Bridge Load Rating Report Summary

Bridge ID: L15672000+02001

Feature Intersected: Swan River

Date Submitted   12-5-2014

Live Load Configuration Considered: HS20-44, Type 3, Type 3-3, Type 3S2

Bridge Description:

Steel through truss with a wood deck supported on steel stringers and steel floorbeams.

Inventory Rating Factor	Operating Rating Factor
R.F. = 0.050	R.F. = 0.084
Controlling Element: Exterior Stringer S8 (Simple Span) - Flexure	Controlling Element: Exterior Stringer S8 (Simple Span) - Flexure

Documented Assumptions:

- This Load Rating Analysis was performed for members only. No connections (including truss pin connections) were analyzed.
- Per MBE Table 6B.5.2.1-1, steel is Grade 30 based on year built of 1911.
- The end posts were the only top chord members accessible for measurement. Three of the four end posts have 0.25-inch cover plates, and one has a 0.375-inch cover plate. The Structure Inventory and Appraisal Sheet (1978) incorrectly shows that all top chords have 0.375-inch cover plates. All top chord members are modeled with 0.25-inch cover plates in the BrR model.
- When calculating the net area of riveted truss members, 0.75-inch rivet diameters were assumed.
- Member BC1 has 1/16-inch of section loss due to corrosion per the MDT Initial Assessment Form (2012). The corrosion was accounted for in the member's net area.

- The deck is made of timber planks. Since BrR does not support wood decks on truss bridges, the deck in the truss system superstructure is modeled as concrete with a thickness producing an equivalent weight of the actual wood deck.
- An additional superstructure definition was created to rate the wood deck only. In the deck model superstructure, the deck was given wet condition factors per the MDT Initial Assessment Form (2010). Douglas Fir-Larch No. 1 & Better deck planks were assumed. The shear stress factor C_H was input as 2.0 for the plank deck, since any splits or checks will be oriented parallel to the load direction and will not affect the shear strength of the member.
- Due to vehicular damage causing loss of straightness, the assumed compression capacity of member VW3L has been reduced to 60% of full capacity per engineering judgment. The MDT Fracture Critical Inspection (2010) states that counter members are "loose" and some eyes have forge cracks. To account for these imperfections, the tension capacity of members DW1, DW2, DW3, DW4, DW5, DW6, VW1, and VW6 has been reduced to 90% of full capacity per engineering judgment. An additional superstructure definition was created with the capacities of these truss members reduced. The capacities were reduced using the "MemberOfInterest" command's "OverrideCapacity" subcommand in the truss input.
- An 8-inch utility pipe (water/sewer) runs the full length of the bridge and is hung from Stringer 2 near the floorbeams. The pipe weight was calculated assuming a full pipe, and point loads were applied to the stringers near the floorbeams.
- A built-up conduit box of 2x wood runs the full length of the bridge and is supported by the southeast ends of the floorbeams. The conduit weight was calculated and point loads were applied to the southeast ends of the floorbeams.
- The exterior stringer is a C8x11.5. Since BrR does not support channel stringers, the exterior stringers are modeled with the S6x12.5 because it has similar cross sectional properties as the C8x11.5.
- The undersides of the interior truss spans were not accessible for inspection. Based on what was visible from the end spans at the river banks, it is assumed that truss bays 1, 4, and 7 have simple span stringers and bays 2-3 and 5-6 have continuous (2-span) stringers.
- Per phone conversation with Amanda Jackson on 1/3/2014, the strength of the walkway is not to be analyzed. Also, no pedestrian live load was applied to the bridge or walkway, as the full pedestrian load occurring simultaneously with the largest truck load is unlikely. Only the dead load of the walkway was applied to the bridge. The walkway dead load was accordingly applied to the SE (Upstream) Truss and Stringers 6, 7, and 8. With the walkway cantilevering past the exterior stringer, an uplift reaction caused by the dead load of the walkway is produced at Stringer 6. Stringer 6 is assumed to have a connection to the walkway beams that is capable of supporting an uplift reaction.

- The controlling rating factor is for exterior stringer S8 in the single span condition. This element is controlling because of the added dead load from the cantilevered walkway on the southeast side of the truss.
- The rating factor presented in this Report Summary is based on the assumption that the wood deck does not act as a diaphragm at the midspan of the stringer. Per MDT Chapter 8 – Bridge Load Rating and Posting section 8.2.6.2.3, the deck only acts as a diaphragm if the girders are not twisting due to overload. Per MDT Initial Assessment Form comment dated 6/16/2004, "some stringers show some minor twisting." Since the bridge is currently posted at 3 tons, the twisting in the stringers is possibly due to overload. Therefore, the deck should not be assumed to act as a diaphragm.

  The presence of a diaphragm has significant effects on the stringers' rating factors. If a diaphragm is assumed to be present, the inventory rating factor for member S8 (and the controlling rating factor for the bridge) increases from 0.050 to 0.156. However, based on MDT's load rating protocol and MDT's bridge inspection notes, the deck is not assumed to act as a diaphragm.

L15672000+02001
Swan River (Truss)
Summary of Deck, Stringer, Floorbeam, and Truss Rating Factors

Deck

Analysis Results - Deck

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating	Rating Factor	Location	Limit State	Impact	Lane
HS 20-44	Axle Load	ASD	Inventory	22.25	0.618		Flexure - One-lane	As Requested	As Requested
HS 20-44	Axle Load	ASD	Operating	29.62	0.823		Flexure - One-lane	As Requested	As Requested
Type 3	Axle Load	ASD	Inventory	25.76	1.030		Flexure - One-lane	As Requested	As Requested
Type 3	Axle Load	ASD	Operating	34.30	1.372		Flexure - One-lane	As Requested	As Requested
Type 3-3	Axle Load	ASD	Inventory	43.39	1.085		Flexure - One-lane	As Requested	As Requested
Type 3-3	Axle Load	ASD	Operating	57.77	1.444		Flexure - One-lane	As Requested	As Requested
Type 3S2	Axle Load	ASD	Inventory	40.13	1.115		Flexure - One-lane	As Requested	As Requested
Type 3S2	Axle Load	ASD	Operating	53.42	1.484		Flexure - One-lane	As Requested	As Requested

Madero(ASD/LRFD) - Version 1.02.05 - Sep. 11, 2012

Analysis Preference Setting: None

Close

Stringers – With the deck acting as a diaphragm

Exterior Stringers

S1 (Simple Span, C-beam)

Analysis Results - Stringer 1

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.52	0.375	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	22.57	0.627	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.90	0.275	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	16.53	0.459	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	8.46	0.338	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	14.13	0.565	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	16.44	0.411	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	27.46	0.686	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	13.37	0.371	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	22.32	0.620	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

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Analysis Preference Setting: None

Close

S8 (Simple Span, C-beam)

Analysis Results - Stringer 8

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	7.68	0.213	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	12.83	0.356	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	5.63	0.156	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	9.40	0.261	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	4.81	0.192	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	8.03	0.321	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	9.34	0.234	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	15.60	0.390	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	7.60	0.211	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	12.68	0.352	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S1 (2 Span, C-beam)

Analysis Results - Stringer 1

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	16.49	0.458	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.54	0.765	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	12.93	0.359	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	21.59	0.600	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	11.38	0.455	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	19.01	0.760	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	22.12	0.553	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	36.94	0.923	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	17.98	0.499	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	30.03	0.834	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S8 (2 Span, C-beam)

Analysis Results - Stringer 8

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	9.37	0.260	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	15.65	0.435	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	7.35	0.204	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	12.27	0.341	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	6.96	0.278	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	11.62	0.465	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	12.90	0.322	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	21.54	0.538	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	12.16	0.338	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	20.31	0.564	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested

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Analysis Preference Setting: None

Close

Interior Stringers

S2 (Simple Span, End Span W-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary
Lane/Impact Loading Type: • As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	10.91	0.303	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	18.23	0.506	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	7.99	0.222	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	13.35	0.371	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	6.78	0.271	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	11.32	0.453	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	13.17	0.329	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	22.00	0.550	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	10.71	0.297	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	17.88	0.497	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S3 (Simple Span, End Span W-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary
Lane/Impact Loading Type: • As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.49	0.375	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	22.53	0.626	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.88	0.274	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	16.50	0.458	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	8.41	0.336	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	14.04	0.562	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	16.34	0.408	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	27.29	0.682	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	13.28	0.369	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	22.18	0.616	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

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Analysis Preference Setting: None

Close

S6 (Simple Span, End Span W-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⊙ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	15.05	0.418	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	25.14	0.698	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	11.03	0.306	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	18.42	0.512	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	9.34	0.374	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	15.60	0.624	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	18.15	0.454	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	30.31	0.758	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	14.75	0.410	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	24.64	0.684	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (Simple Span, End Span W-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⊙ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	10.57	0.294	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	17.65	0.490	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	7.74	0.215	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	12.93	0.359	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	6.61	0.264	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	11.04	0.442	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	12.84	0.321	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	21.44	0.536	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	10.44	0.290	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	17.43	0.484	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S2 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary

Lane/Impact Loading Type: (•) As Requested ( ) Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.61	0.378	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	22.73	0.631	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.97	0.277	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	16.65	0.462	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	8.45	0.338	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	14.12	0.565	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	16.43	0.411	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	27.43	0.686	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	13.35	0.371	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	22.30	0.619	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S3 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary

Lane/Impact Loading Type: (•) As Requested ( ) Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	16.69	0.464	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.88	0.774	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	12.23	0.340	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	20.42	0.567	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	10.40	0.416	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	17.37	0.695	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	20.20	0.505	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	33.74	0.843	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	16.42	0.456	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	27.43	0.762	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S6 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	18.26	0.507	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	30.49	0.847	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	13.37	0.371	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	22.33	0.620	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	11.33	0.453	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	18.92	0.757	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	22.01	0.550	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	36.76	0.919	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	17.89	0.497	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	29.88	0.830	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.26	0.368	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	22.15	0.615	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.71	0.270	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	16.22	0.451	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	8.28	0.331	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	13.83	0.553	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	16.09	0.402	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	26.88	0.672	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	13.08	0.363	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	21.85	0.607	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S2 (2 Span, S-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⊙ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	16.63	0.462	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.77	0.771	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	12.85	0.357	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	21.46	0.596	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	11.01	0.440	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	18.39	0.736	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	21.39	0.535	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	35.73	0.893	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	17.39	0.483	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	29.04	0.807	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S3 (2 Span, S-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⊙ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	20.37	0.566	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	34.02	0.945	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	15.49	0.430	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	25.87	0.719	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	13.28	0.531	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	22.17	0.887	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	25.79	0.645	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	43.07	1.077	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	20.97	0.582	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	35.02	0.973	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S6 (2 Span, S-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	22.28	0.619	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	37.20	1.033	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	16.27	0.452	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	27.17	0.755	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	13.94	0.558	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	23.28	0.931	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	27.09	0.677	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	45.23	1.131	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	22.02	0.612	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	36.77	1.021	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (2 Span, S-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	16.18	0.450	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.03	0.751	17.00	1 - (100.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	12.65	0.351	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	21.13	0.587	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	10.84	0.434	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	18.10	0.724	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	21.06	0.527	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	35.17	0.879	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	17.12	0.476	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	28.59	0.794	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

Stringers – Without the deck acting as a diaphragm

Exterior Stringers

S1 (Simple Span, C-beam)

Analysis Results - Stringer 1

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	8.31	0.231	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	13.88	0.386	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	6.09	0.169	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	10.17	0.282	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	5.20	0.208	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	8.69	0.348	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	10.11	0.253	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	16.88	0.422	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	8.22	0.228	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	13.72	0.381	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S8 (Simple Span, C-beam)

Analysis Results - Stringer 8

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	2.48	0.069	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	4.13	0.115	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	1.81	0.050	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	3.03	0.084	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	1.55	0.062	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	2.59	0.104	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	3.01	0.075	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	5.03	0.126	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	2.45	0.068	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	4.09	0.114	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S1 (2 Span, C-beam)

Analysis Results - Stringer 1

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	12.04	0.335	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	20.11	0.559	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	8.66	0.241	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	14.47	0.402	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	7.43	0.297	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	12.40	0.496	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	14.43	0.361	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	24.09	0.602	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	11.73	0.326	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	19.59	0.544	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S8 (2 Span, C-beam)

Analysis Results - Stringer 8

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	8.01	0.223	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	13.38	0.372	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	5.77	0.160	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	9.63	0.267	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	4.94	0.198	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	8.25	0.330	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	9.60	0.240	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	16.03	0.401	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	7.80	0.217	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	13.03	0.362	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

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Analysis Preference Setting: None

Close

Interior Stringers

S2 (Simple Span, End Span W-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary

Lane/Impact Loading Type: ⦿ As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	5.37	0.149	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	8.97	0.249	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	3.94	0.109	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	6.57	0.183	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	3.34	0.134	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	5.58	0.223	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	6.49	0.162	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	10.85	0.271	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	5.28	0.147	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	8.82	0.245	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S3 (Simple Span, End Span W-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary

Lane/Impact Loading Type: ⦿ As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	6.91	0.192	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	11.54	0.320	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	5.06	0.141	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	8.45	0.235	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	4.33	0.173	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	7.22	0.289	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	8.40	0.210	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	14.03	0.351	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	6.83	0.190	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	11.41	0.317	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S6 (Simple Span, End Span W-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	8.47	0.235	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	14.15	0.393	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	6.21	0.172	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	10.36	0.288	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	5.26	0.210	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	8.78	0.351	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	10.22	0.255	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	17.06	0.427	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	8.30	0.231	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	13.87	0.385	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (Simple Span, End Span W-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	5.02	0.140	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	8.39	0.233	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	3.68	0.102	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	6.15	0.171	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	3.15	0.126	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	5.25	0.210	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	6.11	0.153	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	10.21	0.255	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	4.97	0.138	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	8.30	0.230	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S2 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	9.64	0.268	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	16.10	0.447	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	7.06	0.196	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	11.80	0.328	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	5.99	0.240	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	10.01	0.400	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	11.64	0.291	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	19.45	0.486	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	9.47	0.263	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	15.81	0.439	10.20	1 - (60.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S3 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	11.98	0.333	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	20.01	0.556	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	8.78	0.244	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	14.66	0.407	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	7.48	0.299	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	12.48	0.499	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	14.52	0.363	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	24.25	0.606	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	11.81	0.328	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	19.72	0.548	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S6 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.54	0.376	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	22.62	0.628	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.92	0.276	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	16.57	0.460	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	8.41	0.336	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	14.04	0.562	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	16.33	0.408	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	27.27	0.682	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	13.28	0.369	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	22.17	0.616	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (Simple Span, Middle Span S-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	9.29	0.258	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	15.52	0.431	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	6.81	0.189	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	11.37	0.316	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	5.82	0.233	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	9.72	0.389	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	11.31	0.283	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	18.88	0.472	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	9.19	0.255	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	15.35	0.426	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S2 (2 Span, S-beam)

Analysis Results - Stringer 2

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	12.97	0.360	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	21.66	0.602	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.33	0.259	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	15.58	0.433	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	7.99	0.320	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	13.35	0.534	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	15.53	0.388	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	25.94	0.649	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	12.63	0.351	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	21.09	0.586	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001|

Analysis Preference Setting: None

Close

S3 (2 Span, S-beam)

Analysis Results - Stringer 3

Report Type: Rating Results Summary

Lane/Impact Loading Type: ● As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	15.72	0.437	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	26.26	0.729	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	11.31	0.314	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	18.89	0.525	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	9.69	0.388	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	16.19	0.647	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	18.83	0.471	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	31.45	0.786	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	15.31	0.425	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	25.57	0.710	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001|

Analysis Preference Setting: None

Close

S6 (2 Span, S-beam)

Analysis Results - Stringer 6

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested   ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	16.80	0.467	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	28.06	0.779	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	12.09	0.336	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	20.19	0.561	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	10.36	0.414	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	17.30	0.692	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	20.13	0.503	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	33.61	0.840	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	16.36	0.454	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	27.32	0.759	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

S7 (2 Span, S-beam)

Analysis Results - Stringer 7

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested   ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	12.69	0.353	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	21.19	0.589	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	9.13	0.254	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	15.25	0.424	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	7.82	0.313	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	13.07	0.523	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	15.20	0.380	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	25.39	0.635	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	12.36	0.343	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	20.64	0.573	6.80	1 - (40.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

Floorbeams

FB2

Analysis Results - Floorbeam 2

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ◯ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	15.66	0.435	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	26.15	0.726	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	14.71	0.409	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	24.57	0.682	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	12.65	0.506	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	21.13	0.845	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	25.32	0.633	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	42.29	1.057	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	18.93	0.526	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	31.61	0.878	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

FB3

Analysis Results - Floorbeam 3

Report Type: Rating Results Summary
Lane/Impact Loading Type: ⦿ As Requested ◯ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	13.07	0.363	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	21.83	0.606	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	10.37	0.288	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	17.31	0.481	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	9.89	0.395	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	16.51	0.660	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	19.26	0.482	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	32.17	0.804	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	14.84	0.412	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	24.78	0.688	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

FB4

Analysis Results - Floorbeam 4

Report Type: Rating Results Summary

Lane/Impact Loading Type: ⦿ As Requested ○ Detailed

Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HS 20-44	Lane	LFD	Inventory	15.82	0.439	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	26.41	0.734	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Inventory	14.86	0.413	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	24.81	0.689	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	12.78	0.511	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	21.34	0.854	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	25.58	0.639	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	42.72	1.068	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	19.12	0.531	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	31.92	0.887	8.50	1 - (50.0)	Design Flexure - Steel	As Requested	As Requested

AASHTO LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

Truss

NW Truss (Downstream)

Analysis Results - NW Truss (Downstream)

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Element Name	Limit State	Impact	Lane
HS 20-44	Axle Load	LFD	Inventory	15.71	0.436	VW6	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	26.23	0.729	VW6	AXIAL-TENSION	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	13.36	0.535	VW6	AXIAL-TENSION	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	22.32	0.893	VW6	AXIAL-TENSION	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	23.07	0.577	DW5	AXIAL-TENSION	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	38.52	0.963	DW5	AXIAL-TENSION	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	19.87	0.552	VW6	AXIAL-TENSION	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	33.18	0.922	VW6	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Lane	LFD	Inventory	16.63	0.462	VW1	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.78	0.772	VW6	AXIAL-TENSION	As Requested	As Requested

AASHTO Truss LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

SE Truss (Upstream)

Analysis Results - SE Truss (Upstream)

Report Type: Rating Results Summary
Lane/Impact Loading Type: ● As Requested ○ Detailed
Display Format: Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Element Name	Limit State	Impact	Lane
HS 20-44	Axle Load	LFD	Inventory	15.52	0.431	VW1	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Axle Load	LFD	Operating	25.92	0.720	VW1	AXIAL-TENSION	As Requested	As Requested
Type 3	Axle Load	LFD	Inventory	13.20	0.528	VW1	AXIAL-TENSION	As Requested	As Requested
Type 3	Axle Load	LFD	Operating	22.05	0.882	VW1	AXIAL-TENSION	As Requested	As Requested
Type 3-3	Axle Load	LFD	Inventory	22.77	0.569	DW2	AXIAL-TENSION	As Requested	As Requested
Type 3-3	Axle Load	LFD	Operating	38.03	0.951	DW2	AXIAL-TENSION	As Requested	As Requested
Type 3S2	Axle Load	LFD	Inventory	19.63	0.545	VW1	AXIAL-TENSION	As Requested	As Requested
Type 3S2	Axle Load	LFD	Operating	32.78	0.911	VW1	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Lane	LFD	Inventory	16.44	0.457	VW1	AXIAL-TENSION	As Requested	As Requested
HS 20-44	Lane	LFD	Operating	27.45	0.763	VW1	AXIAL-TENSION	As Requested	As Requested

AASHTO Truss LFR Engine Version 6.6.0.3001

Analysis Preference Setting: None

Close

```
============================================================
|                                                          |
|            TIMBER BRIDGE RATING AND DESIGN               |
|                          FOR                             |
|              AASHTO 16th Edition LOADS                   |
|                                                          |
|                      MADERO                              |
|                 Version  1.02.05                         |
|                  Sep. 11, 2012                           |
|                                                          |
|                University of Wyoming                     |
|                 Laramie, Wyoming                         |
|                                                          |
============================================================
```

ECHO INPUT FILE =======================

COMMENT	Agency: AASHTO
COMMENT	Bridge Code: L15672000_02001
COMMENT	Bridge Name: Swan River (Truss)
COMMENT	Structure Defintion: Timber Deck Model
COMMENT	Superstructure for DECK RATING ONLY
TITLE	Member Alt: Girder
UNITS	0
TYPE	1, 3, 4
CONTROL	1, 0, 2, 1, , , , 0, 1, 1, 1
OUTPUT	1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1
COMMENT	The option to generate points of interest at cross section
COMMENT	changes was selected but is not supported by Madero.
REPORT	100
REPORT	101
REPORT	102
REPORT	103
REPORT	104
REPORT	105
REPORT	106
REPORT	107
REPORT	108
REPORT	109
REPORT	110

CALCS	100
CALCS	101
CALCS	102
CALCS	103
CALCS	104
CALCS	105
CALCS	106
CALCS	107
CALCS	108
CALCS	109
CALCS	110
DECKMATL	DFL-WWPA, N1B
ADJUST	2, 2.000, 0.850, 0.970, 0.670, 0.900,
SPAN	17.0000
FIXITY	1, 10
FIXITY	2, 10
GENLDIM	15.5417, 1, 3.2500, 2.5000,
STRINGSPAC	1, 2.7500
STRINGSPAC	2, 2.0000
STRINGSPAC	3, 2.0000
STRINGSPAC	4, 2.0000
STRINGSPAC	5, 2.0000
STRINGSPAC	6, 2.0000
STRINGSPAC	7, 2.7500
STRINGDIM	8, 4.0010, , 0.2917
DECKDIM	4.0000, , , , 0, , 9.5000,
DECKSTR	WET, WET, , 1.150, 0.095, 0.625, 1800.000
STRINGDEAD	, 50.0000, 50.0000, 19.5000
COMMENT	The following commands contain wheel fractions.
EXBEAM	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010
EXREACT	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

```
EXREACT               2, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

EFFWIDTH              20.0004, 10.0000

COMMENT               The beta live parameter on the COMBFACT command is used

COMMENT               to export the product of the Scale Factor and the Impact

COMMENT               Factor for each vehicle. See the Advanced button in the

COMMENT               Analysis Settings window.

COMMENT               ---------------------------------------

COMMENT               Within Madero, the magnitude of a lane load or pedestrian

COMMENT               load is fixed at 0.64 k/ft (9.3 N/mm). Therefore, the

COMMENT               IMPACT command is used to scale the Madero lane load so

COMMENT               it is equivalent to the load specified in BrDR.

COMMENT               ---------------------------------------

COMMENT               See the Custom I load group for Inventory rating results.

COMMENT               See the Custom II load group for Operating rating results.

COMMENT               Vehicle: HS 20-44

COMBFACT              4, 1.0, 1.000, 100.00, 0.5

COMBFACT              5, 1.0, 1.000, 133.00, 0.5

LIVE                  4, 1, 1.0000, 1, 0, 0, 0

LIVE                  5, 1, 1.0000, 1, 0, 0, 0


END INPUT FILE =========================

CHECKING ROUTINE DETECTED ONE SPAN BRIDGE
AND THEREFORE THE VARIABLE AXLE SPACING
CONTROL WAS SET TO "NO". USE CONTROL COMMAND
TO OVERRIDE. SEE OUTPUT BELOW FOR CURRENT
CONTROL VARIABLES.


========== ADMINISTRATIVE INFORMATION ===========

JOB TITLE:  Member Alt: Girder

DATE     : 12/04/2014
TIME     :  9:18:35


  ========== SUMMARY OF CONTROL PARAMETERS ===========

OUTPUT OPTIONS
     Include Page Breaks             : Yes
     Table Output Abbreviated        : No
     Table Headers                   : Yes
     Influence Function Report       : No
```

          Detailed Action Report   : No
          Load Calculations   : Yes
          Adjustment Factor Calculations   : No
          Rating Factor Calculations   : No
          Stress Calculations   : No
          Connection Calculations   : No
          Structural Analysis Output Level : Minimum

    UNITS: U.S. customary (kips, ft)

    CONTROL PARAMETERS
          Data Checking   : Yes
          Variable Axle Spacing   : No
          Neglect Axles That Do Not Contribute
           to Critical Load Effect   : Yes
          One or Multiple Lanes Loaded   : One
          Interior or Exterior Stringer   : Exterior

    LOAD COMBINATIONS

          GROUP I   LOAD GROUP
               Design Truck   : Yes
               Truck Load Factor : 1.000
               Design Lane Load : Yes
               Special Truck #1 : No
               Special Truck #2 : No
               Special Truck #3 : No

          CUSTOM I   LOAD GROUP
               Design Truck   : Yes
               Truck Load Factor : 1.000
               Design Lane Load : Yes
               Special Truck #1 : No
               Special Truck #2 : No
               Special Truck #3 : No

          CUSTOM II LOAD GROUP
               Design Truck   : Yes
               Truck Load Factor : 1.000
               Design Lane Load : Yes
               Special Truck #1 : No
               Special Truck #2 : No
               Special Truck #3 : No

♀

    =========== GENERAL STRUCTURE INFORMATION ===========

    Bridge Type: Steel Stringer with Timber Floor

              ===========
               ^   ^
       Spans   1
       Nodes   1   11
    Elements   1 to 10
    Supports 1   2

    SPAN DATA
         Span No.   Length (ft)
             1   17.00

    RESTRAINT DATA
         Support No.   Vertical-Rotation

```
              1                 Fixed-Free
              2                 Fixed-Free

      Roadway Width              =        15.542 (ft)
      Number of Design Lanes     =           001
      Curb Width                 =         3.250 (in)
      Railing Width              =         3.250 (in)
      Wearing Surface Thickness =         2.500 (in)
```

NOMINAL DIMENSION IDENTIFICATION (per 1997 NDS Table 1A and AASHTO Table 13.2.2A)

```
Input Data:
    Actual Width =       10.000 (in)
    Actual Depth =        4.000 (in)
    Section Type = Plank Deck

Output data:
    Nominal Width =      10.000 (in)
    Nominal Depth =       4.000 (in)
```

WHEEL LOAD DISTRIBUTION WIDTH CALCULATIONS (per AASHTO 16th ed. 3.25)

```
Input Data:
    Number of Lanes    =          1
    Deck Type          = Plank Deck
    Deck Thickness     =      4.000 (in)
    Deck Member Width  =     10.000 (in)
    Stringer Spacing   =      2.750 (ft)
    Stringer Width     =      4.001 (in)

Output data:
    Effective Deck Span                          =       2.583 (ft)
    Distribution Width Perpendicular to Deck Span =     10.000 (in)
    Distribution Widths in Direction of Deck Span:
      CUSTOM I    Load Group       HS Trk          20.000 (in)
      CUSTOM II   Load Group       HS Trk          20.000 (in)
```

DEAD LOAD CALCULATIONS FOR TRANSVERSE DECK

```
Input data:
    Stringer Spacing          =        2.750 (ft)
    Section Type              = Plank Deck
    Deck Thickness            =        4.000 (in)
    Wearing Surface Thickness =        2.500 (in)
    Deck Unit Weight          =       50.000 (pcf)
    Wearing Surface Unit Weight =     50.000 (pcf)
    Rail System Linear Weight =       19.500 (lb/ft)
    WL Distribution Width Perpendicular to Deck Span =      10.000 (in)

Output data:
    Deck Component DL       =        0.014 (kip/ft)
    Deck Wearing Surface DL =        0.009 (kip/ft)
    Rail System DL          =        0.020 (kip/ft)
```

GEOMETRIC SECTION PROPERTIES CALCULATIONS

```
Input Data:
    Member Type                = Plank Deck
    Member Width               =       10.000 (in)
```

```
      Member Depth               =        4.000 (in)
      Modulus of Elasticity in x =    0.180E+04 (ksi)
      Moisture Adjustment Factor =        0.900

  Output data:
      Moment of Inertia          =    0.533E+02 (in^4)
      Adjusted Modulus (E')      =    0.162E+04 (ksi)
      Flexural Rigidity (E'I)    =    0.864E+05 (k*in^2)
```

⚲   ========== SUMMARY OF TRANSVERSE DECK INFORMATION ==========

```
      MATERIAL DESIGNATIONS
            Deck Type      = Plank Deck
            Species        = User
            Grade          = User
            Grading Agency = User

      STRENGTH PROPERTIES
            Moisture Condition for Shear & Flexure        = WET
            Moisture Condition for Bearing                = WET
            Allowable Deflection                          =      0.040 (in)
            Allowable Bending Stress (tens. zone in tension) =   1.150 (ksi)
            Allowable Bending Stress (comp. zone in tension) =   1.150 (ksi)
            Allowable Shear Stress                        =      0.095 (ksi)
            Allowable Comp. Stress Perp to Grain (bot face) =    0.625 (ksi)
            Allowable Comp. Stress Perp to Grain (top face) =    0.625 (ksi)
            Modulus of Elasticity in x                    =   1800.000 (ksi)
            Modulus of Elasticity in y                    =   1800.000 (ksi)

      GEOMETRIC PROPERTIES
            Deck Overhang              =        0.292 (ft)
            Actual Thickness           =        4.000 (in)
            Effective Width            =       10.000 (in)
            Moment of Inertia          =   0.5333E+02 (in^4)
            Flexural Rigidity          =   0.8640E+05 (k*in^2)
```

⚲   TRANSVERSE DECK DETAILED REPORT

  CUSTOM I   LOAD GROUP

  NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
      Section Dimensions (in)
        Depth    4.000        Effective Width   10.000
```

```
      Design Stresses (ksi)  Unfact. Moist.  Size   Flat Load Dur. Percent Fact.
                             Stress  Factor Factor Factor  Factor  Factor Stress
        Flexure              1.150   0.85   1.10   1.10    1.15     1.00   1.564
```

      Allowable Deflection (in)   0.040

      Maximum Factored Moments (kip*ft)

	Moment

Main Deck	
Component Dead	0.01
Wearing Dead	0.01
	one multiple
Live Load	lane lanes
HS Trck	5.60 0.00

```
     Combined                    5.61          0.00
     Critical                    5.61          0.00

  Overhang
   Component Dead                      0.01
   Wearing Dead                        0.00

   Live Load                     one     multiple
                                 lane      lanes
     HS Trck                     0.00      0.00
     Combined                    0.01      0.00
     Critical                    0.01      0.00
```

Stresses	Flexural (ksi)		Deflection (in)	
	------------------		------------------	

```
  Main Deck
   Component Dead                     0.004               .161E-03
   Wearing Dead                       0.003               .101E-03

   Live Load                 one    multiple'    one     multiple
                             lane    lanes '     lane      lanes
     HS Trck                 2.520   0.000     .759E-01   .000E+00
     Combined                2.527   0.000
     Critical                2.527   0.000     .759E-01   .000E+00
     Ratio                   0.62    0.00       0.53       0.00
     RF                      0.62    0.00

  Overhang
   Component Dead                     0.003
   Wearing Dead                       0.000

   Live Load                 one    multiple
                             lane    lanes
     HS Trck                 0.000   0.000
     Combined                0.003   0.000
     Critical                0.003   0.000
     Ratio                  491.47   0.00
     RF                     ******   0.00

  Critical Ratio            0.62    ******     0.53      ******
  Critical RF               0.62    ******
```

⚢   TRANSVERSE DECK DETAILED REPORT

 CUSTOM II   LOAD GROUP

 NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
  Section Dimensions (in)
   Depth    4.000      Effective Width   10.000
```

Design Stresses (ksi)	Unfact. Stress	Moist. Factor	Size Factor	Flat Load Factor	Dur. Factor	Percent Factor	Fact. Stress
Flexure	1.150	0.85	1.10	1.10	1.15	1.33	2.080

```
  Allowable Deflection (in)     0.040

  Maximum Factored Moments (kip*ft)
                                     Moment
                                ------------------
```

```
Main Deck
  Component Dead                                0.01
  Wearing Dead                                  0.01

  Live Load                             one       multiple
                                        lane       lanes
    HS Trck                             5.60        0.00
    Combined                            5.61        0.00
    Critical                            5.61        0.00

  Overhang
    Component Dead                              0.01
    Wearing Dead                                0.00

  Live Load                             one       multiple
                                        lane       lanes
    HS Trck                             0.00        0.00
    Combined                            0.01        0.00
    Critical                            0.01        0.00
```

```
  Stresses                          Flexural (ksi)        Deflection (in)
                                    -----------------     -----------------
  Main Deck
    Component Dead                      0.004                 .161E-03
    Wearing Dead                        0.003                 .101E-03

    Live Load               one     multiple'      one      multiple
                            lane     lanes '       lane      lanes
      HS Trck              2.520     0.000      .759E-01   .000E+00
      Combined             2.527     0.000
      Critical             2.527     0.000      .759E-01   .000E+00
      Ratio                0.82      0.00        0.53       0.00
      RF                   0.82      0.00

  Overhang
    Component Dead                      0.003
    Wearing Dead                        0.000

    Live Load               one     multiple
                            lane     lanes
      HS Trck              0.000     0.000
      Combined             0.003     0.000
      Critical             0.003     0.000
      Ratio               653.66     0.00
      RF                  ******     0.00

  Critical Ratio           0.82     ******       0.53       ******
  Critical RF              0.82     ******
```

TRANSVERSE DECK SUMMARY REPORT

    NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
                          Flexural (ksi)        Deflection (in)
                          -----------------     -----------------
                          one     multiple      one      multiple
                          lane     lanes        lane      lanes
                         -------   -------     -------    -------
```

```
CUSTOM I      LOAD GROUP
   Stress                         2.527        0.000   0.759E-01   0.000E+00
   Control                         Main         Main        Main        Main
   Truck                        HS 14ft      HS 14ft     HS 14ft     HS 14ft
   Allow                          1.564        1.564   0.400E-01   0.400E-01
   Ratio                           0.62      *******        0.53     *******
   RF                              0.62      *******

CUSTOM II     LOAD GROUP
   Stress                         2.527        0.000   0.759E-01   0.000E+00
   Control                         Main         Main        Main        Main
   Truck                        HS 14ft      HS 14ft     HS 14ft     HS 14ft
   Allow                          2.080        2.080   0.400E-01   0.400E-01
   Ratio                           0.82      *******        0.53     *******
   RF                              0.82      *******

Cr Ratio                           0.62      *******        0.53     *******
Crit RF                            0.62      *******

Critical ratio for all limit states:        0.53
Critical rating factor for all limit states:   0.62
```

```
============================================================
|                                                          |
|          TIMBER BRIDGE RATING AND DESIGN                 |
|                       FOR                                |
|            AASHTO 16th Edition LOADS                      |
|                                                          |
|                    MADERO                                |
|              Version  1.02.05                            |
|               Sep. 11, 2012                              |
|                                                          |
|             University of Wyoming                        |
|              Laramie, Wyoming                            |
|                                                          |
============================================================
```

ECHO INPUT FILE =======================

COMMENT	Agency: AASHTO
COMMENT	Bridge Code: L15672000_02001
COMMENT	Bridge Name: Swan River (Truss)
COMMENT	Structure Defintion: Timber Deck Model
COMMENT	Superstructure for DECK RATING ONLY
TITLE	Member Alt: Girder
UNITS	0
TYPE	1, 3, 4
CONTROL	1, 0, 2, 1, , , , 0, 1, 1, 1
OUTPUT	1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1
COMMENT	The option to generate points of interest at cross section
COMMENT	changes was selected but is not supported by Madero.
REPORT	100
REPORT	101
REPORT	102
REPORT	103
REPORT	104
REPORT	105
REPORT	106
REPORT	107
REPORT	108
REPORT	109
REPORT	110

CALCS	100
CALCS	101
CALCS	102
CALCS	103
CALCS	104
CALCS	105
CALCS	106
CALCS	107
CALCS	108
CALCS	109
CALCS	110
DECKMATL	DFL-WWPA, N1B
ADJUST	2, 2.000, 0.850, 0.970, 0.670, 0.900,
SPAN	17.0000
FIXITY	1, 10
FIXITY	2, 10
GENLDIM	15.5417, 1, 3.2500, 2.5000,
STRINGSPAC	1, 2.7500
STRINGSPAC	2, 2.0000
STRINGSPAC	3, 2.0000
STRINGSPAC	4, 2.0000
STRINGSPAC	5, 2.0000
STRINGSPAC	6, 2.0000
STRINGSPAC	7, 2.7500
STRINGDIM	8, 4.0010, , 0.2917
DECKDIM	4.0000, , , , 0, , 9.5000,
DECKSTR	WET, WET, , 1.150, 0.095, 0.625, 1800.000
STRINGDEAD	, 50.0000, 50.0000, 19.5000
COMMENT	The following commands contain wheel fractions.
EXBEAM	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010
EXREACT	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

```
EXREACT              2, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

EFFWIDTH             14.5775, 10.0000

COMMENT              The beta live parameter on the COMBFACT command is used

COMMENT              to export the product of the Scale Factor and the Impact

COMMENT              Factor for each vehicle. See the Advanced button in the

COMMENT              Analysis Settings window.

COMMENT              ----------------------------------------

COMMENT              Within Madero, the magnitude of a lane load or pedestrian

COMMENT              load is fixed at 0.64 k/ft (9.3 N/mm). Therefore, the

COMMENT              IMPACT command is used to scale the Madero lane load so

COMMENT              it is equivalent to the load specified in BrDR.

COMMENT              ----------------------------------------

COMMENT              See the Custom I load group for Inventory rating results.

COMMENT              See the Custom II load group for Operating rating results.

COMMENT              Vehicle: Type 3

COMBFACT             4, 1.0, 1.000, 100.00, 0.5

COMBFACT             5, 1.0, 1.000, 133.00, 0.5

COMMENT              The axle loading is represented by Special Truck 1.

COMMENT              This only occurs when the axle loading does not conform

COMMENT              to the axle loads and spacings of an HS type truck.

TRUCK                16.000, 0.000 ,17.000, 15.000 ,17.000, 4.000

LIVE                 4, 0, 1.0000, 0, 1, 0, 0

LIVE                 5, 0, 1.0000, 0, 1, 0, 0


END INPUT FILE =========================

CHECKING ROUTINE DETECTED ONE SPAN BRIDGE
AND THEREFORE THE VARIABLE AXLE SPACING
CONTROL WAS SET TO "NO". USE CONTROL COMMAND
TO OVERRIDE. SEE OUTPUT BELOW FOR CURRENT
CONTROL VARIABLES.


