

LEVEL 2 LOAD RATING (VIRTIS)

MILEPOST: 219.91

BIN: 1020079

REGION: 2

COUNTY: MADISON

FEATURE CARRIED: 90 IX

FEATURE CROSSED: MOHAWK STREET (NYS ROUTE 28)

LEVEL 2 LOAD RATING REVIEW

VIRTIS RUN DATE: _____

CHANGES TO INPUT DATA: _____

LOADING	INVENTORY RATING (TONS)	OPERATING RATING (TONS)
HS-20	37.6 (HS-20)	62.8 (HS-34)
H-20	29.9 (H-29)	49.9 (H-49)
EV-2		58.9
EV-3		57.4

* ANALYSIS METHOD: LOAD FACTOR

** Lane loading controls the H20 rating. Truck loading controls the HS20 rating.

CONTROLLING MEMBER FOR RATING

LOCATION: SPAN 1

COMPONENT: FASCIA GIRDER G10 WESTBOUND

FAILURE TYPE: STEEL SERVICEABILITY AT MIDSPAN

EFFECTIVE SPAN LENGTH: 60'

H EQUIVALENT OF LEGAL LOAD H25

PRIMARY MEMBER RATING: 4

SAFE LOAD CAPACITY: H41

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

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 Operating Capacity (Ton)	Legal Capacity (Ton)	Permit Inventory Capacity (Ton)	Permit Operating Capacity (Ton)	Permit Capacity (Ton)	Inventory Location (ft)	Operating Location (ft)
1020079	Eastbound - Span 1	G1	H 20-44	1.794	2.996						35.88	59.91						30.44	30.44
1020079	Eastbound - Span 1	G2	H 20-44	2.075	3.465						41.49	69.29						30.44	30.44
1020079	Eastbound - Span 1	G9	H 20-44	1.723	2.877						34.46	57.54						30.44	30.44
1020079	Eastbound - Span 2	G1	H 20-44	1.794	2.996						35.88	59.91						30.44	30.44
1020079	Eastbound - Span 2	G2	H 20-44	2.139	3.571						42.77	71.43						30.44	30.44
1020079	Eastbound - Span 2	G9	H 20-44	1.712	2.859						34.23	57.17						30.44	30.44
1020079	Westbound - Span 1	G10	H 20-44	1.495	2.497						29.90	49.93						30.44	30.44
1020079	Westbound - Span 1	G11	H 20-44	2.136	3.568						42.73	71.35						30.44	30.44
1020079	Westbound - Span 1	G18	H 20-44	1.762	2.943						35.24	58.86						30.44	30.44
1020079	Westbound - Span 2	G10	H 20-44	1.504	2.511						30.07	50.22						30.44	30.44
1020079	Westbound - Span 2	G11	H 20-44	2.136	3.568						42.73	71.35						30.44	30.44
1020079	Westbound - Span 2	G18	H 20-44	1.752	2.927						35.05	58.53						30.44	30.44
1020079	Eastbound - Span 1	G1	HS 20-44	1.254	2.095						45.16	75.41						30.44	30.44
1020079	Eastbound - Span 1	G2	HS 20-44	1.451	2.423						52.23	87.22						30.44	30.44
1020079	Eastbound - Span 1	G9	HS 20-44	1.205	2.012						43.37	72.43						30.44	30.44
1020079	Eastbound - Span 2	G1	HS 20-44	1.254	2.095						45.16	75.41						30.44	30.44
1020079	Eastbound - Span 2	G2	HS 20-44	1.495	2.497						53.83	89.90						30.44	30.44
1020079	Eastbound - Span 2	G9	HS 20-44	1.197	1.999						43.09	71.96						30.44	30.44
1020079	Westbound - Span 1	G10	HS 20-44	1.045	1.746						37.63	62.85						30.44	30.44
1020079	Westbound - Span 1	G11	HS 20-44	1.494	2.495						53.77	89.80						30.44	30.44
1020079	Westbound - Span 1	G18	HS 20-44	1.232	2.058						44.36	74.08						30.44	30.44
1020079	Westbound - Span 2	G10	HS 20-44	1.051	1.756						37.85	63.21						30.44	30.44
1020079	Westbound - Span 2	G11	HS 20-44	1.494	2.495						53.77	89.80						30.44	30.44
1020079	Westbound - Span 2	G18	HS 20-44	1.225	2.046						44.11	73.67						30.44	30.44

☒ Show up-to-date results only

Print

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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 Operating Capacity (Ton)	Legal Capacity (Ton)	Permit Inventory Capacity (Ton)	Permit Operating Capacity (Ton)	Permit Capacity (Ton)	Inventory Location (ft)	Operating Location (ft)	Leg
1020079	Eastbound - G1	G1	Type EV2		2.458							70.68							30.44	
1020079	Eastbound - G2	G2	Type EV2		3.619							104.04							30.44	
1020079	Eastbound - G9	G9	Type EV2		2.361							67.88							30.44	
1020079	Eastbound - G1	G1	Type EV2		2.458							70.68							30.44	
1020079	Eastbound - G2	G2	Type EV2		3.730							107.24							30.44	
1020079	Eastbound - G9	G9	Type EV2		2.346							67.44							30.44	
1020079	Westbound - G10	G10	Type EV2		2.049							58.91							30.44	
1020079	Westbound - G11	G11	Type EV2		3.726							107.13							30.44	
1020079	Westbound - G18	G18	Type EV2		2.415							69.43							30.44	
1020079	Westbound - G10	G10	Type EV2		2.061							59.24							30.44	
1020079	Westbound - G11	G11	Type EV2		3.726							107.13							30.44	
1020079	Westbound - G18	G18	Type EV2		2.402							69.05							30.44	
1020079	Eastbound - G1	G1	Type EV3		1.602							68.88							30.44	
1020079	Eastbound - G2	G2	Type EV3		2.358							101.38							30.44	
1020079	Eastbound - G9	G9	Type EV3		1.538							66.15							30.44	
1020079	Eastbound - G1	G1	Type EV3		1.602							68.88							30.44	
1020079	Eastbound - G2	G2	Type EV3		2.430							104.51							30.44	
1020079	Eastbound - G9	G9	Type EV3		1.528							65.72							30.44	
1020079	Westbound - G10	G10	Type EV3		1.335							57.40							30.44	
1020079	Westbound - G11	G11	Type EV3		2.428							104.39							30.44	
1020079	Westbound - G18	G18	Type EV3		1.573							67.66							30.44	
1020079	Westbound - G10	G10	Type EV3		1.343							57.73							30.44	
1020079	Westbound - G11	G11	Type EV3		2.428							104.39							30.44	
1020079	Westbound - G18	G18	Type EV3		1.565							67.29							30.44	

☒ Show up-to-date results only

Print

Close

Bridge Name: MP 219.91 - 90IX over Mohawk Street (Rte. 28)

NBI Structure ID: 1020079

Bridge ID: 1020079

Analyzed By: BrR

Analyze Date: Thursday, July 27, 2017 11:55:40

Analysis Engine: AASHTO LFR Engine Version 6.7.0.3001

Analysis Preference Setting: None

Report By: BrR

Report Date: Thursday, July 27, 2017 11:56:16

Structure Definition Name: Westbound - Span 1

Member Name: G10

Member Alternative Name: G-10

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	1.495	Service - Steel	29.90	1	30.44	50.0	As Requested	As Requested
H 20-44	Operating	Lane	2.497	Service - Steel	49.93	1	30.44	50.0	As Requested	As Requested
H 20-44	Inventory	Lane	1.495	Service - Steel	29.90	1	30.44	50.0	With Impact	Single Lane
H 20-44	Operating	Lane	2.497	Service - Steel	49.93	1	30.44	50.0	With Impact	Single Lane
H 20-44	Inventory	Lane	1.495	Service - Steel	29.90	1	30.44	50.0	With Impact	Multi-Lane
H 20-44	Operating	Lane	2.497	Service - Steel	49.93	1	30.44	50.0	With Impact	Multi-Lane
H 20-44	Inventory	Lane	1.897	Service - Steel	37.94	1	30.44	50.0	Without Impact	Single Lane
H 20-44	Operating	Lane	3.168	Service - Steel	63.37	1	30.44	50.0	Without Impact	Single Lane
H 20-44	Inventory	Lane	1.897	Service - Steel	37.94	1	30.44	50.0	Without Impact	Multi-Lane
H 20-44	Operating	Lane	3.168	Service - Steel	63.37	1	30.44	50.0	Without Impact	Multi-Lane
H 20-44	Inventory	Axle Load	1.543	Service - Steel	30.86	1	30.44	50.0	As Requested	As Requested
H 20-44	Operating	Axle Load	2.576	Service - Steel	51.53	1	30.44	50.0	As Requested	As Requested
	Inventory		1.543		30.86	1	30.44	50.0		

H 20-44		Axle Load		Service - Steel					With Impact	Single Lane
H 20-44	Operating	Axle Load	2.576	Service - Steel	51.53	1	30.44	50.0	With Impact	Single Lane
H 20-44	Inventory	Axle Load	1.543	Service - Steel	30.86	1	30.44	50.0	With Impact	Multi-Lane
H 20-44	Operating	Axle Load	2.576	Service - Steel	51.53	1	30.44	50.0	With Impact	Multi-Lane
H 20-44	Inventory	Axle Load	1.958	Service - Steel	39.16	1	30.44	50.0	Without Impact	Single Lane
H 20-44	Operating	Axle Load	3.270	Service - Steel	65.39	1	30.44	50.0	Without Impact	Single Lane
H 20-44	Inventory	Axle Load	1.958	Service - Steel	39.16	1	30.44	50.0	Without Impact	Multi-Lane
H 20-44	Operating	Axle Load	3.270	Service - Steel	65.39	1	30.44	50.0	Without Impact	Multi-Lane

Note:

"N/A" indicates not applicable

*** indicates not available

Individual Vehicle Load Factor Rating Summary

		Vehicle Rating		Capacity		Location				
Live Load		Type	Factor	Controls	(Ton)	Span	(ft)	Percent	Impact	Lane
HS 20-44	Inventory	Lane	1.495	Service - Steel	53.82	1	30.44	50.0	As Requested	As Requested
HS 20-44	Operating	Lane	2.497	Service - Steel	89.88	1	30.44	50.0	As Requested	As Requested
HS 20-44	Inventory	Lane	1.495	Service - Steel	53.82	1	30.44	50.0	With Impact	Single Lane
HS 20-44	Operating	Lane	2.497	Service - Steel	89.88	1	30.44	50.0	With Impact	Single Lane
HS 20-44	Inventory	Lane	1.495	Service - Steel	53.82	1	30.44	50.0	With Impact	Multi-Lane
HS 20-44	Operating	Lane	2.497	Service - Steel	89.88	1	30.44	50.0	With Impact	Multi-Lane
HS 20-44	Inventory	Lane	1.897	Service - Steel	68.30	1	30.44	50.0	Without Impact	Single Lane

