

LEVEL 2 LOAD RATING (VIRTIS)

MILEPOST: 262.01

BIN: 5512790

REGION: 2

COUNTY: MADISON

FEATURE CARRIED: NORTH MAIN STREET

FEATURE CROSSED: 90 IX

LEVEL 2 LOAD RATING REVIEW

VIRTIS RUN DATE: 7/27/2017

CHANGES TO INPUT DATA: Computed fascia girders live load distribution factors using Lever Rule only.

LOADING	INVENTORY RATING (TONS)	OPERATING RATING (TONS)
HS-20	30.3 (HS-16)	50.6 (HS-28)
H-20	23.6 (H-23)	39.4 (H-39)
EV-2		47.2
EV-3		46.0

* ANALYSIS METHOD: LOAD FACTOR

****Truck loading controls the ratings.**

CONTROLLING MEMBER FOR RATING

LOCATION: H20: SPANS 1 & 4 HS20: SPAN 2

COMPONENT: H20: INT. GIRDERS G2-G4; HS20: FASCIA GIRDER G1

FAILURE TYPE: STEEL SERVICEABILITY AT MIDSPAN

EFFECTIVE SPAN LENGTH: 36'

H EQUIVALENT OF LEGAL LOAD H23

PRIMARY MEMBER RATING: 5

SAFE LOAD CAPACITY: H33

SLC COMPUTATION USED (IN BOLD)				
0.60 HOR	0.70 HOR	0.80 HOR	0.85 HOR	HOR

ACTION TAKEN: NONE REQUIRED X

RECOMMEND LEVEL 1

UNRATABLE

COMPLETED BY

REVIEWED BY

KENNETH SWEENEY

AMODH NIRALA

PE # 086434

LOAD RATING ENGINEER

Bridge

Bridge Id: 5512790

Description: Original analysis by Clark Patterson Assoc. - 2/04. Reviewed by DiDonato Associates - 11/06, 7/08, 7/10. Reviewed by CHA - 8/12, 10/14, 8/15. Reviewed by WSA Group, PE-PC - 7/17. HS-20 design load. P/T rods added to capbeams (end floorbeams) in 1996, unratable in Virtis. Level 1 Load Rating prepared in 1994. Steel cap beams control rating. H20 Inventory = 17.8 Tons. H20 Operating = 30.1 Tons. Bridge is posted for 18 Ton load (removed in 2011). 2010 Notes: - None. 2012 Notes: - Level 1 for capbeams performed in 2011. H20 Inv: 33.0 tons H20 Oper: 48.8 tons. - Concrete strength revised based on year built. - Typical section adjusted to account for sidewalk overhang. - Sidewalk thickness adjusted. Remaining thickness put into stage 1 & 2 member loads for G1. - Superstructure Loads: Span 1 & 4 stage 2 loads changed to tributary distribution. Load cases for sidewalk and railing reassigned. - G2 Live load distribution for shear adjusted & G3 added due to higher factor. - Span 2 and 3 interior girders corrected to W33x130. - Span 1 & 4 lateral support revised. 2014 Notes: - Rating engine changed to AASHTO LFD. - Railing load revised. - Sidewalk thickness revised to include the DC2 portion of the keyway, weighted average used. DC2 keyway member load removed. - Conn. angles added as an equivalent partial height plate. - Additional self load revised. - G2 & G3 cover plate ranges revised in Spans 2 & 3 to account for tapered ends. - Composite deck thicknesses revised due to spalling in Spans 2 & 3. See member alt. description for more info. - Section loss added to bottom flanges and cover plates for all girders in Spans 2 & 3. 2015 Notes: - Web section loss added, flange loss revised. - Deck spalling revised. 2017 Notes: - Computed fascia girders live load distribution factors using Lever Rule only.

Facility Carried: North Main Street

Feature Intersected: 90 IX

Structure Number: 5512790

Location: Lenox

Length: 195.97

ft

Route Number:

System Of Units: US Customary

Year Built: 1953

Name: MP 262.01 - North Main Street over 90 IX

District:

County:

LOAD RATING SUMMARY

Member Rating Results

System of Units
☒ US Customary ☐ SI / Metric

Lane/Impact Loading Type
☒ As Requested ☐ Detailed

Display Format
☐ Multiple rating levels per row

Bridge Id	Structure	Member	Vehicle	Inventory Rating Factor	Operating Rating Factor	Legal Operating Rating Factor	Legal Rating Factor	Permit Inventory Rating Factor	Permit Operating Rating Factor	Permit Rating Factor	Inventory Capacity (Ton)	Operating Capacity (Ton)	Legal Capacity (Ton)	Permit Inventory Capacity (Ton)	Permit Operating Capacity (Ton)	Permit Capacity (Ton)	Inventory Location (ft)	Operating Location (ft)
5512790	Span 1	G1	H 20-44	1.575	2.631						31.51	52.62					18.07	18.07
5512790	Span 1	G2	H 20-44	1.182	1.974						23.64	39.48					18.08	18.08
5512790	Span 1	G3	H 20-44	1.182	1.974						23.64	39.48					18.08	18.08
5512790	Span 2	G1	H 20-44	1.210	2.021						24.21	40.43					29.42	29.42
5512790	Span 2	G2	H 20-44	1.430	2.388						28.60	47.76					29.42	29.42
5512790	Span 2	G3	H 20-44	1.489	2.486						29.77	49.72					29.42	29.42
5512790	Span 3	G1	H 20-44	2.360	3.941						47.20	78.83					29.42	29.42
5512790	Span 3	G2	H 20-44	1.335	2.229						26.70	44.58					29.42	29.42
5512790	Span 3	G3	H 20-44	1.374	2.294						27.48	45.88					29.42	29.42
5512790	Span 4	G1	H 20-44	1.575	2.631						31.51	52.62					18.07	18.07
5512790	Span 4	G2	H 20-44	1.182	1.974						23.64	39.48					18.08	18.08
5512790	Span 4	G3	H 20-44	1.182	1.974						23.64	39.48					18.08	18.08
5512790	Span 1	G1	HS 20-44	1.289	2.153						46.42	77.52					14.46	14.46
5512790	Span 1	G2	HS 20-44	0.968	1.617						34.85	58.20					21.69	21.69
5512790	Span 1	G3	HS 20-44	0.968	1.617						34.85	58.20					21.69	21.69
5512790	Span 2	G1	HS 20-44	0.842	1.406						30.30	50.60					29.42	29.42
5512790	Span 2	G2	HS 20-44	0.994	1.661						35.80	59.78					29.42	29.42
5512790	Span 2	G3	HS 20-44	1.035	1.728						37.26	62.23					29.42	29.42
5512790	Span 3	G1	HS 20-44	1.641	2.740						59.08	98.66					29.42	29.42
5512790	Span 3	G2	HS 20-44	0.928	1.550						33.41	55.80					29.42	29.42
5512790	Span 3	G3	HS 20-44	0.955	1.595						34.39	57.43					29.42	29.42
5512790	Span 4	G1	HS 20-44	1.289	2.153						46.42	77.52					21.69	21.69
5512790	Span 4	G2	HS 20-44	0.968	1.617						34.85	58.20					21.69	21.69
5512790	Span 4	G3	HS 20-44	0.968	1.617						34.85	58.20					21.69	21.69

☒ Show up-to-date results only

Print

Close

Member Rating Results

System of Units
☒ US Customary ☐ SI / Metric

Lane/Impact Loading Type
☒ As Requested ☐ Detailed

Display Format
☐ Multiple rating levels per row

Bridge Id	Structure	Member	Vehicle	Inventory Rating Factor	Operating Rating Factor	Legal Operating Rating Factor	Legal Rating Factor	Permit Inventory Rating Factor	Permit Operating Rating Factor	Permit Rating Factor	Inventory Capacity (Ton)	Operating Capacity (Ton)	Legal Capacity (Ton)	Permit Inventory Capacity (Ton)	Permit Operating Capacity (Ton)	Permit Capacity (Ton)	Inventory Location (ft)	Operating Location (ft)	Leg
5512790	Span 1	G1	Type EV2		2.295							65.99						14.46	
5512790	Span 1	G2	Type EV2		2.193							63.06						21.69	
5512790	Span 1	G3	Type EV2		2.193							63.06						21.69	
5512790	Span 2	G1	Type EV2		1.645							47.28						29.42	
5512790	Span 2	G2	Type EV2		2.473							71.10						29.42	
5512790	Span 2	G3	Type EV2		2.574							74.01						29.42	
5512790	Span 3	G1	Type EV2		3.207							92.19						29.42	
5512790	Span 3	G2	Type EV2		2.308							66.36						29.42	
5512790	Span 3	G3	Type EV2		2.376							68.30						29.42	
5512790	Span 4	G1	Type EV2		2.295							65.99						21.69	
5512790	Span 4	G2	Type EV2		2.193							63.06						21.69	
5512790	Span 4	G3	Type EV2		2.193							63.06						21.69	
5512790	Span 1	G1	Type EV3		1.502							64.57						18.07	
5512790	Span 1	G2	Type EV3		1.434							61.67						18.08	
5512790	Span 1	G3	Type EV3		1.434							61.67						18.08	
5512790	Span 2	G1	Type EV3		1.070							46.03						29.42	
5512790	Span 2	G2	Type EV3		1.609							69.21						29.42	
5512790	Span 2	G3	Type EV3		1.675							72.04						29.42	
5512790	Span 3	G1	Type EV3		2.087							89.74						29.42	
5512790	Span 3	G2	Type EV3		1.502							64.59						29.42	
5512790	Span 3	G3	Type EV3		1.546							66.48						29.42	
5512790	Span 4	G1	Type EV3		1.502							64.57						18.07	
5512790	Span 4	G2	Type EV3		1.434							61.67						18.08	
5512790	Span 4	G3	Type EV3		1.434							61.67						18.08	

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Bridge Name: MP 262.01 - North Main Street over 90 IX

NBI Structure ID: 5512790

Bridge ID: 5512790

Analyzed By: BrR

Analyze Date: Thursday, July 27, 2017 10:22:07

Analysis Engine: AASHTO LFR Engine Version 6.7.0.3001

Analysis Preference Setting: None

Report By: BrR

Report Date: Thursday, July 27, 2017 10:22:36

Structure Definition Name: Span 1

Member Name: G2

Member Alternative Name: G-2

Individual Vehicle Load Factor Rating Summary

Live Load	Vehicle Rating				Capacity		Location			
	Type	Factor	Controls	(Ton)	Span	(ft)	Percent	Impact	Lane	
H 20-44	Inventory	Lane	1.720	Service - Steel	34.40	1	18.08	50.0	As Requested	As Requested
H 20-44	Operating	Lane	2.872	Service - Steel	57.45	1	18.08	50.0	As Requested	As Requested
H 20-44	Inventory	Lane	1.720	Service - Steel	34.40	1	18.08	50.0	With Impact	Single Lane
H 20-44	Operating	Lane	2.872	Service - Steel	57.45	1	18.08	50.0	With Impact	Single Lane
H 20-44	Inventory	Lane	1.351	Service - Steel	27.03	1	18.08	50.0	With Impact	Multi-Lane
H 20-44	Operating	Lane	2.257	Service - Steel	45.14	1	18.08	50.0	With Impact	Multi-Lane
H 20-44	Inventory	Lane	2.236	Service - Steel	44.72	1	18.08	50.0	Without Impact	Single Lane
H 20-44	Operating	Lane	3.734	Service - Steel	74.68	1	18.08	50.0	Without Impact	Single Lane
H 20-44	Inventory	Lane	1.757	Service - Steel	35.14	1	18.08	50.0	Without Impact	Multi-Lane
H 20-44	Operating	Lane	2.934	Service - Steel	58.68	1	18.08	50.0	Without Impact	Multi-Lane
H 20-44	Inventory	Axle Load	1.505	Service - Steel	30.09	1	18.08	50.0	As Requested	As Requested
H 20-44	Operating	Axle Load	2.513	Service - Steel	50.25	1	18.08	50.0	As Requested	As Requested
	Inventory		1.505		30.09	1	18.08	50.0		

H 20-44		Axle Load		Service - Steel					With Impact	Single Lane
H 20-44	Operating	Axle Load	2.513	Service - Steel	50.25	1	18.08	50.0	With Impact	Single Lane
H 20-44	Inventory	Axle Load	1.182	Service - Steel	23.64	1	18.08	50.0	With Impact	Multi-Lane
H 20-44	Operating	Axle Load	1.974	Service - Steel	39.48	1	18.08	50.0	With Impact	Multi-Lane
H 20-44	Inventory	Axle Load	1.956	Service - Steel	39.12	1	18.08	50.0	Without Impact	Single Lane
H 20-44	Operating	Axle Load	3.266	Service - Steel	65.33	1	18.08	50.0	Without Impact	Single Lane
H 20-44	Inventory	Axle Load	1.537	Service - Steel	30.74	1	18.08	50.0	Without Impact	Multi-Lane
H 20-44	Operating	Axle Load	2.566	Service - Steel	51.33	1	18.08	50.0	Without Impact	Multi-Lane

Note:

