The gusset plates were drafted in AutoCAD using a combination of existing plans, field measurements, and engineering judgment. Material of rivets was not known so the FHWA recommended $\Phi F = 21$ ksi for rivets of unknown origin constructed after 1936 was utilized.
- An additional 1/8" was added to the 7/8" diameter bolt/rivets detailed on the plans (1/16" more than the 15/16" diameter holes), for a total loss of 1" Diameter per rivet/bolt (per AASHTO 10.16.14.6).
- Upper Chord Gusset Plates that have non-planar chord members have the "Horizontal Shear Plane" aligned along the chord member that has the longest edge distance in the gusset plate.
- A refined analysis was performed for splice plates on the upper chord and lower chord members at the gusset plates. The splice plates are located on the far side of the member from the gusset plate which places the rivets in double shear. Therefore the capacity can be doubled according to AASHTO LFD 10.57.3.1. This was achieved by doubling the number of rivets in members with splice plates. The splice plates also increase the amount of steel resisting member block shear, tension yield, and buckling. These

strengthening modifications were achieved by increasing the percent thickness modifications for the appropriate checks.

The changes are as follows:

- a. The total number of connectors between the gusset plate and left and right chords was doubled at:
 - i. Spans 1 and 4 - L2, L3, L5, and L6
 - ii. Spans 2 and 3 - U2, U3, U7, U8, L2, L3, L4, L6, L7, and L8
 - b. The total number of connectors for the end post was doubled at:
 - i. Spans 2 and 3 - U1 and U9
 - c. The percent remaining plate thickness corresponding to the Tensile width and Shear length was increased for the left and right chords at:
 - i. Spans 1 and 4 - L2, L3, L5, and L6
 - ii. Spans 2 and 3 - L2, L3, L4, L6, L7, and L8
 - d. The percent remaining plate thickness corresponding to the Whitmore width was increased for the left chord at:
 - i. Spans 1 and 4 - L3
 - ii. Spans 2 and 3 - L3 and L4
 - e. The percent remaining plate thickness corresponding to the Whitmore width was increased for the right chord at:
 - i. Spans 1 and 4 - L5
 - ii. Spans 2 and 3 - L6 and L7
 - f. The percent remaining plate thickness corresponding to the Global Horizontal Shear Width was increased at the upper gusset plate endpost locations for all four spans
- E. Below is brief overview of modifications to the ODOT spreadsheet:
- a. Allows vertical member to be non-perpendicular to the chord
 - b. As-Inspected Losses columns were added to allow for individual losses for Tensile, Whitmore, and Shear regions for each Gusset Plate

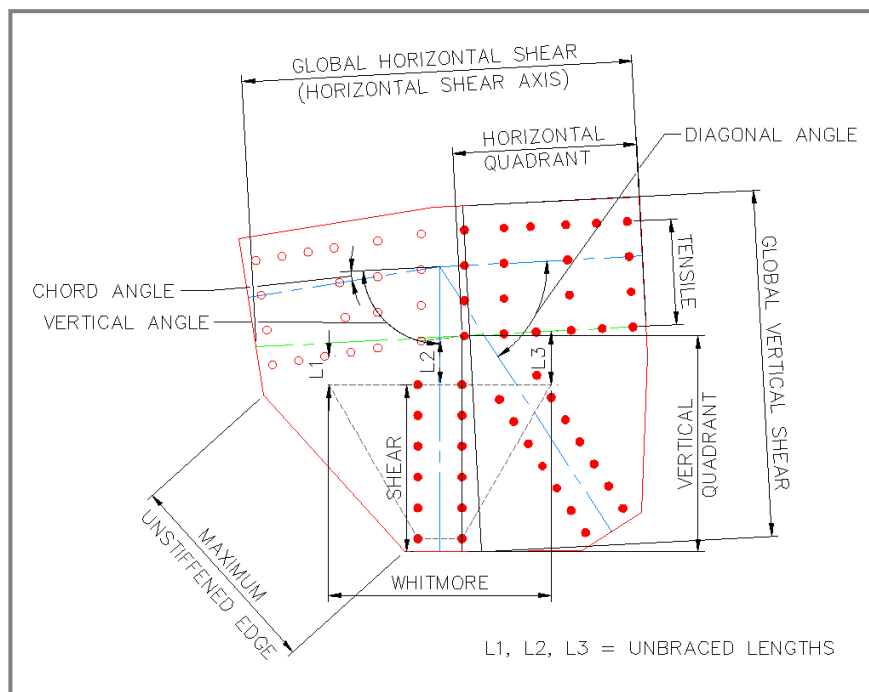


Figure 13 – Example of gusset plate measurements used in rating sheet.

Gusset Plate Rating Summary

From the above assumptions the following As-Inspected Rating Factors were developed (see Figure 14). No significant losses were noted on the upper gusset plates, therefore the as-inspected and as-built ratings are the same. Losses were noted on the lower gusset plates (see Appendix F for a complete summary), however the lowest rating factor was unaffected, so it is the lowest for both the as-built and as-inspected cases.

As-Inspected Gusset Plate Rating Factors										
Member Type	Span	Truss	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
				Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Gusset Plate	1 or 4	North/South	U1/U7	1.13	1.88	3.83	2.59	2.34	2.40	N/A
Lower Gusset Plate	2 or 3	North/ South	L4/L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10

Figure 14 – As-Inspected controlling load rating factors for gusset plates.

The lower gusset plates at L4 and L6 of Spans 2 and 3 have rating factors below the inventory level of 1.0 as shown in **RED**. This is occurring because the rivets connecting the chord, L3-L4 at L4 and L6-L7 at L6, do not have adequate rivet shear capacity. This is either caused by not meeting the minimum rivet count requirement or an overly conservative assumption on the allowable rivet capacity. The plans show a total of 36 rivets at the chord, this number was verified by a field inspection photograph. The number of rivets was doubled to account for the splice plate, therefore the total number of rivets becomes 72. If the current rivet capacity ($\Phi F = 21 \text{ ksi}$) is utilized then the required number of rivets is 83 rivets for HS-20 Inventory Loading,.

RATING SUMMARY

The rating factor and rating tonnage summaries are shown in Figures 15 and 16. They are broken into two groups, the as-built conditions and the as-inspected conditions. The controlling rating factor for the bridge is the lower gusset plate at L4 or L6 of Spans 2 or 3 which has an As-Inspected Inventory Rating of **0.67** and HS-20 Operating Rating of 1.12.

As-Built Rating Factors										
Member Type	Member ID	Span	HS-20-44		2F1	3F1	4F1	5C1	Truck Train	
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating	Operating
Stringer	21WF62 Interior	1 or 4	1.07	1.79	2.62	1.99	1.86	2.08	N/A	
Floorbeam	36WF280 Interior	1 or 4	1.40	2.34	4.25	2.97	2.78	3.12	N/A	
Upper Chord	U4-U5/U5-U6	2 or 3	1.62	2.70	9.07	5.95	5.12	3.84	2.68	
Lower Chord	L2-L3/L7-L8	2 or 3	2.27	3.78	12.55	8.26	7.11	5.25	3.66	
Diagonal	U3-L4/U7-L6	2 or 3	1.88	3.33	8.94	5.91	5.10	3.91	3.30	
Vertical	U1-L1/U9-L9	2 or 3	1.70	2.84	5.41	3.66	3.29	3.75	3.75	
Upper Gusset Plate	U1/U7	1 or 4	1.13	1.88	3.83	2.59	2.34	2.40	N/A	
Lower Gusset Plate	L4/L6	2 or 3	0.67	1.12	3.72	2.45	2.10	1.55	1.10	

As-Built Rating Summary (Tons)										
Member Type	Member ID	Span	HS-20-44 (36 Tons)		2F1 (15 Tons)	3F1 (23 Tons)	4F1 (27 Tons)	5C1 (40 Tons)	Truck Train (40 Tons)	
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating	Operating
Stringer	21WF62 Interior	1 or 4	39	64	39	46	50	83	N/A	
Floorbeam	36WF280 Interior	1 or 4	50	84	64	68	75	125	N/A	
Upper Chord	U4-U5/U5-U6	2 or 3	58	97	136	137	138	154	107	
Lower Chord	L2-L3/L7-L8	2 or 3	82	136	188	190	192	210	146	
Diagonal	U3-L4/U7-L6	2 or 3	68	120	134	136	138	156	132	
Vertical	U1-L1/U9-L9	2 or 3	61	102	81	84	89	150	150	
Upper Gusset Plate	U1/U7	1 or 4	41	68	57	60	63	96	N/A	
Lower Gusset Plate	L4/L6	2 or 3	24	40	56	56	57	62	44	

Figure 15 – As-Inspected Rating Factors and Tonnage for HAM-50-0376 L

As-Inspected Rating Factors									
Member Type	Member ID	Span	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Stringer	Interior	1	1.07	1.79	2.62	1.99	1.86	2.08	N/A
Floorbeam	L3 (Interior)	4	1.26	2.09	3.94	2.67	2.40	2.74	N/A
Upper Chord	U4-U5 (North Truss)	2	1.62	2.70	9.07	5.95	5.12	3.84	2.68
Lower Chord	L0-L1 (North Truss)	1	2.03	3.38	9.11	6.01	5.18	3.92	N/A
Diagonal	U9-L8 (North Truss)	2	1.62	2.70	8.73	5.74	4.94	3.66	2.72
Vertical	U9-L9 (North Truss)	3	1.19	1.99	3.80	2.56	2.31	2.63	2.63
Upper Gusset Plate	U1 (North Truss)	1	1.13	1.88	3.83	2.59	2.34	2.40	N/A
Lower Gusset Plate	L4 (North Truss)	2	0.67	1.12	3.72	2.45	2.10	1.55	1.10

As-Inspected Summary (Tons)									
Member Type	Member ID	Span	HS-20-44 (36 Tons)		2F1 (15 Tons)	3F1 (23 Tons)	4F1 (27 Tons)	5C1 (40 Tons)	Truck Train (40 Tons)
			Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Stringer	Interior	1	39	64	39	46	50	83	N/A
Floorbeam	L3 (Interior)	4	45	75	59	61	65	110	N/A
Upper Chord	U4-U5 (North Truss)	2	58	97	136	137	138	154	107
Lower Chord	L0-L1 (North Truss)	1	73	122	137	138	140	157	N/A
Diagonal	U9-L8 (North Truss)	2	58	97	131	132	133	146	109
Vertical	U9-L9 (North Truss)	3	43	72	57	59	62	105	105
Upper Gusset Plate	U1 (North Truss)	1	41	68	57	60	63	96	N/A
Lower Gusset Plate	L4 (North Truss)	2	24	40	56	56	57	62	44

Figure 16 – As Built Rating Factors and As-Built Tonnage for HAM-50-0376L.