========== ADMINISTRATIVE INFORMATION ===========

JOB TITLE:  Member Alt: Girder

DATE     : 12/04/2014
TIME     :  9:18:35
```

========== SUMMARY OF CONTROL PARAMETERS ===========

OUTPUT OPTIONS
```
     Include Page Breaks            : Yes
     Table Output Abbreviated       : No
     Table Headers                  : Yes
     Influence Function Report      : No
     Detailed Action Report         : No
     Load Calculations              : Yes
     Adjustment Factor Calculations : No
     Rating Factor Calculations     : No
     Stress Calculations            : No
     Connection Calculations        : No
     Structural Analysis Output Level : Minimum
```

UNITS: U.S. customary (kips, ft)

CONTROL PARAMETERS
```
     Data Checking                  : Yes
     Variable Axle Spacing          : No
     Neglect Axles That Do Not Contribute
      to Critical Load Effect       : Yes
     One or Multiple Lanes Loaded   : One
     Interior or Exterior Stringer  : Exterior
```

LOAD COMBINATIONS
```
     GROUP I    LOAD GROUP
          Design Truck      : Yes
          Truck Load Factor : 1.000
          Design Lane Load  : Yes
          Special Truck #1  : No
          Special Truck #2  : No
          Special Truck #3  : No

     CUSTOM I   LOAD GROUP
          Design Truck      : No
          Truck Load Factor : 1.000
          Design Lane Load  : No
          Special Truck #1  : Yes
          Special Truck #2  : No
          Special Truck #3  : No

     CUSTOM II  LOAD GROUP
          Design Truck      : No
          Truck Load Factor : 1.000
          Design Lane Load  : No
          Special Truck #1  : Yes
          Special Truck #2  : No
          Special Truck #3  : No
```

============ GENERAL STRUCTURE INFORMATION ===========

Bridge Type: Steel Stringer with Timber Floor

```
           ===========
           ^         ^
  Spans          1
  Nodes      1        11
Elements     1 to 10
Supports     1         2
```

DeckType3.OUT

    SPAN DATA
        Span No.   Length (ft)
          1   17.00

    RESTRAINT DATA
        Support No.   Vertical-Rotation
          1   Fixed-Free
          2   Fixed-Free

    Roadway Width   =   15.542 (ft)
    Number of Design Lanes   =   001
    Curb Width   =   3.250 (in)
    Railing Width   =   3.250 (in)
    Wearing Surface Thickness =   2.500 (in)

NOMINAL DIMENSION IDENTIFICATION (per 1997 NDS Table 1A and AASHTO Table 13.2.2A)

Input Data:
    Actual Width =   10.000 (in)
    Actual Depth =   4.000 (in)
    Section Type = Plank Deck

Output data:
    Nominal Width =   10.000 (in)
    Nominal Depth =   4.000 (in)

WHEEL LOAD DISTRIBUTION WIDTH CALCULATIONS (per AASHTO 16th ed. 3.25)

Input Data:
    Number of Lanes   =   1
    Deck Type   = Plank Deck
    Deck Thickness   =   4.000 (in)
    Deck Member Width =   10.000 (in)
    Stringer Spacing =   2.750 (ft)
    Stringer Width   =   4.001 (in)

Output data:
    Effective Deck Span   =   2.583 (ft)
    Distribution Width Perpendicular to Deck Span =   10.000 (in)
    Distribution Widths in Direction of Deck Span:
      CUSTOM I   Load Group   HS Trk   14.578 (in)
Spec. 1   14.578 (in)
      CUSTOM II Load Group   HS Trk   14.578 (in)
Spec. 1   14.578 (in)

DEAD LOAD CALCULATIONS FOR TRANSVERSE DECK

Input data:
    Stringer Spacing   =   2.750 (ft)
    Section Type   = Plank Deck
    Deck Thickness   =   4.000 (in)
    Wearing Surface Thickness   =   2.500 (in)
    Deck Unit Weight   =   50.000 (pcf)
    Wearing Surface Unit Weight =   50.000 (pcf)
    Rail System Linear Weight   =   19.500 (lb/ft)
    WL Distribution Width Perpendicular to Deck Span =   10.000 (in)

Output data:

```
        Deck Component DL        =      0.014 (kip/ft)
        Deck Wearing Surface DL  =      0.009 (kip/ft)
        Rail System DL           =      0.020 (kip/ft)
```

GEOMETRIC SECTION PROPERTIES CALCULATIONS

```
Input Data:
    Member Type                =  Plank Deck
    Member Width               =      10.000 (in)
    Member Depth               =       4.000 (in)
    Modulus of Elasticity in x =  0.180E+04 (ksi)
    Moisture Adjustment Factor =       0.900

Output data:
    Moment of Inertia      =  0.533E+02 (in^4)
    Adjusted Modulus (E')  =  0.162E+04 (ksi)
    Flexural Rigidity (E'I) = 0.864E+05 (k*in^2)
```

⚥   ========== SUMMARY OF TRANSVERSE DECK INFORMATION ==========

```
        MATERIAL DESIGNATIONS
                Deck Type        = Plank Deck
                Species          = User
                Grade            = User
                Grading Agency   = User

        STRENGTH PROPERTIES
                Moisture Condition for Shear & Flexure        = WET
                Moisture Condition for Bearing                = WET
                Allowable Deflection                          =       0.040 (in)
                Allowable Bending Stress (tens. zone in tension) =    1.150 (ksi)
                Allowable Bending Stress (comp. zone in tension) =    1.150 (ksi)
                Allowable Shear Stress                        =       0.095 (ksi)
                Allowable Comp. Stress Perp to Grain (bot face) =     0.625 (ksi)
                Allowable Comp. Stress Perp to Grain (top face) =     0.625 (ksi)
                Modulus of Elasticity in x                    =    1800.000 (ksi)
                Modulus of Elasticity in y                    =    1800.000 (ksi)

        GEOMETRIC PROPERTIES
                Deck Overhang                       =       0.292 (ft)
                Actual Thickness                    =       4.000 (in)
                Effective Width                     =      10.000 (in)
                Moment of Inertia                   = 0.5333E+02 (in^4)
                Flexural Rigidity                   = 0.8640E+05 (k*in^2)
```

⚥   TRANSVERSE DECK DETAILED REPORT

CUSTOM I   LOAD GROUP

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
    Section Dimensions (in)
      Depth    4.000        Effective Width    10.000
```

Design Stresses (ksi)	Unfact. Stress	Moist. Factor	Size Factor	Flat Factor	Load Dur. Factor	Percent Factor	Fact. Stress
Flexure	1.150	0.85	1.10	1.10	1.15	1.00	1.564

```
    Allowable Deflection (in)      0.040
```

Maximum Factored Moments (kip*ft)

```
                                        Moment
                                 ------------------
   Main Deck
     Component Dead                      0.01
     Wearing Dead                        0.01

     Live Load                    one       multiple
                                  lane        lanes
       Spec. 1                    3.36        0.00
       Combined                   3.37        0.00
       Critical                   3.37        0.00

   Overhang
     Component Dead                      0.01
     Wearing Dead                        0.00

     Live Load                    one       multiple
                                  lane        lanes
       Spec. 1                    0.00        0.00
       Combined                   0.01        0.00
       Critical                   0.01        0.00
```

```
   Stresses                      Flexural (ksi)         Deflection (in)
                                ------------------     ------------------
   Main Deck
     Component Dead                    0.004                 .161E-03
     Wearing Dead                      0.003                 .101E-03

     Live Load               one     multiple'       one       multiple
                             lane     lanes '        lane        lanes
       Spec. 1               1.512     0.000       .441E-01    .000E+00
       Combined              1.518     0.000
       Critical              1.518     0.000       .441E-01    .000E+00
       Ratio                 1.03      0.00          0.91        0.00
       RF                    1.03      0.00

   Overhang
     Component Dead                    0.003
     Wearing Dead                      0.000

     Live Load               one     multiple
                             lane     lanes
       Spec. 1               0.000     0.000
       Combined              0.003     0.000
       Critical              0.003     0.000
       Ratio                491.47     0.00
       RF                   ******     0.00

   Critical Ratio            1.03     ******        0.91       ******
   Critical RF               1.03     ******
```

♀   TRANSVERSE DECK DETAILED REPORT

 CUSTOM II   LOAD GROUP

 NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
    Section Dimensions (in)
      Depth    4.000        Effective Width   10.000
```

Design Stresses (ksi)	Unfact. Stress	Moist. Factor	Size Factor	Flat Factor	Load Dur. Factor	Percent Factor	Fact. Stress
Flexure	1.150	0.85	1.10	1.10	1.15	1.33	2.080

Allowable Deflection (in)   0.040

Maximum Factored Moments (kip*ft)

	Moment

Main Deck	
Component Dead	0.01
Wearing Dead	0.01

Live Load	one lane	multiple lanes
Spec. 1	3.36	0.00
Combined	3.37	0.00
Critical	3.37	0.00

Overhang	
Component Dead	0.01
Wearing Dead	0.00

Live Load	one lane	multiple lanes
Spec. 1	0.00	0.00
Combined	0.01	0.00
Critical	0.01	0.00

Stresses	Flexural (ksi)		Deflection (in)	
	------------------		------------------	
Main Deck				
Component Dead	0.004		.161E-03	
Wearing Dead	0.003		.101E-03	

Live Load	one lane	multiple lanes'	one lane	multiple lanes
Spec. 1	1.512	0.000	.441E-01	.000E+00
Combined	1.518	0.000		
Critical	1.518	0.000	.441E-01	.000E+00
Ratio	1.37	0.00	0.91	0.00
RF	1.37	0.00		

Overhang	
Component Dead	0.003
Wearing Dead	0.000

Live Load	one lane	multiple lanes
Spec. 1	0.000	0.000
Combined	0.003	0.000
Critical	0.003	0.000
Ratio	653.66	0.00
RF	******	0.00

Critical Ratio	1.37	******	0.91	******
Critical RF	1.37	******		

TRANSVERSE DECK SUMMARY REPORT

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

		Flexural (ksi)		Deflection (in)	
		one lane	multiple lanes	one lane	multiple lanes
		-------	-------	-------	-------
CUSTOM I	**LOAD GROUP**				
Stress		1.518	0.000	0.441E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		1.564	1.564	0.400E-01	0.400E-01
Ratio		1.03	*******	0.91	*******
RF		1.03	*******		
CUSTOM II	**LOAD GROUP**				
Stress		1.518	0.000	0.441E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		2.080	2.080	0.400E-01	0.400E-01
Ratio		1.37	*******	0.91	*******
RF		1.37	*******		
Cr Ratio		1.03	*******	0.91	*******
Crit RF		1.03	*******		

Critical ratio for all limit states: 0.91
Critical rating factor for all limit states: 1.03

```
==========================================================
|                                                        |
|            TIMBER BRIDGE RATING AND DESIGN             |
|                         FOR                            |
|              AASHTO 16th Edition LOADS                 |
|                                                        |
|                       MADERO                           |
|                  Version  1.02.05                      |
|                   Sep. 11, 2012                        |
|                                                        |
|                University of Wyoming                   |
|                  Laramie, Wyoming                      |
|                                                        |
==========================================================
```

ECHO INPUT FILE =======================

COMMENT	Agency: AASHTO
COMMENT	Bridge Code: L15672000_02001
COMMENT	Bridge Name: Swan River (Truss)
COMMENT	Structure Defintion: Timber Deck Model
COMMENT	Superstructure for DECK RATING ONLY
TITLE	Member Alt: Girder
UNITS	0
TYPE	1, 3, 4
CONTROL	1, 0, 2, 1, , , , 0, 1, 1, 1
OUTPUT	1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1
COMMENT	The option to generate points of interest at cross section
COMMENT	changes was selected but is not supported by Madero.
REPORT	100
REPORT	101
REPORT	102
REPORT	103
REPORT	104
REPORT	105
REPORT	106
REPORT	107
REPORT	108
REPORT	109
REPORT	110

CALCS	100
CALCS	101
CALCS	102
CALCS	103
CALCS	104
CALCS	105
CALCS	106
CALCS	107
CALCS	108
CALCS	109
CALCS	110
DECKMATL	DFL-WWPA, N1B
ADJUST	2, 2.000, 0.850, 0.970, 0.670, 0.900,
SPAN	17.0000
FIXITY	1, 10
FIXITY	2, 10
GENLDIM	15.5417, 1, 3.2500, 2.5000,
STRINGSPAC	1, 2.7500
STRINGSPAC	2, 2.0000
STRINGSPAC	3, 2.0000
STRINGSPAC	4, 2.0000
STRINGSPAC	5, 2.0000
STRINGSPAC	6, 2.0000
STRINGSPAC	7, 2.7500
STRINGDIM	8, 4.0010, , 0.2917
DECKDIM	4.0000, , , , 0, , 9.5000,
DECKSTR	WET, WET, , 1.150, 0.095, 0.625, 1800.000
STRINGDEAD	, 50.0000, 50.0000, 19.5000
COMMENT	The following commands contain wheel fractions.
EXBEAM	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010
EXREACT	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

EXREACT	2, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010
EFFWIDTH	14.1422, 10.0000
COMMENT	The beta live parameter on the COMBFACT command is used
COMMENT	to export the product of the Scale Factor and the Impact
COMMENT	Factor for each vehicle. See the Advanced button in the
COMMENT	Analysis Settings window.
COMMENT	---------------------------------------
COMMENT	Within Madero, the magnitude of a lane load or pedestrian
COMMENT	load is fixed at 0.64 k/ft (9.3 N/mm). Therefore, the
COMMENT	IMPACT command is used to scale the Madero lane load so
COMMENT	it is equivalent to the load specified in BrDR.
COMMENT	---------------------------------------
COMMENT	See the Custom I load group for Inventory rating results.
COMMENT	See the Custom II load group for Operating rating results.
COMMENT	Vehicle: Type 3-3
COMBFACT	4, 1.0, 1.000, 100.00, 0.5
COMBFACT	5, 1.0, 1.000, 133.00, 0.5
COMMENT	The axle loading is represented by Special Truck 1.
COMMENT	This only occurs when the axle loading does not conform
COMMENT	to the axle loads and spacings of an HS type truck.
TRUCK	12.000, 0.000 ,12.000, 15.000 ,12.000, 4.000,
LIVE	4, 0, 1.0000, 0, 1, 0, 0
LIVE	5, 0, 1.0000, 0, 1, 0, 0

END INPUT FILE =========================

CHECKING ROUTINE DETECTED ONE SPAN BRIDGE
AND THEREFORE THE VARIABLE AXLE SPACING
CONTROL WAS SET TO "NO". USE CONTROL COMMAND
TO OVERRIDE. SEE OUTPUT BELOW FOR CURRENT
CONTROL VARIABLES.

========== ADMINISTRATIVE INFORMATION ===========

JOB TITLE: Member Alt: Girder

DATE   : 12/04/2014
TIME   : 9:18:35

⚥   ========== SUMMARY OF CONTROL PARAMETERS ===========

     OUTPUT OPTIONS
          Include Page Breaks   : Yes
          Table Output Abbreviated   : No
          Table Headers   : Yes
          Influence Function Report   : No
          Detailed Action Report   : No
          Load Calculations   : Yes
          Adjustment Factor Calculations   : No
          Rating Factor Calculations   : No
          Stress Calculations   : No
          Connection Calculations   : No
          Structural Analysis Output Level : Minimum

     UNITS: U.S. customary (kips, ft)

     CONTROL PARAMETERS
          Data Checking   : Yes
          Variable Axle Spacing   : No
          Neglect Axles That Do Not Contribute
           to Critical Load Effect   : Yes
          One or Multiple Lanes Loaded   : One
          Interior or Exterior Stringer   : Exterior

     LOAD COMBINATIONS

          GROUP I   LOAD GROUP
               Design Truck   : Yes
               Truck Load Factor : 1.000
               Design Lane Load : Yes
               Special Truck #1 : No
               Special Truck #2 : No
               Special Truck #3 : No

          CUSTOM I   LOAD GROUP
               Design Truck   : No
               Truck Load Factor : 1.000
               Design Lane Load : No
               Special Truck #1 : Yes
               Special Truck #2 : No
               Special Truck #3 : No

          CUSTOM II LOAD GROUP
               Design Truck   : No
               Truck Load Factor : 1.000
               Design Lane Load : No
               Special Truck #1 : Yes
               Special Truck #2 : No
               Special Truck #3 : No
⚥

     ============ GENERAL STRUCTURE INFORMATION ===========

     Bridge Type: Steel Stringer with Timber Floor

               ===========
               ^   ^
       Spans   1
       Nodes   1   11
     Elements   1 to 10
     Supports   1   2

```
     SPAN DATA
          Span No.   Length (ft)
             1         17.00

     RESTRAINT DATA
          Support No.   Vertical-Rotation
              1              Fixed-Free
              2              Fixed-Free

     Roadway Width            =      15.542 (ft)
     Number of Design Lanes   =         001
     Curb Width               =       3.250 (in)
     Railing Width            =       3.250 (in)
     Wearing Surface Thickness =      2.500 (in)


NOMINAL DIMENSION IDENTIFICATION (per 1997 NDS Table 1A and AASHTO Table 13.2.2A )

  Input Data:
      Actual Width =     10.000 (in)
      Actual Depth =      4.000 (in)
      Section Type = Plank Deck

  Output data:
      Nominal Width =     10.000 (in)
      Nominal Depth =      4.000 (in)


WHEEL LOAD DISTRIBUTION WIDTH CALCULATIONS (per AASHTO 16th ed. 3.25)

  Input Data:
      Number of Lanes   =          1
      Deck Type         = Plank Deck
      Deck Thickness    =      4.000 (in)
      Deck Member Width =     10.000 (in)
      Stringer Spacing  =      2.750 (ft)
      Stringer Width    =      4.001 (in)

  Output data:
      Effective Deck Span                           =       2.583 (ft)
      Distribution Width Perpendicular to Deck Span =      10.000 (in)
      Distribution Widths in Direction of Deck Span:
        CUSTOM I   Load Group        HS Trk            14.142 (in)
Spec. 1              14.142 (in)
        CUSTOM II  Load Group        HS Trk            14.142 (in)
Spec. 1              14.142 (in)


DEAD LOAD CALCULATIONS FOR TRANSVERSE DECK

  Input data:
      Stringer Spacing             =       2.750 (ft)
      Section Type                 = Plank Deck
      Deck Thickness               =       4.000 (in)
      Wearing Surface Thickness    =       2.500 (in)
      Deck Unit Weight             =      50.000 (pcf)
      Wearing Surface Unit Weight  =      50.000 (pcf)
      Rail System Linear Weight    =      19.500 (lb/ft)
      WL Distribution Width Perpendicular to Deck Span =     10.000 (in)

  Output data:
```

```
        Deck Component DL      =      0.014 (kip/ft)
        Deck Wearing Surface DL =     0.009 (kip/ft)
        Rail System DL         =      0.020 (kip/ft)
```

GEOMETRIC SECTION PROPERTIES CALCULATIONS

```
Input Data:
    Member Type               = Plank Deck
    Member Width              =     10.000 (in)
    Member Depth              =      4.000 (in)
    Modulus of Elasticity in x =  0.180E+04 (ksi)
    Moisture Adjustment Factor =      0.900

Output data:
    Moment of Inertia        =  0.533E+02 (in^4)
    Adjusted Modulus (E')    =  0.162E+04 (ksi)
    Flexural Rigidity (E'I)  =  0.864E+05 (k*in^2)
```

⚲   ========== SUMMARY OF TRANSVERSE DECK INFORMATION ==========

```
        MATERIAL DESIGNATIONS
            Deck Type      = Plank Deck
            Species        = User
            Grade          = User
            Grading Agency = User

        STRENGTH PROPERTIES
            Moisture Condition for Shear & Flexure      = WET
            Moisture Condition for Bearing              = WET
            Allowable Deflection                        =      0.040 (in)
            Allowable Bending Stress (tens. zone in tension) =   1.150 (ksi)
            Allowable Bending Stress (comp. zone in tension) =   1.150 (ksi)
            Allowable Shear Stress                      =      0.095 (ksi)
            Allowable Comp. Stress Perp to Grain (bot face) =    0.625 (ksi)
            Allowable Comp. Stress Perp to Grain (top face) =    0.625 (ksi)
            Modulus of Elasticity in x                  =   1800.000 (ksi)
            Modulus of Elasticity in y                  =   1800.000 (ksi)

        GEOMETRIC PROPERTIES
            Deck Overhang                =       0.292 (ft)
            Actual Thickness             =       4.000 (in)
            Effective Width              =      10.000 (in)
            Moment of Inertia            = 0.5333E+02 (in^4)
            Flexural Rigidity            = 0.8640E+05 (k*in^2)
```

⚲   TRANSVERSE DECK DETAILED REPORT

CUSTOM I   LOAD GROUP

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
    Section Dimensions (in)
      Depth    4.000        Effective Width   10.000
```

Design Stresses (ksi)	Unfact. Stress	Moist. Factor	Size Factor	Flat Factor	Load Dur. Factor	Percent Factor	Fact. Stress
Flexure	1.150	0.85	1.10	1.10	1.15	1.00	1.564

```
    Allowable Deflection (in)      0.040
```

Maximum Factored Moments (kip*ft)

```
                                      Moment
                                 ------------------
   Main Deck
     Component Dead                     0.01
     Wearing Dead                       0.01

     Live Load                     one       multiple
                                   lane        lanes
       Spec. 1                     3.19        0.00
       Combined                    3.21        0.00
       Critical                    3.21        0.00

   Overhang
     Component Dead                     0.01
     Wearing Dead                       0.00

     Live Load                     one       multiple
                                   lane        lanes
       Spec. 1                     0.00        0.00
       Combined                    0.01        0.00
       Critical                    0.01        0.00

   Stresses                        Flexural (ksi)        Deflection (in)
                                 ------------------     ------------------
   Main Deck
     Component Dead                     0.004                .161E-03
     Wearing Dead                       0.003                .101E-03

     Live Load                    one      multiple'      one      multiple
                                  lane      lanes '       lane      lanes
       Spec. 1                   1.436      0.000     .417E-01    .000E+00
       Combined                  1.442      0.000
       Critical                  1.442      0.000     .417E-01    .000E+00
       Ratio                     1.08       0.00        0.96        0.00
       RF                        1.08       0.00

   Overhang
     Component Dead                     0.003
     Wearing Dead                       0.000

     Live Load                     one       multiple
                                   lane        lanes
       Spec. 1                    0.000       0.000
       Combined                   0.003       0.000
       Critical                   0.003       0.000
       Ratio                      491.47      0.00
       RF                         ******      0.00

   Critical Ratio                  1.08       ******      0.96       ******
   Critical RF                     1.08       ******
```

TRANSVERSE DECK DETAILED REPORT

CUSTOM II   LOAD GROUP

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
   Section Dimensions (in)
     Depth    4.000         Effective Width   10.000
```

DeckType3-3.OUT

```
Design Stresses (ksi)   Unfact. Moist.  Size   Flat Load Dur. Percent Fact.
                        Stress  Factor Factor Factor  Factor  Factor Stress
    Flexure             1.150   0.85   1.10   1.10    1.15    1.33   2.080

Allowable Deflection (in)      0.040

Maximum Factored Moments (kip*ft)
                                            Moment
                                        ------------------
    Main Deck
      Component Dead                          0.01
      Wearing Dead                            0.01

      Live Load                        one       multiple
                                       lane       lanes
        Spec. 1                        3.19       0.00
        Combined                       3.21       0.00
        Critical                       3.21       0.00

    Overhang
      Component Dead                          0.01
      Wearing Dead                            0.00

      Live Load                        one       multiple
                                       lane       lanes
        Spec. 1                        0.00       0.00
        Combined                       0.01       0.00
        Critical                       0.01       0.00

    Stresses                          Flexural (ksi)        Deflection (in)
                                      ------------------    ------------------
    Main Deck
      Component Dead                          0.004              .161E-03
      Wearing Dead                            0.003              .101E-03

      Live Load                    one     multiple'      one     multiple
                                   lane     lanes '       lane      lanes
        Spec. 1                   1.436     0.000      .417E-01  .000E+00
        Combined                  1.442     0.000
        Critical                  1.442     0.000      .417E-01  .000E+00
        Ratio                      1.44      0.00        0.96      0.00
        RF                         1.44      0.00

    Overhang
      Component Dead                          0.003
      Wearing Dead                            0.000

      Live Load                    one     multiple
                                   lane     lanes
        Spec. 1                   0.000     0.000
        Combined                  0.003     0.000
        Critical                  0.003     0.000
        Ratio                    653.66      0.00
        RF                       ******      0.00

    Critical Ratio                  1.44    ******     0.96    ******
    Critical RF                     1.44    ******
```

TRANSVERSE DECK SUMMARY REPORT

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

		Flexural (ksi)		Deflection (in)	
		one lane	multiple lanes	one lane	multiple lanes
		-------	-------	-------	-------
CUSTOM I	LOAD GROUP				
Stress		1.442	0.000	0.417E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		1.564	1.564	0.400E-01	0.400E-01
Ratio		1.08	*******	0.96	*******
RF		1.08	*******		
CUSTOM II	LOAD GROUP				
Stress		1.442	0.000	0.417E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		2.080	2.080	0.400E-01	0.400E-01
Ratio		1.44	*******	0.96	*******
RF		1.44	*******		
Cr Ratio		1.08	*******	0.96	*******
Crit RF		1.08	*******		

Critical ratio for all limit states: 0.96
Critical rating factor for all limit states: 1.08

```
==========================================================
|                                                        |
|          TIMBER BRIDGE RATING AND DESIGN               |
|                      FOR                               |
|            AASHTO 16th Edition LOADS                   |
|                                                        |
|                    MADERO                              |
|              Version  1.02.05                          |
|               Sep. 11, 2012                            |
|                                                        |
|             University of Wyoming                      |
|              Laramie, Wyoming                          |
|                                                        |
==========================================================
```

ECHO INPUT FILE =======================

COMMENT	Agency: AASHTO
COMMENT	Bridge Code: L15672000_02001
COMMENT	Bridge Name: Swan River (Truss)
COMMENT	Structure Defintion: Timber Deck Model
COMMENT	Superstructure for DECK RATING ONLY
TITLE	Member Alt: Girder
UNITS	0
TYPE	1, 3, 4
CONTROL	1, 0, 2, 1, , , , 0, 1, 1, 1
OUTPUT	1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 1
COMMENT	The option to generate points of interest at cross section
COMMENT	changes was selected but is not supported by Madero.
REPORT	100
REPORT	101
REPORT	102
REPORT	103
REPORT	104
REPORT	105
REPORT	106
REPORT	107
REPORT	108
REPORT	109
REPORT	110

CALCS	100
CALCS	101
CALCS	102
CALCS	103
CALCS	104
CALCS	105
CALCS	106
CALCS	107
CALCS	108
CALCS	109
CALCS	110
DECKMATL	DFL-WWPA, N1B
ADJUST	2, 2.000, 0.850, 0.970, 0.670, 0.900,
SPAN	17.0000
FIXITY	1, 10
FIXITY	2, 10
GENLDIM	15.5417, 1, 3.2500, 2.5000,
STRINGSPAC	1, 2.7500
STRINGSPAC	2, 2.0000
STRINGSPAC	3, 2.0000
STRINGSPAC	4, 2.0000
STRINGSPAC	5, 2.0000
STRINGSPAC	6, 2.0000
STRINGSPAC	7, 2.7500
STRINGDIM	8, 4.0010, , 0.2917
DECKDIM	4.0000, , , , 0, , 9.5000,
DECKSTR	WET, WET, , 1.150, 0.095, 0.625, 1800.000
STRINGDEAD	, 50.0000, 50.0000, 19.5000
COMMENT	The following commands contain wheel fractions.
EXBEAM	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010
EXREACT	1, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

```
EXREACT              2, 0.010, 0.010, 0.010, 0.010, 0.010, 0.010

EFFWIDTH             13.9195, 10.0000

COMMENT              The beta live parameter on the COMBFACT command is used

COMMENT              to export the product of the Scale Factor and the Impact

COMMENT              Factor for each vehicle. See the Advanced button in the

COMMENT              Analysis Settings window.

COMMENT              ---------------------------------------

COMMENT              Within Madero, the magnitude of a lane load or pedestrian

COMMENT              load is fixed at 0.64 k/ft (9.3 N/mm). Therefore, the

COMMENT              IMPACT command is used to scale the Madero lane load so

COMMENT              it is equivalent to the load specified in BrDR.

COMMENT              ---------------------------------------

COMMENT              See the Custom I load group for Inventory rating results.

COMMENT              See the Custom II load group for Operating rating results.

COMMENT              Vehicle: Type 3S2

COMBFACT             4, 1.0, 1.000, 100.00, 0.5

COMBFACT             5, 1.0, 1.000, 133.00, 0.5

COMMENT              The axle loading is represented by Special Truck 1.

COMMENT              This only occurs when the axle loading does not conform

COMMENT              to the axle loads and spacings of an HS type truck.

TRUCK                10.000, 0.000 ,15.500, 11.000 ,15.500, 4.000,

LIVE                 4, 0, 1.0000, 0, 1, 0, 0

LIVE                 5, 0, 1.0000, 0, 1, 0, 0


END INPUT FILE =======================

CHECKING ROUTINE DETECTED ONE SPAN BRIDGE
AND THEREFORE THE VARIABLE AXLE SPACING
CONTROL WAS SET TO "NO". USE CONTROL COMMAND
TO OVERRIDE. SEE OUTPUT BELOW FOR CURRENT
CONTROL VARIABLES.


========== ADMINISTRATIVE INFORMATION ===========

JOB TITLE:  Member Alt: Girder

DATE     : 12/04/2014
TIME     :  9:18:35
```

♀   ========== SUMMARY OF CONTROL PARAMETERS ===========

OUTPUT OPTIONS
       Include Page Breaks   : Yes
       Table Output Abbreviated   : No
       Table Headers   : Yes
       Influence Function Report   : No
       Detailed Action Report   : No
       Load Calculations   : Yes
       Adjustment Factor Calculations   : No
       Rating Factor Calculations   : No
       Stress Calculations   : No
       Connection Calculations   : No
       Structural Analysis Output Level : Minimum

UNITS: U.S. customary (kips, ft)

CONTROL PARAMETERS
       Data Checking   : Yes
       Variable Axle Spacing   : No
       Neglect Axles That Do Not Contribute
        to Critical Load Effect   : Yes
       One or Multiple Lanes Loaded   : One
       Interior or Exterior Stringer   : Exterior

LOAD COMBINATIONS

       GROUP I   LOAD GROUP
             Design Truck   : Yes
             Truck Load Factor : 1.000
             Design Lane Load : Yes
             Special Truck #1 : No
             Special Truck #2 : No
             Special Truck #3 : No

       CUSTOM I   LOAD GROUP
             Design Truck   : No
             Truck Load Factor : 1.000
             Design Lane Load : No
             Special Truck #1 : Yes
             Special Truck #2 : No
             Special Truck #3 : No

       CUSTOM II LOAD GROUP
             Design Truck   : No
             Truck Load Factor : 1.000
             Design Lane Load : No
             Special Truck #1 : Yes
             Special Truck #2 : No
             Special Truck #3 : No

♀

============ GENERAL STRUCTURE INFORMATION ===========

Bridge Type: Steel Stringer with Timber Floor

             ===========
             ^   ^
  Spans   1
  Nodes   1   11
Elements   1 to 10
Supports   1   2

DeckType3S2.OUT

    SPAN DATA
        Span No.   Length (ft)
            1   17.00

    RESTRAINT DATA
        Support No.   Vertical-Rotation
            1   Fixed-Free
            2   Fixed-Free

    Roadway Width   =   15.542 (ft)
    Number of Design Lanes   =   001
    Curb Width   =   3.250 (in)
    Railing Width   =   3.250 (in)
    Wearing Surface Thickness =   2.500 (in)

NOMINAL DIMENSION IDENTIFICATION (per 1997 NDS Table 1A and AASHTO Table 13.2.2A)

Input Data:
    Actual Width =   10.000 (in)
    Actual Depth =   4.000 (in)
    Section Type = Plank Deck

Output data:
    Nominal Width =   10.000 (in)
    Nominal Depth =   4.000 (in)

WHEEL LOAD DISTRIBUTION WIDTH CALCULATIONS (per AASHTO 16th ed. 3.25)

Input Data:
    Number of Lanes   =   1
    Deck Type   = Plank Deck
    Deck Thickness   =   4.000 (in)
    Deck Member Width =   10.000 (in)
    Stringer Spacing   =   2.750 (ft)
    Stringer Width   =   4.001 (in)

Output data:
    Effective Deck Span   =   2.583 (ft)
    Distribution Width Perpendicular to Deck Span =   10.000 (in)
    Distribution Widths in Direction of Deck Span:
      CUSTOM I   Load Group   HS Trk   13.920 (in)
Spec. 1   13.920 (in)
      CUSTOM II Load Group   HS Trk   13.920 (in)
Spec. 1   13.920 (in)

DEAD LOAD CALCULATIONS FOR TRANSVERSE DECK

Input data:
    Stringer Spacing   =   2.750 (ft)
    Section Type   = Plank Deck
    Deck Thickness   =   4.000 (in)
    Wearing Surface Thickness   =   2.500 (in)
    Deck Unit Weight   =   50.000 (pcf)
    Wearing Surface Unit Weight =   50.000 (pcf)
    Rail System Linear Weight   =   19.500 (lb/ft)
    WL Distribution Width Perpendicular to Deck Span =   10.000 (in)

Output data:

```
        Deck Component DL        =      0.014 (kip/ft)
        Deck Wearing Surface DL  =      0.009 (kip/ft)
        Rail System DL           =      0.020 (kip/ft)
```

GEOMETRIC SECTION PROPERTIES CALCULATIONS

```
Input Data:
        Member Type                 = Plank Deck
        Member Width                =     10.000 (in)
        Member Depth                =      4.000 (in)
        Modulus of Elasticity in x  =  0.180E+04 (ksi)
        Moisture Adjustment Factor  =      0.900

Output data:
        Moment of Inertia        =  0.533E+02 (in^4)
        Adjusted Modulus (E')    =  0.162E+04 (ksi)
        Flexural Rigidity (E'I)  =  0.864E+05 (k*in^2)
```

⚲   ========== SUMMARY OF TRANSVERSE DECK INFORMATION ==========

```
        MATERIAL DESIGNATIONS
                Deck Type       = Plank Deck
                Species         = User
                Grade           = User
                Grading Agency  = User

        STRENGTH PROPERTIES
                Moisture Condition for Shear & Flexure       = WET
                Moisture Condition for Bearing               = WET
                Allowable Deflection                         =       0.040 (in)
                Allowable Bending Stress (tens. zone in tension) =   1.150 (ksi)
                Allowable Bending Stress (comp. zone in tension) =   1.150 (ksi)
                Allowable Shear Stress                       =       0.095 (ksi)
                Allowable Comp. Stress Perp to Grain (bot face)  =   0.625 (ksi)
                Allowable Comp. Stress Perp to Grain (top face)  =   0.625 (ksi)
                Modulus of Elasticity in x                   =    1800.000 (ksi)
                Modulus of Elasticity in y                   =    1800.000 (ksi)

        GEOMETRIC PROPERTIES
                Deck Overhang            =        0.292 (ft)
                Actual Thickness         =        4.000 (in)
                Effective Width          =       10.000 (in)
                Moment of Inertia        =  0.5333E+02 (in^4)
                Flexural Rigidity        =  0.8640E+05 (k*in^2)
```

⚲   TRANSVERSE DECK DETAILED REPORT

CUSTOM I   LOAD GROUP

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
    Section Dimensions (in)
      Depth    4.000        Effective Width    10.000
```

Design Stresses (ksi)	Unfact. Stress	Moist. Factor	Size Factor	Flat Factor	Load Dur. Factor	Percent Factor	Fact. Stress
Flexure	1.150	0.85	1.10	1.10	1.15	1.00	1.564

```
    Allowable Deflection (in)        0.040
```

Maximum Factored Moments (kip*ft)

```
                                         Moment
                                   ------------------
   Main Deck
     Component Dead                       0.01
     Wearing Dead                         0.01
```

Live Load	one lane	multiple lanes
Spec. 1	3.11	0.00
Combined	3.12	0.00
Critical	3.12	0.00

```
   Overhang
     Component Dead                       0.01
     Wearing Dead                         0.00
```

Live Load	one lane	multiple lanes
Spec. 1	0.00	0.00
Combined	0.01	0.00
Critical	0.01	0.00

```
   Stresses                         Flexural (ksi)        Deflection (in)
                                   ------------------    ------------------
   Main Deck
     Component Dead                       0.004                .161E-03
     Wearing Dead                         0.003                .101E-03
```

Live Load	one lane	multiple lanes '	one lane	multiple lanes
Spec. 1	1.397	0.000	.405E-01	.000E+00
Combined	1.404	0.000		
Critical	1.404	0.000	.405E-01	.000E+00
Ratio	1.11	0.00	0.99	0.00
RF	1.11	0.00		

```
   Overhang
     Component Dead                       0.003
     Wearing Dead                         0.000
```

Live Load	one lane	multiple lanes
Spec. 1	0.000	0.000
Combined	0.003	0.000
Critical	0.003	0.000
Ratio	491.47	0.00
RF	******	0.00

	one lane	multiple lanes	one lane	multiple lanes
Critical Ratio	1.11	******	0.99	******
Critical RF	1.11	******		

⚲   TRANSVERSE DECK DETAILED REPORT

CUSTOM II   LOAD GROUP

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

```
   Section Dimensions (in)
     Depth    4.000        Effective Width   10.000
```

```
Design Stresses (ksi)   Unfact. Moist.  Size   Flat Load Dur. Percent Fact.
                        Stress  Factor Factor Factor  Factor  Factor Stress
   Flexure              1.150   0.85   1.10   1.10    1.15    1.33   2.080
```