"N/A" indicates not applicable

*** indicates not available

Bridge Name: MP 262.01 - North Main Street over 90 IX

NBI Structure ID: 5512790

Bridge ID: 5512790

Analyzed By: BrR

Analyze Date: Thursday, July 27, 2017 10:25:16

Analysis Engine: AASHTO LFR Engine Version 6.7.0.3001

Analysis Preference Setting: None

Report By: BrR

Report Date: Thursday, July 27, 2017 10:25:48

Structure Definition Name: Span 2

Member Name: G1

Member Alternative Name: G-1

Individual Vehicle Load Factor Rating Summary										
Live Load	Vehicle Rating				Capacity		Location			
	Type	Factor	Controls	(Ton)	Span	(ft)	Percent	Impact	Lane	
HS 20-44	Inventory Lane	1.210	Service - Steel	43.58	1	29.42	50.0	As Requested	As Requested	
HS 20-44	Operating Lane	2.021	Service - Steel	72.77	1	29.42	50.0	As Requested	As Requested	
HS 20-44	Inventory Lane	1.210	Service - Steel	43.58	1	29.42	50.0	With Impact	Single Lane	
HS 20-44	Operating Lane	2.021	Service - Steel	72.77	1	29.42	50.0	With Impact	Single Lane	
HS 20-44	Inventory Lane	1.210	Service - Steel	43.58	1	29.42	50.0	With Impact	Multi-Lane	
HS 20-44	Operating Lane	2.021	Service - Steel	72.77	1	29.42	50.0	With Impact	Multi-Lane	
HS 20-44	Inventory Lane	1.540	Service - Steel	55.43	1	29.42	50.0	Without Impact	Single Lane	
HS 20-44	Operating Lane	2.571	Service - Steel	92.56	1	29.42	50.0	Without Impact	Single Lane	
	Inventory Lane	1.540	Service - Steel	55.43	1	29.42	50.0	Without Impact	Multi-Lane	

HS 20- 44										
HS 20- 44	Operating	Lane	2.571	Service - Steel	92.56	1	29.42	50.0	Without Impact	Multi- Lane
HS 20- 44	Inventory	Axle Load	0.842	Service - Steel	30.30	1	29.42	50.0	As Requested	As Requested
HS 20- 44	Operating	Axle Load	1.406	Service - Steel	50.60	1	29.42	50.0	As Requested	As Requested
HS 20- 44	Inventory	Axle Load	0.842	Service - Steel	30.30	1	29.42	50.0	With Impact	Single Lane
HS 20- 44	Operating	Axle Load	1.406	Service - Steel	50.60	1	29.42	50.0	With Impact	Single Lane
HS 20- 44	Inventory	Axle Load	0.842	Service - Steel	30.30	1	29.42	50.0	With Impact	Multi- Lane
HS 20- 44	Operating	Axle Load	1.406	Service - Steel	50.60	1	29.42	50.0	With Impact	Multi- Lane
HS 20- 44	Inventory	Axle Load	1.071	Service - Steel	38.54	1	29.42	50.0	Without Impact	Single Lane
HS 20- 44	Operating	Axle Load	1.788	Service - Steel	64.36	1	29.42	50.0	Without Impact	Single Lane
HS 20- 44	Inventory	Axle Load	1.071	Service - Steel	38.54	1	29.42	50.0	Without Impact	Multi- Lane
HS 20- 44	Operating	Axle Load	1.788	Service - Steel	64.36	1	29.42	50.0	Without Impact	Multi- Lane

Note:

"N/A" indicates not applicable

*** indicates not available

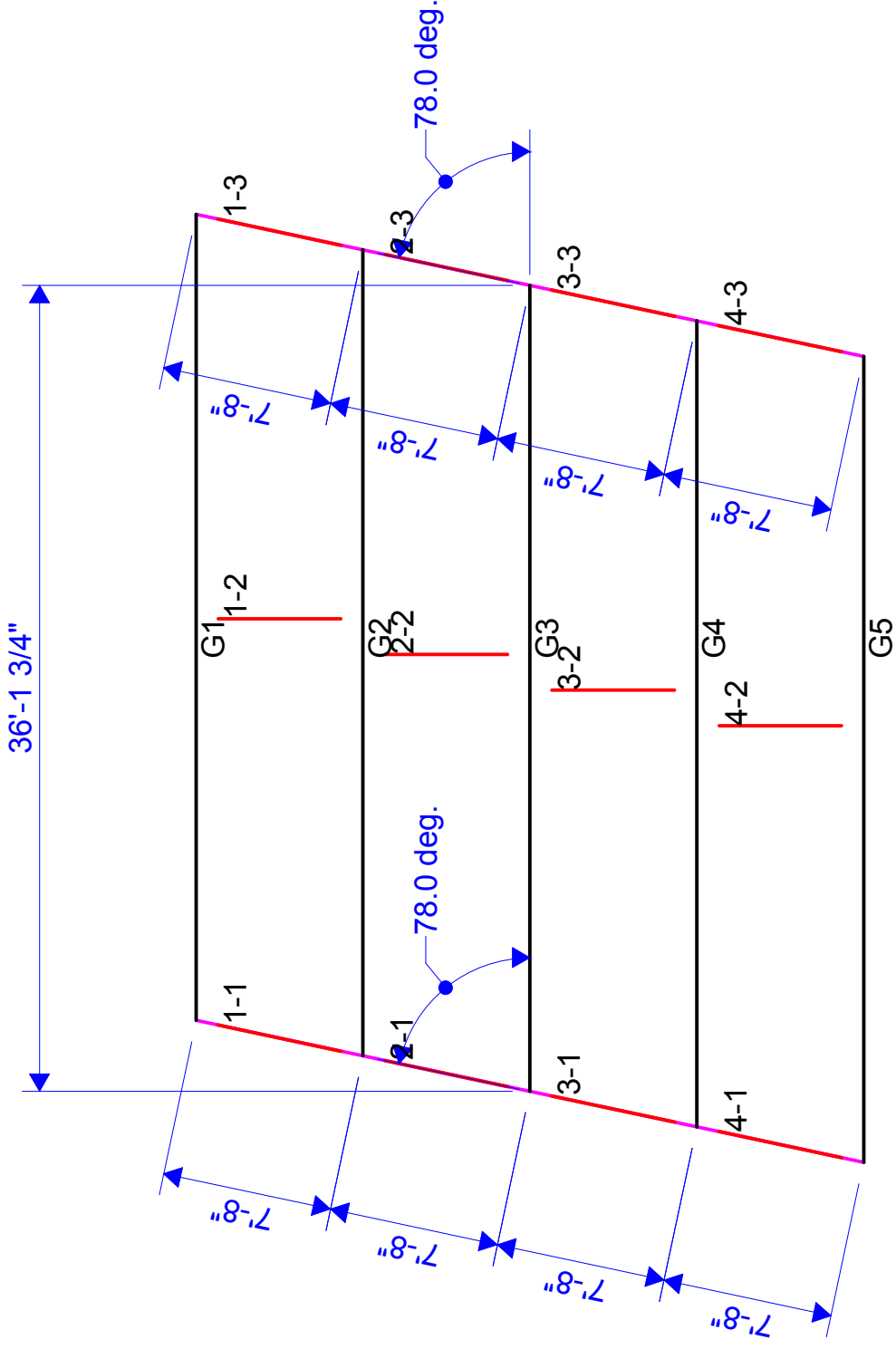
SCHEMATIC DRAWINGS

5512790

MP 262.01 - North Main Street over 90 IX - Span 1

North Main Street / 90 IX

07/20/17

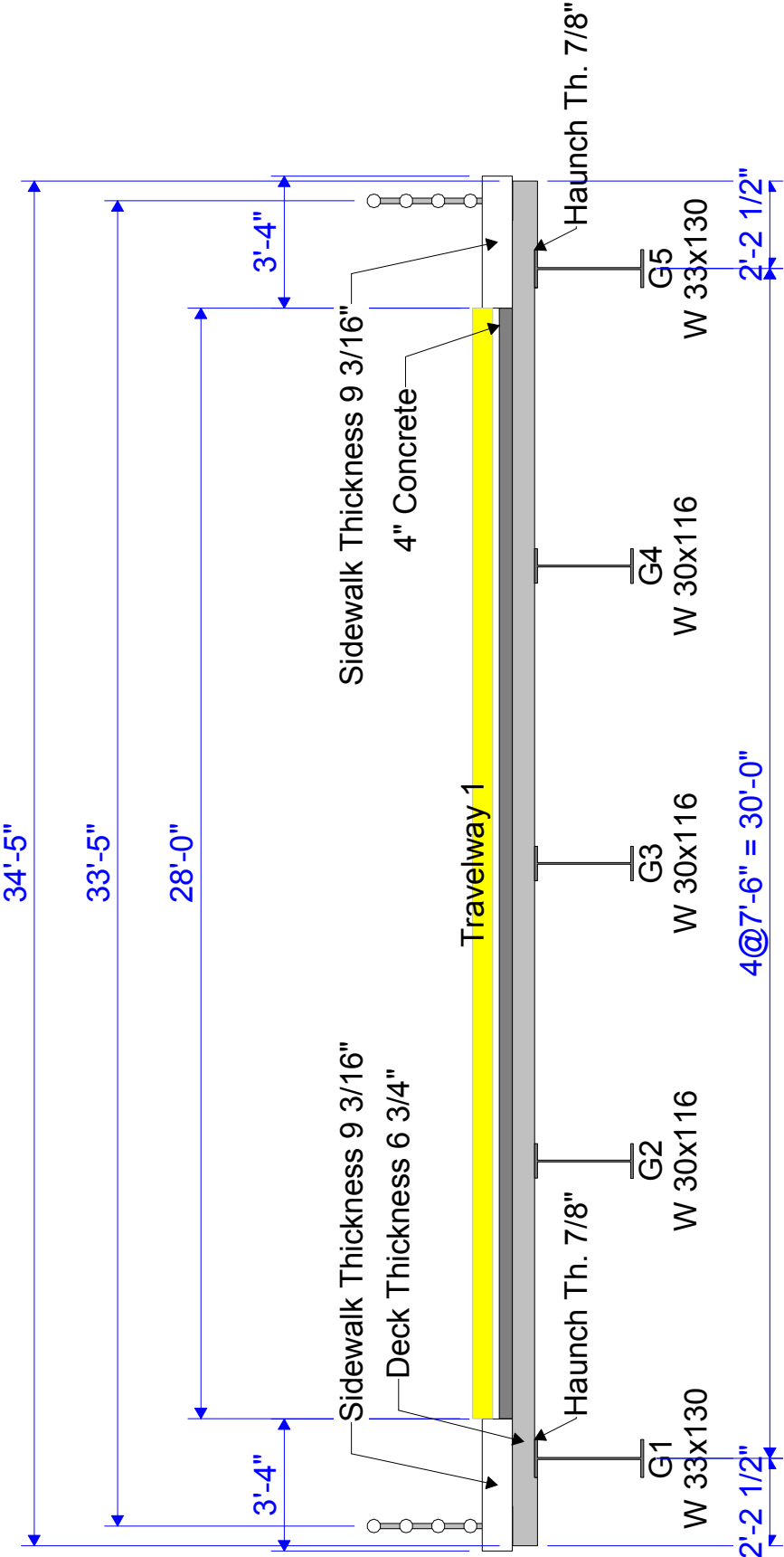


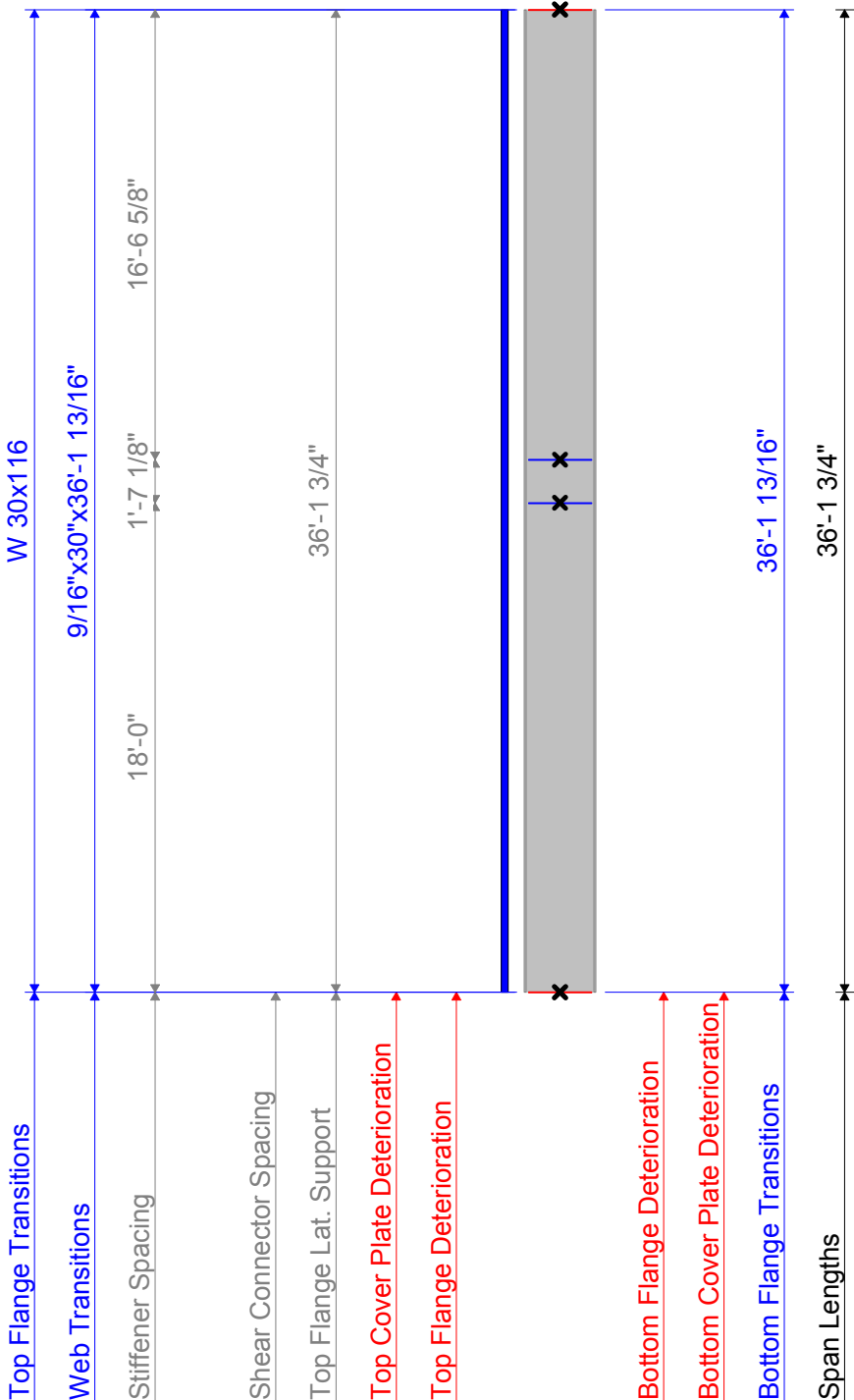
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MP 262.01 - North Main Street over 90 IX - Span 1