HS 20- 44	Operating	Lane	3.168	Service - Steel	114.06	1	30.44	50.0	Without Impact	Single Lane
HS 20- 44	Inventory	Lane	1.897	Service - Steel	68.30	1	30.44	50.0	Without Impact	Multi- Lane
HS 20- 44	Operating	Lane	3.168	Service - Steel	114.06	1	30.44	50.0	Without Impact	Multi- Lane
HS 20- 44	Inventory	Axle Load	1.045	Service - Steel	37.63	1	30.44	50.0	As Requested	As Requested
HS 20- 44	Operating	Axle Load	1.746	Service - Steel	62.85	1	30.44	50.0	As Requested	As Requested
HS 20- 44	Inventory	Axle Load	1.045	Service - Steel	37.63	1	30.44	50.0	With Impact	Single Lane
HS 20- 44	Operating	Axle Load	1.746	Service - Steel	62.85	1	30.44	50.0	With Impact	Single Lane
HS 20- 44	Inventory	Axle Load	1.045	Service - Steel	37.63	1	30.44	50.0	With Impact	Multi- Lane
HS 20- 44	Operating	Axle Load	1.746	Service - Steel	62.85	1	30.44	50.0	With Impact	Multi- Lane
HS 20- 44	Inventory	Axle Load	1.327	Service - Steel	47.76	1	30.44	50.0	Without Impact	Single Lane
HS 20- 44	Operating	Axle Load	2.215	Service - Steel	79.75	1	30.44	50.0	Without Impact	Single Lane
HS 20- 44	Inventory	Axle Load	1.327	Service - Steel	47.76	1	30.44	50.0	Without Impact	Multi- Lane
HS 20- 44	Operating	Axle Load	2.215	Service - Steel	79.75	1	30.44	50.0	Without Impact	Multi- Lane

Note:

"N/A" indicates not applicable

*** indicates not available

Bridge

Bridge Id: 1020079

Description: Original analysis by DiDonato Associates - 10/2007. Reviewed by DiDonato Associates - 09/2009, 09/2011. Reviewed by CHA - 10/2013, 12/2015. Bridge is a two span simply supported multi girder with a composite concrete deck. Bridge is symmetric about the longitudinal centerline. Eastbound and Westbound structures have been created. Bridge built under contract MT 53-10 and rehabilitated under TAS 92-46B. HS20 design Live Load. Bridge oriented west with a 38 degree left skew. 2009 Notes: - Updated wearing surface thickness. (was 8.0" asphalt/concrete and now 7.5") 2011 Notes: - Rating engine changed from BRASS LFD to VIRTIS LFD. 2013 Notes: - Concrete strength revised per MBE. - 4 rail & median rail load revised. Median rail width revised. - Typical section adjusted to account for sidewalk overhang of the deck & the gap between the WB & EB bridges. - Fascia sidewalk dimensions revised. Median sidewalks removed. - Wearing surface unit weight revised. Light weight concrete noted on 1992 rehab plans conservatively ignored. - Wearing surface thickness revised assuming 6.5" minimum at curb (4.5" concrete + 2" asphalt). Weighted average thickness used (7.69" WB; 7.64" EB), which includes the swale. - Intermediate diaphragm connection plates added as partial height stiffeners. - Member loads added for additional deck concrete along the fascia sidewalk. - Shear distribution factors revised for all girders. Factors for G10 revised by placing first wheel 1' from the edge of deck. - G10 cover plate length revised. - Section loss added per 2013 report to G1 bottom flange between cover plate end & pier, G18 web in Span 1 at Pier, and pier diaphragm connection plates. 2015 Notes: - Rating engine changed to AASHTO LFD. - Composite deck thickness revised due to spalling. - Section loss updated including span 2 G1 and G18. see the member alt. desc. for more info. - Additional self load revised

Facility Carried: 90IX

Feature Intersected: Mohawk Street

Structure Number: 1020079

Location: Herkimer

Length: 123.00

ft

Route Number:

System Of Units: US Customary

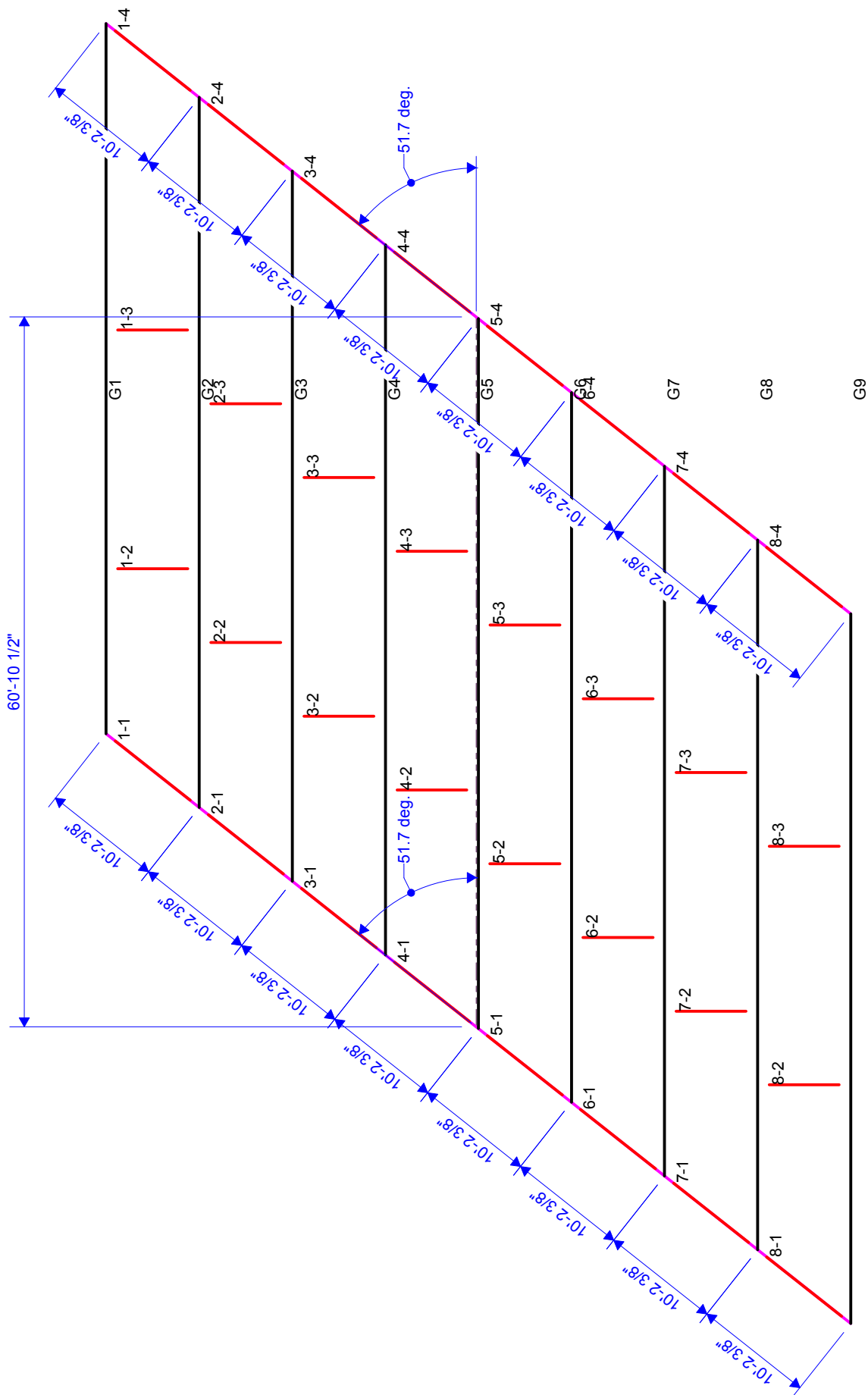
Year Built: 1954

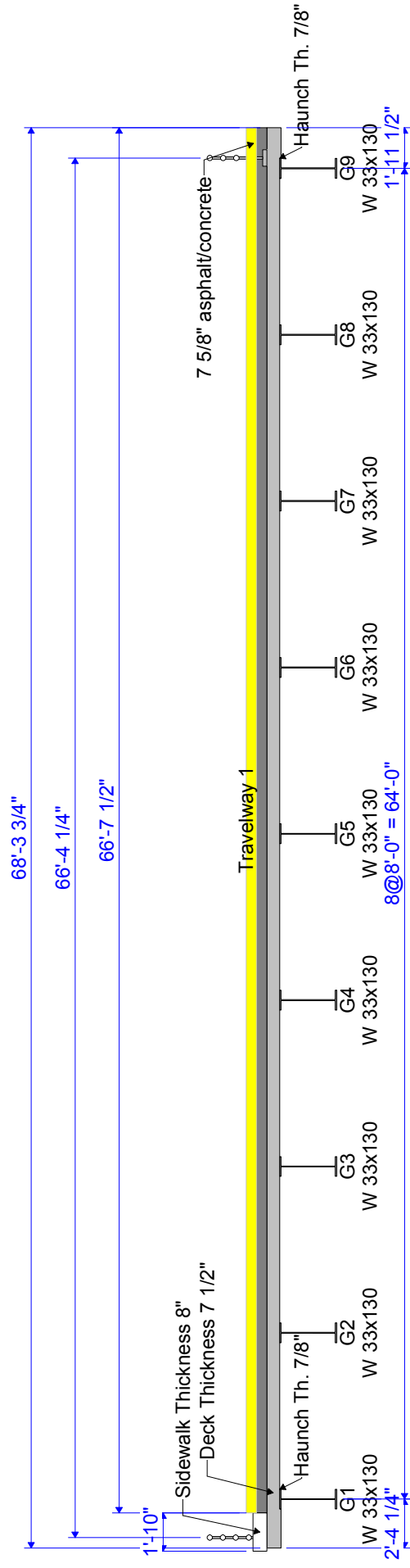
Name: MP 219.91 - 90IX over Mohawk Street (Rte. 28)