CONCLUSIONS

Based upon the original and rehabilitation plans as well as the findings from the in-depth inspection of Bridge HAM-50-0376L, load rating values were generated for the truss members, gusset plates, stringers, and floorbeams. These results indicate that the critical elements are the lower gusset plates L4 and L6, located on either side of the center panel point, in Spans 2 and 3.

These low ratings at the lower left chord connection to the gusset plate at L4 and at the lower right chord connection to the gusset at L6 are a result of either an inadequate number of rivets or an overly conservative assumption of the allowable rivet capacity. The current rivet capacity is based upon an unknown material built after 1936 since the plans do not specify and the location of the shop drawings is unknown. This over stress condition occurs at L₄ and L₆ in Spans 2 and 3 on the North and South trusses (see Figure 17).

Inadequate Rating Gusset Plate Rating Factors												
Member Type	Span	Truss	Member ID	AB*	AI*	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
						Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Lower	2 or 3	North/ South	L4/L6	X	X	0.67	1.12	3.72	2.45	2.10	1.55	1.10

*AB= As-Built, AI= As-Inspected

Figure 17 – Gusset plates with inadequate rating factors for HAM-50-0376L.

The rivet strength utilized is the minimum specified by the FHWA guidelines ($\phi F=21$ ksi). If a material testing program showed that the $\phi F \geq 23.27$ ksi, then the minimum rivet count would have adequate strength to raise the Operative Level, for the Ohio Legal Loads, to 150% (see Figure 18).

Gusset Plate Rating Factors (Rivets with $\phi F=23.27$ ksi)												
Member Type	Span	Truss	Member ID	AB*	AI*	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
						Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Lower	2 or 3	North/ South	L4/L6	X	X	0.90	1.51	5.03	3.32	2.85	2.10	1.50

*AB= As-Built, AI= As-Inspected

Figure 18 – Gusset plate rating with increased rivet strength.

The stringers and floorbeams were found to have adequate rating factors for all of the load cases and both the as built and as inspected conditions.

The truss members were found to have adequate rating factors for all of the load cases and both the as built and as inspected conditions.

RECOMMENDATIONS

We present our recommendations for HAM-50-0376 L in the following four categories:

- Priority Repairs:**
 (Within 1 Year Period) Work which should be performed as soon as possible to address deficiencies which affect the capacity of the structure or public safety.
- Rehabilitation/Evaluation:**
 (Within 5 Year Period) Recommendations for large-scale deficiencies which are extensive in nature and require engineering analysis.
- Monitoring:**
 (As Recommended) Regular field observation of deficiencies which are not currently in need of repair, but will require corrective action if deterioration continues.

Priority Repairs: None

Rehabilitation/Evaluation:

Alternative I - Perform a material testing program on the rivets to assess strength of existing rivets. Re-analyze gusset plates based upon material test results.

Alternative II - Replace select existing rivets based upon the analysis with high strength steel bolts (ASTM 490) to ensure adequate capacity.

Monitoring: (12 month cycle) None

APPENDIX A

TRUSS LOAD TABLES

Spans 1 and 4 Truss Member Unfactored Axial Loads (kips)												
Member Type	Member ID	Dead Load	HS-20-44		2F-1		3F-1		4F-1		5C-1	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Upper chord	U1-U2	-307	0	-129	0	-48	0	-72	0	-84	0	-110
	U2-U3	-356	0	-150	0	-55	0	-83	0	-97	0	-127
	U3-U4	-378	0	-159	0	-58	0	-89	0	-103	0	-132
	U4-U5	-378	0	-159	0	-58	0	-89	0	-103	0	-132
	U5-U6	-356	0	-150	0	-55	0	-83	0	-97	0	-127
	U6-U7	-307	0	-129	0	-48	0	-72	0	-83	0	-110
Lower Chord	L0-L1	211	87	0	32	0	49	0	57	0	75	0
	L1-L2	211	87	0	32	0	49	0	57	0	75	0
	L2-L3	299	126	0	47	0	70	0	81	0	108	0
	L3-L4	355	149	0	55	0	83	0	97	0	126	0
	L4-L5	355	149	0	55	0	83	0	97	0	126	0
	L5-L6	299	126	0	47	0	70	0	81	0	108	0
	L6-L7	211	87	0	32	0	49	0	47	0	75	0
	L7-L8	211	87	0	32	0	49	0	57	0	75	0
Diagonals	U1-L0	-324	0	-148	0	-50	0	-75	0	-88	0	-116
	U1-L2	137	78	-24	30	-14	45	-19	52	-20	67	-16
	U2-L3	95	68	-36	29	-17	44	-26	50	-29	63	-25
	U3-L4	41	61	0	20	0	31	0	35	0	38	0
	U4-L3	0	45	0	27	0	41	0	47	0	56	0
	U4-L5	0	45	0	27	0	41	0	47	0	56	0
	U5-L4	41	61	0	20	0	31	0	35	0	38	0
	U6-L5	95	68	-36	29	-17	44	-26	50	-29	63	-25
	U7-L6	137	78	-24	30	-14	45	-19	52	-20	67	-16
	U7-L8	-324	0	-148	0	-50	0	-75	0	-88	0	-116
Verticals	U1-L1	71	80	0	42	0	62	0	69	0	61	0
	U2-L2	-43	45	-44	22	-19	32	-29	36	-33	32	-41
	U3-L3	-14	46	-43	21	-19	32	-29	36	-33	39	-39
	U4-L4	-6	50	-37	22	-17	34	-25	39	-29	46	-31
	U5-L5	-14	46	-43	21	-19	32	-29	36	-33	39	-39
	U6-L6	-43	45	-48	22	-19	32	-29	36	-33	32	-41
	U7-L7	71	80	0	42	0	62	0	69	0	61	0

Spans 2 and 3
Truss Member Unfactored Axial Loads (kips)

Member Type	Member ID	Dead Load	HS-20-44		2F-1		3F-1		4F-1		5C-1		Truck Train	
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Upper chord	U1-U2	-428	0	-168	0	-51	0	-77	0	-90	0	-121	0	-174
	U2-U3	-492	0	-194	0	-58	0	-88	0	-103	0	-140	0	-196
	U3-U4	-537	0	-212	0	-63	0	-96	0	-112	0	-151	0	-214
	U4-U5	-558	0	-220	0	-66	0	-100	0	-116	0	-155	0	-222
	U5-U6	-558	0	-220	0	-66	0	-100	0	-116	0	-155	0	-222
	U6-U7	-537	0	-212	0	-63	0	-96	0	-112	0	-151	0	-214
	U7-U8	-492	0	-194	0	-58	0	-88	0	-103	0	-140	0	-196
	U8-U9	-428	0	-168	0	-51	0	-77	0	-90	0	-121	0	-174
Lower Chord	L0-L1	290	113	0	34	0	52	0	60	0	83	0	121	0
	L1-L2	290	113	0	34	0	52	0	60	0	83	0	121	0
	L2-L3	413	163	0	49	0	74	0	86	0	117	0	168	0
	L3-L4	486	192	0	58	0	87	0	102	0	138	0	193	0
	L4-L5	536	212	0	63	0	96	0	112	0	151	0	214	0
	L5-L6	536	212	0	63	0	96	0	112	0	151	0	214	0
	L6-L7	486	192	0	58	0	87	0	102	0	138	0	193	0
	L7-L8	413	163	0	49	0	74	0	86	0	117	0	168	0
	L8-L9	290	113	0	34	0	52	0	60	0	83	0	121	0
	L9-L10	290	113	0	34	0	52	0	60	0	83	0	121	0
Diagonals	U1-L0	-436	0	-184	28	-15	43	-21	50	-22	68	-18	91	-17
	U1-L2	185	92	-26	26	-19	39	-28	45	-32	60	-28	76	-29
	U2-L3	124	76	-40	27	-19	41	-29	47	-33	62	-36	73	-37
	U3-L4	93	73	-42	26	0	39	0	45	0	57	0	63	0
	U4-L5	42	63	0	21	0	32	0	36	0	44	0	47	0
	U5-L4	0	47	0	0	-51	0	-78	0	-91	0	-124	0	-181
	U5-L6	0	47	0	0	-51	0	-78	0	-91	0	-124	0	-181
	U6-L5	42	63	0	21	0	32	0	36	0	44	0	47	0
	U7-L6	93	73	-42	26	0	39	0	45	0	57	0	63	0
	U8-L7	124	76	-40	27	-19	41	-29	47	-33	62	-36	73	-37
Verticals	U9-L8	185	92	-26	26	-19	39	-28	45	-32	60	-28	76	-29
	U9-L10	-436	0	-184	28	-15	43	-21	50	-22	68	-18	91	-17
	U1-L1	70	81	0	42	0	63	0	70	0	61	0	61	0
	U2-L2	-75	48	-54	23	-19	34	-28	38	-33	35	-44	35	-55
	U3-L3	-36	51	-48	23	-18	35	-27	40	-32	44	-41	45	-49
	U4-L4	-14	48	-46	21	-19	32	-29	37	-33	45	-42	48	-46
	U5-L5	-7	53	-40	22	-18	33	-27	38	-32	49	-37	49	-37
	U6-L6	-14	48	-46	21	-19	32	-29	37	-33	45	-42	48	-46
	U7-L7	-36	51	-48	23	-18	35	-27	40	-32	44	-41	45	-49
	U8-L8	-75	48	-54	23	-19	34	-28	38	-33	35	-44	35	-55
	U9-L9	70	81	0	42	0	63	0	70	0	61	0	61	0