North Main Street / 90 IX

07/20/17





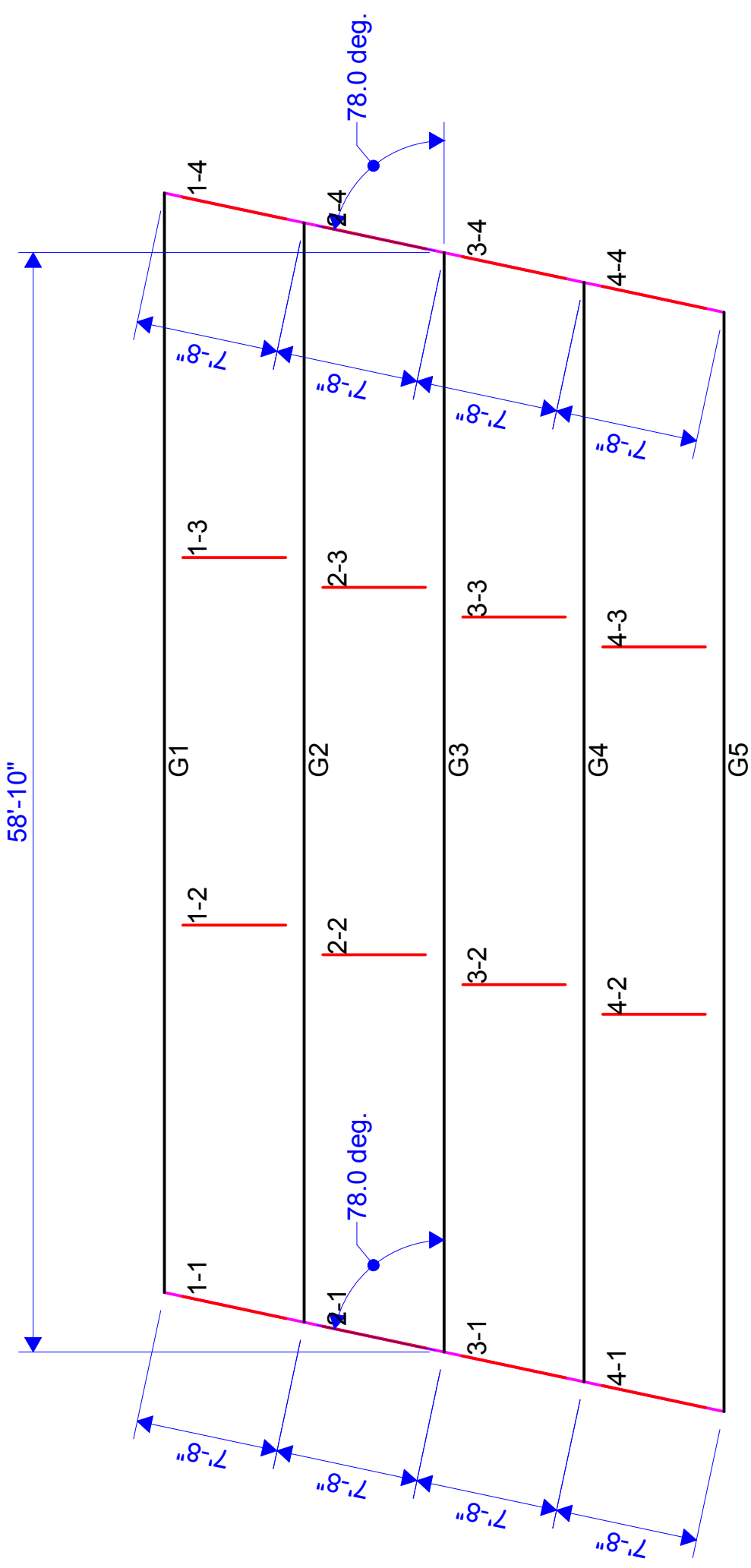
- Notes:
- * All flange length dimensions are horiz. (length along flange may differ).
 - * Transverse stiffener pairs shown in red.
 - * Single transverse stiffener shown in blue.
 - * Bearing stiffeners shown in green.
 - * Dimensioning starts and ends at CL bearings.
 - * X denotes cross frame locations.

5512790

MP 262.01 - North Main Street over 90 IX - Span 2

North Main Street / 90 IX

07/20/17

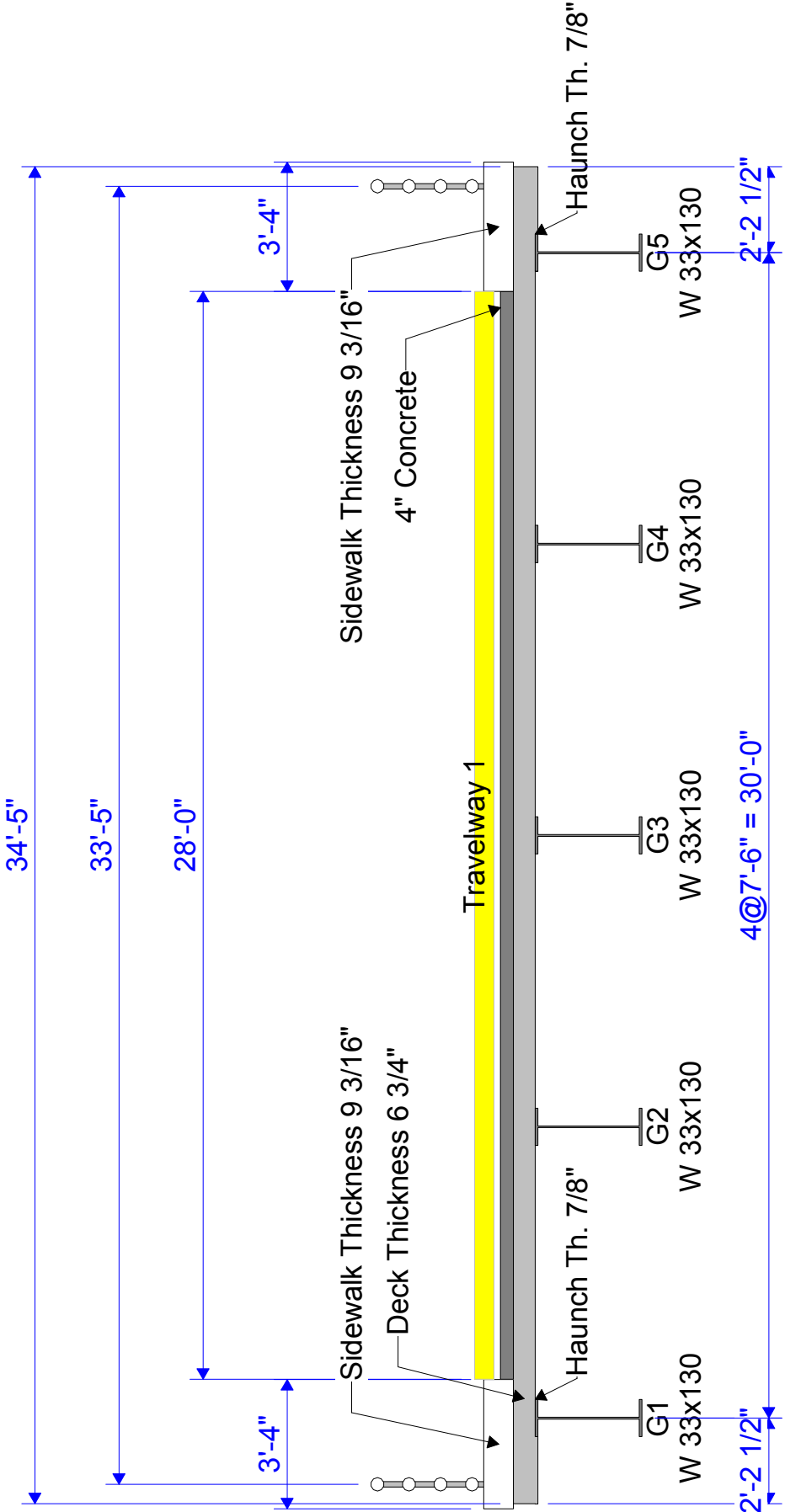


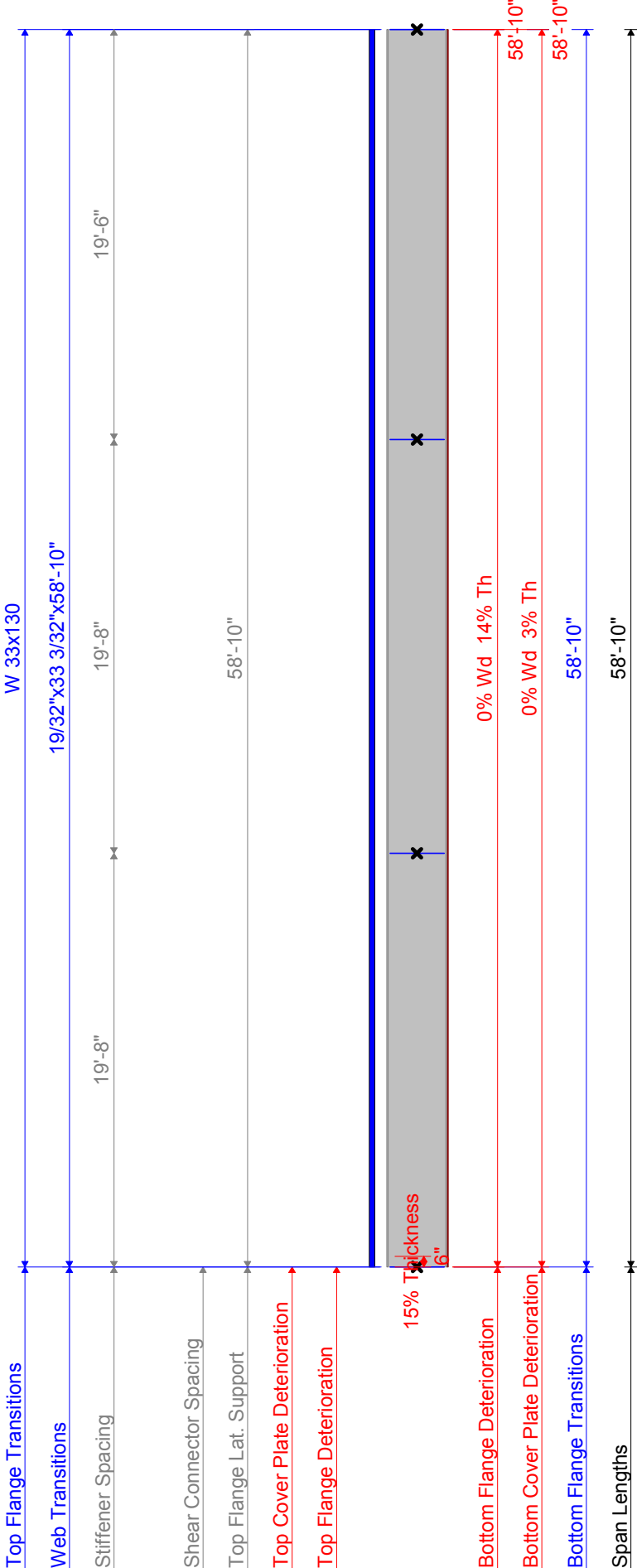
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MP 262.01 - North Main Street over 90 IX - Span 2

