INFRASTRUCTURE SUPPORT SERVICES

Contract DE-EM0004062

Deliverable #120

Scheduled Road and Bridge Inspections Report Part 1

PMA-PORTS-20-6550

September 2020

Road Assessment Report

Portsmouth Mission Alliance, LLC
managing the
Infrastructure Support Services at the
Portsmouth Gaseous Diffusion Plant
under contract DE-EM0004062 for the
U.S. DEPARTMENT OF ENERGY

Classification Review Required Prior to Public Release

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Prepared for the
U.S. Department of Energy
Office of Environmental Management

by
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ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
CMP	Corrugated Metal Pipe
DOE	U.S. Department of Energy
MUTCD	Manual for Uniform Traffic Control Devices
ODOT	Ohio Department of Transportation
PCR	Pavement Condition Rating
PMA	Portsmouth Mission Alliance, LLC
PORTS	Portsmouth Gaseous Diffusion Plant
SSD	Stopping Sight Distance

1 PURPOSE

The purpose of this Report (Portsmouth Road Assessment) is to provide planning level assessment results to assist in the decision-making process regarding future roadway repair and maintenance for the Portsmouth Gaseous Diffusion Plan (PORTS) site. Although a more detailed analysis would require additional investigation and field work including geotechnical borings to completely assess pavement, base, and subgrade conditions, this Report has been prepared to provide valuable information that can be used by decision makers in future road improvement activities. In addition to the information included in this Report, the determination of which roadways and/or roadway segments to improve should be based on an assessment of projected volumes, vehicle types, loads, traffic circulation needs, safety, etc.

2 ROAD ASSESSMENT

Road assessment activities were performed by Portsmouth Mission Alliance, LLC (PMA) and North Wind Infrastructure & Technology (North Wind) field personnel over spring and summer of 2020. After a morning training session, the PMA/North Wind field team performed site assessment activities associated with all paved and unpaved roads, parking areas, and pedestrian walkways included in Section J, Attachment J-8.C.3.4.4A of the Contract. By only having one inspection team, the subjectivity between teams is removed for this report.

As required in the Contract, the Ohio Department of Transportation (ODOT) Pavement Condition Rating (PCR) System was used to generate applicable PCR scores for each segment of roadway and all parking areas. The PCR results, indicated in the Asphalt Surface and Gravel PCR Forms, were determined and the results are presented in Figure and Spreadsheet formats in Appendix A and B, respectively.

Road assessment general observations are included below and have been organized in accordance with the above referenced Section J Attachment. More specifically, the roads, segments, and areas are broken out into the following Sections:

- Inside Perimeter Fence,
- Perimeter and Fog Road,
- Portal Segments,
- Parking Areas,
- Pedestrian Walkways, and
- Other/Minor Roads/Gravel.

There are roads and sidewalks included in this 2020 Assessment that were not included in previous Reports to update the documentation of road segments. In order to track these various revisions, the PCR spreadsheets for each road type have been prepared to indicate both the current assessment values and ratings, as well the 2019 assessment values and ratings.

Consequently, as very few assessment variances were encountered during the current year, photos included in Appendix C of the roads in “Poor” condition were created from the current year’s assessment.

2.1 INSIDE PERIMETER FENCE

The interior site roads facilitate vehicle operations by either trained employees or contractors that are being escorted and/or have been trained. Inside the fence, traffic speeds are much slower and typical roadside safety and design standards are limited in their applicability to these conditions. The safety element comes from pavement condition and the ability to safely operate equipment on the paved surfaces.

In general, and other than recently improved sections of road, the pavement conditions of the interior site roads are highly distressed. The roadways are becoming more distressed from activities associated with the D&D Project, aging infrastructure, and the pavement originally being designed for lighter traffic loads. Many of the roads have fallen into the “Fair” and “Poor” categories.

Based on road assessment, it appears the majority of the site roads were constructed "level" with the original ground and there are no ditches or positive drainage of any kind. The result has been saturation of the aggregate base and subgrade materials, which has reduced the structural capacity of the base materials and hence not provided adequate support for the pavement. The majority of these roads are in a condition that is beyond any effective routine maintenance or repair. Full reconstruction must be evaluated for the cost-to-benefit ratio, depending on the future development and use of the roadway infrastructure. There are a few exceptions, including roads that have been recently paved. A spreadsheet indicating PCR values, Overall Condition Assessment, and distress type present for roads within this Section is included in Appendix B.

2.2 PERIMETER ROAD AND FOG ROAD

Inside the boundary, the majority of roads have changed. Other than roads that were recently paved, all other roads have diminished ratings. Also, a new section was created from South West Construction Access to F-Portal (Poor) since it differed significantly from the F-Portal to X-2207E Entrance (Excellent).

The Perimeter Road and exterior access roads represent a significantly different condition than the roads within the fenced area of the facility. Many of these roads are open to the public, as well as utilized by the U.S. Department of Energy (DOE) operations and employees of the facility. These roads have higher traffic volumes, higher traffic speeds, and a mixture of truck and passenger vehicle traffic similar to a local county road or rural state highway.

These roads appear to have adequate horizontal and vertical geometry when considering the terrain, volumes, vehicle types, and surrounding conditions. Stopping sight distance (SSD) appeared to be adequate at all intersections and on all vertical curves for the posted speed. On Fog Road, the SSD on some of the horizontal curves is reduced, but adequate signage is in place to warn drivers of reduced visibility due to road curvature.

The roadways have a diverse cross-sectional geometry including cross slope, lane width, shoulder width (if present), fore slope/back slope, ditch depth (if present), and fill slope. Generally speaking, the cross-sectional geometry is appropriate for the volumes and traffic types, with the potential exception of Fog Road, where at least a 2-foot shoulder would be desirable to keep the tire path away from the edge of pavement (for heavy vehicles) where there is no lateral support, resulting in early failure of the pavement edge. Most of the roadway segments do not have shoulders but there are many places adequate for a disabled vehicle to pull out of the way of the

travel lane. Given the volumes, speeds, and character of the roadways, adding shoulders is not recommended at this time but should be considered in any reconstruction or change in conditions.

The roadways all appear to have striping that is visible and reasonably well maintained. Given the fog conditions that can exist, a reflective striping material is recommended for all future maintenance. There are no or very few delineator posts on tangents or curves. If nighttime or fog related accidents become an issue, the installation of appropriate curve delineation could be considered in key areas.

Signs appeared to be well maintained. Some of the signs appear to be smaller than what current standards would suggest. It would be appropriate to take a full inventory of the signs and review them against current size and placement standards. For example, most of the stop signs are 30 inches or some may be less. It would be appropriate to upsize the stop signs to 36 inches given the rural nature of the roadways, etc. Some of the signs may be placed too far away from the road based on current standards (12-foot minimum offset is the current ODOT Standard).

2.3 PORTAL SEGMENTS

Portal segment roads generally provide access to the site from public roads and terminate at Perimeter Road. Some of the roads have decreased in quality over the last year including Perimeter Road to North Portal, which went from a “Good” value of 84.7 down to 72.9, “Fair.” Portal roads that are open to the public are maintained similarly to Perimeter Road and, because of the recent overlay projects, the majority are in either “Good” or “Excellent” condition.

Portal roads, open to the public, have higher traffic speeds and usage similar to the Perimeter Road. Volumes are relatively high but have peaking events corresponding to employee ingress and egress in addition to deliveries. There is a mix of truck and passenger vehicle traffic at most entrances. A complete assessment of portal segments inspected is included in Appendix B.

2.4 PARKING AREAS

The parking areas are, for the most, part in great condition. Those that are not in great condition are typically “Fair” if not “Poor”. Majority of the parking areas are in “Excellent” condition. Because of no construction during 2019, the parking areas that were in dire condition in 2019 are now showing little wear because of the lack of taxing conditions, or in “Poor” condition because of water under the pavement or excessive use. The main issue occurring to the parking lots is wheel track cracking. Those parking lots that are experiencing this issue tend to be the same parking lots that are in “Poor” or “Fair” condition and need to be addressed.

2.5 PEDESTRIAN WALKWAYS

A complete inspection of all critical walkways was completed in this assessment. Notes and pictures were taken for all walkways. The majority of the walkways are well maintained due to the tripping hazards that could be associated with unmaintained walkways. Major tripping hazards have been mitigated by shaving the concrete or otherwise eliminating the hazard. Minor tripping hazards have been marked with orange paint. Several new pathways have been installed in recent years in high foot traffic areas that were previously only gravel walkways. These new walkways were constructed primarily with asphalt. Some walkways crossed roads and parking areas, therefore would be maintained during road maintenance efforts. All walkways are maintained year-round.

The pedestrian walkways are mostly in “Excellent” condition, and those that are not, are in “Good” condition within a 2-point difference, other than the X-720 and X-700 Walkway which is “Fair.” The main issue with the pedestrian walkways is the transverse cracking occurring that needs to be remedied.

2.6 OTHER/MINOR ROADS/GRAVEL

These roads were included in the overall assessment process and generally consisted of lesser used roads both within and outside the fenced areas. These roads are typically in “Excellent” condition, if not in “Fair” or “Good” condition. Paved roads within the Section were generally in a highly distressed state. Gravel roads within the Section, however, were generally in “Poor” condition and appear to be not well maintained. The current conditions are due to Covid-19 protocols and the lack of workers on site to perform road maintenance. A complete assessment of each road inspected under this Section is included in Appendix B.

2.7 GUARDRAIL

There have been no additional guardrail projects since 2018, but the guardrail that was installed is still in “Excellent” condition. The other guardrail that was not part of this project is still in “Fair” condition, being in working order but possibly out of the current ODOT standards.

2.8 BRIDGE ASSESSMENT

On June 5, 2020, routine bridge assessment activities were performed by Burgess & Niple Inc., in accordance with the following standards:

- Manual of Bridge Inspection, ODOT, 2014 v8.
- Manual for Condition Evaluation of Bridge, 2nd Edition, American Association of State Highway and Transportation Officials (AASHTO), 2011.
- Bridge Inspector’s Reference Manual, U.S. Department of Transportation, revised December 2012.

Until recently, the PORTS site had only one structure that was designated as a bridge and required routine assessment. Due to recognition of the above listed standards, however, an additional water conveyance structure was re-characterized as a bridge. This structure is located under the North Access Road and consists of an original 12-foot diameter Corrugated Metal Pipe (CMP) that has been lined with an additional 10-foot × 8-inch CMP liner pipe. The final Bridge Assessment Report, including both the Fog Road Bridge and the North Access Bridge, will be submitted separately. Upon completion of the Culvert 17 re-lining project, the span has been reduced below the requirement for being inspected as a bridge and will be inspected as a culvert in later reports.

3 REFERENCE DOCUMENTS

Aside from the pavement conditions ratings, there are several roadside features and design elements that should be considered related to safety. Since many of the roads included in the assessment are essentially operating as public roads, the following design standards are applicable and recommended:

1. AASHTO, A Policy on Geometric Design of Highways and Streets (commonly referred to as the AASHTO Green Book) - this publication represents the "Bible" of roadway design standards and is widely adopted nationwide as a basis for roadway design. In most states, the State Department of Transportation adopts AASHTO as a standard and modifies/supplements AASHTO with special standards that are exclusive to a particular region. Many smaller cities and most rural counties fully adopt AASHTO as their default roadway design manual.

2. AASHTO Roadside Design Guide, 4th Edition – this publication represents the industry standard for designing safe roadside geometry to provide errant vehicles with a clear zone for safety. This Guide is adopted by most, if not all, transportation agencies as the main design resource for roadside geometry and features and supplements the AASHTO Green Book in many ways.

3. ODOT Engineering Standard Drawings – the ODOT has an extensive library of standard drawings and details that demonstrate how features such as guardrail, striping, culverts, etc. should be designed and installed.

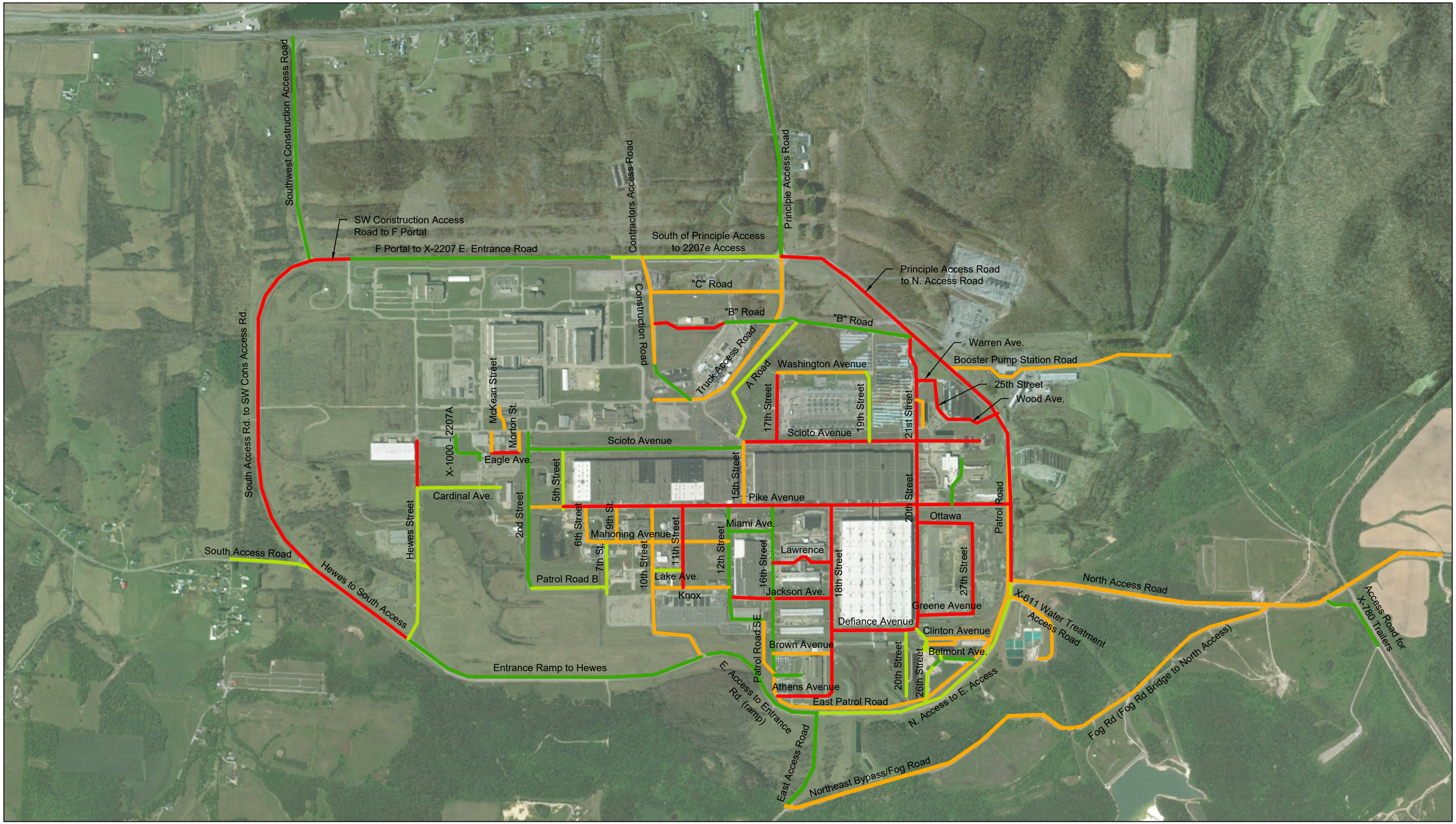
4. Manual for Uniform Traffic Control Devices (MUTCD) – this manual represents the adopted standard for signing (among other things) for all types of roadways. Most transportation agencies adopt and then modify/amend the MUTCD to meet any special local needs.

5. ODOT Design Manuals (i.e., Roadway, Drainage, Bridge).

The use of the above standards for planning, design, and construction will promote consistency, assure compliance with current standards, and substantially reduce the liability of the roadway owner/operator.

APPENDIX A

ROAD ASSESSMENT RATING EXHIBITS



Road Conditions
- Excellent
- Good
- Fair
- Poor

DATE: 08/25/2020	FIGURE 1: ROAD INSPECTION RATING EXHIBIT	JOB NUMBER:	NORTHWIND INFRASTRUCTURE & TECHNOLOGY
FILE NAME: Road_Assessment_Exhibit_2020.dwg		FIGURE NUMBER: 1	
		REV NUMBER: 1	

Road Conditions
- Excellent
- Good
- Fair
- Poor

DATE: 08/25/2020

FILE NAME: Parking_Assesment_Exhibit_2020.dwg

FIGURE 2: PARKING AREA ASSESSMENT RATING EXHIBIT

JOB NUMBER:

FIGURE NUMBER: 2

REV NUMBER: 1

NORTHWIND INFRASTRUCTURE & TECHNOLOGY

APPENDIX B

ROAD ASSESSMENT SUMMARY SPREADSHEETS

PORTSMOUTH INFRASTRUCTURE-PAVED AREAS

Paved Street Name or Parking	Length (ft.) or Area (sf.)	2020 PCR Values	2020 Condition	Raveling	Bleeding	Patching	Potholes	Rutting	Map Cracking	Base Failure	Settlements	Transverse Cracking	Wheel Track Cracking	Longitudinal Cracking	Edge Cracking	Pressure Damage	Crack sealing Deficiency	REPAIR COST		
Inside Perimeter Fence																		SY	$/SY	Estimated Cost
2nd Street	5,428	92.3	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.0	1.2	0.0	0.0	0.0	603	$ -	$0
5th Street	17,644	82.9	Good	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	5.3	2.4	1.0	0.0	0.0	1,960	$ 0.83	$3,627
6th Street	9,784	75.2	Fair	3.0	0.0	0.0	0.9	0.0	2.4	4.2	2.8	4.9	5.3	0.0	1.4	0.0	0.0	1,087	$ 19.94	$23,677
7th Street	3,700	84.5	Good	1.5	0.0	0.9	0.9	0.0	0.0	0.0	0.0	7.0	3.0	1.2	1.0	0.0	0.0	411	$ 0.83	$2,341
9th Street	10,000	74.5	Fair	1.5	0.0	0.9	0.0	0.0	0.4	0.0	3.5	7.0	7.4	2.4	2.5	0.0	0.0	1,111	$ 19.94	$24,156
10th Street	30,625	73.3	Fair	1.5	0.0	1.8	1.8	0.0	1.2	0.0	1.2	7.0	7.4	2.4	2.5	0.0	0.0	3,403	$ 19.94	$69,851
11th Street	23,100	43.1	Poor	6.0	0.0	5.0	3.0	0.0	5.0	10.0	5.0	4.9	10.5	4.0	3.5	0.0	0.0	2,567	$ 31.75	$83,492
12th Street	28,710	93.2	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	0.8	1.0	0.0	0.0	3,190	$ -	$0
15th Street	16,580	76.5	Fair	0.0	0.0	0.9	0.0	0.0	2.4	0.0	1.2	7.0	7.4	1.2	3.5	0.0	0.0	1,842	$ 19.94	$38,734
16th Street	36,687	93.8	Excellent	0.0	0.0	0.9	0.0	0.0	0.0	0.0	1.2	2.0	0.0	0.4	1.8	0.0	0.0	4,076	$ -	$0
17th Street	15,296	54.5	Poor	10.0	0.0	4.0	2.4	6.0	0.0	5.6	2.8	4.9	7.4	0.0	2.5	0.0	0.0	1,700	$ 31.75	$55,961
18th Street	36,876	41.6	Poor	2.4	0.0	2.4	3.0	8.0	4.0	9.0	3.5	4.9	15.0	1.2	5.0	0.0	0.0	4,097	$ 31.75	$132,090
19th Street	15,760	84.7	Good	0.0	0.0	0.9	0.9	0.0	2.0	0.0	0.0	4.9	5.3	0.4	1.0	0.0	0.0	1,751	$ 0.83	$3,453
20th Street	102,500	63.5	Poor	2.4	0.0	1.2	2.4	0.0	2.4	5.6	1.6	7.0	10.5	2.4	1.0	0.0	0.0	11,389	$ 31.75	$363,597
27th Street	14,500	44.0	Poor	10.0	0.0	3.0	1.8	0.0	5.0	0.0	1.2	10.0	15.0	5.0	5.0	0.0	0.0	1,611	$ 31.75	$53,153
Athens Avenue	5,880	52.3	Poor	10.0	0.0	0.0	0.0	0.0	5.0	4.2	0.0	7.0	15.0	3.0	3.5	0.0	0.0	653	$ 31.75	$22,743
Defiance Avenue	12,800	52.9	Poor	2.4	0.0	2.4	3.0	4.2	3.0	7.2	1.2	7.0	15.0	0.0	1.8	0.0	0.0	1,422	$ 31.75	$47,156
Jackson Avenue 12th-18th Street	28,840	59.5	Poor	4.8	0.0	1.8	1.2	0.0	0.4	9.0	1.6	7.0	7.4	2.4	2.5	2.5	0.0	3,204	$ 31.75	$103,741
Knox Avenue	22,491	66.8	Fair	1.5	0.0	4.0	3.0	0.0	2.4	0.0	2.0	7.0	7.4	5.0	1.0	0.0	0.0	2,499	$ 19.94	$51,830
Lake Avenue	8,560	83.5	Good	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	7.0	5.3	2.4	1.0	0.0	0.0	951	$ 0.83	$2,789
Lawrence Avenue 16th-18th Street	18,800	60.7	Poor	0.0	0.0	4.0	3.0	0.0	4.0	7.2	1.2	10.0	7.4	0.8	1.8	0.0	0.0	2,089	$ 31.75	$68,322
Mahoning Avenue 6th-12th Street	40,782	79.9	Fair	1.5	0.0	1.8	0.0	0.0	0.4	0.0	1.2	5.0	5.3	4.0	1.0	0.0	0.0	4,531	$ 19.94	$92,355
Miami Avenue	12,915	91.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.8	3.0	0.4	1.0	0.0	0.0	1,435	$ -	$0
Pike Avenue	119,217	60.6	Poor	4.8	0.0	0.9	2.4	0.0	2.4	0.0	3.5	10.0	10.5	2.4	2.5	0.0	0.0	13,246	$ 31.75	$422,571
Ottawa Avenue 20th-27th Street	6,570	59.2	Poor	0.0	0.0	4.0	2.4	0.0	5.0	4.2	0.0	2.8	15.0	2.4	5.0	0.0	0.0	730	$ 31.75	$25,178
Scioto Avenue to 5th Street (486')	10,692	95.1	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.4	1.0	0.0	0.0	1,188	$ -	$0
Scioto Avenue 5th-15th Street	50,600	99.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	5,622	$ -	$0
Scioto Avenue 15th-20th Street	49,760	63.0	Poor	3.0	0.0	0.9	1.2	4.2	5.0	0.0	0.0	10.0	7.4	0.4	5.0	0.0	0.0	5,529	$ 31.75	$177,542
Washington Avenue	20,768	71.1	Fair	0.0	0.0	3.0	0.0	0.0	5.0	0.0	2.8	7.0	7.4	2.4	1.4	0.0	0.0	2,308	$ 19.94	$48,013
Perimeter Road and Fog Road																		SY	$/SY	Estimated Cost
N. Access Road to E. Access Road	136,656	83.2	Good	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.9	7.4	2.4	1.8	0.0	0.0	15,184	$ 0.83	$14,603
E. Access Road to Entrance Road (Ramp)	84,000	94.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.4	1.0	0.0	0.0	9,333	$ -	$0
Entrance Road (Ramp) to Hewes Road	172,800	94.4	Excellent	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	4.0	0.0	0.4	0.0	0.0	0.0	19,200	$ -	$0
Hewes Road to South Access Road	255,294	60.7	Poor	3.0	0.0	0.9	2.4	4.2	5.0	0.0	2.1	7.0	7.4	2.4	5.0	0.0	0.0	28,366	$ 31.75	$902,621
South Access Road to SW Cons Access Road	121,368	60.1	Poor	3.0	0.0	0.9	2.4	1.8	2.4	5.4	2.8	7.0	7.4	2.4	3.5	1.0	0.0	13,485	$ 31.75	$430,159
SW Cons Access Road to F Portal	35,080	61.1	Poor	10.0	0.0	3.0	3.0	0.0	2.0	0.0	0.0	7.0	10.5	2.4	1.0	0.0	0.0	3,898	$ 31.75	$125,754
F Portal to X-2207 E. Entrance Road	92500.0	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,278	$ -	$0
X-2207 E. Access Road to Principle Access Road	84,702	88.3	Good	1.5	0.0	0.0	0.9	0.0	0.4	0.0	0.0	4.9	0.0	3.0	1.0	0.0	0.0	9,411	$ 0.83	$9,811
Principle Access Road to N. Access Road	280,620	64.6	Poor	6.0	0.0	0.9	0.9	0.0	3.0	7.0	1.2	7.0	3.0	5.0	1.4	0.0	0.0	31,180	$ 31.75	$991,965

Figure 4-1

Portsmouth Infrastructure - Pavement Assessment - Page 1 of 3

PORTSMOUTH INFRASTRUCTURE-PAVED AREAS (CONT.)

Paved Street Name or Parking	Length (ft.) or Area (sf.)	2020 PCR Values	2020 Condition	Raveling	Bleeding	Patching	Potholes	Rutting	Map Cracking	Base Failure	Settlements	Transverse Cracking	Wheel Track Cracking	Longitudinal Cracking	Edge Cracking	Pressure Damage	Crack Sealing Deficiency	REPAIR COST		
Perimeter Road and Fog Road continued																		SY	$/SY	Estimated Cost
Fog Road (Fog Road Bridge to N. Access)	46,000	69.3	Fair	1.5	0.0	0.9	0.0	2.4	0.8	5.6	2.1	3.5	10.5	2.4	1.0	0.0	0.0	5,111	$ 19.94	$103,916
Fog Road (East Access to Fog Road Bridge)	93,384	72.4	Fair	1.5	0.0	0.9	0.0	2.4	0.8	5.6	0.0	3.5	10.5	2.4	0.0	0.0	0.0	10,376	$ 19.94	$208,897
Portal Segments																		SY	$/SY	Estimated Cost
East Access Road	53,160	97.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0	5,907	$ -	$0
Main Entrance Road	42,030	73.5	Fair	1.5	0.0	0.9	0.9	0.0	1.2	0.0	1.6	10.0	7.5	1.2	1.8	0.0	0.0	4,670	$ 19.94	$95,120
Perimeter Road to North Portal	177,408	72.9	Fair	5.0	0.0	1.5	3.0	0.0	0.4	4.2	2.1	4.9	3.0	2.0	1.0	0.0	0.0	19,712	$ 19.94	$395,057
Perimeter Road to West Portal	170,016	97.2	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.8	0.0	0.0	0.0	18,891	$ -	$0
Perimeter Road to D Portal	152,292	76.7	Fair	1.5	0.0	0.9	0.9	0.0	2.4	5.4	0.0	7.0	3.0	1.2	1.0	0.0	0.0	16,921	$ 19.94	$339,411
South Access Road	12,000	85.6	Good	1.5	0.0	0.0	1.8	0.0	2.0	0.0	0.0	7.0	0.0	0.4	1.8	0.0	0.0	1,333	$ 0.83	$3,107
SW Construction Access Road	88,564	97.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0	9,840	$ -	$0
X-108S MAC Portal to X-157 Trailers to X-744G	9,520	97.6	Excellent	1.5	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,058	$ -	$0
Parking Lots by Facility Numbers (FT^2)																		SY	$/SY	Estimated Cost
Parking X-206A	453,000	90.2	Excellent	1.5	0.0	0.0	0.9	0.0	0.0	0.0	0.0	2.0	3.0	2.4	0.0	0.0	0.0	50,333	$ -	$0
Parking X-206B	278,633	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30,959	$ -	$0
Parking X-206E	90,346	94.8	Excellent	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.8	0.0	0.0	0.0	10,038	$ -	$0
Parking X-206H	93,600	90.2	Excellent	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	2.4	0.0	0.0	0.0	10,400	$ -	$0
Parking X-206 H-1	93,600	99.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	10,400	$ -	$0
Parking X-206J	131,733	98.5	Excellent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14,637	$ -	$0
Parking X-206K	24,530	96.4	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.0	0.0	0.4	0.0	0.0	0.0	2,726	$ -	$0
Parking X-206L	88,000	87.5	Good	1.5	0.0	0.0	0.0	0.0	0.0	4.2	0.0	2.0	3.0	0.8	1.0	0.0	0.0	9,778	$ 0.83	$10,116
Parking X-206M	36,285	96.4	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.0	0.0	0.4	0.0	0.0	0.0	4,032	$ -	$0
Parking X-300	13,000	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,444	$ -	$0
Parking X-342/X-344	55,000	79.0	Fair	2.4	0.0	0.0	0.9	0.0	0.4	0.0	1.2	3.5	10.5	0.4	1.8	0.0	0.0	6,111	$ 19.94	$123,856
Parking X-343	4,200	35.0	Poor	10.0	0.0	0.0	5.0	0.0	4.0	6.0	5.0	10.0	15.0	5.0	5.0	0.0	0.0	467	$ 31.75	$16,817
Parking X-530	12,000	66.8	Fair	6.0	0.0	1.8	3.0	0.0	2.4	7.0	2.1	3.5	5.3	1.2	1.0	0.0	0.0	1,333	$ 19.94	$28,587
Parking X-670	24,500	84.3	Good	0.0	0.0	0.9	0.0	0.0	0.4	4.2	1.2	5.0	3.0	0.0	1.0	0.0	0.0	2,722	$ 0.83	$4,259
Parking X-700 North & South Lot	40,000	54.0	Poor	10.0	0.0	1.8	5.0	0.0	0.0	0.0	1.6	10.0	15.0	1.2	1.4	0.0	0.0	4,444	$ 31.75	$143,111
Parking X-705	39,000	67.0	Fair	4.8	0.0	0.9	5.0	0.0	2.0	0.0	0.0	4.9	15.0	0.4	0.0	0.0	0.0	4,333	$ 19.94	$88,407
Parking X-710 East & West Parking Lot	16,800	74.2	Fair	1.5	0.0	0.9	1.8	0.0	0.0	0.0	0.0	7.0	10.5	2.4	1.8	0.0	0.0	1,867	$ 19.94	$39,221
Parking X-720 East & West Parking Lot	21,350	69.4	Fair	8.0	0.0	0.0	5.0	0.0	0.4	0.0	1.2	3.5	7.5	4.0	1.0	0.0	0.0	2,372	$ 19.94	$49,302
Parking X-720 North	28,000	94.2	Excellent	1.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	1.0	0.0	0.0	3,111	$ -	$0
Parking X-720 South	39,900	95.2	Excellent	1.5	0.0	0.9	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0	4,433	$ -	$0
Parking X-735	23,940	86.9	Good	2.4	0.0	0.9	0.9	0.0	0.0	0.0	1.2	3.5	3.0	1.2	0.0	0.0	0.0	2,660	$ 0.83	$4,208
Parking X-750	95,000	87.7	Good	1.5	0.0	3.0	0.9	0.0	1.2	0.0	0.0	3.5	0.0	1.2	1.0	0.0	0.0	10,556	$ 0.83	$10,761
Parking X-751	46,000	97.1	Excellent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.0	0.0	5,111	$ -	$0
Parking X-752	31,200	43.4	Poor	6.0	0.0	0.0	3.0	8.0	4.0	7.2	2.8	10.0	7.4	4.0	1.8	2.5	0.0	3,467	$ 31.75	$112,067
Parking X-780 Trailers	42,900	97.7	Excellent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	4,767	$ -	$0
Parking X-1000 South Lot	17,285	88.5	Good	1.5	0.0	0.0	0.0	0.0	0.4	4.2	0.0	2.0	3.0	0.4	0.0	0.0	0.0	1,921	$ 0.83	$3,594
Parking X-1020 East & West	6,076	70.6	Fair	0.0	0.0	3.0	1.8	0.0	4.0	0.0	2.8	4.9	10.5	2.4	0.0	0.0	0.0	675	$ 19.94	$15,462
Parking X-2207A	170,000	62.2	Poor	8.0	0.0	0.9	0.0	1.8	4.0	5.6	1.2	4.0	7.4	4.0	1.0	0.0	0.0	18,889	$ 31.75	$601,722
Parking X-3000	44,000	57.0	Poor	1.5	0.0	3.0	0.0	0.0	0.0	0.0	3.5	10.0	15.0	5.0	5.0	0.0	0.0	4,889	$ 31.75	$157,222

Figure 4-2

Portsmouth Infrastructure - Pavement Assessment - Page 2 of 3

PORTSMOUTH INFRASTRUCTURE-PAVED AREAS (CONT.)