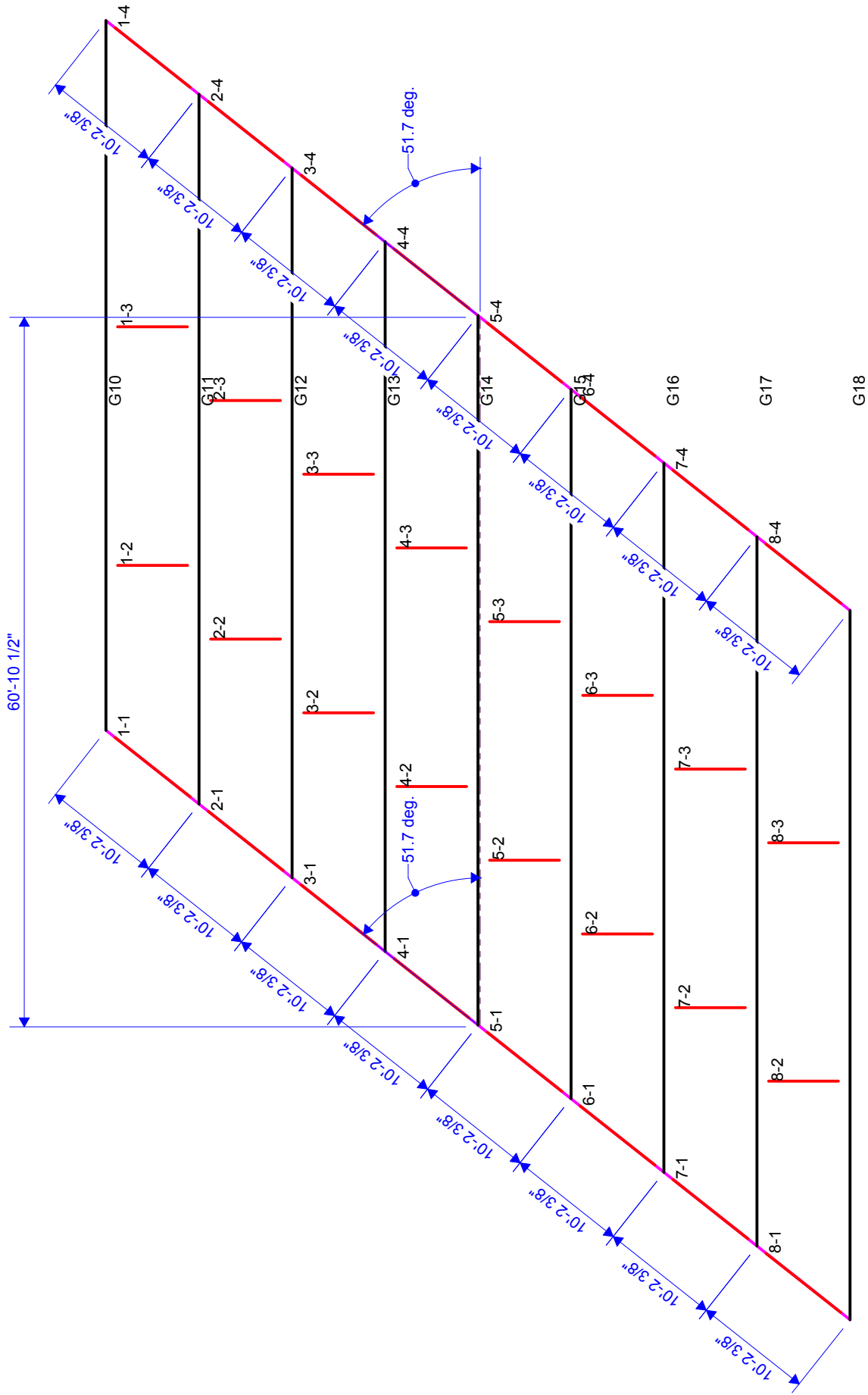
District:

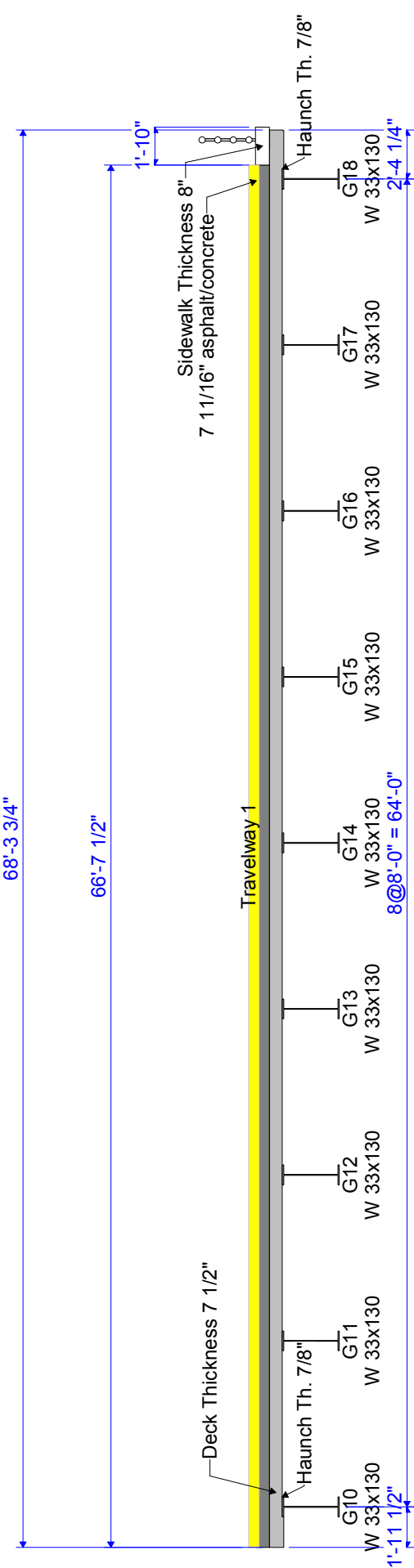
County:

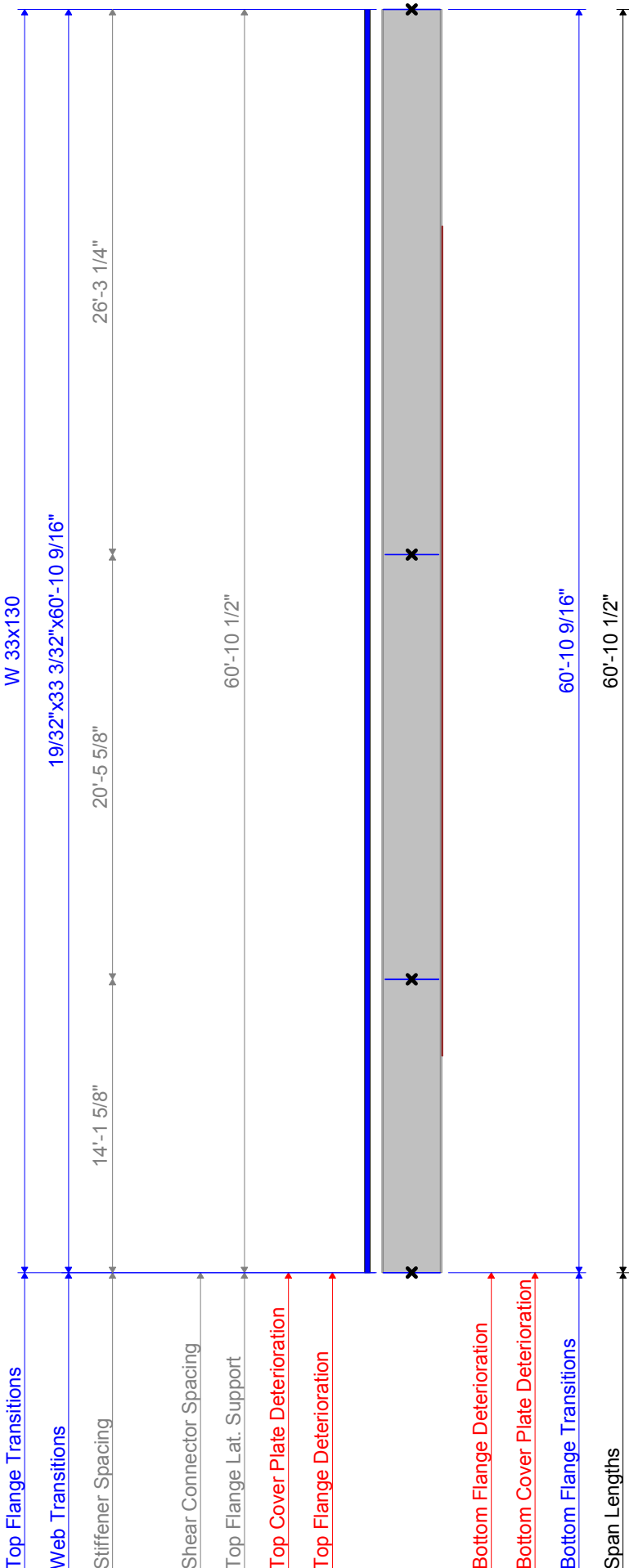
SCHEMATIC DRAWINGS





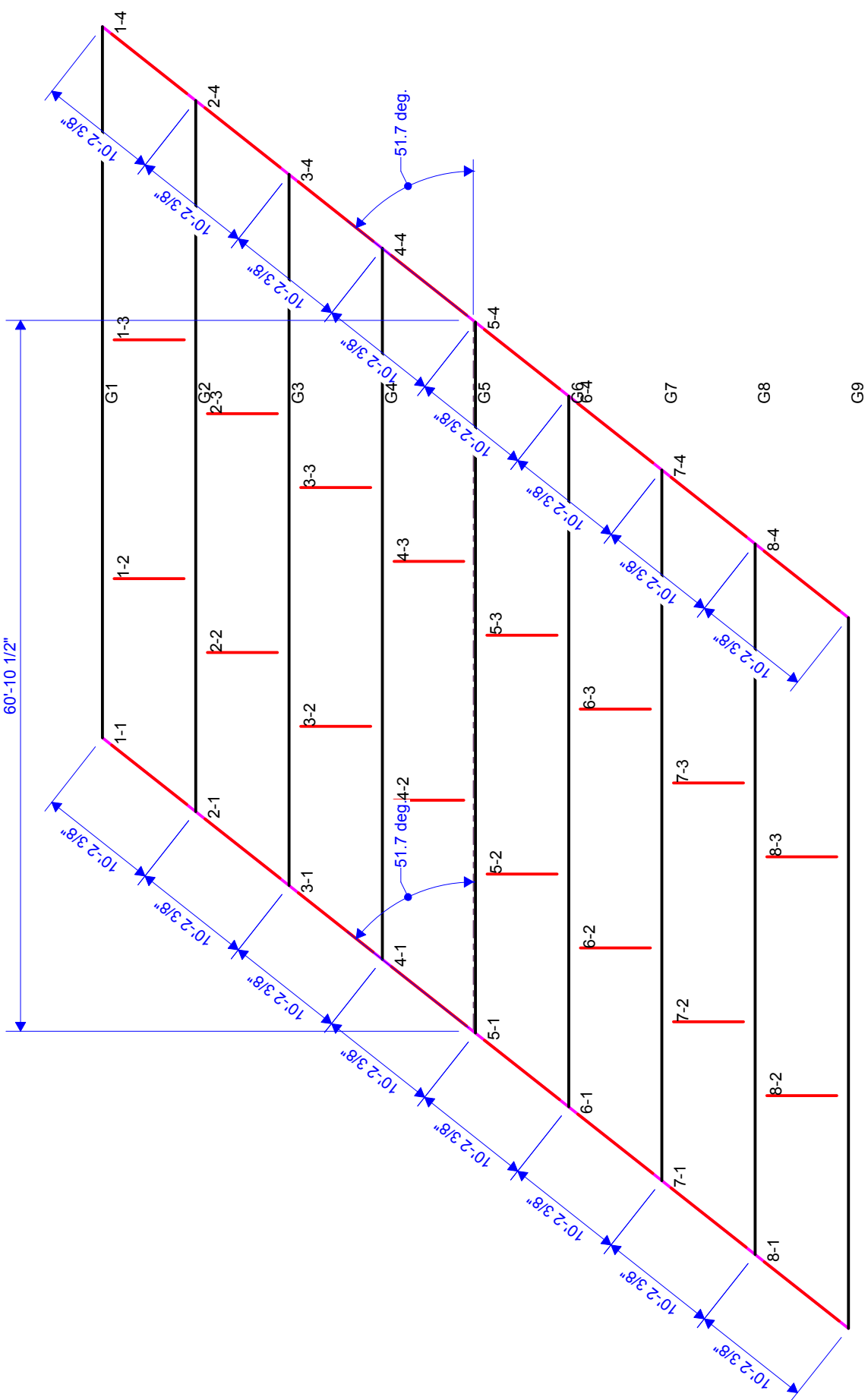






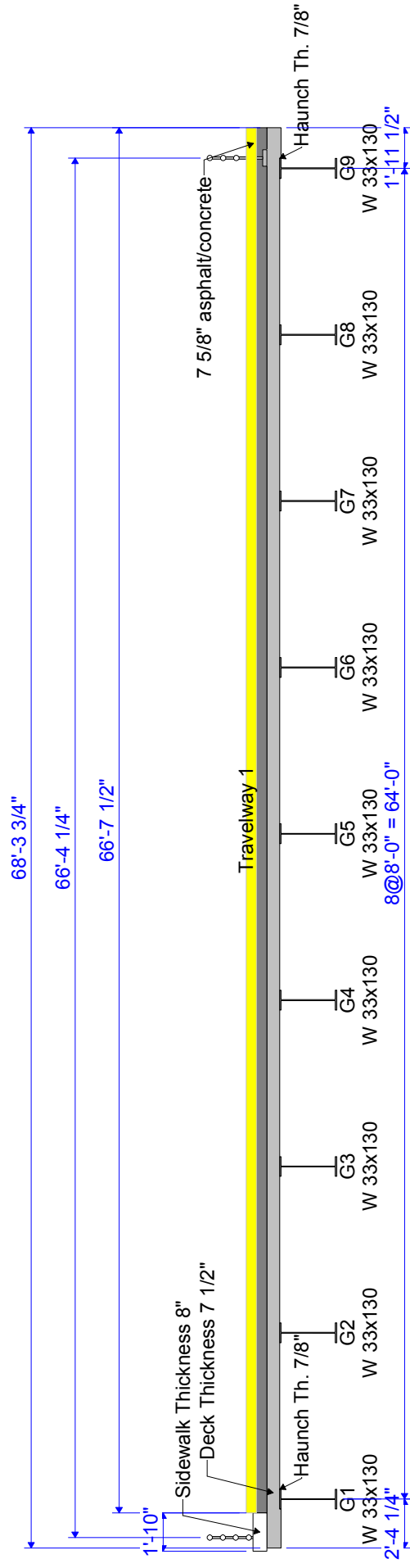
Notes:

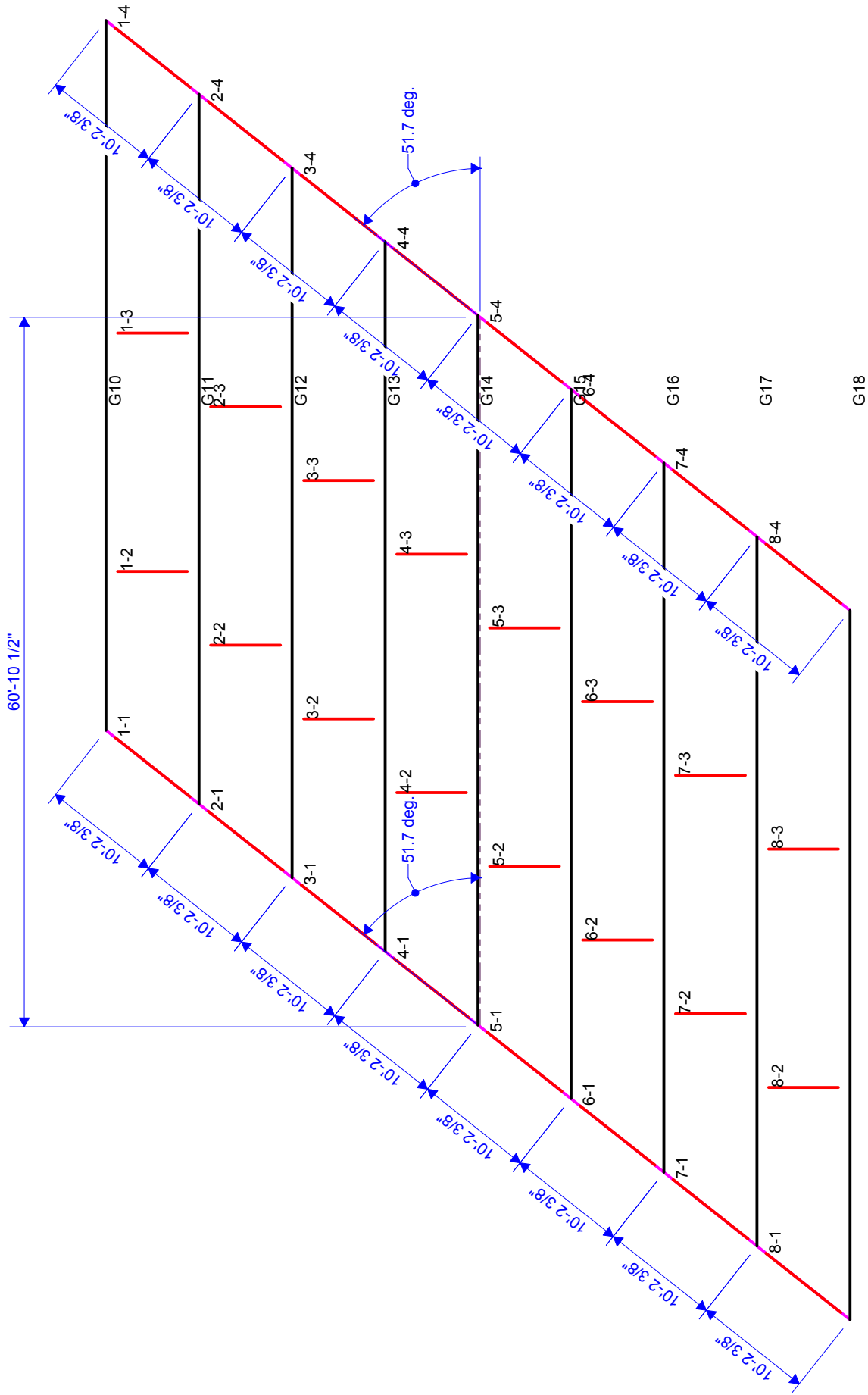
- * All flange length dimensions are horiz. (length along flange may differ).
- * Transverse stiffener pairs shown in red.
- * Single transverse stiffener shown in blue.
- * Bearing stiffeners shown in green.
- * Dimensioning starts and ends at CL bearings.
- * X denotes cross frame locations.

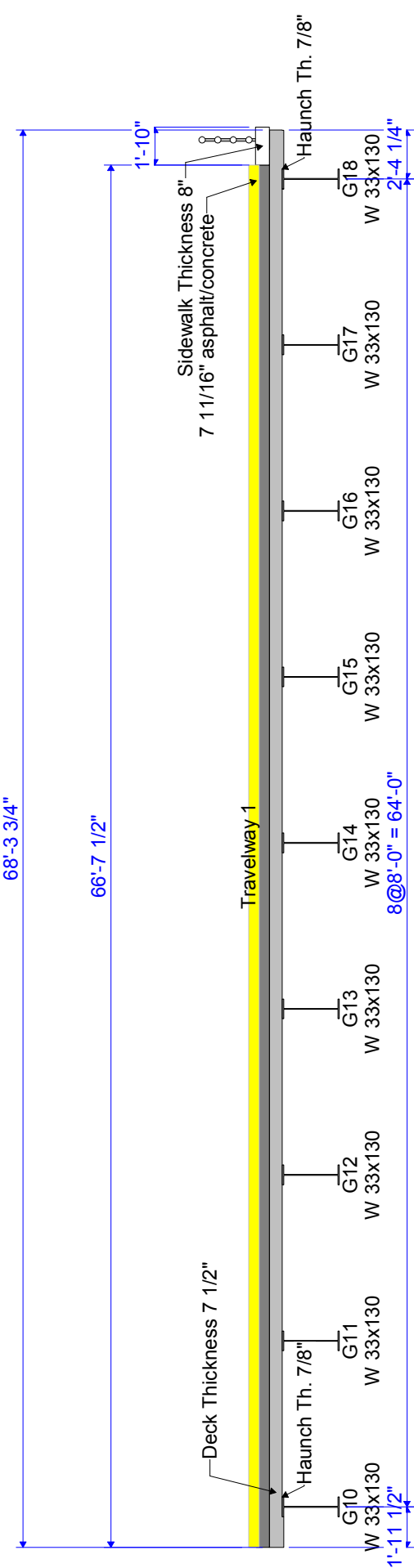


MP 219.91 - 90IX over Mohawk Street (Rte. 28) - Eastbound - Span 2

07/27/17







VIRTIS INPUT

Username: BrR

Date: Thursday, July 27, 2017 11:52:03

Bridge ID 1020079 MP 219.91 - 90IX over Mohawk Street (Rte. 28)

NBI Structure ID (8): 1020079

Description: Original analysis by DiDonato Associates - 10/2007.

Reviewed by DiDonato Associates - 09/2009, 09/2011.

Reviewed by CHA - 10/2013, 12/2015.

Bridge is a two span simply supported multi girder with a composite concrete deck.

Bridge is symmetric about the longitudinal centerline.

Eastbound and Westbound structures have been created.

Bridge built under contract MT 53-10 and rehabilitated under TAS 92-46B. HS20 design Live Load.

Bridge oriented west with a 38 degree left skew.

2009 Notes:

- Updated wearing surface thickness. (was 8.0" asphalt/concrete and now 7.5")

2011 Notes:

- Rating engine changed from BRASS LFD to VIRTIS LFD.

2013 Notes:

- Concrete strength revised per MBE.
- 4 rail & median rail load revised. Median rail width revised.
- Typical section adjusted to account for sidewalk overhang of the deck & the gap between the WB & EB bridges.
- Fascia sidewalk dimensions revised. Median sidewalks removed.
- Wearing surface unit weight revised. Light weight concrete noted on 1992 rehab plans conservatively ignored.
- Wearing surface thickness revised assuming 6.5" minimum at curb (4.5" concrete + 2" asphalt). Weighted average thickness used (7.69" WB; 7.64" EB), which includes the swale.
- Intermediate diaphragm connection plates added as partial height stiffeners.
- Member loads added for additional deck concrete along the fascia sidewalk.
- Shear distribution factors revised for all girders. Factors for G10 revised by placing first wheel 1' from the edge of deck.
- G10 cover plate length revised.
- Section loss added per 2013 report to G1 bottom flange between cover plate end & pier, G18 web in Span 1 at Pier, and pier diaphragm connection plates.