North Main Street / 90 IX

07/20/17





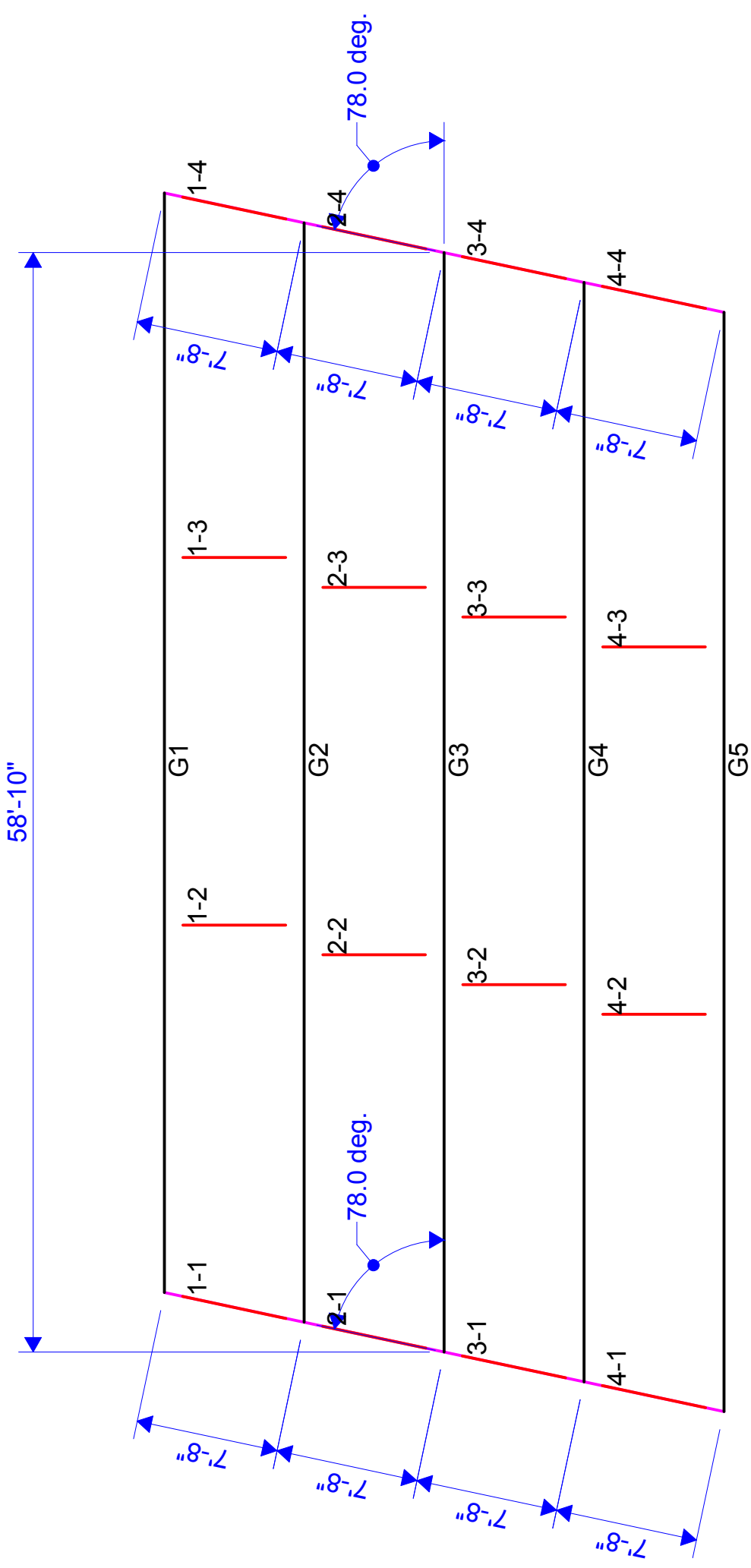
- Notes:
- * All flange length dimensions are horiz. (length along flange may differ).
 - * Transverse stiffener pairs shown in red.
 - * Single transverse stiffener shown in blue.
 - * Bearing stiffeners shown in green.
 - * Dimensioning starts and ends at CL bearings.
 - * X denotes cross frame locations.