Allowable Deflection (in)   0.040

Maximum Factored Moments (kip*ft)

```
                                        Moment
                                   ------------------
   Main Deck
     Component Dead                        0.01
     Wearing Dead                          0.01

     Live Load                      one       multiple
                                    lane        lanes
       Spec. 1                      3.11        0.00
       Combined                     3.12        0.00
       Critical                     3.12        0.00

   Overhang
     Component Dead                        0.01
     Wearing Dead                          0.00

     Live Load                      one       multiple
                                    lane        lanes
       Spec. 1                      0.00        0.00
       Combined                     0.01        0.00
       Critical                     0.01        0.00
```

```
   Stresses                        Flexural (ksi)         Deflection (in)
                                   ------------------     ------------------
   Main Deck
     Component Dead                       0.004                 .161E-03
     Wearing Dead                         0.003                 .101E-03

     Live Load                      one       multiple'    one       multiple
                                    lane        lanes '     lane        lanes
       Spec. 1                     1.397       0.000     .405E-01    .000E+00
       Combined                    1.404       0.000
       Critical                    1.404       0.000     .405E-01    .000E+00
       Ratio                        1.48        0.00      0.99        0.00
       RF                           1.48        0.00

   Overhang
     Component Dead                       0.003
     Wearing Dead                         0.000

     Live Load                      one       multiple
                                    lane        lanes
       Spec. 1                     0.000       0.000
       Combined                    0.003       0.000
       Critical                    0.003       0.000
       Ratio                      653.66        0.00
       RF                         ******        0.00

   Critical Ratio                    1.48      ******      0.99      ******
   Critical RF                       1.48      ******
```

TRANSVERSE DECK SUMMARY REPORT

NOTE: Asterisks indicate large ratios which are non-critical and may be ignored

		Flexural (ksi)		Deflection (in)	
		one lane	multiple lanes	one lane	multiple lanes
		-------	-------	-------	-------
CUSTOM I	LOAD GROUP				
Stress		1.404	0.000	0.405E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		1.564	1.564	0.400E-01	0.400E-01
Ratio		1.11	*******	0.99	*******
RF		1.11	*******		
CUSTOM II	LOAD GROUP				
Stress		1.404	0.000	0.405E-01	0.000E+00
Control		Main	Main	Main	Main
Truck		HS 30ft	HS 30ft	HS 30ft	HS 30ft
Allow		2.080	2.080	0.400E-01	0.400E-01
Ratio		1.48	*******	0.99	*******
RF		1.48	*******		
Cr Ratio		1.11	*******	0.99	*******
Crit RF		1.11	*******		

Critical ratio for all limit states: 0.99
Critical rating factor for all limit states: 1.11

Bridge ID :L1567200002001
Bridge : Swan River (Truss)
StructDef : 119'SteelTruss(withReducedCapacityMembers)
User : BrR
Date : Thursday, December 04, 2014 09:06:35
File : RatingResults.XML
Analysis Preference Setting : None

NBI Structure ID :L15672000_02001
Bridge Alt : As-built
Member : NW Truss (Downstream)

Load Factor Rating Summary

Live Load	Live Load Type	Inv Element	Inv RF	Inv Capacity (Ton)	Opr Element	Opr RF	Opr Capacity (Ton)	Legal Opr Element	Legal Opr RF	Legal Opr Capacity (Ton)	Permit Inv Element	Permit Inv RF	Permit Inv Capacity (Ton)	Permit Opr Element	Permit Opr RF	Permit Opr Capacity (Ton)	Impact	Lane
HS 20-44	Design Truck	VW6	0.436	15.71	VW6	0.729	26.23										As Requested	As Requested
HS 20-44	Design Lane	VW1	0.462	16.63	VW6	0.772	27.78										As Requested	As Requested
HS 20-44	Design Truck	VW6	0.436	15.71	VW6	0.729	26.23										With Impact	Single Lane
HS 20-44	Design Lane	VW1	0.462	16.63	VW6	0.772	27.78										With Impact	Single Lane
HS 20-44	Design Truck	VW6	0.436	15.71	VW6	0.729	26.23										With Impact	Multi-Lane
HS 20-44	Design Lane	VW1	0.462	16.63	VW6	0.772	27.78										With Impact	Multi-Lane
HS 20-44	Design Truck	VW6	0.567	20.42	VW6	0.947	34.10										Without Impact	Single Lane
HS 20-44	Design Lane	VW1	0.601	21.63	VW6	1.003	36.11										Without Impact	Single Lane
HS 20-44	Design Truck	VW6	0.567	20.42	VW6	0.947	34.10										Without Impact	Multi-Lane
HS 20-44	Design Lane	VW1	0.601	21.63	VW6	1.003	36.11										Without Impact	Multi-Lane
Type 3	Design Truck	VW6	0.535	13.36	VW6	0.893	22.32										As Requested	As Requested
Type 3	Design Truck	VW6	0.535	13.36	VW6	0.893	22.32										With Impact	Single Lane
Type 3	Design Truck	VW6	0.535	13.36	VW6	0.893	22.32										With Impact	Multi-Lane
Type 3	Design Truck	VW6	0.695	17.37	VW6	1.160	29.01										Without Impact	Single Lane
Type 3	Design Truck	VW6	0.695	17.37	VW6	1.160	29.01										Without Impact	Multi-Lane
Type 3-3	Design Truck	DW5	0.577	23.07	DW5	0.963	38.52										As Requested	As Requested
Type 3-3	Design Truck	DW5	0.577	23.07	DW5	0.963	38.52										With Impact	Single Lane
Type 3-3	Design Truck	DW5	0.577	23.07	DW5	0.963	38.52										With Impact	Multi-Lane
Type 3-3	Design Truck	DW5	0.718	28.71	DW5	1.199	47.95										Without Impact	Single Lane
Type 3-3	Design Truck	DW5	0.718	28.71	DW5	1.199	47.95										Without Impact	Multi-Lane
Type 3S2	Design Truck	VW6	0.552	19.87	VW6	0.922	33.18										As Requested	As Requested
Type 3S2	Design Truck	VW6	0.552	19.87	VW6	0.922	33.18										With Impact	Single Lane
Type 3S2	Design Truck	VW6	0.552	19.87	VW6	0.922	33.18										With Impact	Multi-Lane
Type 3S2	Design Truck	DW5	0.712	25.64	DW5	1.189	42.82										Without Impact	Single Lane
Type 3S2	Design Truck	DW5	0.712	25.64	DW5	1.189	42.82										Without Impact	Multi-Lane

Detailed Truss Member Rating Results

Live Load: HS 20-44 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		88.02			0.665		0.775	1.294			
		20.61	////		45.39 / 45.39 / / /	1.20		88.02				0.665	0.775	1.294			
		20.61	////		45.39 / 45.39 / / /			88.02			0.665		0.934	1.559			
		20.61	////		45.39 / 45.39 / / /			88.02				0.665	0.934	1.559			
BC2	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		93.75			0.665		0.848	1.415			
		20.61	////		45.39 / 45.39 / / /	1.20		93.75				0.665	0.848	1.415			
		20.61	////		45.39 / 45.39 / / /			93.75			0.665		1.021	1.705			
		20.61	////		45.39 / 45.39 / / /			93.75				0.665	1.021	1.705			
BC3	Lower-Chord	34.46	////		74.12 / 74.12 / / /	1.20		135.00			0.665		0.699	1.168			
		34.46	////		74.12 / 74.12 / / /	1.20		135.00				0.665	0.699	1.168			
		34.46	////		74.12 / 74.12 / / /			135.00			0.665		0.842	1.407			
		34.46	////		74.12 / 74.12 / / /			135.00				0.665	0.842	1.407			
BC4	Lower-Chord	41.00	////		84.15 / 84.15 / / /	1.20		157.50			0.665		0.711	1.188			
		41.00	////		84.15 / 84.15 / / /	1.20		157.50				0.665	0.711	1.188			
		41.00	////		84.15 / 84.15 / / /			157.50			0.665		0.857	1.432			
		41.00	////		84.15 / 84.15 / / /			157.50				0.665	0.857	1.432			
BC5	Lower-Chord	34.46	////		74.12 / 74.12 / / /	1.20		135.00			0.665		0.699	1.168			
		34.46	////		74.12 / 74.12 / / /	1.20		135.00				0.665	0.699	1.168			
		34.46	////		74.12 / 74.12 / / /			135.00			0.665		0.842	1.407			
		34.46	////		74.12 / 74.12 / / /			135.00				0.665	0.842	1.407			
BC6	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		93.75			0.665		0.848	1.415			
		20.61	////		45.39 / 45.39 / / /	1.20		93.75				0.665	0.848	1.415			
		20.61	////		45.39 / 45.39 / / /			93.75			0.665		1.021	1.705			
		20.61	////		45.39 / 45.39 / / /			93.75				0.665	1.021	1.705			
BC7	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		88.02			0.665		0.775	1.294			
		20.61	////		45.39 / 45.39 / / /	1.20		88.02				0.665	0.775	1.294			
		20.61	////		45.39 / 45.39 / / /			88.02			0.665		0.934	1.559			
		20.61	////		45.39 / 45.39 / / /			88.02				0.665	0.934	1.559			
TC2	Upper-Chord	-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63				0.665		1.456	2.431			
		-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63					0.665	1.456	2.431			
		-34.46	-74.12 / -74.12 / / /		////		-232.63				0.665		1.754	2.929			
		-34.46	-74.12 / -74.12 / / /		////		-232.63					0.665	1.754	2.929			
TC3	Upper-Chord	-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63				0.665		1.171	1.955			
		-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63					0.665	1.171	1.955			
		-41.45	-87.73 / -87.73 / / /		////		-232.63				0.665		1.410	2.355			
		-41.45	-87.73 / -87.73 / / /		////		-232.63					0.665	1.410	2.355			
TC4	Upper-Chord	-41.91	-87.41 / -87.20 / / /	1.20	////		-232.63				0.665		1.171	1.960			
		-41.91	-87.41 / -87.20 / / /	1.20	////		-232.63					0.665	1.171	1.960			
		-41.91	-87.41 / -87.20 / / /		////		-232.63				0.665		1.411	2.362			
		-41.91	-87.41 / -87.20 / / /		////		-232.63					0.665	1.411	2.362			
TC5	Upper-Chord	-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63				0.665		1.171	1.955			
		-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63					0.665	1.171	1.955			
		-41.45	-87.73 / -87.73 / / /		////		-232.63				0.665		1.410	2.355			
		-41.45	-87.73 / -87.73 / / /		////		-232.63					0.665	1.410	2.355			
TC6	Upper-Chord	-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63				0.665		1.456	2.431			
		-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63					0.665	1.456	2.431			
		-34.46	-74.12 / -74.12 / / /		////		-232.63				0.665		1.754	2.929			
		-34.46	-74.12 / -74.12 / / /		////		-232.63					0.665	1.754	2.929			
VW1	Vertical	7.18	////		39.06 / 39.06 / / /	1.30		41.34			0.665		0.436	0.729			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

		7.18	////		39.06 / 39.06 / / /	1.30		41.34			0.665	**0.436**	**0.729**
		7.18	////		39.06 / 39.06 / /			41.34		0.665		**0.567**	**0.947**
		7.18	////		39.06 / 39.06 / /			41.34			0.665	**0.567**	**0.947**
VW2	Vertical	-9.67	-35.50 / -35.50 / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61		0.665		**0.877**	1.465
		-9.67	-35.50 / -35.50 / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61			0.665	**0.877**	1.465
		-9.67	-35.50 / -35.50 / /		14.92 / 14.92 / /		-68.58	86.61		0.665		1.092	1.824
		-9.67	-35.50 / -35.50 / /		14.92 / 14.92 / /		-68.58	86.61			0.665	1.092	1.824
VW3L	Vertical	-1.58	-24.82 / -24.56 / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61		0.665		**0.859**	1.449
		-1.58	-24.82 / -24.56 / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61			0.665	**0.859**	1.449
		-1.58	-24.82 / -24.56 / /		0.39 / 0.65 / /		-41.15	86.61		0.665		1.090	1.840
		-1.58	-24.82 / -24.56 / /		0.39 / 0.65 / /		-41.15	86.61			0.665	1.090	1.840
VW4	Vertical	-1.58	-24.82 / -24.56 / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61		0.665		1.461	2.466
		-1.58	-24.82 / -24.56 / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61			0.665	1.461	2.466
		-1.58	-24.82 / -24.56 / /		0.39 / 0.65 / /		-68.58	86.61		0.665		1.855	3.132
		-1.58	-24.82 / -24.56 / /		0.39 / 0.65 / /		-68.58	86.61			0.665	1.855	3.132
VW5	Vertical	-9.67	-35.50 / -35.50 / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61		0.665		**0.877**	1.465
		-9.67	-35.50 / -35.50 / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61			0.665	**0.877**	1.465
		-9.67	-35.50 / -35.50 / /		14.92 / 14.92 / /		-68.58	86.61		0.665		1.092	1.824
		-9.67	-35.50 / -35.50 / /		14.92 / 14.92 / /		-68.58	86.61			0.665	1.092	1.824
VW6	Vertical	7.18	////		39.06 / 39.06 / / /	1.30		41.34		0.665		**0.436**	**0.729**
		7.18	////		39.06 / 39.06 / / /	1.30		41.34			0.665	**0.436**	**0.729**
		7.18	////		39.06 / 39.06 / /			41.34		0.665		**0.567**	**0.947**
		7.18	////		39.06 / 39.06 / /			41.34			0.665	**0.567**	**0.947**
TC1	Diagonal	-32.76	-72.14 / -72.14 / /	1.20	////		-201.57			0.665		1.266	2.114
		-32.76	-72.14 / -72.14 / /	1.20	////		-201.57				0.665	1.266	2.114
		-32.76	-72.14 / -72.14 / /		////		-201.57			0.665		1.526	2.548
		-32.76	-72.14 / -72.14 / /		////		-201.57				0.665	1.526	2.548
TC7	Diagonal	-32.76	-72.14 / -72.14 / /	1.20	////		-201.57			0.665		1.266	2.114
		-32.76	-72.14 / -72.14 / /	1.20	////		-201.57				0.665	1.266	2.114
		-32.76	-72.14 / -72.14 / /		////		-201.57			0.665		1.526	2.548
		-32.76	-72.14 / -72.14 / /		////		-201.57				0.665	1.526	2.548
DW1	Diagonal	22.01	-6.92 / -6.92 / /	1.30	58.90 / 58.90 / / /	1.22		84.38		0.665		**0.536**	**0.895**
		22.01	-6.92 / -6.92 / /	1.30	58.90 / 58.90 / / /	1.22		84.38			0.665	**0.536**	**0.895**
		22.01	-6.92 / -6.92 / /		58.90 / 58.90 / /			84.38		0.665		**0.655**	1.094
		22.01	-6.92 / -6.92 / /		58.90 / 58.90 / /			84.38			0.665	**0.655**	1.094
DW2	Diagonal	11.11	-19.20 / -19.20 / /	1.30	45.67 / 45.67 / / /	1.24		54.00		0.665		**0.482**	**0.804**
		11.11	-19.20 / -19.20 / /	1.30	45.67 / 45.67 / / /	1.24		54.00			0.665	**0.482**	**0.804**
		11.11	-19.20 / -19.20 / /		45.67 / 45.67 / /			54.00		0.665		**0.600**	1.001
		11.11	-19.20 / -19.20 / /		45.67 / 45.67 / /			54.00			0.665	**0.600**	1.001
DW3	Diagonal	0.72	-0.49 / -0.81 / /	1.27	31.93 / 31.60 / / /	1.27		41.34		0.665		**0.690**	1.164
		0.72	-0.49 / -0.81 / /	1.27	31.93 / 31.60 / / /	1.27		41.34			0.665	**0.690**	1.164
		0.72	-0.49 / -0.81 / /		31.93 / 31.60 / /			41.34		0.665		**0.876**	1.478
		0.72	-0.49 / -0.81 / /		31.93 / 31.60 / /			41.34			0.665	**0.876**	1.478
DW4	Diagonal	0.72	-0.49 / -0.81 / /	1.27	31.93 / 31.60 / / /	1.27		41.34		0.665		**0.690**	1.164
		0.72	-0.49 / -0.81 / /	1.27	31.93 / 31.60 / / /	1.27		41.34			0.665	**0.690**	1.164
		0.72	-0.49 / -0.81 / /		31.93 / 31.60 / /			41.34		0.665		**0.876**	1.478
		0.72	-0.49 / -0.81 / /		31.93 / 31.60 / /			41.34			0.665	**0.876**	1.478
DW5	Diagonal	11.11	-19.20 / -19.20 / /	1.30	45.67 / 45.67 / / /	1.24		54.00		0.665		**0.482**	**0.804**
		11.11	-19.20 / -19.20 / /	1.30	45.67 / 45.67 / / /	1.24		54.00			0.665	**0.482**	**0.804**
		11.11	-19.20 / -19.20 / /		45.67 / 45.67 / /			54.00		0.665		**0.600**	1.001
		11.11	-19.20 / -19.20 / /		45.67 / 45.67 / /			54.00			0.665	**0.600**	1.001
DW6	Diagonal	22.01	-6.92 / -6.92 / /	1.30	58.90 / 58.90 / / /	1.22		84.38		0.665		**0.536**	**0.895**
		22.01	-6.92 / -6.92 / /	1.30	58.90 / 58.90 / / /	1.22		84.38			0.665	**0.536**	**0.895**
		22.01	-6.92 / -6.92 / /		58.90 / 58.90 / /			84.38		0.665		**0.655**	1.094
		22.01	-6.92 / -6.92 / /		58.90 / 58.90 / /			84.38			0.665	**0.655**	1.094

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: HS 20-44 (Design Lane)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	/ / / /		38.91 / 38.91 / / /	1.20		88.02			0.665		**0.904**	1.510			
		20.61	/ / / /		38.91 / 38.91 / / /	1.20		88.02				0.665	**0.904**	1.510			
		20.61	/ / / /		38.91 / 38.91 / / /			88.02			0.665		1.089	1.819			
		20.61	/ / / /		38.91 / 38.91 / / /			88.02				0.665	1.089	1.819			
BC2	Lower-Chord	20.61	/ / / /		38.91 / 38.91 / / /	1.20		93.75			0.665		**0.989**	1.651			
		20.61	/ / / /		38.91 / 38.91 / / /	1.20		93.75				0.665	**0.989**	1.651			
		20.61	/ / / /		38.91 / 38.91 / / /			93.75			0.665		1.191	1.989			
		20.61	/ / / /		38.91 / 38.91 / / /			93.75				0.665	1.191	1.989			
BC3	Lower-Chord	34.46	/ / / /		64.85 / 64.85 / / /	1.20		135.00			0.665		**0.799**	1.334			
		34.46	/ / / /		64.85 / 64.85 / / /	1.20		135.00				0.665	**0.799**	1.334			
		34.46	/ / / /		64.85 / 64.85 / / /			135.00			0.665		**0.963**	1.608			
		34.46	/ / / /		64.85 / 64.85 / / /			135.00				0.665	**0.963**	1.608			
BC4	Lower-Chord	41.00	/ / / /		71.90 / 72.11 / / /	1.20		157.50			0.665		**0.833**	1.386			
		41.00	/ / / /		71.90 / 72.11 / / /	1.20		157.50				0.665	**0.833**	1.386			
		41.00	/ / / /		71.90 / 72.11 / / /			157.50			0.665		1.003	1.671			
		41.00	/ / / /		71.90 / 72.11 / / /			157.50				0.665	1.003	1.671			
BC5	Lower-Chord	34.46	/ / / /		64.85 / 64.85 / / /	1.20		135.00			0.665		**0.799**	1.334			
		34.46	/ / / /		64.85 / 64.85 / / /	1.20		135.00				0.665	**0.799**	1.334			
		34.46	/ / / /		64.85 / 64.85 / / /			135.00			0.665		**0.963**	1.608			
		34.46	/ / / /		64.85 / 64.85 / / /			135.00				0.665	**0.963**	1.608			
BC6	Lower-Chord	20.61	/ / / /		38.91 / 38.91 / / /	1.20		93.75			0.665		**0.989**	1.651			
		20.61	/ / / /		38.91 / 38.91 / / /	1.20		93.75				0.665	**0.989**	1.651			
		20.61	/ / / /		38.91 / 38.91 / / /			93.75			0.665		1.191	1.989			
		20.61	/ / / /		38.91 / 38.91 / / /			93.75				0.665	1.191	1.989			
BC7	Lower-Chord	20.61	/ / / /		38.91 / 38.91 / / /	1.20		88.02			0.665		**0.904**	1.510			
		20.61	/ / / /		38.91 / 38.91 / / /	1.20		88.02				0.665	**0.904**	1.510			
		20.61	/ / / /		38.91 / 38.91 / / /			88.02			0.665		1.089	1.819			
		20.61	/ / / /		38.91 / 38.91 / / /			88.02				0.665	1.089	1.819			
TC2	Upper-Chord	-34.46	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63				0.665		1.664	2.779			
		-34.46	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63					0.665	1.664	2.779			
		-34.46	-64.85 / -64.85 / / /		/ / / /		-232.63				0.665		2.005	3.348			
		-34.46	-64.85 / -64.85 / / /		/ / / /		-232.63					0.665	2.005	3.348			
TC3	Upper-Chord	-41.45	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63				0.665		1.319	2.204			
		-41.45	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63					0.665	1.319	2.204			
		-41.45	-77.83 / -77.83 / / /		/ / / /		-232.63				0.665		1.590	2.655			
		-41.45	-77.83 / -77.83 / / /		/ / / /		-232.63					0.665	1.590	2.655			
TC4	Upper-Chord	-41.91	-77.51 / -77.30 / / /	1.20	/ / / /		-232.63				0.665		1.320	2.211			
		-41.91	-77.51 / -77.30 / / /	1.20	/ / / /		-232.63					0.665	1.320	2.211			
		-41.91	-77.51 / -77.30 / / /		/ / / /		-232.63				0.665		1.591	2.664			
		-41.91	-77.51 / -77.30 / / /		/ / / /		-232.63					0.665	1.591	2.664			
TC5	Upper-Chord	-41.45	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63				0.665		1.319	2.204			
		-41.45	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63					0.665	1.319	2.204			
		-41.45	-77.83 / -77.83 / / /		/ / / /		-232.63				0.665		1.590	2.655			
		-41.45	-77.83 / -77.83 / / /		/ / / /		-232.63					0.665	1.590	2.655			
TC6	Upper-Chord	-34.46	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63				0.665		1.664	2.779			
		-34.46	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63					0.665	1.664	2.779			
		-34.46	-64.85 / -64.85 / / /		/ / / /		-232.63				0.665		2.005	3.348			
		-34.46	-64.85 / -64.85 / / /		/ / / /		-232.63					0.665	2.005	3.348			
VW1	Vertical	7.18	/ / / /		36.88 / 36.88 / / /	1.30		41.34			0.665		**0.462**	**0.772**			

```
LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99
```

Member	Type	DL	LL(−)	F	LL(+)	F	Neg	Cap	LLDF-a	LLDF-b	Inv RF	Oper RF
		7.18	////		36.88 / 36.88 / / /	1.30		41.34		0.665	**0.462**	**0.772**
		7.18	////		36.88 / 36.88 / / /			41.34	0.665		**0.601**	1.003
		7.18	////		36.88 / 36.88 / / /			41.34		0.665	**0.601**	1.003
VW2	Vertical	−9.67	−29.36 / −29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	−68.58	86.61	0.665		1.061	1.771
		−9.67	−29.36 / −29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	−68.58	86.61		0.665	1.061	1.771
		−9.67	−29.36 / −29.36 / / /		11.06 / 11.06 / / /		−68.58	86.61	0.665		1.320	2.205
		−9.67	−29.36 / −29.36 / / /		11.06 / 11.06 / / /		−68.58	86.61		0.665	1.320	2.205
VW3L	Vertical	−1.58	−18.90 / −18.64 / / /	1.27	0.39 / 0.65 / / /	1.27	−41.15	86.61	0.665		1.128	1.910
		−1.58	−18.90 / −18.64 / / /	1.27	0.39 / 0.65 / / /	1.27	−41.15	86.61		0.665	1.128	1.910
		−1.58	−18.90 / −18.64 / / /		0.39 / 0.65 / / /		−41.15	86.61	0.665		1.432	2.425
		−1.58	−18.90 / −18.64 / / /		0.39 / 0.65 / / /		−41.15	86.61		0.665	1.432	2.425
VW4	Vertical	−1.58	−18.90 / −18.64 / / /	1.27	0.39 / 0.65 / / /	1.27	−68.58	86.61	0.665		1.919	3.249
		−1.58	−18.90 / −18.64 / / /	1.27	0.39 / 0.65 / / /	1.27	−68.58	86.61		0.665	1.919	3.249
		−1.58	−18.90 / −18.64 / / /		0.39 / 0.65 / / /		−68.58	86.61	0.665		2.436	4.126
		−1.58	−18.90 / −18.64 / / /		0.39 / 0.65 / / /		−68.58	86.61		0.665	2.436	4.126
VW5	Vertical	−9.67	−29.36 / −29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	−68.58	86.61	0.665		1.061	1.771
		−9.67	−29.36 / −29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	−68.58	86.61		0.665	1.061	1.771
		−9.67	−29.36 / −29.36 / / /		11.06 / 11.06 / / /		−68.58	86.61	0.665		1.320	2.205
		−9.67	−29.36 / −29.36 / / /		11.06 / 11.06 / / /		−68.58	86.61		0.665	1.320	2.205
VW6	Vertical	7.18	////		36.88 / 36.88 / / /	1.30		41.34	0.665		**0.462**	**0.772**
		7.18	////		36.88 / 36.88 / / /	1.30		41.34		0.665	**0.462**	**0.772**
		7.18	////		36.88 / 36.88 / / /			41.34	0.665		**0.601**	1.003
		7.18	////		36.88 / 36.88 / / /			41.34		0.665	**0.601**	1.003
TC1	Diagonal	−32.76	−70.67 / −70.67 / / /	1.20	////		−201.57		0.665		1.292	2.158
		−32.76	−70.67 / −70.67 / / /	1.20	////		−201.57			0.665	1.292	2.158
		−32.76	−70.67 / −70.67 / / /		////		−201.57		0.665		1.557	2.601
		−32.76	−70.67 / −70.67 / / /		////		−201.57			0.665	1.557	2.601
TC7	Diagonal	−32.76	−70.67 / −70.67 / / /	1.20	////		−201.57		0.665		1.292	2.158
		−32.76	−70.67 / −70.67 / / /	1.20	////		−201.57			0.665	1.292	2.158
		−32.76	−70.67 / −70.67 / / /		////		−201.57		0.665		1.557	2.601
		−32.76	−70.67 / −70.67 / / /		////		−201.57			0.665	1.557	2.601
DW1	Diagonal	22.01	−5.95 / −5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38	0.665		**0.595**	**0.993**
		22.01	−5.95 / −5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38		0.665	**0.595**	**0.993**
		22.01	−5.95 / −5.95 / / /		53.06 / 53.06 / / /			84.38	0.665		**0.728**	1.215
		22.01	−5.95 / −5.95 / / /		53.06 / 53.06 / / /			84.38		0.665	**0.728**	1.215
DW2	Diagonal	11.11	−14.22 / −14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00	0.665		**0.582**	**0.972**
		11.11	−14.22 / −14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00		0.665	**0.582**	**0.972**
		11.11	−14.22 / −14.22 / / /		37.78 / 37.78 / / /			54.00	0.665		**0.725**	1.210
		11.11	−14.22 / −14.22 / / /		37.78 / 37.78 / / /			54.00		0.665	**0.725**	1.210
DW3	Diagonal	0.72	////		24.32 / 23.98 / / /	1.27		41.34	0.665		**0.906**	1.534
		0.72	////		24.32 / 23.98 / / /	1.27		41.34		0.665	**0.906**	1.534
		0.72	////		24.32 / 23.98 / / /			41.34	0.665		1.150	1.947
		0.72	////		24.32 / 23.98 / / /			41.34		0.665	1.150	1.947
DW4	Diagonal	0.72	////		24.32 / 23.98 / / /	1.27		41.34	0.665		**0.906**	1.534
		0.72	////		24.32 / 23.98 / / /	1.27		41.34		0.665	**0.906**	1.534
		0.72	////		24.32 / 23.98 / / /			41.34	0.665		1.150	1.947
		0.72	////		24.32 / 23.98 / / /			41.34		0.665	1.150	1.947
DW5	Diagonal	11.11	−14.22 / −14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00	0.665		**0.582**	**0.972**
		11.11	−14.22 / −14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00		0.665	**0.582**	**0.972**
		11.11	−14.22 / −14.22 / / /		37.78 / 37.78 / / /			54.00	0.665		**0.725**	1.210
		11.11	−14.22 / −14.22 / / /		37.78 / 37.78 / / /			54.00		0.665	**0.725**	1.210
DW6	Diagonal	22.01	−5.95 / −5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38	0.665		**0.595**	**0.993**
		22.01	−5.95 / −5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38		0.665	**0.595**	**0.993**
		22.01	−5.95 / −5.95 / / /		53.06 / 53.06 / / /			84.38	0.665		**0.728**	1.215
		22.01	−5.95 / −5.95 / / /		53.06 / 53.06 / / /			84.38		0.665	**0.728**	1.215

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Comp. (kip)	Tens. (kip)	Comp. (kip)	Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	/ / / /		32.16 / 32.16 / / /	1.20		88.02			0.665		1.094	1.826			
		20.61	/ / / /		32.16 / 32.16 / / /	1.20		88.02				0.665	1.094	1.826			
		20.61	/ / / /		32.16 / 32.16 / / /			88.02			0.665		1.318	2.201			
		20.61	/ / / /		32.16 / 32.16 / / /			88.02				0.665	1.318	2.201			
BC2	Lower-Chord	20.61	/ / / /		32.16 / 32.16 / / /	1.20		93.75			0.665		1.196	1.997			
		20.61	/ / / /		32.16 / 32.16 / / /	1.20		93.75				0.665	1.196	1.997			
		20.61	/ / / /		32.16 / 32.16 / / /			93.75			0.665		1.441	2.407			
		20.61	/ / / /		32.16 / 32.16 / / /			93.75				0.665	1.441	2.407			
BC3	Lower-Chord	34.46	/ / / /		52.76 / 52.76 / / /	1.20		135.00			0.665		**0.982**	1.640			
		34.46	/ / / /		52.76 / 52.76 / / /	1.20		135.00				0.665	**0.982**	1.640			
		34.46	/ / / /		52.76 / 52.76 / / /			135.00			0.665		1.183	1.976			
		34.46	/ / / /		52.76 / 52.76 / / /			135.00				0.665	1.183	1.976			
BC4	Lower-Chord	41.00	/ / / /		58.42 / 58.64 / / /	1.20		157.50			0.665		1.025	1.705			
		41.00	/ / / /		58.42 / 58.64 / / /	1.20		157.50				0.665	1.025	1.705			
		41.00	/ / / /		58.42 / 58.64 / / /			157.50			0.665		1.235	2.054			
		41.00	/ / / /		58.42 / 58.64 / / /			157.50				0.665	1.235	2.054			
BC5	Lower-Chord	34.46	/ / / /		52.76 / 52.76 / / /	1.20		135.00			0.665		**0.982**	1.640			
		34.46	/ / / /		52.76 / 52.76 / / /	1.20		135.00				0.665	**0.982**	1.640			
		34.46	/ / / /		52.76 / 52.76 / / /			135.00			0.665		1.183	1.976			
		34.46	/ / / /		52.76 / 52.76 / / /			135.00				0.665	1.183	1.976			
BC6	Lower-Chord	20.61	/ / / /		32.16 / 32.16 / / /	1.20		93.75			0.665		1.196	1.997			
		20.61	/ / / /		32.16 / 32.16 / / /	1.20		93.75				0.665	1.196	1.997			
		20.61	/ / / /		32.16 / 32.16 / / /			93.75			0.665		1.441	2.407			
		20.61	/ / / /		32.16 / 32.16 / / /			93.75				0.665	1.441	2.407			
BC7	Lower-Chord	20.61	/ / / /		32.16 / 32.16 / / /	1.20		88.02			0.665		1.094	1.826			
		20.61	/ / / /		32.16 / 32.16 / / /	1.20		88.02				0.665	1.094	1.826			
		20.61	/ / / /		32.16 / 32.16 / / /			88.02			0.665		1.318	2.201			
		20.61	/ / / /		32.16 / 32.16 / / /			88.02				0.665	1.318	2.201			
TC2	Upper-Chord	-34.46	-52.76 / -52.76 / / /	1.20	/ / / /		-232.63				0.665		2.045	3.416			
		-34.46	-52.76 / -52.76 / / /	1.20	/ / / /		-232.63					0.665	2.045	3.416			
		-34.46	-52.76 / -52.76 / / /		/ / / /		-232.63				0.665		2.464	4.115			
		-34.46	-52.76 / -52.76 / / /		/ / / /		-232.63					0.665	2.464	4.115			
TC3	Upper-Chord	-41.45	-62.64 / -62.64 / / /	1.20	/ / / /		-232.63				0.665		1.639	2.738			
		-41.45	-62.64 / -62.64 / / /	1.20	/ / / /		-232.63					0.665	1.639	2.738			
		-41.45	-62.64 / -62.64 / / /		/ / / /		-232.63				0.665		1.975	3.299			
		-41.45	-62.64 / -62.64 / / /		/ / / /		-232.63					0.665	1.975	3.299			
TC4	Upper-Chord	-41.91	-62.32 / -62.11 / / /	1.20	/ / / /		-232.63				0.665		1.642	2.752			
		-41.91	-62.32 / -62.11 / / /	1.20	/ / / /		-232.63					0.665	1.642	2.752			
		-41.91	-62.32 / -62.11 / / /		/ / / /		-232.63				0.665		1.979	3.316			
		-41.91	-62.32 / -62.11 / / /		/ / / /		-232.63					0.665	1.979	3.316			
TC5	Upper-Chord	-41.45	-62.64 / -62.64 / / /	1.20	/ / / /		-232.63				0.665		1.639	2.738			
		-41.45	-62.64 / -62.64 / / /	1.20	/ / / /		-232.63					0.665	1.639	2.738			
		-41.45	-62.64 / -62.64 / / /		/ / / /		-232.63				0.665		1.975	3.299			
		-41.45	-62.64 / -62.64 / / /		/ / / /		-232.63					0.665	1.975	3.299			
TC6	Upper-Chord	-34.46	-52.76 / -52.76 / / /	1.20	/ / / /		-232.63				0.665		2.045	3.416			
		-34.46	-52.76 / -52.76 / / /	1.20	/ / / /		-232.63					0.665	2.045	3.416			
		-34.46	-52.76 / -52.76 / / /		/ / / /		-232.63				0.665		2.464	4.115			
		-34.46	-52.76 / -52.76 / / /		/ / / /		-232.63					0.665	2.464	4.115			
VW1	Vertical	7.18	/ / / /		31.88 / 31.88 / / /	1.30		41.34			0.665		**0.535**	**0.893**			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type											
		7.18	////		31.88 / 31.88 / / /	1.30		41.34		0.665	**0.535**	**0.893**
		7.18	////		31.88 / 31.88 / / /			41.34	0.665		**0.695**	1.160
		7.18	////		31.88 / 31.88 / / /			41.34		0.665	**0.695**	1.160
VW2	Vertical	-9.67	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61	0.665		1.224	2.044
		-9.67	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61		0.665	1.224	2.044
		-9.67	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61	0.665		1.524	2.544
		-9.67	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61		0.665	1.524	2.544
VW3L	Vertical	-1.58	-17.91 / -17.65 / / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61	0.665		1.190	2.017
		-1.58	-17.91 / -17.65 / / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61		0.665	1.190	2.017
		-1.58	-17.91 / -17.65 / / /		0.39 / 0.65 / / /		-41.15	86.61	0.665		1.511	2.561
		-1.58	-17.91 / -17.65 / / /		0.39 / 0.65 / / /		-41.15	86.61		0.665	1.511	2.561
VW4	Vertical	-1.58	-17.91 / -17.65 / / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61	0.665		2.025	3.431
		-1.58	-17.91 / -17.65 / / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61		0.665	2.025	3.431
		-1.58	-17.91 / -17.65 / / /		0.39 / 0.65 / / /		-68.58	86.61	0.665		2.571	4.357
		-1.58	-17.91 / -17.65 / / /		0.39 / 0.65 / / /		-68.58	86.61		0.665	2.571	4.357
VW5	Vertical	-9.67	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61	0.665		1.224	2.044
		-9.67	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61		0.665	1.224	2.044
		-9.67	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61	0.665		1.524	2.544
		-9.67	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61		0.665	1.524	2.544
VW6	Vertical	7.18	////		31.88 / 31.88 / / /	1.30		41.34	0.665		**0.535**	**0.893**
		7.18	////		31.88 / 31.88 / / /	1.30		41.34		0.665	**0.535**	**0.893**
		7.18	////		31.88 / 31.88 / / /			41.34	0.665		**0.695**	1.160
		7.18	////		31.88 / 31.88 / / /			41.34		0.665	**0.695**	1.160
TC1	Diagonal	-32.76	-51.12 / -51.12 / / /	1.20	////		-201.57		0.665		1.787	2.984
		-32.76	-51.12 / -51.12 / / /	1.20	////		-201.57			0.665	1.787	2.984
		-32.76	-51.12 / -51.12 / / /		////		-201.57		0.665		2.153	3.595
		-32.76	-51.12 / -51.12 / / /		////		-201.57			0.665	2.153	3.595
TC7	Diagonal	-32.76	-51.12 / -51.12 / / /	1.20	////		-201.57		0.665		1.787	2.984
		-32.76	-51.12 / -51.12 / / /	1.20	////		-201.57			0.665	1.787	2.984
		-32.76	-51.12 / -51.12 / / /		////		-201.57		0.665		2.153	3.595
		-32.76	-51.12 / -51.12 / / /		////		-201.57			0.665	2.153	3.595
DW1	Diagonal	22.01	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38	0.665		**0.753**	1.257
		22.01	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38		0.665	**0.753**	1.257
		22.01	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38	0.665		**0.921**	1.538
		22.01	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38		0.665	**0.921**	1.538
DW2	Diagonal	11.11	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00	0.665		**0.672**	1.122
		11.11	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00		0.665	**0.672**	1.122
		11.11	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00	0.665		**0.836**	1.397
		11.11	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00		0.665	**0.836**	1.397
DW3	Diagonal	0.72	-0.33 / -0.33 / / /	1.27	23.05 / 22.71 / / /	1.27		41.34	0.665		**0.956**	1.619
		0.72	-0.33 / -0.33 / / /	1.27	23.05 / 22.71 / / /	1.27		41.34		0.665	**0.956**	1.619
		0.72	-0.33 / -0.33 / / /		23.05 / 22.71 / / /			41.34	0.665		1.213	2.056
		0.72	-0.33 / -0.33 / / /		23.05 / 22.71 / / /			41.34		0.665	1.213	2.056
DW4	Diagonal	0.72	-0.33 / -0.33 / / /	1.27	23.05 / 22.71 / / /	1.27		41.34	0.665		**0.956**	1.619
		0.72	-0.33 / -0.33 / / /	1.27	23.05 / 22.71 / / /	1.27		41.34		0.665	**0.956**	1.619
		0.72	-0.33 / -0.33 / / /		23.05 / 22.71 / / /			41.34	0.665		1.213	2.056
		0.72	-0.33 / -0.33 / / /		23.05 / 22.71 / / /			41.34		0.665	1.213	2.056
DW5	Diagonal	11.11	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00	0.665		**0.672**	1.122
		11.11	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00		0.665	**0.672**	1.122
		11.11	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00	0.665		**0.836**	1.397
		11.11	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00		0.665	**0.836**	1.397
DW6	Diagonal	22.01	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38	0.665		**0.753**	1.257
		22.01	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38		0.665	**0.753**	1.257
		22.01	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38	0.665		**0.921**	1.538
		22.01	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38		0.665	**0.921**	1.538