2015 Notes:

- Rating engine changed to AASHTO LFD.
- Composite deck thickness revised due to spalling.
- Section loss updated including span 2 G1 and G18. see the member alt. desc. for more info.
- Additional self load revised

Description

Location: Herkimer

Total Length: 123.00 (ft)

Facility Carried: 90IX
Route Number:
Feature Intersected: Mohawk Street
Mi Post: 219.91 *(mi)*
Units: US Customary
Year Built: 1954
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: **f'c = 2500 psi**
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: 1.000
Composition of concrete: Normal
Initial modulus of elasticity (Eci): 0.00 *(ksi)*

Reinforcing Steel

Name: **ASTM A615, Grade 40**
Description: **40 ksi reinforcing steel (1969 - 1973)**
Specified yield strength (Fy): 40.000 *(ksi)*

Modulus of elasticity (Es): 29000.00 (ksi)
Ultimate strength (Fu): (ksi)
Type: Plain

No prestressing strand materials.

No timber materials.

Beam Shapes

Steel Shapes

No steel angles.

No steel channels.

Steel I Shapes

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 (in²)
Nominal load: 130.000 (lb/ft)
Ixx: 6699.000 (in⁴)
Iyy: 201.400 (in⁴)
Zx: 467.000 (in³)
Zy: 59.500 (in³)
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: **2-Rail Bridge Railing**
Description: English - NYSDOT Old Standard
Effective Wind Height: 33.0000 (in)
Railing Load: 0.045 (kip/ft)
Distance From Edge to Centroid: 6.0000 (in)
Width: 12.0000 (in)

Name: **4- Rail w/ Thrie Beam**
Description:
Effective Wind Height: 39.0000 (in)
Railing Load: 0.065 (kip/ft)
Distance From Edge to Centroid: 6.0000 (in)
Width: 11.5000 (in)

Name: **Double W-Section Median Raill**
Description:
Effective Wind Height: 33.0000 (in)
Railing Load: 0.025 (kip/ft)
Distance From Edge to Centroid: 4.7500 (in)
Width: 9.5000 (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 **Bridge Alt**

Reference Line

Reference Line Length: 0.00 (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: Eastbound - Span 1

Description:

Structure Alternatives

Name: EB - Span 1

Description:

Superstructure Definition: Eastbound - Span 1

Structures

Name: Eastbound - Span 2

Description:

Structure Alternatives

Name: EB - Span 2

Description:

Superstructure Definition: Eastbound - Span 2

Structures

Name: Westbound - Span 1

Description:

Structure Alternatives

Name: WB - Span 1

Description:

Superstructure Definition: Westbound - Span 1

Structures

Name: Westbound - Span 2

Description:

Structure Alternatives

Name: WB - Span 2

Description:

Superstructure Definition: Westbound - Span 2

Superstructure Definition Eastbound - Span 1

Definition

Units: US Customary

Number of spans: 1

Number of girders: 9

Length

Span *(ft)*

1 60.8800
Frame Structure Simplified Definition:
Support Frame Connection
1
2
Girder Spacing Display Type: Perpendicular
Average Humidity: 90.000 (%)

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 38.3300

2 38.3300
 Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start	End
	(ft)	(ft)
1	8.0000	8.0000
2	8.0000	8.0000
3	8.0000	8.0000
4	8.0000	8.0000
5	8.0000	8.0000
6	8.0000	8.0000
7	8.0000	8.0000
8	8.0000	8.0000

Diaphragms

Girder Bay 1

Distance Left Girder	Distance Right Girder	Diaphragm Spacing	Number of Spaces	Diaphragm Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 2

Distance Left Girder	Distance Right Girder	Diaphragm Spacing	Number of Spaces	Diaphragm Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 3

Distance Left Girder	Distance Right Girder	Diaphragm Spacing	Number of Spaces	Diaphragm Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	

Girder Bay 4

Distance Left Girder	Distance Right Girder	Diaphragm Spacing	Number of Spaces	Diaphragm Weight
(ft)	(ft)	(ft)		(kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 5

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

Left Girder (ft)	Right Girder (ft)	Spacing (ft)	Spaces	Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	
<i>Girder Bay 6</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 7</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 8</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	

Structure Typical Section

Deck

Left start width:	34.16 (ft)
Left end width:	34.16 (ft)
Right start width:	34.16 (ft)
Right end width:	34.16 (ft)
Left start overhang:	2.35 (ft)
Left end overhang:	2.35 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	7.5000 (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
Double W-...	DC2		Right E...	1.06	1.06	Left
2-Rail Br...	DC2		Left Ed...	0.00	0.00	Right

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
22.0000	8.0000	Unknown...	DC2		Left Ed...	-0.15 ...

Lane Position

Offset Left Start:	-32.47 <i>(ft)</i>
Offset Left End:	-32.47 <i>(ft)</i>
Offset Right Start:	34.16 <i>(ft)</i>
Offset Right End:	34.16 <i>(ft)</i>

Wearing Surface

Wearing surface material:	asphalt/concrete
Description:	Wearing Surface
Wearing surface thickness:	7.6400 <i>(in)</i>
Wearing surface density:	150.000 <i>(pcf)</i>
Load case:	DW

Load Case Description

Load Case Name	Description	Stage	Type <i>(Days)</i>	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
Fascia Keyway	Additional deck concr...	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:	Single Plate Bearing Stiffener
Stiffener number:	Single
Plate Width:	7.0000 <i>(in)</i>
Plate Thickness:	0.4380 <i>(in)</i>
Material:	ASTM A7
Top Gap:	0.0000 <i>(in)</i>
Bottom Gap:	0.0000 <i>(in)</i>
Top Weld:	
Web Weld:	
Bottom Weld:	

Name:	Int. dia. conn. (single)
Stiffener number:	Single
Plate Width:	7.0000 <i>(in)</i>
Plate Thickness:	0.4380 <i>(in)</i>
Material:	ASTM A7
Top Gap:	1.0000 <i>(in)</i>

Bottom Gap: 1.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: End Stiffener w/ 10% loss
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top Gap: (in)
Bottom Gap: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: End Stiffener w/ 100% loss
Stiffener number: Single
Plate Width: 0.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Bearing Stiffeners

Name: Interior Girders
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. Girders at Pier (20% loss)
Plate Width: 7.0000 (in)
Plate Thickness: 0.3500 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)

Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (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 - Self Load is for Diaphragms

Current: G-1 - Self Load is for Diaphragms

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	60.88	0.095	0.095	Fascia Key...

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: 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: 5.0000 (in)
 Additional Self Load: 0.015 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: AASHTO ASD
 Analysis Module Component:
 Properties:

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

Analysis Method: LRFD
 Analysis Module: AASHTO LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: AASHTO LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
 Analysis Module: BrR Dist Fact
 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:	ASTM A615, Grade 40
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	1.333	0.917	1.333	0.222
Multi-Lane	1.333	0.917	1.333	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin	End	Thickness	Distance	Length	Material
	Width	Width				
	(in)	(in)	(in)	(ft)	(ft)	
1 (Bot...		14.000...	14.000...	0.7500	0.69	59.50
						ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n	Length	Total Thickness	Structural Thickness	Effective Width (Std)	Effective Width
	(ft)	(ft)	(in)	(in)	(in)	(in)
Unknown stren...	0.00	60.88		7.5000	73.2504	76.2504
	10.1...					

Shear Connectors

Start Distance	Length	Connector Name	Number per Row	Number of Spaces	Transverse Spacing
(ft)	(ft)				(in)
0.00	60.88	Composite			

Haunch Profile

Haunch Type:		Flange edges					
Embedded flange:		TRUE					
Distance	Length	Z1	Z2	Z3	Z4	Y1	Y2
(ft)	(ft)	(in)	(in)	(in)	(in)	(in)	(in)
0.00	60.88			22.5000	22.5000	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance	Length
(ft)	(ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	(ft)		(in)
Single Plate Beari...	0.00	1	0.0000
Int. dia. conn. (s...	14.14	1	0.0000
Int. dia. conn. (s...	34.61	1	0.0000

Bearing Stiffener Locations

Points of Interest

Distance from left most support: 60.78 (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
<u>Other Stiffeners</u>	
<i>Bearing Stiffener</i>	
Override Schedule:	FALSE
Stiffener width:	(in)
Stiffener thickness:	(in)
Material:	ASTM A7
Clip:	(in)
Number of pairs:	
Pair spacing:	(in)
Attachment Type:	Welds
<i>Longitudinal Stiffener</i>	
Override Schedule:	FALSE
Stiffener width:	(in)
Stiffener thickness:	(in)
Material:	ASTM A7
Distance from flange to stiffener:	(in)
Distance measured from:	Top Flange
<u>Fatigue</u>	
Number of cycles:	0
<u>Bracing</u>	
Deck provides lateral support:	
Override diaphragm schedule:	FALSE
Distance to left diaphragm:	(ft)
Distance to right diaphragm:	(ft)
Diaphragm at this location:	FALSE
<u>ASD</u>	
Compression flange unsupported length:	(ft)
Tension Field Action	Ignore combined shear and bending
<i>Riveted Section</i>	
Net moment of inertia:	(in ⁴)
Distance to centroid:	(in)
Net area of web:	(in ²)
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	80.0	60.19	0.69

Web Deterioration

Thickness Loss (%)	Start Distance (ft)	Length (ft)
10.0	60.38	0.50

Member G2

Link with: None

Description:

Existing: G-2 - Self Load is for Diaphragms

2015 Deck Spalling:

Span 1 bay 2 has areas of spalling. The worst spall is 1.5' wide x 2.5" deep. The average spall depth is $(1.5' \times 2.5") / (90" \text{ effective width}) = 0.5"$. The revised composite deck thickness is $7.5" - 0.5" = 7"$.

Current: G-2 - Self Load is for Diaphragms

2015 Deck Spalling:

Span 1 bay 2 has areas of spalling. The worst spall is 1.5' wide x 2.5" deep. The average spall depth is $(1.5' \times 2.5") / (90" \text{ effective width}) = 0.5"$. The revised composite deck thickness is $7.5" - 0.5" = 7"$.

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

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: Self Load is for Diaphragms

2015 Deck Spalling:

Span 1 bay 2 has areas of spalling. The worst spall is 1.5' wide x 2.5" deep. The average spall depth is $(1.5' \times 2.5") / (90" \text{ effective width}) = 0.5"$. The revised composite deck thickness is $7.5" - 0.5" = 7"$.