5512790

MP 262.01 - North Main Street over 90 IX - Span 3

North Main Street / 90 IX

07/20/17

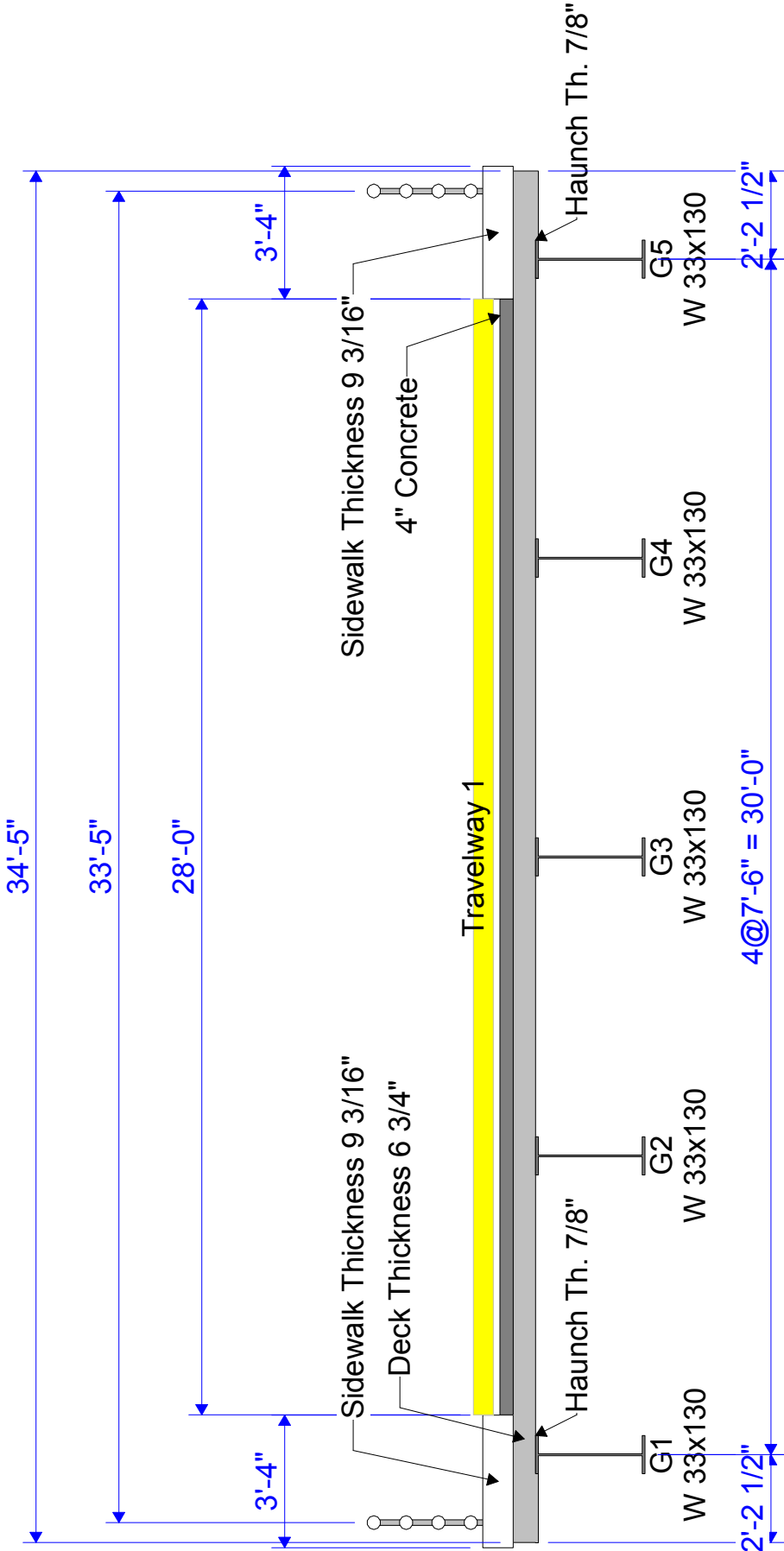


5512790

MP 262.01 - North Main Street over 90 IX - Span 3

North Main Street / 90 IX

07/20/17

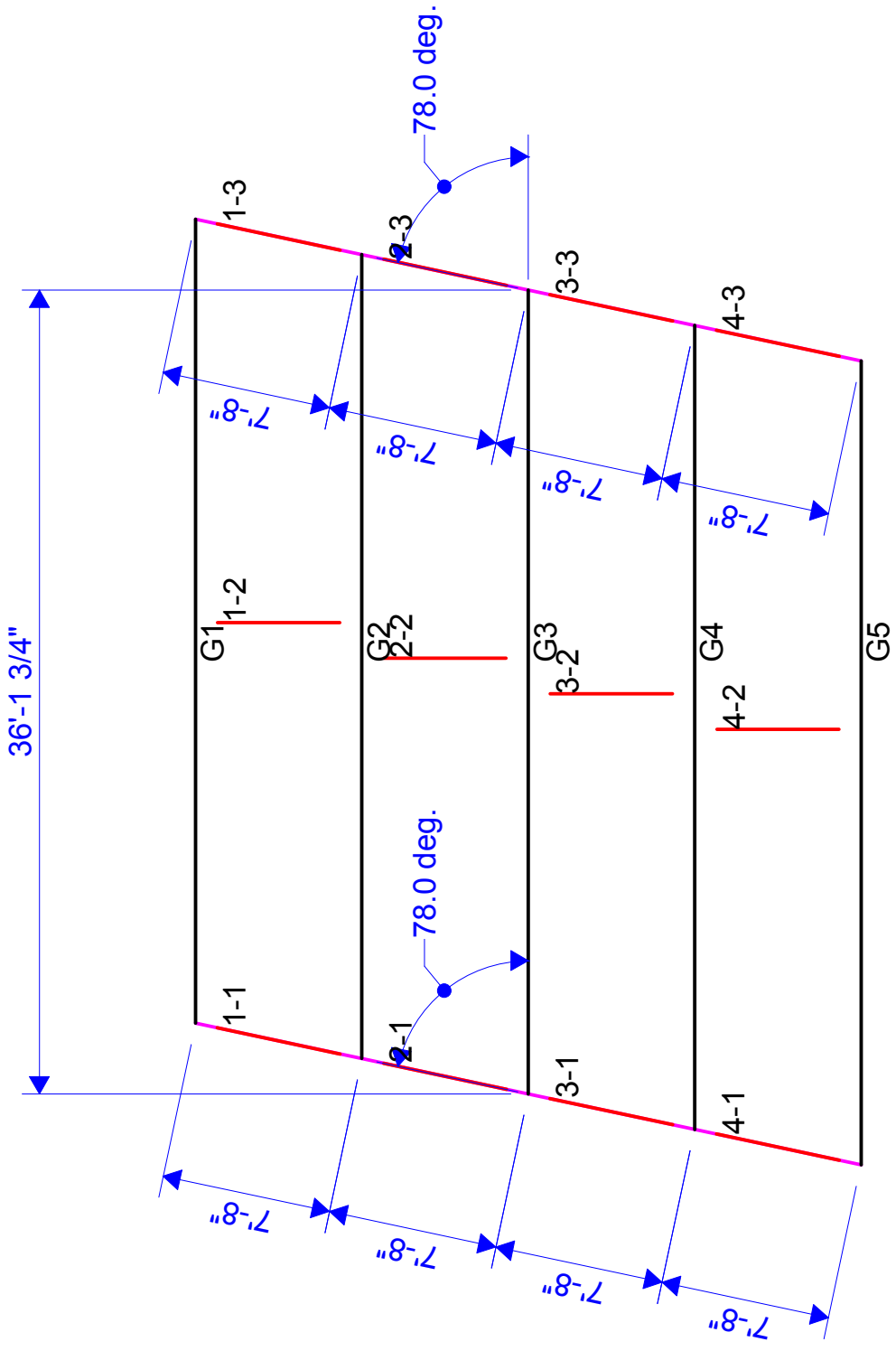


5512790

MP 262.01 - North Main Street over 90 IX - Span 4

North Main Street / 90 IX

07/20/17

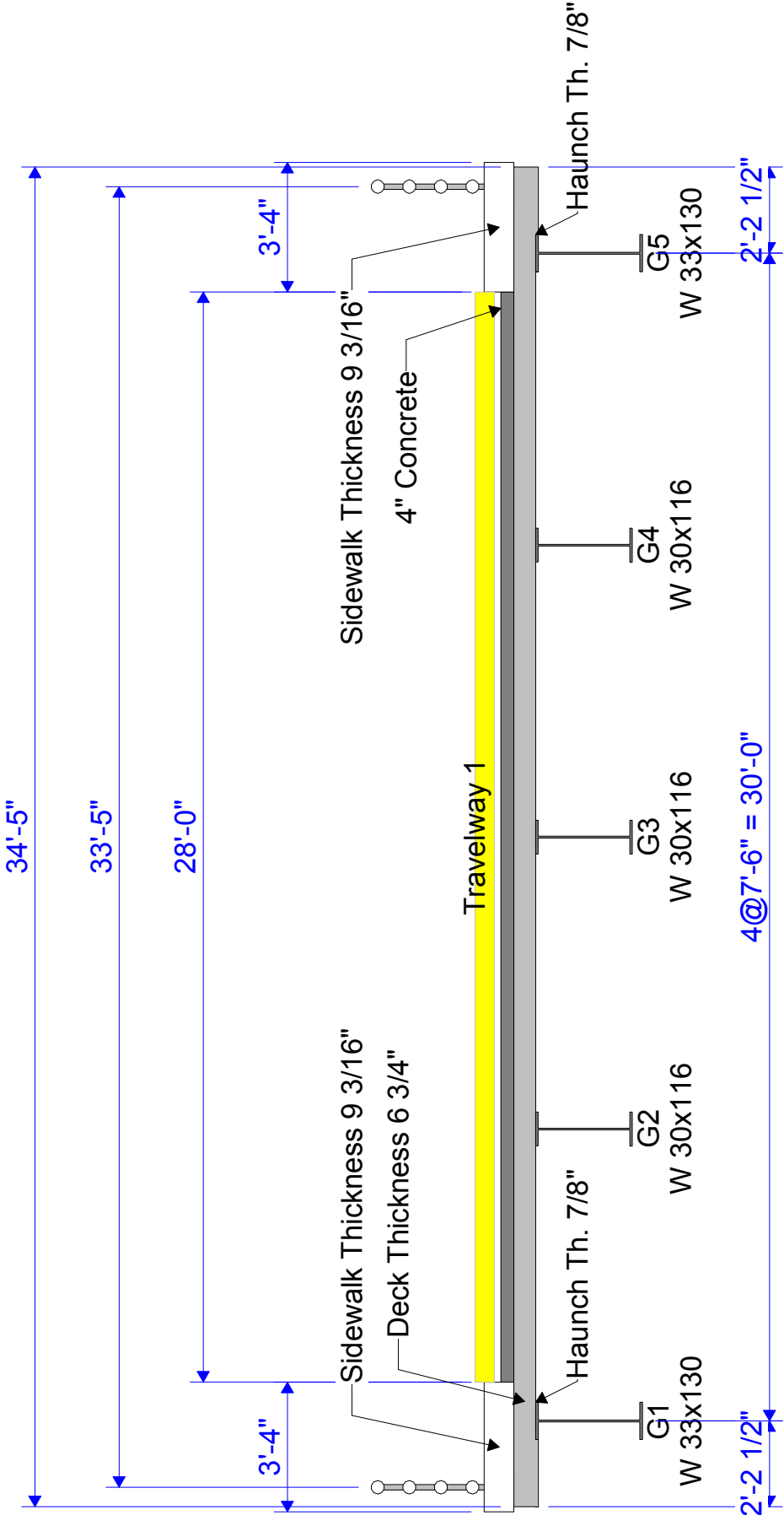


5512790

MP 262.01 - North Main Street over 90 IX - Span 4

North Main Street / 90 IX

07/20/17



VIRTIS INPUT

Username: BrR

Date: Thursday, July 27, 2017 15:29:40

Bridge ID 5512790 MP 262.01 - North Main Street over 90 IX

NBI Structure ID (8): 5512790

Description: Original analysis by Clark Patterson Assoc. - 2/04.

Reviewed by DiDonato Associates - 11/06, 7/08, 7/10.

Reviewed by CHA - 8/12, 10/14, 8/15.

Reviewed by WSA Group, PE-PC - 7/17.

HS-20 design load.

P/T rods added to capbeams (end floorbeams) in 1996, unratable in Virtis.

Level 1 Load Rating prepared in 1994.

Steel cap beams control rating.

H20 Inventory = 17.8 Tons.

H20 Operating = 30.1 Tons.

Bridge is posted for 18 Ton load (removed in 2011).

2010 Notes:

- None.

2012 Notes:

- Level 1 for capbeams performed in 2011.

H20 Inv: 33.0 tons

H20 Oper: 48.8 tons.

- Concrete strength revised based on year built.

- Typical section adjusted to account for sidewalk overhang.

- Sidewalk thickness adjusted. Remaining thickness put into stage 1 & 2 member loads for G1.

- Superstructure Loads: Span 1 & 4 stage 2 loads changed to tributary distribution. Load cases for sidewalk and railing reassigned.

- G2 Live load distribution for shear adjusted & G3 added due to higher factor.

- Span 2 and 3 interior girders corrected to W33x130.

- Span 1 & 4 lateral support revised.

2014 Notes:

- Rating engine changed to AASHTO LFD.

- Railing load revised.

- Sidewalk thickness revised to include the DC2 portion of the keyway, weighted average used. DC2 keyway member load removed.

- Conn. angles added as an equivalent partial height plate.

- Additional self load revised.

- G2 & G3 cover plate ranges revised in Spans 2 & 3 to account for tapered ends.

- Composite deck thicknesses revised due to spalling in Spans 2 & 3. See member alt. description for more info.

- Section loss added to bottom flanges and cover plates for all girders in Spans 2 & 3.

2015 Notes:

- Web section loss added, flange loss revised.

- Deck spalling revised.

2017 Notes:

- Computed fascia girders live load distribution factors using Lever Rule only.

Description

Location: Lenox
Total Length: 195.97 *(ft)*
Facility Carried: North Main Street
Route Number:
Feature Intersected: 90 IX
Mi Post: 262.01 *(mi)*
Units: US Customary
Year Built: 1953
Recent ADTT: 0

District:

County:

Owner:

National Highway System:

Functional Class:

Global Reference Point

X Coordinate: 0.000 *(ft)*
Y Coordinate: 0.000 *(ft)*
Elevation: *(ft)*
Longitude: *(Degrees)*
Latitude: *(Degrees)*

Materials

Structural Steel

Name: **ASTM A7**
Description: **Fy = 33 ksi**
Specified minimum yield strength (Fy): 33.000 *(ksi)*
Specified minimum tensile strength (Fu): 60.000 *(ksi)*
Coefficient of thermal expansion: *(1/F)*
Density: 0.4900 *(kcf)*
Modulus of elasticity (E): 29000.00 *(ksi)*

Concrete

Name: **Unknown strength concrete prior to 1959**
Description: **2.5 ksi**
Specified compressive strength at 28 days (f'c): 2.500 *(ksi)*
Initial specified compressive strength (f'ci): *(ksi)*
Coefficient of thermal expansion: 0.0000060000 *(1/F)*
Density (for dead loads): 0.150 *(kcf)*
Density (for modulus of elasticity): 0.145 *(kcf)*
Modulus of elasticity (Ec): 2880.95 *(ksi)*
Poisson's ratio: 0.200
Modulus of rupture: 0.379 *(ksi)*
Shear factor:

Composition of concrete:
Initial modulus of elasticity (Eci):

Normal
0.00 (ksi)

Reinforcing Steel

Name: **Unknown steel prior to 1954**
Description: 33 ksi reinforcing steel
Specified yield strength (Fy): 33.000 (ksi)
Modulus of elasticity (Es): 29000.00 (ksi)
Ultimate strength (Fu): 90.000 (ksi)
Type: Plain

No prestressing strand materials.

No timber materials.

Beam Shapes

Steel Shapes

Steel Angles

Name: **L 7x4x0.4375**
Description: L 7x4x0.4375 from AISC 5th Edition (1946-1962)
Angle size 1: 7.0000 (in)
Angle size 2: 4.0000 (in)
Thickness: 0.4375 (in)
k: 0.9375 (in)
Xyy: 0.8900 (in)
Yxx: 2.3900 (in)
tan(tetha): 0.337
Cross sectional Area (A): 4.620 (in²)
Nominal load: 15.800 (lb/ft)
Moment of Inertia Ixx: 23.700 (in⁴)
Moment of Inertia Iyy: 5.800 (in⁴)
Rzz: 0.8800 (in)

No steel channels.

Steel I Shapes

Name: **W 30x116**
Description: W 30x116 from AISC 5th Edition Tables (1946-1962)
Depth (d): 30.0000 (in)
Flange width (bf): 10.5000 (in)
Flange thickness (tf): 0.8500 (in)
Web thickness (tw): 0.5640 (in)
k: 1.5625 (in)

k1:	1.0000 (in)
Cross sectional area:	34.130 (in ²)
Nominal load:	116.000 (lb/ft)
Ixx:	4919.100 (in ⁴)
Iyy:	153.200 (in ⁴)
Zx:	378.000 (in ³)
Zy:	49.200 (in ³)
Nominal Depth:	30.0000 (in)
Type:	W Shape
Name:	W 33x130
Description:	W 33x130 from AISC 5th Edition Tables (1946-1962)
Depth (d):	33.1000 (in)
Flange width (bf):	11.5100 (in)
Flange thickness (tf):	0.8550 (in)
Web thickness (tw):	0.5800 (in)
k:	1.6875 (in)
k1:	1.0625 (in)
Cross sectional area:	38.260 (in ²)
Nominal load:	130.000 (lb/ft)
Ixx:	6699.000 (in ⁴)
Iyy:	201.400 (in ⁴)
Zx:	467.000 (in ³)
Zy:	59.500 (in ³)
Nominal Depth:	33.0000 (in)
Type:	W Shape
No steel structural tee shapes.	

Prestressed Shapes

No prestressed shapes.

Timber Shapes

No timber shapes.

Appurtenances

No concrete railings.

Railings

Name:	4-Rail Bridge Railing w/ Ped. Fencing
Description:	English - NYSDOT Old Standard
Effective Wind Height:	42.0000 (in)
Railing Load:	0.070 (kip/ft)
Distance From Edge to Centroid:	6.0000 (in)
Width:	12.0000 (in)

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Factors

No LFD Factors specified.

No LRFD Factors specified.

Bridge Alternatives Location 1

Reference Line

Reference Line Length: (ft)

Starting Station: (ft)

Bearing: N 90° 0' 0.00" E

Global Positioning

Distance: 0.000 (ft)

Offset: 0.000 (ft)

Elevation: (ft)

Structures

Name: Span 1

Description:

Structure Alternatives

Name: Inspection 2002

Description:

Superstructure Definition: Span 1

Structures

Name: Span 2

Description:

Structure Alternatives

Name: Inspection 2002

Description:

Superstructure Definition: Span 2

Structures

Name: Span 3

Description:

Structure Alternatives

Name: Span 3

Description:

Superstructure Definition: Span 3

Structures

Name: Span 4

Description:

Structure Alternatives

Name: Span 4

Description:

Superstructure Definition: Span 4

Superstructure Definition Span 1

Definition

Units: US Customary

Number of spans: 1

Number of girders: 5

Length

Span (ft)

1 36.1510

Frame Structure Simplified Definition:

Support Frame Connection

1

2

Girder Spacing Display Type: Perpendicular

Average Humidity: (%)

Analysis

Default Library Factors

Factor Override

Analysis Module

Analysis Method: ASD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFR

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: Distribution Factors

Analysis Module:

Analysis Module Component:

Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Structure Framing Plan Details

Layout

	Skew
Support	(Degrees)
1	12.0000
2	12.0000

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start	End
	(ft)	(ft)
1	7.5000	7.5000
2	7.5000	7.5000
3	7.5000	7.5000
4	7.5000	7.5000

Diaphragms

Girder Bay 1

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Girder Bay 2

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	

18.00	19.59	0.00	1	
36.15	36.15	0.00	1	
<i>Girder Bay 3</i>				
Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Girder Bay 4

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Structure Typical Section

Deck

Left start width:	17.21 (ft)
Left end width:	17.21 (ft)
Right start width:	17.21 (ft)
Right end width:	17.21 (ft)
Left start overhang:	2.21 (ft)
Left end overhang:	2.21 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	6.7500 (in)
Deck crack control parameter:	(kip/in)
Sustained modular ratio factor:	3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
4-Rail Br...	DC2		Left Ed...	0.00	0.00	Right
4-Rail Br...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
40.0000	9.1900	Unknown...	DC2		Left Ed...	-0.13 ...
40.0000	9.1900	Unknown...	DC2		Right E...	-0.13 ...

Lane Position

Offset Left Start:	-14.00 (ft)
Offset Left End:	-14.00 (ft)
Offset Right Start:	14.00 (ft)
Offset Right End:	14.00 (ft)

Wearing Surface

Wearing surface material:	Concrete
Description:	Overlay
Wearing surface thickness:	4.0000 (in)

Wearing surface density: 150.000 *(pcf)*
Load case: DW

Load Case Description

Load Case Name	Description	Stage	Type	Time <i>(Days)</i>
DC1	DC acting on non-comp...	Non-composite (Sta...		D,DC
DC2	DC acting on long-ter...	Composite (long te...		D,DC
DW	DW acting on long-ter...	Composite (long te...		D,DW
Sidewalk Keyway	Additional strip of d...	Non-composite (Sta...		D,DC

Superstructure Loads

Uniform Temperature

Load Case:

Temperature rise: *(F)*

Temperature fall: *(F)*

Gradient Temperature

Load Case:

Temperature value T1: *(F)*

Temperature value T2: *(F)*

Temperature value T3: *(F)*

Wind

Load Case:

Design Pressure: *(psf)*

Wind Load Path: Truss action

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area

Stage 2 Dead Load Distribution: Tributary Area

Stiffener Definitions

Transverse Stiffeners

Name: Conn. (equiv. plate) (single)

Stiffener number: Single

Plate Width: 7.0000 *(in)*

Plate Thickness: 0.4380 *(in)*

Material: ASTM A7

Top Gap: 1.0000 *(in)*

Bottom Gap: 1.0000 *(in)*

Top Weld:

Web Weld:

Bottom Weld:

Name: Conn. (equiv. plate) (pair)

Stiffener number: Pair

Plate Width: 7.0000 *(in)*

Plate Thickness: 0.4380 *(in)*

Material: ASTM A7

Top Gap: 1.0000 *(in)*

Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:
No prestress stress limits.

No prestress properties.

No vertical shear reinforcement definitions.

No horizontal shear reinforcement definitions.

Member G1

Link with: None

Description:

Existing: G-1 - Additional self load is for diaphragms.