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3-3 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv/Opr/Legal Opr/Permit Inv/Permit Opr (kip)	IF	LL Force Tens. Inv/Opr/Legal Opr/Permit Inv/Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	////		42.50 / 42.50 / / /	1.20		88.02			0.665		0.828	1.382			
		20.61	////		42.50 / 42.50 / / /	1.20		88.02				0.665	0.828	1.382			
		20.61	////		42.50 / 42.50 / / /			88.02			0.665		0.997	1.665			
		20.61	////		42.50 / 42.50 / / /			88.02				0.665	0.997	1.665			
BC2	Lower-Chord	20.61	////		42.50 / 42.50 / / /	1.20		93.75			0.665		0.905	1.511			
		20.61	////		42.50 / 42.50 / / /	1.20		93.75				0.665	0.905	1.511			
		20.61	////		42.50 / 42.50 / / /			93.75			0.665		1.090	1.821			
		20.61	////		42.50 / 42.50 / / /			93.75				0.665	1.090	1.821			
BC3	Lower-Chord	34.46	////		68.19 / 68.19 / / /	1.20		135.00			0.665		0.760	1.269			
		34.46	////		68.19 / 68.19 / / /	1.20		135.00				0.665	0.760	1.269			
		34.46	////		68.19 / 68.19 / / /			135.00			0.665		0.916	1.529			
		34.46	////		68.19 / 68.19 / / /			135.00				0.665	0.916	1.529			
BC4	Lower-Chord	41.00	////		78.80 / 78.80 / / /	1.20		157.50			0.665		0.760	1.269			
		41.00	////		78.80 / 78.80 / / /	1.20		157.50				0.665	0.760	1.269			
		41.00	////		78.80 / 78.80 / / /			157.50			0.665		0.915	1.529			
		41.00	////		78.80 / 78.80 / / /			157.50				0.665	0.915	1.529			
BC5	Lower-Chord	34.46	////		68.19 / 68.19 / / /	1.20		135.00			0.665		0.760	1.269			
		34.46	////		68.19 / 68.19 / / /	1.20		135.00				0.665	0.760	1.269			
		34.46	////		68.19 / 68.19 / / /			135.00			0.665		0.916	1.529			
		34.46	////		68.19 / 68.19 / / /			135.00				0.665	0.916	1.529			
BC6	Lower-Chord	20.61	////		42.50 / 42.50 / / /	1.20		93.75			0.665		0.905	1.511			
		20.61	////		42.50 / 42.50 / / /	1.20		93.75				0.665	0.905	1.511			
		20.61	////		42.50 / 42.50 / / /			93.75			0.665		1.090	1.821			
		20.61	////		42.50 / 42.50 / / /			93.75				0.665	1.090	1.821			
BC7	Lower-Chord	20.61	////		42.50 / 42.50 / / /	1.20		88.02			0.665		0.828	1.382			
		20.61	////		42.50 / 42.50 / / /	1.20		88.02				0.665	0.828	1.382			
		20.61	////		42.50 / 42.50 / / /			88.02			0.665		0.997	1.665			
		20.61	////		42.50 / 42.50 / / /			88.02				0.665	0.997	1.665			
TC2	Upper-Chord	-34.46	-68.19 / -68.19 / / /	1.20	////		-232.63				0.665		1.582	2.643			
		-34.46	-68.19 / -68.19 / / /	1.20	////		-232.63					0.665	1.582	2.643			
		-34.46	-68.19 / -68.19 / / /		////		-232.63				0.665		1.907	3.184			
		-34.46	-68.19 / -68.19 / / /		////		-232.63					0.665	1.907	3.184			
TC3	Upper-Chord	-41.45	-80.65 / -80.65 / / /	1.20	////		-232.63				0.665		1.273	2.126			
		-41.45	-80.65 / -80.65 / / /	1.20	////		-232.63					0.665	1.273	2.126			
		-41.45	-80.65 / -80.65 / / /		////		-232.63				0.665		1.534	2.562			
		-41.45	-80.65 / -80.65 / / /		////		-232.63					0.665	1.534	2.562			
TC4	Upper-Chord	-41.91	-81.01 / -81.01 / / /	1.20	////		-232.63				0.665		1.263	2.110			
		-41.91	-81.01 / -81.01 / / /	1.20	////		-232.63					0.665	1.263	2.110			
		-41.91	-81.01 / -81.01 / / /		////		-232.63				0.665		1.522	2.542			
		-41.91	-81.01 / -81.01 / / /		////		-232.63					0.665	1.522	2.542			
TC5	Upper-Chord	-41.45	-80.65 / -80.65 / / /	1.20	////		-232.63				0.665		1.273	2.126			
		-41.45	-80.65 / -80.65 / / /	1.20	////		-232.63					0.665	1.273	2.126			
		-41.45	-80.65 / -80.65 / / /		////		-232.63				0.665		1.534	2.562			
		-41.45	-80.65 / -80.65 / / /		////		-232.63					0.665	1.534	2.562			
TC6	Upper-Chord	-34.46	-68.19 / -68.19 / / /	1.20	////		-232.63				0.665		1.582	2.643			
		-34.46	-68.19 / -68.19 / / /	1.20	////		-232.63					0.665	1.582	2.643			
		-34.46	-68.19 / -68.19 / / /		////		-232.63				0.665		1.907	3.184			
		-34.46	-68.19 / -68.19 / / /		////		-232.63					0.665	1.907	3.184			
VW1	Vertical	7.18	////		25.65 / 25.65 / / /	1.30		41.34			0.665		0.664	1.110			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type								LLDF	LLDF	RF	RF
		7.18	////		25.65 / 25.65 / / /	1.30		41.34		0.665	**0.664**	1.110
		7.18	////		25.65 / 25.65 / /			41.34	0.665		**0.864**	1.443
		7.18	////		25.65 / 25.65 / /			41.34		0.665	**0.864**	1.443
VW2	Vertical	-9.67	-29.65 / -29.65 / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61	0.665		1.051	1.754
		-9.67	-29.65 / -29.65 / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61		0.665	1.051	1.754
		-9.67	-29.65 / -29.65 / /		9.41 / 9.41 / / /		-68.58	86.61	0.665		1.308	2.184
		-9.67	-29.65 / -29.65 / /		9.41 / 9.41 / / /		-68.58	86.61		0.665	1.308	2.184
VW3L	Vertical	-1.58	-18.13 / -17.87 / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61	0.665		1.176	1.992
		-1.58	-18.13 / -17.87 / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61		0.665	1.176	1.992
		-1.58	-18.13 / -17.87 / /		0.39 / 0.65 / / /		-41.15	86.61	0.665		1.493	2.529
		-1.58	-18.13 / -17.87 / /		0.39 / 0.65 / / /		-41.15	86.61		0.665	1.493	2.529
VW4	Vertical	-1.58	-18.13 / -17.87 / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61	0.665		2.000	3.389
		-1.58	-18.13 / -17.87 / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61		0.665	2.000	3.389
		-1.58	-18.13 / -17.87 / /		0.39 / 0.65 / / /		-68.58	86.61	0.665		2.540	4.304
		-1.58	-18.13 / -17.87 / /		0.39 / 0.65 / / /		-68.58	86.61		0.665	2.540	4.304
VW5	Vertical	-9.67	-29.65 / -29.65 / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61	0.665		1.051	1.754
		-9.67	-29.65 / -29.65 / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61		0.665	1.051	1.754
		-9.67	-29.65 / -29.65 / /		9.41 / 9.41 / / /		-68.58	86.61	0.665		1.308	2.184
		-9.67	-29.65 / -29.65 / /		9.41 / 9.41 / / /		-68.58	86.61		0.665	1.308	2.184
VW6	Vertical	7.18	////		25.65 / 25.65 / / /	1.30		41.34	0.665		**0.664**	1.110
		7.18	////		25.65 / 25.65 / / /	1.30		41.34		0.665	**0.664**	1.110
		7.18	////		25.65 / 25.65 / /			41.34	0.665		**0.864**	1.443
		7.18	////		25.65 / 25.65 / /			41.34		0.665	**0.864**	1.443
TC1	Diagonal	-32.76	-67.55 / -67.55 / /	1.20	////		-201.57		0.665		1.352	2.258
		-32.76	-67.55 / -67.55 / /	1.20	////		-201.57			0.665	1.352	2.258
		-32.76	-67.55 / -67.55 / /		////		-201.57		0.665		1.629	2.721
		-32.76	-67.55 / -67.55 / /		////		-201.57			0.665	1.629	2.721
TC7	Diagonal	-32.76	-67.55 / -67.55 / /	1.20	////		-201.57		0.665		1.352	2.258
		-32.76	-67.55 / -67.55 / /	1.20	////		-201.57			0.665	1.352	2.258
		-32.76	-67.55 / -67.55 / /		////		-201.57		0.665		1.629	2.721
		-32.76	-67.55 / -67.55 / /		////		-201.57			0.665	1.629	2.721
DW1	Diagonal	22.01	-4.54 / -4.54 / /	1.30	52.85 / 52.85 / / /	1.22		84.38	0.665		**0.597**	**0.997**
		22.01	-4.54 / -4.54 / /	1.30	52.85 / 52.85 / / /	1.22		84.38		0.665	**0.597**	**0.997**
		22.01	-4.54 / -4.54 / /		52.85 / 52.85 / / /			84.38	0.665		**0.730**	1.220
		22.01	-4.54 / -4.54 / /		52.85 / 52.85 / / /			84.38		0.665	**0.730**	1.220
DW2	Diagonal	11.11	-12.11 / -12.11 / /	1.30	38.14 / 38.14 / / /	1.24		54.00	0.665		**0.577**	**0.963**
		11.11	-12.11 / -12.11 / /	1.30	38.14 / 38.14 / / /	1.24		54.00		0.665	**0.577**	**0.963**
		11.11	-12.11 / -12.11 / /		38.14 / 38.14 / / /			54.00	0.665		**0.718**	1.199
		11.11	-12.11 / -12.11 / /		38.14 / 38.14 / / /			54.00		0.665	**0.718**	1.199
DW3	Diagonal	0.72	-0.48 / -0.74 / /	1.27	23.33 / 22.99 / / /	1.27		41.34	0.665		**0.944**	1.600
		0.72	-0.48 / -0.74 / /	1.27	23.33 / 22.99 / / /	1.27		41.34		0.665	**0.944**	1.600
		0.72	-0.48 / -0.74 / /		23.33 / 22.99 / / /			41.34	0.665		1.199	2.031
		0.72	-0.48 / -0.74 / /		23.33 / 22.99 / / /			41.34		0.665	1.199	2.031
DW4	Diagonal	0.72	-0.48 / -0.74 / /	1.27	23.33 / 22.99 / / /	1.27		41.34	0.665		**0.944**	1.600
		0.72	-0.48 / -0.74 / /	1.27	23.33 / 22.99 / / /	1.27		41.34		0.665	**0.944**	1.600
		0.72	-0.48 / -0.74 / /		23.33 / 22.99 / / /			41.34	0.665		1.199	2.031
		0.72	-0.48 / -0.74 / /		23.33 / 22.99 / / /			41.34		0.665	1.199	2.031
DW5	Diagonal	11.11	-12.11 / -12.11 / /	1.30	38.14 / 38.14 / / /	1.24		54.00	0.665		**0.577**	**0.963**
		11.11	-12.11 / -12.11 / /	1.30	38.14 / 38.14 / / /	1.24		54.00		0.665	**0.577**	**0.963**
		11.11	-12.11 / -12.11 / /		38.14 / 38.14 / / /			54.00	0.665		**0.718**	1.199
		11.11	-12.11 / -12.11 / /		38.14 / 38.14 / / /			54.00		0.665	**0.718**	1.199
DW6	Diagonal	22.01	-4.54 / -4.54 / /	1.30	52.85 / 52.85 / / /	1.22		84.38	0.665		**0.597**	**0.997**
		22.01	-4.54 / -4.54 / /	1.30	52.85 / 52.85 / / /	1.22		84.38		0.665	**0.597**	**0.997**
		22.01	-4.54 / -4.54 / /		52.85 / 52.85 / / /			84.38	0.665		**0.730**	1.220
		22.01	-4.54 / -4.54 / /		52.85 / 52.85 / / /			84.38		0.665	**0.730**	1.220