APPENDIX B

TRUSS RATING SUMMARY TABLES

HAM-50-0376L Rating Factor Summary Table As-Built Span 1 or 4							
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1
		Inventory	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.88	3.13	8.47	5.59	4.83	3.66
	U2-U3	1.75	2.91	7.91	5.24	4.49	3.44
	U3-U4	1.81	3.01	8.25	5.42	4.68	3.64
	U4-U5	1.81	3.01	8.25	5.42	4.68	3.64
	U5-U6	1.75	2.91	7.91	5.24	4.49	3.44
	U6-U7	1.88	3.13	8.47	5.59	4.83	3.66
Lower Chord	L0-L1	2.48	4.14	11.15	7.36	6.34	4.79
	L1-L2	2.48	4.14	11.15	7.36	6.34	4.79
	L2-L3	2.43	4.05	10.95	7.24	6.25	4.74
	L3-L4	2.4	4	10.86	7.19	6.17	4.73
	L4-L5	2.4	4	10.86	7.19	6.17	4.73
	L5-L6	2.43	4.05	10.95	7.24	6.25	4.74
	L6-L7	2.48	4.14	11.15	7.36	6.34	4.79
	L7-L8	2.48	4.14	11.15	7.36	6.34	4.79
Diagonals	U1-L0	2	3.33	9.87	6.51	5.61	4.24
	U1-L2	2.28	3.8	9.99	6.6	5.7	4.4
	U2-L3	2.64	4.4	10.41	6.9	5.98	4.76
	U3-L4	2.23	3.71	8.33	5.54	4.83	4.04
	U4-L3	3.56	5.94	13	8.71	7.64	7.02
	U4-L5	3.56	5.94	13	8.71	7.64	7.02
	U5-L4	2.23	3.71	8.33	5.54	4.83	4.04
	U6-L5	2.64	4.4	10.41	6.9	5.98	4.76
	U7-L6	2.28	3.8	9.99	6.6	5.7	4.4
	U7-L8	2	3.33	9.87	6.51	5.61	4.24
Verticals	U1-L1	1.72	2.87	5.4	3.65	3.3	3.75
	U2-L2	2.86	4.77	11.1	7.35	6.37	5.07
	U3-L3	1.72	2.86	6.42	4.27	3.72	3.11
	U4-L4	2.11	3.51	7.7	5.2	4.5	4.2
	U5-L5	1.72	2.86	6.42	4.27	3.72	3.11
	U6-L6	2.86	4.77	11.1	7.35	6.37	5.07
	U7-L7	1.72	2.87	5.4	3.65	3.3	3.75

HAM-50-0376L Rating Factor Summary Table As-Built Span 2 or 3								
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
		Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.82	3.03	10.05	6.61	5.69	4.20	2.93
	U2-U3	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U3-U4	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U6-U7	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U7-U8	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U8-U9	1.82	3.03	10.05	6.61	5.69	4.20	2.93
Lower Chord	L0-L1	2.39	3.99	13.22	8.69	7.47	5.47	3.75
	L1-L2	2.39	3.99	13.22	8.69	7.47	5.47	3.75
	L2-L3	2.27	3.78	12.55	8.26	7.11	5.25	3.66
	L3-L4	2.41	4.03	13.40	8.84	7.59	5.59	3.99
	L4-L5	2.37	3.94	13.18	8.68	7.44	5.53	3.90
	L5-L6	2.37	3.94	13.18	8.68	7.44	5.53	3.90
	L6-L7	2.41	4.03	13.40	8.84	7.59	5.59	3.99
	L7-L8	2.27	3.78	12.55	8.26	7.11	5.25	3.66
	L8-L9	2.39	3.99	13.22	8.69	7.47	5.47	3.75
	L9-L10	2.39	3.99	13.22	8.69	7.47	5.47	3.75
Diagonals	U1-L0	2.16	3.59	12.89	8.48	7.28	5.34	3.65
	U1-L2	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U2-L3	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U3-L4	1.88	3.33	8.94	5.91	5.10	3.91	3.30
	U4-L5	2.18	3.63	8.77	5.80	5.03	3.97	3.64
	U5-L4	3.42	5.70	12.82	8.52	7.41	6.14	5.69
	U5-L6	3.42	5.70	12.82	8.52	7.41	6.14	5.69
	U6-L5	2.18	3.63	8.77	5.80	5.03	3.97	3.64
	U7-L6	1.88	3.33	8.94	5.91	5.10	3.91	3.30
	U8-L7	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U9-L8	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U9-L10	2.16	3.59	12.89	8.48	7.28	5.34	3.65
Verticals	U1-L1	1.70	2.84	5.41	3.66	3.29	3.75	3.75
	U2-L2	1.81	3.02	8.78	5.79	4.99	3.75	2.98
	U3-L3	1.72	2.87	7.59	5.01	4.32	3.32	2.80
	U4-L4	2.01	3.36	8.02	5.31	4.60	3.63	3.33
	U5-L5	2.40	4.00	9.00	6.00	5.00	4.30	4.30
	U6-L6	2.01	3.36	8.02	5.31	4.60	3.63	3.33
	U7-L7	1.72	2.87	7.59	5.01	4.32	3.32	2.80
	U8-L8	1.81	3.02	8.78	5.79	4.99	3.75	2.98
	U9-L9	1.70	2.84	5.41	3.66	3.29	3.75	3.75

HAM-50-0376L							
Rating Factor Summary Table							
As-Inspected Span 1 North Truss							
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1
		Inventory	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.88	3.13	8.47	5.59	4.83	3.66
	U2-U3	1.75	2.91	7.91	5.24	4.49	3.44
	U3-U4	1.81	3.01	8.25	5.42	4.68	3.64
	U4-U5	1.81	3.01	8.25	5.42	4.68	3.64
	U5-U6	1.75	2.91	7.91	5.24	4.49	3.44
	U6-U7	1.88	3.13	8.47	5.59	4.83	3.66
Lower Chord	L0-L1	2.03	3.38	9.11	6.01	5.18	3.92
	L1-L2	2.29	3.81	10.27	6.77	5.84	4.41
	L2-L3	2.24	3.73	10.08	6.66	5.76	4.36
	L3-L4	2.21	3.68	10	6.62	5.68	4.35
	L4-L5	2.21	3.68	10	6.62	5.68	4.35
	L5-L6	2.24	3.73	10.08	6.66	5.76	4.36
	L6-L7	2.29	3.81	10.27	6.77	5.84	4.41
	L7-L8	2.29	3.81	10.27	6.77	5.84	4.41
Diagonals	U1-L0	2	3.33	9.87	6.51	5.61	4.24
	U1-L2	2.28	3.79	9.98	6.59	5.7	4.4
	U2-L3	2.61	4.35	10.3	6.82	5.92	4.71
	U3-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U4-L3	2.69	4.48	9.81	6.57	5.77	5.3
	U4-L5	3.04	5.07	11.11	7.44	6.53	5.99
	U5-L4	2.03	3.38	7.58	5.04	4.39	3.67
	U6-L5	2.58	4.31	10.2	6.76	5.86	4.66
	U7-L6	2.21	3.68	9.68	6.39	5.53	4.27
	U7-L8	2	3.33	9.87	6.51	5.61	4.24
Verticals	U1-L1	1.5	2.5	4.71	3.19	2.87	3.27
	U2-L2	2.83	4.72	10.99	7.28	6.31	5.02
	U3-L3	1.56	2.61	5.85	3.89	3.39	2.83
	U4-L4	2.03	3.39	7.4	5	4.4	4
	U5-L5	1.63	2.72	6.11	4.06	3.54	2.96
	U6-L6	2.86	4.77	11.1	7.35	6.37	5.07
	U7-L7	1.67	2.78	5.22	3.54	3.19	3.63