Web Section Loss:

Use 2015 G5 d-meter reading "4" (0.394") for 6" height, reading "5" (0.570") for remaining height. The weighted average loss is 7.2%, say 10%.

Current: G-1 - Additional self load is for diaphragms.

Web Section Loss:

Use 2015 G5 d-meter reading "4" (0.394") for 6" height, reading "5" (0.570") for remaining height. The weighted average loss is 7.2%, say 10%.

Number of Spans: 1

Span Number	Span Length (ft)
1	36.151000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	36.15	0.131	0.131	Sidewalk K...

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				

Support ConstraintsGeneral

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-1

Description: Additional self load is for diaphragms.

Web Section Loss:

Use 2015 G5 d-meter reading "4" (0.394") for 6" height, reading "5" (0.570") for remaining height. The weighted average loss is 7.2%, say 10%.

Description

Material Type: Steel
 Girder Type: Rolled
 Member units: US Customary
 Girder property input method: Schedule based
 Left end X: 5.0000 (in)
 Right end X: 11.0000 (in)
 Additional Self Load: 0.010 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: BRASS ASD
 Analysis Module Component:
 Properties:

Analysis Method: LFD
 Analysis Module: AASHTO LFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFD
 Analysis Module: BRASS LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: BRASS LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)				
Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.277	0.600	1.277	0.400
Multi-Lane	1.277	0.600	1.277	0.800

Girder Profile

Shape

Shape: W 33x130
Distance: 0.00 (ft)
Length: 36.15 (ft)
Material: ASTM A7

Deck Profile

Haunch Profile

Haunch Type: Flange edges

Embedded flange: TRUE

Distance (ft)	Length (ft)	Z1 (in)	Z2 (in)	Z3 (in)	Z4 (in)	Y1 (in)	Y2 (in)
0.00	36.15	0.0000	0.0000	20.7500	20.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Points of Interest

Distance from left most support: 36.05 (ft)

Side: Right

Transverse Stiffeners

Override Schedule: FALSE

Stiffener spacing: (in)

Stiffener width: (in)

Stiffener thickness: (in)

Material: ASTM A7

Stiffener number: Single

Stiffener type: Plate

Other Stiffeners

Bearing Stiffener

Override Schedule: FALSE

Stiffener width: (in)

Stiffener thickness: (in)

Material: ASTM A7

Clip: (in)

Number of pairs:

Pair spacing: (in)
 Attachment Type: Welds
Longitudinal Stiffener
 Override Schedule: FALSE
 Stiffener width: (in)
 Stiffener thickness: (in)
 Material: ASTM A7
 Distance from flange to stiffener: (in)
 Distance measured from: Top Flange
Fatigue
 Number of cycles: 0
Bracing
 Deck provides lateral support:
 Override diaphragm schedule: FALSE
 Distance to left diaphragm: (ft)
 Distance to right diaphragm: (ft)
 Diaphragm at this location: FALSE
ASD
 Compression flange unsupported length: (ft)
 Tension Field Action Ignore combined shear and bending
Riveted Section
 Net moment of inertia: (in⁴)
 Distance to centroid: (in)
 Net area of web: (in²)
 Top plate allowable shear: (ksi)
 Bottom plate allowable shear: (ksi)
 Percent area top flange: (%)
 Percent area bottom flange: (%)

Web Deterioration

Thickness	Start	Length
Loss	Distance	
(%)	(ft)	(ft)
10.0	35.65	0.50

Member G2

Link with: None

Description:

Existing: G-2 - Additional self load is for diaphragms.

Current: G-2 - Additional self load is for diaphragms.

Number of Spans: 1

Span Span Length

Number	(ft)
1	36.151000

Support Frame Connection

1

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-2

Description: Additional self load is for diaphragms.

Description

Material Type: Steel
 Girder Type: Rolled
 Member units: US Customary
 Girder property input method: Schedule based
 Left end X: 5.0000 (in)
 Right end X: 3.5000 (in)
 Additional Self Load: 0.020 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: BRASS ASD
 Analysis Module Component:
 Properties:

Analysis Method: LFD
 Analysis Module: AASHTO LFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFD
 Analysis Module: BRASS LRFD
 Analysis Module Component:

Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

Inventory Operating

Structural steel

Concrete

PS Concrete Comp.

PS Concrete Tens.

PS Moment Cap.

Reinforcement

Bearing Stiffener

Stirrup

Timber

NA

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes		Shear at		
Loaded	Shear	Supports	Moment	Deflection

1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.467	1.364	0.800

Girder Profile

Shape

Shape: W 30x116

Distance: 0.00 *(ft)*

Length: 36.15 *(ft)*

Material: ASTM A7

Deck Profile

Bracing Ranges

Lateral Support

Distance Length

(ft) *(ft)*

0.00 36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance <i>(ft)</i>	Number	Spacing <i>(in)</i>
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	19.59	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Member G3

Link with: None

Description:

Existing: G-3 - Additional self load is for diaphragms.

Current: G-3 - Additional self load is for diaphragms.

Number of Spans: 1

Span Span Length

Number *(ft)*

1 36.151000

Support Frame Connection

1

2

Pedestrian load: 0.000 *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-3

Description: Additional self load is for diaphragms.

Description

Material Type: Steel
Girder Type: Rolled
Member units: US Customary
Girder property input method: Schedule based
Left end X: 5.0000 (in)
Right end X: 3.5000 (in)
Additional Self Load: 0.020 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: BRASS ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:

Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

	D i s t r i b u t i o n F a c t o r (Wheels)			
Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.667	1.364	0.800

Girder Profile

Shape
 Shape: W 30x116
 Distance: 0.00 *(ft)*
 Length: 36.15 *(ft)*
 Material: ASTM A7

Deck Profile

Bracing Ranges

Lateral Support

Distance	Length
<i>(ft)</i>	<i>(ft)</i>
0.00	36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	<i>(ft)</i>		<i>(in)</i>
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	19.59	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Member G4

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span	Span Length
------	-------------

Number	<i>(ft)</i>
1	36.151000

Support	Frame Connection
---------	------------------

1

2

Pedestrian load: *(lb/ft)*

Member G5

Link with: G1

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	36.151000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Superstructure Definition Span 2

Definition

Units: US Customary

Number of spans: 1

Number of girders: 5

Length

Span	(ft)
1	58.8330

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular

Average Humidity: (%)

Analysis

Default Library Factors

Factor Override

Analysis Module

Analysis Method: ASD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFR

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Structure Framing Plan Details

Layout

Support Skew
(Degrees)

1	12.0000
2	12.0000

Girder Spacing Orientation: Perpendicular

Girder	Girder Spacing
Bay	Start End
	(ft) (ft)
1	7.5000 7.5000
2	7.5000 7.5000
3	7.5000 7.5000
4	7.5000 7.5000

Diaphragms

Girder Bay 1

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
19.67	21.26	0.00	1	
19.67	21.26	19.67	1	
58.83	58.83	0.00	1	

Girder Bay 2

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
19.67	21.26	0.00	1	
19.67	21.26	19.67	1	
58.83	58.83	0.00	1	

Girder Bay 3

Distance	Distance	Diaphragm	Number of	Diaphragm
----------	----------	-----------	-----------	-----------

Left Girder (ft)	Right Girder (ft)	Spacing (ft)	Spaces	Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	19.67	1	
19.67	21.26	0.00	1	
58.83	58.83	0.00	1	

Girder Bay 4

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	19.67	1	
19.67	21.26	0.00	1	
58.83	58.83	0.00	1	

Structure Typical Section

Deck

Left start width:	17.21 (ft)
Left end width:	17.21 (ft)
Right start width:	17.21 (ft)
Right end width:	17.21 (ft)
Left start overhang:	2.21 (ft)
Left end overhang:	2.21 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	6.7500 (in)
Deck crack control parameter:	(kip/in)
Sustained modular ratio factor:	3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
4-Rail Br...	DC2		Left Ed...	0.00	0.00	Right
4-Rail Br...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
40.0000	9.1900	Unknown...	DC2		Left Ed...	-0.13 ...
40.0000	9.1900	Unknown...	DC2		Right E...	-0.13 ...

Lane Position

Offset Left Start:	-14.00 (ft)
Offset Left End:	-14.00 (ft)
Offset Right Start:	14.00 (ft)
Offset Right End:	14.00 (ft)

Wearing Surface

Wearing surface material:	Concrete
Description:	Overlay
Wearing surface thickness:	4.0000 (in)
Wearing surface density:	150.000 (pcf)
Load case:	DW

Load Case Description

Load Case Name	Description	Stage	Type	Time (Days)
DC1	DC acting on non-comp...	Non-composite (Sta...		D,DC
DC2	DC acting on long-ter...	Composite (long te...		D,DC
DW	DW acting on long-ter...	Composite (long te...		D,DW
Sidewalk Keyway	Additional strip of d...	Non-composite (Sta...		D,DC

Superstructure Loads

Uniform Temperature

Load Case:

Temperature rise: (F)

Temperature fall: (F)

Gradient Temperature

Load Case:

Temperature value T1: (F)

Temperature value T2: (F)

Temperature value T3: (F)

Wind

Load Case:

Design Pressure: (psf)

Wind Load Path: Truss action

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area

Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Transverse Stiffeners

Name: Conn. (equiv. plate) (single)
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 1.0000 (in)
Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Conn. (equiv. plate) (pair)
Stiffener number: Pair
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 1.0000 (in)
Bottom Gap: 1.0000 (in)
Top Weld:

Web Weld:

Bottom Weld:

No prestress stress limits.

No prestress properties.

No vertical shear reinforcement definitions.

No horizontal shear reinforcement definitions.

Member G1

Link with: None

Description:

Existing: G-1 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the worst spalling is 1.5' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left fascia. Weighted average spall depth for the girder's effective width is 0.94", say 1". Therefore, the effective deck thickness is now 6.75" - 1" = 5.75".

Web Section Loss:

Use 2015 G5 d-meter reading "3" (0.405") for 6.5" height, reading "4" (0.526") for remaining height. The weighted average loss is 13.4%, say 15%.

Current: G-1 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the worst spalling is 1.5' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left fascia. Weighted average spall depth for the girder's effective width is 0.94", say 1". Therefore, the effective deck thickness is now 6.75" - 1" = 5.75".

Web Section Loss:

Use 2015 G5 d-meter reading "3" (0.405") for 6.5" height, reading "4" (0.526") for remaining height. The weighted average loss is 13.4%, say 15%.

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	58.83	0.131	0.131	Sidewalk K...

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-1

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the worst spalling is 1.5' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left fascia. Weighted average spall depth for the girder's effective width is 0.94", say 1". Therefore, the effective deck thickness is now 6.75" - 1" = 5.75".

Web Section Loss:

Use 2015 G5 d-meter reading "3" (0.405") for 6.5" height, reading "4" (0.526") for remaining height. The weighted average loss is 13.4%, say 15%.

Description

Material Type:	Steel
Girder Type:	Rolled
Member units:	US Customary
Girder property input method:	Schedule based
Left end X:	11.0000 (in)
Right end X:	11.0000 (in)
Additional Self Load:	0.010 (kip/ft)
Additional Self Load %:	(%)

Analysis Module

Analysis Method:	ASD
Analysis Module:	BRASS ASD
Analysis Module Component:	
Properties:	

Analysis Method:	LFD
------------------	-----

Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.277	0.600	1.277	0.400
Multi-Lane	1.277	0.600	1.277	0.800

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 58.83 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		8.0000	8.0000	0.5000	0.00	58.83 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n (ft)	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	58.83		5.7500	60.9996	71.4996
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	58.83	Composite			

Haunch Profile

Haunch Type: Flange edges

Embedded flange: TRUE

Distance (ft)	Length (ft)	Z1 (in)	Z2 (in)	Z3 (in)	Z4 (in)	Y1 (in)	Y2 (in)
0.00	58.83	0.0000	0.0000	20.7500	20.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
---------------	-------------

0.00 58.83

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations

Points of Interest

Distance from left most support: 0.10 (ft)

Side: Right

Transverse Stiffeners

Override Schedule: FALSE

Stiffener spacing: (in)

Stiffener width: (in)

Stiffener thickness: (in)

Material: ASTM A7

Stiffener number: Single

Stiffener type: Plate

Other Stiffeners

Bearing Stiffener

Override Schedule: FALSE

Stiffener width: (in)

Stiffener thickness: (in)

Material: ASTM A7

Clip: (in)

Number of pairs:

Pair spacing: (in)

Attachment Type: Welds

Longitudinal Stiffener

Override Schedule: FALSE

Stiffener width: (in)

Stiffener thickness: (in)

Material: ASTM A7

Distance from flange to stiffener: (in)

Distance measured from: Top Flange

Fatigue

Number of cycles: 0

Bracing

Deck provides lateral support:

Override diaphragm schedule: FALSE

Distance to left diaphragm: (ft)

Distance to right diaphragm: (ft)

Diaphragm at this location: FALSE

ASD

Compression flange unsupported length: (ft)

Tension Field Action

Ignore combined shear and bending

Riveted Section

Net moment of inertia: (in⁴)

Distance to centroid: (in)

Net area of web: (in²)

Top plate allowable shear: (ksi)

Bottom plate allowable shear: (ksi)

Percent area top flange: (%)

Percent area bottom flange: (%)

Top Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)

Bottom Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)
0.0	14.0	0.00	58.83

Web Deterioration

Thickness	Start	Length
Loss	Distance	
(%)	(ft)	(ft)
15.0	0.00	0.50

Top Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)

Bottom Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)
1 : 0.00 - 58.83	0.0	3.0	0.00	58.83

Member G2

Link with: None

Description:

Existing: G-2 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Location of worst spalling is 2' wide x 3" deep in Bay 3 & 1.25' wide x 2" deep in Bay 4. Weighted average spall depth for the girder's effective width is 1.26", use 1.25". Therefore, the effective deck thickness is now 6.75" - 1.25" =

5.5".