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3S2 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	/ / / /		40.84 / 40.84 / / /	1.20		88.02			0.665		0.861	1.438			
		20.61	/ / / /		40.84 / 40.84 / / /	1.20		88.02				0.665	0.861	1.438			
		20.61	/ / / /		40.84 / 40.84 / / /			88.02			0.665		1.038	1.733			
		20.61	/ / / /		40.84 / 40.84 / / /			88.02				0.665	1.038	1.733			
BC2	Lower-Chord	20.61	/ / / /		40.84 / 40.84 / / /	1.20		93.75			0.665		0.942	1.573			
		20.61	/ / / /		40.84 / 40.84 / / /	1.20		93.75				0.665	0.942	1.573			
		20.61	/ / / /		40.84 / 40.84 / / /			93.75			0.665		1.135	1.895			
		20.61	/ / / /		40.84 / 40.84 / / /			93.75				0.665	1.135	1.895			
BC3	Lower-Chord	34.46	/ / / /		66.87 / 66.87 / / /	1.20		135.00			0.665		0.775	1.294			
		34.46	/ / / /		66.87 / 66.87 / / /	1.20		135.00				0.665	0.775	1.294			
		34.46	/ / / /		66.87 / 66.87 / / /			135.00			0.665		0.934	1.559			
		34.46	/ / / /		66.87 / 66.87 / / /			135.00				0.665	0.934	1.559			
BC4	Lower-Chord	41.00	/ / / /		75.78 / 75.99 / / /	1.20		157.50			0.665		0.790	1.316			
		41.00	/ / / /		75.78 / 75.99 / / /	1.20		157.50				0.665	0.790	1.316			
		41.00	/ / / /		75.78 / 75.99 / / /			157.50			0.665		0.952	1.585			
		41.00	/ / / /		75.78 / 75.99 / / /			157.50				0.665	0.952	1.585			
BC5	Lower-Chord	34.46	/ / / /		66.87 / 66.87 / / /	1.20		135.00			0.665		0.775	1.294			
		34.46	/ / / /		66.87 / 66.87 / / /	1.20		135.00				0.665	0.775	1.294			
		34.46	/ / / /		66.87 / 66.87 / / /			135.00			0.665		0.934	1.559			
		34.46	/ / / /		66.87 / 66.87 / / /			135.00				0.665	0.934	1.559			
BC6	Lower-Chord	20.61	/ / / /		40.84 / 40.84 / / /	1.20		93.75			0.665		0.942	1.573			
		20.61	/ / / /		40.84 / 40.84 / / /	1.20		93.75				0.665	0.942	1.573			
		20.61	/ / / /		40.84 / 40.84 / / /			93.75			0.665		1.135	1.895			
		20.61	/ / / /		40.84 / 40.84 / / /			93.75				0.665	1.135	1.895			
BC7	Lower-Chord	20.61	/ / / /		40.84 / 40.84 / / /	1.20		88.02			0.665		0.861	1.438			
		20.61	/ / / /		40.84 / 40.84 / / /	1.20		88.02				0.665	0.861	1.438			
		20.61	/ / / /		40.84 / 40.84 / / /			88.02			0.665		1.038	1.733			
		20.61	/ / / /		40.84 / 40.84 / / /			88.02				0.665	1.038	1.733			
TC2	Upper-Chord	-34.46	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63				0.665		1.614	2.695			
		-34.46	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63					0.665	1.614	2.695			
		-34.46	-66.87 / -66.87 / / /		/ / / /		-232.63				0.665		1.944	3.247			
		-34.46	-66.87 / -66.87 / / /		/ / / /		-232.63					0.665	1.944	3.247			
TC3	Upper-Chord	-41.45	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63				0.665		1.300	2.172			
		-41.45	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63					0.665	1.300	2.172			
		-41.45	-78.97 / -78.97 / / /		/ / / /		-232.63				0.665		1.567	2.617			
		-41.45	-78.97 / -78.97 / / /		/ / / /		-232.63					0.665	1.567	2.617			
TC4	Upper-Chord	-41.91	-78.65 / -78.44 / / /	1.20	/ / / /		-232.63				0.665		1.301	2.179			
		-41.91	-78.65 / -78.44 / / /	1.20	/ / / /		-232.63					0.665	1.301	2.179			
		-41.91	-78.65 / -78.44 / / /		/ / / /		-232.63				0.665		1.568	2.626			
		-41.91	-78.65 / -78.44 / / /		/ / / /		-232.63					0.665	1.568	2.626			
TC5	Upper-Chord	-41.45	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63				0.665		1.300	2.172			
		-41.45	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63					0.665	1.300	2.172			
		-41.45	-78.97 / -78.97 / / /		/ / / /		-232.63				0.665		1.567	2.617			
		-41.45	-78.97 / -78.97 / / /		/ / / /		-232.63					0.665	1.567	2.617			
TC6	Upper-Chord	-34.46	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63				0.665		1.614	2.695			
		-34.46	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63					0.665	1.614	2.695			
		-34.46	-66.87 / -66.87 / / /		/ / / /		-232.63				0.665		1.944	3.247			
		-34.46	-66.87 / -66.87 / / /		/ / / /		-232.63					0.665	1.944	3.247			
VW1	Vertical	7.18	/ / / /		30.88 / 30.88 / / /	1.30		41.34			0.665		0.552	0.922			

```
LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99
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Member	Type	V1	V2	F1	V3	F2	V4	V5	LLDF	LLDF	RF (inv)	RF (op)
		7.18	/ / / /		30.88 / 30.88 / /	1.30		41.34		0.665	**0.552**	**0.922**
		7.18	/ / / /		30.88 / 30.88 / /			41.34	0.665		**0.717**	1.198
		7.18	/ / / /		30.88 / 30.88 / /			41.34		0.665	**0.717**	1.198
VW2	Vertical	-9.67	-29.88 / -29.88 / / /	1.24	9.90 / 9.90 / / /	1.30	-68.58	86.61	0.665		1.042	1.741
		-9.67	-29.88 / -29.88 / / /	1.24	9.90 / 9.90 / / /	1.30	-68.58	86.61		0.665	1.042	1.741
		-9.67	-29.88 / -29.88 / / /		9.90 / 9.90 / / /		-68.58	86.61	0.665		1.297	2.167
		-9.67	-29.88 / -29.88 / / /		9.90 / 9.90 / / /		-68.58	86.61		0.665	1.297	2.167
VW3L	Vertical	-1.58	-19.21 / -18.95 / / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61	0.665		1.110	1.879
		-1.58	-19.21 / -18.95 / / /	1.27	0.39 / 0.65 / / /	1.27	-41.15	86.61		0.665	1.110	1.879
		-1.58	-19.21 / -18.95 / / /		0.39 / 0.65 / / /		-41.15	86.61	0.665		1.409	2.386
		-1.58	-19.21 / -18.95 / / /		0.39 / 0.65 / / /		-41.15	86.61		0.665	1.409	2.386
VW4	Vertical	-1.58	-19.21 / -18.95 / / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61	0.665		1.888	3.197
		-1.58	-19.21 / -18.95 / / /	1.27	0.39 / 0.65 / / /	1.27	-68.58	86.61		0.665	1.888	3.197
		-1.58	-19.21 / -18.95 / / /		0.39 / 0.65 / / /		-68.58	86.61	0.665		2.398	4.059
		-1.58	-19.21 / -18.95 / / /		0.39 / 0.65 / / /		-68.58	86.61		0.665	2.398	4.059
VW5	Vertical	-9.67	-29.88 / -29.88 / / /	1.24	9.90 / 9.90 / / /	1.30	-68.58	86.61	0.665		1.042	1.741
		-9.67	-29.88 / -29.88 / / /	1.24	9.90 / 9.90 / / /	1.30	-68.58	86.61		0.665	1.042	1.741
		-9.67	-29.88 / -29.88 / / /		9.90 / 9.90 / / /		-68.58	86.61	0.665		1.297	2.167
		-9.67	-29.88 / -29.88 / / /		9.90 / 9.90 / / /		-68.58	86.61		0.665	1.297	2.167
VW6	Vertical	7.18	/ / / /		30.88 / 30.88 / / /	1.30		41.34	0.665		**0.552**	**0.922**
		7.18	/ / / /		30.88 / 30.88 / / /	1.30		41.34		0.665	**0.552**	**0.922**
		7.18	/ / / /		30.88 / 30.88 / / /			41.34	0.665		**0.717**	1.198
		7.18	/ / / /		30.88 / 30.88 / / /			41.34		0.665	**0.717**	1.198
TC1	Diagonal	-32.76	-64.91 / -64.91 / / /	1.20	/ / / /		-201.57		0.665		1.407	2.350
		-32.76	-64.91 / -64.91 / / /	1.20	/ / / /		-201.57			0.665	1.407	2.350
		-32.76	-64.91 / -64.91 / / /		/ / / /		-201.57		0.665		1.695	2.831
		-32.76	-64.91 / -64.91 / / /		/ / / /		-201.57			0.665	1.695	2.831
TC7	Diagonal	-32.76	-64.91 / -64.91 / / /	1.20	/ / / /		-201.57		0.665		1.407	2.350
		-32.76	-64.91 / -64.91 / / /	1.20	/ / / /		-201.57			0.665	1.407	2.350
		-32.76	-64.91 / -64.91 / / /		/ / / /		-201.57		0.665		1.695	2.831
		-32.76	-64.91 / -64.91 / / /		/ / / /		-201.57			0.665	1.695	2.831
DW1	Diagonal	22.01	-5.03 / -5.03 / / /	1.30	51.68 / 51.68 / / /	1.22		84.38	0.665		**0.611**	1.020
		22.01	-5.03 / -5.03 / / /	1.30	51.68 / 51.68 / / /	1.22		84.38		0.665	**0.611**	1.020
		22.01	-5.03 / -5.03 / / /		51.68 / 51.68 / / /			84.38	0.665		**0.747**	1.247
		22.01	-5.03 / -5.03 / / /		51.68 / 51.68 / / /			84.38		0.665	**0.747**	1.247
DW2	Diagonal	11.11	-12.74 / -12.74 / / /	1.30	38.45 / 38.45 / / /	1.24		54.00	0.665		**0.572**	**0.956**
		11.11	-12.74 / -12.74 / / /	1.30	38.45 / 38.45 / / /	1.24		54.00		0.665	**0.572**	**0.956**
		11.11	-12.74 / -12.74 / / /		38.45 / 38.45 / / /			54.00	0.665		**0.712**	1.189
		11.11	-12.74 / -12.74 / / /		38.45 / 38.45 / / /			54.00		0.665	**0.712**	1.189
DW3	Diagonal	0.72	-0.32 / -0.78 / / /	1.27	24.71 / 24.38 / / /	1.27		41.34	0.665		**0.891**	1.509
		0.72	-0.32 / -0.78 / / /	1.27	24.71 / 24.38 / / /	1.27		41.34		0.665	**0.891**	1.509
		0.72	-0.32 / -0.78 / / /		24.71 / 24.38 / / /			41.34	0.665		1.132	1.916
		0.72	-0.32 / -0.78 / / /		24.71 / 24.38 / / /			41.34		0.665	1.132	1.916
DW4	Diagonal	0.72	-0.32 / -0.78 / / /	1.27	24.71 / 24.38 / / /	1.27		41.34	0.665		**0.891**	1.509
		0.72	-0.32 / -0.78 / / /	1.27	24.71 / 24.38 / / /	1.27		41.34		0.665	**0.891**	1.509
		0.72	-0.32 / -0.78 / / /		24.71 / 24.38 / / /			41.34	0.665		1.132	1.916
		0.72	-0.32 / -0.78 / / /		24.71 / 24.38 / / /			41.34		0.665	1.132	1.916
DW5	Diagonal	11.11	-12.74 / -12.74 / / /	1.30	38.45 / 38.45 / / /	1.24		54.00	0.665		**0.572**	**0.956**
		11.11	-12.74 / -12.74 / / /	1.30	38.45 / 38.45 / / /	1.24		54.00		0.665	**0.572**	**0.956**
		11.11	-12.74 / -12.74 / / /		38.45 / 38.45 / / /			54.00	0.665		**0.712**	1.189
		11.11	-12.74 / -12.74 / / /		38.45 / 38.45 / / /			54.00		0.665	**0.712**	1.189
DW6	Diagonal	22.01	-5.03 / -5.03 / / /	1.30	51.68 / 51.68 / / /	1.22		84.38	0.665		**0.611**	1.020
		22.01	-5.03 / -5.03 / / /	1.30	51.68 / 51.68 / / /	1.22		84.38		0.665	**0.611**	1.020
		22.01	-5.03 / -5.03 / / /		51.68 / 51.68 / / /			84.38	0.665		**0.747**	1.247
		22.01	-5.03 / -5.03 / / /		51.68 / 51.68 / / /			84.38		0.665	**0.747**	1.247

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Bridge ID :L1567200002001
Bridge : Swan River (Truss)
StructDef : 119'SteelTruss(withReducedCapacityMembers)
User : BrR
Date : Thursday, December 04, 2014 09:06:45
File : RatingResults.XML
Analysis Preference Setting : None

NBI Structure ID :L15672000_02001
Bridge Alt : As-built
Member : SE Truss (Upstream)

Load Factor Rating Summary

Live Load	Live Load Type	Inv Element	Inv RF	Inv Capacity (Ton)	Opr Element	Opr RF	Opr Capacity (Ton)	Legal Opr Element	Legal Opr RF	Legal Opr Capacity (Ton)	Permit Inv Element	Permit Inv RF	Permit Inv Capacity (Ton)	Permit Opr Element	Permit Opr RF	Permit Opr Capacity (Ton)	Impact	Lane
HS 20-44	Design Truck	VW1	0.431	15.52	VW1	0.720	25.92										As Requested	As Requested
HS 20-44	Design Lane	VW1	0.457	16.44	VW1	0.763	27.45										As Requested	As Requested
HS 20-44	Design Truck	VW1	0.431	15.52	VW1	0.720	25.92										With Impact	Single Lane
HS 20-44	Design Lane	VW1	0.457	16.44	VW1	0.763	27.45										With Impact	Single Lane
HS 20-44	Design Truck	VW1	0.431	15.52	VW1	0.720	25.92										With Impact	Multi-Lane
HS 20-44	Design Lane	VW1	0.457	16.44	VW1	0.763	27.45										With Impact	Multi-Lane
HS 20-44	Design Truck	VW1	0.560	20.18	VW1	0.936	33.70										Without Impact	Single Lane
HS 20-44	Design Lane	VW1	0.594	21.37	VW1	0.991	35.69										Without Impact	Single Lane
HS 20-44	Design Truck	VW1	0.560	20.18	VW1	0.936	33.70										Without Impact	Multi-Lane
HS 20-44	Design Lane	VW1	0.594	21.37	VW1	0.991	35.69										Without Impact	Multi-Lane
Type 3	Design Truck	VW1	0.528	13.20	VW1	0.882	22.05										As Requested	As Requested
Type 3	Design Truck	VW1	0.528	13.20	VW1	0.882	22.05										With Impact	Single Lane
Type 3	Design Truck	VW1	0.528	13.20	VW1	0.882	22.05										With Impact	Multi-Lane
Type 3	Design Truck	VW1	0.687	17.17	VW1	1.147	28.67										Without Impact	Single Lane
Type 3	Design Truck	VW1	0.687	17.17	VW1	1.147	28.67										Without Impact	Multi-Lane
Type 3-3	Design Truck	DW2	0.569	22.77	DW2	0.951	38.03										As Requested	As Requested
Type 3-3	Design Truck	DW2	0.569	22.77	DW2	0.951	38.03										With Impact	Single Lane
Type 3-3	Design Truck	DW2	0.569	22.77	DW2	0.951	38.03										With Impact	Multi-Lane
Type 3-3	Design Truck	DW2	0.709	28.35	DW2	1.183	47.34										Without Impact	Single Lane
Type 3-3	Design Truck	DW2	0.709	28.35	DW2	1.183	47.34										Without Impact	Multi-Lane
Type 3S2	Design Truck	VW1	0.545	19.63	VW1	0.911	32.78										As Requested	As Requested
Type 3S2	Design Truck	VW1	0.545	19.63	VW1	0.911	32.78										With Impact	Single Lane
Type 3S2	Design Truck	VW1	0.545	19.63	VW1	0.911	32.78										With Impact	Multi-Lane
Type 3S2	Design Truck	DW2	0.703	25.31	DW2	1.174	42.27										Without Impact	Single Lane
Type 3S2	Design Truck	DW2	0.703	25.31	DW2	1.174	42.27										Without Impact	Multi-Lane

Detailed Truss Member Rating Results

Live Load: HS 20-44 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	21.33	/ / / /		45.39 / 45.39 / / /	1.20		88.02			0.665		0.763	1.275			
		21.33	/ / / /		45.39 / 45.39 / / /	1.20		88.02				0.665	0.763	1.275			
		21.33	/ / / /		45.39 / 45.39 / / /			88.02			0.665		0.920	1.536			
		21.33	/ / / /		45.39 / 45.39 / / /			88.02				0.665	0.920	1.536			
BC2	Lower-Chord	21.33	/ / / /		45.39 / 45.39 / / /	1.20		93.75			0.665		0.836	1.396			
		21.33	/ / / /		45.39 / 45.39 / / /	1.20		93.75				0.665	0.836	1.396			
		21.33	/ / / /		45.39 / 45.39 / / /			93.75			0.665		1.007	1.682			
		21.33	/ / / /		45.39 / 45.39 / / /			93.75				0.665	1.007	1.682			
BC3	Lower-Chord	35.66	/ / / /		74.12 / 74.12 / / /	1.20		135.00			0.665		0.687	1.147			
		35.66	/ / / /		74.12 / 74.12 / / /	1.20		135.00				0.665	0.687	1.147			
		35.66	/ / / /		74.12 / 74.12 / / /			135.00			0.665		0.828	1.383			
		35.66	/ / / /		74.12 / 74.12 / / /			135.00				0.665	0.828	1.383			
BC4	Lower-Chord	42.42	/ / / /		84.15 / 84.15 / / /	1.20		157.50			0.665		0.699	1.167			
		42.42	/ / / /		84.15 / 84.15 / / /	1.20		157.50				0.665	0.699	1.167			
		42.42	/ / / /		84.15 / 84.15 / / /			157.50			0.665		0.842	1.406			
		42.42	/ / / /		84.15 / 84.15 / / /			157.50				0.665	0.842	1.406			
BC5	Lower-Chord	35.68	/ / / /		74.12 / 74.12 / / /	1.20		135.00			0.665		0.687	1.147			
		35.68	/ / / /		74.12 / 74.12 / / /	1.20		135.00				0.665	0.687	1.147			
		35.68	/ / / /		74.12 / 74.12 / / /			135.00			0.665		0.828	1.382			
		35.68	/ / / /		74.12 / 74.12 / / /			135.00				0.665	0.828	1.382			
BC6	Lower-Chord	21.37	/ / / /		45.39 / 45.39 / / /	1.20		93.75			0.665		0.835	1.395			
		21.37	/ / / /		45.39 / 45.39 / / /	1.20		93.75				0.665	0.835	1.395			
		21.37	/ / / /		45.39 / 45.39 / / /			93.75			0.665		1.006	1.680			
		21.37	/ / / /		45.39 / 45.39 / / /			93.75				0.665	1.006	1.680			
BC7	Lower-Chord	21.37	/ / / /		45.39 / 45.39 / / /	1.20		88.02			0.665		0.763	1.273			
		21.37	/ / / /		45.39 / 45.39 / / /	1.20		88.02				0.665	0.763	1.273			
		21.37	/ / / /		45.39 / 45.39 / / /			88.02			0.665		0.919	1.534			
		21.37	/ / / /		45.39 / 45.39 / / /			88.02				0.665	0.919	1.534			
TC2	Upper-Chord	-35.66	-74.12 / -74.12 / / /	1.20	/ / / /		-232.63				0.665		1.444	2.411			
		-35.66	-74.12 / -74.12 / / /	1.20	/ / / /		-232.63					0.665	1.444	2.411			
		-35.66	-74.12 / -74.12 / / /		/ / / /		-232.63				0.665		1.740	2.905			
		-35.66	-74.12 / -74.12 / / /		/ / / /		-232.63					0.665	1.740	2.905			
TC3	Upper-Chord	-42.89	-87.73 / -87.73 / / /	1.20	/ / / /		-232.63				0.665		1.158	1.934			
		-42.89	-87.73 / -87.73 / / /	1.20	/ / / /		-232.63					0.665	1.158	1.934			
		-42.89	-87.73 / -87.73 / / /		/ / / /		-232.63				0.665		1.396	2.331			
		-42.89	-87.73 / -87.73 / / /		/ / / /		-232.63					0.665	1.396	2.331			
TC4	Upper-Chord	-43.37	-87.40 / -87.18 / / /	1.20	/ / / /		-232.63				0.665		1.159	1.940			
		-43.37	-87.40 / -87.18 / / /	1.20	/ / / /		-232.63					0.665	1.159	1.940			
		-43.37	-87.40 / -87.18 / / /		/ / / /		-232.63				0.665		1.396	2.337			
		-43.37	-87.40 / -87.18 / / /		/ / / /		-232.63					0.665	1.396	2.337			
TC5	Upper-Chord	-42.90	-87.73 / -87.73 / / /	1.20	/ / / /		-232.63				0.665		1.158	1.934			
		-42.90	-87.73 / -87.73 / / /	1.20	/ / / /		-232.63					0.665	1.158	1.934			
		-42.90	-87.73 / -87.73 / / /		/ / / /		-232.63				0.665		1.396	2.331			
		-42.90	-87.73 / -87.73 / / /		/ / / /		-232.63					0.665	1.396	2.331			
TC6	Upper-Chord	-35.68	-74.12 / -74.12 / / /	1.20	/ / / /		-232.63				0.665		1.444	2.411			
		-35.68	-74.12 / -74.12 / / /	1.20	/ / / /		-232.63					0.665	1.444	2.411			
		-35.68	-74.12 / -74.12 / / /		/ / / /		-232.63				0.665		1.739	2.905			
		-35.68	-74.12 / -74.12 / / /		/ / / /		-232.63					0.665	1.739	2.905			
VW1	Vertical	7.47	/ / / /		39.06 / 39.06 / / /	1.30		41.34			0.665		0.431	0.720			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type	v1	pair1	f1	pair2	f2	neg	pos	LLDF_L	LLDF_R	Inv	Oper
		7.47	////		39.06 / 39.06 ///	1.30		41.34		0.665	0.431	0.720
		7.47	////		39.06 / 39.06 //			41.34	0.665		0.560	0.936
		7.47	////		39.06 / 39.06 //			41.34		0.665	0.560	0.936
VW2	Vertical	-9.98	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61	0.665		0.871	1.455
		-9.98	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61		0.665	0.871	1.455
		-9.98	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61	0.665		1.085	1.811
		-9.98	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61		0.665	1.085	1.811
VW3	Vertical	-1.61	-24.81 / -24.54 //	1.27	0.41 / 0.69 ///	1.27	-68.58	86.61	0.665		1.461	2.467
		-1.61	-24.81 / -24.54 //	1.27	0.41 / 0.69 ///	1.27	-68.58	86.61		0.665	1.461	2.467
		-1.61	-24.81 / -24.54 //		0.41 / 0.69 ///		-68.58	86.61	0.665		1.855	3.133
		-1.61	-24.81 / -24.54 //		0.41 / 0.69 ///		-68.58	86.61		0.665	1.855	3.133
VW4	Vertical	-1.60	-24.80 / -24.52 //	1.27	0.40 / 0.67 //	1.27	-68.58	86.61	0.665		1.462	2.469
		-1.60	-24.80 / -24.52 //	1.27	0.40 / 0.67 //	1.27	-68.58	86.61		0.665	1.462	2.469
		-1.60	-24.80 / -24.52 //		0.40 / 0.67 //		-68.58	86.61	0.665		1.856	3.135
		-1.60	-24.80 / -24.52 //		0.40 / 0.67 //		-68.58	86.61		0.665	1.856	3.135
VW5	Vertical	-9.95	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61	0.665		0.872	1.456
		-9.95	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61		0.665	0.872	1.456
		-9.95	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61	0.665		1.085	1.812
		-9.95	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61		0.665	1.085	1.812
VW6R	Vertical	7.51	////		39.06 / 39.06 ///	1.30		44.44	0.665		0.473	0.790
		7.51	////		39.06 / 39.06 ///	1.30		44.44		0.665	0.473	0.790
		7.51	////		39.06 / 39.06 //			44.44	0.665		0.615	1.026
		7.51	////		39.06 / 39.06 //			44.44		0.665	0.615	1.026
TC1	Diagonal	-33.90	-72.14 / -72.14 ///	1.20	////		-201.57		0.665		1.254	2.095
		-33.90	-72.14 / -72.14 ///	1.20	////		-201.57			0.665	1.254	2.095
		-33.90	-72.14 / -72.14 ///		////		-201.57		0.665		1.511	2.524
		-33.90	-72.14 / -72.14 ///		////		-201.57			0.665	1.511	2.524
TC7	Diagonal	-33.96	-72.14 / -72.14 ///	1.20	////		-201.57		0.665		1.254	2.094
		-33.96	-72.14 / -72.14 ///	1.20	////		-201.57			0.665	1.254	2.094
		-33.96	-72.14 / -72.14 ///		////		-201.57		0.665		1.511	2.523
		-33.96	-72.14 / -72.14 ///		////		-201.57			0.665	1.511	2.523
DW1	Diagonal	22.77	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		84.38	0.665		0.526	0.879
		22.77	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		84.38		0.665	0.526	0.879
		22.77	-6.92 / -6.92 ///		58.90 / 58.90 ///			84.38	0.665		0.644	1.075
		22.77	-6.92 / -6.92 ///		58.90 / 58.90 ///			84.38		0.665	0.644	1.075
DW2	Diagonal	11.50	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		54.00	0.665		0.476	0.794
		11.50	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		54.00		0.665	0.476	0.794
		11.50	-19.20 / -19.20 ///		45.67 / 45.67 ///			54.00	0.665		0.592	0.988
		11.50	-19.20 / -19.20 ///		45.67 / 45.67 ///			54.00		0.665	0.592	0.988
DW3	Diagonal	0.76	-0.49 / -0.87 ///	1.27	31.92 / 31.57 ///	1.27		41.34	0.665		0.689	1.164
		0.76	-0.49 / -0.87 ///	1.27	31.92 / 31.57 ///	1.27		41.34		0.665	0.689	1.164
		0.76	-0.49 / -0.87 ///		31.92 / 31.57 ///			41.34	0.665		0.875	1.478
		0.76	-0.49 / -0.87 ///		31.92 / 31.57 ///			41.34		0.665	0.875	1.478
DW4	Diagonal	0.75	-0.49 / -0.86 ///	1.27	31.91 / 31.55 ///	1.27		41.34	0.665		0.690	1.165
		0.75	-0.49 / -0.86 ///	1.27	31.91 / 31.55 ///	1.27		41.34		0.665	0.690	1.165
		0.75	-0.49 / -0.86 ///		31.91 / 31.55 ///			41.34	0.665		0.876	1.479
		0.75	-0.49 / -0.86 ///		31.91 / 31.55 ///			41.34		0.665	0.876	1.479
DW5	Diagonal	11.47	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		54.00	0.665		0.476	0.795
		11.47	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		54.00		0.665	0.476	0.795
		11.47	-19.20 / -19.20 ///		45.67 / 45.67 ///			54.00	0.665		0.592	0.989
		11.47	-19.20 / -19.20 ///		45.67 / 45.67 ///			54.00		0.665	0.592	0.989
DW6	Diagonal	22.75	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		84.38	0.665		0.527	0.880
		22.75	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		84.38		0.665	0.527	0.880
		22.75	-6.92 / -6.92 ///		58.90 / 58.90 ///			84.38	0.665		0.644	1.076
		22.75	-6.92 / -6.92 ///		58.90 / 58.90 ///			84.38		0.665	0.644	1.076

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: HS 20-44 (Design Lane)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	21.33	/ / / /		38.91 / 38.91 / / /	1.20		88.02			0.665		**0.890**	1.487			
		21.33	/ / / /		38.91 / 38.91 / / /	1.20		88.02				0.665	**0.890**	1.487			
		21.33	/ / / /		38.91 / 38.91 / / /			88.02			0.665		1.073	1.791			
		21.33	/ / / /		38.91 / 38.91 / / /			88.02				0.665	1.073	1.791			
BC2	Lower-Chord	21.33	/ / / /		38.91 / 38.91 / / /	1.20		93.75			0.665		**0.975**	1.628			
		21.33	/ / / /		38.91 / 38.91 / / /	1.20		93.75				0.665	**0.975**	1.628			
		21.33	/ / / /		38.91 / 38.91 / / /			93.75			0.665		1.175	1.962			
		21.33	/ / / /		38.91 / 38.91 / / /			93.75				0.665	1.175	1.962			
BC3	Lower-Chord	35.66	/ / / /		64.85 / 64.85 / / /	1.20		135.00			0.665		**0.785**	1.311			
		35.66	/ / / /		64.85 / 64.85 / / /	1.20		135.00				0.665	**0.785**	1.311			
		35.66	/ / / /		64.85 / 64.85 / / /			135.00			0.665		**0.946**	1.580			
		35.66	/ / / /		64.85 / 64.85 / / /			135.00				0.665	**0.946**	1.580			
BC4	Lower-Chord	42.42	/ / / /		71.91 / 72.14 / / /	1.20		157.50			0.665		**0.818**	1.361			
		42.42	/ / / /		71.91 / 72.14 / / /	1.20		157.50				0.665	**0.818**	1.361			
		42.42	/ / / /		71.91 / 72.14 / / /			157.50			0.665		**0.985**	1.640			
		42.42	/ / / /		71.91 / 72.14 / / /			157.50				0.665	**0.985**	1.640			
BC5	Lower-Chord	35.68	/ / / /		64.85 / 64.85 / / /	1.20		135.00			0.665		**0.785**	1.311			
		35.68	/ / / /		64.85 / 64.85 / / /	1.20		135.00				0.665	**0.785**	1.311			
		35.68	/ / / /		64.85 / 64.85 / / /			135.00			0.665		**0.946**	1.580			
		35.68	/ / / /		64.85 / 64.85 / / /			135.00				0.665	**0.946**	1.580			
BC6	Lower-Chord	21.37	/ / / /		38.91 / 38.91 / / /	1.20		93.75			0.665		**0.974**	1.627			
		21.37	/ / / /		38.91 / 38.91 / / /	1.20		93.75				0.665	**0.974**	1.627			
		21.37	/ / / /		38.91 / 38.91 / / /			93.75			0.665		1.174	1.960			
		21.37	/ / / /		38.91 / 38.91 / / /			93.75				0.665	1.174	1.960			
BC7	Lower-Chord	21.37	/ / / /		38.91 / 38.91 / / /	1.20		88.02			0.665		**0.889**	1.485			
		21.37	/ / / /		38.91 / 38.91 / / /	1.20		88.02				0.665	**0.889**	1.485			
		21.37	/ / / /		38.91 / 38.91 / / /			88.02			0.665		1.072	1.790			
		21.37	/ / / /		38.91 / 38.91 / / /			88.02				0.665	1.072	1.790			
TC2	Upper-Chord	-35.66	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63				0.665		1.650	2.756			
		-35.66	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63					0.665	1.650	2.756			
		-35.66	-64.85 / -64.85 / / /		/ / / /		-232.63				0.665		1.988	3.320			
		-35.66	-64.85 / -64.85 / / /		/ / / /		-232.63					0.665	1.988	3.320			
TC3	Upper-Chord	-42.89	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63				0.665		1.306	2.180			
		-42.89	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63					0.665	1.306	2.180			
		-42.89	-77.83 / -77.83 / / /		/ / / /		-232.63				0.665		1.573	2.627			
		-42.89	-77.83 / -77.83 / / /		/ / / /		-232.63					0.665	1.573	2.627			
TC4	Upper-Chord	-43.37	-77.50 / -77.28 / / /	1.20	/ / / /		-232.63				0.665		1.307	2.188			
		-43.37	-77.50 / -77.28 / / /	1.20	/ / / /		-232.63					0.665	1.307	2.188			
		-43.37	-77.50 / -77.28 / / /		/ / / /		-232.63				0.665		1.574	2.636			
		-43.37	-77.50 / -77.28 / / /		/ / / /		-232.63					0.665	1.574	2.636			
TC5	Upper-Chord	-42.90	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63				0.665		1.306	2.180			
		-42.90	-77.83 / -77.83 / / /	1.20	/ / / /		-232.63					0.665	1.306	2.180			
		-42.90	-77.83 / -77.83 / / /		/ / / /		-232.63				0.665		1.573	2.627			
		-42.90	-77.83 / -77.83 / / /		/ / / /		-232.63					0.665	1.573	2.627			
TC6	Upper-Chord	-35.68	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63				0.665		1.650	2.755			
		-35.68	-64.85 / -64.85 / / /	1.20	/ / / /		-232.63					0.665	1.650	2.755			
		-35.68	-64.85 / -64.85 / / /		/ / / /		-232.63				0.665		1.988	3.320			
		-35.68	-64.85 / -64.85 / / /		/ / / /		-232.63					0.665	1.988	3.320			
VW1	Vertical	7.47	/ / / /		36.88 / 36.88 / / /	1.30		41.34			0.665		**0.457**	**0.763**			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type	V1	V2	F1	V3	F2	V4	V5	LLDF	LLDF	RF1	RF2
		7.47	////		36.88 / 36.88 / / /	1.30		41.34		0.665	**0.457**	**0.763**
		7.47	////		36.88 / 36.88 / / /			41.34	0.665		**0.594**	**0.991**
		7.47	////		36.88 / 36.88 / / /			41.34		0.665	**0.594**	**0.991**
VW2	Vertical	-9.98	-29.36 / -29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	-68.58	86.61		0.665	1.053	1.759
		-9.98	-29.36 / -29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	-68.58	86.61	0.665		1.053	1.759
		-9.98	-29.36 / -29.36 / / /		11.06 / 11.06 / / /		-68.58	86.61		0.665	1.311	2.189
		-9.98	-29.36 / -29.36 / / /		11.06 / 11.06 / / /		-68.58	86.61	0.665		1.311	2.189
VW3	Vertical	-1.61	-18.89 / -18.62 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61	0.665		1.919	3.251
		-1.61	-18.89 / -18.62 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61		0.665	1.919	3.251
		-1.61	-18.89 / -18.62 / / /		0.41 / 0.69 / / /		-68.58	86.61	0.665		2.437	4.128
		-1.61	-18.89 / -18.62 / / /		0.41 / 0.69 / / /		-68.58	86.61		0.665	2.437	4.128
VW4	Vertical	-1.60	-18.88 / -18.61 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61	0.665		1.920	3.254
		-1.60	-18.88 / -18.61 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61		0.665	1.920	3.254
		-1.60	-18.88 / -18.61 / / /		0.40 / 0.67 / / /		-68.58	86.61	0.665		2.438	4.132
		-1.60	-18.88 / -18.61 / / /		0.40 / 0.67 / / /		-68.58	86.61		0.665	2.438	4.132
VW5	Vertical	-9.95	-29.36 / -29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	-68.58	86.61	0.665		1.054	1.760
		-9.95	-29.36 / -29.36 / / /	1.24	11.06 / 11.06 / / /	1.30	-68.58	86.61		0.665	1.054	1.760
		-9.95	-29.36 / -29.36 / / /		11.06 / 11.06 / / /		-68.58	86.61	0.665		1.312	2.190
		-9.95	-29.36 / -29.36 / / /		11.06 / 11.06 / / /		-68.58	86.61	0.665		1.312	2.190
VW6R	Vertical	7.51	////		36.88 / 36.88 / / /	1.30		44.44	0.665		**0.501**	**0.836**
		7.51	////		36.88 / 36.88 / / /	1.30		44.44		0.665	**0.501**	**0.836**
		7.51	////		36.88 / 36.88 / / /			44.44	0.665		**0.651**	1.087
		7.51	////		36.88 / 36.88 / / /			44.44		0.665	**0.651**	1.087
TC1	Diagonal	-33.90	-70.67 / -70.67 / / /	1.20	////		-201.57		0.665		1.280	2.138
		-33.90	-70.67 / -70.67 / / /	1.20	////		-201.57			0.665	1.280	2.138
		-33.90	-70.67 / -70.67 / / /		////		-201.57		0.665		1.543	2.577
		-33.90	-70.67 / -70.67 / / /		////		-201.57			0.665	1.543	2.577
TC7	Diagonal	-33.96	-70.67 / -70.67 / / /	1.20	////		-201.57		0.665		1.280	2.137
		-33.96	-70.67 / -70.67 / / /	1.20	////		-201.57			0.665	1.280	2.137
		-33.96	-70.67 / -70.67 / / /		////		-201.57		0.665		1.542	2.575
		-33.96	-70.67 / -70.67 / / /		////		-201.57			0.665	1.542	2.575
DW1	Diagonal	22.77	-5.95 / -5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38	0.665		**0.584**	**0.976**
		22.77	-5.95 / -5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38		0.665	**0.584**	**0.976**
		22.77	-5.95 / -5.95 / / /		53.06 / 53.06 / / /			84.38	0.665		**0.715**	1.193
		22.77	-5.95 / -5.95 / / /		53.06 / 53.06 / / /			84.38		0.665	**0.715**	1.193
DW2	Diagonal	11.50	-14.22 / -14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00	0.665		**0.575**	**0.960**
		11.50	-14.22 / -14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00		0.665	**0.575**	**0.960**
		11.50	-14.22 / -14.22 / / /		37.78 / 37.78 / / /			54.00	0.665		**0.716**	1.195
		11.50	-14.22 / -14.22 / / /		37.78 / 37.78 / / /			54.00		0.665	**0.716**	1.195
DW3	Diagonal	0.76	////		24.30 / 23.95 / / /	1.27		41.34	0.665		**0.905**	1.534
		0.76	////		24.30 / 23.95 / / /	1.27		41.34		0.665	**0.905**	1.534
		0.76	////		24.30 / 23.95 / / /			41.34	0.665		1.149	1.947
		0.76	////		24.30 / 23.95 / / /			41.34		0.665	1.149	1.947
DW4	Diagonal	0.75	////		24.29 / 23.94 / / /	1.27		41.34	0.665		**0.906**	1.535
		0.75	////		24.29 / 23.94 / / /	1.27		41.34		0.665	**0.906**	1.535
		0.75	////		24.29 / 23.94 / / /			41.34	0.665		1.150	1.949
		0.75	////		24.29 / 23.94 / / /			41.34		0.665	1.150	1.949
DW5	Diagonal	11.47	-14.22 / -14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00	0.665		**0.575**	**0.961**
		11.47	-14.22 / -14.22 / / /	1.30	37.78 / 37.78 / / /	1.24		54.00		0.665	**0.575**	**0.961**
		11.47	-14.22 / -14.22 / / /		37.78 / 37.78 / / /			54.00	0.665		**0.716**	1.196
		11.47	-14.22 / -14.22 / / /		37.78 / 37.78 / / /			54.00		0.665	**0.716**	1.196
DW6	Diagonal	22.75	-5.95 / -5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38	0.665		**0.585**	**0.976**
		22.75	-5.95 / -5.95 / / /	1.30	53.06 / 53.06 / / /	1.22		84.38		0.665	**0.585**	**0.976**
		22.75	-5.95 / -5.95 / / /		53.06 / 53.06 / / /			84.38	0.665		**0.715**	1.194
		22.75	-5.95 / -5.95 / / /		53.06 / 53.06 / / /			84.38		0.665	**0.715**	1.194

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Tens. (kip)	Adj Veh Demand Comp. (kip)	Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	21.33	////		32.16 / 32.16 / / /	1.20		88.02			0.665		1.077	1.799			
		21.33	////		32.16 / 32.16 / / /	1.20		88.02				0.665	1.077	1.799			
		21.33	////		32.16 / 32.16 / / /			88.02			0.665		1.298	2.167			
		21.33	////		32.16 / 32.16 / / /			88.02				0.665	1.298	2.167			
BC2	Lower-Chord	21.33	////		32.16 / 32.16 / / /	1.20		93.75			0.665		1.179	1.970			
		21.33	////		32.16 / 32.16 / / /	1.20		93.75				0.665	1.179	1.970			
		21.33	////		32.16 / 32.16 / / /			93.75			0.665		1.421	2.373			
		21.33	////		32.16 / 32.16 / / /			93.75				0.665	1.421	2.373			
BC3	Lower-Chord	35.66	////		52.76 / 52.76 / / /	1.20		135.00			0.665		**0.965**	1.612			
		35.66	////		52.76 / 52.76 / / /	1.20		135.00				0.665	**0.965**	1.612			
		35.66	////		52.76 / 52.76 / / /			135.00			0.665		1.163	1.942			
		35.66	////		52.76 / 52.76 / / /			135.00				0.665	1.163	1.942			
BC4	Lower-Chord	42.42	////		58.44 / 58.66 / / /	1.20		157.50			0.665		1.006	1.674			
		42.42	////		58.44 / 58.66 / / /	1.20		157.50				0.665	1.006	1.674			
		42.42	////		58.44 / 58.66 / / /			157.50			0.665		1.212	2.017			
		42.42	////		58.44 / 58.66 / / /			157.50				0.665	1.212	2.017			
BC5	Lower-Chord	35.68	////		52.76 / 52.76 / / /	1.20		135.00			0.665		**0.965**	1.611			
		35.68	////		52.76 / 52.76 / / /	1.20		135.00				0.665	**0.965**	1.611			
		35.68	////		52.76 / 52.76 / / /			135.00			0.665		1.163	1.942			
		35.68	////		52.76 / 52.76 / / /			135.00				0.665	1.163	1.942			
BC6	Lower-Chord	21.37	////		32.16 / 32.16 / / /	1.20		93.75			0.665		1.178	1.968			
		21.37	////		32.16 / 32.16 / / /	1.20		93.75				0.665	1.178	1.968			
		21.37	////		32.16 / 32.16 / / /			93.75			0.665		1.420	2.371			
		21.37	////		32.16 / 32.16 / / /			93.75				0.665	1.420	2.371			
BC7	Lower-Chord	21.37	////		32.16 / 32.16 / / /	1.20		88.02			0.665		1.076	1.797			
		21.37	////		32.16 / 32.16 / / /	1.20		88.02				0.665	1.076	1.797			
		21.37	////		32.16 / 32.16 / / /			88.02			0.665		1.297	2.165			
		21.37	////		32.16 / 32.16 / / /			88.02				0.665	1.297	2.165			
TC2	Upper-Chord	-35.66	-52.76 / -52.76 / / /	1.20	////		-232.63				0.665		2.028	3.387			
		-35.66	-52.76 / -52.76 / / /	1.20	////		-232.63					0.665	2.028	3.387			
		-35.66	-52.76 / -52.76 / / /		////		-232.63				0.665		2.444	4.081			
		-35.66	-52.76 / -52.76 / / /		////		-232.63					0.665	2.444	4.081			
TC3	Upper-Chord	-42.89	-62.64 / -62.64 / / /	1.20	////		-232.63				0.665		1.622	2.709			
		-42.89	-62.64 / -62.64 / / /	1.20	////		-232.63					0.665	1.622	2.709			
		-42.89	-62.64 / -62.64 / / /		////		-232.63				0.665		1.955	3.264			
		-42.89	-62.64 / -62.64 / / /		////		-232.63					0.665	1.955	3.264			
TC4	Upper-Chord	-43.37	-62.31 / -62.09 / / /	1.20	////		-232.63				0.665		1.625	2.723			
		-43.37	-62.31 / -62.09 / / /	1.20	////		-232.63					0.665	1.625	2.723			
		-43.37	-62.31 / -62.09 / / /		////		-232.63				0.665		1.958	3.281			
		-43.37	-62.31 / -62.09 / / /		////		-232.63					0.665	1.958	3.281			
TC5	Upper-Chord	-42.90	-62.64 / -62.64 / / /	1.20	////		-232.63				0.665		1.622	2.709			
		-42.90	-62.64 / -62.64 / / /	1.20	////		-232.63					0.665	1.622	2.709			
		-42.90	-62.64 / -62.64 / / /		////		-232.63				0.665		1.954	3.264			
		-42.90	-62.64 / -62.64 / / /		////		-232.63					0.665	1.954	3.264			
TC6	Upper-Chord	-35.68	-52.76 / -52.76 / / /	1.20	////		-232.63				0.665		2.028	3.387			
		-35.68	-52.76 / -52.76 / / /	1.20	////		-232.63					0.665	2.028	3.387			
		-35.68	-52.76 / -52.76 / / /		////		-232.63				0.665		2.444	4.081			
		-35.68	-52.76 / -52.76 / / /		////		-232.63					0.665	2.444	4.081			
VW1	Vertical	7.47	////		31.88 / 31.88 / / /	1.30		41.34			0.665		**0.528**	**0.882**			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

		7.47	/ / / /		31.88 / 31.88 / / /	1.30		41.34				0.665	**0.528** **0.882**	
		7.47	/ / / /		31.88 / 31.88 / / /			41.34			0.665		**0.687** 1.147	
		7.47	/ / / /		31.88 / 31.88 / / /			41.34				0.665	**0.687** 1.147	
VW2	Vertical	-9.98	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61			0.665		1.215 2.030	
		-9.98	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61				0.665	1.215 2.030	
		-9.98	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61			0.665		1.513 2.526	
		-9.98	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61				0.665	1.513 2.526	
VW3	Vertical	-1.61	-17.90 / -17.63 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61			0.665		2.025 3.434	
		-1.61	-17.90 / -17.63 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61				0.665	2.025 3.434	
		-1.61	-17.90 / -17.63 / / /		0.41 / 0.69 / / /		-68.58	86.61			0.665		2.571 4.360	
		-1.61	-17.90 / -17.63 / / /		0.41 / 0.69 / / /		-68.58	86.61				0.665	2.571 4.360	
VW4	Vertical	-1.60	-17.89 / -17.62 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61			0.665		2.026 3.437	
		-1.60	-17.89 / -17.62 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61				0.665	2.026 3.437	
		-1.60	-17.89 / -17.62 / / /		0.40 / 0.67 / / /		-68.58	86.61			0.665		2.573 4.364	
		-1.60	-17.89 / -17.62 / / /		0.40 / 0.67 / / /		-68.58	86.61				0.665	2.573 4.364	
VW5	Vertical	-9.95	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61			0.665		1.216 2.031	
		-9.95	-25.45 / -25.45 / / /	1.24	11.16 / 11.16 / / /	1.30	-68.58	86.61				0.665	1.216 2.031	
		-9.95	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61			0.665		1.514 2.528	
		-9.95	-25.45 / -25.45 / / /		11.16 / 11.16 / / /		-68.58	86.61				0.665	1.514 2.528	
VW6R	Vertical	7.51	/ / / /		31.88 / 31.88 / / /	1.30		44.44			0.665		**0.579** **0.967**	
		7.51	/ / / /		31.88 / 31.88 / / /	1.30		44.44				0.665	**0.579** **0.967**	
		7.51	/ / / /		31.88 / 31.88 / / /			44.44			0.665		**0.753** 1.257	
		7.51	/ / / /		31.88 / 31.88 / / /			44.44				0.665	**0.753** 1.257	
TC1	Diagonal	-33.90	-51.12 / -51.12 / / /	1.20	/ / / /		-201.57				0.665		1.770 2.956	
		-33.90	-51.12 / -51.12 / / /	1.20	/ / / /		-201.57					0.665	1.770 2.956	
		-33.90	-51.12 / -51.12 / / /		/ / / /		-201.57				0.665		2.133 3.562	
		-33.90	-51.12 / -51.12 / / /		/ / / /		-201.57					0.665	2.133 3.562	
TC7	Diagonal	-33.96	-51.12 / -51.12 / / /	1.20	/ / / /		-201.57				0.665		1.769 2.955	
		-33.96	-51.12 / -51.12 / / /	1.20	/ / / /		-201.57					0.665	1.769 2.955	
		-33.96	-51.12 / -51.12 / / /		/ / / /		-201.57				0.665		2.132 3.560	
		-33.96	-51.12 / -51.12 / / /		/ / / /		-201.57					0.665	2.132 3.560	
DW1	Diagonal	22.77	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38			0.665		**0.739** 1.235	
		22.77	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38				0.665	**0.739** 1.235	
		22.77	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38			0.665		**0.904** 1.510	
		22.77	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38				0.665	**0.904** 1.510	
DW2	Diagonal	11.50	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00			0.665		**0.663** 1.108	
		11.50	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00				0.665	**0.663** 1.108	
		11.50	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00			0.665		**0.826** 1.379	
		11.50	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00				0.665	**0.826** 1.379	
DW3	Diagonal	0.76	-0.33 / -0.33 / / /	1.27	23.03 / 22.68 / / /	1.27		41.34			0.665		**0.955** 1.620	
		0.76	-0.33 / -0.33 / / /	1.27	23.03 / 22.68 / / /	1.27		41.34				0.665	**0.955** 1.620	
		0.76	-0.33 / -0.33 / / /		23.03 / 22.68 / / /			41.34			0.665		1.213 2.057	
		0.76	-0.33 / -0.33 / / /		23.03 / 22.68 / / /			41.34				0.665	1.213 2.057	
DW4	Diagonal	0.75	-0.33 / -0.33 / / /	1.27	23.02 / 22.67 / / /	1.27		41.34			0.665		**0.956** 1.621	
		0.75	-0.33 / -0.33 / / /	1.27	23.02 / 22.67 / / /	1.27		41.34				0.665	**0.956** 1.621	
		0.75	-0.33 / -0.33 / / /		23.02 / 22.67 / / /			41.34			0.665		1.214 2.059	
		0.75	-0.33 / -0.33 / / /		23.02 / 22.67 / / /			41.34				0.665	1.214 2.059	
DW5	Diagonal	11.47	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00			0.665		**0.664** 1.109	
		11.47	-14.36 / -14.36 / / /	1.30	32.74 / 32.74 / / /	1.24		54.00				0.665	**0.664** 1.109	
		11.47	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00			0.665		**0.826** 1.380	
		11.47	-14.36 / -14.36 / / /		32.74 / 32.74 / / /			54.00				0.665	**0.826** 1.380	
DW6	Diagonal	22.75	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38			0.665		**0.740** 1.236	
		22.75	-5.51 / -5.51 / / /	1.30	41.93 / 41.93 / / /	1.22		84.38				0.665	**0.740** 1.236	
		22.75	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38			0.665		**0.905** 1.511	
		22.75	-5.51 / -5.51 / / /		41.93 / 41.93 / / /			84.38				0.665	**0.905** 1.511	

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3-3 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	LL Force Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	LL Force Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Capacity Comp. (kip)	Capacity Tens. (kip)	Adj Veh Demand Comp. (kip)	Adj Veh Demand Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	21.33	/ / / /		42.50 / 42.50 / / /	1.20		88.02			0.665		**0.815**	1.361			
		21.33	/ / / /		42.50 / 42.50 / / /	1.20		88.02				0.665	**0.815**	1.361			
		21.33	/ / / /		42.50 / 42.50 / / /			88.02			0.665		**0.982**	1.640			
		21.33	/ / / /		42.50 / 42.50 / / /			88.02				0.665	**0.982**	1.640			
BC2	Lower-Chord	21.33	/ / / /		42.50 / 42.50 / / /	1.20		93.75			0.665		**0.892**	1.490			
		21.33	/ / / /		42.50 / 42.50 / / /	1.20		93.75				0.665	**0.892**	1.490			
		21.33	/ / / /		42.50 / 42.50 / / /			93.75			0.665		1.075	1.796			
		21.33	/ / / /		42.50 / 42.50 / / /			93.75				0.665	1.075	1.796			
BC3	Lower-Chord	35.66	/ / / /		68.19 / 68.19 / / /	1.20		135.00			0.665		**0.747**	1.247			
		35.66	/ / / /		68.19 / 68.19 / / /	1.20		135.00				0.665	**0.747**	1.247			
		35.66	/ / / /		68.19 / 68.19 / / /			135.00			0.665		**0.900**	1.503			
		35.66	/ / / /		68.19 / 68.19 / / /			135.00				0.665	**0.900**	1.503			
BC4	Lower-Chord	42.42	/ / / /		78.80 / 78.80 / / /	1.20		157.50			0.665		**0.746**	1.246			
		42.42	/ / / /		78.80 / 78.80 / / /	1.20		157.50				0.665	**0.746**	1.246			
		42.42	/ / / /		78.80 / 78.80 / / /			157.50			0.665		**0.899**	1.502			
		42.42	/ / / /		78.80 / 78.80 / / /			157.50				0.665	**0.899**	1.502			
BC5	Lower-Chord	35.68	/ / / /		68.19 / 68.19 / / /	1.20		135.00			0.665		**0.747**	1.247			
		35.68	/ / / /		68.19 / 68.19 / / /	1.20		135.00				0.665	**0.747**	1.247			
		35.68	/ / / /		68.19 / 68.19 / / /			135.00			0.665		**0.900**	1.502			
		35.68	/ / / /		68.19 / 68.19 / / /			135.00				0.665	**0.900**	1.502			
BC6	Lower-Chord	21.37	/ / / /		42.50 / 42.50 / / /	1.20		93.75			0.665		**0.892**	1.489			
		21.37	/ / / /		42.50 / 42.50 / / /	1.20		93.75				0.665	**0.892**	1.489			
		21.37	/ / / /		42.50 / 42.50 / / /			93.75			0.665		1.074	1.794			
		21.37	/ / / /		42.50 / 42.50 / / /			93.75				0.665	1.074	1.794			
BC7	Lower-Chord	21.37	/ / / /		42.50 / 42.50 / / /	1.20		88.02			0.665		**0.814**	1.360			
		21.37	/ / / /		42.50 / 42.50 / / /	1.20		88.02				0.665	**0.814**	1.360			
		21.37	/ / / /		42.50 / 42.50 / / /			88.02			0.665		**0.981**	1.638			
		21.37	/ / / /		42.50 / 42.50 / / /			88.02				0.665	**0.981**	1.638			
TC2	Upper-Chord	-35.66	-68.19 / -68.19 / / /	1.20	/ / / /		-232.63				0.665		1.569	2.621			
		-35.66	-68.19 / -68.19 / / /	1.20	/ / / /		-232.63					0.665	1.569	2.621			
		-35.66	-68.19 / -68.19 / / /		/ / / /		-232.63				0.665		1.891	3.158			
		-35.66	-68.19 / -68.19 / / /		/ / / /		-232.63					0.665	1.891	3.158			
TC3	Upper-Chord	-42.89	-80.65 / -80.65 / / /	1.20	/ / / /		-232.63				0.665		1.260	2.104			
		-42.89	-80.65 / -80.65 / / /	1.20	/ / / /		-232.63					0.665	1.260	2.104			
		-42.89	-80.65 / -80.65 / / /		/ / / /		-232.63				0.665		1.518	2.535			
		-42.89	-80.65 / -80.65 / / /		/ / / /		-232.63					0.665	1.518	2.535			
TC4	Upper-Chord	-43.37	-81.01 / -81.01 / / /	1.20	/ / / /		-232.63				0.665		1.250	2.087			
		-43.37	-81.01 / -81.01 / / /	1.20	/ / / /		-232.63					0.665	1.250	2.087			
		-43.37	-81.01 / -81.01 / / /		/ / / /		-232.63				0.665		1.506	2.515			
		-43.37	-81.01 / -81.01 / / /		/ / / /		-232.63					0.665	1.506	2.515			
TC5	Upper-Chord	-42.90	-80.65 / -80.65 / / /	1.20	/ / / /		-232.63				0.665		1.260	2.104			
		-42.90	-80.65 / -80.65 / / /	1.20	/ / / /		-232.63					0.665	1.260	2.104			
		-42.90	-80.65 / -80.65 / / /		/ / / /		-232.63				0.665		1.518	2.535			
		-42.90	-80.65 / -80.65 / / /		/ / / /		-232.63					0.665	1.518	2.535			
TC6	Upper-Chord	-35.68	-68.19 / -68.19 / / /	1.20	/ / / /		-232.63				0.665		1.569	2.620			
		-35.68	-68.19 / -68.19 / / /	1.20	/ / / /		-232.63					0.665	1.569	2.620			
		-35.68	-68.19 / -68.19 / / /		/ / / /		-232.63				0.665		1.891	3.157			
		-35.68	-68.19 / -68.19 / / /		/ / / /		-232.63					0.665	1.891	3.157			
VW1	Vertical	7.47	/ / / /		25.65 / 25.65 / / /	1.30		41.34			0.665		**0.657**	1.097			