Paved Street Name or Parking	Length (ft.) or Area (sf.)	2020 PCR Values	2020 Condition	Raveling	Bleeding	Patching	Potholes	Rutting	Map Cracking	Base Failure	Settlements	Transverse Cracking	Wheel Track Cracking	Longitudinal Cracking	Edge Cracking	Pressure Damage	Crack Sealing Deficiency	REPAIR COST		
Other/Minor Roads																		SY	$/SY	Estimated Cost
Access Road for X-780 Trailers	12,000	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,333	$ -	$0
B-Road	64,800	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,200	$ -	$0
Cardinal Avenue	21,120	82.7	Good	1.5	0.0	0.9	0.9	0.0	0.8	0.0	0.0	4.0	4.2	4.0	1.0	0.0	0.0	2,347	$ 0.83	$3,948
Construction Road	15,360	90.3	Excellent	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.9	3.0	0.4	1.0	0.0	0.0	1,707	$ -	$0
C-Road	43,728	68.2	Fair	3.0	0.0	1.8	2.4	0.0	2.4	0.0	3.5	7.0	10.5	1.2	0.0	0.0	0.0	4,859	$ 19.94	$98,882
Eagle Avenue	9,500	64.9	Poor	1.5	0.0	3.0	0.0	0.0	5.0	0.0	1.6	7.0	10.5	3.0	3.5	0.0	0.0	1,056	$ 31.75	$35,514
Hewes Road - Perimeter to Cardinal	61,880	84.5	Good	1.5	0.0	0.9	1.8	0.0	0.0	0.0	0.0	2.8	7.4	1.2	0.0	0.0	0.0	6,876	$ 0.83	$7,707
Hewes Road - West of Cardinal	17,810	63	Poor	10	0	1	0	6	5	6	0	4	4	0	1	0	0	1,979	$ 31.75	$64,830
McKean Street	6,840	78.6	Fair	0.0	0.0	3.0	0.0	0.0	1.2	0.0	2.8	4.9	7.4	1.2	1.0	0.0	0.0	760	$ 19.94	$17,154
Morton Street	6,888	66.0	Fair	2.4	0.0	0.0	0.0	0.0	0.4	0.0	2.8	7.0	15.0	4.0	2.5	0.0	0.0	765	$ 19.94	$17,261
X-611 Water Treatment Access Road	26,600	74.5	Fair	4.8	0.0	3.0	1.8	0.0	2.4	0.0	0.0	7.0	0.0	3.0	3.5	0.0	0.0	2,956	$ 19.94	$60,934
X-1000 - X-2207A	9,900	95.8	Excellent	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0	1,100	$ -	$0

Figure 4-3
Portsmouth Infrastructure - Pavement Assessment - Page 3 of 3

PORTSMOUTH INFRASTRUCTURE-UNPAVED AREAS

Unpaved Street Name or Parking	Area (sq ft)	2020 PCR Values	2020 Condition	Gravel Layer	Dust	Drainage	Potholes	Rutting	Washboard	Loose Aggregate	Crown	REPAIR COST		
Gravel roads												SY	$/SY	Estimated Cost
20th Street	8,040	89.80	Good	0.0	0.0	1.8	0.0	0.0	0.0	0.0	8.4	893	0.41	$2,366
21st Street	6,480	67.20	Fair	9.0	0.0	10.0	5.4	0.0	0.0	0.0	8.4	720	1.39	$3,001
24th Street	7,395	82.60	Good	0.0	0.0	4.8	0.0	0.0	0.0	4.2	8.4	822	0.41	$2,337
25th Street	6,300	63.30	Poor	7.2	0.0	10.0	3.6	0.0	0.0	5.4	10.5	700	1.50	$3,050
26th Street	7,200	80.50	Good	4.5	0.0	1.8	2.7	0.0	0.0	0.0	10.5	800	0.41	$2,328
A-Road	32,200	84.40	Good	0.0	0.0	3.0	0.0	0.0	0.0	4.2	8.4	3,578	0.41	$3,467
Athens Avenue	4,200	64.20	Poor	4.5	0.0	10.0	3.6	0.0	0.0	7.2	10.5	467	1.50	$2,700
B-Road Gravel Section	18,840	60.10	Poor	4.5	0.0	10.0	9.0	0.0	0.8	7.2	8.4	2,093	1.50	$5,140
Belmont Avenue	4,890	94.00	Excellent	0.0	0.0	1.8	0.0	0.0	0.0	4.2	0.0	543	0.00	$0
Booster Pump Station Road	64,015	76.60	Fair	7.2	0.0	0.0	9.0	0.0	0.0	7.2	0.0	7,113	1.39	$11,887
Brown Road	22,800	69.20	Fair	7.2	0.0	6.0	3.6	0.0	4.8	4.2	0.0	2,533	1.39	$5,521
Butler Avenue	3,000	89.80	Good	0.0	0.0	0.0	0.0	0.0	0.0	5.4	4.8	333	0.41	$2,137
Clermont Avenue	6,000	72.70	Fair	15.0	0.0	1.8	0.0	0.0	0.0	0.0	10.5	667	1.39	$2,927
Clinton Avenue (North) Gravel	12,000	70.40	Fair	4.5	0.0	1.8	7.2	0.0	0.0	5.6	10.5	1,333	1.39	$3,853
Construction Road	35,520	79.60	Fair	4.5	0.0	4.8	2.7	0.0	0.0	0.0	8.4	3,947	1.39	$7,486
Greene Road	17,270	59.70	Poor	9.0	0.0	1.8	9.0	0.0	0.0	10.0	10.5	1,919	1.50	$4,878
Patrol Road	273,942	68.60	Fair	4.5	0.0	4.8	3.6	0.0	0.8	7.2	10.5	30,438	1.39	$44,309
Patrol Road B	12,672	88.60	Good	0.0	0.0	1.8	0.0	6.0	0.0	0.0	3.6	1,408	0.41	$2,577
Pike Ave (South) Gravel	4,500	76.30	Fair	0.0	0.0	0.0	9.0	0.0	0.0	4.2	10.5	500	1.39	$2,695
Trumbull Avenue	4,500	64.50	Poor	15.0	0.0	10.0	0.0	0.0	0.0	0.0	10.5	500	1.50	$2,750
Williams Avenue	1,071	64.50	Poor	15.0	0.0	10.0	0.0	0.0	0.0	0.0	10.5	119	1.50	$2,179
Wood Avenue	36,000	61.30	Poor	15.0	0.0	0.0	9.0	0.0	0.0	4.2	10.5	4,000	1.50	$8,000
Warren Avenue	5,004	64.20	Poor	4.5	0.0	10.0	0.0	3.6	0.0	7.2	10.5	556	1.50	$2,834
Gravel Parking Lots by Facility Numbers (FT^2)												SY	$/SY	Estimated Cost
Parking X-206EP Lot	80,500	83.80	Good	7.2	0.0	0.0	9.0	0.0	0.0	0.0	0.0	8,944	0.41	$5,667
Parking X-206N	38,500	84.50	Good	4.5	0.0	1.8	3.6	0.0	0.0	5.6	0.0	4,278	0.41	$3,754

Figure 4-4

Portsmouth Infrastructure - Unpaved Road Assessment

PORTSMOUTH INFRASTRUCTURE-WALKWAY AREAS

Walkway Name	2020 PCR Values	2020 Condition	Raveling	Bleeding	Patching	Potholes	Rutting	Map Cracking	Base Failure	Settlements	Transverse Cracking	Wheel Track Cracking	Longitudinal Cracking	Edge Cracking	Pressure Damage	Crack Sealing Deficiency
10th Street & Mahoning Avenue (South) to X-710	96.5	Excellent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
"C" Lot to X-330	89.4	Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.5	3.0	0.4	2.5	0.0	0.0
X-104 to X-108A	96.8	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.0	0.0	0.0	0.0	0.0	0.0
XT-104 to 10th Street	94.9	Excellent	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.2	2.0	0.0	0.0	0.0	1.0	0.0
X-108A TO X-710	93.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0
X-108B to X-720 Walkway	94.2	Excellent	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	2.0	0.0	0.4	2.5	0.0	0.0
X-108H Lot to X-333	92.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	2.8	0.0	0.4	0.0	0.0	0.0
X-108H to X-342/X-344 & X-330	94.6	Excellent	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.2	2.0	0.0	0.4	0.0	0.0	0.0
X-157 & X-744 Walkways	96.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0
X-206B W-E Walkway	91.7	Excellent	0.0	0.0	0.9	0.0	0.0	0.8	0.0	0.0	2.0	4.2	0.4	0.0	0.0	0.0
X-206J Walkway	99.1	Excellent	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X-333 Walkway	90.9	Excellent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	5.3	0.4	0.0	0.0	0.0
X-533 Trailers Walkway	95.8	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X-611 Walkway	97.6	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0
X-633 Walkway	95.8	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X-700 - X-705 Walkway & X-705 back to X-700 (North)	88.0	Good	1.5	0.0	0.9	0.0	0.0	0.8	0.0	1.2	2.0	5.3	0.4	0.0	0.0	0.0
X-710 to X-300G	92.0	Excellent	1.5	0.0	0.9	0.9	0.0	0.0	0.0	1.2	3.5	0.0	0.0	0.0	0.0	0.0
X-720 & X-700 Walkway	67.1	Fair	8.0	0.0	1.8	4.0	0.0	0.0	0.0	1.2	7.0	10.5	0.4	0.0	0.0	0.0
X-752 Walkway	93.8	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.0	3.0	0.0	0.0	0.0	0.0
X-780 Walkway	100.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
XT-847 Walkway	96.1	Excellent	3.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X-1000 Walkway	98.0	Excellent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
X-1020 & X-1007 Walkway	91.1	Excellent	0.0	0.0	3.0	0.9	0.0	0.0	0.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0

Figure 4-*5*

Portsmouth Infrastructure - Walkway Assessment

APPENDIX C

PHOTOGRAPH LOG

11th Street

18th Street and Defiance Avenue intersection

25th Street

27th Street

Athens Avenue

B Road gravel portion

Cardinal Avenue to X-2207A lot

Defiance Avenue

Eagle Avenue

Fog Road

Greene Avenue

Jackson Avenue

Lawrence Avenue

North Access Road

Ottawa Avenue

Perimeter Road South Access to Southwest Construction Access Road

Perimeter Road Southwest Construction Access Road to F Portal

Perimeter Road Principle Access Road to North Access Road

Trumbull Avenue

Warren Avenue

Williams Avenue

Wood Avenue

X-343 Parking Lot

X-700 Parking Lot (south)

X-752 Parking Lot

X-2207A Parking Lot

X-3000 Parking Lot

Hewes St west of Cardinal Ave

20th Street

Pike Avenue

Scioto Avenue

INFRASTRUCTURE SUPPORT SERVICES

Contract DE-EM0004062

Deliverable #120

Scheduled Road and Bridge Inspections Report Part 2

PMA-PORTS-20-6551

September 2020

South Fog Road Bridge and North Access Road Culvert Inspection Report

Classification Review Required Prior to Public Release

Portsmouth Mission Alliance, LLC
managing the
Infrastructure Support Services at the Portsmouth Gaseous Diffusion Plant under contract DE-EM0004062 for the
U.S. DEPARTMENT OF ENERGY

INFRASTRUCTURE SUPPORT SERVICES

Contract DE-EM0004062
Deliverable #120
Scheduled Road and Bridge Inspections Report
Part 2

South Fog Road Bridge and
North Access Road Culvert
Inspection Report

Prepared for the
U.S. Department of Energy
Office of Environmental Management

by
Portsmouth Mission Alliance, LLC
managing the
Infrastructure Support Services at the
Portsmouth Gaseous Diffusion Plant
under contract DE-EM0004062
for the
U.S. DEPARTMENT OF ENERGY

September 2020

SOUTH FOG ROAD BRIDGE

X-202B

BRIDGE INSPECTION REPORT

- BRIDGE INSPECTION FIELD REPORT
- CROSS CHANNEL PROFILE MEASUREMENTS
- LEVEL I SCOUR ANALYSIS AND SCOUR PLAN OF ACTION
- NATIONAL BRIDGE INSPECTION INVENTORY DATA ITEMS
- BRIDGE INSPECTION FIELD REPORT FORM
- CURRENT LOAD RATING ANALYSIS
- PERSONNEL QUALIFICATIONS AND CERTIFICATES
- HEALTH AND SAFETY PLAN

BURGESS & NIPLE

5085 Reed Road | Columbus, OH 43220 | 614.459.2050

Mr. Craig Opperman, PE, PS
Portsmouth Mission Alliance, LLC
3930 US 23 South
Piketon, Ohio 45661

Re: 2020 Inspection of South Fog Road
Bridge at Piketon Gaseous
Diffusion Plant
Bridge No. 207245 X-202B

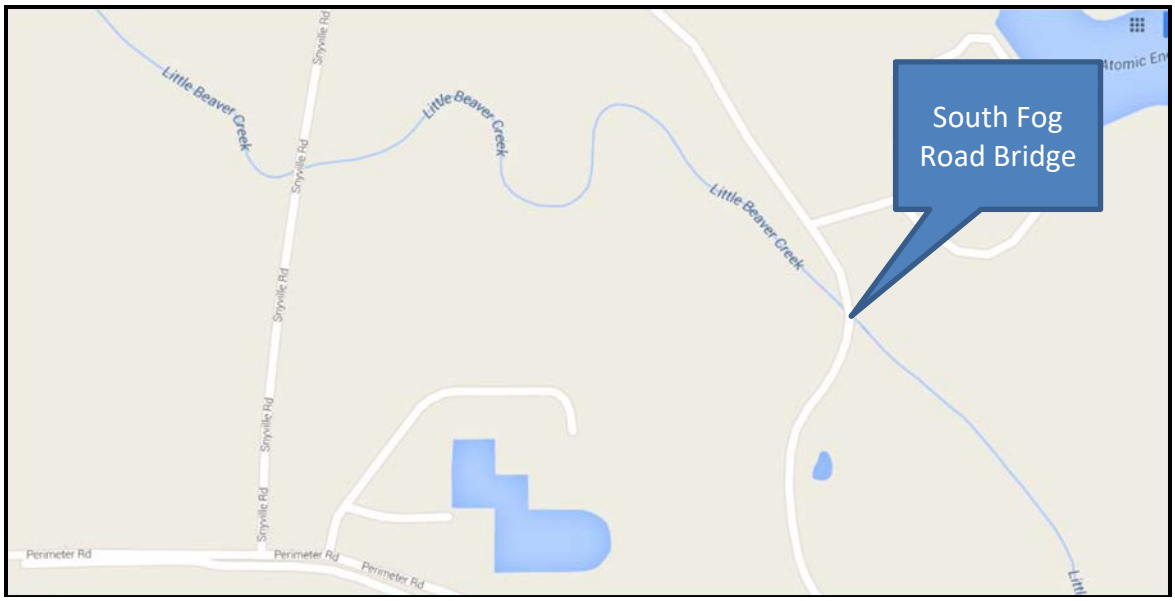
June 12, 2020

Dear Mr. Opperman:

On June 3, 2020, Burgess & Niple, Inc. (B&N) performed a routine inspection of the South Fog Road Bridge located near the Gaseous Diffusion Plant complex near Piketon, Ohio. The Burgess & Niple inspection team consisted of Brendan Prendeville, PE and Dale Poorman, PE. Craig Opperman, PE, PS of Portsmouth Mission Alliance (PMA) accompanied the inspection team during the field work.

The bridge is 35-foot long steel beam bridge located on Fog Road within the complex and generally runs north and south. This bridge is inventoried from south-to-north and the steel beams are numbered 1 through 13 from west-to-east (left-to-right looking north). A map of the location is shown below. For the purposes of this report the structure is identified as the South Fog Road Bridge. This report includes the following attachments:

- Appendix A – Cross Channel Measurements/Diagram
- Appendix B – Level I Scour Assessment/Scour POA
- Appendix C – NBI Data Items
- Appendix D – ODOT Bridge Inspection Field Report Form
- Appendix E – Qualifications
- Attached for Reference – 2020 Load Rating Analysis



Bridge Location

This bridge was inspected in accordance with ODOT's annual frequency requirement. The FHWA requires that all bridges be inspected on a biennial frequency; however, ODOT requires all bridges be inspected annually. According to FHWA, a bridge is a structure that spans 20 feet or longer, whereas ODOT's definition is any structure that spans greater than 10 feet or longer.

The bridge was inspected according to the *Bridge Inspector's Reference Manual* published by the Federal Highway Administration (FHWA) and the Ohio Department of Transportation (ODOT) *Manual of Bridge Inspection (Revised 2014 v.8)*. This letter report summarizes our findings and recommendations. The criteria used to evaluate ODOT bridges is included in a table below.

An updated load rating was performed in 2019 per the Department of Energy guidelines. See the following tables for the rating results. Based on the results of the rating, the current posting levels are adequate. No significant advancement in deterioration was noted during the 2020 inspection to warrant an updated analysis.

Load Rating Summary			
Vehicle	**Rating Factor**	**Tons**	**Metric Tons**
TYPE 3	0.499	12.4	11.2
TYPE 3S2	0.524	18.8	17.0
TYPE 3-3	0.615	24.5	22.2
NRL	0.324	12.9	11.7
SHV SU4	0.421	11.3	10.2
SHV SU5	0.402	12.4	11.2
SHV SU6	0.362	12.5	11.3
SHV SU7	0.342	13.2	12.0
EV-2	0.488	12.5	11.3
EV-3	0.310	11.9	10.8

2F1	0.674	10.1	9.1
3F1	0.463	10.6	9.6
4F1	0.428	11.5	10.4
5C1	0.481	19.2	17.4

The following Ohio Legal Loads were analyzed:

State Bridge Standards		
State Legal Load	**Dimensions**	**Weight**
2F1	2 axles-10’	15 tons
3F1	3 axles- 4’-10’	23 tons
4F1	4 axles-4’-4’- 10’	27 tons
5C1	5 axles -4’- 31’- 4’- 12’	40 tons
Does the State comply with Federal Weight Limits	☒ Yes	☐ No

The posting levels are as follows:

Load Posting Values	
Vehicle	**Tons**
TYPE 3	12
TYPE 3S2	18
TYPE 3-3	24
NRL	12
SHV SU4	11
SHV SU5	12
SHV SU6	12
SHV SU7	13
EV-2	12
EV-3	11
2F1	10
3F1	10
4F1	11
5C1	19

This bridge is rated **FAIR** based on the condition of the superstructure and deck. It is understood that there are plans to change the overall roadway, which would involve realigning the existing roadway as well as a new structure crossing the Little Beaver Creek. It was indicated that, while not official, this was planned to be replaced in approximately 5 years. As such the recommendations listed below are based upon this anticipated remaining life of the structure.

RECOMMENDATIONS

The following recommendations should be performed to maintain the current level of service for this structure for the next five-to-ten years. During that time, it is anticipated that a new bridge is to be in place.

- Monitor for loose areas of concrete/grout in the northbound lane and repair as they develop. For a more permanent repair, use hydro demolition to remove the concrete beyond the depth of deterioration and replace with concrete. Concrete cores and chloride ion tests may be required to determine the depth of deterioration.
- Abrasively remove corrosion and existing coating and paint beam 1.
- During future inspections, continue to monitor the depth and undermining at the north abutment for changes to observed conditions. Place riprap and/or concrete toe along the face of the north abutment, northwest wingwall, and east end of the south abutment.
- Continue to monitor cracked or missing masonry blocks at the abutments. Specific locations of this are listed in the "Substructure" section below.
- Monitor the beam ends for beams 7 through 13 at both abutments for further corrosion/section loss. Consider removing formwork to allow for a more thorough inspection of the beam ends. Also consider cleaning and spot painting areas of heavy corrosion on the beam ends adjacent to the abutment seat.
- Monitor the southeast wingwall for additional scour or deterioration to the installed riprap countermeasures and for further erosion of the embankment adjacent to the approach guardrail posts.

Condition Rating Guide			
1-4 Individual Component	9-0 NBIS Summary		Inspector Guidelines (Quantitative comments include the Location, Extent & Severity of the deficiency)
1-GOOD	9 - Excellent	No problems noted: no section loss, general deterioration.	Make brief comments as necessary. Communicate the predominant deficiency.
	8 - Very Good		
	7 - Good	Some minor problems (ex. extent of concrete deterioration is up to 1% spalling or up to 5% saturation)	
2-FAIR	6 – Satisfactory	Structural elements show some minor deterioration (ex. extent of concrete deterioration is up to 5% spalling or up to 10% saturation)	
	5 -Fair	Structural elements show deterioration but are sound (ex. extent of concrete deterioration is up to 10% spalling or up to 20% saturation)	Document deficiencies quantitatively. Consider taking photos or making sketches.
3-POOR	4 - Poor	Advanced* (ex. extent of concrete deterioration is more than 10% spalling or more than 20% saturation). Usually the load path appears to be affected for primary members or there are obvious structural changes since the as-built condition that are advanced.	Candidate to establish monitoring benchmarks to track the rate-of - change. Take photos, make sketches and document quantitatively in order to determine if a re-load rating is possible. Include in-service conditions to verify capacity
	3 - Serious	4-Poor. . . *And* local failures possible.	*Above*. . . *And* discuss the deficiency immediately with Control Authority.
4-CRITICAL	2 - Critical	3-Serious. . . *And* Unless closely monitored it may be necessary to close the bridge until corrective action is taken.	*Above*. . . *And* the bridge is a candidate to dispatch road closure and/or immediate repairs and/or increased monitoring (Interim Inspections). Confirm in writing, critical finding.
	1 -Imminent Failure	2-Critical. . . *And* Major deterioration is affecting stability. Bridge or lane(s) shall be closed to traffic but corrective action may put bridge back into light service.	*Above*. . . *And* Dispatch immediate lane or bridge closure. Contact the Control Authority. Stay at the bridge until the safety of the traveling public is achieved. Confirm in writing.
	0 - Failed	1-Imm Failure. . . *And* Out of service - beyond corrective action.	

Photo 1 – Elevation view looking northwest. Note: channel impacts the north abutment.

Photo 2 – End view looking north.

SUMMARY OF FINDINGS

The original South Fog Road Bridge structure consisted of six rolled steel beams and one steel channel spanning 34-feet 6-inches over Little Beaver Creek. The jack arch deck consists of a concrete deck using sections of corrugated metal pipe to form the soffit and encasing the web and top flange of the steel beam superstructure. Typically, the deck has a single mat of reinforcing consisting of longitudinal and transverse steel bars. No detailed bridge plans or history are available for this portion of the structure. Information supplied in the Department of Energy NBI record indicates the original bridge was constructed in 1935. This structure was widened at an unknown later date. The widened portion of the bridge consists of six rolled steel beams with corrugated metal stay-in-place forms supporting a reinforced concrete deck. Portions of the deck along the east edge were reformed as a result of severe deterioration of the concrete. The bridge is currently posted for load **(photos 3 and 4)**.

Inspection comments, in order as they are listed for ODOT bridges, include:

Approach

The approach consists of asphalt pavement with no approach slab and is in **SATISFACTORY** condition.

Inspection comments include:

- The north approach pavement exhibits multiple asphalt patches and unsealed map cracks as the result of settlement of the embankment behind the abutment **(photo 5)**. A definitive cause of the settlement could not be determined during the inspection; however, asphalt patches applied since the 2019 has significantly improved the ride quality at the approach roadway to deck transition. Minor settlement of the south approach pavement along the south abutment has been corrected with asphalt patching **(photo 6)**.
- Map cracks exist in the wheel lines of the southbound roadway in the south approach **(photo 7)**. These cracks are due to aging of the asphalt and vehicle loads and will develop into potholes over time. Unsealed longitudinal cracks exist in the asphalt pavement along the centerline of the roadway in both approaches. The cracks have not significantly changed since the previous inspections.
- The approach rail consists of steel w-beam rail with both timber and steel posts. Minor impact damage exists to the northwest approach guardrail over approximately 15 feet of the rail.
- The rail transition at the southeast corner does not meet current standards due to improper post spacing **(photo 8)**. This appears to be due to the rail posts being near the installed riprap, thereby preventing additional posts being installed.

Deck

The deck is in **FAIR** condition. The deck for the original portion of the bridge consists of reinforced concrete which encases the web and top flange of the beams, using half-segments of steel corrugated pipe as deck forms (commonly referred to as a jack arch deck). It is assumed that a single mat of reinforcing steel exists in the deck for the original portion of the bridge. The widened portion of the bridge carries the southbound lane and consists of a 6-inch thick reinforced concrete deck with conventional metal stay-in-place forms supported by steel beams.

Inspection comments include:

- The previously failed portion of the deck along the east shoulder has been rebuilt using similar half-segments of steel corrugated pipe as deck forms with a full-depth concrete patch. This portion of the deck is in good condition with no delaminations noted.
- The northbound lane has been patched to repair the spalls noted during previous inspections **(photo 9)**. Multiple concrete and epoxy grout patches exist in driving lane while the east edge of the deck has been replaced full depth with concrete. The northbound lane is supported by the original portion of the bridge. The deterioration appears to be due to scaling of the concrete surface attributed freeze-thaw damage which is common for concrete of this age.
- Portions of the concrete deck underside could not be observed due to stay-in-place forms and corrugated metal pipe covering the widened and original portions of the bridge, respectively. Surface corrosion and section loss are common on the stay-in-place forms in the widened portion of the structure. This has not changed significantly from the previous inspection.
- The corrugated metal pipe arches on the original deck have significant corrosion and have corroded away at several locations, which has exposed the concrete underside. This corrosion is heavier at the abutments with up to 100% section loss for up to 10 square feet near the north abutment. Deterioration of these forms will not affect the load carrying capacity of the concrete deck. The exposed concrete on the original portion of the bridge exhibits isolated locations of cracking and spalls.
- The wearing surface in the southbound lane (widened portion of the bridge) has no significant deficiencies. Minor popouts exist at random locations throughout.
- No significant deficiencies were observed in the galvanized steel tube bridge rail.

Superstructure

The superstructure is in **FAIR** condition. The superstructure for the original portion of the bridge consists of six rolled steel beams and one steel channel. The bearings for the interior beams of this portion are covered with timber formwork and likely encased in concrete, making them inaccessible for inspection. The original beams bear on a masonry abutment, and the newer beams bear on reinforced concrete abutments.

The superstructure for the widened portion of the bridge consists of six rolled steel beams supporting a conventional concrete deck with metal stay-in-place forms. The steel superstructure was painted between 2010 and 2014. Square steel rods are welded across the bottom flange of the beams at supports for the current bridge railing. These welded rods and the railing supports create fatigue prone details in the beam bottom flange. No cracks were observed at these welded details and it is unlikely that it will reach its fatigue life due to the low traffic volume and anticipated remaining life of the bridge.

Inspection comments include:

- Beam 1 was not properly cleaned prior to painting which has allowed the corrosion to continue under the new paint **(photo 10)**. Section loss up to 1/32-inch deep was noted on the web and loss up to 1/16-inch deep was noted on the flanges on both the interior and exterior faces **(photo 11)**. This corrosion is due to deck drainage passing over the edge of the bridge deck. This section loss has not significantly affected the load carrying capacity of the beam. The corrosion is due to over-the-side

drainage from the deck surface running down and onto the exterior beam. The edge of the deck does not have a drip edge strip to prevent deck drainage from running back onto the exterior beam.

- The beam ends for the original portion of the structure (beams 7-13) exhibit corrosion and section loss along the bottom flanges at the bearing seats at both abutments **(photo 12)**. Most of the beams are obscured due to timber formwork; however, beam 11 exhibits 1-inch wide edge loss to the east edge of the bottom flange adjacent to the abutment **(photo 13)**. This section loss has not significantly affected the load carrying capacity of the beam.
- The bearing for beam 13 at the south abutment is not accessible due to metal flashing being placed around the bearing seat **(photos 14)**. Previously, loss of bearing area was noted at this location. The bearing has been repaired but is still mostly obscured by the flashing.

Substructure

The substructure is in **SATISFACTORY** condition. The widened portion of the substructure consists of reinforced concrete abutments while the original portion of the substructure consists of sandstone masonry block.

Inspection comments include:

- The concrete footings are exposed at both abutments. The north abutment footing is exposed along its entire length, with some undercutting/fracturing of the supporting bedrock. No signs of rotation or settlement were noted in the concrete abutments.
- Both abutments are supported on spread footings cast/laid on bedrock. Scour was noted along both abutments at the following locations:
    - The east corner of the south abutment is undermined laterally 14 inches maximum.
    - The west end of the north abutment is undermined laterally 14 inches maximum.
    - The north abutment between beams 8 and 9 is undermined a maximum of 15 inches laterally **(photo 15)**.
    - The northwest wingwall is undermined laterally a maximum of 12 inches over an 8-foot length.

  These conditions have not changed significantly since the previous several inspections but should be monitored during future inspections.
- In the original portion of the substructure, many of the masonry blocks exhibit cracks, spalling of the face and missing stones. The stone exhibits minor erosion due to weathering and the mortar joints are sound. Specific locations of deterioration include:

  South abutment
    - 1/8-inch wide cracks exist under beams 8, 11, and 13 in the top course of masonry block **(photo 16)**.
    - A crack exists in the second course of masonry block from the top under beam 10.
    - Cracks exist in the third course of masonry block from the top under beams 8 and 9 **(photo 12)**.
    - The southeast wingwall has spalled and eroded stone with several missing and displaced stone **(photo 8)**. The deterioration is due to the stream impacting the wingwall and face of the embankment and runoff from the approach roadway.

North abutment

- Two heavily cracked and spalled masonry blocks exist in the second course of masonry from the bottom under beams 7 and 8 **(photo 17)**. A previously missing block in the first course of masonry from the bottom has been filled in with grout. The joints between masonry blocks and a few cracks have been filled with grout. Generally, the grout is functioning well with isolated areas of cracking noted.

The overall condition of the masonry blocks has not significantly changed over the past several inspections.

- No significant spalls, delaminations, or cracks were noted in the concrete abutments and wingwalls of the widened portion.
- The footing of the northwest wingwall is exposed due to the exposed bedrock in the channel **(photo 18)**. Erosion of the approach embankment has exposed up to 5 feet of the northwest wingwall; however, the wingwall appears to be retaining fill **(photo 19)**.

Channel

The channel is in **SATISFACTORY** condition. Inspection comments include:

- Large riprap was installed at the northeast and southeast wingwalls to redirect the channel through the bridge. This riprap appears to be functioning as designed and is in good condition. Prior to this, the channel was cutting into the embankment below and behind the wingwall.
- The channel flows diagonally under the bridge from southeast to northwest, impacting the riprap at the southeast and northeast wingwalls and the north abutment **(photos 1 and 20)**. This enables the ongoing undermining of the north abutment footing. This undermining does not appear to have increased noticeably over the past few inspections.
- The riprap at the southeast and northeast wingwalls consist of large boulders **(photos 20 and 21)**. The southeast embankment is very steep and is encroaching on the approach guardrail timber posts **(photo 8)**.
- Outcrop of bedrock exists throughout the streambed and the banks are well vegetated both upstream and downstream of the structure. A few roots are exposed along the banks and several of the trees are beginning to be slightly undercut.

Scour

The scour rating is **4 – "Bridge foundations determined to be stable for calculated scour conditions; field review indicates action is required to protect exposed foundations from effects of additional erosion and corrosion"**. This rating is based on the undermined north abutment, northwest wingwall and east end of the south abutment. It is recommended that riprap and/or concrete toe be placed along the locations of undermining. No scour calculation or hydraulic study was completed as a part of this scope. All scour ratings are determined by field evaluation and probing. The foundations bear directly on bedrock reducing the effects of scour on the substructure units.

Due to the scour rating of a 4 – this bridge is not considered "Scour Critical"; however, due to DOE guidelines a Scour Plan of Action was developed.

We appreciate the opportunity to provide bridge engineering services to you. If you have any questions or concerns, please feel free to contact me at mobile – 614-849-2279 or Brendan.Prendeville@burgessniple.com..

Sincerely,

Brendan J. Prendeville, PE
Project Manager/Team Leader

STATE OF OHIO
7-24-20
BRENDAN J.
PRENDEVILLE
E-74728
REGISTERED
PROFESSIONAL ENGINEER

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INSPECTION PHOTOGRAPHS

Photo 3 – Looking south at the load posting sign in the north approach. Note: sign is leaning.

Photo 4 – Looking south at the load posting sign in the south approach.

Photo 5 – Looking southwest at the north approach near the north abutment. Note: asphalt patches and cracking of the asphalt pavement.

Photo 6 – Looking west along the south edge of the bridge deck. Note: minor cracking along asphalt patch in the asphalt pavement.

Photo 7 – Looking south at the south approach roadway. Note: map cracks in the wheel lines of the southbound roadway. Unsealed longitudinal crack along roadway centerline.

Photo 8 – Looking northwest at the southeast wingwall and embankment. Note: approach rail transition has too great of post spacing. Missing and deteriorated masonry blocks in the wingwall. Erosion is encroaching on the pavement of the south approach roadway.

Photo 9 – Looking southeast at the deck surface. Note: northbound lane has multiple patched areas.

Photo 10 – Looking northeast at the exterior face of beam 1. Note: corrosion exists under the paint.

Photo 11 – Looking north along the interior face of beam 1. Note: peeling paint and corrosion under the paint.

Photo 12 – Looking southeast at beam 8 interface with the south abutment. Note: surface corrosion along the bottom flange of the beam at the bearing seat. Vertical crack in the masonry block beneath the beam.

Photo 13 – Looking southwest at beam 11 at the south abutment. Note: 1-inch wide edge loss to the bottom flange.

Photo 14 – Looking southwest at beam 13 at the south abutment. Note: drainage flashing installed along exterior beam. Bearing area repaired.

Photo 15 – Looking northwest at the west end of the north abutment. Note: undermining due to scour.

Photo 16 – Looking south at the south abutment. Note: minor cracking in the masonry blocks.

Photo 17 – Looking north at the original portion of the north abutment. Note: cracked and spalled masonry block with missing portion of bottom course filled with grout.

Photo 18 – Looking northwest at the downstream channel. Note: the footing for the northwest wingwall is exposed, this is not atypical for regional construction practices for footings on bedrock.

Photo 19 – Looking southwest at the embankment face of the northwest wingwall. Note: rear face of the wingwall exposed 5 feet.

Photo 20 – Looking southeast at the upstream channel. Note: channel impacts the end of the southeast wingwall. Riprap has been placed along the embankment at the end of the wingwall.

Photo 21 – Looking northeast at the north bank near the east end of the north abutment. Note: riprap placed to protect bank from channel flow.

APPENDIX A –

CROSS CHANNEL PROFILE

Cross Channel Profile

Channel profile measurements were taken along the upstream and downstream sides of the bridge. The stream channel is bedrock and changes in the measurements reflect movement of gravel within the streambed.

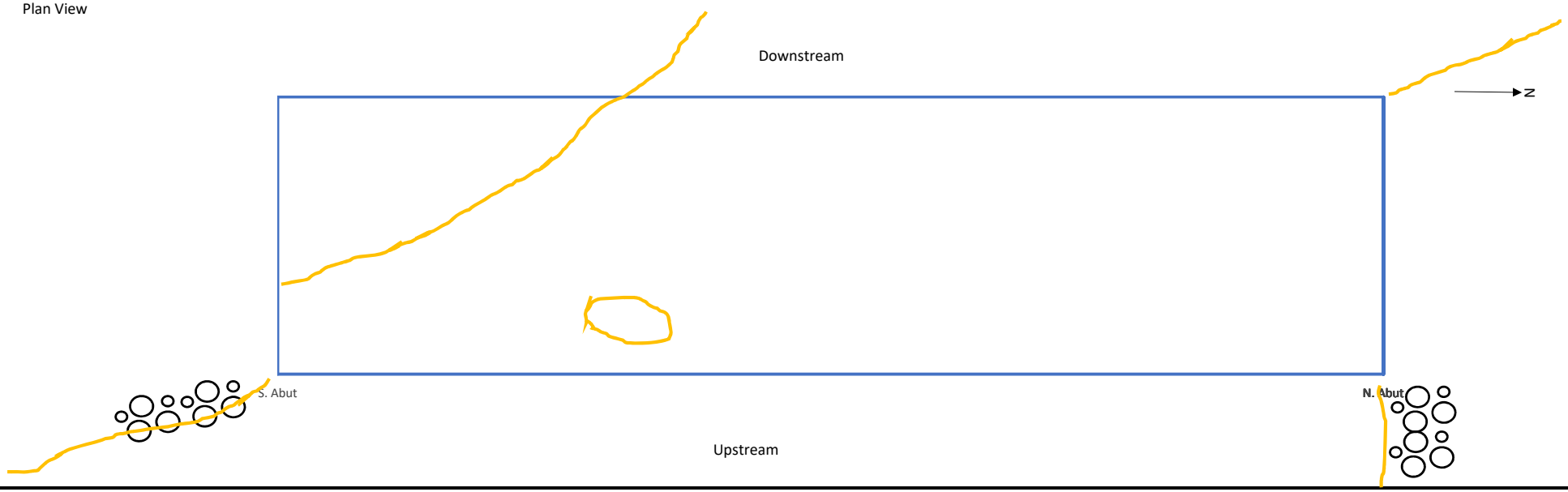
Upstream Channel Profile

Distance from South Abutment (feet)		Distance from top of rail post to stream bed		
		2020	2019	2018
1	(railing post #1)	10.4	10.3	10.7
4.9	(railing post #2)	10.6	10.7	11.0
11.2	(railing post #3)	10.8	11.0	10.3
17.4	(railing post #4)	10.2	11.0	10.4
23.6	(railing post #5)	11.0	10.8	11.2
29.9	(railing post #6)	10.9	10.1	10.1
33.7	(railing post #7)	9.3	9.6	10.0

Downstream Channel Profile

Distance from South Abutment (feet)		Distance from top of rail post to stream bed		
		2020	2019	2018
2.0	(railing post #1)	9.1	8.8	9.3
5.3	(railing post #2)	9.0	9.2	9.2
11.6	(railing post #3)	9.6	10.3	10.3
17.8	(railing post #4)	10.8	10.4	11.0
24.0	(railing post #5)	10.8	10.7	11.5
30.2	(railing post #6)	11.4	11.9	11.6
34.0	(railing post #7)	11.6	11.7	11.6

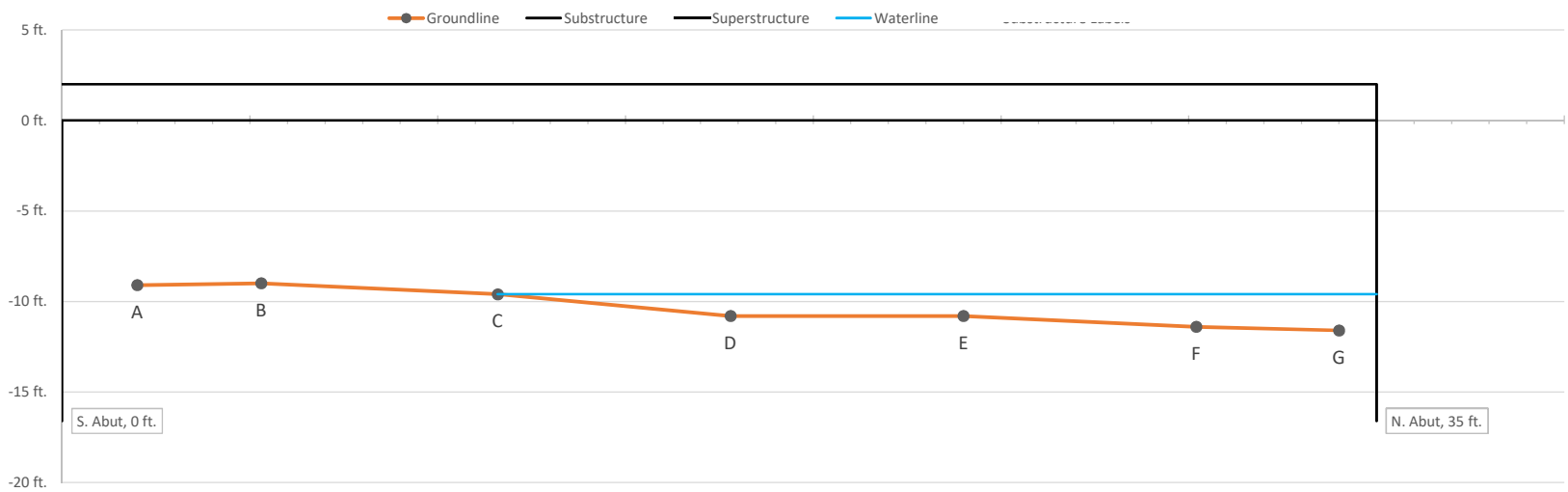
Plan View



Downstream Profile

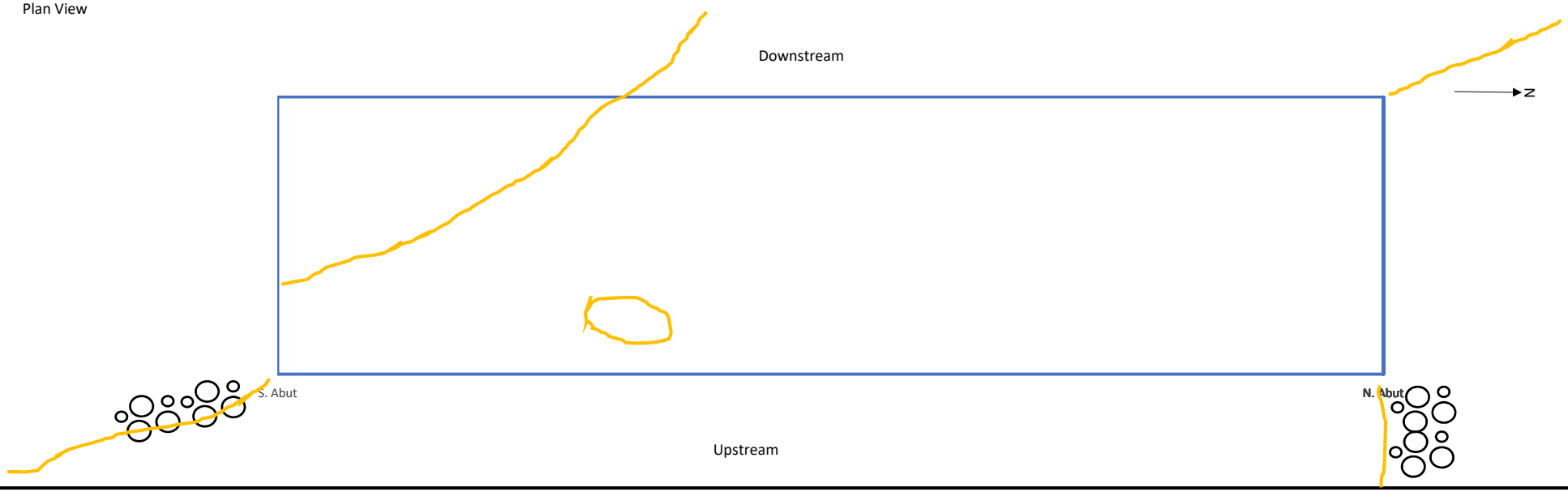
	X	Y
A	2	9.1
B	5.3	9
C	11.6	9.6
D	17.8	10.8
E	24	10.8
F	30.2	11.4
G	34	11.6
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		