HAM-50-0376L							
Rating Factor Summary Table							
As-Inspected Span 1 South Truss							
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1
		Inventory	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.88	3.13	8.47	5.59	4.83	3.66
	U2-U3	1.75	2.91	7.91	5.24	4.49	3.44
	U3-U4	1.81	3.01	8.25	5.42	4.68	3.64
	U4-U5	1.81	3.01	8.25	5.42	4.68	3.64
	U5-U6	1.75	2.91	7.91	5.24	4.49	3.44
	U6-U7	1.88	3.13	8.47	5.59	4.83	3.66
Lower Chord	L0-L1	2.29	3.81	10.27	6.77	5.84	4.41
	L1-L2	2.29	3.81	10.27	6.77	5.84	4.41
	L2-L3	2.24	3.73	10.08	6.66	5.76	4.36
	L3-L4	2.21	3.68	10	6.62	5.68	4.35
	L4-L5	2.21	3.68	10	6.62	5.68	4.35
	L5-L6	2.24	3.73	10.08	6.66	5.76	4.36
	L6-L7	2.29	3.81	10.27	6.77	5.84	4.41
	L7-L8	2.29	3.81	10.27	6.77	5.84	4.41
Diagonals	U1-L0	2	3.33	9.87	6.51	5.61	4.24
	U1-L2	2.28	3.79	9.98	6.59	5.7	4.4
	U2-L3	2.64	4.4	10.41	6.9	5.98	4.76
	U3-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U4-L3	3.36	5.61	12.27	8.22	7.22	6.63
	U4-L5	3.36	5.61	12.27	8.22	7.22	6.63
	U5-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U6-L5	2.64	4.4	10.41	6.9	5.98	4.76
	U7-L6	2.28	3.79	9.98	6.59	5.7	4.4
	U7-L8	2	3.33	9.87	6.51	5.61	4.24
Verticals	U1-L1	1.49	2.48	4.66	3.16	2.85	3.24
	U2-L2	2.86	4.77	11.1	7.35	6.37	5.07
	U3-L3	1.72	2.86	6.42	4.27	3.72	3.11
	U4-L4	2.11	3.51	7.7	5.1	4.5	4.1
	U5-L5	1.72	2.86	6.42	4.27	3.72	3.11
	U6-L6	2.86	4.77	11.1	7.35	6.37	5.07
	U7-L7	1.67	2.78	5.22	3.54	3.19	3.63

HAM-50-0376L Rating Factor Summary Table As-Inspected Span 2 North Truss								
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
		Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.82	3.03	10.05	6.61	5.69	4.20	2.93
	U2-U3	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U3-U4	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U6-U7	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U7-U8	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U8-U9	1.82	3.03	10.05	6.61	5.69	4.20	2.93
Lower Chord	L0-L1	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L1-L2	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L2-L3	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L3-L4	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L4-L5	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L5-L6	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L6-L7	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L7-L8	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L8-L9	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L9-L10	2.33	3.88	12.86	8.46	7.27	5.32	3.64
Diagonals	U1-L0	2.16	3.59	12.89	8.48	7.28	5.34	3.65
	U1-L2	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U2-L3	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U3-L4	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U4-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U5-L4	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U5-L6	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U6-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U7-L6	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U8-L7	2.02	3.37	9.91	6.53	5.63	4.23	3.37
	U9-L8	1.62	2.70	8.73	5.74	4.94	3.66	2.72
	U9-L10	2.16	3.59	12.89	8.48	7.28	5.34	3.65
Verticals	U1-L1	1.65	2.75	5.24	3.54	3.18	3.63	3.63
	U2-L2	1.81	3.02	8.78	5.79	4.99	3.75	2.98
	U3-L3	1.72	2.87	7.59	5.01	4.32	3.32	2.80
	U4-L4	2.01	3.36	8.02	5.31	4.60	3.63	3.33
	U5-L5	2.40	4.00	9.00	6.00	5.00	4.30	4.30
	U6-L6	1.84	3.07	7.34	4.86	4.21	3.32	3.05
	U7-L7	1.68	2.81	7.43	4.91	4.24	3.25	2.74
	U8-L8	1.81	3.02	8.78	5.79	4.99	3.75	2.98
	U9-L9	1.54	2.57	4.89	3.31	2.97	3.39	3.39

HAM-50-0376L Rating Factor Summary Table As-Inspected Span 2 South Truss								
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
		Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.82	3.03	10.05	6.61	5.69	4.20	2.93
	U2-U3	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U3-U4	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U6-U7	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U7-U8	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U8-U9	1.82	3.03	10.05	6.61	5.69	4.20	2.93
Lower Chord	L0-L1	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L1-L2	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L2-L3	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L3-L4	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L4-L5	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L5-L6	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L6-L7	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L7-L8	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L8-L9	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L9-L10	2.33	3.88	12.86	8.46	7.27	5.32	3.64
Diagonals	U1-L0	2.16	3.59	12.89	8.48	7.28	5.34	3.65
	U1-L2	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U2-L3	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U3-L4	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U4-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U5-L4	3.14	5.24	11.80	7.84	6.82	5.64	5.23
	U5-L6	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U6-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U7-L6	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U8-L7	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U9-L8	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U9-L10	2.16	3.59	12.89	8.48	7.28	5.34	3.65
Verticals	U1-L1	1.38	2.30	4.38	2.96	2.66	3.04	3.04
	U2-L2	1.76	2.93	8.54	5.63	4.85	3.65	2.90
	U3-L3	1.72	2.87	7.59	5.01	4.32	3.32	2.80
	U4-L4	2.01	3.36	8.02	5.31	4.60	3.63	3.33
	U5-L5	2.40	4.00	9.00	6.00	5.00	4.30	4.30
	U6-L6	2.01	3.36	8.02	5.31	4.60	3.63	3.33
	U7-L7	1.72	2.87	7.59	5.01	4.32	3.32	2.80
	U8-L8	1.81	3.02	8.78	5.79	4.99	3.75	2.98
	U9-L9	1.65	2.75	5.24	3.54	3.18	3.63	3.63

HAM-50-0376L Rating Factor Summary Table As-Inspected Span 3 North Truss								
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
		Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.82	3.03	10.05	6.61	5.69	4.20	2.93
	U2-U3	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U3-U4	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U6-U7	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U7-U8	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U8-U9	1.82	3.03	10.05	6.61	5.69	4.20	2.93
Lower Chord	L0-L1	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L1-L2	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L2-L3	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L3-L4	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L4-L5	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L5-L6	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L6-L7	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L7-L8	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L8-L9	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L9-L10	2.33	3.88	12.86	8.46	7.27	5.32	3.64
Diagonals	U1-L0	2.16	3.59	12.89	8.48	7.28	5.34	3.65
	U1-L2	1.91	3.18	10.26	6.75	5.81	4.30	3.19
	U2-L3	2.04	3.40	10.03	6.61	5.70	4.28	3.41
	U3-L4	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U4-L5	1.94	3.23	7.79	5.16	4.47	3.53	3.23
	U5-L4	3.17	5.28	11.89	7.90	6.87	5.69	5.27
	U5-L6	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U6-L5	1.83	3.06	7.37	4.88	4.23	3.34	3.06
	U7-L6	1.71	2.84	7.63	5.04	4.35	3.34	2.82
	U8-L7	1.87	3.12	9.18	6.05	5.21	3.92	3.12
	U9-L8	1.91	3.18	10.26	6.75	5.81	4.30	3.19
	U9-L10	2.16	3.59	12.89	8.48	7.28	5.34	3.65
Verticals	U1-L1	1.50	2.50	4.77	3.22	2.90	3.30	3.31
	U2-L2	1.80	2.99	8.72	5.74	4.95	3.72	2.96
	U3-L3	1.55	2.59	6.84	4.52	3.90	2.99	2.52
	U4-L4	1.85	3.08	7.36	4.87	4.22	3.33	3.05
	U5-L5	1.59	2.65	6.00	4.00	3.30	2.90	2.90
	U6-L6	1.57	2.62	6.26	4.14	3.59	2.83	2.60
	U7-L7	1.50	2.50	6.60	4.36	3.77	2.89	2.44
	U8-L8	1.68	2.80	8.17	5.38	4.64	3.49	2.77
	U9-L9	1.19	1.99	3.80	2.56	2.31	2.63	2.63