```
LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99
```

Member	Type	Val	Range A	Fac A	Range B	Fac B	Neg	Pos	LLDF-1	LLDF-2	RF-1	RF-2
		7.47	////		25.65 / 25.65 / / /	1.30		41.34		0.665	**0.657**	1.097
		7.47	////		25.65 / 25.65 / / /			41.34	0.665		**0.854**	1.425
		7.47	////		25.65 / 25.65 / / /			41.34		0.665	**0.854**	1.425
VW2	Vertical	-9.98	-29.65 / -29.65 / / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61	0.665		1.043	1.742
		-9.98	-29.65 / -29.65 / / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61		0.665	1.043	1.742
		-9.98	-29.65 / -29.65 / / /		9.41 / 9.41 / / /		-68.58	86.61	0.665		1.298	2.168
		-9.98	-29.65 / -29.65 / / /		9.41 / 9.41 / / /		-68.58	86.61		0.665	1.298	2.168
VW3	Vertical	-1.61	-18.12 / -17.85 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61	0.665		2.001	3.392
		-1.61	-18.12 / -17.85 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61		0.665	2.001	3.392
		-1.61	-18.12 / -17.85 / / /		0.41 / 0.69 / / /		-68.58	86.61	0.665		2.540	4.307
		-1.61	-18.12 / -17.85 / / /		0.41 / 0.69 / / /		-68.58	86.61		0.665	2.540	4.307
VW4	Vertical	-1.60	-18.11 / -17.84 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61	0.665		2.002	3.395
		-1.60	-18.11 / -17.84 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61		0.665	2.002	3.395
		-1.60	-18.11 / -17.84 / / /		0.40 / 0.67 / / /		-68.58	86.61	0.665		2.542	4.310
		-1.60	-18.11 / -17.84 / / /		0.40 / 0.67 / / /		-68.58	86.61		0.665	2.542	4.310
VW5	Vertical	-9.95	-29.65 / -29.65 / / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61	0.665		1.044	1.743
		-9.95	-29.65 / -29.65 / / /	1.24	9.41 / 9.41 / / /	1.30	-68.58	86.61		0.665	1.044	1.743
		-9.95	-29.65 / -29.65 / / /		9.41 / 9.41 / / /		-68.58	86.61	0.665		1.299	2.169
		-9.95	-29.65 / -29.65 / / /		9.41 / 9.41 / / /		-68.58	86.61		0.665	1.299	2.169
VW6R	Vertical	7.51	////		25.65 / 25.65 / / /	1.30		44.44	0.665		**0.720**	1.202
		7.51	////		25.65 / 25.65 / / /	1.30		44.44		0.665	**0.720**	1.202
		7.51	////		25.65 / 25.65 / / /			44.44	0.665		**0.936**	1.563
		7.51	////		25.65 / 25.65 / / /			44.44		0.665	**0.936**	1.563
TC1	Diagonal	-33.90	-67.55 / -67.55 / / /	1.20	////		-201.57		0.665		1.340	2.237
		-33.90	-67.55 / -67.55 / / /	1.20	////		-201.57			0.665	1.340	2.237
		-33.90	-67.55 / -67.55 / / /		////		-201.57		0.665		1.614	2.695
		-33.90	-67.55 / -67.55 / / /		////		-201.57			0.665	1.614	2.695
TC7	Diagonal	-33.96	-67.55 / -67.55 / / /	1.20	////		-201.57		0.665		1.339	2.236
		-33.96	-67.55 / -67.55 / / /	1.20	////		-201.57			0.665	1.339	2.236
		-33.96	-67.55 / -67.55 / / /		////		-201.57		0.665		1.613	2.694
		-33.96	-67.55 / -67.55 / / /		////		-201.57			0.665	1.613	2.694
DW1	Diagonal	22.77	-4.54 / -4.54 / / /	1.30	52.85 / 52.85 / / /	1.22		84.38	0.665		**0.587**	**0.980**
		22.77	-4.54 / -4.54 / / /	1.30	52.85 / 52.85 / / /	1.22		84.38		0.665	**0.587**	**0.980**
		22.77	-4.54 / -4.54 / / /		52.85 / 52.85 / / /			84.38	0.665		**0.717**	1.198
		22.77	-4.54 / -4.54 / / /		52.85 / 52.85 / / /			84.38		0.665	**0.717**	1.198
DW2	Diagonal	11.50	-12.11 / -12.11 / / /	1.30	38.14 / 38.14 / / /	1.24		54.00	0.665		**0.569**	**0.951**
		11.50	-12.11 / -12.11 / / /	1.30	38.14 / 38.14 / / /	1.24		54.00		0.665	**0.569**	**0.951**
		11.50	-12.11 / -12.11 / / /		38.14 / 38.14 / / /			54.00	0.665		**0.709**	1.183
		11.50	-12.11 / -12.11 / / /		38.14 / 38.14 / / /			54.00		0.665	**0.709**	1.183
DW3	Diagonal	0.76	-0.48 / -0.88 / / /	1.27	23.31 / 22.96 / / /	1.27		41.34	0.665		**0.944**	1.600
		0.76	-0.48 / -0.88 / / /	1.27	23.31 / 22.96 / / /	1.27		41.34		0.665	**0.944**	1.600
		0.76	-0.48 / -0.88 / / /		23.31 / 22.96 / / /			41.34	0.665		1.198	2.031
		0.76	-0.48 / -0.88 / / /		23.31 / 22.96 / / /			41.34		0.665	1.198	2.031
DW4	Diagonal	0.75	-0.48 / -0.74 / / /	1.27	23.30 / 22.95 / / /	1.27		41.34	0.665		**0.944**	1.601
		0.75	-0.48 / -0.74 / / /	1.27	23.30 / 22.95 / / /	1.27		41.34		0.665	**0.944**	1.601
		0.75	-0.48 / -0.74 / / /		23.30 / 22.95 / / /			41.34	0.665		1.199	2.034
		0.75	-0.48 / -0.74 / / /		23.30 / 22.95 / / /			41.34		0.665	1.199	2.034
DW5	Diagonal	11.47	-12.11 / -12.11 / / /	1.30	38.14 / 38.14 / / /	1.24		54.00	0.665		**0.570**	**0.952**
		11.47	-12.11 / -12.11 / / /	1.30	38.14 / 38.14 / / /	1.24		54.00		0.665	**0.570**	**0.952**
		11.47	-12.11 / -12.11 / / /		38.14 / 38.14 / / /			54.00	0.665		**0.709**	1.185
		11.47	-12.11 / -12.11 / / /		38.14 / 38.14 / / /			54.00		0.665	**0.709**	1.185
DW6	Diagonal	22.75	-4.54 / -4.54 / / /	1.30	52.85 / 52.85 / / /	1.22		84.38	0.665		**0.587**	**0.980**
		22.75	-4.54 / -4.54 / / /	1.30	52.85 / 52.85 / / /	1.22		84.38		0.665	**0.587**	**0.980**
		22.75	-4.54 / -4.54 / / /		52.85 / 52.85 / / /			84.38	0.665		**0.718**	1.199
		22.75	-4.54 / -4.54 / / /		52.85 / 52.85 / / /			84.38		0.665	**0.718**	1.199

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: Type 3S2 (Design Truck)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
<u>Inventory:</u>
A1 = 1.30 , A2 = 2.17
<u>Operating:</u>
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Truss Element	DL Force (kip)	Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Comp. (kip)	Tens. (kip)	Comp. (kip)	Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	21.33	/ / / /		40.84 / 40.84 / / /	1.20		88.02			0.665		0.848	1.416			
		21.33	/ / / /		40.84 / 40.84 / / /	1.20		88.02				0.665	0.848	1.416			
		21.33	/ / / /		40.84 / 40.84 / / /			88.02			0.665		1.022	1.707			
		21.33	/ / / /		40.84 / 40.84 / / /			88.02				0.665	1.022	1.707			
BC2	Lower-Chord	21.33	/ / / /		40.84 / 40.84 / / /	1.20		93.75			0.665		0.929	1.551			
		21.33	/ / / /		40.84 / 40.84 / / /	1.20		93.75				0.665	0.929	1.551			
		21.33	/ / / /		40.84 / 40.84 / / /			93.75			0.665		1.119	1.869			
		21.33	/ / / /		40.84 / 40.84 / / /			93.75				0.665	1.119	1.869			
BC3	Lower-Chord	35.66	/ / / /		66.87 / 66.87 / / /	1.20		135.00			0.665		0.762	1.272			
		35.66	/ / / /		66.87 / 66.87 / / /	1.20		135.00				0.665	0.762	1.272			
		35.66	/ / / /		66.87 / 66.87 / / /			135.00			0.665		0.918	1.532			
		35.66	/ / / /		66.87 / 66.87 / / /			135.00				0.665	0.918	1.532			
BC4	Lower-Chord	42.42	/ / / /		75.79 / 76.02 / / /	1.20		157.50			0.665		0.776	1.292			
		42.42	/ / / /		75.79 / 76.02 / / /	1.20		157.50				0.665	0.776	1.292			
		42.42	/ / / /		75.79 / 76.02 / / /			157.50			0.665		0.935	1.557			
		42.42	/ / / /		75.79 / 76.02 / / /			157.50				0.665	0.935	1.557			
BC5	Lower-Chord	35.68	/ / / /		66.87 / 66.87 / / /	1.20		135.00			0.665		0.761	1.271			
		35.68	/ / / /		66.87 / 66.87 / / /	1.20		135.00				0.665	0.761	1.271			
		35.68	/ / / /		66.87 / 66.87 / / /			135.00			0.665		0.917	1.532			
		35.68	/ / / /		66.87 / 66.87 / / /			135.00				0.665	0.917	1.532			
BC6	Lower-Chord	21.37	/ / / /		40.84 / 40.84 / / /	1.20		93.75			0.665		0.928	1.550			
		21.37	/ / / /		40.84 / 40.84 / / /	1.20		93.75				0.665	0.928	1.550			
		21.37	/ / / /		40.84 / 40.84 / / /			93.75			0.665		1.118	1.867			
		21.37	/ / / /		40.84 / 40.84 / / /			93.75				0.665	1.118	1.867			
BC7	Lower-Chord	21.37	/ / / /		40.84 / 40.84 / / /	1.20		88.02			0.665		0.847	1.415			
		21.37	/ / / /		40.84 / 40.84 / / /	1.20		88.02				0.665	0.847	1.415			
		21.37	/ / / /		40.84 / 40.84 / / /			88.02			0.665		1.021	1.705			
		21.37	/ / / /		40.84 / 40.84 / / /			88.02				0.665	1.021	1.705			
TC2	Upper-Chord	-35.66	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63				0.665		1.600	2.673			
		-35.66	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63					0.665	1.600	2.673			
		-35.66	-66.87 / -66.87 / / /		/ / / /		-232.63				0.665		1.928	3.220			
		-35.66	-66.87 / -66.87 / / /		/ / / /		-232.63					0.665	1.928	3.220			
TC3	Upper-Chord	-42.89	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63				0.665		1.287	2.149			
		-42.89	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63					0.665	1.287	2.149			
		-42.89	-78.97 / -78.97 / / /		/ / / /		-232.63				0.665		1.550	2.589			
		-42.89	-78.97 / -78.97 / / /		/ / / /		-232.63					0.665	1.550	2.589			
TC4	Upper-Chord	-43.37	-78.64 / -78.42 / / /	1.20	/ / / /		-232.63				0.665		1.288	2.156			
		-43.37	-78.64 / -78.42 / / /	1.20	/ / / /		-232.63					0.665	1.288	2.156			
		-43.37	-78.64 / -78.42 / / /		/ / / /		-232.63				0.665		1.551	2.598			
		-43.37	-78.64 / -78.42 / / /		/ / / /		-232.63					0.665	1.551	2.598			
TC5	Upper-Chord	-42.90	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63				0.665		1.287	2.149			
		-42.90	-78.97 / -78.97 / / /	1.20	/ / / /		-232.63					0.665	1.287	2.149			
		-42.90	-78.97 / -78.97 / / /		/ / / /		-232.63				0.665		1.550	2.589			
		-42.90	-78.97 / -78.97 / / /		/ / / /		-232.63					0.665	1.550	2.589			
TC6	Upper-Chord	-35.68	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63				0.665		1.600	2.672			
		-35.68	-66.87 / -66.87 / / /	1.20	/ / / /		-232.63					0.665	1.600	2.672			
		-35.68	-66.87 / -66.87 / / /		/ / / /		-232.63				0.665		1.928	3.220			
		-35.68	-66.87 / -66.87 / / /		/ / / /		-232.63					0.665	1.928	3.220			
VW1	Vertical	7.47	/ / / /		30.88 / 30.88 / / /	1.30		41.34			0.665		0.545	0.911			

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type	Force	P cap (pos/neg)	PF	M cap (pos/neg)	MF	D-load	Capacity	LLDF a	LLDF b	RF Inv	RF Op
		7.47	////		30.88 / 30.88 / /	1.30		41.34		0.665	0.545	0.911
		7.47	////		30.88 / 30.88 / /			41.34	0.665		0.709	1.184
		7.47	////		30.88 / 30.88 / /			41.34		0.665	0.709	1.184
VW2	Vertical	-9.98	-29.88 / -29.88 / /	1.24	9.90 / 9.90 / /	1.30	-68.58	86.61	0.665		1.035	1.728
		-9.98	-29.88 / -29.88 / /	1.24	9.90 / 9.90 / /	1.30	-68.58	86.61		0.665	1.035	1.728
		-9.98	-29.88 / -29.88 / /		9.90 / 9.90 / /		-68.58	86.61	0.665		1.288	2.151
		-9.98	-29.88 / -29.88 / /		9.90 / 9.90 / /		-68.58	86.61		0.665	1.288	2.151
VW3	Vertical	-1.61	-19.19 / -18.92 / /	1.27	0.41 / 0.69 / /	1.27	-68.58	86.61	0.665		1.888	3.199
		-1.61	-19.19 / -18.92 / /	1.27	0.41 / 0.69 / /	1.27	-68.58	86.61		0.665	1.888	3.199
		-1.61	-19.19 / -18.92 / /		0.41 / 0.69 / /		-68.58	86.61	0.665		2.398	4.062
		-1.61	-19.19 / -18.92 / /		0.41 / 0.69 / /		-68.58	86.61		0.665	2.398	4.062
VW4	Vertical	-1.60	-19.19 / -18.91 / /	1.27	0.40 / 0.67 / /	1.27	-68.58	86.61	0.665		1.890	3.201
		-1.60	-19.19 / -18.91 / /	1.27	0.40 / 0.67 / /	1.27	-68.58	86.61		0.665	1.890	3.201
		-1.60	-19.19 / -18.91 / /		0.40 / 0.67 / /		-68.58	86.61	0.665		2.399	4.065
		-1.60	-19.19 / -18.91 / /		0.40 / 0.67 / /		-68.58	86.61		0.665	2.399	4.065
VW5	Vertical	-9.95	-29.88 / -29.88 / /	1.24	9.90 / 9.90 / /	1.30	-68.58	86.61	0.665		1.035	1.729
		-9.95	-29.88 / -29.88 / /	1.24	9.90 / 9.90 / /	1.30	-68.58	86.61		0.665	1.035	1.729
		-9.95	-29.88 / -29.88 / /		9.90 / 9.90 / /		-68.58	86.61	0.665		1.289	2.152
		-9.95	-29.88 / -29.88 / /		9.90 / 9.90 / /		-68.58	86.61		0.665	1.289	2.152
VW6R	Vertical	7.51	////		30.88 / 30.88 / /	1.30		44.44	0.665		0.598	0.999
		7.51	////		30.88 / 30.88 / /	1.30		44.44		0.665	0.598	0.999
		7.51	////		30.88 / 30.88 / /			44.44	0.665		0.777	1.298
		7.51	////		30.88 / 30.88 / /			44.44		0.665	0.777	1.298
TC1	Diagonal	-33.90	-64.91 / -64.91 / /	1.20	////		-201.57		0.665		1.394	2.328
		-33.90	-64.91 / -64.91 / /	1.20	////		-201.57			0.665	1.394	2.328
		-33.90	-64.91 / -64.91 / /		////		-201.57		0.665		1.680	2.805
		-33.90	-64.91 / -64.91 / /		////		-201.57			0.665	1.680	2.805
TC7	Diagonal	-33.96	-64.91 / -64.91 / /	1.20	////		-201.57		0.665		1.393	2.327
		-33.96	-64.91 / -64.91 / /	1.20	////		-201.57			0.665	1.393	2.327
		-33.96	-64.91 / -64.91 / /		////		-201.57		0.665		1.679	2.803
		-33.96	-64.91 / -64.91 / /		////		-201.57			0.665	1.679	2.803
DW1	Diagonal	22.77	-5.03 / -5.03 / /	1.30	51.68 / 51.68 / /	1.22		84.38	0.665		0.600	1.002
		22.77	-5.03 / -5.03 / /	1.30	51.68 / 51.68 / /	1.22		84.38		0.665	0.600	1.002
		22.77	-5.03 / -5.03 / /		51.68 / 51.68 / /			84.38	0.665		0.734	1.225
		22.77	-5.03 / -5.03 / /		51.68 / 51.68 / /			84.38		0.665	0.734	1.225
DW2	Diagonal	11.50	-12.74 / -12.74 / /	1.30	38.45 / 38.45 / /	1.24		54.00	0.665		0.565	0.943
		11.50	-12.74 / -12.74 / /	1.30	38.45 / 38.45 / /	1.24		54.00		0.665	0.565	0.943
		11.50	-12.74 / -12.74 / /		38.45 / 38.45 / /			54.00	0.665		0.703	1.174
		11.50	-12.74 / -12.74 / /		38.45 / 38.45 / /			54.00		0.665	0.703	1.174
DW3	Diagonal	0.76	-0.32 / -0.78 / /	1.27	24.69 / 24.35 / /	1.27		41.34	0.665		0.891	1.509
		0.76	-0.32 / -0.78 / /	1.27	24.69 / 24.35 / /	1.27		41.34		0.665	0.891	1.509
		0.76	-0.32 / -0.78 / /		24.69 / 24.35 / /			41.34	0.665		1.131	1.916
		0.76	-0.32 / -0.78 / /		24.69 / 24.35 / /			41.34		0.665	1.131	1.916
DW4	Diagonal	0.75	-0.32 / -0.78 / /	1.27	24.68 / 24.33 / /	1.27		41.34	0.665		0.891	1.510
		0.75	-0.32 / -0.78 / /	1.27	24.68 / 24.33 / /	1.27		41.34		0.665	0.891	1.510
		0.75	-0.32 / -0.78 / /		24.68 / 24.33 / /			41.34	0.665		1.132	1.918
		0.75	-0.32 / -0.78 / /		24.68 / 24.33 / /			41.34		0.665	1.132	1.918
DW5	Diagonal	11.47	-12.74 / -12.74 / /	1.30	38.45 / 38.45 / /	1.24		54.00	0.665		0.565	0.944
		11.47	-12.74 / -12.74 / /	1.30	38.45 / 38.45 / /	1.24		54.00		0.665	0.565	0.944
		11.47	-12.74 / -12.74 / /		38.45 / 38.45 / /			54.00	0.665		0.704	1.175
		11.47	-12.74 / -12.74 / /		38.45 / 38.45 / /			54.00		0.665	0.704	1.175
DW6	Diagonal	22.75	-5.03 / -5.03 / /	1.30	51.68 / 51.68 / /	1.22		84.38	0.665		0.600	1.002
		22.75	-5.03 / -5.03 / /	1.30	51.68 / 51.68 / /	1.22		84.38		0.665	0.600	1.002
		22.75	-5.03 / -5.03 / /		51.68 / 51.68 / /			84.38	0.665		0.734	1.226
		22.75	-5.03 / -5.03 / /		51.68 / 51.68 / /			84.38		0.665	0.734	1.226

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

L 15672000+02001   Swan River (Truss)

Establish truss geometry and naming convention

7 Spaces @ 17'-0" = 119'-0"

21'-0"
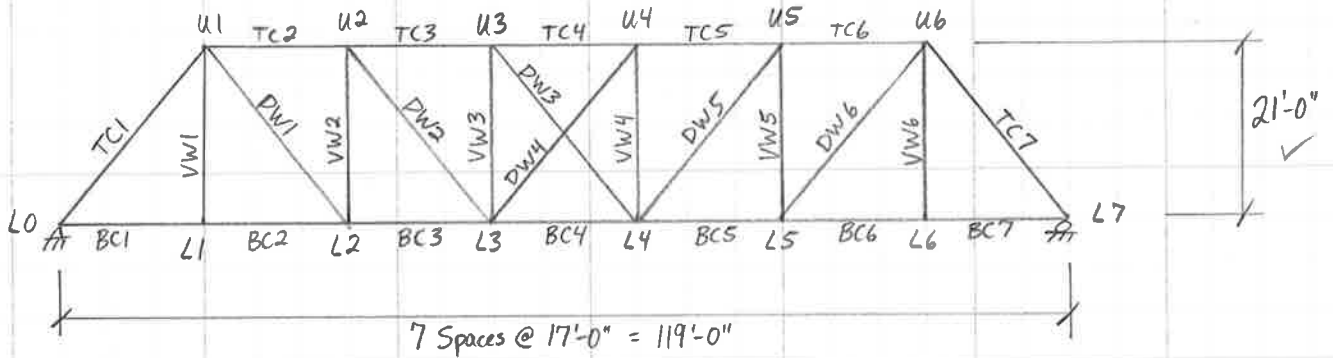
Panel Point Coordinates ✓

L0	(0,0)		
L1	(17,0)	U1	(17,21)
L2	(34,0)	U2	(34,21)
L3	(51,0)	U3	(51,21)
L4	(68,0)	U4	(68,21)
L5	(85,0)	U5	(85,21)
L6	(102,0)	U6	(102,21)
L7	(119,0)		

17'-11¾" : out-to-out lattice VW

15'-7½" : Face of rail — Face of rail

16'-1" : deck width

3" Longitudinal Planks 9½×2½ running planks

4" Transverse Timbers 4×(9½→12) deck planks

SEC. 35, T27N, R2CW
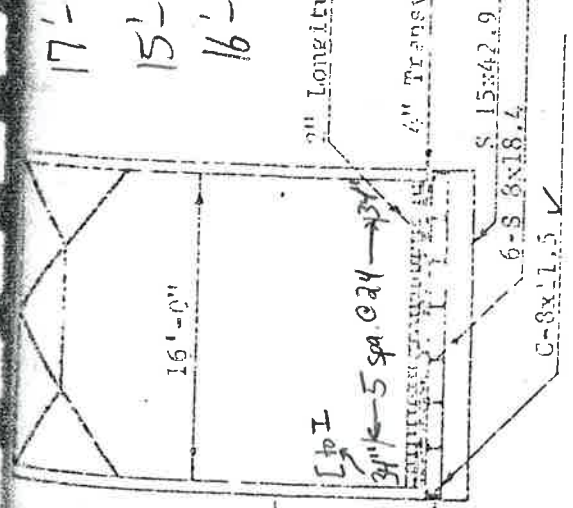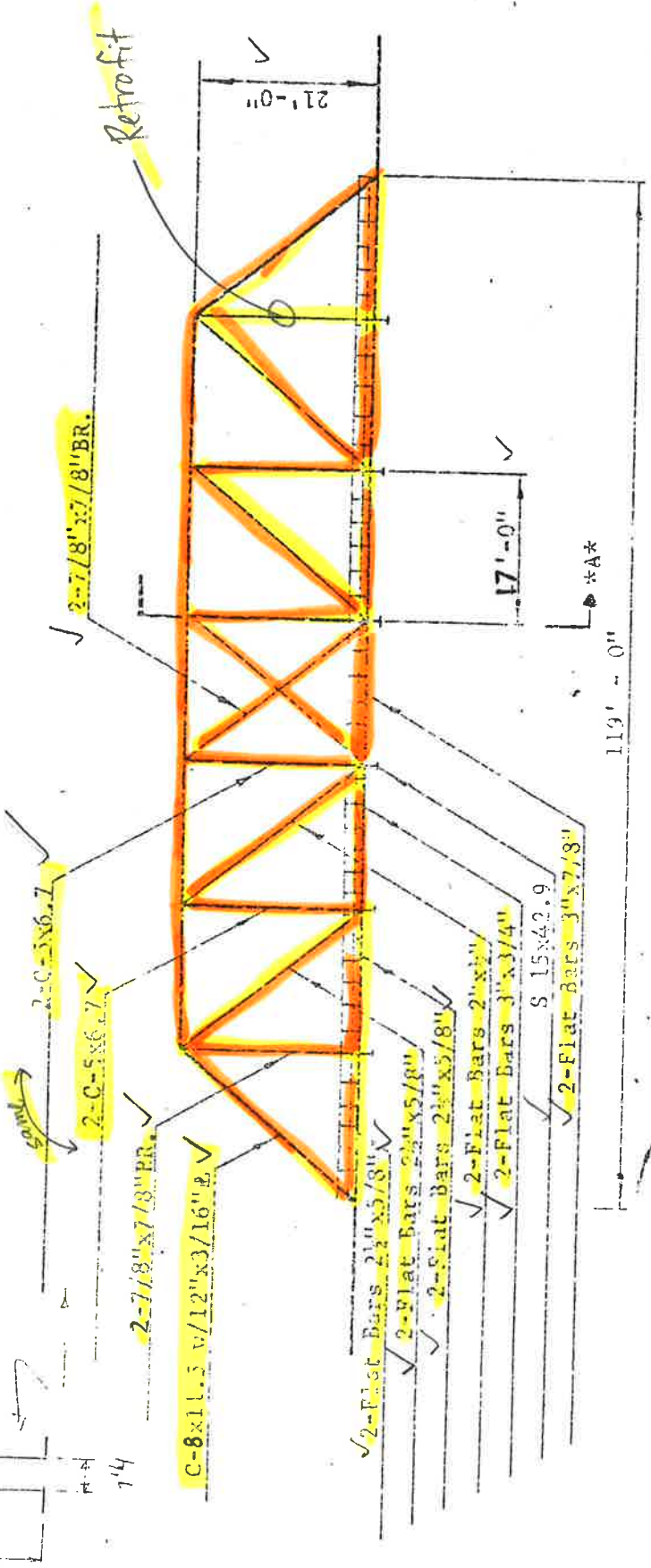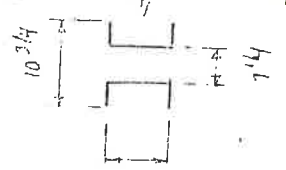
SECTION *A*
Scale: 1" = 10'-0"

2-C-5x6.7

15'-0"

S 15x42.9

6-S 8x18.4

C-8x11.5

2-Flat Bars 3"x3/4"

¾" to I
¾"→5 spa @ 24"→3'

10¾

ELEVATION VIEW
Scale: 1" = 20'-0"

Retrofit

21'-0"

17'-0"

119'-0"

A

2-7/8"x7/8"BR.

C-8x11.5 w/12"x3/16"Pl.

2-7/8"x7/8"BR.

2-C-5x6.7

2-C-5x6.7

2-Flat Bars 2"x5/8"

2-Flat Bars 2"x5/8"

2-int Bars 2"x5/8"

2-Flat Bars 2"x¾"

2-Flat Bars 3"x3/4"

S 15x42.9

2-Flat Bars 3"x3/4"

Bridge Cross Section Composite Sketch — Info from SEI (KLJ) inspection Oct. 2013, Structure Inventory Sheet (1978), Photographs
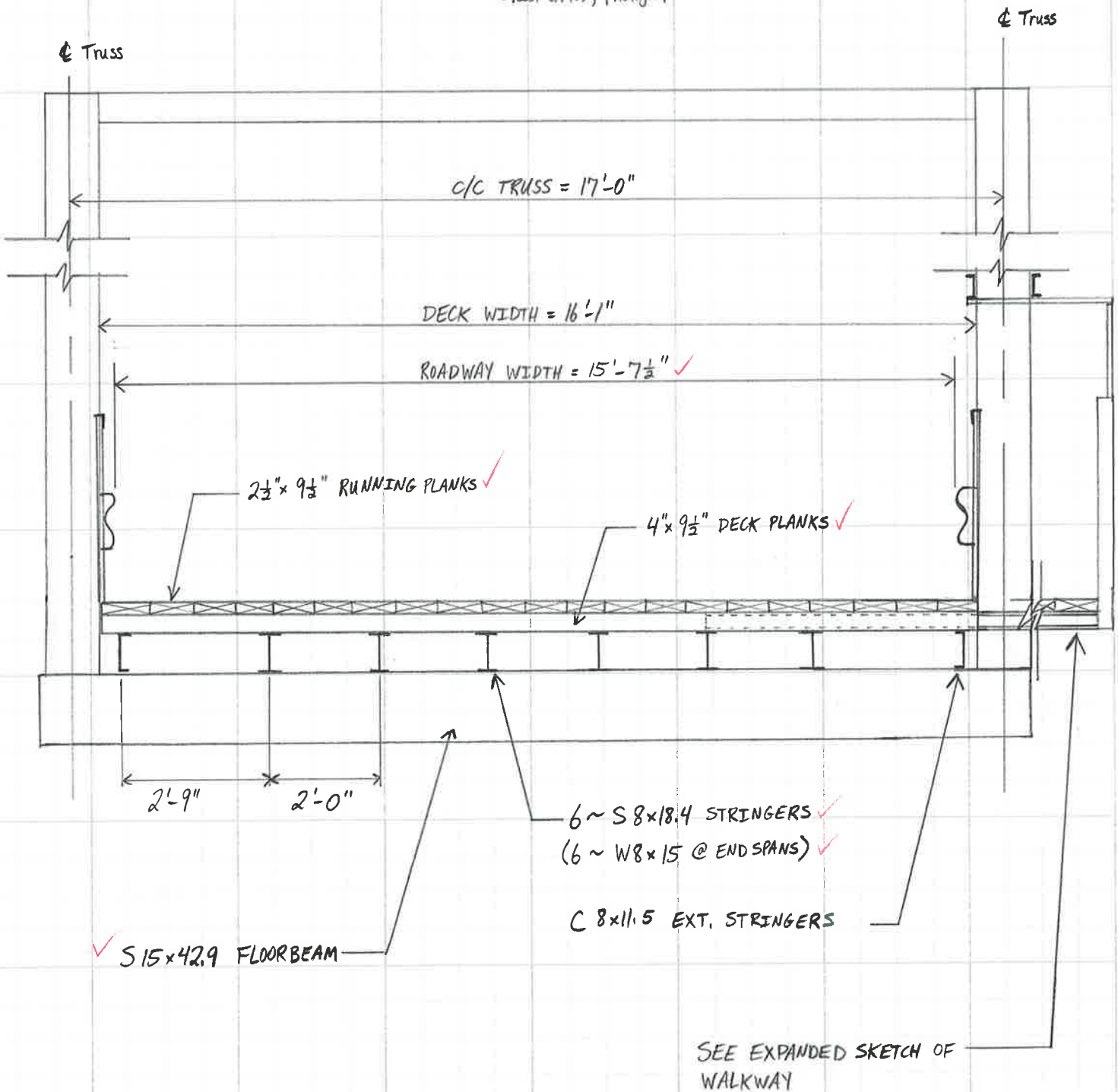
€ Truss

€ Truss

c/c TRUSS = 17'-0"

DECK WIDTH = 16'-1"

ROADWAY WIDTH = 15'-7½" ✓

2½" x 9½" RUNNING PLANKS ✓

4" x 9½" DECK PLANKS ✓

2'-9"   2'-0"

6 ~ S 8×18.4 STRINGERS ✓
(6 ~ W8×15 @ END SPANS) ✓

C 8×11.5 EXT. STRINGERS

✓ S 15×42.9 FLOORBEAM

SEE EXPANDED SKETCH OF WALKWAY

Scale: 3/8" = 1'-0"

KLJ

L15672000+02001

C5×6.7
(Assumed)

C5×6.7×5'-3"

1¼"φ PIPE × 7'-6" @ 13' o.c.

L3×3×¼

1¾"φ PIPE

¾"×12"
W-RAIL

5~1¾"φ PIPES

L3×3×3/16 × 4'-4¾" POSTS @ 13' o.c.

HSS 3×3 @ 8' o.c.
× 3'-5"

5'-0¾"

S 4×7.7 @ 4'-0" o.c. w/ 3/16"×6" TOP ℞
EXTENDS BACK TO 3ᴿᴰ STRINGER

2¾" × 11¾" RUNNING BOARDS
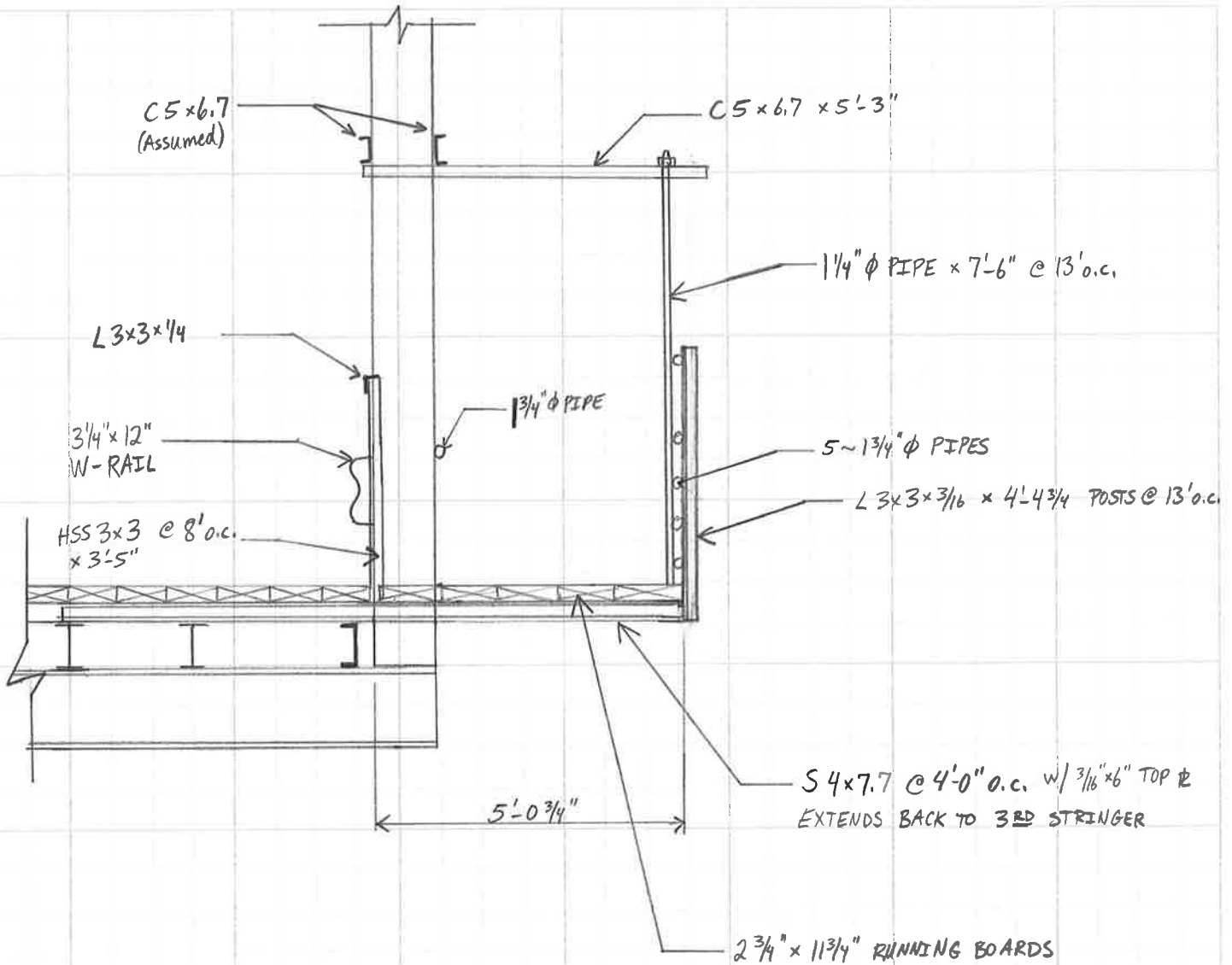
Walkway on SE side of Bridge

L 15672000 + 02001

Calculate LLDF for Main Truss
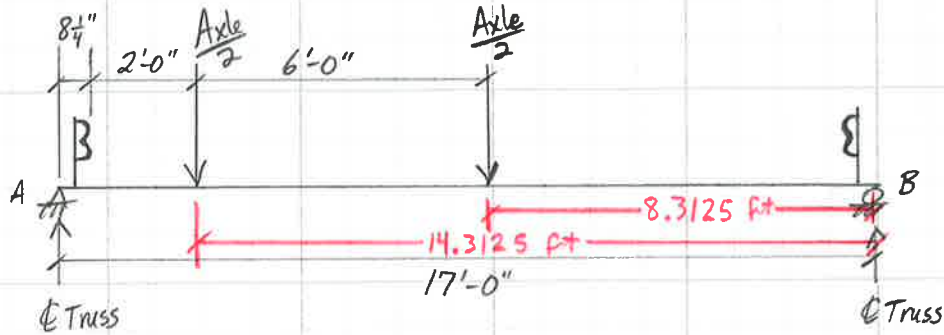
Z AXIS @ B

$$\sum M_B = 0 = R_A(17A) - \frac{A}{2}(14.3125 \ ft) - \frac{A}{2}(8.3125 \ ft)$$

$$R_A = 0.6654 \ Axle$$

$$\therefore \underline{LLDF = 0.6654} \checkmark$$

Calculate Exterior Stringer LLDF — per AASHTO 3.23.2.3.1

Assumed hinge
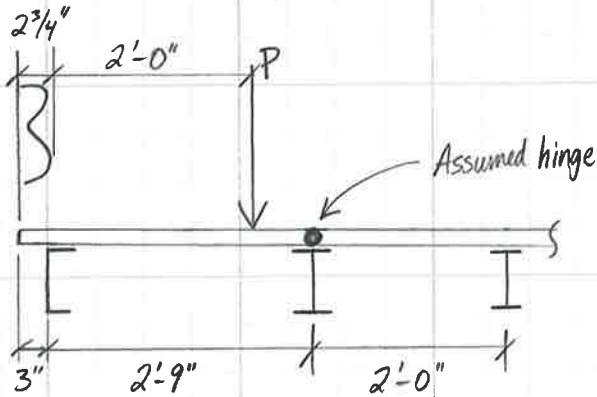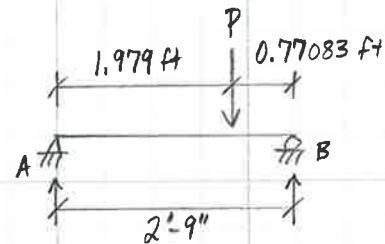
$$\sum M_B = 0 = R_A(2.75 \ ft) - P(0.77083 \ ft)$$

$$R_A = 0.2803 \ P$$

$$\therefore \underline{LLDF = 0.2803} \checkmark$$

Calculate Deflection LLDF

$$DF = \frac{\# \ wheel \ lines}{\# \ stringers} = \frac{2}{8} = 0.25 \checkmark$$

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Exterior Stringer Size

The exterior stringer is a C 8×11.5. Virtis does not support channel stringers. Therefore, a comparable S or W shape must be selected.

$C\ 8\times11.5$ ✓	$S\ 6\times17.25$	$S\ 6\times12.5$
$A = 3.37\ in^2$	$A = 5.05\ in^2$	$A = 3.66\ in^2$
$A_w = 0.22\ in \times 8\ in = 1.76\ in^2$	$A_w = 0.465'' \times 6'' = 2.79\ in^2$	$A_w = 0.232'' \times 6'' = 1.39\ in^2$
$I_x = 32.5\ in^4$	$I_x = 26.2\ in^4$	$I_x = 22.0\ in^4$
$S_x = 8.14\ in^3$	$S_x = 8.74\ in^3$	$S_x = 7.34\ in^3$
$Z_x = 9.63\ in^3$	$Z_x = 10.5\ in^3$	$Z_x = 8.45\ in^3$

* Select the S 6×12.5 for the exterior stringer in the Virtis model. The cross sectional properties are slightly conservative compared to the C 8×11.5.

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Calculate Interior Stringer LLDF – per AASHTO Table 3.23.1

Timber Plank Floor

Stringer	S (ft)	LLDF = S/4.0 (1 lane)
1ST interior	2.375	0.5938 ✓
Other interior	2	0.5000 ✓

BRIDGE POSTED FOR "ONE CAR AT A TIME ON BRIDGE."

Calculate Weight of Guardrail

W-rail : – Per MDT Detail 606-88, say 20" wide sheet metal makes 12" W-shape
– Assume 10 ga sheet, t = 0.138 in

$$w = (490 \, pcf)\left(\frac{0.138}{12} \, ft\right)\left(\frac{20}{12} \, ft\right) = 9.4 \, plf \checkmark$$