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: 5.0000 (in)
 Additional Self Load: 0.030 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: AASHTO ASD
 Analysis Module Component:
 Properties:

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

Analysis Method: LRFD
 Analysis Module: AASHTO LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: AASHTO LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
 Analysis Module: BrR Dist Fact
 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:	ASTM A615, Grade 40
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	1.143	1.250	1.143	0.222
Multi-Lane	1.455	1.750	1.455	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin	End	Thickness	Distance	Length	Material
	Width	Width				
	(in)	(in)	(in)	(ft)	(ft)	

1 (Bot...	14.000...	14.000...	1.1250	6.44	48.00	ASTM A7
-----------	-----------	-----------	--------	------	-------	---------

Deck Profile

Deck Concrete

Material (LRFD)	Distance n	Length	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	60.88		7.0000	84.0000	96.0000
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	Composite			

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Int. dia. conn. (s...	14.14	1	0.0000
Int. dia. conn. (s...	20.47	1	0.0000
Int. dia. conn. (s...	34.61	1	0.0000
Int. dia. conn. (s...	40.94	1	0.0000

Bearing Stiffener Locations

Support 1

Stiffener Pair	Name	Offset (in)
1	Interior Girders	0.0000

Support 2

Stiffener Pair	Name	Offset (in)
1	Int. Girders at Pier (20% loss)	0.0000

Member G3

Link with: G2

Description:

Existing: G-3 -

Current: G-3 -

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G4

Link with: G2

Description:

Existing: G-4 - Self Load is for Diaphragms
Current: G-4 - Self Load is for Diaphragms
Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G5

Link with: G2

Description:

Existing:
Current:
Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G6

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G7

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G8

Link with: G2

Description:

Existing: G-8 -

Current: G-8 -

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G9

Link with: None

Description:

Existing: G-9 - Self Load is for Diaphragms

2015 Deck Spalling near Ends:

The median fascia overhang has areas of spalling. The worst spall is 2' wide x 2" deep. The average spall depth is $(2" \times 24") / (68.25" \text{ effective width}) = 0.70"$, say $3/4"$. The revised composite deck thickness is $7.5" - 3/4" = 6.75"$.

Current: G-9 - Self Load is for Diaphragms

2015 Deck Spalling near Ends:

The median fascia overhang has areas of spalling. The worst spall is 2' wide x 2" deep. The average spall depth is $(2" \times 24") / (68.25" \text{ effective width}) = 0.70"$, say $3/4"$. The revised composite deck thickness is $7.5" - 3/4" = 6.75"$.

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (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				

Member Alternative G-9

Description: Self Load is for Diaphragms

2015 Deck Spalling near Ends:

The median fascia overhang has areas of spalling. The worst spall is 2' wide x 2" deep. The average spall depth is $(2" \times 24") / (68.25" \text{ effective width}) = 0.70"$, say $3/4"$. The revised composite deck thickness is $7.5" - 3/4" = 6.75"$.

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: 5.0000 (in)
 Additional Self Load: 0.015 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: AASHTO ASD
 Analysis Module Component:
 Properties:

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

Analysis Method: LRFD
 Analysis Module: AASHTO LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: AASHTO LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors
 Analysis Module: BrR Dist Fact
 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:	ASTM A615, Grade 40
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	1.333	0.776	1.333	0.222
Multi-Lane	1.333	0.776	1.333	0.833

Girder Profile

Shape

Shape:	W 33x130
Distance:	0.00 (ft)
Length:	60.88 (ft)
Material:	ASTM A7

Flange Cover Plates

Plate	Begin	End	Thickness	Distance	Length	Material
	Width	Width				
	(in)	(in)	(in)	(ft)	(ft)	
1 (Bot...		14.000...	14.000...	0.6250	10.44	40.00
						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	50.44		7.5000	73.0000	71.5000
	10.1...					
Unknown stren...	50.44	10.44		6.7500	64.0008	71.5008
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	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	60.88			17.7500	17.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Single Plate Beari...	0.00	1	0.0000
Int. dia. conn. (s...	20.47	1	0.0000
Int. dia. conn. (s...	40.94	1	0.0000
End Stiffener w/ 1...	60.88	1	0.0000

Bearing Stiffener Locations

Superstructure Definition Eastbound - Span 2

Definition

Units: US Customary

Number of spans: 1

Number of girders: 9

Length

Span
1 (ft) 60.8800

Frame Structure Simplified Definition:

Support Frame Connection

1

2

Girder Spacing Display Type: Perpendicular

Average Humidity: 90.000 (%)

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

38.3300

2

38.3300

Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing	
	Start	End
	(ft)	(ft)
1	8.0000	8.0000
2	8.0000	8.0000
3	8.0000	8.0000
4	8.0000	8.0000
5	8.0000	8.0000
6	8.0000	8.0000
7	8.0000	8.0000
8	8.0000	8.0000

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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	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	
13.61	19.94	20.47	1	
13.61	19.94	0.00	1	
60.88	60.88	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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 5

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

13.61	19.94	20.47	1
13.61	19.94	0.00	1
60.88	60.88	0.00	1

Girder Bay 6

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 7

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 8

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
13.61	19.94	20.47	1	
13.61	19.94	0.00	1	
60.88	60.88	0.00	1	

Structure Typical Section

Deck

Left start width:	34.16 (ft)
Left end width:	34.16 (ft)
Right start width:	34.16 (ft)
Right end width:	34.16 (ft)
Left start overhang:	2.35 (ft)
Left end overhang:	2.35 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	7.5000 (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
Double W-...	DC2		Right E...	1.06	1.06	Left
2-Rail Br...	DC2		Left Ed...	0.00	0.00	Right

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
-------	---------------------	----------	-----------	------------	---------------	----------

22.0000 8.0000 Unknown... DC2 Left Ed... -0.15 ...

Lane Position

Offset Left Start: -32.47 (ft)
Offset Left End: -32.47 (ft)
Offset Right Start: 34.16 (ft)
Offset Right End: 34.16 (ft)

Wearing Surface

Wearing surface material: asphalt/concrete
Description: Wearing Surface
Wearing surface thickness: 7.6400 (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
Fascia Keyway	Additional deck concr...	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: Single Plate Bearing Stiffener
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. dia. conn. (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: End Stiffener w/ 10% loss
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: End Stiffener w/ 100% loss
Stiffener number: Single
Plate Width: 0.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Bearing Stiffeners

Name: Interior Girders
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. Girders at Pier (100% loss)
Plate Width: 0.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (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 - Self Load is for Diaphragms

Current: G-1 - Self Load is for Diaphragms

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support Number	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	60.88	0.095	0.095	Fascia Key...

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: 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: 5.0000 (in)
Additional Self Load: 0.015 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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:	ASTM A615, Grade 40
Welds:	
Bolts:	

Impact

Standard Impact Factor

Type:	Standard - AASHTO
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LRFD Dynamic Load Allowance

Fatigue and fracture limit states:	15.0 (%)
------------------------------------	----------

All other limit states:	33.0 (%)
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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	1.333	0.917	1.333	0.222
Multi-Lane	1.333	0.917	1.333	0.833

Girder Profile

Shape

Shape:	W 33x130
--------	----------

Distance:	0.00 (ft)
-----------	-----------

Length:	60.88 (ft)
---------	------------

Material:	ASTM A7
-----------	---------

Flange Cover Plates

	Begin	End					
Plate	Width (in)	Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material	
1 (Bot...		14.000...	14.000...	0.7500	0.69	59.50	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	60.88		7.5000	73.2504	76.2504
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	Composite			

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	60.88			22.5000	22.5000	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Int. dia. conn. (s...	13.61	1	0.0000
Int. dia. conn. (s...	34.08	1	0.0000
Single Plate Beari...	60.88	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	80.0	0.00	0.69

Web Deterioration

Thickness	Start	Length
Loss	Distance	

(%)	(ft)	(ft)
10.0	0.00	0.50

Member G2

Link with: None

Description:

Existing: G-2 -

Current: G-2 -

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

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:

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: 5.0000 (in)
Additional Self Load: 0.030 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
 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	1.143	1.250	1.143	0.222
Multi-Lane	1.455	1.750	1.455	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	1.1250	6.44	48.00 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	60.88		7.5000	90.0000	96.0000
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	Composite			

Bracing Ranges

Lateral Support
 Distance Length
(ft) *(ft)*
 0.00 60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance <i>(ft)</i>	Number	Spacing <i>(in)</i>
Int. dia. conn. (s...	13.61	1	0.0000
Int. dia. conn. (s...	19.94	1	0.0000
Int. dia. conn. (s...	34.08	1	0.0000
Int. dia. conn. (s...	40.41	1	0.0000

Bearing Stiffener Locations

Support 2

Stiffener Pair	Name	Offset <i>(in)</i>
1	Interior Girders	0.0000

Member G3

Link with: G2

Description:

Existing: G-3 -
 Current: G-3 -
 Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G4

Link with: G2

Description:

Existing:
 Current:
 Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G5

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G6

Link with: G2

Description:

Existing: G-6 -

Current: G-6 -

Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G7

Link with: G2

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G8

Link with: G2

Description:

Existing: G-8 -

Current: G-8 -

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G9

Link with: None

Description:

Existing: G-9 - Self Load is for Diaphragms

Current: G-9 - Self Load is for Diaphragms

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (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-9

Description: 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: 5.0000 (in)
Additional Self Load: 0.015 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
 Analysis Module: BrR Dist Fact
 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: ASTM A615, Grade 40
 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	1.333	0.776	1.333	0.222
Multi-Lane	1.333	0.776	1.333	0.833

Girder Profile

Shape

Shape: W 33x130
 Distance: 0.00 *(ft)*
 Length: 60.88 *(ft)*
 Material: ASTM A7

Flange Cover Plates

Plate	Begin Width <i>(in)</i>	End Width <i>(in)</i>	Thickness <i>(in)</i>	Distance <i>(ft)</i>	Length <i>(ft)</i>	Material
1 (Bot...		14.000...	14.000...	0.6250	10.44	40.00 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n <i>(ft)</i>	Length <i>(ft)</i>	Total Thickness <i>(in)</i>	Structural Thickness <i>(in)</i>	Effective Width (Std) <i>(in)</i>	Effective Width <i>(in)</i>
Unknown stren...	0.00	60.88		7.5000	68.5008	71.5008
	10.1...					