HAM-50-0376L Rating Factor Summary Table As-Inspected Span 3 South Truss								
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1	Truck Train
		Inventory	Operating	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.82	3.03	10.05	6.61	5.69	4.20	2.93
	U2-U3	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U3-U4	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U4-U5	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U5-U6	1.62	2.70	9.07	5.95	5.12	3.84	2.68
	U6-U7	1.75	2.91	9.73	6.41	5.50	4.08	2.88
	U7-U8	1.82	3.03	10.09	6.65	5.71	4.21	3.00
	U8-U9	1.82	3.03	10.05	6.61	5.69	4.20	2.93
Lower Chord	L0-L1	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L1-L2	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L2-L3	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L3-L4	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L4-L5	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L5-L6	2.30	3.84	12.82	8.44	7.24	5.38	3.79
	L6-L7	2.35	3.92	13.04	8.60	7.38	5.44	3.88
	L7-L8	2.20	3.67	12.20	8.03	6.91	5.11	3.56
	L8-L9	2.33	3.88	12.86	8.46	7.27	5.32	3.64
	L9-L10	2.33	3.88	12.86	8.46	7.27	5.32	3.64
Diagonals	U1-L0	2.16	3.59	12.89	8.48	7.28	5.34	3.65
	U1-L2	1.97	3.28	10.59	6.97	6.00	4.45	3.30
	U2-L3	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U3-L4	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U4-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U5-L4	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U5-L6	3.24	5.39	12.14	8.07	7.02	5.81	5.38
	U6-L5	2.04	3.40	8.22	5.44	4.71	3.72	3.41
	U7-L6	1.93	3.22	8.64	5.71	4.93	3.78	3.19
	U8-L7	2.15	3.58	10.56	6.96	6.00	4.51	3.58
	U9-L8	1.68	2.80	9.03	5.94	5.11	3.79	2.81
	U9-L10	2.16	3.59	12.89	8.48	7.28	5.34	3.65
Verticals	U1-L1	1.32	2.20	4.21	2.84	2.56	2.91	2.92
	U2-L2	1.73	2.88	8.38	5.52	4.76	3.58	2.85
	U3-L3	1.50	2.50	6.60	4.36	3.76	2.89	2.44
	U4-L4	1.67	2.78	6.64	4.40	3.81	3.01	2.76
	U5-L5	2.40	4.00	9.00	6.00	5.00	4.30	4.30
	U6-L6	1.78	2.97	7.11	4.70	4.07	3.22	2.95
	U7-L7	1.50	2.50	6.60	4.36	3.76	2.89	2.44
	U8-L8	1.71	2.85	8.31	5.47	4.72	3.55	2.82
	U9-L9	1.43	2.39	4.55	3.08	2.77	3.15	3.16

HAM-50-0376L Rating Factor Summary Table As-Inspected Span 4 North Truss							
Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1
		Inventory	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.88	3.13	8.47	5.59	4.83	3.66
	U2-U3	1.75	2.91	7.91	5.24	4.49	3.44
	U3-U4	1.81	3.01	8.25	5.42	4.68	3.64
	U4-U5	1.81	3.01	8.25	5.42	4.68	3.64
	U5-U6	1.75	2.91	7.91	5.24	4.49	3.44
	U6-U7	1.88	3.13	8.47	5.59	4.83	3.66
Lower Chord	L0-L1	2.29	3.81	10.27	6.77	5.84	4.41
	L1-L2	2.29	3.81	10.27	6.77	5.84	4.41
	L2-L3	2.24	3.73	10.08	6.66	5.76	4.36
	L3-L4	2.21	3.68	10	6.62	5.68	4.35
	L4-L5	2.21	3.68	10	6.62	5.68	4.35
	L5-L6	2.24	3.73	10.08	6.66	5.76	4.36
	L6-L7	2.29	3.81	10.27	6.77	5.84	4.41
	L7-L8	2.29	3.81	10.27	6.77	5.84	4.41
Diagonals	U1-L0	2	3.33	9.87	6.51	5.61	4.24
	U1-L2	2.11	3.51	9.24	6.1	5.27	4.07
	U2-L3	2.42	4.04	9.56	6.34	5.49	4.37
	U3-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U4-L3	3.27	5.44	11.92	7.98	7.01	6.43
	U4-L5	3.1	5.17	11.32	7.58	6.65	6.11
	U5-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U6-L5	2.61	4.35	10.3	6.82	5.92	4.71
	U7-L6	2.11	3.51	9.24	6.1	5.27	4.07
	U7-L8	2	3.33	9.87	6.51	5.61	4.24
Verticals	U1-L1	1.32	2.21	4.15	2.81	2.54	2.89
	U2-L2	2.7	4.51	10.49	6.95	6.02	4.79
	U3-L3	1.42	2.36	5.3	3.53	3.07	2.57
	U4-L4	1.99	3.31	7.3	4.9	4.3	3.9
	U5-L5	1.45	2.42	5.44	3.62	3.15	2.63
	U6-L6	2.72	4.54	10.56	6.99	6.06	4.83
	U7-L7	1.39	2.32	4.37	2.96	2.67	3.04

HAM-50-0376L
Rating Factor Summary Table
As-Inspected Span 4 South Truss

Member Type	Member ID	HS-20-44		2F1	3F1	4F1	5C1
		Inventory	Operating	Operating	Operating	Operating	Operating
Upper Chord	U1-U2	1.88	3.13	8.47	5.59	4.83	3.66
	U2-U3	1.75	2.91	7.91	5.24	4.49	3.44
	U3-U4	1.81	3.01	8.25	5.42	4.68	3.64
	U4-U5	1.81	3.01	8.25	5.42	4.68	3.64
	U5-U6	1.75	2.91	7.91	5.24	4.49	3.44
	U6-U7	1.88	3.13	8.47	5.59	4.83	3.66
Lower Chord	L0-L1	2.29	3.81	10.27	6.77	5.84	4.41
	L1-L2	2.29	3.81	10.27	6.77	5.84	4.41
	L2-L3	2.24	3.73	10.08	6.66	5.76	4.36
	L3-L4	2.21	3.68	10	6.62	5.68	4.35
	L4-L5	2.21	3.68	10	6.62	5.68	4.35
	L5-L6	2.24	3.73	10.08	6.66	5.76	4.36
	L6-L7	2.29	3.81	10.27	6.77	5.84	4.41
	L7-L8	2.29	3.81	10.27	6.77	5.84	4.41
Diagonals	U1-L0	2	3.33	9.87	6.51	5.61	4.24
	U1-L2	2.28	3.79	9.98	6.59	5.7	4.4
	U2-L3	2.64	4.4	10.41	6.9	5.98	4.76
	U3-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U4-L3	3.36	5.61	12.27	8.22	7.22	6.63
	U4-L5	3.36	5.61	12.27	8.22	7.22	6.63
	U5-L4	2.08	3.47	7.78	5.18	4.51	3.77
	U6-L5	2.03	3.38	8.01	5.31	4.6	3.66
	U7-L6	1.96	3.26	8.58	5.67	4.9	3.78
	U7-L8	2	3.33	9.87	6.51	5.61	4.24
Verticals	U1-L1	1.67	2.78	5.22	3.54	3.19	3.63
	U2-L2	2.65	4.42	10.29	6.81	5.91	4.7
	U3-L3	1.52	2.53	5.68	3.78	3.29	2.75
	U4-L4	1.76	2.93	6.4	4.3	3.8	3.5
	U5-L5	1.52	2.53	5.68	3.78	3.29	2.75
	U6-L6	2.86	4.77	11.1	7.35	6.37	5.07
	U7-L7	1.67	2.78	5.22	3.54	3.19	3.63

APPENDIX C

GUSSET PLATE RATING SUMMARY TABLES

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 207

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Spans 1 and 4 As-Built - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
L1	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L2	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L3	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L4	1.51	2.53	5.67	3.77	3.28	2.75	2.70	OK
L5	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L6	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L7	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L8	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
U1	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK
U2	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U3	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U4	3.05	5.09	11.15	7.47	6.56	6.02	6.02	OK
U5	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U6	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U7	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 209

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Spans 2 and 3 As-Built - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
L1	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L2	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L3	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L4	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L5	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L7	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L8	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L9	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L10	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
U1	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK
U2	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U3	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U4	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U5	2.21	3.68	8.29	5.51	4.60	3.97	3.97	OK
U6	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U7	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U8	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U9	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 207

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 1 North Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
L1	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L2	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L3	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L4	1.51	2.53	5.67	3.77	3.28	2.75	2.70	OK
L5	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L6	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L7	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L8	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
U1	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK
U2	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U3	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U4	3.05	5.09	11.15	7.47	6.56	6.02	6.02	OK
U5	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U6	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U7	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 207

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 1 South Truss As Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
L1	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L2	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L3	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L4	1.51	2.53	5.67	3.77	3.28	2.75	2.70	OK
L5	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L6	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L7	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L8	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
U1	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK
U2	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U3	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U4	3.05	5.09	11.15	7.47	6.56	6.02	6.02	OK
U5	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U6	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U7	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 209

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 2 North Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
L1	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L2	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L3	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L4	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L5	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L7	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L8	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L9	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L10	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
U1	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK
U2	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U3	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U4	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U5	2.21	3.68	8.29	5.51	4.60	3.97	3.97	OK
U6	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U7	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U8	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U9	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 209

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 2 South Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
L1	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L2	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L3	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L4	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L5	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L7	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L8	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L9	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L10	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
U1	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK
U2	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U3	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U4	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U5	2.21	3.68	8.29	5.51	4.60	3.97	3.97	OK
U6	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U7	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U8	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U9	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 209

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 3 North Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
L1	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L2	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L3	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L4	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L5	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L7	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L8	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L9	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L10	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
U1	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK
U2	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U3	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U4	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U5	2.21	3.68	8.29	5.51	4.60	3.97	3.97	OK
U6	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U7	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U8	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U9	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 209

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 3 South Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
L1	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L2	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L3	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L4	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L5	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
L6	0.67	1.12	3.72	2.45	2.10	1.55	1.10	OK
L7	1.05	1.76	5.74	3.79	3.26	2.44	1.70	OK
L8	1.33	2.23	7.20	4.74	4.08	3.02	2.24	OK
L9	1.50	2.50	4.77	3.22	2.89	3.30	3.30	OK
L10	1.11	1.85	6.65	4.37	3.76	2.75	1.88	OK
U1	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK
U2	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U3	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U4	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U5	2.21	3.68	8.29	5.51	4.60	3.97	3.97	OK
U6	1.45	2.43	5.85	3.88	3.36	2.65	2.43	OK
U7	1.48	2.46	6.61	4.37	3.77	2.89	2.44	OK
U8	1.17	1.95	5.74	3.79	3.26	2.45	1.95	OK
U9	1.21	2.02	3.85	2.60	2.34	2.67	2.24	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 207