Current: G-2 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Location of worst spalling is 2' wide x 3" deep in Bay 3 & 1.25' wide x 2" deep in Bay 4. Weighted average spall depth for the girder's effective width is 1.26", use 1.25". Therefore, the effective deck thickness is now 6.75" - 1.25" = 5.5".

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-2

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Location of worst spalling is 2' wide x 3" deep in Bay 3 & 1.25' wide x 2" deep in Bay 4. Weighted average spall depth for the girder's effective width is 1.26", use 1.25". Therefore, the effective deck thickness is now 6.75" - 1.25" = 5.5".

Description

Material Type:	Steel
Girder Type:	Rolled

Member units: US Customary
 Girder property input method: Schedule based
 Left end X: 3.5000 (in)
 Right end X: 3.5000 (in)
 Additional Self Load: 0.020 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: BRASS ASD
 Analysis Module Component:
 Properties:

Analysis Method: LFD
 Analysis Module: AASHTO LFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFD
 Analysis Module: BRASS LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: BRASS LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
 Analysis Module:
 Analysis Module Component:
 Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.467	1.364	0.800

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 58.83 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		3.0000	8.0000	0.8750	11.92	1.38 ASTM A7
1 (Bot...		8.0000	8.0000	0.8750	13.29	32.25 ASTM A7
1 (Bot...		8.0000	3.0000	0.8750	45.54	1.38 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n (ft)	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	58.83		5.5000	66.0000	90.0000
	10.1...					

Shear Connectors

Start Connector Number Number of Transverse

Distance (ft)	Length (ft)	Name	per Row	Spaces	Spacing (in)
0.00	58.83	Composite			

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	58.83

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	21.26	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	40.93	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations

Top Flange Deterioration

Width	Thickness	Start	Length
Loss (%)	Loss (%)	Distance (ft)	(ft)

Bottom Flange Deterioration

Width	Thickness	Start	Length
Loss (%)	Loss (%)	Distance (ft)	(ft)
0.0	13.0	0.00	58.83

Top Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss (%)	Loss (%)	Distance (ft)	(ft)

Bottom Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss (%)	Loss (%)	Distance (ft)	(ft)
1 : 11.92 - 13.30	0.0	4.0	11.92	1.38
1 : 13.29 - 45.54	0.0	4.0	13.29	32.25
1 : 45.54 - 46.92	0.0	4.0	45.54	1.38

Member G3

Link with: None

Description:

Existing: G-3 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall in Bay 2 is 1.75' wide x 2" deep. Weighted average spall depth for the girder's effective width is 0.52", use 1/2". Therefore, the effective deck thickness is now 6.75" - 1/2" = 6.25".

Current: G-3 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall in Bay 2 is 1.75' wide x 2" deep. Weighted average spall depth for the girder's effective width is 0.52", use 1/2". Therefore, the effective deck thickness is now 6.75" - 1/2" = 6.25".

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-3

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall in Bay 2 is 1.75' wide x 2" deep. Weighted average spall depth for the girder's effective width is 0.52", use 1/2". Therefore, the effective deck thickness is now 6.75" - 1/2" = 6.25".

Description

Material Type: Steel
Girder Type: Rolled
Member units: US Customary
Girder property input method: Schedule based
Left end X: 3.5000 (in)
Right end X: 3.5000 (in)
Additional Self Load: 0.020 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: BRASS ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		

Stirrup
Timber

NA

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.667	1.364	0.800

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 58.83 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		3.0000	8.0000	0.8750	11.92	1.38 ASTM A7
1 (Bot...		8.0000	8.0000	0.8750	13.29	32.25 ASTM A7
1 (Bot...		8.0000	3.0000	0.8750	45.54	1.38 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n (ft)	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	58.83		6.2500	75.0000	90.0000
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	58.83	Composite			

Bracing Ranges**Lateral Support**

Distance (ft)	Length (ft)
0.00	58.83

Stiffener Ranges**Transverse Stiffener Ranges (Location)**

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	21.26	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	40.93	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations**Top Flange Deterioration**

Width	Thickness	Start Distance (ft)	Length (ft)
Loss (%)	Loss (%)		

Bottom Flange Deterioration

Width	Thickness	Start Distance (ft)	Length (ft)
Loss (%)	Loss (%)		
0.0	13.0	0.00	58.83

Top Cover Plate Deterioration

Cover Plate	Width Loss (%)	Thickness Loss (%)	Start Distance (ft)	Length (ft)
----------------	----------------------	--------------------------	---------------------------	----------------

Bottom Cover Plate Deterioration

Cover Plate	Width Loss (%)	Thickness Loss (%)	Start Distance (ft)	Length (ft)
1 : 11.92 - 13.30	0.0	4.0	11.92	1.38
1 : 13.29 - 45.54	0.0	4.0	13.29	32.25
1 : 45.54 - 46.92	0.0	4.0	45.54	1.38

Member G4

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G1

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Superstructure Definition Span 3

Definition

Units: US Customary

Number of spans: 1

Number of girders: 5

Span	Length (ft)
1	58.8330

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular

Average Humidity: (%)

Analysis

Default Library Factors

Factor Override

Analysis Module

Analysis Method: ASD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFR

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: Distribution Factors

Analysis Module:

Analysis Module Component:

Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Structure Framing Plan Details

Layout

Skew

Support (Degrees)

1 12.0000

2 12.0000

Girder Spacing Orientation: Perpendicular

Girder Girder Spacing

Bay Start End
(ft) (ft)

1	7.5000	7.5000
2	7.5000	7.5000
3	7.5000	7.5000
4	7.5000	7.5000

Diaphragms

Girder Bay 1

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	0.00	1	
19.67	21.26	19.67	1	
58.83	58.83	0.00	1	

Girder Bay 2

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	0.00	1	
19.67	21.26	19.67	1	
58.83	58.83	0.00	1	

Girder Bay 3

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	19.67	1	
19.67	21.26	0.00	1	
58.83	58.83	0.00	1	

Girder Bay 4

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
19.67	21.26	19.67	1	
19.67	21.26	0.00	1	
58.83	58.83	0.00	1	

Structure Typical Section

Deck

Left start width:	17.21 (ft)
Left end width:	17.21 (ft)
Right start width:	17.21 (ft)
Right end width:	17.21 (ft)
Left start overhang:	2.21 (ft)
Left end overhang:	2.21 (ft)

Deck (Cont'd)

Deck concrete: Unknown strength concrete prior to 1959

Total deck thickness: 6.7500 (in)
 Deck crack control parameter: (kip/in)
 Sustained modular ratio factor: 3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
4-Rail Br...	DC2		Left Ed...	0.00	0.00	Right
4-Rail Br...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
40.0000	9.1900	Unknown...	DC2		Left Ed...	-0.13 ...
40.0000	9.1900	Unknown...	DC2		Right E...	-0.13 ...

Lane Position

Offset Left Start: -14.00 (ft)
 Offset Left End: -14.00 (ft)
 Offset Right Start: 14.00 (ft)
 Offset Right End: 14.00 (ft)

Wearing Surface

Wearing surface material: Concrete
 Description: Overlay
 Wearing surface thickness: 4.0000 (in)
 Wearing surface density: 150.000 (pcf)
 Load case: DW

Load Case Description

Load Case Name	Description	Stage	Type	Time (Days)
DC1	DC acting on non-comp...	Non-composite (Sta...		D,DC
DC2	DC acting on long-ter...	Composite (long te...		D,DC
DW	DW acting on long-ter...	Composite (long te...		D,DW
Sidewalk Keyway	Additional strip of d...	Non-composite (Sta...		D,DC

Superstructure Loads

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area
 Stage 2 Dead Load Distribution: Uniformly to All Girders

Stiffener Definitions

Transverse Stiffeners

Name: Conn. (equiv. plate) (single)
 Stiffener number: Single
 Plate Width: 7.0000 (in)
 Plate Thickness: 0.4380 (in)
 Material: ASTM A7
 Top Gap: 1.0000 (in)
 Bottom Gap: 1.0000 (in)
 Top Weld:

Web Weld:
Bottom Weld:

Name: Conn. (equiv. plate) (pair)
Stiffener number: Pair
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 1.0000 (in)
Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

No prestress stress limits.

No prestress properties.

No vertical shear reinforcement definitions.

No horizontal shear reinforcement definitions.

Member G1

Link with: None

Description:

Existing: G-1 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the spalling is 3' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left overhang. Weighted average spall depth for the girder's effective width is 1.48", say 1.5". Therefore, the effective deck thickness is now 6.75" - 1.5" = 5.25".

Current: G-1 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the spalling is 3' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left overhang. Weighted average spall depth for the girder's effective width is 1.48", say 1.5". Therefore, the effective deck thickness is now 6.75" - 1.5" = 5.25".

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	58.83	0.131	0.131	Sidewalk K...

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-1

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say the spalling is 3' wide x 2" deep in Bay 1 & 1.5' wide x 1.5" average depth along the left overhang. Weighted average spall depth for the girder's effective width is 1.48", say 1.5". Therefore, the effective deck thickness is now 6.75" - 1.5" = 5.25".

Description

Material Type:	Steel
Girder Type:	Rolled
Member units:	US Customary
Girder property input method:	Schedule based
Left end X:	11.0000 (in)
Right end X:	11.0000 (in)
Additional Self Load:	0.010 (kip/ft)
Additional Self Load %:	(%)

Analysis Module

Analysis Method:	ASD
Analysis Module:	BRASS ASD
Analysis Module Component:	
Properties:	

Analysis Method:	LFD
Analysis Module:	AASHTO LFD

Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes Loaded	Shear	Shear at Supports	Moment	Deflection
1 Lane	0.600	0.600	0.600	0.400
Multi-Lane	0.600	0.600	0.600	0.800

Girder Profile

Shape

Shape: W 33x130
Distance: 0.00 (ft)
Length: 58.83 (ft)
Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		8.0000	8.0000	0.5000	0.00	58.83 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n (ft)	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	58.83		5.2500	57.9996	71.4996
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	58.83	Composite			

Haunch Profile

Haunch Type: Flange edges
Embedded flange: TRUE

Distance (ft)	Length (ft)	Z1 (in)	Z2 (in)	Z3 (in)	Z4 (in)	Y1 (in)	Y2 (in)
0.00	58.83	0.0000	0.0000	20.7500	20.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	58.83

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations

Top Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)

Bottom Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)
0.0	19.0	0.00	58.83

Top Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)

Bottom Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)
1 : 0.00 - 58.83	0.0	7.0	0.00	58.83

Member G2

Link with: None

Description:

Existing: G-2 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say spall in Bay 1 is 2.75' wide within the effective width x 2" deep and spall in Bay 2 is the effective Bay width x 2" deep. Weighted average spall depth for the girder's effective width is 1.81", say 1.75". Therefore, the effective deck thickness is now 6.75" - 1.75" = 5".

Current: G-2 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say spall in Bay 1 is 2.75' wide within the effective width x 2" deep and spall in Bay 2 is the effective Bay width x 2" deep. Weighted average spall depth for the girder's effective width is 1.81", say 1.75". Therefore, the effective

deck thickness is now $6.75'' - 1.75'' = 5''$.

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-2

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Say spall in Bay 1 is 2.75' wide within the effective width x 2" deep and spall in Bay 2 is the effective Bay width x 2" deep. Weighted average spall depth for the girder's effective width is 1.81", say 1.75". Therefore, the effective deck thickness is now $6.75'' - 1.75'' = 5''$.

Description

Material Type:	Steel
Girder Type:	Rolled
Member units:	US Customary
Girder property input method:	Schedule based
Left end X:	3.5000 (in)
Right end X:	3.5000 (in)
Additional Self Load:	0.020 (kip/ft)
Additional Self Load %:	(%)

Analysis Module

Analysis Method: ASD
Analysis Module: BRASS ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:

Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.467	1.364	0.800

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 58.83 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin	End	Thickness	Distance	Length	Material
	Width	Width				
	(in)	(in)	(in)	(ft)	(ft)	
1 (Bot...		3.0000	8.0000	0.8750	11.92	1.38 ASTM A7
1 (Bot...		8.0000	8.0000	0.8750	13.29	32.25 ASTM A7
1 (Bot...		8.0000	3.0000	0.8750	45.54	1.38 ASTM A7

Deck Profile

Deck Concrete

Material	Distance	Length	Total Thickness	Structural Thickness	Effective Width (Std)	Effective Width
(LRFD)	n					
	(ft)	(ft)	(in)	(in)	(in)	(in)
Unknown stren...	0.00	58.83		5.0000	60.0000	90.0000
	10.1...					