Posts : HSS 3×3×3/16 (thickness assumed) @ 8' o.c.

$$w = 6.87 \, plf \times 3.417 \, ft \, / \, 8 ft = 2.9 \, plf \checkmark$$

∠ Rail : ∠3×3×1/4

$$w = 4.90 \, plf \checkmark$$

Handrail : 1 3/4" ⌀ Pipe   (assume HSS 1.660 × 0.140)

$$w = 2.3 \, plf \checkmark \quad (CONSERVATIVE) \; ONLY \; ON \; ONE \; SIDE$$

$$Total \; Railing \; Weight = 9.4 + 2.9 + 4.9 + 2.3 = \underline{19.5 \, plf} \checkmark$$

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<u>Calculate "Equivalent Deck Thickness"</u>

Virtis does not allow wood decks on trusses, but does allow concrete decks.

∴ Calculate a concrete thickness that will provide the same DL as the wood deck.

4" thick deck planks: $\rho = (50 \, pcf)(\frac{4}{12} \, ft) = 16.667 \, psf$

Concrete: $\rho = (150 \, pcf)(t) = 16.667 \, psf$

$$t = 0.111 \, ft = 1.333 \, in \checkmark$$

<u>Calculate Weight of Running Planks</u>

2½" thick running planks full width of bridge

$\gamma = 50 \, pcf \rightsquigarrow \frac{(2\frac{1}{2})}{12} = 0.2083 \rightsquigarrow (0.2083 \, ft)(50 \, lb/ft^3) = 10.42 \, psf$

⟹ Apply as wearing surface load in Virtis

$L15672000 + 02001$

Utility Pipe (Water/Sewer) Weight

Pipe circumference = 27.5 in ✓

$C = \pi d \implies d = \frac{27.5 \text{ in}}{\pi} = 8.75$ in Outside diameter

Pipe 8 Std. ✓   O.D. = 8.63 in , I.D. = 7.98 in
$\qquad\qquad\qquad$ w = 28.6 plf

$\qquad$ Water area = $\pi \left(\frac{7.98 \text{ in}}{2} \right)^2 = 50.0$ in^2

$\qquad$ Max water weight = 62.4 pcf $\times \frac{50}{144}$ ft^2 = 21.7 plf ✓

Pipe Empty Weight = __28.6 plf__ ✓

Pipe Full Weight = 28.6 plf + 21.7 plf = __50.3 plf__ ✓

*Pipe is hung on Stringer 2 at Floorbeams.

$\qquad$ Stringer point load = 50.3 plf $\times$ 17 ft = __855 lbs__ ✓

Wood Conduit Weight

"2x" ~ 20" wood "box" Supported by Floorbeams @ Upstream end of floorbeam

$A = 1\frac{1}{2}$ in $\times$ 20 in $\times$ 4 sides = 120 in^2

$W = (50$ pcf$)\left(\frac{120}{144} \text{ ft}^2 \right) = 41.7$ plf ✓

$\qquad$ Floorbeam point load = 41.7 plf $\times$ 17 ft = __709 lbs__ ✓

Water/Sewer pipe hung from Stringer 2 near Floorbeams

Wood box conduit on end of Floorbeams

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PROJECT _MDT Bridge Rating_ _SEI 13-035_
SHEET NO. _____ OF _____
CALCULATED BY _BBL_ DATE _12/30/13_
CHECKED BY _RDL_ DATE _12-2-14_

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Calculate Weight of Walkway Railing

Rails: 5 ~ 1¾" ⌀ Pipes

$$w = 5 \times 2.3 \, plf = 11.5 \, plf ✓$$

∠ Posts: ∠ 3×3×3/16 × 4'-4¾" @ 13' o.c.

$$w = 3.71 \, plf \times 4.40 \, ft / 13 \, ft = 1.3 \, plf ✓$$

Pipe Hangers: 1¼" ⌀ Pipe × 7'-6" @ 13' o.c.

$$w = 1.7 \, plf \times 7.5 \, ft / 13 \, ft = 1.0 \, plf ✓$$

Channel hanger: C5×6.7 × 5'-3" long @ 13' o.c.

$$w = 6.7 \, plf \times 5.25 \, ft / 13 \, ft = 2.7 \, plf ✓$$

Double channel hanger support: Assume 2C 5×6.7

$$w = 2 \times 6.7 = 13.4 \, plf \text{ (welded directly to main truss) } ✓$$

Total Walkway Rail Weight = 11.5 + 1.3 = 12.8 plf ✓
Total Hanger Weight = 1.0 + 2.7 + 13.4 = 17.1 plf ✓

Wood Running Boards:
$$p = 50 \, pcf \times \frac{2.75}{12} \, ft = 11.46 \, psf ✓ \quad (2¾" \times 11¾" \text{ boards})$$

Walkway Beams:
S 4×7.7 w/ 3/16"×6" top ℄

$$w = 7.7 \, plf + (490 \, pcf)\left(\frac{3/16}{12} \, ft\right)\left(\frac{6}{12} \, ft\right) = 11.5 \, plf ✓$$

L 15672000 + 02001

Sidewalk Dead Load

* Hanger assembly weight not included. Assume hanger weight carried by truss.

$D = 12.8$ plf (Rail Weight) ✓

(Bm) (Deck)
$D = 11.5$ plf + (11.46 psf × 4ft) = 57.3 plf ↓

$D = 11.5$ plf (Bm)

Spring Supports

$S 4 \times 7.7 @ 4' o.c.$

Avg. Reactions =   −0.258 k   0.115 k   0.545 k
(per 4 ft)
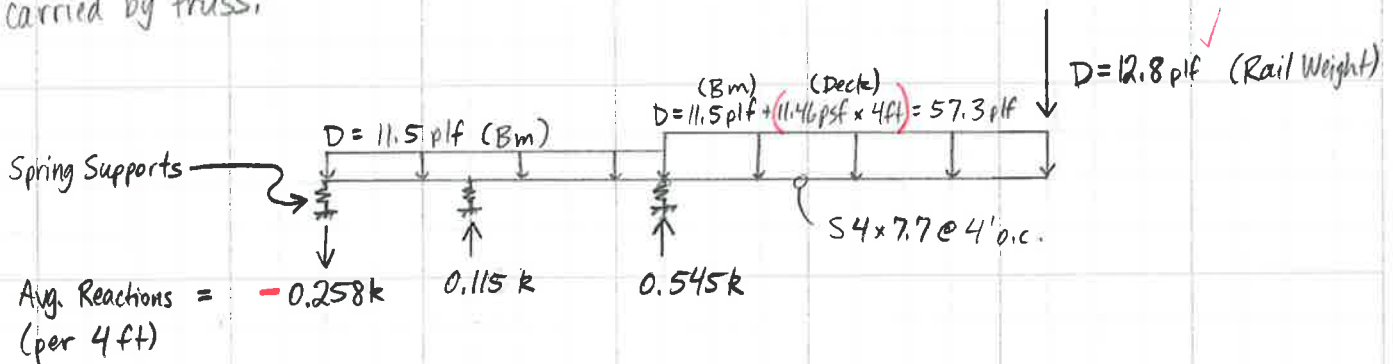
Reactions determined in Visual Analysis (attached). OK ✓

DL Applied to Stringers :

S6   S7   S8

$D = -0.065$ k/ft $D = 0.029$ k/ft $D = 0.136$ k/ft
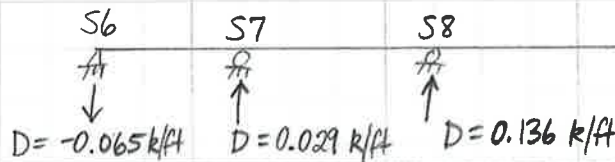
Stringer 6 : $D = \dfrac{-0.258 k}{4 ft} = -0.065$ k/ft ✓

Stringer 7 : $D = \dfrac{0.115 k}{4 ft} = 0.029$ k/ft ✓

Stringer 8 : $D = \dfrac{0.545 k}{4 ft} = 0.136$ k/ft ✓

(Stringer S6 is _assumed_ to have a connection to the walkway beams that is capable of supporting an uplift reaction.) ✓

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Stringer "Spring Support" Stiffnesses
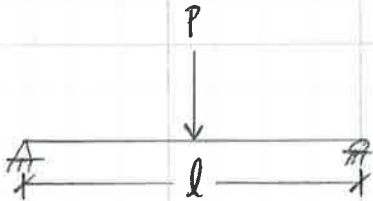
$$\Delta = \frac{P\ell^3}{48EI} \checkmark$$

(@ CENTER BUT STIFFNESSES WILL REMAIN PROPORTIONAL ALONG LENGTHS OF BEAMS)

$$k = \frac{P}{\Delta} = \frac{48EI}{\ell^3} \checkmark$$

- Exterior Stringer Support: C 8×11.5 $I = 32.5 \ in^4$

$$k = \frac{48(29{,}000 \ ksi)(32.5 \ in^4)}{(17 \times 12 \ in)^3} = 5.329 \ k/in \ \checkmark$$

- Interior Stringer Support: S 8×18.4 $I = 57.5 \ in^4$

$$k = \frac{48(29{,}000 \ ksi)(57.5 \ in^4)}{(17 \times 12 \ in)^3} = 9.428 \ k/in \ \checkmark$$

Visual Analysis model of sidewalk

57.3 plf

11.5 plf

12.8 plf

3x12-Timber

S4x7.7

4'-0"

5.324 Min

9.428 Min

9.428 Min

Sidewalk

2'-9"

2'-0"

Q Stringer 6

Q Stringer 7

Q Stringer 8
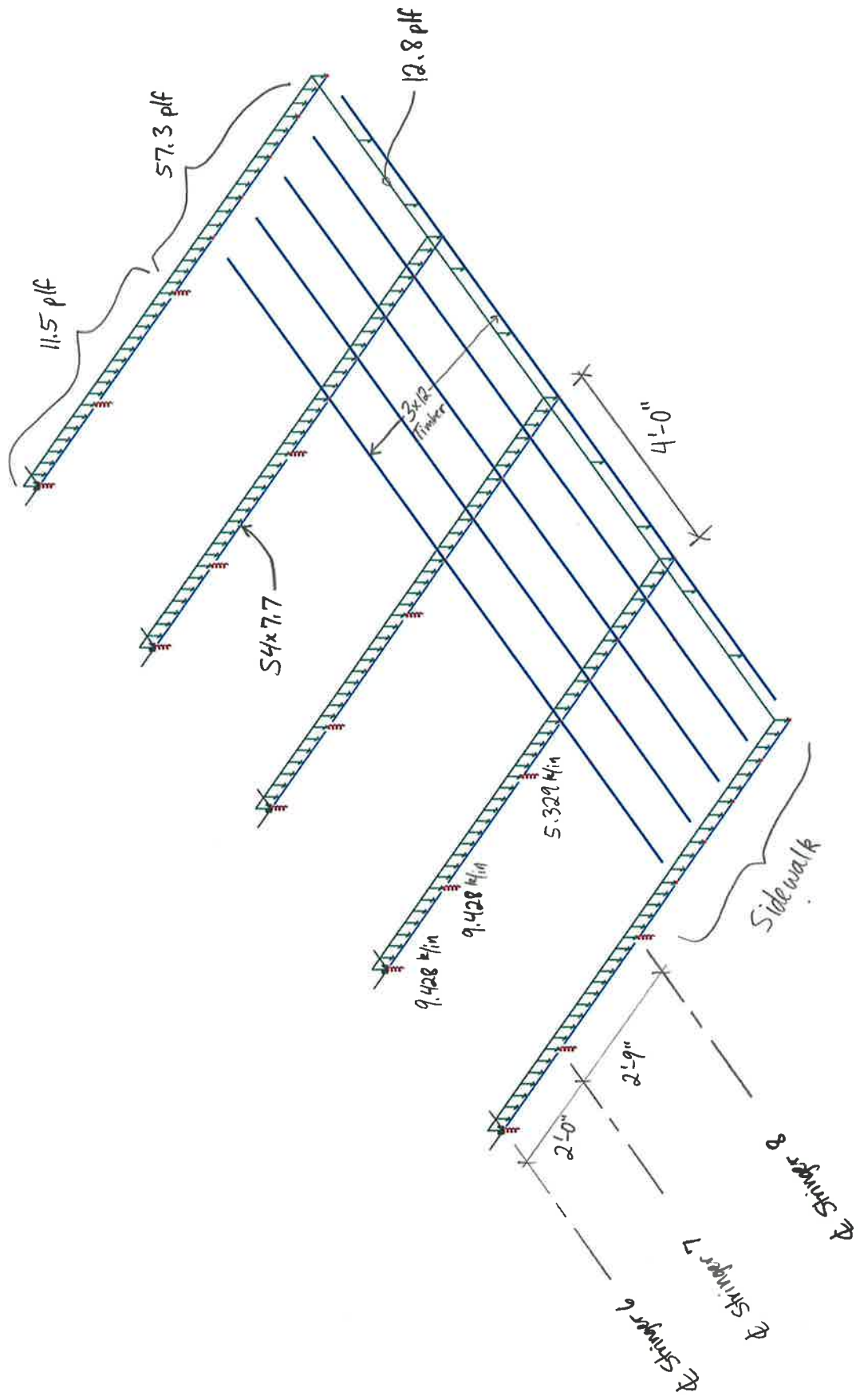
Average Reactions (per 4 ft)

S6   0.258 k ↓
S7   0.115 k ←
S8   0.545 k ↑
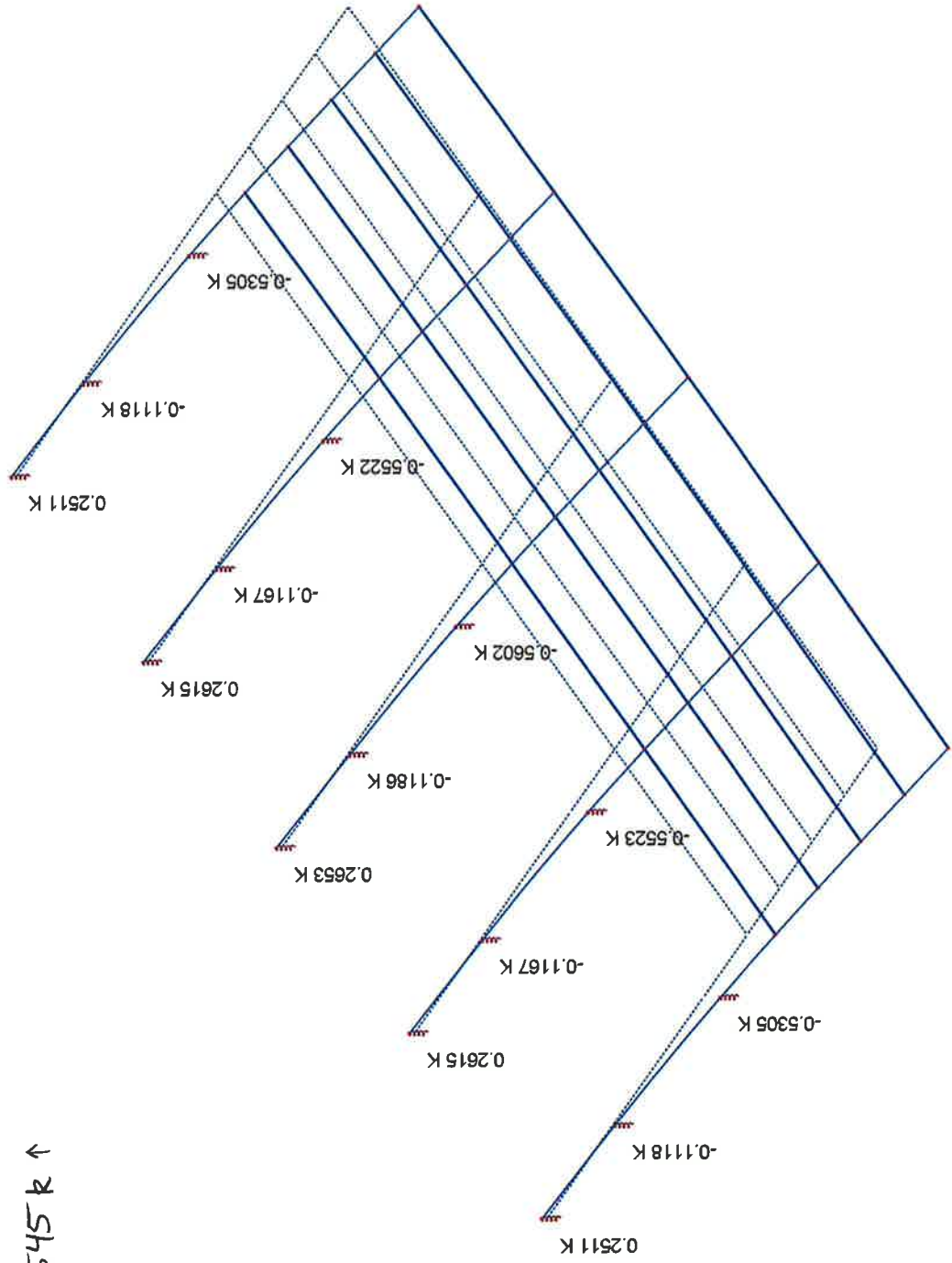
0.2511 K
-0.1118 K
-0.5305 K

0.2615 K
-0.1167 K
-0.5523 K

0.2653 K
-0.1186 K
-0.5602 K

0.2615 K
-0.1167 K
-0.5522 K

0.2511 K
-0.1118 K
-0.5305 K

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Hanger Assembly Weight — carried directly by truss
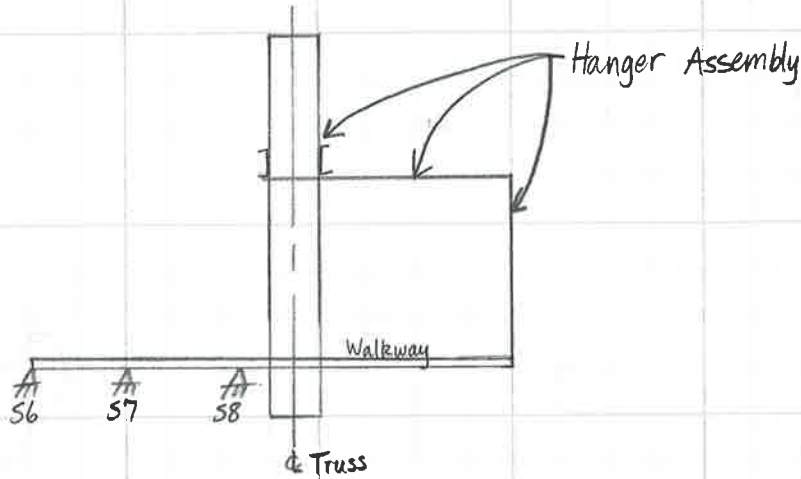
Hanger Assembly Weight = 17.1 plf ✓

Load at Panel Points = 17.1 plf × 17 ft = 291 lbs ✓

∴ Apply <u>291 lbs</u> at panel points on Right (Upstream) Truss ✓
(L1 – L6)

and 145 lbs at L0 & L7

KLJ
Calculate Weight of Portal Framing

PROJECT _MDT Bridge Load Rating 13-035_
SHEET NO. _____ OF _____
CALCULATED BY _____JWJ_____ DATE _11/24/14_
CHECKED BY _____BBL_____ DATE _11/25/14_

#15 Swan River

Truss End Frame
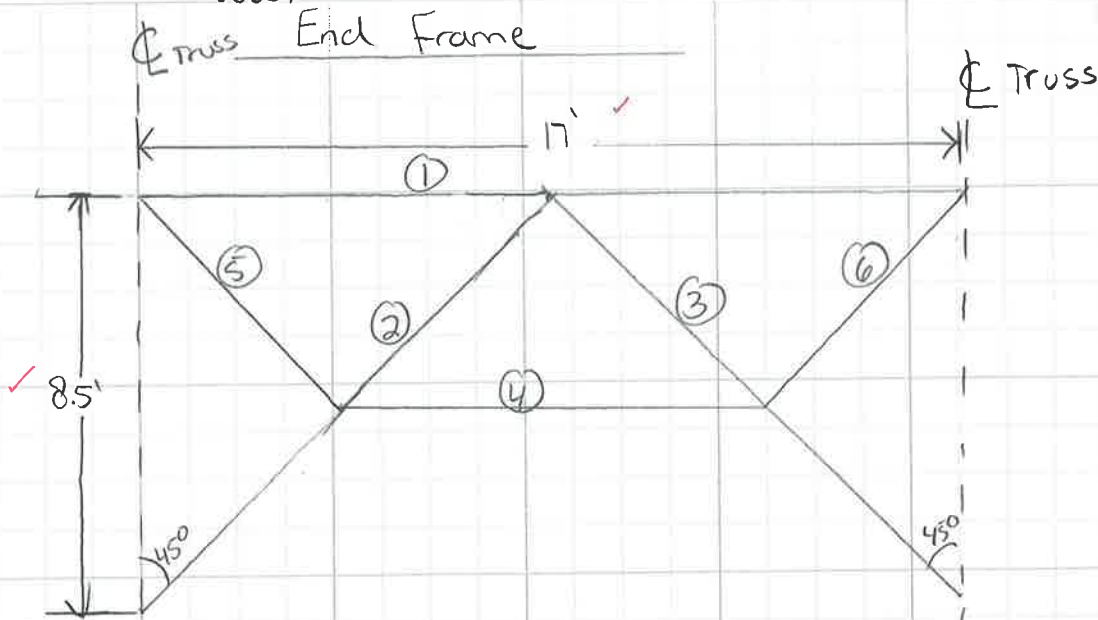
Assumptions ✓ (based on photos)

- All members are ⌐L 2x2x¼ ✓
- 45° Angle between ⌐ Truss members 2 & 3 ✓
- members 2 & 3 connect @ midpoint of member 1 ✓
- members 3, 4, & 5 connect @ midpoint of members 2 & 3 ✓

L 2x2x¼   weight = 3.19 plf ✓

Length of members 2 & 3: $\sqrt{8.5^2 + 8.5^2}$ = 12.02 ft ✓

location of members 3, 4, & 5 connection: $\sin(45°) = \dfrac{x}{6.01 ft}$ ← $\dfrac{12.02'}{2}$

x = 4.25 ft ✓

length of ④ = 4.25 ft (2) = 8.5 ft ✓

length of 5 & 6 = $\sqrt{4.25^2 + 4.25^2}$ = 6.01 ft ✓

load to panel point 1 = 2(3.19 plf)$\left(\dfrac{17'}{2} + 12.02' + 6.01' + \dfrac{8.5}{2} \right)$
(U1)

= 6.38 plf (30.78 ft) = 196.38 lbs ✓

#15 Swan River

Interior Frames
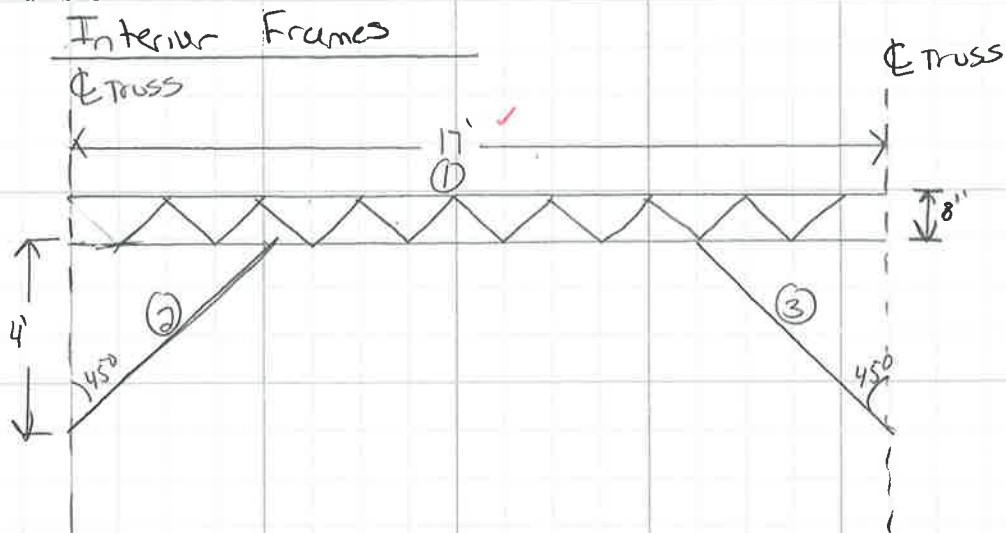
Assumptions: (based on photos)

- members 1, 2, & 3 are $\perp L\ 2\times 2\times \frac{1}{4}$ ✓
- 45° angle between ₵ Truss & members 2 & 3 ✓
- lattice bracing $1\frac{1}{2}$" wide × $\frac{1}{4}$" thick, & 10" long ✓
- Scaling from picture, members 2 & 3 connect to member 1
  ≈ 4 ft away from ₵ Truss

length of members 2 & 3 : $\sqrt{4^2 + 4^2}$ = 5.66 ft ✓

equivalent uniform weight of lattice bracing:

$$\frac{1.5\,in (0.25\,in)(10\,in)(490 pcf)(34)\,braces \left(\frac{1ft}{12in}\right)^3}{17 ft} = \frac{36.15\,lbs}{17 ft}$$

= 2.13 plf ✓

load to panel point: $(4(3.19 pef) + 2.13 plf)(\frac{17ft}{2}) + 2(3.19 plf)(5.66 ft)$

= 14.89 plf (8.5 ft) + 6.38 plf (5.66 ft)

= 162.63 lbs ✓

15 Swan River

Top Lateral Bracing

Assumptions

- members 1 & 2 are a circular 1"∅ rod ✓

Diagonal length $= \sqrt{17^2 + 17^2} = 24.04\,ft$ ✓

Area of rod $= \dfrac{\pi d^2}{4} = \dfrac{\pi (1in)^2}{4} = 0.78\,in^2 \left(\dfrac{1ft}{12in}\right)^2 = 0.005\,ft^2$

load to panel points $1 \& 6 = 0.005\,ft^2 \left(\dfrac{24.04ft}{2}\right)(490\,pcf) = 32.13\,lbs$ ✓

load to panel points $2\text{-}5 = 0.005\,ft^2 \left(2\left(\dfrac{24.04ft}{2}\right)\right)(490\,pcf) = 64.25\,lbs$ ✓

Total Load to Panel Points from Portal Framing

(U1, U6)

Panel Points $1 \& 6$: $196.38\,lbs + 32.13\,lbs = \boxed{228.51\,lbs}$ ✓

(U2-U5)

Panel Points $2\text{-}5$: $162.63\,lbs + 64.25\,lbs = \boxed{226.88\,lbs}$ ✓

ONE CAR
AT A TIME
ON BRIDGE.

Summary - Total Panel Point Loads to be Applied to Truss in BrR

Panel Point	Sidewalk Hanger Assembly*	Portal Framing
L0	0.145 k ✓	—
L1	0.291 k	—
L2	0.291 k	—
L3	0.291 k	—
L4	0.291 k	—
L5	0.291 k	—
L6	0.291 k	—
L7	0.145 k ✓	—
U1	—	0.229 k
U2	—	0.227 k
U3	—	0.227 k
U4	—	0.227 k
U5	—	0.227 k
U6	—	0.229 k

* SE (Upstream) truss only

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PROJECT __MDT Load Rating   SEI 13-035__
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CALCULATED BY _BBL_   DATE _12/31/13_
CHECKED BY _RDL_   DATE _12-2-14_

Member Cross Sectional Properties

BC1 & BC2

BC1 has $\frac{2}{32}$" of section loss on the inside rail per MDT Assessment (2012).

2 ~ $2\frac{1}{2}$" × $\frac{5}{8}$" bars

$2\frac{1}{2}$" $\frac{5}{8}$"   ₵ Truss
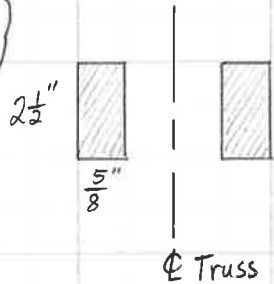
$$A_g = A_n = 2 \times 2\frac{1}{2}\,\text{in} \times \frac{5}{8}\,\text{in} = 3.125 \ \text{in}^2 \checkmark$$

$$I_x = 2 \times \frac{(5/8\,\text{in})(2\frac{1}{2}\,\text{in})^3}{12} = 1.628 \ \text{in}^4 \checkmark$$

$$I_y = 2 \times \frac{(2\frac{1}{2}\,\text{in})(5/8\,\text{in})^3}{12} = 0.102 \ \text{in}^4 \checkmark$$

$$* \ BC1 \quad A_n = 2\frac{1}{2} \times \frac{5}{8} + (2\frac{1}{2} - \frac{1}{16})(\frac{5}{8} - \frac{1}{16}) = 2.934 \ \text{in}^2 \checkmark$$

BC3

2 ~ 3" × $\frac{3}{4}$" bars

3" $\frac{3}{4}$"   ₵ Truss
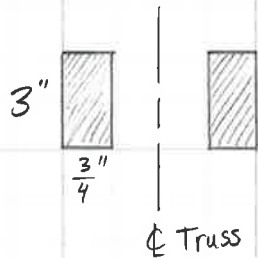
$$A_g = A_n = 2 \times 3\,\text{in} \times \frac{3}{4}\,\text{in} = 4.5 \ \text{in}^2 \checkmark$$

$$I_x = 2 \times \frac{(3/4\,\text{in})(3\,\text{in})^3}{12} = 3.375 \ \text{in}^4$$

$$I_y = 2 \times \frac{(3\,\text{in})(3/4\,\text{in})^3}{12} = 0.211 \ \text{in}^4 \checkmark$$

BC4

2 ~ 3" × $\frac{7}{8}$" bars

3" $\frac{7}{8}$"   ₵ Truss
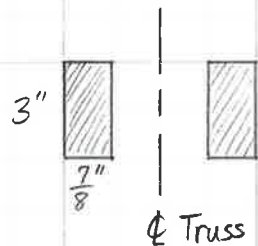
$$A_g = A_n = 2 \times 3\,\text{in} \times \frac{7}{8}\,\text{in} = 5.25 \ \text{in}^2 \checkmark$$

$$I_x = 2 \times \frac{(7/8\,\text{in})(3\,\text{in})^3}{12} = 3.938 \ \text{in}^4 \checkmark$$

$$I_y = 2 \times \frac{(3\,\text{in})(7/8\,\text{in})^3}{12} = 0.335 \ \text{in}^4$$

![KLJ]

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PROJECT __MDT Bridge Rating   SEI 13-035__
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CHECKED BY _RDL_ DATE _12-2-14_

VW1 $2 \sim \frac{7}{8}" \times \frac{7}{8}"$ bars

$\frac{7}{8}"$ ▨ ┊ ▨ $\frac{7}{8}"$
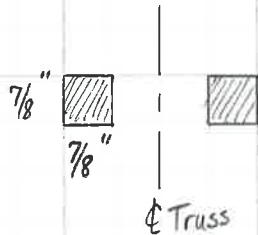
⊄ Truss

$A_g = A_n = 2 \times \left(\frac{7}{8} in\right)\left(\frac{7}{8} in\right) = 1.531 \, in^2$ ✓

$I_x = 2 \times \frac{\left(\frac{7}{8} in\right)\left(\frac{7}{8} in\right)^3}{12} = 0.098 \, in^4$ ✓

$I_y = 0.098 \, in^4$ ✓

VW6 R   (upstream truss)   — Retrofitted member

$\frac{7}{8}"$ ▨ ┊ ◯

$\frac{7}{8}"$ $1\frac{1}{2}" \phi$

⊄ Truss

width = $1\frac{1}{2}$ in   ← $\frac{1}{2}$ in
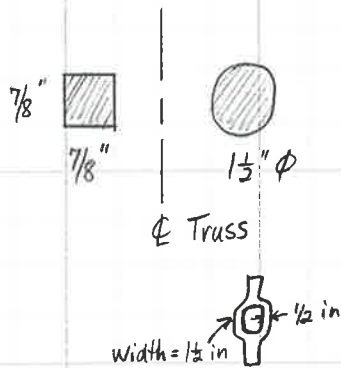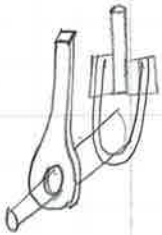
$A_g = \frac{7}{8} in \times \frac{7}{8} in + \pi \left(\frac{1.5 in}{2}\right)^2 = 2.533 \, in^2$ ✓

$I_x = \frac{\left(\frac{7}{8} in\right)\left(\frac{7}{8} in\right)^3}{12} + \pi \left(\frac{1.5 in}{2}\right)^4 / 64 = \cancel{0.067} \, in^4$ = **0.297 in^4**

$I_y = \cancel{0.067} \, in^4$ **0.297 in^4**

U bolt area = $2 \times 0.44 \, in^2 = 0.88 \, in^2 < A_{rod} = 1.767 \, in^2$
Turnbuckle area = $\frac{1}{2} in \times 1\frac{1}{2} in \times 2 = 1.5 \, in^2 < A_{rod} = 1.767 \, in^2$
$A_n = 0.88 \, in^2 + \frac{7}{8} in \times \frac{7}{8} in = 1.646 \, in^2$ ✓

DW1   — Same member configuration as BC2

DW2 $2 \sim 2" \times \frac{1}{2}"$ bars

$2"$ ▯ ┊ ▯ $\frac{1}{2}"$

⊄ Truss
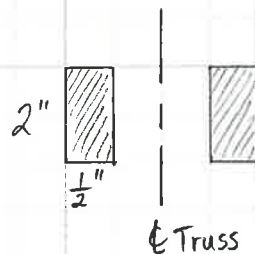
$A_g = A_n = 2 \times 2 in \times \frac{1}{2} in = 2 \, in^2$ ✓

$I_x = 2 \times \frac{\left(\frac{1}{2} in\right)\left(2 in\right)^3}{12} = 0.667 \, in^4$ ✓

$I_y = 2 \times \frac{\left(2 in\right)\left(\frac{1}{2} in\right)^3}{12} = 0.042 \, in^4$ ✓

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| DW3 & DW4 | — | Same member configuration as VW1 ✓ |

Turnbuckle Area:

sq bar
$1\frac{1}{8}''\phi$ thread
9/16
Width = $1\frac{1}{2}''$
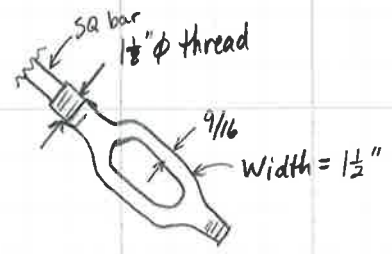
$A_{thread} = \pi\left(\frac{1\frac{1}{8}in}{2}\right)^2 = 0.994\ in^2 > A_{bar} = \frac{1.531 in^2}{2} = 0.77 in^2$

$A_{turnbuckle} = \frac{9}{16}in \times 1\frac{1}{2}in \times 2 = 1.688\ in^2 > A_{bar}$ $\underline{OK}$

✓

12.000 in

ℝ ¼ ×12 Cont.

C 8 × 11.5

+ CG
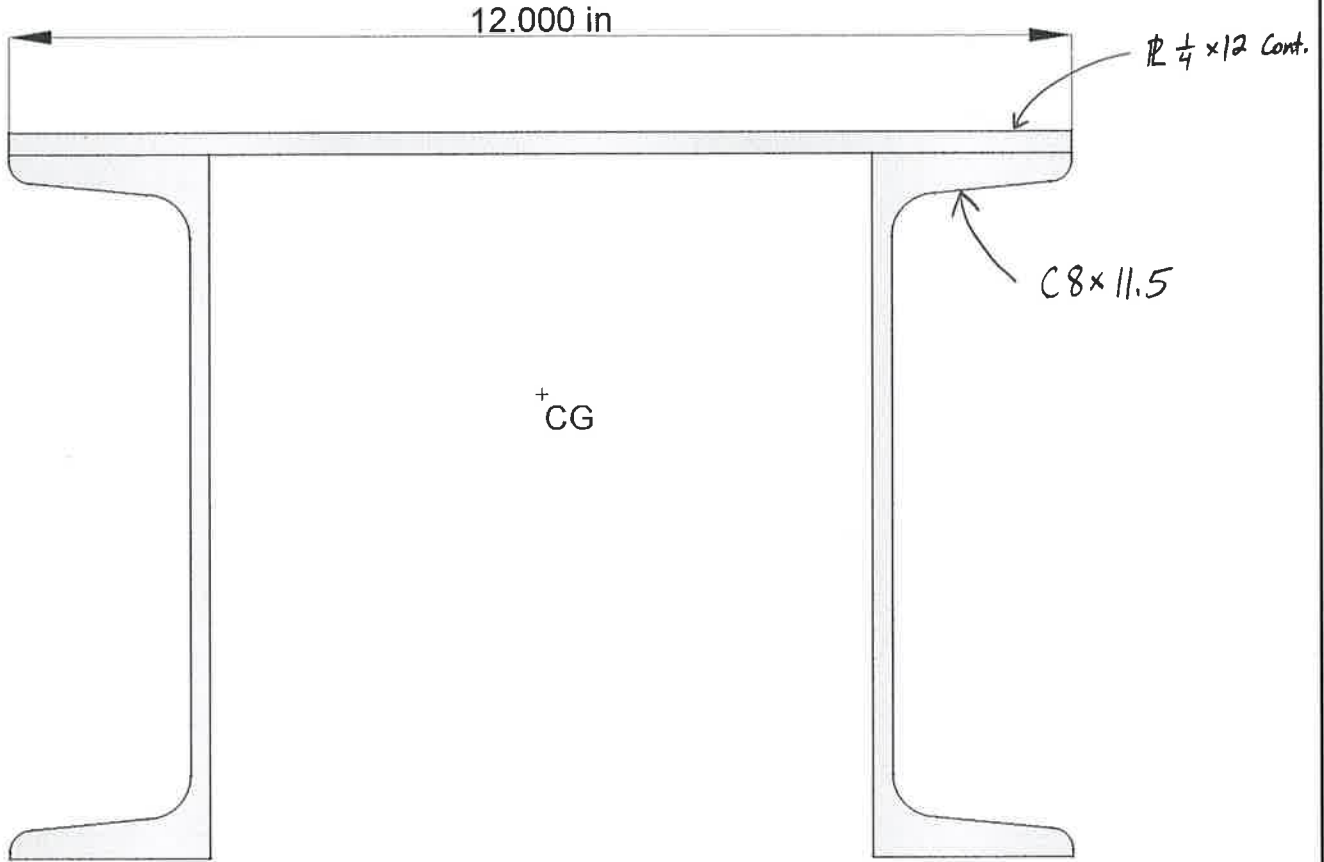
Overall Dimensions	
Width	12.000 in
Height	8.250 in
Perimeter	71.886 in
Geometric Properties	
Iy	168.784 in^4
Ix	102.940 in^4
J	0.192 in^4
ry	4.125 in
rx	3.221 in
A	9.921 in^2
Sy Right	28.131 in^3
Sy Left	28.131 in^3
Sx Bottom	19.617 in^3
Sx Top	34.283 in^3
Centroid Y	0.889 in
Centroid X	2.167 in
Material Properties	
E	29000.000 Ksi
Plastic Properties	
Fy Base	36.000 Ksi
Zy	42.488 in^3
Zx	27.781 in^3
PNA-Y	3.331 in

PNA-X	2.167 in
Polar Properties	
Ip	271.724 in^4
rp	5.233 in
Principal Properties	
I2	102.940 in^4
I1	168.784 in^4
Ixy	-0.000 in^4
Theta	90.000 deg

+
CG
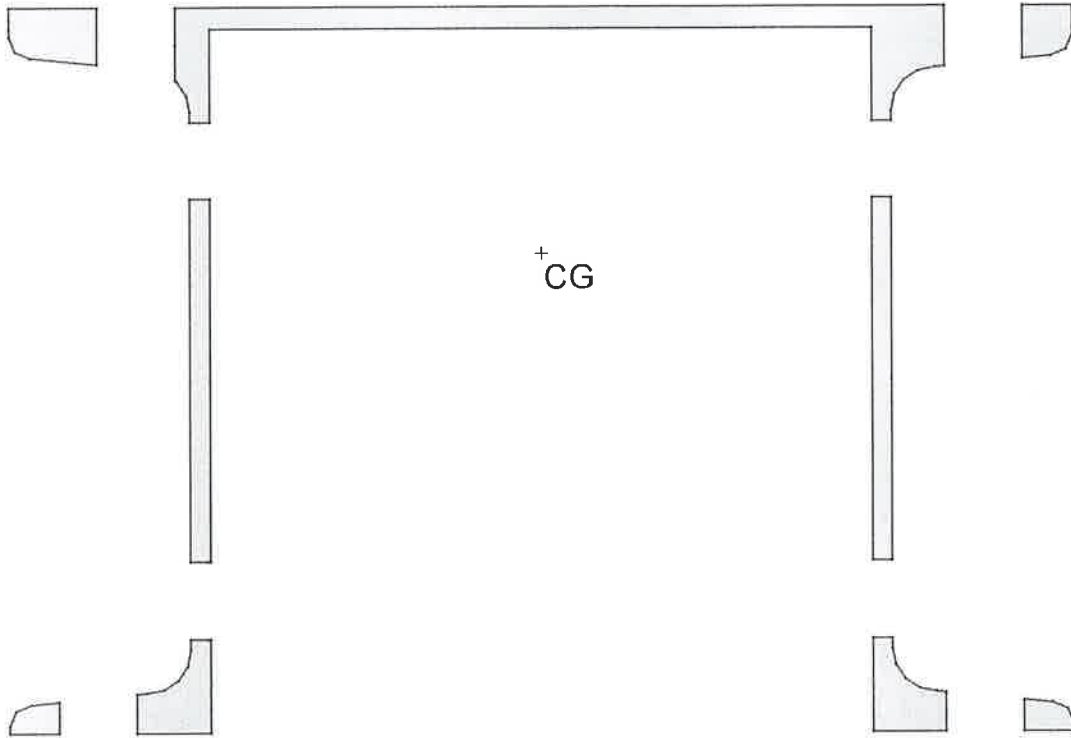
Overall Dimensions

Width	12.000 in
Height	8.250 in
Perimeter	54.944 in

Geometric Properties

Iy	112.926 in^4
Ix	70.338 in^4
ry	3.943 in
rx	3.112 in
A	7.265 in^2
Sy Right	18.806 in^3
Sy Left	18.836 in^3
Sx Bottom	12.950 in^3
Sx Top	24.956 in^3
Centroid Y	1.073 in
Centroid X	2.162 in

Material Properties

E	29000.000 Ksi

Plastic Properties

Fy Base	36.000 Ksi
Zy	32.087 in^3
Zx	19.419 in^3
PNA-Y	3.418 in
PNA-X	2.262 in

Polar Properties

Ip	183.264 in^4
rp	5.023 in

Principal Properties

I2	70.337 in^4
I1	112.927 in^4
Ixy	-0.163 in^4
Theta	89.780 deg

L 15672000 + 02001

10.750 in

C 5×6.7

+
CG

Lacing
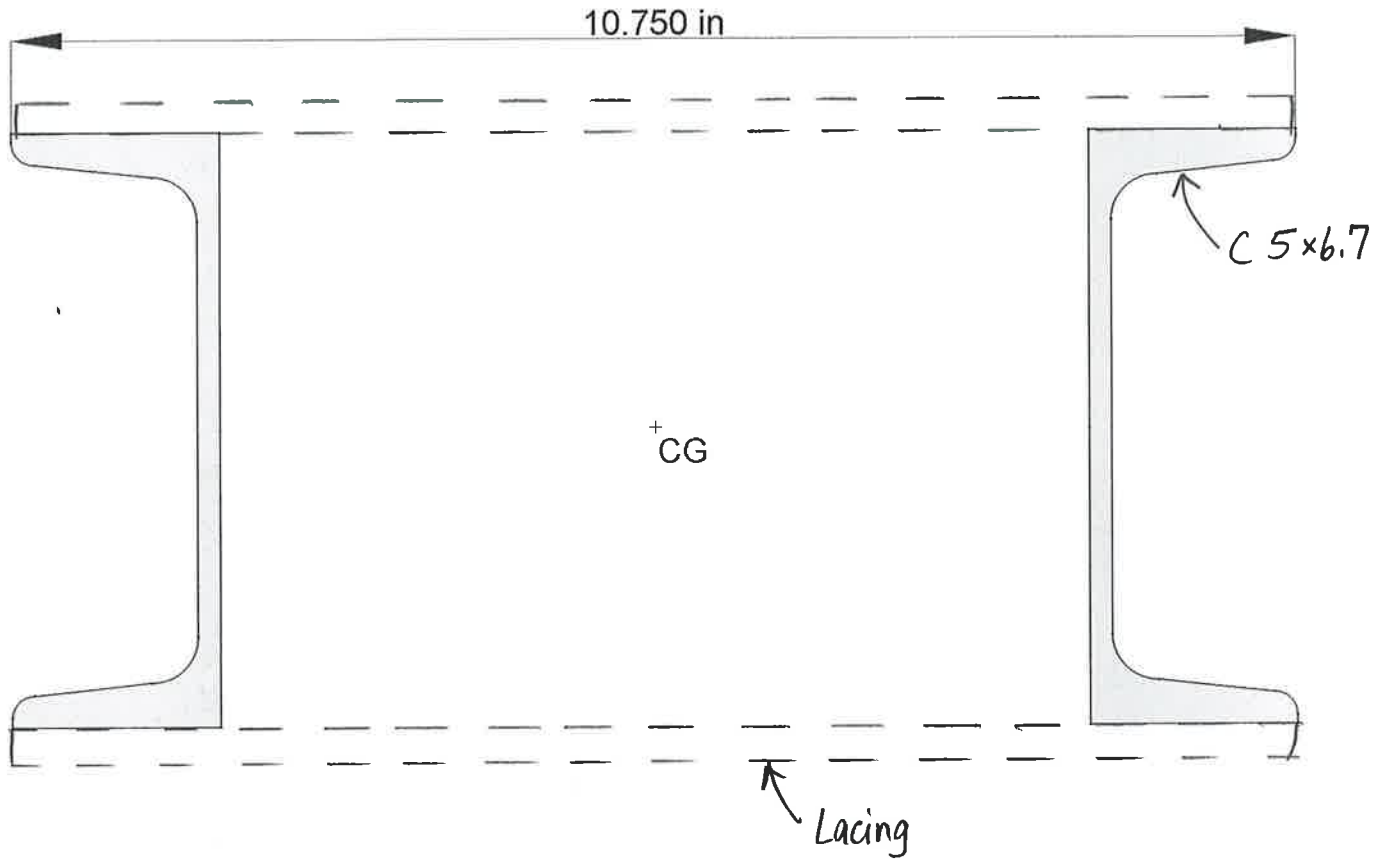
Overall Dimensions	
Width	10.750 in
Height	5.000 in
Perimeter	31.807 in
Geometric Properties	
Iy	69.589 in^4
Ix	15.426 in^4
J	0.055 in^4
ry	4.155 in
rx	1.956 in
A	4.032 in^2
Sy Right	12.947 in^3
Sy Left	12.947 in^3
Sx Bottom	6.170 in^3
Sx Top	6.170 in^3
Centroid Y	-0.036 in
Centroid X	2.642 in
Material Properties	
E	29000.000 Ksi
Plastic Properties	
Zy	16.627 in^3
Zx	7.312 in^3
PNA-Y	-0.036 in
PNA-X	2.642 in

Polar Properties	
Ip	85.015 in^4
rp	4.592 in
Principal Properties	
I2	15.426 in^4
I1	69.589 in^4
Ixy	0.000 in^4
Theta	90.000 deg

Brady Lassila	VW2 net	
	& VW3	

10.750 in

$^+$CG

L 15672000 + 02001

<u>Reduced Capacity Members</u>

VW3L —   Vehicular damage caused loss of straightness, but no section loss.
Reduce compression capacity to 60% of full capacity. (PER ENGINEERING JUDGEMENT)

DW1, DW2, DW3, DW4, DW5, DW6, VW1, VW6

— MDT Fracture Critical Inspection (2010) states that counter members
are "loose," and some eyes have hairline forge cracks.
Reduce tension capacity by 10%. (PER ENGINEERING JUDGEMENT)

Member	Full Capacity (k) (As reported by Virtis)	Reduction (%)	Final Capacity (k) *
VW3L	(COMPR.) −68.58 k	40% ✓	−41.15 k
DW1, DW6	(TENS.) 93.75 k	10%	84.38 k
DW2, DW5	60.00 k	10% ✓	54.00 k ✓
DW3, DW4	45.93 k	10%	41.34 k
VW1, VW6	45.93 k	10%	41.34 k
VW6 R	49.38 k	10%	44.44 k

* Input these capacities into "Member Of Interest" command's "Override Capacity" ✓
subcommand.

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

NW Truss (Downstream) Member Full Capacities

Member	Truss Element	DL Force (kip)	Comp. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Tens. Inv / Opr / Legal Opr / Permit Inv / Permit Opr (kip)	IF	Comp. (kip)	Tens. (kip)	Comp. (kip)	Tens. (kip)	One Lane LLDF	Multi Lane LLDF	Inv RF	Opr RF	Legal Opr RF	Permit Inv RF	Permit Opr RF
BC1	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		88.02			0.665		0.775	1.294			
		20.61	////		45.39 / 45.39 / / /	1.20		88.02				0.665	0.775	1.294			
		20.61	////		45.39 / 45.39 / / /			88.02			0.665		0.934	1.559			
		20.61	////		45.39 / 45.39 / / /			88.02				0.665	0.934	1.559			
BC2	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		93.75			0.665		0.848	1.415			
		20.61	////		45.39 / 45.39 / / /	1.20		93.75				0.665	0.848	1.415			
		20.61	////		45.39 / 45.39 / / /			93.75			0.665		1.021	1.705			
		20.61	////		45.39 / 45.39 / / /			93.75				0.665	1.021	1.705			
BC3	Lower-Chord	34.46	////		74.12 / 74.12 / / /	1.20		135.00			0.665		0.699	1.168			
		34.46	////		74.12 / 74.12 / / /	1.20		135.00				0.665	0.699	1.168			
		34.46	////		74.12 / 74.12 / / /			135.00			0.665		0.842	1.407			
		34.46	////		74.12 / 74.12 / / /			135.00				0.665	0.842	1.407			
BC4	Lower-Chord	41.00	////		84.15 / 84.15 / / /	1.20		157.50			0.665		0.711	1.188			
		41.00	////		84.15 / 84.15 / / /	1.20		157.50				0.665	0.711	1.188			
		41.00	////		84.15 / 84.15 / / /			157.50			0.665		0.857	1.432			
		41.00	////		84.15 / 84.15 / / /			157.50				0.665	0.857	1.432			
BC5	Lower-Chord	34.46	////		74.12 / 74.12 / / /	1.20		135.00			0.665		0.699	1.168			
		34.46	////		74.12 / 74.12 / / /	1.20		135.00				0.665	0.699	1.168			
		34.46	////		74.12 / 74.12 / / /			135.00			0.665		0.842	1.407			
		34.46	////		74.12 / 74.12 / / /			135.00				0.665	0.842	1.407			
BC6	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		93.75			0.665		0.848	1.415			
		20.61	////		45.39 / 45.39 / / /	1.20		93.75				0.665	0.848	1.415			
		20.61	////		45.39 / 45.39 / / /			93.75			0.665		1.021	1.705			
		20.61	////		45.39 / 45.39 / / /			93.75				0.665	1.021	1.705			