Profile measured to top of west rail posts



Piketon Gaseous Diffusion Plant	Bridge No. 207245 X-202B	South Fog Road Bridge	MEASURED BY:	BJP	SHEET		
BURGESS & NIPLE	2020 Downstream Channel Profile		DATE:	6/3/2020	2	OF	2

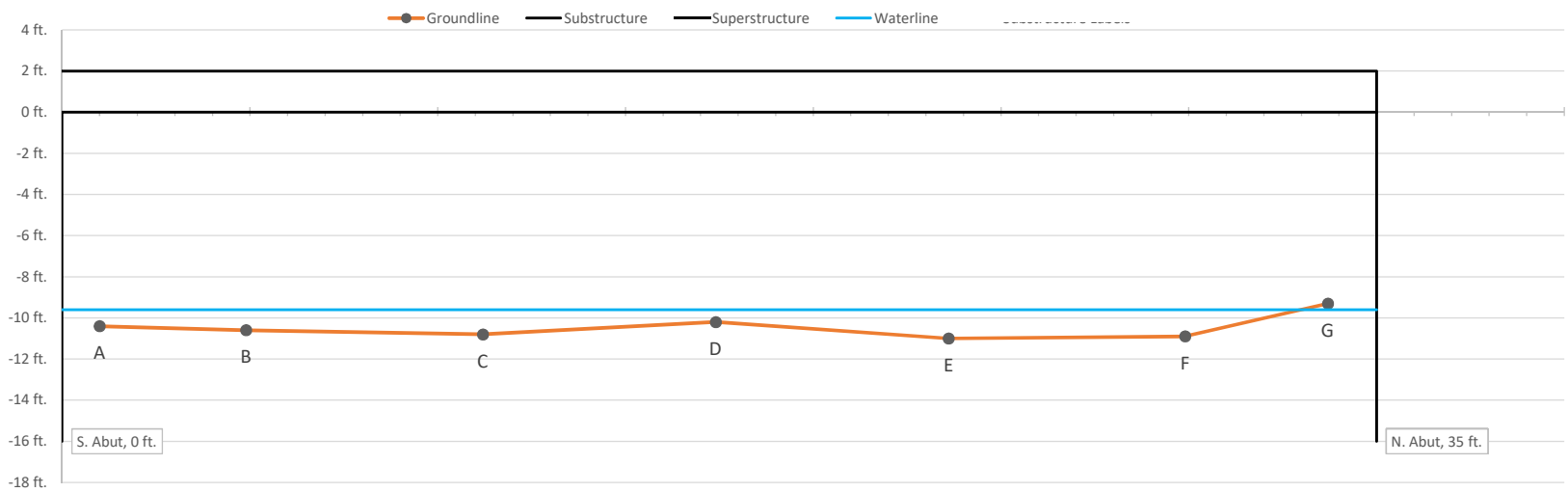
Plan View



Upstream Profile

	X	Y
A	1	10.4
B	4.9	10.6
C	11.2	10.8
D	17.4	10.2
E	23.6	11
F	29.9	10.9
G	33.7	9.3
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		

Profile measured to top of east rail posts



Piketon Gaseous Diffusion Plant	Bridge No. 207245 X-202B	South Fog Road Bridge	MEASURED BY:	BJP	SHEET		
BURGESS & NIPLE	2020 Upstream Channel Profile		DATE:	6/3/2020	1	OF	2

APPENDIX B –

LEVEL I SCOUR ANALYSIS

Department of Energy
Scour Evaluation Checklist

The purpose of this checklist is to verify that each bridge over water has been evaluated for scour in accordance with federal law and Department of Energy (DOE) policy. The checklist is based on metric #18 of the latest version of the Federal Highway Administration (FHWA) Metrics for the Oversight of the National Bridge Inspection (NBI) Program.

Metric #18: Inspection procedures – Scour

To meet this metric, each bridge over water must have a documented evaluation of scour vulnerability. For bridges determined to be scour critical, bridges with unknown foundations, bridges with countermeasures installed to mitigate an existing scour problem, or where an evaluation of scour vulnerability is not documented, prepare a Scour Critical Plan of Action (POA) and monitor the bridge in accordance with the POA.

DOE policy requires each operating or in-service bridge over water have a valid, documented scour evaluation, NBI Data Item 113 coded consistently with the results of the scour evaluation for vehicle bridges, and as applicable, documentation of a valid POA with evidence that the bridge is monitored in accordance with the POA. Valid scour evaluations and POAs are ones that follow the applicable DOE criteria, have been completed by a qualified engineer, have completed Quality Control and Quality Assurance reviews by qualified engineers, and are adequately documented. Evidence of bridge monitoring includes documentation for changes in scour during routine inspections, and for those under a POA, report of re-evaluation following a POA-defined trigger event.

A bridge may be:

a. Low Risk. Bridge with no history of scour problems and have a low likelihood for scour problems in the future.

b. Scour Critical. Bridge with unstable foundation element, an abutment or pier foundation, due to observed, assessed, or calculated scour as determined from a field assessment or scour evaluation.

c. Scour Susceptible. A bridge that based on a Level 1 Field Assessment is neither clearly scour critical or low risk. Further investigation is required to determine the status of the structure.

Apply the following guidance in conjunction with FHWA guidance when rating vulnerability to scour for both vehicle and railroad bridges:

DOE Coding Guidance	
Minimum Conditions	**Possible Outcomes**
The bridge is not over a waterway	NBI Item 113 = N
The bridge has failed due to scour and closed to traffic.	NBI Item 113 = 0
The bridge is unstable for either observed, assessed, or calculated scour. For example: • Scour within the limits of the footing or piles • Scour below spread-footing base or pile tips • Bridge at imminent risk of failure from scour	NBI Item 113 = 3, 2, or 1; requires a PCA/POA

Department of Energy
Scour Evaluation Checklist

DOE Coding Guidance	
Minimum Conditions	**Possible Outcomes**
The bridge is not over a waterway	NBI Item 113 = N
Bridges with neither a Field Assessment nor a Scour Evaluation If bridge is also over "tidal" waters OR If foundations are also "unknown"	NBI Item 113 = 6; requires a PCA/POA NBI Item 113 = T; requires a PCA/POA NBI Item 113 = U; requires a PCA/POA
The bridge has a documented Level 1 Field Assessment. For example: • Bridge foundation (including piles) on dry land well above flood water elevations • Scour within the limits of footing or piles (Example B) by assessment • Installed countermeasures supported by a hydraulic analysis	NBI Item 113 = 9 , 7, or 5 If NBI Item 113 = 7; provide documentation of an implemented POA
The bridge is low-risk, stable for assessed scour, and has a documented Level 1 Field Assessment. Includes: • Single span bridges with protected abutments • Bridges with foundations well above the flood plain • Bridges over dams or pools with small flows • Bridges over lined channels • Bridges with spread footings on non-erodible bedrock • Culverts with floors	NBI Item 113 = 8
The bridge is stable for calculated scour and has a documented HEC-18 Scour Evaluation • Scour above the top of footing (Example A) by calculation	NBI Item 113 = 8
The bridge is stable for calculated scour and had a documented HEC-18 Scour Evaluation • Action required to protect exposed foundations	NBI Item 113 = 4; requires a PCA/POA

Using the Checklist:

a. Populate structure identification information.
b. Identify supporting documents.
    a. Supporting documents provide evidence that a requirement is met. Each supporting document must be signed, dated, managed, and updated at appropriate intervals.
    b. Identify the person responsible for each document. Identify the document format (electronic or hard copy), and storage location.
c. Review document contents using the requirement list.
    a. Indicated whether the requirement is met (Y), not met (N), or not applicable (NA).
    b. Use the Notes section to describe documentation deficiencies.
    c. For a document that is not available but should be, reference a Plan of Corrective Action or provide a timeline for document completion in the Notes section.

Department of Energy
Scour Evaluation Checklist

NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**
Real Property Unique ID:	**Usage Code:**
Program Office:	**Site Name: South Fog Road Bridge**

Supporting Document Name/Date	Subject Matter Expert	Format (E/H)	Storage Location
	Name: Phone: Email: Position: Company:		

Y/N	Notes	Item
		DOE Qualification of Personnel – Responsible Engineer
Y		1. Does the responsible engineer have the qualifications required to evaluate the bridge for scour and stream instability from floods?
Y		a. Does the engineer hold a current registration as a professional engineer?
Y		b. Does the engineer have at least 5 years of experience similar to the evaluation being performed?
Y		c. Has the engineer completed National Highway Institute (NHI) Stream Stability and Scour at Highway Bridges course or equivalent training?
		FHWA Metric #18: Inspection Procedures – Scour *Attachment 1 – Scour Evaluation Flowchart* provides an overview of the DOE Scour Evaluation Process
Y		2. Is evaluation for scour applicable to this structure?
Y		a. Is the bridge over a waterway? (If yes, go to 3. If no, scour evaluation not needed; code Item 113 with N.)
Y		b. Is the bridge open? (If yes, go to 3. If no, scour evaluation not needed; code Item 113 with 0.)
Y		3. Is the bridge at risk based on observed scour? (If yes, go to 7. If no, go to 4.)
		4. Does the bridge have a documented **Scour Evaluation** conducted IAW HEC-18? (If yes, go to 7. If no, go to 5.)
		5. Does the bridge have a documented **Level 1 Field Assessment**? (If yes, go to 6. If no, go to 7.)

Department of Energy
Scour Evaluation Checklist

Y/N	Notes	Item
		a. Has field data been collected and recorded using Attachment 2 - *Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment* template?
		6. Is the bridge conclusively at low risk for scour (Item 113 = 9, 8, or 5)? (If yes, go to 7. If no, go to 9.)
		a. Is the bridge foundation (including piles) on dry land well above floodwater elevations? OR Is the bridge stable for calculated or assessed scour? OR Is the bridge stable with properly designed and installed countermeasures?
		b. Is bridge foundation construction documented?
Y		7. Has NBI Data Item 113 been correctly coded? (see FHWA memorandum *ACTION: Revision of Coding Guide, Item 113 - Scour Critical Bridges*, April 9, 2012 and DOE Coding Guidance)
Y		a. Does it match with the results of the completed **Scour Evaluation** or **Level 1 Field Assessment**?
Y		b. If required to meet the definition of a low risk for scour, have countermeasures been properly designed and installed per HEC-23?
NA		c. If NBI Data Item 113 has been coded 2 or less, is this rating consistent with NBI Data Item 60? (see FHWA *memorandum Revision of Coding Guide, Item 113 – Scour Critical Bridges*, April 27, 2001)
Y		d. If NBI Data Item 113 has been coded 6, has a **Level 1 Field Assessment** or HEC-18 compliant **Scour Evaluation** been scheduled?
N		8. Is the bridge scour critical or are the foundations unknown or are countermeasures installed but not supported by a hydraulic analysis? (If yes, go to 10. If no, go to 11.)
NA		9. Where a HEC-18 Scour Evaluation, Field Assessment, or Scour Critical Plan of Action (POA) does NOT exist, has a **Plan of Corrective Action (PCA)** been completed?
		a. Does the PCA include a schedule for completing Scour Evaluation, Field Assessment, or POA?
		b. Is the PCA up to date?
		c. Has the PCA been provided to the DOE Bridge and Tunnel Program Manager?
N		10. Has a Scour Critical Plan of Action been developed?
		a. Does documentation exist and is it accessible?

Y/N	Notes	Item
		b. Does the POA follow the FHWA template? (See Attachment 3 - Federal Highways Administration, Scour Critical Bridge – Plan of Action template)
		c. Does the POA describe why the preferred actions were selected and address each of the following components: monitoring program development and implementation, timely installation of countermeasures to reduce the risk from scour, and schedule for construction of appropriate countermeasures to eliminate the risk from scour?
		d. Does the POA identify trigger events and required actions?
		e. Does the POA include a commitment to annual progress reporting until corrective actions are satisfied? Or indicate monitoring only?
		f. Did a qualified responsible engineer prepare the POA?
		g. Did a qualified engineer conduct and document quality control for the POA?
		h. Is the POA up to date (points of contact are current, changed conditions addressed)?
		i. Has the POA been correctly implemented and is there documentation demonstrating its implementation (i.e. a follow-up report)?
Y	**INCLULDED IN REPORT**	11. Has a **Level 1 Field Assessment** or **Scour Evaluation** been property documented and is documentation accessible? Is it tailored to the specific structure and availability of data?
Y		a. Is the document signed and sealed by the Responsible Engineer?
Y		b. Did a qualified Engineer conduct and document quality control for the assessment or evaluation?
Y		c. Are the qualifications of the Responsible Engineer, Team Member(s), and Underwater Diver(s), as appropriate documented in the report?
		Level 1 Field Assessment Data
Y		a. Does the report follow the Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment template?
		Scour Evaluation Report
Y		a. Does the scour evaluation report include a cover page; title page; executive summary; information about upstream conditions including the banks, main channel, floodplain, debris, and other features; identify conditions at the bridge including the substructure, superstructure, channel protection and scour countermeasures, and waterway area; and, describe up/downstream conditions including the banks, main channel, floodplain, and other features?

Department of Energy
Scour Evaluation Checklist

Y/N	Notes	Item
Y		b. Does the scour evaluation report include current streambed elevation data plotted to a common datum along with historical elevations plotted to the same datum? Present sounding data in tabular form and on an elevation drawing? Note the location and depth of the streambed at each point where a sounding was taken? Note evidence of any stream migration?
Y		c. Does the scour evaluation report include collected field data?
NA		d. Does the scour evaluation report include calculations?
Y		e. Does the scour evaluation report use sketches and photos to illustrate notes and findings? Does it include satellite images, modeling results, and scour plots appropriate to the level of evaluation conducted?
Y		f. For vehicle bridges, does the scour evaluation report specifically identify recommended data entries for NBI Data Items 61, 71, and 113?
Y		12. Is scour adequately monitored during **routine inspections**?
Y		a. Does the inspection report note the specific location and extent of any deterioration, damage, or undermining in stream channel or stream banks, substructure elements, or foundation? Note the condition of channel protection devices or scour countermeasures?
Y	**NA for items 92 & 93**	b. For vehicle bridges, does the inspection report note data entries made in most recent inspection report for NBI Data Items 60, 92, and 93?
Y		c. Is sounding data collected with each routine inspection and reviewed by the Responsible Engineer?

Level 1 Field Assessment (often called a Level 1 Scour Evaluation) – A qualitative field review used to identify the potential for scour using all available data, including: as-built plans, hydraulic studies, soundings and other underwater investigations, streambed and foundation soils, and historical use. Conduct a site visit, if needed.

Level 2 Scour Evaluation - A quantitative engineering analysis of hydrologic data and streambed material properties.

Level 3 Scour Evaluation - A quantitative engineering analysis using more detailed hydrologic and streambed material property data to complete mathematical or physical model studies.

References:

Federal Highways Administration memorandum *ACTION: Revision of Coding Guide, Item 113 - Scour Critical Bridges*, April 9, 2012 and DOE Coding Guidance. https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/revguide.cfm

Federal Highways Administration, *FHWA-HIF-12-003, Hydraulic Engineering Circular No. (HEC) 18 Evaluating Scour at Bridges*, April 2012. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif12003.pdf.

Federal Highways Administration, *FHWA-HIF-12-004, Hydraulic Engineering Circular No. (HEC) 20 Stream Stability at Highway Bridges*, April 2012. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif12004.pdf.

Federal Highways Administration, *FHWA-HIF-09-111, Hydraulic Engineering Circular No. (HEC) 23 Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance,* September 2009. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/09111/09111.pdf.

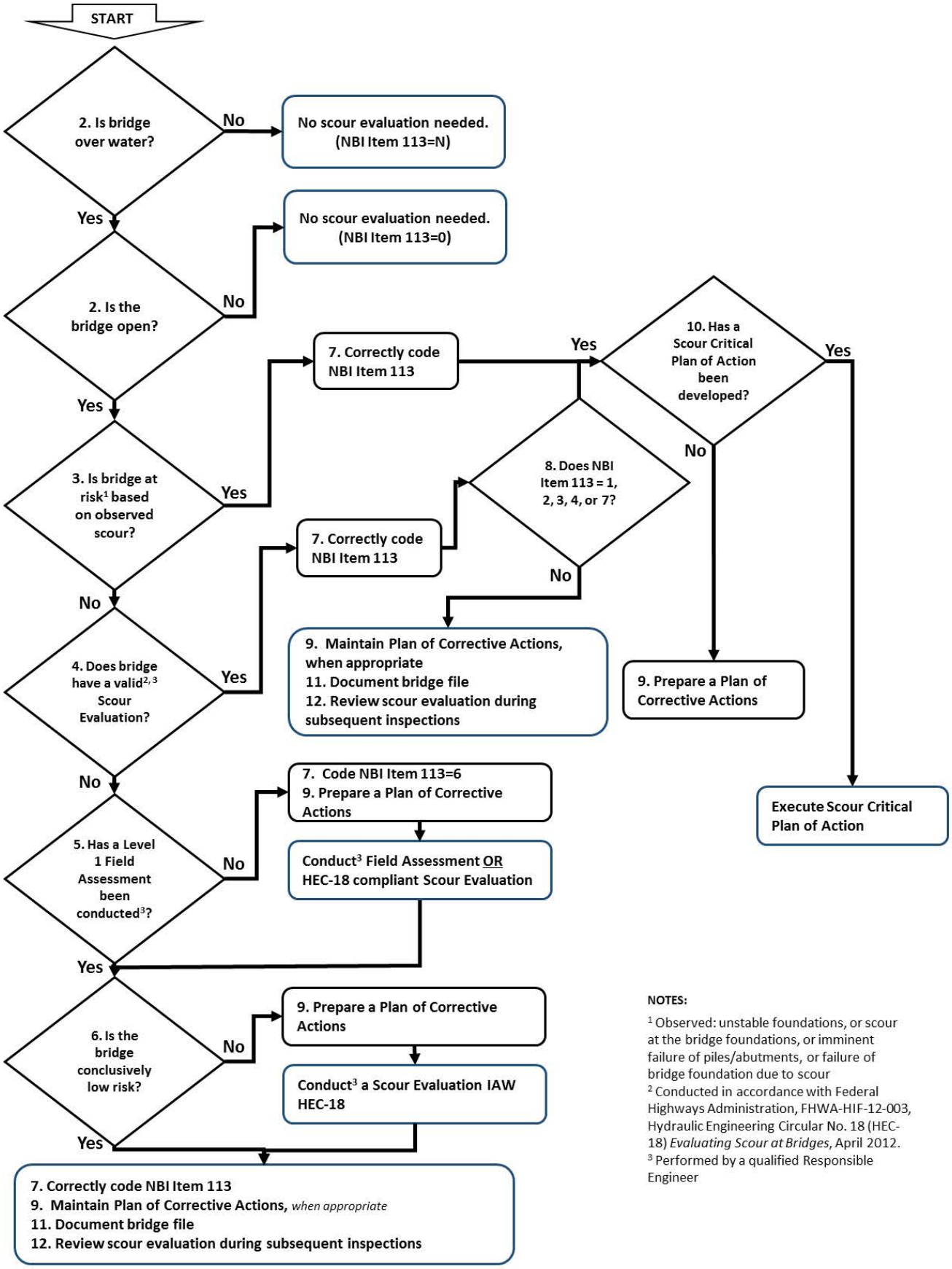
Federal Highways Administration memorandum *Revision of Coding Guide, Item 113 – Scour Critical Bridges*, April 27, 2001. https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/revguide.cfm

Federal Highways Administration, Scour Critical Bridge – Plan of Action template. https://www.fhwa.dot.gov/engineering/hydraulics/bridgehyd/poaform.cfm.

Attachments:

Attachment 1 – Scour Evaluation Process Flowchart
Attachment 2 – Template: Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment
Attachment 3 – Template: Scour Critical Bridge - Plan of Action

Scour Evaluation Process Flowchart



NOTES:

[1] Observed: unstable foundations, or scour at the bridge foundations, or imminent failure of piles/abutments, or failure of bridge foundation due to scour

[2] Conducted in accordance with Federal Highways Administration, FHWA-HIF-12-003, Hydraulic Engineering Circular No. 18 (HEC-18) *Evaluating Scour at Bridges*, April 2012.

[3] Performed by a qualified Responsible Engineer

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**
Real Property Unique ID:	**Usage Code:**
Program Office:	**Site:**
Location: Piketon, OH	**Over:**

1. SCOUR VULNERABILITY RATING

a. Scour Critical:	Yes	No	NA
Scour Susceptible:	High	Low	NA
Risk:	High	Low	
Foundation:	Known	Unknown	
Structure Type:	Bridge	Culvert	

b. Reasons for Rating:

2. RECOMMENDATIONS

a. Countermeasures:	Riprap	Scour Monitor	Inspection	Other

b. Level 2 Analysis Recommended		Yes	No	
c. Level 2 Priority:	High	Low	None	

d. Trigger Events: Overtopping

e. Remarks:

3. SITE FIELD REVIEW

a. Evidence of Scour at Structure

1) Abutment or Pier Tilting or Moving	Yes	No
2) Slopes Washing in or Sloughing	Yes	No
3) Scour Holes Near Abutments / Bents	Yes	No
4) Bed Deposits Downstream	Yes	No
5) Bridge Railing Sagging	Yes	No
6) Debris	Yes	No
7) High-water Mark	Yes	No

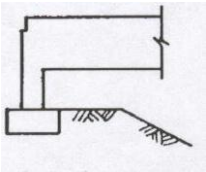
b. Feasibility of Monitoring During High Flow

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**

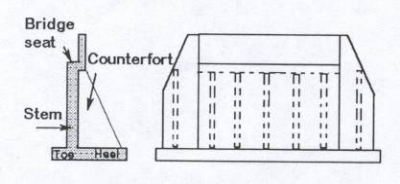
1) Rod / Pole / Weight from Deck	(Yes)	No
2) Fixed Monitoring Device	Yes	(No)
c. Feasibility of Adding Riprap or Other Scour Countermeasures	(Yes)	No

4. ABUTMENTS

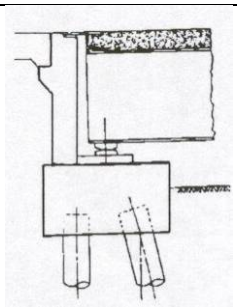
a. Type



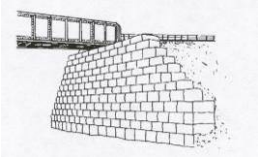
Sill



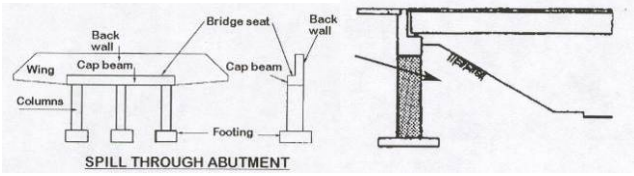
Counterfort



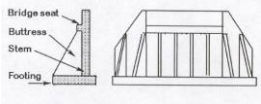
Pile Bent



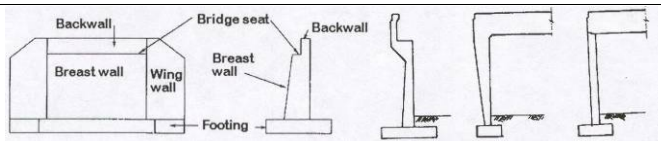
(Gravity)



Spill-Through (Open)



Buttress



(Cantilever)

(Bridge) | Concrete Culvert | Channel Walls

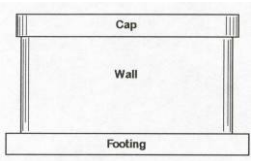
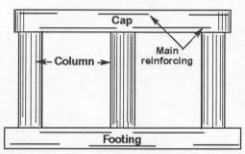
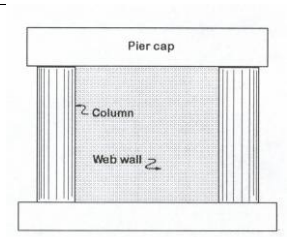
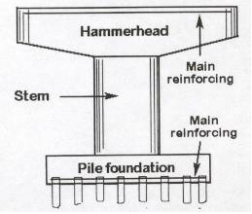
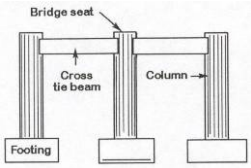
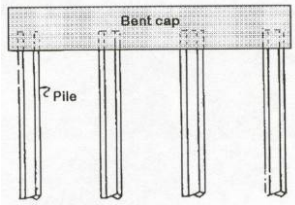
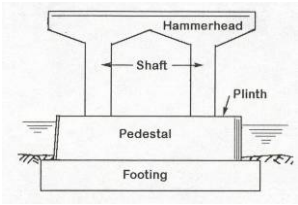
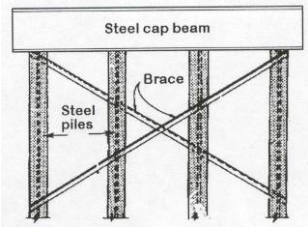
	Dimensions (ft)			Embedment (ft)	Scour Exposure (ft)
b. Foundation	L	W	D		
	29’	7’	21”	North abutment similar – W=8’	

(Spread Footings)	Pile Caps	Piles	Drilled Shaft
Source of Data	Field Review	(Design Plans)	As-built Drawings
	Pile Driving Record	Inspection Reports	Other

c. Location from Bank			Left (ft)	Right (ft)
1) Set Back	Yes	(No)		

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment				
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**				
Property Number:		**Property Name: Piketon Gaseous Diffusion Plant**		
2) In Channel	Yes	No		
3) At Bank	Yes	No		
d. Protection				
1) Riprap	Sand Cement	Grouted	Rubble	Other
	Seawall	None	Commercial Block	
2) Condition	**Good**	**Fair**	**Poor**	
Left				
Right				

5. PIER (None)

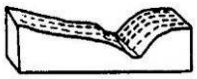
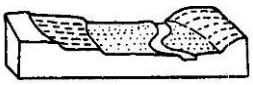
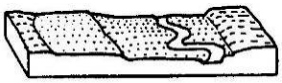
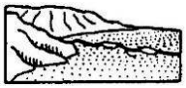
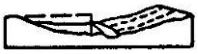
a. Type	 Solid Wall	 Column Bent	 Column with Web Wall
	 Hammerhead	 Open Bent	 Pile Bent
	 Double Hammerhead		 Steel Bent
b. Shape	Square	Rounded	Sharp Nose
c. Width	Length	Number:	

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment					
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**					
Property Number:			**Property Name: Piketon Gaseous Diffusion Plant**		
d. Angle of Attack:	Flood Flow: °			Normal Flow: °	
e. Foundation	Dimensions (ft)			Embedment (ft)	Exposure (ft)
(Worst pier)	L	W	D		
Pile	Spread Footing			Pile Cap	Drilled Shaft
Source of Data	Field Review		As-built Drawings		Design Plans
	Pile Driving Records		Inspection Reports		Other
f. Protection					
1) Riprap	Sand Cement		Grouted	Comm. Block	Rubble
	Seawall		None	None Apparent	Other
2) Condition	Good		Fair	Poor	

6. CHANNEL LATERAL STABILITY					
a. Bends					
1) Bridge Location	Upstream of Bend		Downstream of Bend		In Bend
2) Migration	Yes	No			
3) Countermeasures	Yes	No	Type: Riprap		
b. Bank Condition	Upstream		Downstream		
1) Eroding	Yes	No	Yes	No	
2) Stable	Yes	No	Yes	No	
3) Vegetated	Yes	No	Yes	No	
4) Seawall	Yes	No	Yes	No	
5) Countermeasures	Yes	No	Yes	No	Type:
c. Angle of Attack:	Flood Flow:			Normal Flow: 30°	
d. Point Bar Under Bridge		Yes	No		
e. Islands or Bars	Upstream		Downstream		

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**

	1) Island	Yes	No	Yes	No	
	2) Bar	Yes	No	Yes	No	

f. Floodplains	 Small (<2x channel)	 Narrow (2-10x channel)	 Wide (>10x channel)
g. Valley Setting	 No valley	 Low relief (<30 m)	
	Moderate (30-300 m)	High relief (>300 m)	

7. CHANNEL VERTICAL STABILITY

a. Exposed Footing	Yes	No	Unknown	Not Applicable
b. Exposed Piles	Yes	No	Unknown	Not Applicable

c. Contraction Scour (Encroachment)

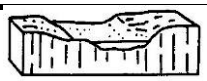
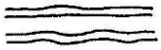
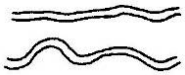
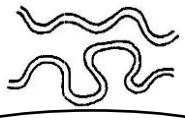
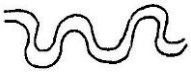
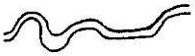
1) Overbank Flow	Left	Right		
2) Relief Bridge	Yes	No		
3) Roadway Over Topping	Yes	No	Unknown	Possible
4) Bridge Over Topping	Yes	No	Unknown	Possible

d. Long Term	1) Aggradation	Yes	No	Unknown
	2) Degradation	Yes	No	Unknown

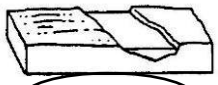
e. Bed Material

Silt-Clay	Silt	Sand	Gravel	Cobbles	Other - Bedrock

8. GEOMORPHOLOGY

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment			
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**			
Property Number:		**Property Name: Piketon Gaseous Diffusion Plant**	
a. Channel Boundaries	Alluvial	Semi-alluvial	 Non-alluvial
b. Dam or Reservoir	Yes	No	
c. River Sinuosity	 Straight (1-1.05)	 Sinuous (1.06-1.25)	
	 Meandering (1.25-2.0)	Highly Meandering (>35%)	Man Made
d. In-stream Mining/Dredging		Yes	No
e. Headcuts or Nickpoints		Yes	No
f. Diversions		Yes	No
g. Channel Modification		Yes	No
h. Stream Size	Small (<100 ft)	Medium (100-500 ft)	Large (> 500 ft)
i. Flow Habit	Ephemeral	Intermittent	
	Perennial but flashy	Perennial	Tidal
j. Braided Streams	Not braided (<5%)	Locally braided (5-35%)	Generally (>35%)
k. Anabranched Stream	No (<5%)	Locally (5-35%)	Generally (>35%)
l. Stream Width	Equiwidth	 Wider at bends	 Random

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**

	Narrow point bars	Wider point bars	Irregular points
m. Natural Levees	Little or none	Concave	Well developed
n. Apparent Incision	 Not Incised	Probably Incised	

9. OTHER CONSIDERATIONS

a. Sediment Transport

1) Live Bed Condition	Yes	No	Unknown
2) Clear Water Condition	Yes	No	Unknown
3) Armored Bed	Yes	No	Unknown

b. Watershed	Agricultural	Forested	Swamp	Urban

c. Tidal Influence	Yes	No	Possible

d. Tributaries	Upstream	Downstream	No factor
	Distance to confluence of next stream/water body:		

e. Observed Stream Velocity: LOW

10. ADDITIONAL COMMENTS

a. Remarks: Undermining at locations along both abutments. No significant change in undermining over past 4 years. Channel flows directly into the northeast embankment – riprap placed several years prior and continues to function.

11. Responsible Personnel

a. Responsible Engineer 5/30/19
   1) Name: Brendan J. Prendeville, PE
   2) Organization: Burgess & Niple
   3) Organization Address: 5085 Reed Road, Columbus, OH 43220
   4) Phone Number/e-mail address: 614-459-2050 - Brendan.prendeville@burgessniple.com
   5) Date Assessment Completed: 5/8/2019

b. Reviewer 5/30/19
   1) Name: Michael A. Seal, PE
   2) Organization: Burgess & Niple
   3) Organization Address: 5085 Reed Road, Columbus, OH 43220
   4) Phone Number/e-mail address: 614-459-2050 – mike.seal@burgessniple.com

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: **South Fog Road Bridge**	
Property Number:	**Property Name: Piketon Gaseous Diffusion Plant**
5) Date Review Completed: 5/17/2019	

INSTRUCTIONS FOR COMPLETING
Template: Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment

The Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment form (the template) may be used to record the finding of a Level 1 Field Assessment and to inform subsequent routine Bridge Inspections for water crossings. It is completed by the Responsible Engineer and used by the inspection team leader during the on-site inspection. The form should be completed once, reviewed periodically, and updated on when conditions at the structure change.

OVERVIEW

The template includes a heading which identifies the bridge evaluated: NBI Structure Number (if applicable), Property Number, Property Name, Real Property Unique ID, Usage Code, Program Office, Site Name, Location (Route Number or latitude/longitude), and Over (waterway crossed). Item 1 provides a summary of the scour vulnerability rating, foundation status (known or unknown), and structure type (bridge or culvert). Item 1b provides space to include a narrative summary of the reasons for the rating recommendations of Item 1a. Item 2 provides a summary of recommended actions and includes an indication of the urgency (priority) of further action (e.g., the need for a follow-on Level 2 or 3 Scour Evaluation).

Items 1 and 2 should be completed last considering data obtained during the site field review as recorded under Items 3-10. Items 1 and 2 should "stand alone," indicate to a reviewer the vulnerability of the structure, and provide a concise summary of recommended actions.

ITEM 1 – SCOUR VULNERABILITY RATING

Part a: Scour Critical: Indicate scour critical status. **Yes** indicates the bridge should be rated 0, 1, 2, or 3 for NBI Item 113. **No** indicates the bridge is conclusively "Low Risk" from scour failure and should be rated 8, 9, or N.

Scour Susceptible: Based on the Field Review the bridge is neither clearly scour critical or low risk. NBI Item 113 is rated 6. Further investigation is required to determine the status of the structure. **High** indicates that the bridge is more likely to be scour critical. **Low** indicates that the bridge is more likely to be low risk. A Level 2 Engineering Evaluation will be required to determine the scour status of the bridge.

Note: Either the Scour Critical or Scour Susceptible line will be N/A depending on the results of the Level 1 scour evaluation.

Risk: The rating of **High** or **Low** risk is a judgment call and is meant to indicate the relative danger to bridge users with the bridge in its current condition. Risk is an additional basis for prioritizing follow-up actions. A high risk bridge (evidence or history of scour, shallow foundations, simply supported, susceptible to debris loading) on a high risk river (steep slope, high velocity, significant sediment loads) would receive a High risk rating. A low risk bridge (no evidence or history of scour, deep foundations and continuous superstructure, no debris) on a low risk river (moderate slope, low velocities, moderate sediment loads) would receive a Low risk rating. The inspector should base the rating on judgment and experience and consider structure and waterway characteristics that combine to provide a qualitative "hazard" evaluation.