Shear Connectors

Start	Connector	Number	Number of	Transverse
Distance	Name	per Row	Spaces	Spacing
(ft)				(in)
0.00	Composite			

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	58.83

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	21.26	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	40.93	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations

Top Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)

Bottom Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)
0.0	20.0	0.00	58.83

Top Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)

Bottom Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)
1 : 11.92 - 13.30	0.0	2.0	11.92	1.38
1 : 13.29 - 45.54	0.0	2.0	13.29	32.25
1 : 45.54 - 46.92	0.0	2.0	45.54	1.38

Member G3

Link with: None

Description:

Existing: G-3 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall is the effective tributary width of Bay 3 x 2.5" deep. Weighted average spall depth for the girder's effective width is 1.25". Therefore,

the effective deck thickness is now $6.75'' - 1.25'' = 5.5''$.

Current: G-3 - Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall is the effective tributary width of Bay 3 x 2.5" deep. Weighted average spall depth for the girder's effective width is 1.25". Therefore, the effective deck thickness is now $6.75'' - 1.25'' = 5.5''$.

Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-3

Description: Additional self load is for diaphragms.

Composite deck thickness revised due to spalling. Spall is the effective tributary width of Bay 3 x 2.5" deep. Weighted average spall depth for the girder's effective width is 1.25". Therefore, the effective deck thickness is now $6.75'' - 1.25'' = 5.5''$.

Description

Material Type: Steel
Girder Type: Rolled
Member units: US Customary
Girder property input method: Schedule based

Left end X: 3.5000 (in)
Right end X: 3.5000 (in)
Additional Self Load: 0.020 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: BRASS ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
 Deck concrete: Unknown strength concrete prior to 1959
 Deck reinforcement: Unknown steel prior to 1954
 Welds:
 Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.667	1.364	0.800

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 58.83 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		3.0000	8.0000	0.8750	11.92	1.38 ASTM A7
1 (Bot...		8.0000	8.0000	0.8750	13.29	32.25 ASTM A7
1 (Bot...		8.0000	3.0000	0.8750	45.54	1.38 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n (ft)	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	58.83		5.5000	66.0000	90.0000
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
---------------------------	----------------	-------------------	-------------------	---------------------	-------------------------------

0.00 58.83 Composite

Bracing Ranges

Lateral Support

Distance	Length
(ft)	(ft)
0.00	58.83

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	(ft)		(in)
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	19.67	1	0.0000
Conn. (equiv. plat...	21.26	1	0.0000
Conn. (equiv. plat...	39.33	1	0.0000
Conn. (equiv. plat...	40.93	1	0.0000
Conn. (equiv. plat...	58.83	1	0.0000

Bearing Stiffener Locations

Top Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)

Bottom Flange Deterioration

Width	Thickness	Start	Length
Loss	Loss	Distance	
(%)	(%)	(ft)	(ft)
0.0	20.0	0.00	58.83

Top Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)

Bottom Cover Plate Deterioration

Cover	Width	Thickness	Start	Length
Plate	Loss	Loss	Distance	
	(%)	(%)	(ft)	(ft)
1 : 11.92 - 13.30	0.0	2.0	11.92	1.38
1 : 13.29 - 45.54	0.0	2.0	13.29	32.25
1 : 45.54 - 46.92	0.0	2.0	45.54	1.38

Member G4

Link with: G2

Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G1
Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	58.833000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Superstructure Definition Span 4

Definition

Units: US Customary
Number of spans: 1
Number of girders: 5

Span	Length (ft)
1	36.1510

Frame Structure Simplified Definition:

Support	Frame Connection
1	
2	

Girder Spacing Display Type: Perpendicular

Average Humidity: (%)

Analysis

Default Library Factors

Factor Override

Analysis Module

Analysis Method: ASD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFD

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: LRFR

Analysis Module:

Analysis Module Component:

Properties:

Analysis Method: Distribution Factors

Analysis Module:

Analysis Module Component:

Properties:

Default rating method: LFD

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Structure Framing Plan Details

Layout

Support Skew
 (Degrees)
1 12.0000
2 12.0000
Girder Spacing Orientation: Perpendicular

Girder	Girder Spacing	
Bay	Start	End
	(ft)	(ft)
1	7.5000	7.5000
2	7.5000	7.5000
3	7.5000	7.5000
4	7.5000	7.5000

Diaphragms

Girder Bay 1

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Girder Bay 2

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Girder Bay 3

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Girder Bay 4

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
18.00	19.59	0.00	1	
36.15	36.15	0.00	1	

Structure Typical Section

Deck

Left start width:	17.21 (ft)
Left end width:	17.21 (ft)
Right start width:	17.21 (ft)
Right end width:	17.21 (ft)
Left start overhang:	2.21 (ft)
Left end overhang:	2.21 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	6.7500 (in)
Deck crack control parameter:	(kip/in)
Sustained modular ratio factor:	3.000

Railing

Name	Load Case	Measure To	Measured From	Distance At Start	Distance At End	Front Face Orientation
4-Rail Br...	DC2		Left Ed...	0.00	0.00	Right
4-Rail Br...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
40.0000	9.1900	Unknown...	DC2		Left Ed...	-0.13 ...
40.0000	9.1900	Unknown...	DC2		Right E...	-0.13 ...

Lane Position

Offset Left Start:	-14.00 (ft)
Offset Left End:	-14.00 (ft)
Offset Right Start:	14.00 (ft)
Offset Right End:	14.00 (ft)

Wearing Surface

Wearing surface material:	Concrete
Description:	Overlay
Wearing surface thickness:	4.0000 (in)
Wearing surface density:	150.000 (pcf)
Load case:	DW

Load Case Description

Load Case Name	Description	Stage	Type (Days)	Time
DC1	DC acting on non-comp...	Non-composite (Sta...		D,DC
DC2	DC acting on long-ter...	Composite (long te...		D,DC
DW	DW acting on long-ter...	Composite (long te...		D,DW
Sidewalk Keyway	Additional strip of d...	Non-composite (Sta...		D,DC

Superstructure Loads

Uniform Temperature

Load Case:

Temperature rise:	(F)
Temperature fall:	(F)

Gradient Temperature

Load Case:

Temperature value T1:	(F)
Temperature value T2:	(F)
Temperature value T3:	(F)

Wind

Load Case:

Design Pressure:	(psf)
Wind Load Path:	Truss action

DL Distribution

Stage 1 Dead Load Distribution: Tributary Area

Stage 2 Dead Load Distribution: Tributary Area

Stiffener Definitions

Transverse Stiffeners

Name:	Conn. (equiv. plate) (single)
Stiffener number:	Single
Plate Width:	7.0000 (in)

Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 1.0000 (in)
Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Conn. (equiv. plate) (pair)
Stiffener number: Pair
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 1.0000 (in)
Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

No prestress stress limits.

No prestress properties.

No vertical shear reinforcement definitions.

No horizontal shear reinforcement definitions.

Member G1

Link with: None

Description:

Existing: G-1 - Additional self load is for diaphragms.

Current: G-1 - Additional self load is for diaphragms.

Number of Spans: 1

Span Number	Span Length (ft)
1	36.151000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	36.15	0.131	0.131	Sidewalk K...

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-1

Description: Additional self load is for diaphragms.

Description

Material Type: Steel
 Girder Type: Rolled
 Member units: US Customary
 Girder property input method: Schedule based
 Left end X: 11.0000 (in)
 Right end X: 5.0000 (in)
 Additional Self Load: 0.010 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: BRASS ASD
 Analysis Module Component:
 Properties:

Analysis Method: LFD
 Analysis Module: AASHTO LFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFD
 Analysis Module: BRASS LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: BRASS LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
 Analysis Module:
 Analysis Module Component:
 Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
 Deck concrete: Unknown strength concrete prior to 1959
 Deck reinforcement: Unknown steel prior to 1954
 Welds:
 Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)				
Lanes	Shear	Shear at	Moment	Deflection
Loaded		Supports		
1 Lane	1.277	0.600	1.277	0.400

Multi-Lane	1.277	0.600	1.277	0.800
------------	-------	-------	-------	-------

Girder Profile

Shape

Shape: W 33x130
 Distance: 0.00 *(ft)*
 Length: 36.15 *(ft)*
 Material: ASTM A7

Deck Profile

Haunch Profile

Haunch Type: Flange edges
 Embedded flange: TRUE

Distance	Length	Z1	Z2	Z3	Z4	Y1	Y2
<i>(ft)</i>	<i>(ft)</i>	<i>(in)</i>	<i>(in)</i>	<i>(in)</i>	<i>(in)</i>	<i>(in)</i>	<i>(in)</i>
0.00	36.15	0.0000	0.0000	20.7500	20.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance	Length
<i>(ft)</i>	<i>(ft)</i>
0.00	36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	<i>(ft)</i>		<i>(in)</i>
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Member G2

Link with: None

Description:

Existing: G-2 - Additional self load is for diaphragms.

Current: G-2 - Additional self load is for diaphragms.

Number of Spans: 1

Span	Span Length
Number	<i>(ft)</i>
1	36.151000

Support	Frame Connection
1	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-2

Description: Additional self load is for diaphragms.

Description

Material Type: Steel
 Girder Type: Rolled
 Member units: US Customary
 Girder property input method: Schedule based
 Left end X: 3.5000 (in)
 Right end X: 5.0000 (in)
 Additional Self Load: 0.020 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: BRASS ASD
 Analysis Module Component:
 Properties:

Analysis Method: LFD
 Analysis Module: AASHTO LFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFD
 Analysis Module: BRASS LRFD
 Analysis Module Component:

Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

Inventory Operating

Structural steel

Concrete

PS Concrete Comp.

PS Concrete Tens.

PS Moment Cap.

Reinforcement

Bearing Stiffener

Stirrup

Timber

NA

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

D i s t r i b u t i o n F a c t o r (Wheels)

Lanes		Shear at		
Loaded	Shear	Supports	Moment	Deflection

1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.467	1.364	0.800

Girder Profile

Shape

Shape:	W 30x116
Distance:	0.00 <i>(ft)</i>
Length:	36.15 <i>(ft)</i>
Material:	ASTM A7

Deck Profile

Bracing Ranges

Lateral Support

Distance	Length
<i>(ft)</i>	<i>(ft)</i>
0.00	36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	<i>(ft)</i>		<i>(in)</i>
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	19.59	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Member G3

Link with: None

Description:

Existing: G-3 - Additional self load is for diaphragms.

Current: G-3 - Additional self load is for diaphragms.

Number of Spans: 1

Span	Span Length
Number	<i>(ft)</i>
1	36.151000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 *(lb/ft)*

Member Loads

Member Loads - Settlement

Support Number	Horizontal (in)	Vertical (in)	Rotational (Radians)	Load Case Name
1				
2				

Support Constraints

General

Support Number	Support Type	X Translation	Y Translation	Z Rotation
1	Roller	Free	Fixed	Free
2	Pinned	Fixed	Fixed	Free

Elastic

Support Number	X Translation (kip/ft)	Y Translation (kip/ft)	Z Rotation (kip-in/rad)	Override Computed Z Rotation
1				
2				

Member Alternative G-3

Description: Additional self load is for diaphragms.

Description

Material Type: Steel
Girder Type: Rolled
Member units: US Customary
Girder property input method: Schedule based
Left end X: 3.5000 (in)
Right end X: 5.0000 (in)
Additional Self Load: 0.020 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: BRASS ASD
Analysis Module Component:
Properties:

Analysis Method: LFD
Analysis Module: AASHTO LFD
Analysis Module Component:
Properties:

Analysis Method: LRFD
Analysis Module: BRASS LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: BRASS LRFR
Analysis Module Component:

Properties:

Analysis Method: Distribution Factors
Analysis Module:
Analysis Module Component:
Properties:

Default rating method: LFD

Factors

Factor Override

LRFD:

LFD:

ASD Factors

	Inventory	Operating
Structural steel		
Concrete		
PS Concrete Comp.		
PS Concrete Tens.		
PS Moment Cap.		
Reinforcement		
Bearing Stiffener		
Stirrup		
Timber	NA	

Default Materials

Structural steel: ASTM A7
Deck concrete: Unknown strength concrete prior to 1959
Deck reinforcement: Unknown steel prior to 1954
Welds:
Bolts:

Impact

Standard Impact Factor

Type: Standard - AASHTO

LRFD Dynamic Load Allowance

Fatigue and fracture limit states: 15.0 (%)

All other limit states: 33.0 (%)

Live Load Distribution

Standard

	D i s t r i b u t i o n F a c t o r (Wheels)			
Lanes	Shear	Shear at Supports	Moment	Deflection
Loaded				
1 Lane	1.071	1.200	1.071	0.400
Multi-Lane	1.364	1.667	1.364	0.800

Girder Profile

Shape
 Shape: W 30x116
 Distance: 0.00 *(ft)*
 Length: 36.15 *(ft)*
 Material: ASTM A7

Deck Profile

Bracing Ranges

Lateral Support

Distance	Length
<i>(ft)</i>	<i>(ft)</i>
0.00	36.15

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	<i>(ft)</i>		<i>(in)</i>
Conn. (equiv. plat...	0.00	1	0.0000
Conn. (equiv. plat...	18.00	1	0.0000
Conn. (equiv. plat...	19.59	1	0.0000
Conn. (equiv. plat...	36.15	1	0.0000

Bearing Stiffener Locations

Member G4

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span	Span Length
------	-------------

Number	<i>(ft)</i>
1	36.151000

Support	Frame Connection
---------	------------------

1

2

Pedestrian load: *(lb/ft)*

Member G5

Link with: G1

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	36.151000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*