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 4 North Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
L1	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L2	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L3	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L4	1.51	2.53	5.67	3.77	3.28	2.75	2.70	OK
L5	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L6	1.34	2.24	5.90	3.90	3.37	2.60	2.21	OK
L7	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L8	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
U1	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK
U2	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U3	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U4	3.05	5.09	11.15	7.47	6.56	6.02	6.02	OK
U5	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U6	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U7	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK

HAM-50-0376 L

Gusset Plate Summary

Start Joint ID 100
End Joint ID 207

Made By: CTY
Checked By: JAK

Date: 5/27/2009
Date: 5/28/2009

Span 4 South Truss As-Inspected - Gusset Plate Ratings								
Joint Name	HS-20 (Inventory)	HS-20 (Operating)	2F1 (Operating)	3F1 (Operating)	4F1 (Operating)	5C1 (Operating)	ODOT Truck Train (Operating)	Edge Stiffness AASHTO 10.16.11.3
L0	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
L1	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L2	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L3	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L4	1.51	2.53	5.67	3.77	3.28	2.75	2.70	OK
L5	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
L6	1.34	2.24	5.90	3.90	3.37	2.60	2.23	OK
L7	1.51	2.52	4.75	3.21	2.90	3.30	3.31	OK
L8	1.49	2.49	6.71	4.42	3.81	2.88	2.30	OK
U1	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK
U2	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U3	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U4	3.05	5.09	11.15	7.47	6.56	6.02	6.02	OK
U5	1.50	2.51	5.67	3.77	3.28	2.75	2.53	OK
U6	1.21	2.02	4.78	3.17	2.74	2.18	2.03	OK
U7	1.13	1.88	3.83	2.59	2.34	2.40	1.91	OK

APPENDIX D

TRUSS MEMBER SECTION LOSS TABLES

HAM-50-0376 L

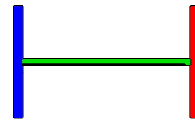
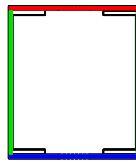
Legend:

FH - Full Height

FW - Full Width

Int. - Interior

Ext. - Exterior



Plates

Channels

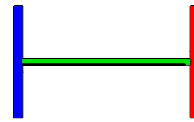
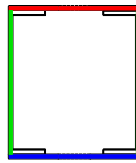
WF Section

Location	Structure	Member	Section Loss*						
				North Truss			South Truss		
			All Losses are on the exterior of channels (unless noted otherwise)						
			Plates	Top Plate	Web Plate	Bottom Plate	Top Plate	Web Plate	Bottom Plate
			Channels/ WF Section	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs
Upper Chord	Span 1	U1 U2	Channels						
		U2 U3	Channels						
		U3 U4	Channels						
		U4 U5	Channels						
		U5 U6	Channels						
		U6 U7	Channels						
	Span 2	U1 U2	Box Section						
		U2 U3	Box Section						
		U3 U4	Box Section						
		U4 U5	Box Section						
		U5 U6	Box Section						
		U6 U7	Box Section						
		U7 U8	Box Section						
		U8 U9	Box Section						
	Span 3	U1 U2	Box Section						
		U2 U3	Box Section						
		U3 U4	Box Section						
		U4 U5	Box Section						
		U5 U6	Box Section						
		U6 U7	Box Section						
		U7 U8	Box Section						
		U8 U9	Box Section						
	Span 4	U1 U2	Box Section						
		U2 U3	Box Section						
		U3 U4	Box Section						
		U4 U5	Box Section						
		U5 U6	Box Section						
		U6 U7	Box Section						

HAM-50-0376 L

Legend:

FH - Full Height
FW - Full Width
Int. - Interior
Ext. - Exterior



Plates

Channels

WF Section

Location	Structure	Member	Section Loss*						
				North Truss			South Truss		
			All Losses are on the exterior of channels (unless noted otherwise)						
			Plates	Top Plate	Web Plate	Bottom Plate	Top Plate	Web Plate	Bottom Plate
			Channels/ WF Section	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs
Lower Chord	Span 1	L0 L1	Plates		1/16" x 6" 1/8" x 6" 1/16" x 1 1/2" 1/16" x 1"				
		L1 L2	Plates						
		L2 L3	Plates						
		L3 L4	Plates						
		L4 L5	Plates						
		L5 L6	Plates						
		L6 L7	Plates						
		L7 L8	Plates						
	Span 2	L0 L1	Plates						
		L1 L2	Plates						
		L2 L3	Plates						
		L3 L4	Plates						
		L4 L5	Plates						
		L5 L6	Plates						
		L6 L7	Plates						
		L7 L8	Plates						
	Span 2	L8 L9	Plates						
		L9 L10	Plates						
		L0 L1	Plates						
		L1 L2	Plates						
		L2 L3	Plates						
		L3 L4	Plates						
		L4 L5	Plates						
		L5 L6	Plates						
	Span 3	L6 L7	Plates						
		L7 L8	Plates						
		L8 L9	Plates						
		L9 L10	Plates						
		L0 L1	Plates						
		L1 L2	Plates						
		L2 L3	Plates						
		L3 L4	Plates						
	Span 4	L4 L5	Plates						
		L5 L6	Plates						
		L6 L7	Plates						
		L7 L8	Plates						

*only controlling case listed by DepthxLength

HAM-50-0376 L

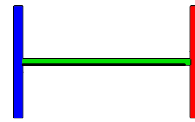
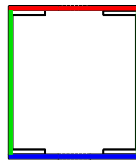
Legend:

FH - Full Height

FW - Full Width

Int. - Interior

Ext. - Exterior



Plates

Channels

WF Section

Location	Structure	Member	Section Loss*						
				North Truss			South Truss		
			All Losses are on the exterior of channels (unless noted otherwise)						
			Plates	Top Plate	Web Plate	Bottom Plate	Top Plate	Web Plate	Bottom Plate
			Channels/ WF Section	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs
Diagonals	Span 1	U1 L0	Channels						
		U1 L2	WF Section						
		U2 L3	WF Section			1/16" x 2"			
		U3 L4	WF Section						
		U4 L3	WF Section	1/16" x FH (Ext.) 1/16" x 2" (Int.)	1/16" x 2"	1/8" x FH			
		U4 L5	WF Section	1/8" x FW					
		U5 L4	WF Section	1/16" x 3"					
		U6 L5	WF Section			1/16" x 4" (Int)			
		U7 L6	WF Section			1/16" x 5" (Int)			
		U7 L8	Channels						
	Span 2	U1 L0	Channels			1/8" x 3 3/4"			
		U1 L2	WF Section						
		U2 L3	WF Section						
		U3 L4	WF Section						
		U4 L5	WF Section						
		U5 L4	WF Section				1/8" x 2"		
		U5 L6	WF Section						
		U6 L5	WF Section						
		U7 L6	WF Section						
		U8 L7	WF Section			1/8" x 5" (Int.)			
		U9 L8	WF Section		1/8" x FH	1/8" x 6" (Int.)			
	U9 L10	Channels							
	Span 3	U1 L0	Channels						
		U1 L2	WF Section	1/8" x 3"					
		U2 L3	WF Section	1/16" x 8"					
		U3 L4	WF Section						
		U4 L5	WF Section	1/16" x 6"					
		U5 L4	WF Section		1/8" x 1" 1/16" x 2"				
		U5 L6	WF Section						
		U6 L5	WF Section		1/16" x 6" 3/16" x 3"				
		U7 L6	WF Section		3/16" x 3"	1/8" x 3" (Int.)			
		U8 L7	WF Section	1/16" x 4"	1/8" x 8"				
		U9 L8	WF Section	1/8" x 3"			1/8" x 6" (Int)	1/8" x 6"	1/8" x 2"
		U9 L10	Channels						
	Span 4	U1 L0	Channels						
		U1 L2	WF Section	1/16" x FW					
		U2 L3	WF Section	1/8" x 7"					
		U3 L4	WF Section	1/16" x 2"	1/16" x 2"				
		U4 L3	WF Section						
		U4 L5	WF Section	1/8" x FW					
		U5 L4	WF Section						
		U6 L5	WF Section			1/16" x 2" (Int.)	1/16" x 3" (Int.) 1/16" x 5" (Int.)	1/16" x 3" 1/16" x 11"	1/8" x 6" 1/16" x 5" (Int.)
		U7 L6	WF Section	1/16" x 8" 1/8" x 2"				1/8" x 6"	1/8" x 4" (Int.) 3/16" x 1" (Int.)
		U7 L8	Channels						

*only controlling case listed by DepthxLength

HAM-50-0376 L

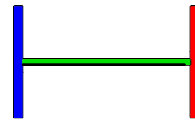
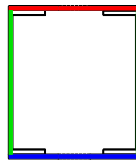
Legend:

FH - Full Height

FW - Full Width

Int. - Interior

Ext. - Exterior



Plates

Channels

WF Section

Location	Structure	Member	Section Loss*						
				North Truss			South Truss		
			All Losses are on the exterior of channels (unless noted otherwise)						
			Plates	Top Plate	Web Plate	Bottom Plate	Top Plate	Web Plate	Bottom Plate
			Channels/ WF Section	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs	Horizontal Legs	Vertical legs/ Web Plate	Horizontal Legs
Verticals	Span 1	U1 L1	WF Section			1/8" x 6"	1/16" x 3" 1/8" x 5"		
		U2 L2	WF Section	1/16" x 2"		1/16" x 3" (Int)			
		U3 L3	WF Section	3/16" x 5"					
		U4 L4	WF Section	1/16" x 4 1/2" 1/8" x 2"					
		U5 L5	WF Section	1/16" x 4" 1/8" x 3" 1/16" x 1"					
		U6 L6	WF Section						
		U7 L7	WF Section						
	Span 2	U1 L1	WF Section				1/4" x 5"		
		U2 L2	WF Section				1/16" x 5"		
		U3 L3	WF Section						
		U4 L4	WF Section						
		U5 L5	WF Section						
		U6 L6	WF Section	1/8" x FW					
		U7 L7	WF Section	1/8" x 2 1/2"					
		U8 L8	WF Section						
		U9 L9	WF Section	1/8" x 4"					
	Span 3	U1 L1	WF Section	1/8" x 5"		1/16" x 1"			3/16" x FW
		U2 L2	WF Section	1/16" x 4"					3/16" x 6"
		U3 L3	WF Section	1/8" x 7"					1/8" x FW
		U4 L4	WF Section	1/16" x 5" 1/8" x 3"					3/16" x FW
		U5 L5	WF Section	3/16" x 7"					
		U6 L6	WF Section	1/8" x FW					1/8" x FW
		U7 L7	WF Section	1/8" x FW					1/8" x FW
		U8 L8	WF Section	1/8" x 9"					1/8" x 8"
		U9 L9	WF Section	1/4" x FW					1/8" x 8"
	Span 4	U1 L1	WF Section	3/16" x 7"		1/16" x 4" (Int.)			
		U2 L2	WF Section	1/8" x 8"	1/16" x 5"		1/8" x 3"		1/16" x FW
		U3 L3	WF Section	3/16" x FW			1/8" x FW		
		U4 L4	WF Section	3/16" x 3" (Ext.) 1/16" x 3" (Int.)			1/8" x FW		1/16" x FW
		U5 L5	WF Section	1/8" x FW			1/8" x FW		
		U6 L6	WF Section	1/8" x 5"		1/16" x 6" (Int.)			
		U7 L7	WF Section	1/8" x FW		1/16" x 4" (Int.)	1/16" x FW (Ext.) 1/16" x		

*only controlling case listed by DepthxLength

APPENDIX E

FLOORBEAM SECTION LOSS TABLE

HAM-50-0376 L

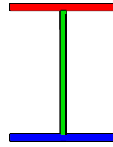
Legend:

FW - Full Width

REM - Thickness of Steel Remaining

WF - West Face

EF - East Face



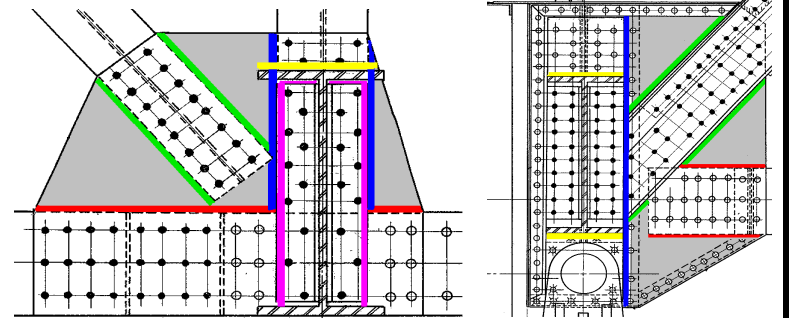
			Floorbeam Type	Top Plate	Web Plate	Bottom Plate	Distance to Adjacent Truss
				Horizontal	Web Plate	Horizontal	(Feet)
Span 1	FB	00	W36 x 260			1/16" x FW	1.
	FB	01	W36 x 280		1/16" x 1"	1/4" x FW	3.
	FB	02	W36 x 260			1/8" x 2"	19.417
	FB	02	W36 x 260		1/16" x 3"	3/16" x 8"	3.
	FB	03	W36 x 260			1/8" x 6"	12.417
	FB	04	W36 x 260			3/16" x 2"	12.417
	FB	05	W36 x 260			1/8" x 2"	12.417
	FB	06	W36 x 260			1/4" x 3"	12.417
	FB	07	W36 x 280			1/8" x 3"	12.417
Span 2	FB	07	W36 x 280		1/16" x 2"	3/16" x 8"	19.417
	FB	08	W36 x 260		1/8" x 4"	1/8" x 8"	3.
	FB	00	W36 x 280			1/16" x 8"	19.417
	FB	04	W36 x 280		1/16" x 4"	1/8" x FW	5.417
	FB	05	W36 x 280		1/8" x 4"	1/16" x 8"	5.417
	FB	06	W36 x 280		1/16" x 33 3/8"	1/8" x 8"	19.417
	FB	07	W36 x 280		1/8" x 4"		3.
	FB	08	W36 x 280		1/8" x 4"	1/4" x 8"	3.
	FB	09	W36 x 300			5/16" x 8"	3.
Span 3	FB	10	W36 x 280			1 5/16" REM x FW	19.417
	FB	01	W36 x 300		1/8" x 4"	1/4" x 3"	19.417
	FB	02	W36 x 280		1/8" x 4" (WF) 1/8" x 4" (EF)		3.
	FB	04	W36 x 280		1/8" x 4"		3.
	FB	05	W36 x 280		1/8" x 7"		3.
	FB	06	W36 x 280		1/8" x 9"		3.
	FB	07	W36 x 280		3/16" x 2"	1/8" x 8"	19.417
	FB	08	W36 x 280		1/16" x 3"	3/16" x 8"	12.417
Span 4	FB	00	W36 x 260		1/8" x 8" (WF) 1/8" x 4.5" (EF) 3/16" x 2 1/2" (EF)	1 1/18" REM x FW	3.
	FB	00	W36 x 260			3/16" x 6" 1/4" x 2"	19.417
	FB	01	W36 x 280		1/16" x 4" 1/8" x 1" 1/16" x 4"	1/8" x 8" 1/16" x 8"	3.
	FB	02	W36 x 260		1/8" x 2" (WF) 1/8" x 20" (EF)	1 1/8" REM x 8" 1 1/16" REM x 8"	3.
	FB	03	W36 x 260		1/8" x 6"	1/8" x 8" 1" REM x 8"	3.
	FB	04	W36 x 260		1/8" x 4"	1/8" x 8" 1" REM x 8"	3.
	FB	05	W36 x 260		1/16" x 5"	1/16" x 8" 1/8" x 8"	3.
	FB	06	W36 x 260		3/16" x 1" 1/16" x 4"	1/16" x 8" 1/8" x 8"	3.
	FB	07	W36 x 280		1/8" x 3" (WF) 1/16" x 1" (EF)	1/8" x FW	3. & 12.417

APPENDIX F

GUSSET PLATE SECTION LOSS TABLE

HAM-50-0376L
North Truss Lower Gussets

Legend



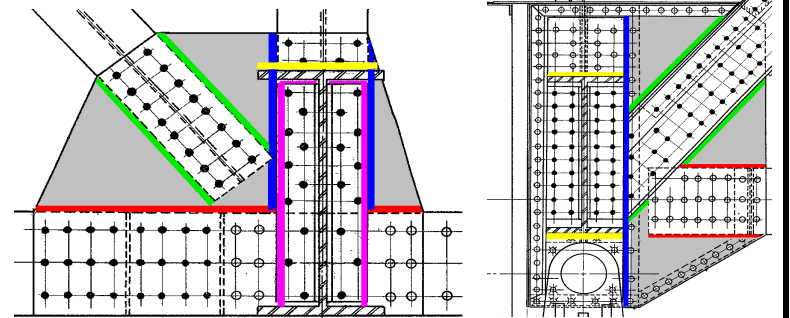
Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
1	L0									1/16"x1"x36"; 1/8"x1"x24" 1/16"x5"x6"				
	L1		-1/8	-1/8										
	L2		-1/8	-1/8										
	L3		+1/16	+1/16			1/16"x12"x1"							
	L4						1/16"x6"x2"	1/16"x8"x5"				1/16" typical above area above U3-L4	1/16"x4"x6"	
	L5		+1/16	+1/16						1/16"x16"x1"				
	L6		+1/8	+1/8		1/16"x8"x2"								
	L7													
	L8									1/16"x27"x1"				
2	L0		+1/8	+1/8										
	L1		-1/8			1/16"x3"x1"; 1/16"x3"x1"					1/16"x3"x1"; 1/16"x3"x1"			
	L2	1/2	-1/8	+3/16										
	L3			+3/16		1/16"x12"x3"; 1/4"x3"x3"					1/8"x3"x2"; 1/16"x6"x2"			
	L4	1/2	+1/4	+1/8		1/16"x3"x1"; 1/16"x3"x1"; 1/16"x3"x1"; 1/8"x2"x2"					1/8"x2"x2"			