Foundation: This rating is based on the availability of or lack of documentation on bridge foundation information. In general, an unknown foundation bridge would be coded "U" for Item 113.

Structure Type: Self explanatory.

Part b: Reasons for Rating: The section should focus on the specific conditions of bridge substructure elements (piers or abutments), the waterway, or countermeasures that resulted in the ratings of Part 1a. For example, observed scour, identified stream instability problems, or countermeasures that have deteriorated to the point that the integrity of the bridge is in question, would all be valid reasons to support the rating. The suggested NBI Data Item 113 coding should be provided as well as the reasoning for the coding. Do not leave this item blank.

ITEM 2 – RECOMMENDATIONS

Part a: Countermeasures: The engineer's field opinion of countermeasures suitable to reduce the risk to bridge users from a scour failure should be indicated. Riprap (or other structural countermeasures), scour monitoring (i.e., installation of fixed instrumentation or establishing a "flood watch"), or inspection (i.e., continue the normal inspection cycle) should be considered.

Part b: Level 2 Analysis Recommended. If a bridge is rated Scour Critical or Scour Susceptible for Item 1a, a Level 2 analysis is recommended.

Part c: Level 2 Priority. Based on a comparison with other Scour Critical or Scour Susceptible bridges at the site, a priority for additional analysis should be indicated. For example, a bridge rated in Item 1a as scour critical or highly scour susceptible, high risk, and unknown foundations would have the highest priority for further (Level 2) analysis. A low risk bridge with a known foundation (or a culvert) could be considered low priority (or no priority) for further evaluation.

Part d: Remarks. Explanatory information necessary to understand the recommendations should be provided in this section. For example, if a bridge could be in extreme danger of failure during the next runoff season, or if, in the opinion of the Inspector, countermeasure repairs are required immediately, that should be included here.

Part e: Trigger Events. Identify events that would initiate an operational or management action.

ITEM 3 – SITE FIELD REVIEW

Part a: Evidence of Scour at Structure: The general observations from the site field review should be recorded here. Any of these items, if observed at a structure, could indicate a serious scour threat. Accumulation of debris or an observed high water mark that verifies bridge overtopping could indicate that the bridge has been subjected to potentially severe hydraulic loads.

Part b: Feasibility of Monitoring During High Flows: In the event that a flood watch or installation of a fixed scour monitoring instrument is recommended, this section provides the Inspector's opinion of the feasibility of such a course of action.

Part c: Feasibility of Adding Countermeasures: Based on field observation, indicate the feasibility of using countermeasures to correct or reduce the risk from an observed scour problem(s).

ITEM 4 – ABUTMENTS

Part a: Type: Diagrams indicate the most common types of abutments found on bridges owned or inspected by the DOE. Circle the appropriate diagram.

Part b: Foundation: The length (L), width (W), and depth (D) of the abutment structure should be recorded. Length is measured in the direction of flow, width is the dimension perpendicular to the flow, and depth is the vertical dimension of the abutment from the highest elevation of the structure to the lowest elevation (e.g., bottom of spread footing or pile cap and/or tip of piles or drilled shafts). The purpose of these measurements is to provide an estimate of the obstruction to the flow presented by the abutment structure in the event further hydraulic analysis (Level 2 Scour Evaluation) is required.

The remaining embedment with reference to the observed ground elevation at the abutment should be recorded and should be consistent with the scour exposure (if any) as referenced to the original ground elevation on design or as-built drawings.

The foundation type should be noted as well as the source(s) of data on the abutment foundation.

Part c: Location from Bank: The location of the abutment with respect to existing channel banks (left and right) should be noted (distance set back from the channel, distance encroaching into the channel, at channel bank). These measured distances from existing banks should be recorded to support a Level 2 analysis, if necessary. Use the convention of left and right as viewed down stream.

Part d: Protection: Countermeasure protection, if any, should be noted and the condition of countermeasures rated on a scale of Good, Fair, or Poor.

ITEM 5 – PIER

Part a: Type: Diagrams indicate the most common types of piers found on bridges owned or inspected by the DOE. Circle the appropriate diagram or attach photos or sketches of actual structure.

Part b: Shape: The shape of the pier should be indicated to support further (Level 2) analysis, if necessary.

Part c: Width and Length: The Width of the pier perpendicular to the direction of flow as well as the Length of the pier (wall pier or pile bent) in the direction of flow should be measured and recorded. The number of piers should also be indicated.

Part d: Angle of Attack: The angle of the pier centerline to the direction of flow should be estimated for flood flow and normal flow (e.g., flow aligned with the pier would have a 0° angle of attack). Angle of attack is a critical input parameter for estimating pier scour in a follow-on Level 2 analysis, if necessary.

Part e: Foundation: The length (L), width (W), and depth (D) of the **Worst** pier should be recorded. The worst pier would be that pier that creates the greatest obstruction to the flow (e.g., greatest width, highest angle of attack, greatest amount of debris accumulation) and/or has the shallowest foundation. The length is measured in the direction of flow, the width is the dimension perpendicular to the flow, and the depth is the vertical dimension of the pier foundation below the original ground (stream bed) elevation.

The remaining embedment of the worst pier with reference to the observed ground elevation should be recorded and should be consistent with the scour exposure (if any) as referenced to the original ground elevation on design or as-built drawings.

The foundation type should be noted as well as the source(s) of data on the pier foundation.

Part f: Protection: Countermeasure protection, if any, should be noted and the condition of countermeasures rated on a scale of Good, Fair, Poor.

ITEM 6 – CHANNEL LATERAL STABILITY

Parts a and b: Bends and Bank Condition: Bends and bank condition in the bridge reach provide an indication of actively migrating meander bends or actively eroding channel banks, either of which could create a threat to the bridge. Vegetation on the channel banks could be an indication of relative stability. The existence of countermeasures against bend and bank instability in the bridge reach should be noted.

Part c: Angle of Attack: This entry should be consistent with the Item 5, Part d. The primary concern for channel lateral stability would be impinging flow on the bank.

Part d: Point Bar Under Bridge: A point bar in the bridge opening could indicate loss of channel conveyance capacity and increased hydraulic stress on bridge substructure elements in the active channel.

Part e: Islands or Bars: Islands or bars in the bridge reach could affect the flow angle of attack and determine the planform characteristics of the channel.

Parts f and g: Floodplains and Valley Setting: These geomorphic characteristics can influence the magnitude and severity of potential scour at a bridge.

ITEM 7 – CHANNEL VERTICAL STABILITY

Parts a and b: Exposed Footing or Piles: Exposed bridge footings or piles are good indicators of long-term degradation problems in the reach.

Part c: Contraction Scour: Contraction scour in the bridge reach is a direct result of the constriction of the floodplain by roadway approach embankments or loss of flow capacity at the bridge because of obstructions created by bridge substructure elements. The evaluation factors numbered (1) through (4) are indicators of either concentration of flow or possible flow relief on the left and right floodplains adjacent to the bridge.

Part d: Long-Term Trends: Channel profile and cross section records from previous inspection reports are good indicators of long-term trends toward either aggradation (raising of the channel bed) or degradation (lowering of the channel bed). These disturbances, which can occur over long reaches of a river, can usually be attributed to changes in delivery of water and sediment to the river channel.

Part e: Bed Material: Document the relationship of bed material size to stream instability and scour problems at bridges here.

ITEM 8 – GEOMORPHOLOGY

Parts a, c, and h through n:

Geomorphic Factors: These geomorphic factors are indicators of potential stream instability or scour problems at a bridge.

Part b: Dam or Reservoir: The presence of a dam or reservoir above the bridge reach could indicate significant changes to the flow regime and interruption of sediment supply with consequences (e.g., degradation) for river stability at the bridge.

Parts d and e: In-stream Mining/Dredging and Headcuts/Nickpoints: In-stream sand and gravel mining above a bridge can disrupt the sediment supply to the bridge reach causing potentially significant degradation at the bridge. In-stream mining below a bridge or other changes in downstream base level control could initiate a headcut or nickpoint which could move upstream and seriously undercut the bridge foundation.

Parts f and g: Diversions and Channel Modification: Diversion of water away from the channel or modifications such as channelization of a river reach adjacent to a bridge could cause channel response that might impact river stability at the bridge.

ITEM 9 – OTHER CONSIDERATIONS

Part a: Sediment Transport: The sediment transport condition is important to inspectors. A live-bed condition (usually in the main channel of a sand bed river) means that bed sediments are moving into the bridge reach and any scour at bridge substructure elements during a flood will likely fill in and not be visible after a flood. The clear-water condition (usually on well-vegetated overbank/floodplain areas) means that bed sediments are not moving into the bridge reach and any scour at bridge substructure elements during a flood will likely not fill in and will be visible after a flood.

The armored bed condition occurs when a layer of coarse bed materials (gravel) accumulates over and "armors" a finer underlying material (sand) against further scour for a specific flow event. Generally the armor layer can be easily disrupted and cannot be relied on to prevent further scour.

Part b: Watershed: Watershed conditions or changes in these conditions (e.g., drought, fire, urbanization) can be good indicators of potential downstream channel instability problems.

Part c: Tidal Influence: A tidally influenced reach of river (or estuary) will experience periods of flow reversal from flood tide to ebb tide. This creates a potentially hazardous scour condition, particularly for bridges over tidal nlets.

Part d: Tributaries: For bridges near tributary confluences, complex flow conditions can create unusual stream instability and scour problems. Variations in timing of flood peaks between a tributary and the main-stem river and changes in base level control are important factors to consider.

Part e: Observed Stream Velocity: High flow velocities in the bridge reach will obviously have an influence on scour potential. A quick estimate of flow velocity at a bridge can be obtained by recording the time of travel of a floating object through a known distance. Then, Velocity = Distance/Time (ft/sec).

ITEM 10 – ADDITIONAL COMMENTS

Part a: Remarks: While the templet was designed to record most factors related to stream stability and scour at bridges, it cannot anticipate all possible conditions in the field that might impact a bridge. Record additional factors in this section. For example, the potential for ice build-up or ice jam

break-up in colder regions can have significant impacts on a bridge. The potential for a Nor'easter on the East Coast, vulnerability to hurricane storm surge on the Southeast and Gulf Coasts, and the possibility of a tsunami on the West Coast or in Hawaii all may create unusual hydraulic conditions and a high potential for scour at a bridge. Exposed utility crossings are strong indicators of channel degradation problems.

ITEM 11 – RESPONSIBLE PERSONNEL

Identify the responsible engineer that performed the evaluation, the engineers who reviewed the evaluation as well as the applicable evaluation dates.

SCOUR CRITICAL BRIDGE - PLAN OF ACTION

1. GENERAL INFORMATION

NBI Structure No. or Property No.: 207245 X202B	**City, County, State:** Piketon, OH	**Waterway:** Little Beaver Creek
Structure name: South Fog Road	**State highway or facility carried:** South Fog Road	**Owner:** USDOE

Year built: 1935	**Year rebuilt:** 1981	**Bridge replacement plans (if scheduled):** _____ **Anticipated opening date:** _____

Structure type: ☒ Bridge ☐ Culvert

Structure size and description: 36.5' simple span multi-beam

Foundations: ☒ Known, type: Spread Footing Depth: _____ ☐ Unknown

Subsurface soil information (*check all that apply*): ☐ Non-cohesive ☐ Cohesive ☒ Rock

Bridge ADT: 300	**Year/ADT:** 2020	**% Trucks:** 10

Does the bridge provide service to emergency facilities and/or an evacuation route (Y/N)? N

If so, describe: _____

2. RESPONSIBILITY FOR POA

Author(s) of POA (name, title, agency/organization, telephone, pager, email):

Brendan Prendeville, Bridge Engineer, Burgess & Niple, 614-459-2050

Date: 5/17/19

Concurrences on POA (name, title, agency/organization, telephone, pager, email):

Michael Seal, Bridge Engineer, Burgess & Niple, 614-459-2050 5/30/19

POA updated by (name, title, agency, organization): _____ **Date of update:** ___

Items update: _____

POA to be updated every _____ **months by (name, title, agency/organization):**_____

Date of next update:_____

3. SCOUR VULNERABILITY

a. Current NBI Item 113 Code: ☐ 3 ☐ 2 ☐ 1 Other: 4

b. Source of Scour Critical Code: ☐ Observed ☐ Assessment ☐ Calculated Other: NA

c. Scour Evaluation Summary: Undermining of the north abutment, NW wingwall, and east end of the south abutment.

d. Scour History: Undermining of substructure has been noted for several years, no significant change to undermining.

4. RECOMMENDED ACTION(S) (see Sections 6 and 7)

	Recommended		Implemented	
a. Increased Inspection Frequency	☐ Yes	☒ No	☐ Yes	☐ No
b. Fixed Monitoring Device(s)	☐ Yes	☒ No	☐ Yes	☐ No
c. Flood Monitoring Program	☐ Yes	☒ No	☐ Yes	☐ No
d. Hydraulic/Structural Countermeasures	☒ Yes	☐ No	☐ Yes	☒ No

5. NBI CODING INFORMATION

	Current	Previous
Inspection date	**5/8/19**	**4/19/18**
NBI Item 113 Scour Critical	**4**	**4**
NBI Item 60 Substructure	**6**	**6**
NBI Item 61 Channel & Channel Protection	**6**	**6**
NBI Item 71 Waterway Adequacy	**6**	**6**
Comments: (drift, scour holes, etc. - depict in sketches in Section 10)	_____	_____

6. MONITORING PROGRAM

☒ **Regular Inspection Program** ☐w/surveyed cross sections

Items to Watch: Further undermining of substructure

☒ **Increased Inspection Frequency of 12 mo.** ☐w/surveyed cross sections

Items to Watch: Further undermining of substructure

☐ **Underwater Inspection Required**

Items to Watch: _____

☐ **Increased Underwater Inspection Frequency of __ mo.**

Items to Watch: _____

☐ **Fixed Monitoring Device(s)**

Type of Instrument: _____

Installation location(s): _____

Sample Interval: ☐ 30 min. ☐ 1 hr. ☐ 6 hrs. ☐ 12 hrs. ☐ Other: _____

Frequency of data download and review: ☐ Daily ☐ Weekly ☐ Monthly ☐ Other _____

Scour alert elevation(s) for each pier/abutment: _____

Scour critical elevations(s) for each pier/abutment:_____

Survey ties: _____

Criteria of termination for fixed monitoring: _____

☐ **Flood Monitoring Program**

Type: ☐ Visual inspection

☐ Instrument (*check all that apply*):

☐ Portable ☐ Geophysical ☐ Sonar ☐ Other: _____

Flood monitoring required: ☐ Yes ☒ No

Flood monitoring event defined by (*check all that apply*):

☐ Discharge _____ ☐ Stage _____

☐ Elev. measured from _____ ☐ Rainfall _____ (in/mm) per _____ (hour)

☐ Flood forecasting information: _____

☐ Flood warning system: _____

Frequency of flood monitoring: ☐1 hr. ☐3 hrs. ☐6 hrs. ☐ Other: _____

Post-flood monitoring required: ☐ No ☐Yes, within _____ days

Frequency of post-flood monitoring: ☐Daily ☐Weekly ☐Monthly ☐Other: _____
Criteria for termination of flood monitoring: _____

Criteria for termination of post-flood monitoring: _____

Scour alert elevation(s) for each pier/abutment: _____

Scour critical elevation(s) for each pier/abutment: _____

Note: Additional details for action(s) required may be included in Section 8.

Action(s) required if scour alert elevation detected (*include notification and closure procedures*): _____

Action(s) required if scour critical elevation detected (*include notification and closure procedures*): _____

Agency and department responsible for monitoring: Portsmouth Mission Alliance

Contact person (*include name, title, telephone, pager, e-mail*): Craig Opperman, PE, PS

7. COUNTERMEASURE RECOMMENDATIONS

Prioritize alternatives below. Include information on any hydraulic, structural or monitoring countermeasures.

☒ **Only monitoring required (see Section 6 and Section 10 – Attachment F)**

Estimated cost $_____

☐ **Structural/hydraulic countermeasures considered (see Section 10, Attachment F):**

Priority Ranking	**Estimated cost**
(1) Install designed riprap along north abutment – east end of south	$ 10k
(2) _____	$ _____
(3) _____	$ _____
(4) _____	$ _____
(5) _____	$ _____

Basis for the selection of the preferred scour countermeasure: _____

Countermeasure implementation project type:

☐ Proposed Construction Project ☒ Maintenance Project

☐ Programmed Construction - Project Lead Agency:

☐ Bridge Bureau ☐ Road Design ☐ Other _____

Agency and department responsible for countermeasure program (if different from Section 6 contact for monitoring): _____

Contact person (*include name, title, telephone, pager, e-mail*): _____

Target design completion date: _____

Target construction completion date: _____

Countermeasures already completed: _____

8. BRIDGE CLOSURE PLAN

Scour monitoring criteria for consideration of bridge closure:

- ☐ Water surface elevation reaches _____ at _____
- ☒ Overtopping road or structure
- ☐ Scour measurement results / Monitoring device (See Section 6)
- ☐ Observed structure movement / Settlement
- ☐ Discharge: _____ cfs/cms
- ☐ Flood forecast: _____
- ☐ Other: ☐ Debris accumulation ☐ Movement of riprap/other armor protection
  ☐ Loss of road embankment

Emergency repair plans (*include source(s), contact(s), cost, installation directions*): _____

Agency and department responsible for closure: Portsmouth Mission Alliance

Contact persons (name, title, agency/organization, telephone, pager, email): Craig Opperman, PE, PS

Criteria for re-opening the bridge: Water levels decrease, probing for scour under substructure units.

Agency and person responsible for re-opening the bridge after inspection: Portsmouth Mission Alliance.

9. DETOUR ROUTE

Detour route description (route number, from/to, distance from bridge, etc.) - Include map in Section 10, Attachment E. – Shyville Rd. (North Access Rd.), Perimeter Rd., Dutch Run Rd. (East Access Rd.)

Bridges on Detour Route: North Access Road Structure

Bridge Number	Waterway	Sufficiency Rating/ Load Limitations	Item 113 Code

Traffic control equipment (detour signing and barriers) and location(s): _____

Road closed at each end of Fog Road with directional detour signs along the route.

Additional considerations or critical issues (susceptibility to overtopping, limited waterway adequacy, lane restrictions, etc.) : _____

News release, other public notice (include authorized person(s), information to be provided and limitations): _____ Site Public Relations Officer

10. ATTACHMENTS

Please indicate which materials are being submitted with this POA:

☐ **Attachment A: Boring logs and/or other subsurface information**

☐ **Attachment B: Cross sections from current and previous inspection reports**

☐ **Attachment C: Bridge elevation showing existing streambed, foundation depth(s) and observed and/or calculated scour depths**

☐ **Attachment D: Plan view showing location of scour holes, debris, etc.**

☐ **Attachment E: Map showing detour route(s)**

☐ **Attachment F: Supporting documentation, calculations, estimates and conceptual designs for scour countermeasures.**

☐ **Attachment G: Photos**

☐ **Attachment H: Other information: _____**

INSTRUCTIONS FOR COMPLETING
Template: Scour Critical Plan of Action

Overview

The Scour Critical Plan of Action form (the template) is a tool for developing a Scour Critical Plan of Action (POA). A Scour Critical POA describes the procedures for inspectors and engineers to implement before, during, and after a flood event to protect the traveling public. It describes the countermeasures considered and selected to address the vulnerability of the bridge to scour or stream instability. This template includes the minimum information recommended by the Federal Highway Administration (FHWA) for a POA.

The template contains ten sections. Sections 1 through 4 provide an executive summary. Sections 5 through 10 provide additional detail and identify attachments. All the fields in the template may be modified so that unique information may be added regarding local and site-specific scour and stream stability concerns, and local sources of information may be included. All blocks in this template will expand automatically to allow additional space. Where check boxes are provided, they can be checked by double-clicking on the box and selecting the "checked" option.

Section 1 – General Information

Section 1 of the template covers general information about the bridge.

The bridge replacement information provides a framework for decisions regarding the need for a structural or hydraulic countermeasure.

The structure type information provides insight on how the bridge could fail, if significant scour were to occur. For example, a simply-supported span bridge can fail suddenly, so the bridge should be closed as soon as scour becomes close to critical. Bridges with structural redundancy may allow more time to respond to an emergency situation.

The subsurface soil information comes from the boring logs in Attachment A of the POA. Indicate all the types of soil that are at the site by checking the boxes and then adding location information in the space below the boxes.

Also, identified in this section is bridge importance. This information is necessary so that the need for alternate routes or access contingencies can be identified.

Section 2 – Responsibility for POA

Section 2 of the template provides point of contact information for those responsible for preparing and maintaining the POA.

Concurrences on POA refers to the individuals or organizations which must concur with the contents of the POA. This may include individuals or organizations including site/Program/Agency management or county officials and law enforcement agencies who must agree with the bridge closure plans and the disruption the closure will have on the site or the public. **Gaining concurrence before an emergency occurs helps to minimize inter-agency conflicts during an emergency**.

Also, in Section 2 is information on the POA update: who will do the update, when, and what was updated. The POA should be reviewed and updated on a routine basis to ensure that the contents of the plan are still valid. After a major flood event, the POA should be reviewed to ensure that the plan functioned as intended. Changes to the plan may be required to make it function better during an emergency.

Section 3 – Scour Vulnerability

Section 3 of the template provides a summary of the scour status of the bridge.

In Section 3a, select the appropriate box for the **current** scour coding. If *Other* is selected, provide the appropriate code. For example, if the foundation is unknown mark *U* in the *Other* field.

In Section 3b indicate how the Item 113 code was determined. If the bridge has a *U* code, *unknown* must be written in the *Other* field.

In Section 3c, provides space for a narrative description to summarize the information from the scour evaluation. Some items to include are:

- Scour critical flood flow and scour depth
- 100- or 500-year flood flows
- Overtopping flow

Section 3d provides space to summarize the scour history, including when, where and how much scour or stream instability has been observed at the bridge. Also, information on scour countermeasures previously installed at the bridge and their performance should be included.

Section 4 – Recommended Action(s)

Section 4 of the template contains highlights from the recommended actions from Sections 6 and 7 of the template. Items 4a, 4b, and 4c refer to the main parts of the POA monitoring program. Item 4d refers to the hydraulic or structural countermeasure selected in Section 7. This section cannot be completed until Sections 6 and 7 are completed.

Section 5 – NBIS Coding Information

Section 5 of the template contains previous and current codes for the hydraulic related items of the NBI. This information provides a quick indication of observed or potential long-term problems or adverse trends that may affect the stability of the bridge foundations.

The *Inspection Date* corresponds to the date of the inspection when the NBI items were coded. If the Items were coded on a date different than the inspection date, this different date is indicated in the *Comments* block.

For additional details on NBI Items 113 and 60, see the FHWA Policy *Memorandum Revision of Coding Guide, Item 113 – Scour Critical Bridges* dated April 27, 2001.

Section 6 – Monitoring Program

There are three types of countermeasures which should be considered as part of the countermeasure program:

- Monitoring
- Hydraulic
- Structural

A monitoring countermeasure can be considered a key component of a POA, either alone or in combination with other countermeasures. Monitoring is highlighted in its own section, Section 6, in the template. Section 6 is subdivided into three additional subsections including:

- Inspection Frequency
- Fixed Monitoring
- Flood Monitoring

The first subsection of Section 6 covers information on the frequency of inspection. Bridges are usually inspected biennially. Bridge owners may choose to keep this schedule but may also specify inspectors look at certain items at the bridge to ensure stability with regard to scour. In this case, the *Regular Inspection Program* box is selected along with a list of the items to be watched. These items may include countermeasures, channel bed elevations, signs of movement or settlement.

Some bridge owners may choose to increase the frequency of inspection to less than the 2-year cycle. In this case, the *Increased Inspection Frequency* box is checked and the number of months between inspections is indicated. Usually only items pertinent to scour and stream stability would be observed and inspected. The specific items are indicated in the POA standard template.

Underwater inspections may also be required at the bridge. If the Underwater Inspection cycle remains on the regular schedule, then the *Underwater Inspection Required* box is checked. If an increased cycle is needed, then the *Increased Underwater Inspection Frequency* box is selected and the months between inspections indicated. In both cases the items for inspection and observation are indicated on the POA.

The second subsection of Section 6 covers information on Fixed Monitoring Devices. Fixed monitoring devices can provide continuous information about scour at the bridge site. This information can lead to early identification of potential scour problems.

The Fixed Monitoring box is selected if a bridge owner opts to use fixed monitoring devices at the bridge. The type of devices and location of devices are then described in the plan. Details about the devices may be included in Attachment F to the POA.

In most cases, the fixed monitoring device can send information continuously from the bridge site. However, this amount of information can become cumbersome, so most bridge owners only obtain or sample the information periodically. The sampling interval should be indicated on the POA and can be modified during flood events. If modified, the rationale for the change is noted on the POA.

The information received from the fixed monitoring device should be reviewed for developing scour problems. During normal flow, the information may be reviewed daily, weekly, or monthly. During flood events, the review frequency may increase. The POA should detail the frequency of review and identify who is conducting the review.

The Scour Critical Criteria should be determined by a Level 2 Scour Evaluation. The criteria should be indicated on the plan. Selecting an elevation higher than the scour critical elevation ensures sufficient time needed to take action in protecting the traveling public and possibly the bridge. This elevation, called the Scour Alert Criteria, should also be presented on the POA.

The third subsection of Section 6 describes monitoring actions that should be implemented during an actual flood event.

If the bridge owner inspects the bridge visually during a flood, then the *Visual Inspection* box is selected.

Those individuals visually observing the bridge may look for movement or settlement in the bridge or for a certain elevation of water, which could trigger the actions prescribed in the POA. If some kind of instrumentation is used to measure scour or water elevation, the *Instrument* box is selected and the applicable instrumentation type indicated. Both the *Visual Inspection* and the *Instrument* boxes may be selected.

The POA should document thresholds for the start and end of flood monitoring and note the frequency of the monitoring. These thresholds may include:

- Flood discharge
- Stage
- Water surface elevation
- Rainfall data

The POA should clearly describe the thresholds and how the threshold is determined. For example, the threshold discharge or stage may be tied to a nearby USGS gage. Some bridge owners have opted to mark their bridges with the threshold water surface elevations to ensure inspectors know when action should be taken. The POA should also describe the actions required when threshold values are reached.

The agency, department, position, or person responsible for inspecting or reviewing instrumentation data is listed at the end of Section 6 in the template. Some bridge owners may have maintenance staff rather than bridge inspectors monitor the bridge during a flood and then have bridge inspection staff conduct the post-flood inspection. All staff with responsibilities in implementing the POA should be listed. More than one person may be listed, especially to provide back up points- of-contact.

In some cases, the person at the bridge site during a flood event must confer with someone of greater authority in order to decide to close the bridge. This decision maker should also be listed in Section 6 of the POA Standard Template.

Finally, if action must be taken, the agency, department, position, or person responsible for taking the action is listed. For example, if the local law enforcement is to close the bridge and set up the detour route, this agency is listed in Section 6 of the template.

<u>Section 7 – Countermeasure Recommendations</u>

Section 7 of the template summarizes the alternative countermeasures considered for the bridge, as well as the final countermeasures selected and rationale. Guidance on the selection and design of scour countermeasures is presented in FHWA Hydraulic Engineering Circular No. 23, *Bridge Scour and Stream*

Instability Countermeasures. The circular contains a matrix presenting the various countermeasures and their attributes.

If a monitoring countermeasure is selected for the countermeasure program, the *Monitoring* box is selected. If a structural and/or hydraulic countermeasure is selected, then the *Structural/Hydraulic Scour Countermeasures Considered* box is selected. Both boxes may be selected, if needed.

Under the *Priority Ranking* and *Estimated Cost* columns, list the various countermeasures for consideration along with their corresponding estimated costs. The selected countermeasures are indicated and the reasons for selecting the countermeasures are explained on the *Basis for selection* line. Supporting information for the considered countermeasures should be attached. Include sufficient information to help independent reviewers understand the countermeasure selection process and the resulting decisions.

This section also includes boxes for indicating the countermeasure implementation project type.

The last part of Section 7 of the template requires information on agency/department/position/person responsible for designing and implementing the countermeasure program. More than one person may be listed, if appropriate.

Target design and construction dates should are also required.

Section 8 – Bridge Closure Plan

Section 8 of the template provides instructions for closing a bridge. Specifically, this section should include:

- Specific criteria indicating when to close the bridge
- Who should close the bridge
- Contact information, such as management or local law enforcement

Several examples of bridge closing conditions are provided. Select the conditions as appropriate. If the bridge owner has closure instructions specified in another document, these instructions should be referenced on the *Emergency repair plans* line.

The POA should also detail the process for reopening the bridge. In some cases, the bridge may be reopened when the floodwater has receded sufficiently. In other cases, the bridge will require inspection to ensure it is structurally sound. The reopening criteria should be listed. The agency or person who will inspect or make the decision to reopen the bridge should be identified in the plan.

Section 9 – Detour Route

Section 9 of the template describes potential detour routes, if the bridge is closed. The description should include route numbers, from/to locations, distances from closed bridge, as well as any other pertinent information. A map of the detour routes should be attached.

The bridges on the detour route should be listed in the *Bridges on Detour Route* table, along with restrictive factors for each bridge on the detour route, such as:

- Load restrictions
- Clearance restrictions
- Scour vulnerability condition

Additional items to present in Section 9 include:

- Required traffic control equipment
- Critical issues, such as flood overtopping vulnerability for bridges and roadways along the detour route, waterway adequacy of the detour bridges, and lane restrictions
- Authority to communicate with the media and public

Concurrence from local law enforcement agencies on the proposed detour and the closing procedures should be obtained and copies of the POA provided to these agencies.

Detours routes are not set in stone, but information should be provided on potential detours. Some factors to be considered in documenting in advance a detour route for a particular bridge include:

- Detours must be set up, taking into consideration the conditions existing at the time a detour is needed. For some bridges, it may not be possible to foresee what these conditions might be, which roads might be flooded, which bridges may already be closed, what will be the load and clearance restrictions for the proposed detour route, etc.
- DOT or bridge owner may have a designated department/office which is intimately familiar with their bridges and road systems, and are in the best position to quickly decide upon and coordinate a detour route for the given set of circumstances. This would be noted in the POA.
- Decisions are made on the basis of the conditions that exist at the time of the closure.

Consideration needs to be given to floods that may overtop bridges and approach roadways on the detour route. Actual detour routes should be based on roadway and bridge network status at the time the detour is proposed.

Section 10 – Attachments

Section 10 of the template identifies supporting materials and documents typically part of the POA.

APPENDIX C –

NBI DATA ITEMS

NBI Data Item	Item 1	Item 8	Item 5	Item 2	Item 3	Item 4	Item 6	Item 7
Data Item Name	State Code	Structure Number	Inventory Route	Highway Agency District	County (Parish) Code	Place Code	Features Intersected	Facility Carried by Structure
Length-Type of Data Item	3 digit Numeric	15 digit Alpha/Numeric	9 digit Alpha/Numeric	2 digit Alpha/Numeric	3 digit Numeric	5 digit Numeric	25 digit Alpha/Numeric	18 digit Alpha/Numeric
DOE Submission Requirement	Required	Required	Required	Required	Required	Required	Required	Required
DOE Specific Instructions		Use: FIMS Property Sequence Number		Item 2 should be coded 00 if Highway Agency District is unreported.				
Create one NBI record for each asset. Each row corresponds to a single bridge.	395	207245	180000000	09	131	45611	Little Beaver Creek	South Fog Road

Item 9	Item 10	Item 11	Item 12	Item 13	Item 16	Item 17	Item 19	Item 20	Item 21	Item 22	Item 26
Location	Inventory Route, Minimum Vertical Clearance	Kilometer point	Base Highway Network	LRS Inventory Route, Subroute Number	Latitude	Longitude	Bypass, Detour Length	Toll	Maintenance Responsibility	Owner	Functional Classification of Inventory Route
25 digit Alpha/Numeric	4 digit Numeric	7 digit Numeric	1 digit Numeric	12 digit Numeric	8 digit Numeric	9 digit Numeric	3 digit Numeric	1 digit Numeric	2 digit Numeric	2 digit Numeric	2 digit Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
	Enter in this form: "XX.XX" **meters** (e.g., for 8.8 meters, type 0880)	Enter in this form: "XXXX.XXX" (e.g., For 130.34, type 0130340)			e.g., for 35°27'18.55", enter "35271855"	e.g., for 81°5'50.65", enter "081055065"			Use 79 for Department of Energy (DOE)	Use 79 for Department of Energy (DOE)	
E of US23 @ Piketon Plant	9999	0000000	0		39013177	82591732	5	3	79	79	09

Item 27	Item 28	Item 29	Item 30	Item 31	Item 32	Item 33	Item 34	Item 35	Item 36	Item 37	Item 38
Year Built	Lanes On and Under the Structure	Average Daily Traffic	Year of Average Daily Traffic	Design Load	Approach Roadway Width	Bridge Median	Skew	Structure Flared	Traffic Safety Features	Historical Significance	Navigation Control
4 digit Numeric	4 digit Numeric	6 digit Numeric	4 digit Numeric	1 digit Numeric	4 digit Numeric	1 digit Numeric	2 digit Numeric	1 digit Numeric	4 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric
Required	Required	Estimate Required	Estimate Required	Required	Required	Required	Required	Required	Required	Required	Required
	e.g., for 3 lanes on, 1 lane under, type "0301"										
1935	0200	300	2020	0	0056	0	25	0	1011	5	N

Item 39	Item 40	Item 41	Item 42	Item 43	Item 44	Item 45	Item 46	Item 47	Item 48	Item 49	Item 50	Item 51
Navigation Vertical Clearance	Navigation Horizontal Clearance	Structure, Open, Posted, or Closed to Traffic	Type of Service	Structure Type, Main	Structure Type, Approach Spans	Number of Spans in Main Unit	Number of Approach Spans	Inventory Route, Total Horizontal Clearance	Length of Maximum Span	Structure Length	Curb or Sidewalk Widths	Bridge Roadway Width, Curb-to-Curb
4 digit Numeric	5 digit Numeric	1 digit Alpha/Numeric	2 digit Numeric	3 digit Numeric	3 digit Numeric	3 digit Numeric	4 digit Numeric	3 digit Numeric	5 digit Numeric	6 digit Numeric	6 digit Numeric	4 digit Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
000	0000	P	15	302	000	001	0000	080	00105	00105	000000	0080

Item 52	Item 53	Item 54	Item 55	Item 56	Item 58	Item 59	Item 60	Item 61	Item 62
Deck Width, Out-to-Out	Minimum Vertical Clearance Over Bridge Roadway	Minimum Vertical Underclearance	Minimum Lateral Underclearance on Right	Minimum Lateral Underclearance on Left	Deck Condition Rating	Superstructure Condition Rating	Substructure Condition Rating	Channel/Channel Protection	Culverts
4 digit Numeric	4 digit Numeric	5 digit Alpha/Numeric	4 digit Alpha/Numeric	3 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
0084	9999	N0000	N000	000	5	5	6	6	N

Item 63	Item 64	Item 65	Item 66	Item 67	Item 68	Item 69	Item 70
Method Used to Determine Operating Rating	Operating Rating	Method Used to Determine Inventory Rating	Inventory Rating	Structural Evaluation Appraisal Rating	Deck Geometry Appraisal Rating	Underclearances, Vertical and Horizontal Appraisal Rating	Bridge Posting
1 digit Numeric	3 digit Numeric	1 digit Numeric	3 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Numeric
Required	Required	Required	Required	Not Required	Not Required	Not Required	Required
8	109	8	084				0

Item 71	Item 72	Item 75	Item 76	Item 90	Item 91	Item 92	Item 93	Item 94	Item 95
Waterway Adequacy Appraisal Rating	Approach Roadway Alignment Appraisal Rating	Type of Work	Length of Structure Improvement	Inspection Date	Designated inspection Frequency	Critical Feature Inspection	Critical Feature Inspection Date	Bridge Improvement Cost ($000)	Roadway Improvement Cost ($000)
1 digit Alpha/Numeric	1 digit Alpha/Numeric	3 digit Alpha/Numeric	6 digit Numeric	4 digit Numeric	2 digit Numeric	9 digit Alpha/Numeric	12 digit Alpha/Numeric	6 digit Numeric	6 digit Numeric
Required	Required	Required	Optional	Required	Required	Required	Required	Optional	Optional
6	6			0620	12	N N			