Shear Connectors

Start Distance <i>(ft)</i>	Length <i>(ft)</i>	Connector Name	Number per Row	Number of Spaces	Transverse Spacing <i>(in)</i>
0.00	60.88	Composite			

Haunch Profile

Haunch Type:		Flange edges					
Embedded flange:		TRUE					
Distance <i>(ft)</i>	Length <i>(ft)</i>	Z1 <i>(in)</i>	Z2 <i>(in)</i>	Z3 <i>(in)</i>	Z4 <i>(in)</i>	Y1 <i>(in)</i>	Y2 <i>(in)</i>
0.00	60.88			17.7500	17.7500	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance <i>(ft)</i>	Length <i>(ft)</i>
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance <i>(ft)</i>	Number	Spacing <i>(in)</i>
End Stiffener w/ 1...	0.00	1	0.0000
Int. dia. conn. (s...	19.94	1	0.0000
Int. dia. conn. (s...	40.41	1	0.0000
Single Plate Beari...	60.88	1	0.0000

Bearing Stiffener Locations

Superstructure Definition Westbound - Span 1

Definition

Units: US Customary

Number of spans: 1

Number of girders: 9

Length

Span (ft)

1 60.8800

Frame Structure Simplified Definition:

Support Frame Connection

1

2

Girder Spacing Display Type: Perpendicular

Average Humidity: 90.000 (%)

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
(Degrees)

Support
 1 38.3300
 2 38.3300

Girder Spacing Orientation: Perpendicular

Girder	Girder Spacing	
Bay	Start	End
	<i>(ft)</i>	<i>(ft)</i>
1	8.0000	8.0000
2	8.0000	8.0000
3	8.0000	8.0000
4	8.0000	8.0000
5	8.0000	8.0000
6	8.0000	8.0000
7	8.0000	8.0000
8	8.0000	8.0000

Diaphragms

Girder Bay 1

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>		<i>(kip)</i>
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 2

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>		<i>(kip)</i>
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	

Girder Bay 3

Distance	Distance	Diaphragm	Number of	Diaphragm
Left Girder	Right Girder	Spacing	Spaces	Weight
<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>		<i>(kip)</i>
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	

Girder Bay 4

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

Left Girder (ft)	Right Girder (ft)	Spacing (ft)	Spaces	Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 5</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	
<i>Girder Bay 6</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 7</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	0.00	1	
14.14	20.47	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 8</i>				
Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
14.14	20.47	20.47	1	
14.14	20.47	0.00	1	
60.88	60.88	0.00	1	

Structure Typical Section

Deck

Left start width:	34.16 (ft)
Left end width:	34.16 (ft)
Right start width:	34.16 (ft)
Right end width:	34.16 (ft)
Left start overhang:	1.96 (ft)
Left end overhang:	1.96 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
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Total deck thickness: 7.5000 (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 w...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
22.0000	8.0000	Unknown...	DC2		Right E...	-0.15 ...

Lane Position

Offset Left Start: -34.16 (ft)
 Offset Left End: -34.16 (ft)
 Offset Right Start: 32.47 (ft)
 Offset Right End: 32.47 (ft)

Wearing Surface

Wearing surface material: asphalt/concrete
 Description: Wearing Surface
 Wearing surface thickness: 7.6900 (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
Fascia Keyway	Additional deck concr...	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: Single Plate Bearing Stiffener
 Stiffener number: Single
 Plate Width: 7.0000 (in)
 Plate Thickness: 0.4380 (in)
 Material: ASTM A7
 Top Gap: 0.0000 (in)
 Bottom Gap: 0.0000 (in)
 Top Weld:
 Web Weld:
 Bottom Weld:

Name: Int. dia. conn. (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: End Stiffener w/ 10% loss
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top Gap: (in)
Bottom Gap: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: End Stiffener w/ 100% loss
Stiffener number: Single
Plate Width: 0.0010 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Bearing Stiffeners

Name: Interior Girders
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. Girders at Pier (10% loss)
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (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 G10

Link with: None

Description:

Existing: G-10 - Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 4" deep. The average spall depth is $(4" \times 18") / (68.25" \text{ effective width}) = 1.05"$, say 1". The revised composite deck thickness is $7.5" - 1" = 6.5"$.

2015 Deck Spalling at Midspan:

The worst spalling is 1.5' wide x 2" deep along the Bay 9 overhang. The average spall depth is $(2" \times 18") / (68.25" \text{ effective width}) = 0.53"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

Current: G-10 - Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 4" deep. The average spall depth is $(4" \times 18") / (68.25" \text{ effective width}) = 1.05"$, say 1". The revised composite deck thickness is $7.5" - 1" = 6.5"$.

2015 Deck Spalling at Midspan:

The worst spalling is 1.5' wide x 2" deep along the Bay 9 overhang. The average spall depth is $(2" \times 18") / (68.25" \text{ effective width}) = 0.53"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Member Loads - Settlement

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

Support Constraints

General

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

Elastic

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

Member Alternative G-10

Description: Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 4" deep. The average spall depth is $(4" \times 18") / (68.25" \text{ effective width}) = 1.05"$, say 1". The revised composite deck thickness is $7.5" - 1" = 6.5"$.

2015 Deck Spalling at Midspan:

The worst spalling is 1.5' wide x 2" deep along the Bay 9 overhang. The average spall depth is $(2" \times 18") / (68.25" \text{ effective width}) = 0.53"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

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: 5.0000 (in)
Additional Self Load: 0.015 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
 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	1.490	1.490	1.490	0.222
Multi-Lane	1.490	1.490	1.490	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	0.6250	10.44	40.00 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	10.44		6.5000	62.4996	71.5000
Unknown stren...	10.1...					
Unknown stren...	10.44	40.00		7.0000	65.4996	71.5000
Unknown stren...	10.1...					
Unknown stren...	50.44	10.44		6.5000	62.4996	71.5000
	10.1...					

Shear Connectors

Start Distance	Length	Connector Name	Number per Row	Number of Spaces	Transverse Spacing
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(ft)	(ft)	
0.00	60.88	Composite
		(in)

Haunch Profile

Haunch Type:		Flange edges					
Embedded flange:		TRUE					
Distance	Length	Z1	Z2	Z3	Z4	Y1	Y2
(ft)	(ft)	(in)	(in)	(in)	(in)	(in)	(in)
0.00	60.88			17.7500	17.7500	0.0000	0.0000

Bracing Ranges

<u>Lateral Support</u>	
Distance	Length
(ft)	(ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	(ft)		(in)
Single Plate Beari...	0.00	1	0.0000
Int. dia. conn. (s...	14.14	1	0.0000
Int. dia. conn. (s...	34.61	1	0.0000
End Stiffener w/ 1...	60.88	1	0.0000

Bearing Stiffener Locations

Member G11

Link with: None

Description:

Existing: G-11 - Self Load is for Diaphragms

Current: G-11 - Self Load is for Diaphragms

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: 0.000 (lb/ft)

Member Loads

Member Loads - Settlement

Support	Horizontal	Vertical	Rotational	Load Case Name
---------	------------	----------	------------	----------------

Number	(in)	(in)	(Radians)
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-11

Description: 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: 5.0000 (in)
 Additional Self Load: 0.030 (kip/ft)
 Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
 Analysis Module: AASHTO ASD
 Analysis Module Component:
 Properties:

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

Analysis Method: LRFD
 Analysis Module: AASHTO LRFD
 Analysis Module Component:
 Properties:

Analysis Method: LRFR
 Analysis Module: AASHTO LRFR
 Analysis Module Component:
 Properties:

Analysis Method: Distribution Factors

Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
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	1.143	1.250	1.143	0.222
Multi-Lane	1.455	1.750	1.455	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)
Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	1.1250	6.44	48.00 ASTM A7

Deck Profile

Deck Concrete

Material (LRFD)	Distance n	Length (ft)	Total Thickness (in)	Structural Thickness (in)	Effective Width (Std) (in)	Effective Width (in)
Unknown stren...	0.00	60.88		7.5000	90.0000	96.0000
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	Composite			

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Int. dia. conn. (s...	14.14	1	0.0000
Int. dia. conn. (s...	20.47	1	0.0000
Int. dia. conn. (s...	34.61	1	0.0000
Int. dia. conn. (s...	40.94	1	0.0000

Bearing Stiffener Locations

Support 1

Stiffener Pair	Name	Offset (in)
1	Interior Girders	0.0000

Support 2

Stiffener Pair	Name	Offset (in)
1	Int. Girders at Pier (10% loss)	0.0000

Member G12

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G13

Link with: G11

Description:

Existing: G-13 -

Current: G-13 -

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G14

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length (ft)
1	60.880000

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

1
2

Pedestrian load: *(lb/ft)*

Member G15

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G16

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length <i>(ft)</i>
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: *(lb/ft)*

Member G17

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G18

Link with: None

Description:

Existing: G-18 - Self Load is for Diaphragms

Section Loss: Use 2015 d-meter reading "A" (0.361") for a 3" height, reading "C" (0.397") for a 2" height, reading "E" (0.503") for a 2" height, reading "G" (0.570") for remaining height. Weighted average loss is 7.6%, say 10%.

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 1' wide x 2" deep. The average spall depth is $(2" \times 12") / (73" \text{ effective width}) = 0.328"$, say $3/8"$. The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

Current: G-18 - Self Load is for Diaphragms

Section Loss: Use 2015 d-meter reading "A" (0.361") for a 3" height, reading "C" (0.397") for a 2" height, reading "E" (0.503") for a 2" height, reading "G" (0.570") for remaining height. Weighted average loss is 7.6%, say 10%.

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 1' wide x 2" deep. The average spall depth is $(2" \times 12") / (73" \text{ effective width}) = 0.328"$, say $3/8"$. The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member Loads

Distributed Loads

Distance (ft)	Length (ft)	Start (kip/ft)	End (kip/ft)	Load Case Name
0.00	60.88	0.095	0.095	Fascia Key...

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-18

Description: Self Load is for Diaphragms

Section Loss: Use 2015 d-meter reading "A" (0.361") for a 3" height, reading "C" (0.397") for a 2" height, reading "E" (0.503") for a 2" height, reading "G" (0.570") for remaining height. Weighted average loss is 7.6%, say 10%.