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

HAM-50-0376L
North Truss Lower Gussets

Legend



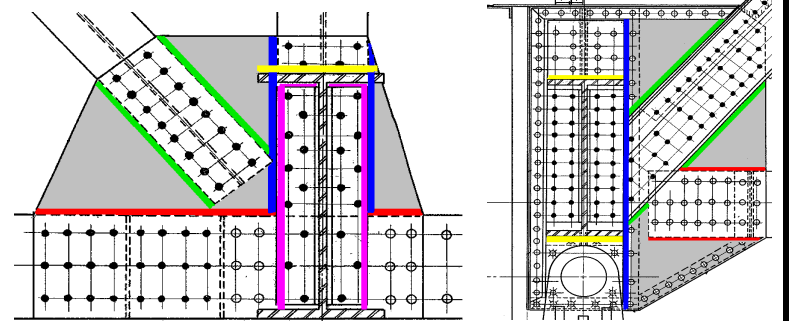
Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
2	L5	9/16				1/16"x6"x1"								
	L6		-1/2	-1/16		1/8"x42"x1"; 1/8"x6"x1"; 1/16"x8"x1"					1/8"x24"x1"; 1/8"x6"x1"; 1/16"x8"x1"			
	L7	1/2	-3/8	-1/8		1/16"x8"x1"; 3/16"x6"x4"					1/16"x2"x2"			
	L8	1/2	-1/2	-3/8							1/8"x20"x1"			
	L9	9/16	-1/8											
	L10					up to 1/8" area under chord					up to 1/8" area under chord			
3	L0					1/16" area under chord					1/16" area under chord			
	L1		-1/8											
	L2			-1/8										
	L3		-1/8	+3/16		1/16"x5"x3"		1/16"x2"x4"						
	L4													
	L5													
	L6		+1/8	+1/8		1/8"x36"x1"			1/16"x3"x2"		1/8"x5"x2"			
	L7		+1/4	+1/8		1/16"x30"x4"				1/16"x4"Ø; 1/16"x4"Ø; 1/16"x4"Ø; 1/16"x4"Ø				

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

HAM-50-0376L
North Truss Lower Gussets

Legend



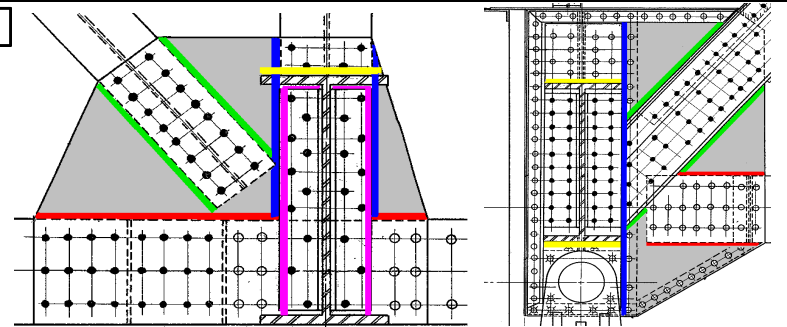
Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
3	L8					1/16"x4"x4"; 1/8"x1.5"Ø	1/16"x4"x1"; 1/16"x8"x4"; 1/16"x3"x3"	1/16"x1"x4"	1/16"x4"x8"	1/16"x2"Ø ; 1/16"x2"Ø	1/16"x1"Ø; 1/16"x1"Ø; 1/16"x1"Ø; 1/16"x1"Ø; 1/16"x1"Ø	1/16"x4"x1"	1/16"x1"x4"	
	L9		-1/8							1/16"x8"x1"				
	L10									1/8"x1"x3"				
4	L0					1/8"x8"x1" (top)					1/8"x8"x1" (top)		3/16"x2"x4"	
	L1													
	L2		+1/4	+1/4		1/8"x5"x1"								
	L3		+3/16	+3/16										
	L4		+1/8	+1/8										
	L5		+1/4	+1/4										
	L6		+1/4	+1/4		1/8"x3"x1"; 1/16"x6"x1"					1/4"x2"x1"			
	L7					1/8"x1"x1"								
	L8										3/16"x20"x2" (under)			

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

HAM-50-0376L
South Truss Lower Gussets

Legend



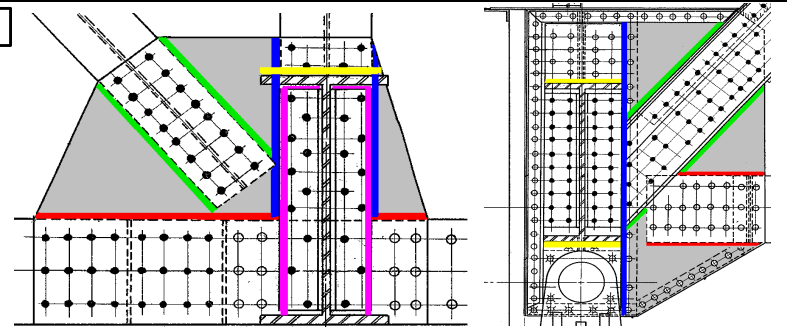
Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
1	L0	9/16				1/16"xFLx1" (top); 1/8"xFLx1" (under)								
	L1	1/2		+1/4										
	L2	1/2	-3/8	-1/4		1/16"x12"x1"; 1/8"x12"x2"					1/16"x18"x1"	1/16"x24"x1"		
	L3	1/2	+3/16	+1/4			1/16"xFLx1"							
	L4	1/2						1/16"x4"x8"	1/16"x6"Ø			1/16"x6"x1"; 1/16"x6"x3"	1/16"x3"x3"	
	L5	1/2	-1/4	-3/16		1/8"x6"x1"; 1/8"x4"x4"					1/8"x2"Ø; 1/8"x2"Ø			
	L6	1/2				1/8"x24"x1"					1/8"x6"x1"; 1/8"x18"x1"			
	L7	1/2				1/16"x3"x1"					1/16"x3"x1"			
	L8	9/16	-1/8	-1/16		1/16"x12"x1"								
2	L0	3/4					1/8"x6"x2"					1/16"x6"x2"		
	L1	1/2				1/8"x4"x1"					1/8"x4"x1"			
	L2	1/2		+1/8		1/8"x18"x3"					1/8"x7"x1"			
	L3	1/2	-1/8	-1/4		1/8"x4"x4"; 1/8"x8"x1"					1/16"x12"x1"; 1/8"x8"x1"			
	L4	1/2	-1/8	+1/4		1/16"x42"x2"; 1/16"x13"x1"					1/8"x42"x2"; 1/16"x13"x1"			
	L5	1/2	-1/8	+1/8		1/8"x6"x1"								

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

HAM-50-0376L
South Truss Lower Gussets

Legend



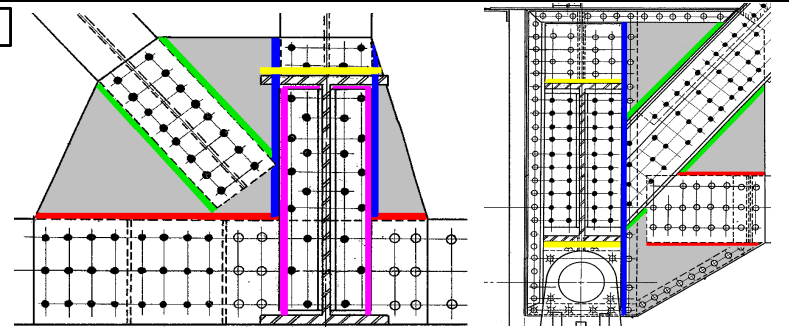
Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
2	L6	1/2	+3/16	+1/4		1/8"x6"x1"								
	L7	1/2			1/8"x4"x1"; 1/8"x1"x4"	1/16"x20"x1"	1/16"x6"x4"				1/8"x24"x1"			
	L8	1/2	+1/4	+1/8		1/16"x4"x4"; 1/16"x16"x1"					1/8"x10"x1"			
	L9	1/2									1/16"x3"x1"			
	L10	11/16				1/8"x12"x1" (under)					1/8"x12"x1" (under)			
3	L0													
	L1										1/16"x4"x1"; 1/8"x3"x1"			
	L2		+1/4	+1/8		1/8"x11"x2"								
	L3			+1/4		1/8"x7"x1"; 1/16"x5"x7"					1/16"x21"x2"			
	L4		+1/4	+1/4		1/8"x6"x1"					1/8"x12"x2"			
	L5					1/8"x4"x1"; 1/8"x8"x1"					1/8"x4"x1"; 1/8"x8"x1"			
	L6		+1/4	+1/4							1/8"x10"x2"; 3/16"x8"x2"; 1/8"x6"x2"			
	L7					1/8"x6"x3"; 1/16"x6"x3"	1/8"x5"x3"; 3/16"x6"x9"				1/16"x32"x2"			
	L8		+1/4	+1/8		1/16"x6"x2"								
	L9					1/16"x2"x2"					1/16"x2"x2"			
	L10													

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

HAM-50-0376L
South Truss Lower Gussets

Legend



Location		Plate Thickness by calipers (inches)	Bowling* (inches)		Section Loss**									
					North Gusset					South Gusset				
					Exterior	Interior				Exterior	Interior			
Span	Panel Point		North Gusset	South Gusset	Isolated	Lower chord	Diagonal	Vertical	Isolated	Isolated	Lower chord	Diagonal	Vertical	Isolated
4	L0													
	L1			+1/4										
	L2													
	L3					1/16"x5"x1"; 1/16"x4"x1"; 1/8"x7"x1"					1/16"x16"x1"; 1/8"x4"x1"			
	L4													
	L5					1/8"x14"x1"; 1/8"x10"x4"								
	L6													
	L7													
	L8													

*only worst case listed, +=bowed out away from chord, -=bowed in towards chord

**DepthxLengthxHeight

APPENDIX G

CD OF ELECTRONIC FILES