Item 96	Item 97	Item 98	Item 99	Item 100	Item 101	Item 102	Item 103	Item 104	Item 105	Item 106
Total Project Cost ($000)	Year of Improvement Cost Estimate	Border Bridge	Border Bridge Structure Number	STRAHNET Highway Designation	Parallel Structure Designation	Direction of Traffic	Temporary Structure Designation	Highway System of Inventory Route	Federal lands Highways	Year Reconstructed
6 digit Numeric	4 digit Numeric	5 digit Alpha/Numeric	15 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Numeric	1 digit Numeric	4 digit Numeric
Optional	Optional	Required	Required	Required	Required	Required	Required	Required	Required	Required
				0	N	2		0	0	1981

Item 107	Item 108	Item 109	Item 110	Item 111	Item 112	Item 113	Item 114	Item 115	Item 116
Deck Structure Type	Wearing Surface/Protective System	Average Daily Truck Traffic	Designated National Network	Pier/Abutment Protection	NBIS Bridge Length	Scour Critical Bridges	Future Average Daily Traffic	Year of Future Average Daily Traffic	Minimum Navigational Vertical Clearance, Vertical Lift Bridge
1 digit Alpha/Numeric	3 digit Alpha/Numeric	2 digit Numeric	1 digit Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	6 digit Numeric	4 digit Numeric	4 digit Numeric
Required	Required	Required	Required	Required	Required	Required	Estimate Required	Estimate Required	Required
1	108	10	0	1	Y	4	700	2040	

APPENDIX D –

ODOT BRIDGE INSPECTION FIELD REPORT FORM

STATE OF OHIO
BRIDGE INSPECTION FIELD REPORT

SFN		Bridge Number		Year Built	1935
DIST	9	Feature Intersected	Little Beaver Creek	Municipality	Not applicable

APPROACH ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c1.	Wearing Surface (SF)						2
c2.	Slab (SF)						
c3.	Relief Joint (LF)						
c4.	Embankment (LF) ded						2
c5.	Guardrail (LF)						1
N36.	Safety Features: Tr, Gr, Tm	36)B 0	36)C 0	36)D 1			
c6.	Approach Summary					(9-0)	6

DECK ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c7.1	Floor/Slab (SF)						2
c7.2	Edge of Floor/Slab (LF)						1
c8.	Wearing Surface (SF)						3
c9.	Curbs/Sidewalk (LF)						
c10.	Median (LF)						
c11.	Railing (LF)						1
N36.	Safety Features: Rail	36)A 1					
c12.	Drainage (EA) ded						1
c13.	Expansion Joint (LF) ded						
N58.	Deck Summary					(9-0)	5

SUPERSTRUCTURE ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c14.	Alignment (EA) ded						1
c15.1	Beams/Girders (LF)						2
c15.2	Slab (SF)						
c16.	Diaphragm/X-Frames (EA)						
c17.	Stringers (LF)						
c18.	Floorbeams (LF)						
c19.	Truss Verticals (EA)						
c20.	Truss Diagonals (EA)						
c21.	Truss Upper Chord (EA)						
c22.	Truss Lower Chord (EA)						
c23.	Truss Gusset Plate (EA) ded						
c24.	Lateral Bracing (EA)						
c25.	Sway Bracing (EA)						
c26.	Bearing Devices (EA) ded						
c27.	Arch (LF)						
c28.	Arch Column/Hanger (EA)						
c29.	Arch Spandrel Walls (LF)						
c30.	Prot. Coating System (LF) ded						3
c31.	Pins/Hangers/Hinges (EA) ded						
c32.	Fatigue (LF) ded						1
N59.	Superstructure Summary					(9-0)	5

SUBSTRUCTURE ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c33.	Abutment Walls (LF)						2
c34.	Abutment Caps (LF)						
c35.	Abut. Colmns/Bents (EA)						
c36.	Pier Walls (LF)						
c37.	Pier Caps (LF)						
c38.	Pier Columns/Bents (EA)						
c39.	Backwalls (LF)						1
c40.	Wingwalls (LF)						1
c42.	Scour (LF) ded						2
c43.	Slope Protection (LF) ded						
N60.	Substructure Summary					(9-0)	6

CULVERT ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c44.	General (LF)						
c45.	Alignment (LF) ded						
c46.	Shape (LF) ded						
c47.	Seams (LF) ded						
c48.	Headwall/Endwall (LF)						
c49.	Scour (LF) ded						
c50.	Abutments (LF)						
N62.	Culvert Summary					(9-0)	

CHANNEL ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c51.	Alignment (LF) ded						3
c52.	Protection (LF) ded						1
c53.	HydraulicOpening (EA) ded						2
c54.	Navigation Lights (EA) ded						
N61.	Channel Summary					(9-0)	6

SIGN/UTILITY ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c55.	Signs (EA) ded						1
c56.	Sign Supports (EA) ded						1
c57.	Utilities (LF) ded						
N59, 60 or 62	General Appraisal					(9-0)	5
N41.	Operating Status					(Open, Restricted, or Closed)	P

Inspector Name	Dale Poorman
Inspection Date/Type Use mm/dd/yr	06/03/2020 / RT ☑ FC ☐ UW ☐ SP ☐
Reviewer Name	Brendan Prendeville
Review Date	06/12/2020 Use mm/dd/yr
PE Number (Insp or Rev)	74728

Key: "*Qty*" = Quantity necessary for Element Level inspection; "*(LF)*" = Linear Feet; "*(SF)*" = Square Feet; "*(EA)*" = Each or count; "*CR*" = 1,2,3 or 4 Condition Rating; "*TR*" = Transition Rating or weighted average of condition states; "*ded*" = dedicated or specific chart and guidance; "*c*" = condition prefix; "*N*" = NBIS rating

APPENDIX E –

LOAD RATING ANALYSIS

EXECUTIVE SUMMARY—LOAD RATING RESULTS
SOUTH FOG ROAD BRIDGE
5/17/19, BURGESS & NIPLE, INC.

Rater: Joe M. Kelley, PE Signature:

Checker: Ben D. Eckert, EI Signature:

Reviewer: Edward M. Cinadr, PE Signature:

The following is a brief summary of the rating results for the above referenced bridge:

Truck	Rating Factor	Tons	Truck	Rating Factor	Tons
HL-93 (Operating)*	0.33	12.0	**4F1**	0.42	11.5
HL-93 (Inventory)*	0.25	9.2	**5C1**	0.48	19.2
Type 3	0.49	12.4	**SU4**	0.42	11.3
Type 3S2	0.52	18.8	**SU5**	0.40	12.4
Type 3-3	0.61	24.5	**SU6**	0.36	12.5
NRL	0.32	12.9	**SU7**	0.34	13.2
2F1	0.67	10.1	**EV2**	0.48	12.5
3F1	0.46	10.6	**EV3**	0.31	11.9

**based on 36-ton vehicle*

The bridge is currently posted as shown below. Based on the results of the load rating, the current posting is adequate.

BRIDGE LOAD RATING REPORT

PROJECT:	United States Department of Energy Load Ratings
SITE:	South Fog Road Bridge over Little Beaver Creek
BRIDGE NUMBER:	207245 X202B
Bridge Description:	Multi-beam, simple span. Original portion consists of six B16x40 rolled beams and one channel. Widened portion consists of six W16x78 rolled beams.
Spans (c/c Bearings):	36.5'
Alignment:	9.3 Degree Skew
Bridge Plan Information:	Widening Design Plans - 1981
Material Strengths:	Fy (steel) = 30 ksi for original structure - 36 ksi for widened portion (Assumed based on year of construction: 1935 & 1981)
Rating Method:	Load & Resistance Factor Rating (LRFR)
Rating Software:	AASHTOWare BrR, Microsoft Excel
Special Assumptions:	1/16-inch section loss to the top and bottom flanges and 1/32-inch section loss to the web assumed on exterior beam of the widened portion of the structure based on field observations. The section loss was accounted for in BrR as a percent loss to the the flanges and web. Section loss on bottom flanges of original beams at supports is not included since it is at a location of zero moment.
Comments:	B13 (Original exterior beam) was not rated since it does not resist any live load. Distribution factors were calculated using equations found in AASHTO 4.6.2.2. The minimum spacing for range of applicability was ignored to provide a more accurate result for the distribution factors. State and federal live loads have a 1.45 load factor based on MBE 6A.4.4.2.3a-1 and ODOT BDM table 925-2. The emergency vehicle live loads have a 1.30 load factor based on AASHTO Memorandum "Load Rating for the FAST Act's Emergency Vehicles" and ODOT BDM table 925-2. In BrR all trucks besides the HL-93 design load have a 1.45 load factor; the emergency vehicles have an additional factor of 1.3/1.45 to get the appropriate rating results. The BrR results therefore show the correct rating factor but the tonnage capacity is reduced by the same 1.3/1.45 factor. Emergency vehicle tonnage capacities are correct in the summary tables in this report but must be adjusted if taken from the BrR output. **The bridge is currently posted. Based on the results of the load rating below, the current posting is adequate.**

Structure Rating Summary:

Loading	Gross Vehicle Weight (Tons)	Rating (Tons)	Rating (Metric Tons)	Rating Factor	Controlling Member	Controlling Location/ Force
HL-93 (Operating)	36	**12.0**	**10.9**	0.33	Beams 8-12 (orig.)	Midspan Bending Moment
HL-93 (Inventory)	36	**9.2**	**8.4**	0.25	Beams 8-12 (orig.)	Midspan Bending Moment
Type 3	25	**12.4**	**11.2**	0.49	Beams 8-12 (orig.)	Midspan Bending Moment
Type 3S2	36	**18.8**	**17.0**	0.52	Beams 8-12 (orig.)	Midspan Bending Moment
Type 3-3	40	**24.5**	**22.2**	0.61	Beams 8-12 (orig.)	Midspan Bending Moment
NRL	40	**12.9**	**11.7**	0.32	Beams 8-12 (orig.)	Midspan Bending Moment
2F1	15	**10.1**	**9.1**	0.67	Beams 8-12 (orig.)	Midspan Bending Moment
3F1	23	**10.6**	**9.6**	0.46	Beams 8-12 (orig.)	Midspan Bending Moment
4F1	27	**11.5**	**10.4**	0.42	Beams 8-12 (orig.)	Midspan Bending Moment
5C1	40	**19.2**	**17.4**	0.48	Beams 8-12 (orig.)	Midspan Bending Moment
SU4	27	**11.3**	**10.2**	0.42	Beams 8-12 (orig.)	Midspan Bending Moment
SU5	31	**12.4**	**11.2**	0.40	Beams 8-12 (orig.)	Midspan Bending Moment
SU6	34.75	**12.5**	**11.3**	0.36	Beams 8-12 (orig.)	Midspan Bending Moment
SU7	38.75	**13.2**	**11.9**	0.34	Beams 8-12 (orig.)	Midspan Bending Moment
EV2	28.75	**12.5**	**11.3**	0.48	Beams 8-12 (orig.)	Midspan Bending Moment
EV3	43	**11.9**	**10.7**	0.31	Beams 8-12 (orig.)	Midspan Bending Moment

Rated By:	Joe M. Kelley, PE (e-mail: joe.kelley@burgessniple.com)
Checked By:	Benjamin D. Eckert, EI (e-mail: ben.eckert@burgessniple.com)
Reviewed By:	Edward M. Cinadr, PE (e-mail: ed.cinadr@burgessniple.com)
Company:	Burgess & Niple 5085 Reed Road Columbus, Ohio 43220 Phone: (614) 459-2050 Fax: (614) 451-1385

STATE OF OHIO
EDWARD MICHAEL CINADR
E-66077
REGISTERED PROFESSIONAL ENGINEER

Date:	5/17/2019

5/17/2019

Department of Energy
Load Rating Checklist

The purpose of this checklist is to verify that each bridge has been load rated in accordance with federal law and Department of Energy (DOE) policy. The checklist is based on applicable metrics (#4, #13, and #14) of the latest version of the FHWA Metrics for the Oversight of the National Bridge Inspection Program. While these metrics were developed specifically for public access vehicle bridges, they are applied to all vehicle and railroad bridges under DOE policy.

Metric #4: Qualifications of Personnel -- Load Rating Engineer

To meet this metric, the agency must identify an individual who is charged with the overall responsibility for load rating bridges, the Load Rating Engineer (LRE). The DOE has designated an individual to perform the duties of Bridge Program Manager and Load Rating Engineer as set forth in 23 CFR Part 650, Subpart C.

DOE policy requires that each load rating evaluation be performed under the direction of a qualified responsible engineer who ensures each bridge has a valid load rating. The engineer must possess requisite education, experience, licensure, and training. These qualifications must be documented.

Metric #13: Inspection Procedures -- Load Rating

To meet this metric, each bridge is rated for its safe load carrying capacity in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Manual for Bridge Evaluation (MBE) for all State legal vehicles and routine permit loads or American Railway Engineering and Maintenance-of-Way Association (AREMA) for railroad bridges. The load rating must be accurate for current conditions and documented.

Metric #14: Inspection Procedures -- Post or Restrict

To meet this metric, each bridge is posted or restricted in accordance with the AASHTO Manual for Bridge Evaluation or in accordance with State law when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating or equivalent rating factor or AREMA for railroad bridges. Any posting deficiencies are promptly resolved.

Using the Checklist:

1. Populate structure identification information.
2. Identify supporting documents.
    a. Supporting documents provide evidence that a requirement is met. Each supporting document must have be signed, dated, managed, and updated at appropriate intervals.
    b. Identify the person responsible for each document. Identify the document format (electronic or hard copy), and storage location.
3. Review document contents using the requirement list.
    a. Indicated whether the requirement is met (Y), not met (N), or not applicable (NA).
    b. Used the Notes section to describe documentation deficiencies.
    c. For a document that is not available but should be, reference a Plan of Corrective Action or provide a timeline for document completion in the Notes section.

Department of Energy
Load Rating Checklist

NBI Structure Number *(if applicable)*:	
Property Number:	**Property Name:**
Real Property Unique ID:	**Usage Code:**
Program Office:	**Site Name:**

Supporting Document Name/Date	Subject Matter Expert	Format (E/H)	Storage Location
	Name: Phone: Email: Position: Company:		

Y/N/NA	Notes	Requirement
		Metric #4 Qualification of Personnel -- Load Rating Engineer
Y		1. Does the load rating engineer have the qualifications required to rate this vehicle bridge?
Y		a. Does the engineer hold a current registration as a professional engineer?
Y		b. Does the engineer have at least 5 years of experience similar to load rating being performed?
Y		c. Has the engineer completed National Highway Institute (NHI) Load Rating of Highway Bridges course or equivalent training?
Y		d. Does the engineer's resume demonstrate a working knowledge of The Manual for Bridge Evaluation (MBE) and of rating methodology used in the given load rating?
NA		2. Does the load rating engineer have qualifications required to rate this railroad bridge?
NA		a. Does the engineer hold a current registration as a professional engineer?
NA		b. Does the engineer have at least 10 years of experience similar to that identified in 49 CFR 237.51(a)?
NA		c. Does the engineer's resume demonstrate a working knowledge of the American Railway Engineering and Maintenance-of-Way Association

Y/N/NA	Notes	Requirement
		(AREMA) Manual and of rating methodology used in the given load rating?
		Metric #13 Inspection Procedures -- Load Rating
Y		3. Does the bridge have a valid load rating?
Y		a. Does documentation exist and is it accessible?
Y		b. Does a load rating report include a cover page, title page, executive summary, a list of all assumptions, a summary of results, load rating methodology, computer input and output, and all calculations? (See FHWA memorandum, *INFORMATION: Bridge Load Ratings for the National Bridge Inventory*, October 30, 2006). See **Attachment 1, Load Rating Report Data** for load rating data to be included in the load rating report.
Y		c. Does the load rating report for the vehicular bridge identify local State legal loads and the State's compliance with federal weight limits and the Bridge Formula?
Y		d. At a minimum, have the superstructure members been load rated?
Y		e. Have Specialized Hauling Vehicles (SHV) for the vehicular bridge been evaluated in accordance with FHWA memo, *ACTION: Load Rating of Specialized Hauling Vehicles*, November 15, 2013?
Y		f. Have Emergency Vehicles (EV) for the vehicular bridge been evaluated in accordance with FHWA memo, *ACTION: Load Rating for the FAST Act's Emergency Vehicles dated November 3, 2016*?
Y		g. Have routine permit vehicles and special permit vehicles for the vehicular bridge been evaluated in accordance with the MBE?
Y		h. Does the most recent inspection report contain a summary of load rating data and does it indicate if a new load rating is needed or not? See **Attachment 2, Templates: Load Rating Data for Inspection Report** for load rating data to be included in the vehicular bridge inspection report.
Y		i. For a vehicle bridge, does the load rating summary provide all inventory and operating ratings for the AASHTO Design vehicle (NBI Data Items 31, 63 thru 66)?

Y/N/NA	Notes	Requirement
NA		j. For a railroad bridge, does the load rating summary provide the normal and maximum ratings for the Cooper E-80 loading, or any modified loading normal for the track?
Y		k. Does the load rating summary provide load posting recommendations?
		l. Do the load rating values in the summary match the values reported in the SI&A data?
		m. For the vehicular bridge, is the Operating Rating greater than the Inventory Rating? If not, is there a valid explanation for why it is not?
NA		n. For the vehicular bridge, if the Method Used to Determine Operating or Inventory Rating (NBI Data Items 63 or 65) is coded "0", has adequate engineering judgement been provided in accordance with FHWA memo, *ACTION: Revisions to the Recording and Coding Guide for the Structure, Inventory and Appraisal of the Nation's Bridges (Coding Guide) - Item 31, Design Load, and Items 63 and 65, Method Used to Determine Operating and Inventory Ratings*, February 2, 2011?
NA		o. For the vehicular bridge, if the Method Used to Determine Operating or Inventory Rating (NBI Data Items 63 or 65) is coded "5", are rating values (NBI Data Items 64 or 66) coded 0?
Y		p. For the vehicular bridge, have NBI Data Items 41 and 70 been coded properly?
Y		q. Is the load rating report signed, dated, and sealed by the responsible engineer, as applicable?
Y		r. Did a qualified engineer conduct and document quality control for the load rating?
Y		s. Does the load rating report include quality control documentation?
NA		t. Did the DOE Load Rating Engineer approve the load rating and quality control?
Y		4. Are the load ratings accurate for current conditions?
Y		a. Do the conditions in the load rating report match those in the most recent bridge inspection report?
Y		b. Do the member properties in the load rating report match as-built drawings and have as-built drawings been field verified? If As-built drawings do not

Y/N/NA	Notes	Requirement
		exist, have field measurements been obtained and are they documented in the load rating report?
		Metric #14: Inspection Procedures -- Post or Restrict
Y		5. Does bridge require load posting or other restrictions?
Y		a. If so, has the bridge been posted?
NA		b. When the load rating revealed that a bridge required posting, but was not, was posting complete within 90 days of load capacity determination?
NA		c. Where posting signs exist, do they meet local State or AREMA requirements?
Y	**POSTING REQUIRED – CURRENT POSTING CORRECT**	d. For those public vehicular bridges where NBI Data Item 64 is less than 20 metric tons, or the Rating Factor is less than 1.0, or NBI Data Item 31 is 2 or less, has it been verified that the bridge does not need posting?
N		6. Should the bridge be closed?
N		a. Is the load rating 3 tons or less or insufficient for carrying expected traffic?
NA		7. For any of the deficiencies identified above, is there a Plan of Corrective Action on file and is it up to date?

References:

Federal Highways Administration memorandum, *INFORMATION: Bridge Load Ratings for the National Bridge Inventory*, October 30, 2006. https://www.fhwa.dot.gov/bridge/nbis/103006.cfm.

Federal Highways Administration memorandum, *ACTION: Load Rating of Specialized Hauling Vehicles*, November 15, 2013. https://www.fhwa.dot.gov/bridge/loadrating/131115.cfm.

Federal Highways Administration memorandum, *ACTION: Load Rating for the FAST Act's Emergency Vehicles dated November 3, 2016*. https://www.fhwa.dot.gov/bridge/loadrating/131115.cfm.

Attachments:

Attachment 1 – Template: Load Rating Report Data for Vehicular Bridges

Attachment 2 – Template: Load Rating Data for Inspection Report for Vehicular Bridges

Template:
Load Rating Report Data for Vehicular Bridges

Present load rating calculations in a clear and easily understood format. Use the following templates to supplement the Executive Summary of the Load Rating Report.

Load Rating NBI Data Values:

Note: Follow the general format shown. Insert the NBI Coding Values to reflect the load rating analysis performed.

The appropriate values for reporting in the National Bridge Inventory (NBI) are:

NBI Item Number	NBI Coding Value
41	P
#63	8 - Load and Resistance Factor (LRFR)
#64	109
#65	8 - Load and Resistance Factor (LRFR)
#66	084
#70	0 – > than 39.9% below legal loads

For example:

Summary of Rating Factors:

Note: Follow the general format shown. Edit the values to reflect the load rating analysis performed. At a minimum, include the type of load rating performed, the limit states evaluated, and members and locations evaluated. Identify the controlling member.

Rating Summary					
Location	Design Load Rating Factor – HL93				
	Strength I - Flexure		Strength I - Shear		Service III
	Inventory	Operating	Inventory	Operating	Inventory
Beam 1 (Widened Ext.)	1.344	1.742	3.902	5.058	-
Beam 2-6 (Widened Int.)	1.178	1.527	2.083	2.700	-
Beam 7 (Orig. Ext./ Wide. Int.)	2.881	3.734	1.005	1.303	-
Beam 8-12 (Orig. Int.)	***0.257***	***0.333***	0.966	1.253	-

Template:
Load Rating Report Data for Vehicular Bridges

Load Rating Summary:

Note: Follow the general format shown. Evaluate all AASHTO Legal Loads. Use this table to report Specialized Hauling Vehicles and Emergency Vehicle rating results as well as any State or site-specific loads rated. Insert values to reflect the load rating analysis performed.

Load Rating Summary			
Vehicle	**Rating Factor**	**Tons**	**Metric Tons**
TYPE 3	0.499	12.4	11.2
TYPE 3S2	0.524	18.8	17.0
TYPE 3-3	0.615	24.5	22.2
NRL	0.324	12.9	11.7
SHV SU4	0.421	11.3	10.2
SHV SU5	0.402	12.4	11.2
SHV SU6	0.362	12.5	11.3
SHV SU7	0.342	13.2	12.0
EV-2	0.488	12.5	11.3
EV-3	0.310	11.9	10.8
2F1	0.674	10.1	9.1
3F1	0.463	10.6	9.6
4F1	0.428	11.5	10.4
5C1	0.481	19.2	17.4

Legal Load Ratings:

Note: When the Inventory Rating for any values in the table above is less than one, evaluate applicable State Legal Loads.

State Bridge Standards		
State Legal Load	**Dimensions**	**Weight**
2F1	2 axles-10’	15 tons
3F1	3 axles- 4’-10’	23 tons
4F1	4 axles-4’-4’- 10’	27 tons
5C1	5 axles -4’- 31’- 4’- 12’	40 tons
Does the State comply with Federal Weight Limits	☒ Yes	☐ No

Template:
Load Rating Report Data for Vehicular Bridges

Posting Recommendations:

Note: When the rating factor for any values in the table above are less than one, posting is required. Specify the posting recommendations using the format provided. If posting is not required, so state.

Load Posting Values	
Vehicle	**Tons**
TYPE 3	12
TYPE 3S2	18
TYPE 3-3	24
NRL	12
SHV SU4	11
SHV SU5	12
SHV SU6	12
SHV SU7	13
EV-2	12
EV-3	11
2F1	10
3F1	10
4F1	11
5C1	19

Summary of other significant considerations used in the evaluation:

Note: Follow the general format shown to provide analysis assumptions. Edit the values to reflect the actual assumptions of the load rating analysis performed.

Bridge Condition		
Bridge Component	**Condition Rating**	**Inspection Date**
Interior Girder	6 (Satisfactory)	5/8/2019
Exterior Girder	6 (Satisfactory)	5/8/2019

Vehicle Traffic Volume Data			
Average Daily Traffic (ADT)	**Average Daily Truck Traffic (ADTT)**	**Impacts on the multiple presence factor**	**Survey Date**
300	30	no reduction considered regardless of ADTT	1/1/2020

Template:
Load Rating Report Data for Vehicular Bridges

Template:
Load Rating Data for Inspection Report of Vehicular Bridges

Each inspection report should identify the Load Rating values and Load Posting requirements known at the time of inspection. If a load rating has not been completed, include the following statement –

> "A load rating has not been documented for this bridge. Reported Inventory and Operating Load Rating values are XX and XX tons/RF respectively. Recommend the site confirm or add a justification for these values to the Bridge File or complete a load rating prior to the next inspection."

Each inspection report should indicate changed conditions that warrant a review of the load rating. Include either of the following statements –

> "Current conditions do not warrant any reduction in capacity that would affect a load rating."
>
> **OR**
>
> "Current conditions require review and possibly revisions to the load rating and a recommendation has been included accordingly."

Each inspection report should indicate whether the bridge is posted or not. If posting is required, the inspection report should indicate whether posting signs exist and are appropriate for the current load rating and posting recommendations. *Note: Follow the general formats shown. Edit the values to reflect the existing load rating analysis.*

Load Rating Values

Design Load Rating						
Truck Type	Operating Rating*			Inventory Rating*		
	Rating Factor	Tons	Metric Tons	Rating Factor	Tons	Metric Tons
HL-93	0.333	12	10.9	0.257	9.25	8.4

*Based on 36 ton truck

Load Rating Summary			
Vehicle	**Rating Factor**	**Tons**	**Metric Tons**
TYPE 3			
TYPE 3S2			
TYPE 3-3			
NRL			
SHV SU4			
SHV SU5			
SHV SU6			
SHV SU7			
EV-2			
EV-3			
2F1			

Template:
Load Rating Data for Inspection Report of Vehicular Bridges

3F1			
4F1			
5C1			

Load Posting Values	
Vehicle	**Tons**
TYPE 3	
TYPE 3S2	
TYPE 3-3	
NRL	
SHV SU4	
SHV SU5	
SHV SU6	
SHV SU7	
EV-2	
EV-3	
State	

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO.	*57488*	**JOB NAME**	*DOE Load Ratings*	**SHEET**	*1*	**OF**	*2* **SHEETS**
SUBJECT	*South Fog Road Bridge*		**PREPARED BY**	*JMK*		**DATE**	*5/2/2019*
	Load Rating Notes & Calcs		**CHECKED BY**	*BDE*		**DATE**	*5/14/2019*

User input in black, formulas in red
Beam 13 was not rated since it does not see any Live Load

Geometry

f/f abutment =	34.5	ft	*from widening plans*
beam seat width =	2	ft	*from widening plans*
Span length =	36.5	ft	
Left overhang =	0.75	ft	
B1-B7 Spacing =	2.25	ft	
B8-B12 Spacing =	2.25	ft	
Right overhang =	0	ft	
Total Deck Width =	27.5	ft	*Total of beam spacing and overhangs*
f/f railing width =	27.5	ft	*same as o/o deck based on photos*
Widened beams =	W16x78		*from widening plans*
Original beams =	B16x40		

Loads

Deck Form SW =	0.91	psf	*from deck form brochure*
Rib Spacing =	2.5	in	*from deck form brochure*
Depth =	0.59375	in	*from deck form brochure*
Jack arch area =	1.55	sq ft	*measured in the field*
Total wt/ft of beam =	9	lbs	*B1*
Total wt/ft of beam =	10	lbs	*B2-B6*
Total wt/ft of beam =	121	lbs	*B7*
Total wt/ft of beam =	232	lbs	*B8-B12*
Weight of tubes =	29	#/ft	
Weight of post =	146	lbs each	*HP 8x36 section measured in the field*
Weight of blockout =	40	lbs each	*W 6x25 section measured in the field*
Weight of connection member =	55	lbs each	*6x9 tube section measured in the field*
Number of posts =	7		
Total Wt./ft =	80	#/ft	

Material Properties

Original construciton date =	1935		
fy =	30	ksi	*MBE 6A.6.2.1*
f'c =	2.5	ksi	*MBE 6A.5.2.1*
Widening construciton date =	1981		
fy =	36	ksi	*MBE 6A.6.2.1*
f'c =	3	ksi	*MBE 6A.5.2.1*

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO.	57488	JOB NAME	DOE Load Ratings	SHEET	2	OF	2 SHEETS
SUBJECT	South Fog Road Bridge	PREPARED BY	JMK	DATE	5/2/2019		
	Distribution Factors	CHECKED BY	BDE	DATE	5/14/2019		

Properties:

	Widened	Original		
Beam Height =	16.52	15.88	in	
Beam Area =	22.6	11.78	in^2	
Beam I =	1110	521.7	in^4	
Span =	36.5	36.5	ft	
Beam Spacing =	2.25	2.25	ft	
Deck Thickness =	6	6	in	Assumed .5" Wearing Surface
C.G. from Beam Bot =	8.26	7.94	in	
d_e =	0.750	--	ft	
E (Beam) =	29000	29000	ksi	
E (Deck) =	3625.49	3413.8	ksi	
n =	8.00	8.49		(LRFD 4.6.2.2.1-2)
e_g =	11.26	10.94	in	
K_g =	31798.9	16408.58	in^4	(LRFD 4.6.2.2.1-1)

Interior Beam Distribution Factors:

D_M 1 Lane =	0.247	0.235	(LRFD Table 4.6.2.2.2b-1)
D_M 2 Lanes =	0.291	0.278	(LRFD Table 4.6.2.2.2b-1)
D_V 1 Lane =	0.450	0.450	(LRFD Table 4.6.2.2.3a-1)
D_V 2 Lanes =	0.383	0.383	(LRFD Table 4.6.2.2.3a-1)

Exterior Beam Distribution Factors:

e_M =	0.852	(LRFD Table 4.6.2.2.2d-1)
D_M 1 Lane =	0.267	(LRFD Table 4.6.2.2.2d-1)
D_M 2 Lanes =	0.248	(LRFD Table 4.6.2.2.2d-1)
e_V =	0.675	(LRFD Table 4.6.2.2.3b-1)
D_V 1 Lane =	0.267	(LRFD Table 4.6.2.2.3b-1)
D_V 2 Lanes =	0.259	(LRFD Table 4.6.2.2.3b-1)

Addit'l Rigid Connection Check for Ext. Girder:

D_M 1 Lane =	0.255	(LRFD C.4.6.2.2.2d)
D_M 2 Lanes =	0.249	(LRFD C.4.6.2.2.2d)

Summary:

INT	D_M =	**0.291**	**0.278**
	D_V =	**0.450**	**0.450**
EXT	D_M =	**0.267**	**0.000**
	D_V =	**0.267**	**0.000**

BrR Input & Summary

Bridge

Bridge Id:	207245 X-202B	
Structure Number:	South Fog Rd	
Name:	South Fog Rd	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Tuesday, May 14, 2019 14:35:44	
Description:		
Location:		
Bridge Completely Defined Indicator:	FALSE	
Template Indicator:	FALSE	
Facility Carried:		
Feature Intersected:		
Year Built:		
System Of Units:	US Customary	
Route Number:		
Length:		ft
Mile/Km Post:		mi
Recent ADTT:		
District:		
County:		
Owner:		
Maintainer:		
Administrative Area:		
National Highway System Indicator:		
Functional Class:		
Bridge Alt Name - Existing:	1	
Bridge Alt Name - Current:	1	
X Plane Coordinate:	0.000	ft
Y Plane Coordinate:	0.000	ft
Elevation:		ft
Longitude:		Degrees
Latitude:		Degrees
Impact Factor Adjustment:		
Impact Factor Override:		%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
Traffic Design ADTT:		
Traffic ADT:		
Truck Percent:		
Directional Percent:		%
Custom Agency Field One:		
Custom Agency Field Two:		
Custom Agency Field Three:		
Custom Agency Field Four:		
Custom Agency Field Five:		
Custom Agency Field Six:		
Custom Agency Field Seven:		
Custom Agency Field Eight:		
Custom Agency Field Nine:		
Custom Agency Field Ten:		

Bridge Alt

Name:	1	
Description:		
Creation Timestamp:	Tuesday, May 14, 2019 14:37:27	
Last Modified Timestamp:		
Reference Line Length:		ft
Station:		ft
Bearing:	90.00	Degrees
Distance:	0.000	ft
Elevation:		ft
Offset:	0.000	ft
Impact Factor Type:	Standard - AASHTO	
Longitudinal Force Load Distribution Type:	Fixed & Expansion - Simplified	

Superstructure

Name:	1	
Description:		
Creation Timestamp:	Tuesday, May 14, 2019 14:37:27	
Last Modified Timestamp:		
Super Structure Alternative Name - Existing:	1	
Super Structure Alternative Name - Current:	1	
Distance:	0.000	ft
Offset:	-0.000	ft
Angle:	0.00	Degrees
Start Station:		ft
Vehicle Path Longitudinal Increment:	4.000	ft

Superstructure Alternative

Name:	1
Description:	
Creation Timestamp:	Tuesday, May 14, 2019 14:37:28
Last Modified Timestamp:	
Superstructure Definition Name:	Superstructure

Superstructure Loading Path

NSG Vehicle Path Type:	Centered	
NSG Vehicle Center Line Location:		ft
Adjacent Vehicle Path Type:	None	
Adjacent Vehicle Center Line Location:		ft

Materials

Structural Steel Material

Name:	1905 to 1936	
Description:	Built 1905 to 1936 - steel unknown	
Si Or Us Type:	US Customary	
Yield Strength:	30.000	ksi
Tensile Strength:	60.000	ksi
Coefficient Of Thermal Expansion:	0.0000065000	1/F
Density:	0.4900	kcf
Modulus Of Elasticity:	29000.00	ksi

Structural Steel Material

Name:	After 1963	
Description:	Built after 1963 - steel unkown	
Si Or Us Type:	US Customary	
Yield Strength:	36.000	ksi
Tensile Strength:		ksi
Coefficient Of Thermal Expansion:	0.0000065000	1/F
Density:	0.4900	kcf
Modulus Of Elasticity:	29000.00	ksi

Concrete Material

Name:	Original Concrete Deck	
Description:	year of construction 1935	
Si Or Us Type:	US Customary	
28 Day Compressive Strength:	2.500	ksi
Initial Compressive Strength:		ksi
Density For DL:	0.150	kcf
Density For Modulus Of Elasticity:	0.145	kcf
Std Modulus Of Elasticity:	2880.95	ksi
Std Initial Modulus Of Elasticity:		ksi
Coefficient Of Thermal Expansion:	0.0000060000	1/F
Poissons Ratio:	0.200	
Composition Type:	Normal	
Modulus Of Rupture:	0.379	ksi
Shear Factor:	1.000	

Concrete Material

Name:	Widened Deck	
Description:	year of construction 1981	
Si Or Us Type:	US Customary	
28 Day Compressive Strength:	3.000	ksi
Initial Compressive Strength:		ksi
Density For DL:	0.150	kcf
Density For Modulus Of Elasticity:	0.145	kcf
Std Modulus Of Elasticity:	3155.92	ksi
Std Initial Modulus Of Elasticity:		ksi
Coefficient Of Thermal Expansion:	0.0000060000	1/F
Poissons Ratio:	0.200	
Composition Type:	Normal	
Modulus Of Rupture:	0.416	ksi
Shear Factor:	1.000	

Beam Shapes

Steel Beam Shapes

Steel I Shape

Name: W 16x77

Description:	W 16x77 Imported from AISC Tables (1994)	
Si Or Us Type:	US Customary	
Shape Type:	W Shape	
Depth:	16.5200	in
Flange Width Bf:	10.2950	in
Flange Thickness Tf:	0.7600	in
Web Thickness Tw:	0.4550	in
Distance K:	1.4375	in
Area:	22.600	in^2
Nominal Weight Or Mass:	77.000	lb/ft
Ixx:	1110.000	in^4
Iyy:	138.000	in^4
Zx:	150.000	in^3
Zy:	41.100	in^3
Nominal Depth:	16.0000	in

Steel I Shape

Name:	B16x40	
Description:	Historic shape	
Si Or Us Type:	US Customary	
Shape Type:	W Shape	
Depth:	15.8800	in
Flange Width Bf:	7.2150	in
Flange Thickness Tf:	0.5000	in
Web Thickness Tw:	0.2850	in
Distance K:	0.5000	in
Area:	11.780	in^2
Nominal Weight Or Mass:	40.000	lb/ft
Ixx:	521.700	in^4
Iyy:	27.900	in^4
Zx:	72.090	in^3
Zy:	13.370	in^3
Nominal Depth:	16.0000	in