BC7	Lower-Chord	20.61	////		45.39 / 45.39 / / /	1.20		88.02			0.665		0.775	1.294			
		20.61	////		45.39 / 45.39 / / /	1.20		88.02				0.665	0.775	1.294			
		20.61	////		45.39 / 45.39 / / /			88.02			0.665		0.934	1.559			
		20.61	////		45.39 / 45.39 / / /			88.02				0.665	0.934	1.559			
TC2	Upper-Chord	-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63				0.665		1.456	2.431			
		-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63					0.665	1.456	2.431			
		-34.46	-74.12 / -74.12 / / /		////		-232.63				0.665		1.754	2.929			
		-34.46	-74.12 / -74.12 / / /		////		-232.63					0.665	1.754	2.929			
TC3	Upper-Chord	-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63				0.665		1.171	1.955			
		-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63					0.665	1.171	1.955			
		-41.45	-87.73 / -87.73 / / /		////		-232.63				0.665		1.410	2.355			
		-41.45	-87.73 / -87.73 / / /		////		-232.63					0.665	1.410	2.355			
TC4	Upper-Chord	-41.91	-87.41 / -87.20 / / /	1.20	////		-232.63				0.665		1.171	1.960			
		-41.91	-87.41 / -87.20 / / /	1.20	////		-232.63					0.665	1.171	1.960			
		-41.91	-87.41 / -87.20 / / /		////		-232.63				0.665		1.411	2.362			
		-41.91	-87.41 / -87.20 / / /		////		-232.63					0.665	1.411	2.362			
TC5	Upper-Chord	-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63				0.665		1.171	1.955			
		-41.45	-87.73 / -87.73 / / /	1.20	////		-232.63					0.665	1.171	1.955			
		-41.45	-87.73 / -87.73 / / /		////		-232.63				0.665		1.410	2.355			
		-41.45	-87.73 / -87.73 / / /		////		-232.63					0.665	1.410	2.355			
TC6	Upper-Chord	-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63				0.665		1.456	2.431			
		-34.46	-74.12 / -74.12 / / /	1.20	////		-232.63					0.665	1.456	2.431			
		-34.46	-74.12 / -74.12 / / /		////		-232.63				0.665		1.754	2.929			
		-34.46	-74.12 / -74.12 / / /		////		-232.63					0.665	1.754	2.929			
VW1	Vertical	7.18	////		39.06 / 39.06 / / /	1.30		45.93			0.665		0.499	0.833			

| LL Scale Factor = 1.00 |
| Adjacent Vehicle LL Factor = 0.00 |
| Inventory: |
| A1 = 1.30 , A2 = 2.17 |
| Operating: |
| A1 = 1.30 , A2 = 1.30 |
| Note: Rating factor is outputted as 99.00 when it is greater than 99 |

NW Truss (Downstream) Member Full Capacities (cont.)

Member	Type													
		7.18	////		39.06 / 39.06 ///	1.30		45.93				0.665	0.499	0.833
		7.18	////		39.06 / 39.06 ///			45.93		0.665			0.649	1.083
		7.18	////		39.06 / 39.06 ///			45.93				0.665	0.649	1.083
VW2	Vertical	-9.67	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61		0.665			0.877	1.465
		-9.67	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61				0.665	0.877	1.465
		-9.67	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61		0.665			1.092	1.824
		-9.67	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61				0.665	1.092	1.824
VW3 L	Vertical	-1.58	-24.82 / -24.56 ///	1.27	0.39 / 0.65 ///	1.27	-68.58	86.61		0.665			1.461	2.466
		-1.58	-24.82 / -24.56 ///	1.27	0.39 / 0.65 ///	1.27	-68.58	86.61				0.665	1.461	2.466
		-1.58	-24.82 / -24.56 ///		0.39 / 0.65 ///		-68.58	86.61		0.665			1.855	3.132
		-1.58	-24.82 / -24.56 ///		0.39 / 0.65 ///		-68.58	86.61				0.665	1.855	3.132
VW4	Vertical	-1.58	-24.82 / -24.56 ///	1.27	0.39 / 0.65 ///	1.27	-68.58	86.61		0.665			1.461	2.466
		-1.58	-24.82 / -24.56 ///	1.27	0.39 / 0.65 ///	1.27	-68.58	86.61				0.665	1.461	2.466
		-1.58	-24.82 / -24.56 ///		0.39 / 0.65 ///		-68.58	86.61		0.665			1.855	3.132
		-1.58	-24.82 / -24.56 ///		0.39 / 0.65 ///		-68.58	86.61				0.665	1.855	3.132
VW5	Vertical	-9.67	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61		0.665			0.877	1.465
		-9.67	-35.50 / -35.50 ///	1.24	14.92 / 14.92 ///	1.30	-68.58	86.61				0.665	0.877	1.465
		-9.67	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61		0.665			1.092	1.824
		-9.67	-35.50 / -35.50 ///		14.92 / 14.92 ///		-68.58	86.61				0.665	1.092	1.824
VW6	Vertical	7.18			39.06 / 39.06 ///	1.30		45.93		0.665			0.499	0.833
		7.18			39.06 / 39.06 ///	1.30		45.93				0.665	0.499	0.833
		7.18			39.06 / 39.06 ///			45.93		0.665			0.649	1.083
		7.18			39.06 / 39.06 ///			45.93				0.665	0.649	1.083
TC1	Diagonal	-32.76	-72.14 / -72.14 ///	1.20	////		-201.57			0.665			1.266	2.114
		-32.76	-72.14 / -72.14 ///	1.20	////		-201.57					0.665	1.266	2.114
		-32.76	-72.14 / -72.14 ///		////		-201.57			0.665			1.526	2.548
		-32.76	-72.14 / -72.14 ///		////		-201.57					0.665	1.526	2.548
TC7	Diagonal	-32.76	-72.14 / -72.14 ///	1.20	////		-201.57			0.665			1.266	2.114
		-32.76	-72.14 / -72.14 ///	1.20	////		-201.57					0.665	1.266	2.114
		-32.76	-72.14 / -72.14 ///		////		-201.57			0.665			1.526	2.548
		-32.76	-72.14 / -72.14 ///		////		-201.57					0.665	1.526	2.548
DW1	Diagonal	22.01	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		93.75		0.665			0.626	1.045
		22.01	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		93.75				0.665	0.626	1.045
		22.01	-6.92 / -6.92 ///		58.90 / 58.90 ///			93.75		0.665			0.765	1.278
		22.01	-6.92 / -6.92 ///		58.90 / 58.90 ///			93.75				0.665	0.765	1.278
DW2	Diagonal	11.11	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		60.00		0.665			0.555	0.926
		11.11	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		60.00				0.665	0.555	0.926
		11.11	-19.20 / -19.20 ///		45.67 / 45.67 ///			60.00		0.665			0.690	1.153
		11.11	-19.20 / -19.20 ///		45.67 / 45.67 ///			60.00				0.665	0.690	1.153
DW3	Diagonal	0.72	-0.49 / -0.81 ///	1.27	31.93 / 31.60 ///	1.27		45.93		0.665			0.768	1.296
		0.72	-0.49 / -0.81 ///	1.27	31.93 / 31.60 ///	1.27		45.93				0.665	0.768	1.296
		0.72	-0.49 / -0.81 ///		31.93 / 31.60 ///			45.93		0.665			0.975	1.646
		0.72	-0.49 / -0.81 ///		31.93 / 31.60 ///			45.93				0.665	0.975	1.646
DW4	Diagonal	0.72	-0.49 / -0.81 ///	1.27	31.93 / 31.60 ///	1.27		45.93		0.665			0.768	1.296
		0.72	-0.49 / -0.81 ///	1.27	31.93 / 31.60 ///	1.27		45.93				0.665	0.768	1.296
		0.72	-0.49 / -0.81 ///		31.93 / 31.60 ///			45.93		0.665			0.975	1.646
		0.72	-0.49 / -0.81 ///		31.93 / 31.60 ///			45.93				0.665	0.975	1.646
DW5	Diagonal	11.11	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		60.00		0.665			0.555	0.926
		11.11	-19.20 / -19.20 ///	1.30	45.67 / 45.67 ///	1.24		60.00				0.665	0.555	0.926
		11.11	-19.20 / -19.20 ///		45.67 / 45.67 ///			60.00		0.665			0.690	1.153
		11.11	-19.20 / -19.20 ///		45.67 / 45.67 ///			60.00				0.665	0.690	1.153
DW6	Diagonal	22.01	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		93.75		0.665			0.626	1.045
		22.01	-6.92 / -6.92 ///	1.30	58.90 / 58.90 ///	1.22		93.75				0.665	0.626	1.045
		22.01	-6.92 / -6.92 ///		58.90 / 58.90 ///			93.75		0.665			0.765	1.278
		22.01	-6.92 / -6.92 ///		58.90 / 58.90 ///			93.75				0.665	0.765	1.278

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: HS 20-44 (Design Lane)

LL Scale Factor = 1.00
Adjacent Vehicle LL Factor = 0.00
Inventory:
A1 = 1.30 , A2 = 2.17
Operating:
A1 = 1.30 , A2 = 1.30
Note: Rating factor is outputted as 99.00 when it is greater than 99

Member	Type												
		7.47	////		39.06 / 39.06 / / /	1.30		45.93				0.665	0.494	0.825
		7.47	////		39.06 / 39.06 / / /			45.93		0.665			0.642	1.072
		7.47	////		39.06 / 39.06 / / /			45.93				0.665	0.642	1.072
VW2	Vertical	-9.98	-35.50 / -35.50 / / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61		0.665			0.871	1.455
		-9.98	-35.50 / -35.50 / / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61				0.665	0.871	1.455
		-9.98	-35.50 / -35.50 / / /		14.92 / 14.92 / / /		-68.58	86.61		0.665			1.085	1.811
		-9.98	-35.50 / -35.50 / / /		14.92 / 14.92 / / /		-68.58	86.61				0.665	1.085	1.811
VW3	Vertical	-1.61	-24.81 / -24.54 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61		0.665			1.461	2.467
		-1.61	-24.81 / -24.54 / / /	1.27	0.41 / 0.69 / / /	1.27	-68.58	86.61				0.665	1.461	2.467
		-1.61	-24.81 / -24.54 / / /		0.41 / 0.69 / / /		-68.58	86.61		0.665			1.855	3.133
		-1.61	-24.81 / -24.54 / / /		0.41 / 0.69 / / /		-68.58	86.61				0.665	1.855	3.133
VW4	Vertical	-1.60	-24.80 / -24.52 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61		0.665			1.462	2.469
		-1.60	-24.80 / -24.52 / / /	1.27	0.40 / 0.67 / / /	1.27	-68.58	86.61				0.665	1.462	2.469
		-1.60	-24.80 / -24.52 / / /		0.40 / 0.67 / / /		-68.58	86.61		0.665			1.856	3.135
		-1.60	-24.80 / -24.52 / / /		0.40 / 0.67 / / /		-68.58	86.61				0.665	1.856	3.135
VW5	Vertical	-9.95	-35.50 / -35.50 / / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61		0.665			0.872	1.456
		-9.95	-35.50 / -35.50 / / /	1.24	14.92 / 14.92 / / /	1.30	-68.58	86.61				0.665	0.872	1.456
		-9.95	-35.50 / -35.50 / / /		14.92 / 14.92 / / /		-68.58	86.61		0.665			1.085	1.812
		-9.95	-35.50 / -35.50 / / /		14.92 / 14.92 / / /		-68.58	86.61				0.665	1.085	1.812
VW6R	Vertical	7.51	////		39.06 / 39.06 / / /	1.30		49.38		0.665			0.540	0.902
		7.51	////		39.06 / 39.06 / / /	1.30		49.38				0.665	0.540	0.902
		7.51	////		39.06 / 39.06 / / /			49.38		0.665			0.702	1.173
		7.51	////		39.06 / 39.06 / / /			49.38				0.665	0.702	1.173
TC1	Diagonal	-33.90	-72.14 / -72.14 / / /	1.20	////		-201.57			0.665			1.254	2.095
		-33.90	-72.14 / -72.14 / / /	1.20	////		-201.57					0.665	1.254	2.095
		-33.90	-72.14 / -72.14 / / /		////		-201.57			0.665			1.511	2.524
		-33.90	-72.14 / -72.14 / / /		////		-201.57					0.665	1.511	2.524
TC7	Diagonal	-33.96	-72.14 / -72.14 / / /	1.20	////		-201.57			0.665			1.254	2.094
		-33.96	-72.14 / -72.14 / / /	1.20	////		-201.57					0.665	1.254	2.094
		-33.96	-72.14 / -72.14 / / /		////		-201.57			0.665			1.511	2.523
		-33.96	-72.14 / -72.14 / / /		////		-201.57					0.665	1.511	2.523
DW1	Diagonal	22.77	-6.92 / -6.92 / / /	1.30	58.90 / 58.90 / / /	1.22		93.75		0.665			0.616	1.029
		22.77	-6.92 / -6.92 / / /	1.30	58.90 / 58.90 / / /	1.22		93.75				0.665	0.616	1.029
		22.77	-6.92 / -6.92 / / /		58.90 / 58.90 / / /			93.75		0.665			0.754	1.259
		22.77	-6.92 / -6.92 / / /		58.90 / 58.90 / / /			93.75				0.665	0.754	1.259
DW2	Diagonal	11.50	-19.20 / -19.20 / / /	1.30	45.67 / 45.67 / / /	1.24		60.00		0.665			0.549	0.916
		11.50	-19.20 / -19.20 / / /	1.30	45.67 / 45.67 / / /	1.24		60.00				0.665	0.549	0.916
		11.50	-19.20 / -19.20 / / /		45.67 / 45.67 / / /			60.00		0.665			0.683	1.140
		11.50	-19.20 / -19.20 / / /		45.67 / 45.67 / / /			60.00				0.665	0.683	1.140
DW3	Diagonal	0.76	-0.49 / -0.87 / / /	1.27	31.92 / 31.57 / / /	1.27		45.93		0.665			0.768	1.296
		0.76	-0.49 / -0.87 / / /	1.27	31.92 / 31.57 / / /	1.27		45.93				0.665	0.768	1.296
		0.76	-0.49 / -0.87 / / /		31.92 / 31.57 / / /			45.93		0.665			0.975	1.646
		0.76	-0.49 / -0.87 / / /		31.92 / 31.57 / / /			45.93				0.665	0.975	1.646
DW4	Diagonal	0.75	-0.49 / -0.86 / / /	1.27	31.91 / 31.55 / / /	1.27		45.93		0.665			0.768	1.297
		0.75	-0.49 / -0.86 / / /	1.27	31.91 / 31.55 / / /	1.27		45.93				0.665	0.768	1.297
		0.75	-0.49 / -0.86 / / /		31.91 / 31.55 / / /			45.93		0.665			0.975	1.647
		0.75	-0.49 / -0.86 / / /		31.91 / 31.55 / / /			45.93				0.665	0.975	1.647
DW5	Diagonal	11.47	-19.20 / -19.20 / / /	1.30	45.67 / 45.67 / / /	1.24		60.00		0.665			0.549	0.917
		11.47	-19.20 / -19.20 / / /	1.30	45.67 / 45.67 / / /	1.24		60.00				0.665	0.549	0.917
		11.47	-19.20 / -19.20 / / /		45.67 / 45.67 / / /			60.00		0.665			0.683	1.141
		11.47	-19.20 / -19.20 / / /		45.67 / 45.67 / / /			60.00				0.665	0.683	1.141
DW6	Diagonal	22.75	-6.92 / -6.92 / / /	1.30	58.90 / 58.90 / / /	1.22		93.75		0.665			0.617	1.030
		22.75	-6.92 / -6.92 / / /	1.30	58.90 / 58.90 / / /	1.22		93.75				0.665	0.617	1.030
		22.75	-6.92 / -6.92 / / /		58.90 / 58.90 / / /			93.75		0.665			0.754	1.260
		22.75	-6.92 / -6.92 / / /		58.90 / 58.90 / / /			93.75				0.665	0.754	1.260

LLDF	Single Lane	Multi Lane
Force	0.665	0.665
Deflection	0.500	0.500

Live Load: HS 20-44 (Design Lane)

BRIDGE RATING INFORMATION SHEET – DECKS

Bridge ID: _L15672000+02001_   Year Constructed: _1911_   Feature Intersected: _Swan River_
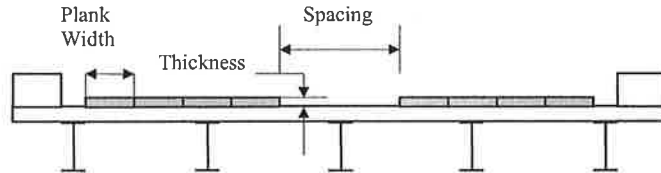
Location: _S End Big Fork_   Date Submitted: _12/5/14_

County: _Flathead_   District/Division: _Missoula_   Inspector: _BBL/PKS_
Stelling Engineers, Inc.
(KLJ)

Deck Material:

☒ Timber:

Deck Species: ☒ Larch/Fir   ☐ Glu-Lam   ☐ Other (specify):   Conditions: ☐ Dry   ☒ Wet

Type (Nail-Lam, Glu-Lam, or Plank)	Board Width (in)	Board Thickness (in)	Running Planks? (Y or N)	Running Plank Width (in)	Running Plank Thickness (in)	Number of Running Planks Left	Number of Running Planks Right	Running Plank Spacing
Plank	9½ → 12	4	Y	9½	2½	Full Deck	Width	

☐ Concrete: ☐ Reinforced Cast-in-Place ☐ Reinforced Precast Panels ☐ Prestressed Precast Panels ☐ Unknown

Concrete Deck Thickness (in):

☐ Corrugated Metal Decking:
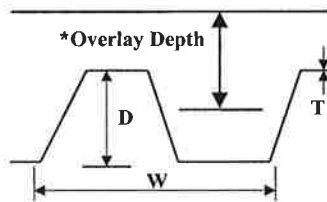
D (in) =

T (in) =

W (in) =

Overlay Depth (in) =

☐ Other (specify):   Thickness (in) =

Overlay? ☐ Yes ☒ No   Material =   Thickness (in) =

Curb? ☐ Yes ☒ No

Material =   Top Width (in) =   Bottom Width (in) =   Height (in) =

Guardrail? ☒ Yes ☐ No   Type = _W-rail_ Height (ft) = _3'-5"_ Post Material = _Steel_

Comments:

Note: Use the back of this sheet for sketches.

DOCUMENT6

SPAN CROSS-SECTION – STEEL GIRDERS

I Shape   Channel

Angle
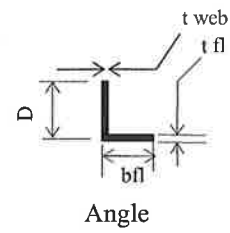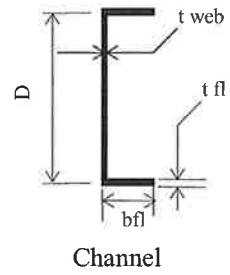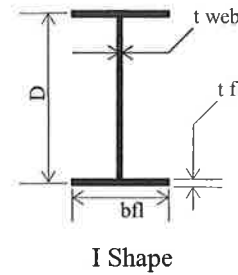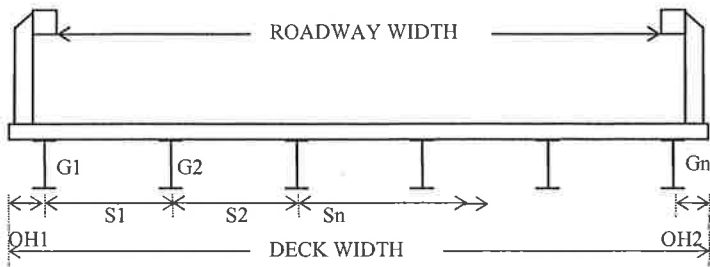
Span No: 1 (End Spans)

Roadway Width (Curb-to-Curb or Face to Face of Rail): 15 ft 7½ in

Deck Width: 16 ft 1 in   Number of Girders: 8

Deck Overhang: OH1: 3½ in   OH2: 3½ in

Girder Material: ☒ Plain Steel   ☐ Weathering Steel

Note: Girder shapes can be I shapes, C for Channel shapes, A for Angle Shapes, or O for built-up and strange shapes.
Provide a sketch if you enter an O shape. *O should also be used for shapes with variable cross-sections (variable girder depth, etc).*

Girder Cross-Section	Shape (I, C, A, or O)	D (depth) (in)	bfl (flange width) (in)	tfl (flange thickness) (in)	tweb (web thickness) (in)
A	C 8×11.5	8	2 5/16	0.46	
B	W 8×15	8	4 1/8	0.33	
C					
D					
E					

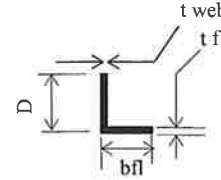| Girder	Cross-Section	Spacing (ft)		Girder	Cross-Section	Spacing (ft)
G1	A			G8	A	
		2'-9"				
G2	B			G9		
		2'-0"				
G3	B			G10		
		2'-0"				
G4	B			G11		
		2'-0"				
G5	B			G12		
		2'-0"				
G6	B			G13		
		2'-0"				
G7	B			G14		
		2'-9"				

Comments:

ADDITIONAL SPAN CROSS-SECTION – STEEL GIRDERS
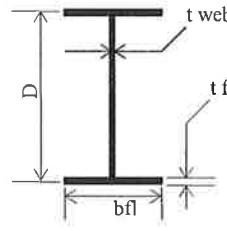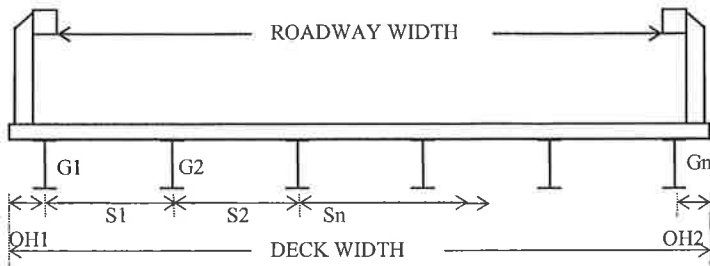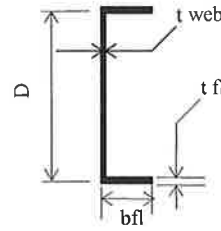
I Shape

Channel

Angle

Span No: 2-6 (Interior Spans)

Roadway Width (Curb-to-Curb or Face to Face of Rail): 15 ft 7½ in

Deck Width: 16 ft 1 in   Number of Girders: 8

Deck Overhang: OH1: 3½ in   OH2: 3½ in

Girder Material: ☒ Plain Steel   ☐ Weathering Steel

Note: Girder shapes can be I shapes, C for Channel shapes, A for Angle Shapes, or O for built-up and strange shapes. Provide a sketch if you enter an O shape. O should also be used for shapes with variable cross-sections (variable girder depth, etc).

Girder Cross-Section	Shape (I, C, A, or O)	D (depth) (in)	bfl (flange width) (in)	tfl (flange thickness) (in)	tweb (web thickness) (in)
A	C 8×11.5	8	2 5/16	0.46	
B	S 8×18.4	8	4		
C					
D					
E					

Girder	Cross-Section	Spacing (ft)	Girder	Cross-Section	Spacing (ft)
G1	A		G8	A	
		2'-9"	G9		
G2	B				
		2'-0"	G10		
G3	B				
		2'-0"	G11		
G4	B				
		2'-0"	G12		
G5	B				
		2'-0"	G13		
G6	B				
		2'-0"	G14		
G7	B				
		2'-9"			

Comments:

BRIDGE MEASUREMENT FORM – SIMPLE SPAN STEEL GIRDER

Bridge ID: L15672000 + 02001   Year Constructed: 1911   Feature Intersected: Swan River
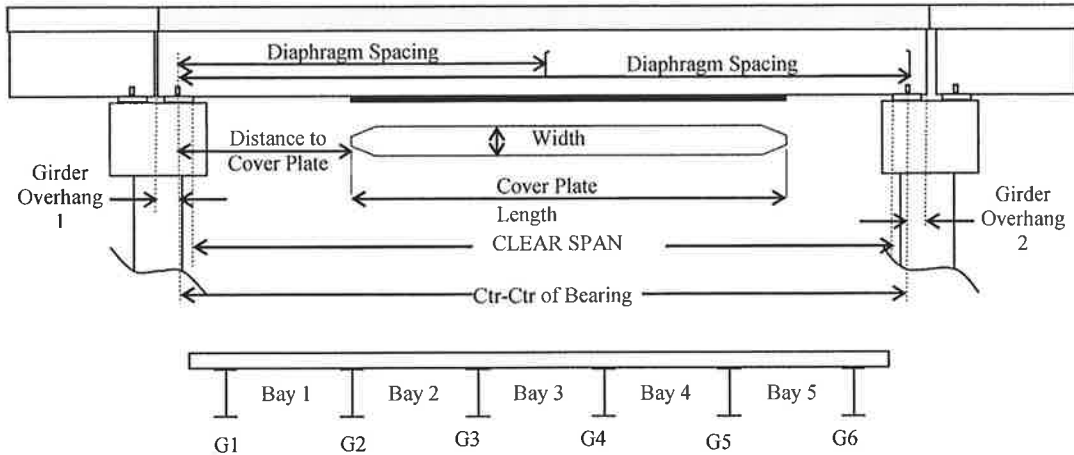
Location: S End Big Fork   Date Submitted: 12/5/14

County: Flathead   District/Division: Missoula   Inspector: BBL/PKS
Stelling Engineers, Inc. (KLJ)

STEEL SIMPLE SPAN LENGTH DEFINITIONS

Girders and girder bays are numbered from left to right while looking ahead on line.
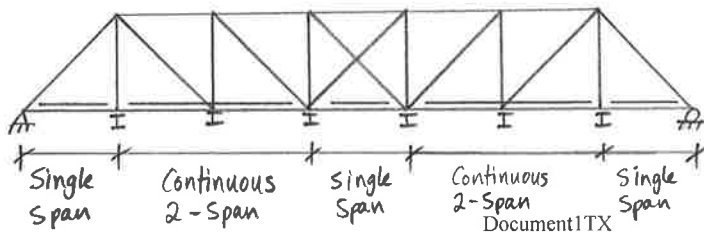
Diaphragms? ☐ Yes ☒ No

Span Number	Span Length (ctr to ctr of bearing) (ft)	Clear Span (ft)	Girder Overhang 1 (in)	Girder Overhang 2 (in)	Skew 1 (degrees)	Skew 2 (degrees)
1, 4, 7	17'-0"	16'-6½"	1 3/8"	1 3/8"	0	0

Span	Girder Bay(s)	Diaphragm Spacing (ahead on line) (ft)

Cover Plates? ☐ Yes ☒ No

Span	Girder(s)	Distance to Cover Plate (ft)	Length of Cover Plate (ft)	Width of Cover Plate (in)	Thickness of Cover Plate (in)

Comments:

Single Span | Continuous 2-Span | Single Span | Continuous 2-Span | Single Span

Document1TX

Assumed stringer configuration, as viewed from Abutments.

BRIDGE MEASUREMENT FORM – CONTINUOUS STEEL GIRDER

Bridge ID: L 15672000 + 02001   Year Constructed: 1911   Feature Intersected: Swan River

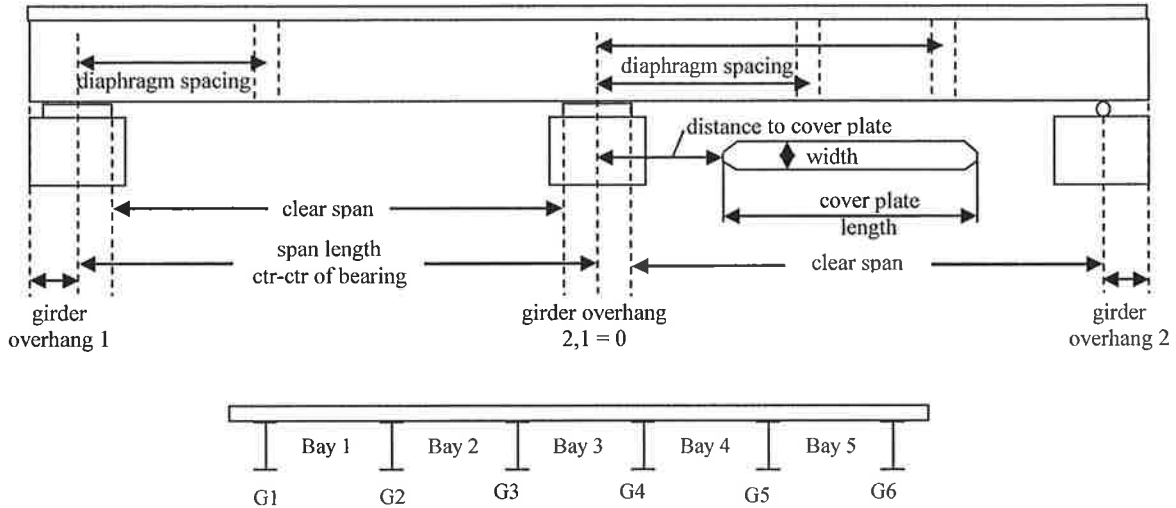Location: S End Big Fork   Date Submitted: 12/5/14

County: Flathead   District/Division: Missoula   Inspector: BBL / PKS
Stelling Engineers, Inc. (KLJ)

CONTINUOUS STEEL GIRDER SPAN LENGTH DEFINITIONS

Girders and girder bays are numbered from left to right while looking ahead on line.

Diaphragms?   ☐ Yes   ☒ No

Diaphragm Spacing:

Span Number	Span Length (ctr to ctr of bearing) (ft)	Clear Span (ft)	Girder Overhang 1 (in)	Girder Overhang 2 (in)
2-3	17'×2 = 34'	16'-6½"	1 3/8"	1 3/8"
5-6	17'×2 = 34'	16'-6½"	1 3/8"	1 3/8"

Span	Girder Bay(s)	Diaphragm Spacing (ahead on line) (ft)

Cover Plates?   ☐ Yes   ☒ No

Span	Girder(s)	Distance to Cover Plate (ft)	Length of Cover Plate (ft)	Width of Cover Plate (in)	Thickness of Cover Plate (in)