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 1' wide x 2" deep. The average spall depth is $(2" \times 12") / (73" \text{ effective width}) = 0.328"$, say 3/8". The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

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:	5.0000 (in)
Additional Self Load:	0.015 (kip/ft)
Additional Self Load %:	(%)

Analysis Module

Analysis Method:	ASD
Analysis Module:	AASHTO ASD
Analysis Module Component:	
Properties:	

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
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	1.333	0.917	1.333	0.222
Multi-Lane	1.333	0.917	1.333	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	0.7500	0.69	59.50 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 10.1...	60.88		7.1250	71.0016	76.2516

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	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	60.88			22.5000	22.5000	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance	Length
(ft)	(ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	(ft)		(in)
Single Plate Beari...	0.00	1	0.0000
Int. dia. conn. (s...	20.47	1	0.0000
Int. dia. conn. (s...	40.94	1	0.0000
End Stiffener w/ 1...	60.88	1	0.0000

Bearing Stiffener Locations

Points of Interest

Distance from left most support: 60.78 (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: TRUE
ASD
 Compression flange unsupported length: (ft)
 Tension Field Action Ignore combined shear and bending
Riveted Section
 Net moment of inertia: (in^4)
 Distance to centroid: (in)
 Net area of web: (in^2)
 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	60.38	0.50

Superstructure Definition Westbound - Span 2

Definition

Units: US Customary
 Number of spans: 1
 Number of girders: 9
 Length
 Span (ft)
 1 60.8800
 Frame Structure Simplified Definition:
 Support Frame Connection
 1
 2
 Girder Spacing Display Type: Perpendicular
 Average Humidity: 90.000 (%)

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 38.3300
2 38.3300
Girder Spacing Orientation: Perpendicular

Girder Bay	Girder Spacing Start (ft)	Girder Spacing End (ft)
1	8.0000	8.0000
2	8.0000	8.0000
3	8.0000	8.0000
4	8.0000	8.0000
5	8.0000	8.0000
6	8.0000	8.0000
7	8.0000	8.0000
8	8.0000	8.0000

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	
13.61	19.94	0.00	1	

13.61	19.94	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 2</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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	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	
13.61	19.94	20.47	1	
13.61	19.94	0.00	1	
60.88	60.88	0.00	1	
<i>Girder Bay 4</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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 5</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	
13.61	19.94	20.47	1	
13.61	19.94	0.00	1	
60.88	60.88	0.00	1	
<i>Girder Bay 6</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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 7</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	
13.61	19.94	0.00	1	
13.61	19.94	20.47	1	
60.88	60.88	0.00	1	
<i>Girder Bay 8</i>				

Distance Left Girder (ft)	Distance Right Girder (ft)	Diaphragm Spacing (ft)	Number of Spaces	Diaphragm Weight (kip)
0.00	0.00	0.00	1	
13.61	19.94	20.47	1	
13.61	19.94	0.00	1	
60.88	60.88	0.00	1	

Structure Typical Section

Deck

Left start width:	34.16 (ft)
Left end width:	34.16 (ft)
Right start width:	34.16 (ft)
Right end width:	34.16 (ft)
Left start overhang:	1.96 (ft)
Left end overhang:	1.96 (ft)

Deck (Cont'd)

Deck concrete:	Unknown strength concrete prior to 1959
Total deck thickness:	7.5000 (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 w...	DC2		Right E...	0.00	0.00	Left

Sidewalk

Width	Thickness At End	Material	Load Case	Measure to	Measured From	At Start
22.0000	8.0000	Unknown...	DC2		Right E...	-0.15 ...

Lane Position

Offset Left Start:	-34.16 (ft)
Offset Left End:	-34.16 (ft)
Offset Right Start:	32.47 (ft)
Offset Right End:	32.47 (ft)

Wearing Surface

Wearing surface material:	asphalt/concrete
Description:	Wearing Surface
Wearing surface thickness:	7.6900 (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
Fascia Keyway	Additional deck concr...	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: Single Plate Bearing Stiffener
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. dia. conn. (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: End Stiffener w/ 10% loss
Stiffener number: Single
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top Gap: 0.0000 (in)
Bottom Gap: 0.0000 (in)
Top Weld:
Web Weld:
Bottom Weld:

Bearing Stiffeners

Name: Interior Girders
Plate Width: 7.0000 (in)
Plate Thickness: 0.4380 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)

Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (in)
Top Weld:
Web Weld:
Bottom Weld:

Name: Int. Girders at Pier (10% loss)
Plate Width: 7.0000 (in)
Plate Thickness: 0.3940 (in)
Material: ASTM A7
Top outside clip length: (in)
Top inside horizontal clip length: (in)
Top inside vertical clip length: (in)
Bottom outside clip length: (in)
Bottom inside horizontal clip length: (in)
Bottom inside vertical clip length: (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 G10

Link with: None

Description:

Existing: G-10 - Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 2" deep. The average spall depth is $(1.5' \times 24") / (68.25" \text{ effective width}) = 0.53"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

2015 Deck Spalling at Midspan:

Say the worst spalling is 1' wide x 2" deep in Bay 9. The average spall depth is $(1' \times 2") / (68.25" \text{ effective width}) = 0.35"$, say 3/8". The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

Current: G-10 - Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 2" deep. The average spall depth is $(1.5' \times 24") / (68.25" \text{ effective width}) = 0.53"$, say 1/2". The revised

composite deck thickness is $7.5" - 1/2" = 7"$.

2015 Deck Spalling at Midspan:

Say the worst spalling is 1' wide x 2" deep in Bay 9. The average spall depth is $(1' \times 2") / (68.25" \text{ effective width}) = 0.35"$, say $3/8"$. The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

Number of Spans: 1

Span Span Length

Number	(ft)
1	60.880000

Support Frame Connection

1
2

Pedestrian load: (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-10

Description: Self Load is for Diaphragms

2015 Deck Spalling at Ends:

The median fascia overhang has areas of spalling. The worst spall is 1.5' wide x 2" deep. The average spall depth is $(1.5' \times 24") / (68.25" \text{ effective width}) = 0.53"$, say $1/2"$. The revised composite deck thickness is $7.5" - 1/2" = 7"$.

2015 Deck Spalling at Midspan:

Say the worst spalling is 1' wide x 2" deep in Bay 9. The average spall depth is $(1' \times 2") / (68.25" \text{ effective width}) = 0.35"$, say $3/8"$. The revised composite deck thickness is $7.5" - 3/8" = 7.125"$.

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: 5.0000 (in)
Additional Self Load: 0.015 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
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	1.490	1.490	1.490	0.222
Multi-Lane	1.490	1.490	1.490	0.833

Girder Profile

Shape

Shape: W 33x130

Distance: 0.00 (ft)

Length: 60.88 (ft)

Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	0.6250	10.44	40.00 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	10.44		7.0000	65.4996	71.5000
	10.1...					
Unknown stren...	10.44	40.00		7.1250	66.2496	71.5000
	10.1...					

Unknown stren...	50.44	10.44	7.0000	65.4996	71.5000
	10.1...				

Shear Connectors

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

Haunch Profile

Haunch Type:		Flange edges					
Embedded flange:		TRUE					
Distance	Length	Z1	Z2	Z3	Z4	Y1	Y2
(ft)	(ft)	(in)	(in)	(in)	(in)	(in)	(in)
0.00	60.88			17.7500	17.7500	0.0000	0.0000

Bracing Ranges

<u>Lateral Support</u>	
Distance	Length
(ft)	(ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance	Number	Spacing
	(ft)		(in)
End Stiffener w/ 1...	0.00	1	0.0000
Int. dia. conn. (s...	13.61	1	0.0000
Int. dia. conn. (s...	34.08	1	0.0000
Single Plate Beari...	60.88	1	0.0000

Bearing Stiffener Locations

Member G11

Link with: None

Description:

Existing: G-11 - Self Load is for Diaphragms

Current: G-11 - Self Load is for Diaphragms

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

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-11

Description: 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: 5.0000 (in)
Additional Self Load: 0.030 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:
Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
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	1.143	1.250	1.143	0.222
Multi-Lane	1.455	1.750	1.455	0.833

Girder Profile

Shape

Shape: W 33x130
Distance: 0.00 (ft)
Length: 60.88 (ft)
Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	1.1250	6.44	48.00 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 10.1...	60.88		7.5000	90.0000	96.0000

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	Composite			

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
Int. dia. conn. (s...	13.61	1	0.0000
Int. dia. conn. (s...	19.94	1	0.0000
Int. dia. conn. (s...	34.08	1	0.0000
Int. dia. conn. (s...	40.41	1	0.0000

Bearing Stiffener Locations

Support 1

Stiffener Pair	Name	Offset (in)
-------------------	------	----------------

1	Int. Girders at Pier (10% loss)	0.0000
<i>Support 2</i>		
Stiffener		Offset
Pair	Name	(in)
1	Interior Girders	0.0000

Member G12

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G13

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span	Span Length
Number	(ft)
1	60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G14

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length
1	(ft) 60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G15

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length
1	(ft) 60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G16

Link with: G11

Description:

Existing:

Current:

Number of Spans: 1

Span Number	Span Length
1	(ft) 60.880000

Support	Frame Connection
1	
2	

Pedestrian load: (lb/ft)

Member G17

Link with: G11

Description:

Existing: G-17 -

Current: G-17 -

Number of Spans: 1

Span Span Length

Number (ft)

1 60.880000

Support Frame Connection

1

2

Pedestrian load: (lb/ft)

Member G18

Link with: None

Description:

Existing: G-18 - Self Load is for Diaphragms

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 2' wide x 1.5" deep. The average spall depth is $(1.5" \times 24") / (73" \text{ effective width}) = 0.493"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

Current: G-18 - Self Load is for Diaphragms

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 2' wide x 1.5" deep. The average spall depth is $(1.5" \times 24") / (73" \text{ effective width}) = 0.493"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

Number of Spans: 1

Span Span Length

Number (ft)

1 60.880000

Support Frame Connection

1

2

Pedestrian load: (lb/ft)

Member Loads

Distributed Loads

Distance	Length	Start	End	Load Case Name
(ft)	(ft)	(kip/ft)	(kip/ft)	
0.00	60.88	0.095	0.095	Fascia Key...

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-18

Description: Self Load is for Diaphragms

2015 Deck Spalling:

The right fascia overhang has areas of spalling. The worst spall is 2' wide x 1.5" deep. The average spall depth is $(1.5" \times 24") / (73" \text{ effective width}) = 0.493"$, say 1/2". The revised composite deck thickness is $7.5" - 1/2" = 7"$.

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: 5.0000 (in)
Additional Self Load: 0.015 (kip/ft)
Additional Self Load %: (%)

Analysis Module

Analysis Method: ASD
Analysis Module: AASHTO ASD
Analysis Module Component:
Properties:

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

Analysis Method: LRFD
Analysis Module: AASHTO LRFD
Analysis Module Component:

Properties:

Analysis Method: LRFR
Analysis Module: AASHTO LRFR
Analysis Module Component:
Properties:

Analysis Method: Distribution Factors
Analysis Module: BrR Dist Fact
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: ASTM A615, Grade 40
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	1.333	0.917	1.333	0.222
Multi-Lane	1.333	0.917	1.333	0.833

Girder Profile

Shape

Shape: W 33x130
Distance: 0.00 (ft)
Length: 60.88 (ft)
Material: ASTM A7

Flange Cover Plates

Plate	Begin Width (in)	End Width (in)	Thickness (in)	Distance (ft)	Length (ft)	Material
1 (Bot...		14.000...	14.000...	0.7500	0.69	59.50 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	60.88		7.0000	70.2516	76.2516
	10.1...					

Shear Connectors

Start Distance (ft)	Length (ft)	Connector Name	Number per Row	Number of Spaces	Transverse Spacing (in)
0.00	60.88	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	60.88			22.5000	22.5000	0.0000	0.0000

Bracing Ranges

Lateral Support

Distance (ft)	Length (ft)
0.00	60.88

Stiffener Ranges

Transverse Stiffener Ranges (Location)

Name	Distance (ft)	Number	Spacing (in)
End Stiffener w/ 1...	0.00	1	0.0000

Int. dia. conn. (s...	19.94	1	0.0000
Int. dia. conn. (s...	40.41	1	0.0000
Single Plate Beari...	60.88	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: *(in^4)*

Distance to centroid: *(in)*

Net area of web: *(in^2)*

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	0.00	0.50