Steel Channel

Area:	7.350	in^2
Average Flange Thickness Tf:	0.5010	in
Channel Type:	Standard Channel	
Depth:	12.0000	in
Description:	C 12x25 Imported from AISC Tables (1994)	
Distance K:	1.1250	in
Eo:	0.7460	in
Flange Width Bf:	3.0470	in
Grip:		in
Ixx:	144.000	in^4
Iyy:	4.470	in^4
Maximum Flange Fastener:		in
Name:	C 12x25	
Nominal Load:	25.000	lb/ft
Si Or Us Type:	US Customary	
Web Thickness Tw:	0.3870	in
X Bar:	0.6740	in

Appurtenances

Railing

Name:	Twin tube railing	
Description:		
Si Or Us Type:	US Customary	
Weight Per Length:	0.080	kip/ft
Width:	6.0000	in
Distance To Center Of Gravity:	3.0000	in
Effective Wind Height:	32.0000	in

Factors

LRFR

Name:	2017 AASHTO LRFR Spec
Description:	AASHTO Manual for Bridge Evaluation, 3rd Edition 2017

LRFR Limit State

Bridge Type:	Steel
Limit State:	STRENGTH I
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	TRUE
Consider Legal Vehicle Indicator:	TRUE

Consider Permit Vehicle Indicator: FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		1.750
LL	Operating		1.350
LL	Legal Load	Table 6A.4.4.2.3	
LL	Permit Load		

LRFR Limit State

Bridge Type: Steel
Limit State: STRENGTH II
Consider Inv Vehicle Indicator: FALSE
Consider Opr Vehicle Indicator: FALSE
Consider Legal Vehicle Indicator: FALSE
Consider Permit Vehicle Indicator: TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load	Table 6A.4.5.4.2a-1	

LRFR Limit State

Bridge Type: Steel
Limit State: SERVICE II
Consider Inv Vehicle Indicator: TRUE
Consider Opr Vehicle Indicator: TRUE
Consider Legal Vehicle Indicator: TRUE
Consider Permit Vehicle Indicator: TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.000
DW	Dead Load		1.000
LL	Inventory		0.010
LL	Operating		0.010
LL	Legal Load		0.010
LL	Permit Load		0.010

LRFR Limit State

Bridge Type: Steel
Limit State: FATIGUE
Consider Inv Vehicle Indicator: TRUE
Consider Opr Vehicle Indicator: FALSE
Consider Legal Vehicle Indicator: FALSE
Consider Permit Vehicle Indicator: FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		0.000
DW	Dead Load		0.000
LL	Inventory		0.010
LL	Operating		
LL	Legal Load		
LL	Permit Load		

LRFR Limit State

Bridge Type:	Reinforced-Concrete
Limit State:	STRENGTH I
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	TRUE
Consider Legal Vehicle Indicator:	TRUE
Consider Permit Vehicle Indicator:	FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		1.750
LL	Operating		1.350
LL	Legal Load	Table 6A.4.4.2.3	
LL	Permit Load		

LRFR Limit State

Bridge Type:	Reinforced-Concrete
Limit State:	STRENGTH II
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load	Table 6A.4.5.4.2a-1	

LRFR Limit State

Bridge Type:	Reinforced-Concrete
Limit State:	SERVICE I
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.000
DW	Dead Load		1.000
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load		1.000

LRFR Limit State

Bridge Type:	Prestressed
Limit State:	STRENGTH I
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	TRUE
Consider Legal Vehicle Indicator:	TRUE
Consider Permit Vehicle Indicator:	FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500

LL	Inventory		1.750
LL	Operating		1.350
LL	Legal Load	Table 6A.4.4.2.3	
LL	Permit Load		

LRFR Limit State

Bridge Type:	Prestressed
Limit State:	STRENGTH II
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load	Table 6A.4.5.4.2a-1	

LRFR Limit State

Bridge Type:	Prestressed
Limit State:	SERVICE I
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.000
DW	Dead Load		1.000
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load		1.000

LRFR Limit State

Bridge Type:	Prestressed
Limit State:	SERVICE III
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	TRUE
Consider Permit Vehicle Indicator:	FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.000
DW	Dead Load		1.000
LL	Inventory	Table 6A.4.2.2-2	0.000
LL	Operating		
LL	Legal Load		1.000
LL	Permit Load		

LRFR Limit State

Bridge Type:	Timber
Limit State:	STRENGTH I
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	TRUE
Consider Legal Vehicle Indicator:	TRUE
Consider Permit Vehicle Indicator:	FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		1.750
LL	Operating		1.350
LL	Legal Load	Table 6A.4.4.2.3	
LL	Permit Load		

LRFR Limit State

Bridge Type:	Timber
Limit State:	STRENGTH II
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		1.250
DW	Dead Load		1.500
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load	Table 6A.4.5.4.2a-1	

LRFR Limit State

Bridge Type:	Reinforced-Concrete Box Culvert
Limit State:	STRENGTH I
Consider Inv Vehicle Indicator:	TRUE
Consider Opr Vehicle Indicator:	TRUE
Consider Legal Vehicle Indicator:	TRUE
Consider Permit Vehicle Indicator:	FALSE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		
DW	Dead Load		
LL	Inventory		1.750
LL	Operating		1.350
LL	Legal Load		2.000
LL	Permit Load		

LRFR Limit State

Bridge Type:	Reinforced-Concrete Box Culvert
Limit State:	STRENGTH II
Consider Inv Vehicle Indicator:	FALSE
Consider Opr Vehicle Indicator:	FALSE
Consider Legal Vehicle Indicator:	FALSE
Consider Permit Vehicle Indicator:	TRUE

Load Factors

Loading Name	Load Group Name	Load Factor Text	Load Factor
DC	Dead Load		
DW	Dead Load		
LL	Inventory		
LL	Operating		
LL	Legal Load		
LL	Permit Load	Table 6A.4.5.4.2a-1	

Legal Loads

Traffic Volume Type

	Load Factor
Unknown	1.450
Recent ADTT >= 5000	1.450
Recent ADTT <= 1000	1.450

Routine Or Annual Permit Loads

Traffic Volume Type	Permit Weight Under 100 Kips	Permit Weight Over 150 Kips
Recent ADTT >= 5000		
Recent ADTT = 1000		
Recent ADTT <= 100		

Special Or Limited Crossing Permit Loads

Frequency Type	Loading Condition Type	Traffic Volume Type	Load Factor
Single Trip	Escorted	N/A	1.100
Single Trip	Mixed with traffic	All ADTTs	1.200
Multiple Trips (<100 crossings)	Mixed with traffic	All ADTTs	1.400

Resistance Factors

Concrete

Phi Conc Anchor Tens Steel:	1.000
Phi Conc Axial Compr:	0.750
Phi Conc Bearing:	0.700
Phi Conc Light Density Shear Tors:	0.900
Phi Conc Low Density Anchor Compr:	0.800
Phi Conc Norm Density Anchor Compr:	0.800
Phi Conc Norm Density Shear Tors:	0.900
Phi Conc PS Flexure And Tens:	1.000
Phi Conc Rc Flexure And Tens:	0.900
Phi Conc Strut And Tie Compr:	0.700

Steel

Phi Steel A307 Shear Bolt:	0.750
Phi Steel A307 Tens Bolt:	0.800
Phi Steel A325 Shear Bolt:	
Phi Steel A325 Tens Bolt:	
Phi Steel Axial Compr:	0.950
Phi Steel Axial Compr Composite:	0.900
Phi Steel Bearing Bolt:	0.800
Phi Steel Bearing Pins:	1.000
Phi Steel Block Shear:	0.800
Phi Steel Flexure:	1.000
Phi Steel Shear:	1.000
Phi Steel Shear Connector:	0.850
Phi Steel Tens Fracture Net:	0.800
Phi Steel Tens Yield Gross:	0.950
Phi Steel Weld Shear In Throat:	0.800
Phi Steel Weld Shear On Eff Area:	0.850
Phi Steel Weld Shear Parallel:	0.800
Phi Steel Weld Tens Normal Eff:	0.800
Phi Steel Axial Compr Built-up Section:	0.900
Phi Steel Axial Compr Built-up Section Without Univ Mill Plate:	0.950

Timber

Phi Wood Compr Parallel:	0.900
Phi Wood Compr Perpendicular:	0.900
Phi Wood Flexure:	0.850
Phi Wood Shear:	0.750
Phi Wood Tens Parallel:	0.800

Superstructure Definitions

Girder System Structure Def

Name:	Superstructure
Description:	Girder System structure definition generated using the design wizard
Creation Timestamp:	Friday, May 03, 2019 10:53:17
Last Modified Timestamp:	Tuesday, May 14, 2019 13:55:38
System Of Units:	US Customary
Number Of Girders:	13

Number Of Spans:	1	
Frame Structure Simplified Definition Indicator:		
LRFD - Lanes Available to Trucks:		
LRFD - Override Truck Fraction Indicator:	FALSE	
LRFD - Override Truck Fraction:		
Average Humidity:		%
Girder Spacing Display Type:	Perpendicular	
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
Dead Load 1 Distribution Type:	Tributary Area	
Dead Load 2 Distribution Type:	Uniformly to All Girders	
Consider Effective Slab Thickness For Rating Indicator:	TRUE	
Consider Effective Slab Thickness For Design Indicator:	TRUE	
Default Analysis Method:	LFD	
Deck Exposure Factor:		
Consider Wearing Surface For Rating Indicator:	TRUE	
Consider Wearing Surface For Design Indicator:	TRUE	

Span Lengths

Span	Length (ft)
1	36.5000

Load Case Description

Name	Description	Load Type	Stage Name	Load Application Time (Days)
DC1		D,DC	Non-composite (Stage 1)	
DC2		D,DC	Composite (long term) (Stage 2)	
DW		D,DW	Composite (long term) (Stage 2)	

Structure Framing Plan Details

Support Skew

Support Number	Skew Degrees	Frame Connections Indicator
1	9.2800	FALSE
2	9.2800	FALSE

Girder Spacings

Bay Number	Start Spacing ft	End Spacing ft
1	2.2500	2.2500
2	2.2500	2.2500
3	2.2500	2.2500
4	2.2500	2.2500
5	2.2500	2.2500
6	2.2500	2.2500
7	2.2500	2.2500
8	2.2500	2.2500
9	2.2500	2.2500
10	2.2500	2.2500
11	2.2500	2.2500
12	2.0000	2.0000

Diaphragm Locations

Bottom Flange Lateral Bracing Location

Structure Typical Section

Concrete Deck

Width Left Start:	13.75	ft
Width Right Start:	13.75	ft

Width Left End:	13.75	ft
Width Right End:	13.75	ft
Left Overhang Start:	0.75	ft
Left Overhang End:	0.75	ft
Deck Type:	Concrete	
Deck Concrete Name:	Original Concrete Deck	
Total Deck Thickness:	6.5000	in
Deck Crack Control Parameter Z:		kip/in
Modular Ratio Sustained Factor:		
Deck Load Case Engine Assigned Indicator:	TRUE	
Deck Load Case Name:		

Steel Railings

Name	Load Case Name	Measured To Front Face Indicator	Offset Reference Type	Offset at Start (ft)	Offset at End (ft)	Face Left Indicator
Twin tube railing	DC2	TRUE	Right Edge	0.79	0.79	TRUE
Twin tube railing	DC2	FALSE	Left Edge	0.79	0.79	TRUE

Travelway

Number Of Lanes	Distance (ft)	Length (ft)	Offset Left Start (ft)	Offset Right Start (ft)	Offset Left End (ft)	Offset Right End (ft)
2	0.00	36.50	-13.21	13.21	-13.21	13.21

Wearing Surface

Wearing Surface Material Name:		
Wearing Surface Description:		
Wearing Surface Thickness:		in
Wearing Surface Density:		pcf
Wearing Surface Load Case Name:		

Girder Member

Name:	B1	
Description:	Widened Exterior Girder	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Tuesday, May 14, 2019 13:51:59	
Same As Structure Member Name:		
Member Alternative Name - Existing:	B1 (Widened Exterior Girder)	
Member Alternative Name - Current:	B1 (Widened Exterior Girder)	
Pedestrian Live Load Force:		lb/ft

Member Loads

Distributed Member Loads

Load Case Name	Distance (ft)	Length (ft)	Load Start (kip/ft)	Load End (kip/ft)	Direction Type	WS Field Measured
DC1	0.00	36.50	0.009	0.009	X direction	FALSE

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator

1	
2	

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	B1 (Widened Exterior Girder)	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Tuesday, May 14, 2019 13:51:59	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LRFR	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	After 1963	
Default Deck Concrete Name:	Widened Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:	FALSE	
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:	FALSE	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFR Allow Plastic Redistribution Indicator:	TRUE	
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE	

LRFR Consider Flange Lateral Bending Stress Indicator:	
LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	FALSE
LRFD Use Appendix A6 For Flexural Resistance Indicator:	TRUE
LRFD Allow Plastic Redistribution Indicator:	TRUE
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Field Measured Section Properties Indicator:	FALSE
LRFR System Factor Override:	FALSE
LRFD POI Generated At Stiffeners Indicator:	FALSE
LRFR POI Generated At Stiffeners Indicator:	FALSE
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE
LFD Ignore Shear Indicator:	FALSE
Self Load Case Engine Assigned Indicator:	TRUE
Self Load Case Name:	
Simple DL Continuous LL Indicator:	FALSE
Sufficiently connected to act as a unit:	TRUE
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Deflection	0.00	36.500	0.153	0.077					Constant
Moment	0.00	36.500	0.267	0.267					Constant
Shear	0.00	36.500	0.267	0.267					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	W 16x77	
Steel Shape Steel Name:	After 1963	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	22.5000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Bearing Stiffeners

Steel Web Plate Deterioration Ranges

Percent Thickness Loss (%)	Distance (ft)	Length (ft)
7.0	12.16	12.16

Steel Flange Plate Deterioration Ranges

Top Flange Indicator	Percent Width Loss (%)	Percent Thickness Loss (%)	Distance (ft)	Length (ft)
TRUE	0.0	8.0	0.00	36.50
FALSE	0.0	8.0	0.00	36.50

Analysis Event

Creation Timestamp: Wednesday, May 15, 2019 07:05:52
Event type: Rating
Agency Name: AASHTO
Entered By: BrR
Description: BrR new analysis event
Message:
Engine Version: AASHTO LRFR Engine Version 6.8.3.3001

Rating Summary

Vehicle	Vehicle Type	Design Method	Rating Status	Inv Capacity (Ton)	Opr Capacity (Ton)	Legal Capacity (Ton)	Permit Capacity (Ton)	Inv Rating Factor	Opr Rating Factor	Legal Rating Factor	Permit Rating Factor	Inv Location (ft)	Opr Location (ft)	Legal Location (ft)	Permit Location (ft)	Inv Limit State	Opr Lin State
EV2	Axle Load	LRFR	Success			63.39				2.459				21.90			
EV3	Axle Load	LRFR	Success			62.52				1.622				18.25			
HL-93 (US)	Truck + Lane	LRFR	Success	51.29	66.49			1.425	1.847			21.90	21.90			STRENGTH-I Steel Flexure	STRENGT Steel Flex
HL-93 (US)	Tandem + Lane	LRFR	Success	48.39	62.73			1.344	1.742			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flex
NRL	Axle Load	LRFR	Success			67.73				1.693				18.25			
SU4	Axle Load	LRFR	Success			59.39				2.200				18.25			
SU5	Axle Load	LRFR	Success			65.10				2.100				18.25			
SU6	Axle Load	LRFR	Success			65.81				1.894				18.25			
SU7	Axle Load	LRFR	Success			69.23				1.786				18.25			
Type 3	Axle Load	LRFR	Success			65.27				2.611				18.25			
Type 3-3	Axle Load	LRFR	Success			127.18				3.180				21.90			
Type 3S2	Axle Load	LRFR	Success			98.59				2.739				18.25			
2F1	Axle Load	LRFR	Success			52.90				3.527				18.25			
3F1	Axle Load	LRFR	Success			55.71				2.422				18.25			
4F1	Axle Load	LRFR	Success			60.40				2.237				18.25			
5C1	Axle Load	LRFR	Success			100.60				2.515				18.25			

Dead Load Actions

Name: Load Case 1 - Self Load (Stage 1:D,DC)
Description: Load Case 1 - Self Load (Stage 1:D,DC)
Load Type: Girder Weight
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction (kip)	X Deflection (in)	Y Deflection (in)
1	0.00	-0.00	1.40	0.00	1.40	0.0000	-0.0000
1	3.65	4.61	1.12	0.00		0.0000	-0.0299
1	7.30	8.20	0.84	0.00		0.0000	-0.0567

1	10.95	10.76	0.56	0.00		0.0000	-0.0776
1	12.16	11.38	0.47	0.00		0.0000	-0.0829
1	14.60	12.29	0.28	0.00		0.0000	-0.0909
1	18.25	12.81	0.00	0.00		0.0000	-0.0954
1	21.90	12.29	-0.28	0.00		0.0000	-0.0909
1	24.32	11.39	-0.47	0.00		0.0000	-0.0830
1	25.55	10.76	-0.56	0.00		0.0000	-0.0776
1	29.20	8.20	-0.84	0.00		0.0000	-0.0567
1	32.85	4.61	-1.12	0.00		0.0000	-0.0299
1	36.50	0.00	-1.40	0.00	1.40	0.0000	-0.0000

Name: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Description: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.16	0.00	0.16	0.0000	-0.0000
1	3.65	0.54	0.13	0.00		0.0000	-0.0035
1	7.30	0.96	0.10	0.00		0.0000	-0.0066
1	10.95	1.26	0.07	0.00		0.0000	-0.0091
1	12.16	1.33	0.05	0.00		0.0000	-0.0097
1	14.60	1.44	0.03	0.00		0.0000	-0.0106
1	18.25	1.50	0.00	0.00		0.0000	-0.0112
1	21.90	1.44	-0.03	0.00		0.0000	-0.0106
1	24.32	1.33	-0.05	0.00		0.0000	-0.0097
1	25.55	1.26	-0.07	0.00		0.0000	-0.0091
1	29.20	0.96	-0.10	0.00		0.0000	-0.0066
1	32.85	0.54	-0.13	0.00		0.0000	-0.0035
1	36.50	0.00	-0.16	0.00	0.16	0.0000	-0.0000

Name: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Description: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	2.78	0.00	2.78	0.0000	-0.0000
1	3.65	9.13	2.22	0.00		0.0000	-0.0593
1	7.30	16.24	1.67	0.00		0.0000	-0.1122
1	10.95	21.31	1.11	0.00		0.0000	-0.1537
1	12.16	22.54	0.93	0.00		0.0000	-0.1642
1	14.60	24.36	0.56	0.00		0.0000	-0.1800
1	18.25	25.37	0.00	0.00		0.0000	-0.1890
1	21.90	24.36	-0.56	0.00		0.0000	-0.1800
1	24.32	22.56	-0.92	0.00		0.0000	-0.1644
1	25.55	21.31	-1.11	0.00		0.0000	-0.1537
1	29.20	16.24	-1.67	0.00		0.0000	-0.1122
1	32.85	9.13	-2.22	0.00		0.0000	-0.0593
1	36.50	0.00	-2.78	0.00	2.78	0.0000	-0.0000

Name: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Description: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.22	0.00	0.22	0.0000	-0.0000
1	3.65	0.74	0.18	0.00		0.0000	-0.0048
1	7.30	1.31	0.13	0.00		0.0000	-0.0091
1	10.95	1.72	0.09	0.00		0.0000	-0.0124
1	12.16	1.82	0.07	0.00		0.0000	-0.0133
1	14.60	1.97	0.04	0.00		0.0000	-0.0145
1	18.25	2.05	0.00	0.00		0.0000	-0.0153
1	21.90	1.97	-0.04	0.00		0.0000	-0.0145
1	24.32	1.82	-0.07	0.00		0.0000	-0.0133
1	25.55	1.72	-0.09	0.00		0.0000	-0.0124
1	29.20	1.31	-0.13	0.00		0.0000	-0.0091

1	32.85	0.74	-0.18	0.00		0.0000	-0.0048
1	36.50	-0.00	-0.22	0.00	0.22	0.0000	-0.0000

Live Load Actions

Vehicle Name: EV2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	15.17	0.00	15.17	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	48.68	0.00	0.00	0.00	13.34	-1.07			0.0000	0.0000	0.0000	0.0000		
1	7.30	83.99	0.00	0.00	0.00	11.51	-2.13			0.0000	0.0000	0.0000	0.0000		
1	10.95	105.93	0.00	0.00	0.00	9.67	-3.20			0.0000	0.0000	0.0000	0.0000		
1	12.16	110.26	0.00	0.00	0.00	9.07	-3.55			0.0000	0.0000	0.0000	0.0000		
1	14.60	114.52	0.00	0.00	0.00	7.84	-4.27			0.0000	0.0000	0.0000	0.0000		
1	18.25	109.74	0.00	0.00	0.00	6.01	-6.01			0.0000	0.0000	0.0000	0.0000		
1	21.90	114.52	0.00	0.00	0.00	4.27	-7.84			0.0000	0.0000	0.0000	0.0000		
1	24.32	110.32	0.00	0.00	0.00	3.56	-9.06			0.0000	0.0000	0.0000	0.0000		
1	25.55	105.93	0.00	0.00	0.00	3.20	-9.67			0.0000	0.0000	0.0000	0.0000		
1	29.20	83.99	0.00	0.00	0.00	2.13	-11.51			0.0000	0.0000	0.0000	0.0000		
1	32.85	48.68	0.00	0.00	0.00	1.07	-13.34			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-15.17	15.17	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: EV3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	22.32	0.00	22.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	71.48	0.00	0.00	0.00	19.58	-0.99			0.0000	0.0000	0.0000	0.0000		
1	7.30	122.97	0.00	0.00	0.00	16.85	-2.87			0.0000	0.0000	0.0000	0.0000		
1	10.95	154.47	0.00	0.00	0.00	14.11	-4.84			0.0000	0.0000	0.0000	0.0000		
1	12.16	160.50	0.00	0.00	0.00	13.20	-5.49			0.0000	0.0000	0.0000	0.0000		
1	14.60	170.32	0.00	0.00	0.00	11.37	-6.81			0.0000	0.0000	0.0000	0.0000		
1	18.25	172.80	0.00	0.00	0.00	8.79	-8.79			0.0000	0.0000	0.0000	0.0000		
1	21.90	170.32	0.00	0.00	0.00	6.81	-11.37			0.0000	0.0000	0.0000	0.0000		
1	24.32	160.59	0.00	0.00	0.00	5.51	-13.18			0.0000	0.0000	0.0000	0.0000		
1	25.55	154.47	0.00	0.00	0.00	4.84	-14.11			0.0000	0.0000	0.0000	0.0000		
1	29.20	122.97	0.00	0.00	0.00	2.87	-16.85			0.0000	0.0000	0.0000	0.0000		
1	32.85	71.48	0.00	0.00	0.00	0.99	-19.58			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-22.32	22.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	19.03	0.00	19.03	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	60.13	0.00	0.00	0.00	16.47	-1.14			0.0000	0.0000	0.0000	-0.1788		
1	7.30	101.59	0.00	0.00	0.00	13.92	-2.27			0.0000	0.0000	0.0000	-0.3404		
1	10.95	126.48	0.00	0.00	0.00	11.55	-3.41			0.0000	0.0000	0.0000	-0.4674		
1	12.16	131.29	0.00	0.00	0.00	10.80	-3.79			0.0000	0.0000	0.0000	-0.4989		
1	14.60	136.48	0.00	0.00	0.00	9.28	-4.73			0.0000	0.0000	0.0000	-0.5453		
1	18.25	133.88	0.00	0.00	0.00	7.00	-7.00			0.0000	0.0000	0.0000	-0.5714		
1	21.90	136.48	0.00	0.00	0.00	4.73	-9.28			0.0000	0.0000	0.0000	-0.5453		
1	24.32	131.35	0.00	0.00	0.00	3.79	-10.78			0.0000	0.0000	0.0000	-0.4994		
1	25.55	126.48	0.00	0.00	0.00	3.41	-11.55			0.0000	0.0000	0.0000	-0.4674		
1	29.20	101.59	0.00	0.00	0.00	2.27	-13.92			0.0000	0.0000	0.0000	-0.3404		
1	32.85	60.13	0.00	0.00	0.00	1.14	-16.47			0.0000	0.0000	0.0000	-0.1789		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-19.03	19.03	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Truck + Lane

Span

	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	22.15	0.00	22.15	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	70.37	0.00	0.00	0.00	19.00	-1.17			0.0000	0.0000	0.0000	-0.2167		
1	7.30	119.80	0.00	0.00	0.00	15.91	-2.40			0.0000	0.0000	0.0000	-0.4120		
1	10.95	150.38	0.00	0.00	0.00	13.08	-3.69			0.0000	0.0000	0.0000	-0.5655		
1	12.16	156.58	0.00	0.00	0.00	12.18	-4.13			0.0000	0.0000	0.0000	-0.6038		
1	14.60	163.79	0.00	0.00	0.00	10.40	-5.23			0.0000	0.0000	0.0000	-0.6603		
1	18.25	162.33	0.00	0.00	0.00	7.78	-7.78			0.0000	0.0000	0.0000	-0.6921		
1	21.90	163.79	0.00	0.00	0.00	5.23	-10.40			0.0000	0.0000	0.0000	-0.6603		
1	24.32	156.66	0.00	0.00	0.00	4.14	-12.17			0.0000	0.0000	0.0000	-0.6044		
1	25.55	150.38	0.00	0.00	0.00	3.69	-13.08			0.0000	0.0000	0.0000	-0.5655		
1	29.20	119.80	0.00	0.00	0.00	2.40	-15.91			0.0000	0.0000	0.0000	-0.4120		
1	32.85	70.37	0.00	0.00	0.00	1.17	-19.00			0.0000	0.0000	0.0000	-0.2167		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-22.15	22.15	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	16.78	0.00	16.78	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	54.78	0.00	0.00	0.00	15.01	-0.89			0.0000	0.0000	0.0000	-0.1650		
1	7.30	96.59	0.00	0.00	0.00	13.23	-2.58			0.0000	0.0000	0.0000	-0.3151		
1	10.95	125.44	0.00	0.00	0.00	11.46	-4.35			0.0000	0.0000	0.0000	-0.4363		
1	12.16	132.15	0.00	0.00	0.00	10.87	-4.94			0.0000	0.0000	0.0000	-0.4674		
1	14.60	141.33	0.00	0.00	0.00	9.68	-6.13			0.0000	0.0000	0.0000	-0.5136		
1	18.25	144.26	0.00	0.00	0.00	7.90	-7.90			0.0000	0.0000	0.0000	-0.5363		
1	21.90	141.33	0.00	0.00	0.00	6.13	-9.68			0.0000	0.0000	0.0000	-0.5136		
1	24.32	132.25	0.00	0.00	0.00	4.95	-10.86			0.0000	0.0000	0.0000	-0.4679		
1	25.55	125.44	0.00	0.00	0.00	4.35	-11.46			0.0000	0.0000	0.0000	-0.4363		
1	29.20	96.59	0.00	0.00	0.00	2.58	-13.23			0.0000	0.0000	0.0000	-0.3151		
1	32.85	54.78	0.00	0.00	0.00	0.89	-15.01			0.0000	0.0000	0.0000	-0.1650		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-16.78	16.78	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	19.90	0.00	19.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	65.02	0.00	0.00	0.00	17.53	-0.92			0.0000	0.0000	0.0000	-0.2028		
1	7.30	114.80	0.00	0.00	0.00	15.23	-2.70			0.0000	0.0000	0.0000	-0.3867		
1	10.95	149.35	0.00	0.00	0.00	12.98	-4.63			0.0000	0.0000	0.0000	-0.5344		
1	12.16	157.43	0.00	0.00	0.00	12.25	-5.29			0.0000	0.0000	0.0000	-0.5722		
1	14.60	168.65	0.00	0.00	0.00	10.80	-6.63			0.0000	0.0000	0.0000	-0.6285		
1	18.25	172.72	0.00	0.00	0.00	8.68	-8.68			0.0000	0.0000	0.0000	-0.6570		
1	21.90	168.65	0.00	0.00	0.00	6.63	-10.80			0.0000	0.0000	0.0000	-0.6285		
1	24.32	157.55	0.00	0.00	0.00	5.30	-12.24			0.0000	0.0000	0.0000	-0.5728		
1	25.55	149.35	0.00	0.00	0.00	4.63	-12.98			0.0000	0.0000	0.0000	-0.5344		
1	29.20	114.80	0.00	0.00	0.00	2.70	-15.23			0.0000	0.0000	0.0000	-0.3867		
1	32.85	65.02	0.00	0.00	0.00	0.92	-17.53			0.0000	0.0000	0.0000	-0.2028		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-19.90	19.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	3.12	0.00	3.12	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000
1	3.65	10.24	0.00	0.00	0.00	2.53	-0.03			0.0000	0.0000	0.0000	-0.0378		
1	7.30	18.21	0.00	0.00	0.00	2.00	-0.12			0.0000	0.0000	0.0000	-0.0716		
1	10.95	23.90	0.00	0.00	0.00	1.53	-0.28			0.0000	0.0000	0.0000	-0.0981		

1	12.16	25.29	0.00	0.00	0.00	1.39	-0.35			0.0000	0.0000	0.0000	-0.1049		
1	14.60	27.32	0.00	0.00	0.00	1.12	-0.50			0.0000	0.0000	0.0000	-0.1149		
1	18.25	28.46	0.00	0.00	0.00	0.78	-0.78			0.0000	0.0000	0.0000	-0.1207		
1	21.90	27.32	0.00	0.00	0.00	0.50	-1.12			0.0000	0.0000	0.0000	-0.1149		
1	24.32	25.31	0.00	0.00	0.00	0.35	-1.38			0.0000	0.0000	0.0000	-0.1050		
1	25.55	23.90	0.00	0.00	0.00	0.28	-1.53			0.0000	0.0000	0.0000	-0.0981		
1	29.20	18.21	0.00	0.00	0.00	0.12	-2.00			0.0000	0.0000	0.0000	-0.0716		
1	32.85	10.24	0.00	0.00	0.00	0.03	-2.53			0.0000	0.0000	0.0000	-0.0378		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-3.12	3.12	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000

Vehicle Name: NRL
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	17.99	0.00	17.99	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	56.11	0.00	0.00	0.00	15.37	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	102.61	0.00	0.00	0.00	13.03	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	139.63	0.00	0.00	0.00	10.95	-3.19			0.0000	0.0000	0.0000	0.0000		
1	12.16	148.24	0.00	0.00	0.00	10.27	-3.70			0.0000	0.0000	0.0000	0.0000		
1	14.60	160.23	0.00	0.00	0.00	8.89	-4.88			0.0000	0.0000	0.0000	0.0000		
1	18.25	165.48	0.00	0.00	0.00	6.83	-6.83			0.0000	0.0000	0.0000	0.0000		
1	21.90	160.23	0.00	0.00	0.00	4.88	-8.89			0.0000	0.0000	0.0000	0.0000		
1	24.32	148.36	0.00	0.00	0.00	3.71	-10.26			0.0000	0.0000	0.0000	0.0000		
1	25.55	139.63	0.00	0.00	0.00	3.19	-10.95			0.0000	0.0000	0.0000	0.0000		
1	29.20	102.61	0.00	0.00	0.00	1.75	-13.03			0.0000	0.0000	0.0000	0.0000		
1	32.85	56.11	0.00	0.00	0.00	0.60	-15.37			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-17.99	17.99	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU4
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	15.79	0.00	15.79	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	50.64	0.00	0.00	0.00	13.87	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	87.27	0.00	0.00	0.00	11.96	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	109.91	0.00	0.00	0.00	10.04	-3.19			0.0000	0.0000	0.0000	0.0000		
1	12.16	115.73	0.00	0.00	0.00	9.40	-3.68			0.0000	0.0000	0.0000	0.0000		
1	14.60	125.08	0.00	0.00	0.00	8.12	-4.68			0.0000	0.0000	0.0000	0.0000		
1	18.25	127.40	0.00	0.00	0.00	6.20	-6.20			0.0000	0.0000	0.0000	0.0000		
1	21.90	125.08	0.00	0.00	0.00	4.68	-8.12			0.0000	0.0000	0.0000	0.0000		
1	24.32	115.83	0.00	0.00	0.00	3.69	-9.39			0.0000	0.0000	0.0000	0.0000		
1	25.55	109.91	0.00	0.00	0.00	3.19	-10.04			0.0000	0.0000	0.0000	0.0000		
1	29.20	87.27	0.00	0.00	0.00	1.75	-11.96			0.0000	0.0000	0.0000	0.0000		
1	32.85	50.64	0.00	0.00	0.00	0.60	-13.87			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-15.79	15.79	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU5
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	17.23	0.00	17.23	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	54.85	0.00	0.00	0.00	15.03	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	93.64	0.00	0.00	0.00	12.83	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	118.62	0.00	0.00	0.00	10.63	-3.19			0.0000	0.0000	0.0000	0.0000		
1	12.16	125.52	0.00	0.00	0.00	9.90	-3.70			0.0000	0.0000	0.0000	0.0000		
1	14.60	134.06	0.00	0.00	0.00	8.44	-4.88			0.0000	0.0000	0.0000	0.0000		
1	18.25	133.43	0.00	0.00	0.00	6.66	-6.66			0.0000	0.0000	0.0000	0.0000		
1	21.90	134.06	0.00	0.00	0.00	4.88	-8.44			0.0000	0.0000	0.0000	0.0000		
1	24.32	125.62	0.00	0.00	0.00	3.71	-9.88			0.0000	0.0000	0.0000	0.0000		
1	25.55	118.62	0.00	0.00	0.00	3.19	-10.63			0.0000	0.0000	0.0000	0.0000		
1	29.20	93.64	0.00	0.00	0.00	1.75	-12.83			0.0000	0.0000	0.0000	0.0000		
1	32.85	54.85	0.00	0.00	0.00	0.60	-15.03			0.0000	0.0000	0.0000	0.0000		

1	36.50	0.00	0.00	0.00	0.00	-0.00	-17.23	17.23	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU6
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	17.61	0.00	17.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	55.26	0.00	0.00	0.00	15.14	-0.41			0.0000	0.0000	0.0000	0.0000		
1	7.30	100.88	0.00	0.00	0.00	12.67	-1.11			0.0000	0.0000	0.0000	0.0000		
1	10.95	129.98	0.00	0.00	0.00	10.25	-2.49			0.0000	0.0000	0.0000	0.0000		
1	12.16	135.65	0.00	0.00	0.00	9.57	-3.00			0.0000	0.0000	0.0000	0.0000		
1	14.60	145.03	0.00	0.00	0.00	8.19	-4.18			0.0000	0.0000	0.0000	0.0000		
1	18.25	147.97	0.00	0.00	0.00	6.13	-6.13			0.0000	0.0000	0.0000	0.0000		
1	21.90	145.03	0.00	0.00	0.00	4.18	-8.19			0.0000	0.0000	0.0000	0.0000		
1	24.32	135.72	0.00	0.00	0.00	3.01	-9.56			0.0000	0.0000	0.0000	0.0000		
1	25.55	129.98	0.00	0.00	0.00	2.49	-10.25			0.0000	0.0000	0.0000	0.0000		
1	29.20	100.88	0.00	0.00	0.00	1.11	-12.67			0.0000	0.0000	0.0000	0.0000		
1	32.85	55.26	0.00	0.00	0.00	0.41	-15.14			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-17.61	17.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU7
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	17.74	0.00	17.74	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	55.26	0.00	0.00	0.00	15.14	-0.41			0.0000	0.0000	0.0000	0.0000		
1	7.30	100.88	0.00	0.00	0.00	12.53	-0.83			0.0000	0.0000	0.0000	0.0000		
1	10.95	135.84	0.00	0.00	0.00	9.98	-1.88			0.0000	0.0000	0.0000	0.0000		
1	12.16	143.53	0.00	0.00	0.00	9.21	-2.30			0.0000	0.0000	0.0000	0.0000		
1	14.60	152.47	0.00	0.00	0.00	7.64	-3.48			0.0000	0.0000	0.0000	0.0000		
1	18.25	156.85	0.00	0.00	0.00	5.43	-5.43			0.0000	0.0000	0.0000	0.0000		
1	21.90	152.47	0.00	0.00	0.00	3.48	-7.64			0.0000	0.0000	0.0000	0.0000		
1	24.32	143.64	0.00	0.00	0.00	2.31	-9.20			0.0000	0.0000	0.0000	0.0000		
1	25.55	135.84	0.00	0.00	0.00	1.88	-9.98			0.0000	0.0000	0.0000	0.0000		
1	29.20	100.88	0.00	0.00	0.00	0.83	-12.53			0.0000	0.0000	0.0000	0.0000		
1	32.85	55.26	0.00	0.00	0.00	0.41	-15.14			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-17.74	17.74	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	14.14	0.00	14.14	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	45.12	0.00	0.00	0.00	12.36	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	77.27	0.00	0.00	0.00	10.59	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	96.47	0.00	0.00	0.00	8.81	-2.96			0.0000	0.0000	0.0000	0.0000		
1	12.16	99.97	0.00	0.00	0.00	8.22	-3.36			0.0000	0.0000	0.0000	0.0000		
1	14.60	106.96	0.00	0.00	0.00	7.03	-4.17			0.0000	0.0000	0.0000	0.0000		
1	18.25	107.33	0.00	0.00	0.00	5.38	-5.38			0.0000	0.0000	0.0000	0.0000		
1	21.90	106.96	0.00	0.00	0.00	4.17	-7.03			0.0000	0.0000	0.0000	0.0000		
1	24.32	100.01	0.00	0.00	0.00	3.37	-8.21			0.0000	0.0000	0.0000	0.0000		
1	25.55	96.47	0.00	0.00	0.00	2.96	-8.81			0.0000	0.0000	0.0000	0.0000		
1	29.20	77.27	0.00	0.00	0.00	1.75	-10.59			0.0000	0.0000	0.0000	0.0000		
1	32.85	45.12	0.00	0.00	0.00	0.60	-12.36			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-14.14	14.14	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3-3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)

1	0.00	0.00	0.00	0.00	0.00	12.14	0.00	12.14	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	37.98	0.00	0.00	0.00	10.40	-0.50			0.0000	0.0000	0.0000	0.0000		
1	7.30	64.54	0.00	0.00	0.00	8.84	-1.44			0.0000	0.0000	0.0000	0.0000		
1	10.95	79.71	0.00	0.00	0.00	7.28	-2.44			0.0000	0.0000	0.0000	0.0000		
1	12.16	83.15	0.00	0.00	0.00	6.76	-2.77			0.0000	0.0000	0.0000	0.0000		
1	14.60	88.58	0.00	0.00	0.00	5.72	-3.43			0.0000	0.0000	0.0000	0.0000		
1	18.25	87.18	0.00	0.00	0.00	4.43	-4.43			0.0000	0.0000	0.0000	0.0000		
1	21.90	88.58	0.00	0.00	0.00	3.43	-5.72			0.0000	0.0000	0.0000	0.0000		
1	24.32	83.22	0.00	0.00	0.00	2.77	-6.75			0.0000	0.0000	0.0000	0.0000		
1	25.55	79.71	0.00	0.00	0.00	2.44	-7.28			0.0000	0.0000	0.0000	0.0000		
1	29.20	64.54	0.00	0.00	0.00	1.44	-8.84			0.0000	0.0000	0.0000	0.0000		
1	32.85	37.98	0.00	0.00	0.00	0.50	-10.40			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-12.14	12.14	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3S2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	12.97	0.00	12.97	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	40.30	0.00	0.00	0.00	11.04	-0.55			0.0000	0.0000	0.0000	0.0000		
1	7.30	69.97	0.00	0.00	0.00	9.59	-1.60			0.0000	0.0000	0.0000	0.0000		
1	10.95	89.01	0.00	0.00	0.00	8.13	-2.70			0.0000	0.0000	0.0000	0.0000		
1	12.16	92.98	0.00	0.00	0.00	7.65	-3.06			0.0000	0.0000	0.0000	0.0000		
1	14.60	98.71	0.00	0.00	0.00	6.67	-3.80			0.0000	0.0000	0.0000	0.0000		
1	18.25	102.32	0.00	0.00	0.00	5.22	-5.22			0.0000	0.0000	0.0000	0.0000		
1	21.90	98.71	0.00	0.00	0.00	3.80	-6.67			0.0000	0.0000	0.0000	0.0000		
1	24.32	93.04	0.00	0.00	0.00	3.07	-7.64			0.0000	0.0000	0.0000	0.0000		
1	25.55	89.01	0.00	0.00	0.00	2.70	-8.13			0.0000	0.0000	0.0000	0.0000		
1	29.20	69.97	0.00	0.00	0.00	1.60	-9.59			0.0000	0.0000	0.0000	0.0000		
1	32.85	40.30	0.00	0.00	0.00	0.55	-11.04			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-12.97	12.97	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 2F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	9.68	0.00	9.68	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	31.44	0.00	0.00	0.00	8.62	-0.71			0.0000	0.0000	0.0000	0.0000		
1	7.30	55.11	0.00	0.00	0.00	7.55	-1.42			0.0000	0.0000	0.0000	0.0000		
1	10.95	71.00	0.00	0.00	0.00	6.48	-2.22			0.0000	0.0000	0.0000	0.0000		
1	12.16	74.56	0.00	0.00	0.00	6.13	-2.58			0.0000	0.0000	0.0000	0.0000		
1	14.60	79.12	0.00	0.00	0.00	5.42	-3.29			0.0000	0.0000	0.0000	0.0000		
1	18.25	79.46	0.00	0.00	0.00	4.35	-4.35			0.0000	0.0000	0.0000	0.0000		
1	21.90	79.12	0.00	0.00	0.00	3.29	-5.42			0.0000	0.0000	0.0000	0.0000		
1	24.32	74.61	0.00	0.00	0.00	2.58	-6.13			0.0000	0.0000	0.0000	0.0000		
1	25.55	71.00	0.00	0.00	0.00	2.22	-6.48			0.0000	0.0000	0.0000	0.0000		
1	29.20	55.11	0.00	0.00	0.00	1.42	-7.55			0.0000	0.0000	0.0000	0.0000		
1	32.85	31.44	0.00	0.00	0.00	0.71	-8.62			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-9.68	9.68	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 3F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	14.04	0.00	14.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	45.28	0.00	0.00	0.00	12.41	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	78.64	0.00	0.00	0.00	10.77	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	100.07	0.00	0.00	0.00	9.14	-2.96			0.0000	0.0000	0.0000	0.0000		
1	12.16	104.54	0.00	0.00	0.00	8.60	-3.36			0.0000	0.0000	0.0000	0.0000		
1	14.60	111.56	0.00	0.00	0.00	7.50	-4.24			0.0000	0.0000	0.0000	0.0000		
1	18.25	115.68	0.00	0.00	0.00	5.87	-5.87			0.0000	0.0000	0.0000	0.0000		
1	21.90	111.56	0.00	0.00	0.00	4.24	-7.50			0.0000	0.0000	0.0000	0.0000		

1	24.32	104.60	0.00	0.00	0.00	3.37	-8.59			0.0000	0.0000	0.0000	0.0000		
1	25.55	100.07	0.00	0.00	0.00	2.96	-9.14			0.0000	0.0000	0.0000	0.0000		
1	29.20	78.64	0.00	0.00	0.00	1.75	-10.77			0.0000	0.0000	0.0000	0.0000		
1	32.85	45.28	0.00	0.00	0.00	0.60	-12.41			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-14.04	14.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 4F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	15.44	0.00	15.44	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	49.36	0.00	0.00	0.00	13.52	-0.50			0.0000	0.0000	0.0000	0.0000		
1	7.30	84.72	0.00	0.00	0.00	11.60	-1.44			0.0000	0.0000	0.0000	0.0000		
1	10.95	109.20	0.00	0.00	0.00	9.69	-2.84			0.0000	0.0000	0.0000	0.0000		
1	12.16	115.73	0.00	0.00	0.00	9.05	-3.33			0.0000	0.0000	0.0000	0.0000		
1	14.60	124.23	0.00	0.00	0.00	7.77	-4.33			0.0000	0.0000	0.0000	0.0000		
1	18.25	125.27	0.00	0.00	0.00	5.85	-5.85			0.0000	0.0000	0.0000	0.0000		
1	21.90	124.23	0.00	0.00	0.00	4.33	-7.77			0.0000	0.0000	0.0000	0.0000		
1	24.32	115.83	0.00	0.00	0.00	3.34	-9.04			0.0000	0.0000	0.0000	0.0000		
1	25.55	109.20	0.00	0.00	0.00	2.84	-9.69			0.0000	0.0000	0.0000	0.0000		
1	29.20	84.72	0.00	0.00	0.00	1.44	-11.60			0.0000	0.0000	0.0000	0.0000		
1	32.85	49.36	0.00	0.00	0.00	0.50	-13.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-15.44	15.44	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 5C1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	13.81	0.00	13.81	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	44.43	0.00	0.00	0.00	12.17	-0.60			0.0000	0.0000	0.0000	0.0000		
1	7.30	76.93	0.00	0.00	0.00	10.54	-1.75			0.0000	0.0000	0.0000	0.0000		
1	10.95	97.51	0.00	0.00	0.00	8.90	-2.96			0.0000	0.0000	0.0000	0.0000		
1	12.16	101.70	0.00	0.00	0.00	8.36	-3.36			0.0000	0.0000	0.0000	0.0000		
1	14.60	108.15	0.00	0.00	0.00	7.27	-4.17			0.0000	0.0000	0.0000	0.0000		
1	18.25	111.42	0.00	0.00	0.00	5.64	-5.64			0.0000	0.0000	0.0000	0.0000		
1	21.90	108.15	0.00	0.00	0.00	4.17	-7.27			0.0000	0.0000	0.0000	0.0000		
1	24.32	101.76	0.00	0.00	0.00	3.37	-8.35			0.0000	0.0000	0.0000	0.0000		
1	25.55	97.51	0.00	0.00	0.00	2.96	-8.90			0.0000	0.0000	0.0000	0.0000		
1	29.20	76.93	0.00	0.00	0.00	1.75	-10.54			0.0000	0.0000	0.0000	0.0000		
1	32.85	44.43	0.00	0.00	0.00	0.60	-12.17			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-13.81	13.81	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	Override	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name: B2
Description: Widened Interior Girder
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:58:25
Same As Structure Member Name:
Member Alternative Name - Existing: B2
Member Alternative Name - Current: B2
Pedestrian Live Load Force: lb/ft

Member Loads

Distributed Member Loads

Load Case Name	Distance (ft)	Length (ft)	Load Start (kip/ft)	Load End (kip/ft)	Direction Type	WS Field Measured
DC1	0.00	36.50	0.010	0.010	X direction	FALSE

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	B2	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:58:25	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LRFR	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	After 1963	
Default Deck Concrete Name:	Widened Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		

Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:	FALSE	
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:	FALSE	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFR Allow Plastic Redistribution Indicator:	TRUE	
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE	
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:	FALSE	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFD Allow Plastic Redistribution Indicator:	TRUE	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Field Measured Section Properties Indicator:	FALSE	
LRFR System Factor Override:	FALSE	
LRFD POI Generated At Stiffeners Indicator:	FALSE	
LRFR POI Generated At Stiffeners Indicator:	FALSE	
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE	
LFD Ignore Shear Indicator:	FALSE	
Self Load Case Engine Assigned Indicator:	TRUE	
Self Load Case Name:		
Simple DL Continuous LL Indicator:	FALSE	
Sufficiently connected to act as a unit:	TRUE	
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD Distribution Factor Input Method Type:	Simplified	
LFD Distribution Factor Input Method Type:	Simplified	

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Deflection	0.00	36.500	0.153	0.077					Constant
Moment	0.00	36.500	0.291	0.291					Constant
Shear	0.00	36.500	0.450	0.450					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	W 16x77	
Steel Shape Steel Name:	After 1963	
Deck Concrete Name:	Widened Deck	
Deck Tributary Width:	27.0000	in

Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:	8.000	
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Bearing Stiffeners

Analysis Event

Creation Timestamp:	Wednesday, May 15, 2019 07:05:52
Event type:	Rating
Agency Name:	AASHTO
Entered By:	BrR
Description:	BrR new analysis event
Message:	
Engine Version:	AASHTO LRFR Engine Version 6.8.3.3001

Rating Summary

Vehicle	Vehicle Type	Design Method	Rating Status	Inv Capacity (Ton)	Opr Capacity (Ton)	Legal Capacity (Ton)	Permit Capacity (Ton)	Inv Rating Factor	Opr Rating Factor	Legal Rating Factor	Permit Rating Factor	Inv Location (ft)	Opr Location (ft)	Legal Location (ft)	Permit Location (ft)	Inv Limit State	Opr Lin State
EV2	Axle Load	LRFR	Success			55.60				2.157				21.90			
EV3	Axle Load	LRFR	Success			54.78				1.421				18.25			
HL-93 (US)	Truck + Lane	LRFR	Success	44.98	58.31			1.249	1.620			21.90	21.90			STRENGTH-I Steel Flexure	STRENGT Steel Flex
HL-93 (US)	Tandem + Lane	LRFR	Success	42.40	54.96			1.178	1.527			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flex
NRL	Axle Load	LRFR	Success			59.35				1.484				18.25			
SU4	Axle Load	LRFR	Success			52.03				1.927				18.25			
SU5	Axle Load	LRFR	Success			57.04				1.840				18.25			
SU6	Axle Load	LRFR	Success			57.66				1.659				18.25			
SU7	Axle Load	LRFR	Success			60.66				1.565				18.25			
Type 3	Axle Load	LRFR	Success			57.19				2.287				18.25			
Type 3-3	Axle Load	LRFR	Success			111.54				2.789				21.90			
Type 3S2	Axle Load	LRFR	Success			86.39				2.400				18.25			
2F1	Axle Load	LRFR	Success			46.35				3.090				18.25			
3F1	Axle Load	LRFR	Success			48.82				2.122				18.25			
4F1	Axle Load	LRFR	Success			52.92				1.960				18.25			
5C1	Axle Load	LRFR	Success			88.15				2.204				18.25			

Dead Load Actions

Name: Load Case 1 - Self Load (Stage 1:D,DC)
Description: Load Case 1 - Self Load (Stage 1:D,DC)
Load Type: Girder Weight
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	0.00	1.40	0.00	1.40	0.0000	-0.0000
1	3.65	4.61	1.12	0.00		0.0000	-0.0299
1	7.30	8.20	0.84	0.00		0.0000	-0.0567
1	10.95	10.76	0.56	0.00		0.0000	-0.0776
1	14.60	12.29	0.28	0.00		0.0000	-0.0909
1	18.25	12.81	0.00	0.00		0.0000	-0.0954
1	21.90	12.29	-0.28	0.00		0.0000	-0.0909
1	25.55	10.76	-0.56	0.00		0.0000	-0.0776
1	29.20	8.20	-0.84	0.00		0.0000	-0.0567
1	32.85	4.61	-1.12	0.00		0.0000	-0.0299
1	36.50	-0.00	-1.40	0.00	1.40	0.0000	-0.0000

Name: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Description: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	0.00	0.18	0.00	0.18	0.0000	-0.0000
1	3.65	0.60	0.15	0.00		0.0000	-0.0039
1	7.30	1.07	0.11	0.00		0.0000	-0.0074
1	10.95	1.40	0.07	0.00		0.0000	-0.0101
1	14.60	1.60	0.04	0.00		0.0000	-0.0118
1	18.25	1.67	0.00	0.00		0.0000	-0.0124
1	21.90	1.60	-0.04	0.00		0.0000	-0.0118
1	25.55	1.40	-0.07	0.00		0.0000	-0.0101
1	29.20	1.07	-0.11	0.00		0.0000	-0.0074
1	32.85	0.60	-0.15	0.00		0.0000	-0.0039
1	36.50	-0.00	-0.18	0.00	0.18	0.0000	-0.0000

Name: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Description: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	0.00	3.34	0.00	3.34	0.0000	-0.0000
1	3.65	10.96	2.67	0.00		0.0000	-0.0712
1	7.30	19.48	2.00	0.00		0.0000	-0.1347
1	10.95	25.57	1.33	0.00		0.0000	-0.1844
1	14.60	29.23	0.67	0.00		0.0000	-0.2160
1	18.25	30.44	0.00	0.00		0.0000	-0.2268
1	21.90	29.23	-0.67	0.00		0.0000	-0.2160
1	25.55	25.57	-1.33	0.00		0.0000	-0.1844
1	29.20	19.48	-2.00	0.00		0.0000	-0.1347
1	32.85	10.96	-2.67	0.00		0.0000	-0.0712
1	36.50	0.00	-3.34	0.00	3.34	0.0000	-0.0000

Name: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Description: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	0.00	0.22	0.00	0.22	0.0000	-0.0000
1	3.65	0.74	0.18	0.00		0.0000	-0.0048
1	7.30	1.31	0.13	0.00		0.0000	-0.0091
1	10.95	1.72	0.09	0.00		0.0000	-0.0124
1	14.60	1.97	0.04	0.00		0.0000	-0.0145

1	18.25	2.05	0.00	0.00		0.0000	-0.0153
1	21.90	1.97	-0.04	0.00		0.0000	-0.0145
1	25.55	1.72	-0.09	0.00		0.0000	-0.0124
1	29.20	1.31	-0.13	0.00		0.0000	-0.0091
1	32.85	0.74	-0.18	0.00		0.0000	-0.0048
1	36.50	-0.00	-0.22	0.00	0.22	0.0000	-0.0000

Live Load Actions

Vehicle Name: EV2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	25.56	0.00	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	53.05	0.00	0.00	0.00	22.48	-1.80			0.0000	0.0000	0.0000	0.0000		
1	7.30	91.54	0.00	0.00	0.00	19.39	-3.60			0.0000	0.0000	0.0000	0.0000		
1	10.95	115.46	0.00	0.00	0.00	16.31	-5.39			0.0000	0.0000	0.0000	0.0000		
1	14.60	124.81	0.00	0.00	0.00	13.22	-7.19			0.0000	0.0000	0.0000	0.0000		
1	18.25	119.60	0.00	0.00	0.00	10.13	-10.13			0.0000	0.0000	0.0000	0.0000		
1	21.90	124.81	0.00	0.00	0.00	7.19	-13.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	115.46	0.00	0.00	0.00	5.39	-16.31			0.0000	0.0000	0.0000	0.0000		
1	29.20	91.54	0.00	0.00	0.00	3.60	-19.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	53.05	0.00	0.00	0.00	1.80	-22.48			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-25.56	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: EV3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	37.62	0.00	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	77.90	0.00	0.00	0.00	33.01	-1.66			0.0000	0.0000	0.0000	0.0000		
1	7.30	134.02	0.00	0.00	0.00	28.39	-4.83			0.0000	0.0000	0.0000	0.0000		
1	10.95	168.36	0.00	0.00	0.00	23.78	-8.16			0.0000	0.0000	0.0000	0.0000		
1	14.60	185.63	0.00	0.00	0.00	19.16	-11.48			0.0000	0.0000	0.0000	0.0000		
1	18.25	188.33	0.00	0.00	0.00	14.81	-14.81			0.0000	0.0000	0.0000	0.0000		
1	21.90	185.63	0.00	0.00	0.00	11.48	-19.16			0.0000	0.0000	0.0000	0.0000		
1	25.55	168.36	0.00	0.00	0.00	8.16	-23.78			0.0000	0.0000	0.0000	0.0000		
1	29.20	134.02	0.00	0.00	0.00	4.83	-28.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	77.90	0.00	0.00	0.00	1.66	-33.01			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.62	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	32.07	0.00	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	65.53	0.00	0.00	0.00	27.76	-1.92			0.0000	0.0000	0.0000	-0.1785		
1	7.30	110.72	0.00	0.00	0.00	23.45	-3.83			0.0000	0.0000	0.0000	-0.3398		
1	10.95	137.84	0.00	0.00	0.00	19.47	-5.75			0.0000	0.0000	0.0000	-0.4664		
1	14.60	148.74	0.00	0.00	0.00	15.64	-7.98			0.0000	0.0000	0.0000	-0.5440		
1	18.25	145.91	0.00	0.00	0.00	11.81	-11.81			0.0000	0.0000	0.0000	-0.5698		
1	21.90	148.74	0.00	0.00	0.00	7.98	-15.64			0.0000	0.0000	0.0000	-0.5440		
1	25.55	137.84	0.00	0.00	0.00	5.75	-19.47			0.0000	0.0000	0.0000	-0.4664		
1	29.20	110.72	0.00	0.00	0.00	3.83	-23.45			0.0000	0.0000	0.0000	-0.3398		
1	32.85	65.53	0.00	0.00	0.00	1.92	-27.76			0.0000	0.0000	0.0000	-0.1785		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-32.07	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Truck + Lane

Span	Distance (ft)	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos X	Neg X	Pos Y	Neg Y	Pos Reaction Percent	Neg Reaction Percent

		Moment (kip-ft)	Moment (kip-ft)	Axial (kip)	Axial (kip)	Shear (kip)	Shear (kip)	Reaction (kip)	Reaction (kip)	Deflection (in)	Deflection (in)	Deflection (in)	Deflection (in)	Impact (%)	Impact (%)
1	0.00	0.00	0.00	0.00	0.00	37.33	0.00	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	76.70	0.00	0.00	0.00	32.02	-1.97			0.0000	0.0000	0.0000	-0.2163		
1	7.30	130.57	0.00	0.00	0.00	26.82	-4.04			0.0000	0.0000	0.0000	-0.4113		
1	10.95	163.90	0.00	0.00	0.00	22.04	-6.22			0.0000	0.0000	0.0000	-0.5644		
1	14.60	178.52	0.00	0.00	0.00	17.53	-8.82			0.0000	0.0000	0.0000	-0.6587		
1	18.25	176.93	0.00	0.00	0.00	13.12	-13.12			0.0000	0.0000	0.0000	-0.6903		
1	21.90	178.52	0.00	0.00	0.00	8.82	-17.53			0.0000	0.0000	0.0000	-0.6587		
1	25.55	163.90	0.00	0.00	0.00	6.22	-22.04			0.0000	0.0000	0.0000	-0.5644		
1	29.20	130.57	0.00	0.00	0.00	4.04	-26.82			0.0000	0.0000	0.0000	-0.4113		
1	32.85	76.70	0.00	0.00	0.00	1.97	-32.02			0.0000	0.0000	0.0000	-0.2163		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.33	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	28.29	0.00	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	59.70	0.00	0.00	0.00	25.29	-1.50			0.0000	0.0000	0.0000	-0.1648		
1	7.30	105.27	0.00	0.00	0.00	22.30	-4.35			0.0000	0.0000	0.0000	-0.3150		
1	10.95	136.72	0.00	0.00	0.00	19.31	-7.34			0.0000	0.0000	0.0000	-0.4363		
1	14.60	154.04	0.00	0.00	0.00	16.32	-10.33			0.0000	0.0000	0.0000	-0.5136		
1	18.25	157.23	0.00	0.00	0.00	13.32	-13.32			0.0000	0.0000	0.0000	-0.5363		
1	21.90	154.04	0.00	0.00	0.00	10.33	-16.32			0.0000	0.0000	0.0000	-0.5136		
1	25.55	136.72	0.00	0.00	0.00	7.34	-19.31			0.0000	0.0000	0.0000	-0.4363		
1	29.20	105.27	0.00	0.00	0.00	4.35	-22.30			0.0000	0.0000	0.0000	-0.3150		
1	32.85	59.70	0.00	0.00	0.00	1.50	-25.29			0.0000	0.0000	0.0000	-0.1648		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-28.29	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	33.54	0.00	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	70.86	0.00	0.00	0.00	29.55	-1.55			0.0000	0.0000	0.0000	-0.2026		
1	7.30	125.12	0.00	0.00	0.00	25.66	-4.56			0.0000	0.0000	0.0000	-0.3865		
1	10.95	162.77	0.00	0.00	0.00	21.88	-7.81			0.0000	0.0000	0.0000	-0.5343		
1	14.60	183.81	0.00	0.00	0.00	18.21	-11.17			0.0000	0.0000	0.0000	-0.6284		
1	18.25	188.25	0.00	0.00	0.00	14.64	-14.64			0.0000	0.0000	0.0000	-0.6568		
1	21.90	183.81	0.00	0.00	0.00	11.17	-18.21			0.0000	0.0000	0.0000	-0.6284		
1	25.55	162.77	0.00	0.00	0.00	7.81	-21.88			0.0000	0.0000	0.0000	-0.5343		
1	29.20	125.12	0.00	0.00	0.00	4.56	-25.66			0.0000	0.0000	0.0000	-0.3865		
1	32.85	70.86	0.00	0.00	0.00	1.55	-29.55			0.0000	0.0000	0.0000	-0.2026		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-33.54	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	5.26	0.00	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000
1	3.65	11.17	0.00	0.00	0.00	4.26	-0.05			0.0000	0.0000	0.0000	-0.0378		
1	7.30	19.85	0.00	0.00	0.00	3.36	-0.21			0.0000	0.0000	0.0000	-0.0715		
1	10.95	26.05	0.00	0.00	0.00	2.58	-0.47			0.0000	0.0000	0.0000	-0.0980		
1	14.60	29.77	0.00	0.00	0.00	1.89	-0.84			0.0000	0.0000	0.0000	-0.1148		
1	18.25	31.01	0.00	0.00	0.00	1.31	-1.31			0.0000	0.0000	0.0000	-0.1205		
1	21.90	29.77	0.00	0.00	0.00	0.84	-1.89			0.0000	0.0000	0.0000	-0.1148		
1	25.55	26.05	0.00	0.00	0.00	0.47	-2.58			0.0000	0.0000	0.0000	-0.0980		
1	29.20	19.85	0.00	0.00	0.00	0.21	-3.36			0.0000	0.0000	0.0000	-0.0715		
1	32.85	11.17	0.00	0.00	0.00	0.05	-4.26			0.0000	0.0000	0.0000	-0.0378		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-5.26	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000

Vehicle Name: NRL
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	30.32	0.00	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	61.15	0.00	0.00	0.00	25.91	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	111.84	0.00	0.00	0.00	21.96	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	152.18	0.00	0.00	0.00	18.46	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	174.63	0.00	0.00	0.00	14.99	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	180.36	0.00	0.00	0.00	11.52	-11.52			0.0000	0.0000	0.0000	0.0000		
1	21.90	174.63	0.00	0.00	0.00	8.23	-14.99			0.0000	0.0000	0.0000	0.0000		
1	25.55	152.18	0.00	0.00	0.00	5.38	-18.46			0.0000	0.0000	0.0000	0.0000		
1	29.20	111.84	0.00	0.00	0.00	2.95	-21.96			0.0000	0.0000	0.0000	0.0000		
1	32.85	61.15	0.00	0.00	0.00	1.02	-25.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-30.32	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU4
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.61	0.00	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	55.19	0.00	0.00	0.00	23.38	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	95.12	0.00	0.00	0.00	20.15	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	119.79	0.00	0.00	0.00	16.92	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	136.33	0.00	0.00	0.00	13.69	-7.89			0.0000	0.0000	0.0000	0.0000		
1	18.25	138.85	0.00	0.00	0.00	10.45	-10.45			0.0000	0.0000	0.0000	0.0000		
1	21.90	136.33	0.00	0.00	0.00	7.89	-13.69			0.0000	0.0000	0.0000	0.0000		
1	25.55	119.79	0.00	0.00	0.00	5.38	-16.92			0.0000	0.0000	0.0000	0.0000		
1	29.20	95.12	0.00	0.00	0.00	2.95	-20.15			0.0000	0.0000	0.0000	0.0000		
1	32.85	55.19	0.00	0.00	0.00	1.02	-23.38			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.61	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU5
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.04	0.00	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	59.78	0.00	0.00	0.00	25.33	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	102.05	0.00	0.00	0.00	21.62	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	129.28	0.00	0.00	0.00	17.91	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	146.11	0.00	0.00	0.00	14.22	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	145.43	0.00	0.00	0.00	11.22	-11.22			0.0000	0.0000	0.0000	0.0000		
1	21.90	146.11	0.00	0.00	0.00	8.23	-14.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	129.28	0.00	0.00	0.00	5.38	-17.91			0.0000	0.0000	0.0000	0.0000		
1	29.20	102.05	0.00	0.00	0.00	2.95	-21.62			0.0000	0.0000	0.0000	0.0000		
1	32.85	59.78	0.00	0.00	0.00	1.02	-25.33			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.04	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU6
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.67	0.00	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	60.22	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	109.95	0.00	0.00	0.00	21.36	-1.88			0.0000	0.0000	0.0000	0.0000		
1	10.95	141.66	0.00	0.00	0.00	17.28	-4.20			0.0000	0.0000	0.0000	0.0000		
1	14.60	158.07	0.00	0.00	0.00	13.81	-7.05			0.0000	0.0000	0.0000	0.0000		
1	18.25	161.27	0.00	0.00	0.00	10.34	-10.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	158.07	0.00	0.00	0.00	7.05	-13.81			0.0000	0.0000	0.0000	0.0000		
1	25.55	141.66	0.00	0.00	0.00	4.20	-17.28			0.0000	0.0000	0.0000	0.0000		

1	29.20	109.95	0.00	0.00	0.00	1.88	-21.36			0.0000	0.0000	0.0000	0.0000		
1	32.85	60.22	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.67	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU7
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.90	0.00	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	60.22	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	109.95	0.00	0.00	0.00	21.13	-1.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	148.05	0.00	0.00	0.00	16.83	-3.17			0.0000	0.0000	0.0000	0.0000		
1	14.60	166.18	0.00	0.00	0.00	12.88	-5.87			0.0000	0.0000	0.0000	0.0000		
1	18.25	170.95	0.00	0.00	0.00	9.16	-9.16			0.0000	0.0000	0.0000	0.0000		
1	21.90	166.18	0.00	0.00	0.00	5.87	-12.88			0.0000	0.0000	0.0000	0.0000		
1	25.55	148.05	0.00	0.00	0.00	3.17	-16.83			0.0000	0.0000	0.0000	0.0000		
1	29.20	109.95	0.00	0.00	0.00	1.39	-21.13			0.0000	0.0000	0.0000	0.0000		
1	32.85	60.22	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.90	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.83	0.00	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	49.17	0.00	0.00	0.00	20.83	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	84.22	0.00	0.00	0.00	17.84	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	105.14	0.00	0.00	0.00	14.85	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	116.57	0.00	0.00	0.00	11.86	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	116.98	0.00	0.00	0.00	9.06	-9.06			0.0000	0.0000	0.0000	0.0000		
1	21.90	116.57	0.00	0.00	0.00	7.02	-11.86			0.0000	0.0000	0.0000	0.0000		
1	25.55	105.14	0.00	0.00	0.00	4.99	-14.85			0.0000	0.0000	0.0000	0.0000		
1	29.20	84.22	0.00	0.00	0.00	2.95	-17.84			0.0000	0.0000	0.0000	0.0000		
1	32.85	49.17	0.00	0.00	0.00	1.02	-20.83			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.83	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3-3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	20.46	0.00	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	41.39	0.00	0.00	0.00	17.54	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	70.35	0.00	0.00	0.00	14.90	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	86.87	0.00	0.00	0.00	12.27	-4.11			0.0000	0.0000	0.0000	0.0000		
1	14.60	96.54	0.00	0.00	0.00	9.64	-5.78			0.0000	0.0000	0.0000	0.0000		
1	18.25	95.02	0.00	0.00	0.00	7.46	-7.46			0.0000	0.0000	0.0000	0.0000		
1	21.90	96.54	0.00	0.00	0.00	5.78	-9.64			0.0000	0.0000	0.0000	0.0000		
1	25.55	86.87	0.00	0.00	0.00	4.11	-12.27			0.0000	0.0000	0.0000	0.0000		
1	29.20	70.35	0.00	0.00	0.00	2.43	-14.90			0.0000	0.0000	0.0000	0.0000		
1	32.85	41.39	0.00	0.00	0.00	0.84	-17.54			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-20.46	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3S2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	21.86	0.00	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	43.92	0.00	0.00	0.00	18.61	-0.93			0.0000	0.0000	0.0000	0.0000		
1	7.30	76.26	0.00	0.00	0.00	16.15	-2.69			0.0000	0.0000	0.0000	0.0000		
1	10.95	97.01	0.00	0.00	0.00	13.70	-4.55			0.0000	0.0000	0.0000	0.0000		

1	14.60	107.58	0.00	0.00	0.00	11.25	-6.40			0.0000	0.0000	0.0000	0.0000			
1	18.25	111.51	0.00	0.00	0.00	8.79	-8.79			0.0000	0.0000	0.0000	0.0000			
1	21.90	107.58	0.00	0.00	0.00	6.40	-11.25			0.0000	0.0000	0.0000	0.0000			
1	25.55	97.01	0.00	0.00	0.00	4.55	-13.70			0.0000	0.0000	0.0000	0.0000			
1	29.20	76.26	0.00	0.00	0.00	2.69	-16.15			0.0000	0.0000	0.0000	0.0000			
1	32.85	43.92	0.00	0.00	0.00	0.93	-18.61			0.0000	0.0000	0.0000	0.0000			
1	36.50	0.00	0.00	0.00	0.00	-0.00	-21.86	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000	

Vehicle Name: 2F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	16.32	0.00	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	34.27	0.00	0.00	0.00	14.52	-1.20			0.0000	0.0000	0.0000	0.0000		
1	7.30	60.07	0.00	0.00	0.00	12.72	-2.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	77.39	0.00	0.00	0.00	10.93	-3.75			0.0000	0.0000	0.0000	0.0000		
1	14.60	86.23	0.00	0.00	0.00	9.13	-5.54			0.0000	0.0000	0.0000	0.0000		
1	18.25	86.60	0.00	0.00	0.00	7.34	-7.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	86.23	0.00	0.00	0.00	5.54	-9.13			0.0000	0.0000	0.0000	0.0000		
1	25.55	77.39	0.00	0.00	0.00	3.75	-10.93			0.0000	0.0000	0.0000	0.0000		
1	29.20	60.07	0.00	0.00	0.00	2.39	-12.72			0.0000	0.0000	0.0000	0.0000		
1	32.85	34.27	0.00	0.00	0.00	1.20	-14.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-16.32	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 3F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.66	0.00	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	49.35	0.00	0.00	0.00	20.91	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	85.70	0.00	0.00	0.00	18.16	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	109.06	0.00	0.00	0.00	15.40	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	121.59	0.00	0.00	0.00	12.65	-7.14			0.0000	0.0000	0.0000	0.0000		
1	18.25	126.08	0.00	0.00	0.00	9.90	-9.90			0.0000	0.0000	0.0000	0.0000		
1	21.90	121.59	0.00	0.00	0.00	7.14	-12.65			0.0000	0.0000	0.0000	0.0000		
1	25.55	109.06	0.00	0.00	0.00	4.99	-15.40			0.0000	0.0000	0.0000	0.0000		
1	29.20	85.70	0.00	0.00	0.00	2.95	-18.16			0.0000	0.0000	0.0000	0.0000		
1	32.85	49.35	0.00	0.00	0.00	1.02	-20.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.66	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 4F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.02	0.00	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	53.79	0.00	0.00	0.00	22.79	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	92.33	0.00	0.00	0.00	19.56	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	119.02	0.00	0.00	0.00	16.33	-4.79			0.0000	0.0000	0.0000	0.0000		
1	14.60	135.40	0.00	0.00	0.00	13.09	-7.30			0.0000	0.0000	0.0000	0.0000		
1	18.25	136.52	0.00	0.00	0.00	9.86	-9.86			0.0000	0.0000	0.0000	0.0000		
1	21.90	135.40	0.00	0.00	0.00	7.30	-13.09			0.0000	0.0000	0.0000	0.0000		
1	25.55	119.02	0.00	0.00	0.00	4.79	-16.33			0.0000	0.0000	0.0000	0.0000		
1	29.20	92.33	0.00	0.00	0.00	2.43	-19.56			0.0000	0.0000	0.0000	0.0000		
1	32.85	53.79	0.00	0.00	0.00	0.84	-22.79			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.02	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 5C1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)

1	0.00	0.00	0.00	0.00	0.00	23.27	0.00	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	48.42	0.00	0.00	0.00	20.51	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	83.85	0.00	0.00	0.00	17.76	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	106.27	0.00	0.00	0.00	15.01	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	117.87	0.00	0.00	0.00	12.26	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	121.43	0.00	0.00	0.00	9.50	-9.50			0.0000	0.0000	0.0000	0.0000		
1	21.90	117.87	0.00	0.00	0.00	7.02	-12.26			0.0000	0.0000	0.0000	0.0000		
1	25.55	106.27	0.00	0.00	0.00	4.99	-15.01			0.0000	0.0000	0.0000	0.0000		
1	29.20	83.85	0.00	0.00	0.00	2.95	-17.76			0.0000	0.0000	0.0000	0.0000		
1	32.85	48.42	0.00	0.00	0.00	1.02	-20.51			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.27	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	Override	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name: B3
Description: Widened Interior Girder
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:19:27
Same As Structure Member Name: B2
Member Alternative Name - Existing: Wizard Alternative
Member Alternative Name - Current: Wizard Alternative
Pedestrian Live Load Force: lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							

2

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:		
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:		
LRFR Use Appendix A6 For Flexural Resistance Indicator:		
LRFR Allow Plastic Redistribution Indicator:		
LRFR Evaluate Remaining Fatigue Life Indicator:		
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:		
LRFD Use Appendix A6 For Flexural Resistance Indicator:		
LRFD Allow Plastic Redistribution Indicator:		
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Ignore Long Reinf In Negative Moment Capacity:		
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:		
ASD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Field Measured Section Properties Indicator:		
LRFR System Factor Override:		
LRFD POI Generated At Stiffeners Indicator:		

LRFR POI Generated At Stiffeners Indicator:
LFD Allow Plastic Analysis of Cover Plate Indicator:
LFD Ignore Shear Indicator:
Self Load Case Engine Assigned Indicator:
Self Load Case Name:
Simple DL Continuous LL Indicator:
Sufficiently connected to act as a unit:
LFD DF for Permit Loads With Routine Traffic Indicator:
LRFD DF for Permit Loads With Routine Traffic Indicator:
LRFD Distribution Factor Input Method Type: Simplified
LFD Distribution Factor Input Method Type: Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B4	
Description:	Widened Interior Girder	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Same As Structure Member Name:	B2	
Member Alternative Name - Existing:	Wizard Alternative	
Member Alternative Name - Current:	Wizard Alternative	
Pedestrian Live Load Force:		lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	

Distribution Factor Input Method Type:	Simplified
ASD POI Tenth Points Indicator:	TRUE
ASD POI Section Change Points Indicator:	TRUE
ASD POI User-Defined Points Indicator:	TRUE
LFD POI Tenth Points Indicator:	TRUE
LFD POI Section Change Points Indicator:	TRUE
LFD POI User-Defined Points Indicator:	TRUE
LFD Allow Moment Redistribution Indicator:	
LRFR POI Tenth Points Indicator:	TRUE
LRFR POI Section Change Points Indicator:	TRUE
LRFR POI User-Defined Points Indicator:	TRUE
LRFR Allow Moment Redistribution Indicator:	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	
LRFR Allow Plastic Redistribution Indicator:	
LRFR Evaluate Remaining Fatigue Life Indicator:	
LRFR Consider Flange Lateral Bending Stress Indicator:	
LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	
LRFD Allow Plastic Redistribution Indicator:	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Ignore Long Reinf In Negative Moment Capacity:	
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	
ASD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Field Measured Section Properties Indicator:	
LRFR System Factor Override:	
LRFD POI Generated At Stiffeners Indicator:	
LRFR POI Generated At Stiffeners Indicator:	
LFD Allow Plastic Analysis of Cover Plate Indicator:	
LFD Ignore Shear Indicator:	
Self Load Case Engine Assigned Indicator:	
Self Load Case Name:	
Simple DL Continuous LL Indicator:	
Sufficiently connected to act as a unit:	
LFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B5
Description:	Widened Interior Girder
Creation Timestamp:	Friday, May 03, 2019 10:53:17
Last Modified Timestamp:	Monday, May 13, 2019 13:51:15
Same As Structure Member Name:	B2
Member Alternative Name - Existing:	Wizard Alternative
Member Alternative Name - Current:	Wizard Alternative
Pedestrian Live Load Force:	lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		

Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:		
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:		
LRFR Use Appendix A6 For Flexural Resistance Indicator:		
LRFR Allow Plastic Redistribution Indicator:		
LRFR Evaluate Remaining Fatigue Life Indicator:		
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:		
LRFD Use Appendix A6 For Flexural Resistance Indicator:		
LRFD Allow Plastic Redistribution Indicator:		
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Ignore Long Reinf In Negative Moment Capacity:		
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:		
ASD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Field Measured Section Properties Indicator:		
LRFR System Factor Override:		
LRFD POI Generated At Stiffeners Indicator:		
LRFR POI Generated At Stiffeners Indicator:		
LFD Allow Plastic Analysis of Cover Plate Indicator:		
LFD Ignore Shear Indicator:		
Self Load Case Engine Assigned Indicator:		
Self Load Case Name:		
Simple DL Continuous LL Indicator:		
Sufficiently connected to act as a unit:		
LFD DF for Permit Loads With Routine Traffic Indicator:		
LRFD DF for Permit Loads With Routine Traffic Indicator:		
LRFD Distribution Factor Input Method Type:	Simplified	
LFD Distribution Factor Input Method Type:	Simplified	

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B6	
Description:	Widened Interior Girder	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:51:15	
Same As Structure Member Name:	B2	
Member Alternative Name - Existing:	Wizard Alternative	
Member Alternative Name - Current:	Wizard Alternative	
Pedestrian Live Load Force:		lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				

2

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:		
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:		
LRFR Use Appendix A6 For Flexural Resistance Indicator:		
LRFR Allow Plastic Redistribution Indicator:		
LRFR Evaluate Remaining Fatigue Life Indicator:		
LRFR Consider Flange Lateral Bending Stress Indicator:		

LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	
LRFD Allow Plastic Redistribution Indicator:	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Ignore Long Reinf In Negative Moment Capacity:	
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	
ASD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Field Measured Section Properties Indicator:	
LRFR System Factor Override:	
LRFD POI Generated At Stiffeners Indicator:	
LRFR POI Generated At Stiffeners Indicator:	
LFD Allow Plastic Analysis of Cover Plate Indicator:	
LFD Ignore Shear Indicator:	
Self Load Case Engine Assigned Indicator:	
Self Load Case Name:	
Simple DL Continuous LL Indicator:	
Sufficiently connected to act as a unit:	
LFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B7
Description:	Original Interior Girder
Creation Timestamp:	Friday, May 03, 2019 10:53:17

Last Modified Timestamp: Monday, May 13, 2019 13:54:42
Same As Structure Member Name:
Member Alternative Name - Existing: B7 (Original Interior Girder)
Member Alternative Name - Current: B7 (Original Interior Girder)
Pedestrian Live Load Force: lb/ft

Member Loads

Distributed Member Loads

Load Case Name	Distance (ft)	Length (ft)	Load Start (kip/ft)	Load End (kip/ft)	Direction Type	WS Field Measured
DC1	0.00	36.50	0.121	0.121	X direction	FALSE

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name: B7 (Original Interior Girder)
Description: Member alternative generated using the design wizard
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:54:42
Cross Section Based Indicator: TRUE
System Of Units: US Customary
Additional Self Load: kip/ft
Additional Self Load Percent: %
Beam Projection Start: in
Beam Projection End: in
Default Rating Method: LRFR
Analysis Module Name - ASD:
Analysis Module Name - LFD: AASHTO LFD
Analysis Module Name - LRFD: AASHTO LRFD
ASD Inv Structural Steel Factor:
ASD Inv Concrete Factor:
ASD Inv Rebar Factor:
ASD Inv Bearing Stiffener Factor:
ASD Opr Structural Steel Factor:
ASD Opr Concrete Factor:

ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:	FALSE	
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:	FALSE	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFR Allow Plastic Redistribution Indicator:	TRUE	
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE	
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:	TRUE	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFD Allow Plastic Redistribution Indicator:	FALSE	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Field Measured Section Properties Indicator:	FALSE	
LRFR System Factor Override:	FALSE	
LRFD POI Generated At Stiffeners Indicator:	FALSE	
LRFR POI Generated At Stiffeners Indicator:	FALSE	
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE	
LFD Ignore Shear Indicator:	FALSE	
Self Load Case Engine Assigned Indicator:	TRUE	
Self Load Case Name:		
Simple DL Continuous LL Indicator:	FALSE	
Sufficiently connected to act as a unit:	TRUE	
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD Distribution Factor Input Method Type:	Simplified	
LFD Distribution Factor Input Method Type:	Simplified	

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Moment	0.00	36.500	0.278	0.278					Constant
Shear	0.00	36.500	0.450	0.450					Constant
Deflection	0.00	36.500	0.153	0.077					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Bearing Stiffeners

Analysis Event

Creation Timestamp:	Wednesday, May 15, 2019 07:05:52
Event type:	Rating
Agency Name:	AASHTO
Entered By:	BrR
Description:	BrR new analysis event
Message:	
Engine Version:	AASHTO LRFR Engine Version 6.8.3.3001

Rating Summary

Vehicle	Vehicle Type	Design Method	Rating Status	Inv Capacity (Ton)	Opr Capacity (Ton)	Legal Capacity (Ton)	Permit Capacity (Ton)	Inv Rating Factor	Opr Rating Factor	Legal Rating Factor	Permit Rating Factor	Inv Location (ft)	Opr Location (ft)	Legal Location (ft)	Permit Location (ft)	Inv Limit State	Opr Lim State
EV2	Axle Load	LRFR	Failure			15.95				0.619				14.60			
EV3	Axle Load	LRFR	Failure			15.37				0.399				18.25			
HL-93 (US)	Truck + Lane	LRFR	Failure	12.66	16.41			0.352	0.456			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flex
HL-93 (US)	Tandem + Lane	LRFR	Failure	11.90	15.42			0.330	0.428			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flex
NRL	Axle Load	LRFR	Failure			16.65				0.416				18.25			
SU4	Axle Load	LRFR	Failure			14.60				0.541				18.25			
SU5	Axle Load	LRFR	Failure			16.00				0.516				18.25			
SU6	Axle Load	LRFR	Failure			16.18				0.466				18.25			
SU7	Axle Load	LRFR	Failure			17.02				0.439				18.25			
Type 3	Axle Load	LRFR	Failure			16.04				0.642				18.25			
Type 3-3	Axle Load	LRFR	Failure			31.61				0.790				18.25			
Type 3S2	Axle Load	LRFR	Failure			24.24				0.673				18.25			
2F1	Axle Load	LRFR	Failure			13.00				0.867				18.25			
3F1	Axle Load	LRFR	Failure			13.70				0.595				18.25			

4F1	Axle Load	LRFR	Failure	14.85	0.550	18.25
5C1	Axle Load	LRFR	Failure	24.73	0.618	18.25

Dead Load Actions

Name: Load Case 1 - Self Load (Stage 1:D,DC)
Description: Load Case 1 - Self Load (Stage 1:D,DC)
Load Type: Girder Weight
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.73	0.00	0.73	0.0000	-0.0000
1	3.65	2.40	0.59	0.00		0.0000	-0.0332
1	7.30	4.27	0.44	0.00		0.0000	-0.0628
1	10.95	5.61	0.29	0.00		0.0000	-0.0860
1	14.60	6.41	0.15	0.00		0.0000	-0.1008
1	18.25	6.68	-0.00	0.00		0.0000	-0.1058
1	21.90	6.41	-0.15	0.00		0.0000	-0.1008
1	25.55	5.61	-0.29	0.00		0.0000	-0.0860
1	29.20	4.27	-0.44	0.00		0.0000	-0.0628
1	32.85	2.40	-0.59	0.00		0.0000	-0.0332
1	36.50	0.00	-0.73	0.00	0.73	0.0000	-0.0000

Name: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Description: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	0.00	2.21	0.00	2.21	0.0000	-0.0000
1	3.65	7.25	1.77	0.00		0.0000	-0.1003
1	7.30	12.90	1.32	0.00		0.0000	-0.1897
1	10.95	16.93	0.88	0.00		0.0000	-0.2597
1	14.60	19.34	0.44	0.00		0.0000	-0.3042
1	18.25	20.15	-0.00	0.00		0.0000	-0.3194
1	21.90	19.34	-0.44	0.00		0.0000	-0.3042
1	25.55	16.93	-0.88	0.00		0.0000	-0.2597
1	29.20	12.90	-1.32	0.00		0.0000	-0.1897
1	32.85	7.25	-1.77	0.00		0.0000	-0.1003
1	36.50	0.00	-2.21	0.00	2.21	0.0000	-0.0000

Name: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Description: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	3.34	0.00	3.34	0.0000	-0.0000
1	3.65	10.96	2.67	0.00		0.0000	-0.1515
1	7.30	19.48	2.00	0.00		0.0000	-0.2866
1	10.95	25.57	1.33	0.00		0.0000	-0.3924
1	14.60	29.23	0.67	0.00		0.0000	-0.4595
1	18.25	30.44	-0.00	0.00		0.0000	-0.4825
1	21.90	29.23	-0.67	0.00		0.0000	-0.4595
1	25.55	25.57	-1.33	0.00		0.0000	-0.3924
1	29.20	19.48	-2.00	0.00		0.0000	-0.2866
1	32.85	10.96	-2.67	0.00		0.0000	-0.1515
1	36.50	0.00	-3.34	0.00	3.34	0.0000	-0.0000

Name: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Description: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.22	0.00	0.22	0.0000	-0.0000

1	3.65	0.74	0.18	0.00		0.0000	-0.0102
1	7.30	1.31	0.13	0.00		0.0000	-0.0193
1	10.95	1.72	0.09	0.00		0.0000	-0.0264
1	14.60	1.97	0.04	0.00		0.0000	-0.0309
1	18.25	2.05	0.00	0.00		0.0000	-0.0325
1	21.90	1.97	-0.04	0.00		0.0000	-0.0309
1	25.55	1.72	-0.09	0.00		0.0000	-0.0264
1	29.20	1.31	-0.13	0.00		0.0000	-0.0193
1	32.85	0.74	-0.18	0.00		0.0000	-0.0102
1	36.50	0.00	-0.22	0.00	0.22	0.0000	-0.0000

Live Load Actions

Vehicle Name: EV2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	25.56	0.00	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	50.68	0.00	0.00	0.00	22.48	-1.80			0.0000	0.0000	0.0000	0.0000		
1	7.30	87.45	0.00	0.00	0.00	19.39	-3.60			0.0000	0.0000	0.0000	0.0000		
1	10.95	110.30	0.00	0.00	0.00	16.31	-5.39			0.0000	0.0000	0.0000	0.0000		
1	14.60	119.24	0.00	0.00	0.00	13.22	-7.19			0.0000	0.0000	0.0000	0.0000		
1	18.25	114.26	0.00	0.00	0.00	10.13	-10.13			0.0000	0.0000	0.0000	0.0000		
1	21.90	119.24	0.00	0.00	0.00	7.19	-13.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	110.30	0.00	0.00	0.00	5.39	-16.31			0.0000	0.0000	0.0000	0.0000		
1	29.20	87.45	0.00	0.00	0.00	3.60	-19.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	50.68	0.00	0.00	0.00	1.80	-22.48			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-25.56	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: EV3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	37.62	0.00	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	74.42	0.00	0.00	0.00	33.01	-1.66			0.0000	0.0000	0.0000	0.0000		
1	7.30	128.03	0.00	0.00	0.00	28.39	-4.83			0.0000	0.0000	0.0000	0.0000		
1	10.95	160.84	0.00	0.00	0.00	23.78	-8.16			0.0000	0.0000	0.0000	0.0000		
1	14.60	177.33	0.00	0.00	0.00	19.16	-11.48			0.0000	0.0000	0.0000	0.0000		
1	18.25	179.92	0.00	0.00	0.00	14.81	-14.81			0.0000	0.0000	0.0000	0.0000		
1	21.90	177.33	0.00	0.00	0.00	11.48	-19.16			0.0000	0.0000	0.0000	0.0000		
1	25.55	160.84	0.00	0.00	0.00	8.16	-23.78			0.0000	0.0000	0.0000	0.0000		
1	29.20	128.03	0.00	0.00	0.00	4.83	-28.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	74.42	0.00	0.00	0.00	1.66	-33.01			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.62	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	32.07	0.00	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	62.60	0.00	0.00	0.00	27.76	-1.92			0.0000	0.0000	0.0000	-0.3798		
1	7.30	105.78	0.00	0.00	0.00	23.45	-3.83			0.0000	0.0000	0.0000	-0.7229		
1	10.95	131.69	0.00	0.00	0.00	19.47	-5.75			0.0000	0.0000	0.0000	-0.9924		
1	14.60	142.10	0.00	0.00	0.00	15.64	-7.98			0.0000	0.0000	0.0000	-1.1574		
1	18.25	139.39	0.00	0.00	0.00	11.81	-11.81			0.0000	0.0000	0.0000	-1.2123		
1	21.90	142.10	0.00	0.00	0.00	7.98	-15.64			0.0000	0.0000	0.0000	-1.1574		
1	25.55	131.69	0.00	0.00	0.00	5.75	-19.47			0.0000	0.0000	0.0000	-0.9924		
1	29.20	105.78	0.00	0.00	0.00	3.83	-23.45			0.0000	0.0000	0.0000	-0.7229		
1	32.85	62.60	0.00	0.00	0.00	1.92	-27.76			0.0000	0.0000	0.0000	-0.3798		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-32.07	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)

Vehicle Type: Truck + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	37.33	0.00	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	73.27	0.00	0.00	0.00	32.02	-1.97			0.0000	0.0000	0.0000	-0.4602		
1	7.30	124.74	0.00	0.00	0.00	26.82	-4.04			0.0000	0.0000	0.0000	-0.8751		
1	10.95	156.58	0.00	0.00	0.00	22.04	-6.22			0.0000	0.0000	0.0000	-1.2008		
1	14.60	170.54	0.00	0.00	0.00	17.53	-8.82			0.0000	0.0000	0.0000	-1.4016		
1	18.25	169.02	0.00	0.00	0.00	13.12	-13.12			0.0000	0.0000	0.0000	-1.4687		
1	21.90	170.54	0.00	0.00	0.00	8.82	-17.53			0.0000	0.0000	0.0000	-1.4016		
1	25.55	156.58	0.00	0.00	0.00	6.22	-22.04			0.0000	0.0000	0.0000	-1.2008		
1	29.20	124.74	0.00	0.00	0.00	4.04	-26.82			0.0000	0.0000	0.0000	-0.8751		
1	32.85	73.27	0.00	0.00	0.00	1.97	-32.02			0.0000	0.0000	0.0000	-0.4602		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.33	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	28.29	0.00	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.03	0.00	0.00	0.00	25.29	-1.50			0.0000	0.0000	0.0000	-0.3506		
1	7.30	100.57	0.00	0.00	0.00	22.30	-4.35			0.0000	0.0000	0.0000	-0.6702		
1	10.95	130.61	0.00	0.00	0.00	19.31	-7.34			0.0000	0.0000	0.0000	-0.9283		
1	14.60	147.16	0.00	0.00	0.00	16.32	-10.33			0.0000	0.0000	0.0000	-1.0928		
1	18.25	150.21	0.00	0.00	0.00	13.32	-13.32			0.0000	0.0000	0.0000	-1.1411		
1	21.90	147.16	0.00	0.00	0.00	10.33	-16.32			0.0000	0.0000	0.0000	-1.0928		
1	25.55	130.61	0.00	0.00	0.00	7.34	-19.31			0.0000	0.0000	0.0000	-0.9283		
1	29.20	100.57	0.00	0.00	0.00	4.35	-22.30			0.0000	0.0000	0.0000	-0.6702		
1	32.85	57.03	0.00	0.00	0.00	1.50	-25.29			0.0000	0.0000	0.0000	-0.3506		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-28.29	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	33.54	0.00	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	67.70	0.00	0.00	0.00	29.55	-1.55			0.0000	0.0000	0.0000	-0.4310		
1	7.30	119.53	0.00	0.00	0.00	25.66	-4.56			0.0000	0.0000	0.0000	-0.8224		
1	10.95	155.50	0.00	0.00	0.00	21.88	-7.81			0.0000	0.0000	0.0000	-1.1368		
1	14.60	175.60	0.00	0.00	0.00	18.21	-11.17			0.0000	0.0000	0.0000	-1.3369		
1	18.25	179.84	0.00	0.00	0.00	14.64	-14.64			0.0000	0.0000	0.0000	-1.3975		
1	21.90	175.60	0.00	0.00	0.00	11.17	-18.21			0.0000	0.0000	0.0000	-1.3369		
1	25.55	155.50	0.00	0.00	0.00	7.81	-21.88			0.0000	0.0000	0.0000	-1.1368		
1	29.20	119.53	0.00	0.00	0.00	4.56	-25.66			0.0000	0.0000	0.0000	-0.8224		
1	32.85	67.70	0.00	0.00	0.00	1.55	-29.55			0.0000	0.0000	0.0000	-0.4310		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-33.54	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	5.26	0.00	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000
1	3.65	10.67	0.00	0.00	0.00	4.26	-0.05			0.0000	0.0000	0.0000	-0.0804		
1	7.30	18.96	0.00	0.00	0.00	3.36	-0.21			0.0000	0.0000	0.0000	-0.1522		
1	10.95	24.89	0.00	0.00	0.00	2.58	-0.47			0.0000	0.0000	0.0000	-0.2084		
1	14.60	28.44	0.00	0.00	0.00	1.89	-0.84			0.0000	0.0000	0.0000	-0.2442		
1	18.25	29.63	0.00	0.00	0.00	1.31	-1.31			0.0000	0.0000	0.0000	-0.2564		
1	21.90	28.44	0.00	0.00	0.00	0.84	-1.89			0.0000	0.0000	0.0000	-0.2442		
1	25.55	24.89	0.00	0.00	0.00	0.47	-2.58			0.0000	0.0000	0.0000	-0.2084		
1	29.20	18.96	0.00	0.00	0.00	0.21	-3.36			0.0000	0.0000	0.0000	-0.1522		

1	32.85	10.67	0.00	0.00	0.00	0.05	-4.26			0.0000	0.0000	0.0000	-0.0804		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-5.26	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000

Vehicle Name: NRL
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	30.32	0.00	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	58.42	0.00	0.00	0.00	25.91	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	106.84	0.00	0.00	0.00	21.96	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	145.39	0.00	0.00	0.00	18.46	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	166.83	0.00	0.00	0.00	14.99	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	172.30	0.00	0.00	0.00	11.52	-11.52			0.0000	0.0000	0.0000	0.0000		
1	21.90	166.83	0.00	0.00	0.00	8.23	-14.99			0.0000	0.0000	0.0000	0.0000		
1	25.55	145.39	0.00	0.00	0.00	5.38	-18.46			0.0000	0.0000	0.0000	0.0000		
1	29.20	106.84	0.00	0.00	0.00	2.95	-21.96			0.0000	0.0000	0.0000	0.0000		
1	32.85	58.42	0.00	0.00	0.00	1.02	-25.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-30.32	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU4
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.61	0.00	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	52.72	0.00	0.00	0.00	23.38	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	90.87	0.00	0.00	0.00	20.15	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	114.44	0.00	0.00	0.00	16.92	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	130.24	0.00	0.00	0.00	13.69	-7.89			0.0000	0.0000	0.0000	0.0000		
1	18.25	132.64	0.00	0.00	0.00	10.45	-10.45			0.0000	0.0000	0.0000	0.0000		
1	21.90	130.24	0.00	0.00	0.00	7.89	-13.69			0.0000	0.0000	0.0000	0.0000		
1	25.55	114.44	0.00	0.00	0.00	5.38	-16.92			0.0000	0.0000	0.0000	0.0000		
1	29.20	90.87	0.00	0.00	0.00	2.95	-20.15			0.0000	0.0000	0.0000	0.0000		
1	32.85	52.72	0.00	0.00	0.00	1.02	-23.38			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.61	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU5
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.04	0.00	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.11	0.00	0.00	0.00	25.33	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	97.49	0.00	0.00	0.00	21.62	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	123.50	0.00	0.00	0.00	17.91	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	139.58	0.00	0.00	0.00	14.22	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	138.93	0.00	0.00	0.00	11.22	-11.22			0.0000	0.0000	0.0000	0.0000		
1	21.90	139.58	0.00	0.00	0.00	8.23	-14.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	123.50	0.00	0.00	0.00	5.38	-17.91			0.0000	0.0000	0.0000	0.0000		
1	29.20	97.49	0.00	0.00	0.00	2.95	-21.62			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.11	0.00	0.00	0.00	1.02	-25.33			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.04	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU6
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.67	0.00	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.53	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	105.04	0.00	0.00	0.00	21.36	-1.88			0.0000	0.0000	0.0000	0.0000		
1	10.95	135.33	0.00	0.00	0.00	17.28	-4.20			0.0000	0.0000	0.0000	0.0000		
1	14.60	151.01	0.00	0.00	0.00	13.81	-7.05			0.0000	0.0000	0.0000	0.0000		

1	18.25	154.07	0.00	0.00	0.00	10.34	-10.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	151.01	0.00	0.00	0.00	7.05	-13.81			0.0000	0.0000	0.0000	0.0000		
1	25.55	135.33	0.00	0.00	0.00	4.20	-17.28			0.0000	0.0000	0.0000	0.0000		
1	29.20	105.04	0.00	0.00	0.00	1.88	-21.36			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.53	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.67	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU7
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.90	0.00	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.53	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	105.04	0.00	0.00	0.00	21.13	-1.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	141.44	0.00	0.00	0.00	16.83	-3.17			0.0000	0.0000	0.0000	0.0000		
1	14.60	158.75	0.00	0.00	0.00	12.88	-5.87			0.0000	0.0000	0.0000	0.0000		
1	18.25	163.31	0.00	0.00	0.00	9.16	-9.16			0.0000	0.0000	0.0000	0.0000		
1	21.90	158.75	0.00	0.00	0.00	5.87	-12.88			0.0000	0.0000	0.0000	0.0000		
1	25.55	141.44	0.00	0.00	0.00	3.17	-16.83			0.0000	0.0000	0.0000	0.0000		
1	29.20	105.04	0.00	0.00	0.00	1.39	-21.13			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.53	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.90	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.83	0.00	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	46.98	0.00	0.00	0.00	20.83	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	80.46	0.00	0.00	0.00	17.84	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	100.44	0.00	0.00	0.00	14.85	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	111.37	0.00	0.00	0.00	11.86	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	111.75	0.00	0.00	0.00	9.06	-9.06			0.0000	0.0000	0.0000	0.0000		
1	21.90	111.37	0.00	0.00	0.00	7.02	-11.86			0.0000	0.0000	0.0000	0.0000		
1	25.55	100.44	0.00	0.00	0.00	4.99	-14.85			0.0000	0.0000	0.0000	0.0000		
1	29.20	80.46	0.00	0.00	0.00	2.95	-17.84			0.0000	0.0000	0.0000	0.0000		
1	32.85	46.98	0.00	0.00	0.00	1.02	-20.83			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.83	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3-3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	20.46	0.00	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	39.54	0.00	0.00	0.00	17.54	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	67.20	0.00	0.00	0.00	14.90	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	82.99	0.00	0.00	0.00	12.27	-4.11			0.0000	0.0000	0.0000	0.0000		
1	14.60	92.23	0.00	0.00	0.00	9.64	-5.78			0.0000	0.0000	0.0000	0.0000		
1	18.25	90.77	0.00	0.00	0.00	7.46	-7.46			0.0000	0.0000	0.0000	0.0000		
1	21.90	92.23	0.00	0.00	0.00	5.78	-9.64			0.0000	0.0000	0.0000	0.0000		
1	25.55	82.99	0.00	0.00	0.00	4.11	-12.27			0.0000	0.0000	0.0000	0.0000		
1	29.20	67.20	0.00	0.00	0.00	2.43	-14.90			0.0000	0.0000	0.0000	0.0000		
1	32.85	39.54	0.00	0.00	0.00	0.84	-17.54			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-20.46	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3S2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	21.86	0.00	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

1	3.65	41.96	0.00	0.00	0.00	18.61	-0.93			0.0000	0.0000	0.0000	0.0000		
1	7.30	72.85	0.00	0.00	0.00	16.15	-2.69			0.0000	0.0000	0.0000	0.0000		
1	10.95	92.68	0.00	0.00	0.00	13.70	-4.55			0.0000	0.0000	0.0000	0.0000		
1	14.60	102.77	0.00	0.00	0.00	11.25	-6.40			0.0000	0.0000	0.0000	0.0000		
1	18.25	106.53	0.00	0.00	0.00	8.79	-8.79			0.0000	0.0000	0.0000	0.0000		
1	21.90	102.77	0.00	0.00	0.00	6.40	-11.25			0.0000	0.0000	0.0000	0.0000		
1	25.55	92.68	0.00	0.00	0.00	4.55	-13.70			0.0000	0.0000	0.0000	0.0000		
1	29.20	72.85	0.00	0.00	0.00	2.69	-16.15			0.0000	0.0000	0.0000	0.0000		
1	32.85	41.96	0.00	0.00	0.00	0.93	-18.61			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-21.86	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 2F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	16.32	0.00	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	32.74	0.00	0.00	0.00	14.52	-1.20			0.0000	0.0000	0.0000	0.0000		
1	7.30	57.38	0.00	0.00	0.00	12.72	-2.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	73.93	0.00	0.00	0.00	10.93	-3.75			0.0000	0.0000	0.0000	0.0000		
1	14.60	82.38	0.00	0.00	0.00	9.13	-5.54			0.0000	0.0000	0.0000	0.0000		
1	18.25	82.73	0.00	0.00	0.00	7.34	-7.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	82.38	0.00	0.00	0.00	5.54	-9.13			0.0000	0.0000	0.0000	0.0000		
1	25.55	73.93	0.00	0.00	0.00	3.75	-10.93			0.0000	0.0000	0.0000	0.0000		
1	29.20	57.38	0.00	0.00	0.00	2.39	-12.72			0.0000	0.0000	0.0000	0.0000		
1	32.85	32.74	0.00	0.00	0.00	1.20	-14.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-16.32	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 3F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.66	0.00	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	47.15	0.00	0.00	0.00	20.91	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	81.88	0.00	0.00	0.00	18.16	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	104.19	0.00	0.00	0.00	15.40	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	116.16	0.00	0.00	0.00	12.65	-7.14			0.0000	0.0000	0.0000	0.0000		
1	18.25	120.44	0.00	0.00	0.00	9.90	-9.90			0.0000	0.0000	0.0000	0.0000		
1	21.90	116.16	0.00	0.00	0.00	7.14	-12.65			0.0000	0.0000	0.0000	0.0000		
1	25.55	104.19	0.00	0.00	0.00	4.99	-15.40			0.0000	0.0000	0.0000	0.0000		
1	29.20	81.88	0.00	0.00	0.00	2.95	-18.16			0.0000	0.0000	0.0000	0.0000		
1	32.85	47.15	0.00	0.00	0.00	1.02	-20.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.66	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 4F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.02	0.00	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	51.39	0.00	0.00	0.00	22.79	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	88.21	0.00	0.00	0.00	19.56	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	113.70	0.00	0.00	0.00	16.33	-4.79			0.0000	0.0000	0.0000	0.0000		
1	14.60	129.35	0.00	0.00	0.00	13.09	-7.30			0.0000	0.0000	0.0000	0.0000		
1	18.25	130.43	0.00	0.00	0.00	9.86	-9.86			0.0000	0.0000	0.0000	0.0000		
1	21.90	129.35	0.00	0.00	0.00	7.30	-13.09			0.0000	0.0000	0.0000	0.0000		
1	25.55	113.70	0.00	0.00	0.00	4.79	-16.33			0.0000	0.0000	0.0000	0.0000		
1	29.20	88.21	0.00	0.00	0.00	2.43	-19.56			0.0000	0.0000	0.0000	0.0000		
1	32.85	51.39	0.00	0.00	0.00	0.84	-22.79			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.02	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 5C1
Vehicle Type: Axle Load

Span		Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos X	Neg X	Pos Y	Neg Y	Pos Reaction	Neg Reaction

	Distance (ft)	Moment (kip-ft)	Moment (kip-ft)	Axial (kip)	Axial (kip)	Shear (kip)	Shear (kip)	Reaction (kip)	Reaction (kip)	Deflection (in)	Deflection (in)	Deflection (in)	Deflection (in)	Percent Impact (%)	Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.27	0.00	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	46.26	0.00	0.00	0.00	20.51	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	80.10	0.00	0.00	0.00	17.76	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	101.53	0.00	0.00	0.00	15.01	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	112.61	0.00	0.00	0.00	12.26	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	116.01	0.00	0.00	0.00	9.50	-9.50			0.0000	0.0000	0.0000	0.0000		
1	21.90	112.61	0.00	0.00	0.00	7.02	-12.26			0.0000	0.0000	0.0000	0.0000		
1	25.55	101.53	0.00	0.00	0.00	4.99	-15.01			0.0000	0.0000	0.0000	0.0000		
1	29.20	80.10	0.00	0.00	0.00	2.95	-17.76			0.0000	0.0000	0.0000	0.0000		
1	32.85	46.26	0.00	0.00	0.00	1.02	-20.51			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.27	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	Override	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name: B8
Description: Original Interior Girder
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:55:46
Same As Structure Member Name:
Member Alternative Name - Existing: B8 Original Interior Girder)
Member Alternative Name - Current: B8 Original Interior Girder)
Pedestrian Live Load Force: lb/ft

Member Loads

Distributed Member Loads

Load Case Name	Distance (ft)	Length (ft)	Load Start (kip/ft)	Load End (kip/ft)	Direction Type	WS Field Measured
DC1	0.00	36.50	0.232	0.232	X direction	FALSE

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

Support Number	Support Type	X Rotation Type	X Translation Type	Y Rotation Type	Y Translation Type	Z Rotation Type	Z Translation Type

1	Roller	Free	Free	Free	Fixed	Free	Free
2	Roller	Free	Free	Free	Fixed	Free	Free

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	B8 Original Interior Girder)	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:55:46	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LRFR	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:	FALSE	
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:	FALSE	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFR Allow Plastic Redistribution Indicator:	TRUE	
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE	
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:	FALSE	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFD Allow Plastic Redistribution Indicator:	TRUE	

LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Field Measured Section Properties Indicator:	FALSE
LRFR System Factor Override:	FALSE
LRFD POI Generated At Stiffeners Indicator:	FALSE
LRFR POI Generated At Stiffeners Indicator:	FALSE
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE
LFD Ignore Shear Indicator:	FALSE
Self Load Case Engine Assigned Indicator:	TRUE
Self Load Case Name:	
Simple DL Continuous LL Indicator:	FALSE
Sufficiently connected to act as a unit:	TRUE
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Moment	0.00	36.500	0.278	0.278					Constant
Shear	0.00	36.500	0.450	0.450					Constant
Deflection	0.00	36.500	0.153	0.077					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:	0.0000	in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Bearing Stiffeners

Analysis Event

Creation Timestamp:	Wednesday, May 15, 2019 07:05:52
Event type:	Rating
Agency Name:	AASHTO
Entered By:	BrR
Description:	BrR new analysis event
Message:	
Engine Version:	AASHTO LRFR Engine Version 6.8.3.3001

Rating Summary

Vehicle	Vehicle Type	Design Method	Rating Status	Inv Capacity (Ton)	Opr Capacity (Ton)	Legal Capacity (Ton)	Permit Capacity (Ton)	Inv Rating Factor	Opr Rating Factor	Legal Rating Factor	Permit Rating Factor	Inv Location (ft)	Opr Location (ft)	Legal Location (ft)	Permit Location (ft)	Inv Limit State	Opr Lim State
EV2	Axle Load	LRFR	Failure			12.59				0.488				18.25			
EV3	Axle Load	LRFR	Failure			11.95				0.310				18.25			
HL-93 (US)	Truck + Lane	LRFR	Failure	9.85	12.76			0.273	0.355			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flexu
HL-93 (US)	Tandem + Lane	LRFR	Failure	9.25	12.00			0.257	0.333			18.25	18.25			STRENGTH-I Steel Flexure	STRENGT Steel Flexu
NRL	Axle Load	LRFR	Failure			12.95				0.324				18.25			
SU4	Axle Load	LRFR	Failure			11.36				0.421				18.25			
SU5	Axle Load	LRFR	Failure			12.45				0.402				18.25			
SU6	Axle Load	LRFR	Failure			12.58				0.362				18.25			
SU7	Axle Load	LRFR	Failure			13.24				0.342				18.25			
Type 3	Axle Load	LRFR	Failure			12.48				0.499				18.25			
Type 3-3	Axle Load	LRFR	Failure			24.58				0.615				18.25			
Type 3S2	Axle Load	LRFR	Failure			18.85				0.524				18.25			
2F1	Axle Load	LRFR	Failure			10.12				0.674				18.25			
3F1	Axle Load	LRFR	Failure			10.65				0.463				18.25			
4F1	Axle Load	LRFR	Failure			11.55				0.428				18.25			
5C1	Axle Load	LRFR	Failure			19.24				0.481				18.25			

Dead Load Actions

Name: Load Case 1 - Self Load (Stage 1:D,DC)
Description: Load Case 1 - Self Load (Stage 1:D,DC)
Load Type: Girder Weight
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.73	0.00	0.73	0.0000	-0.0000
1	3.65	2.40	0.59	0.00		0.0000	-0.0332
1	7.30	4.27	0.44	0.00		0.0000	-0.0628
1	10.95	5.61	0.29	0.00		0.0000	-0.0860
1	14.60	6.41	0.15	0.00		0.0000	-0.1008
1	18.25	6.68	-0.00	0.00		0.0000	-0.1058
1	21.90	6.41	-0.15	0.00		0.0000	-0.1008
1	25.55	5.61	-0.29	0.00		0.0000	-0.0860
1	29.20	4.27	-0.44	0.00		0.0000	-0.0628
1	32.85	2.40	-0.59	0.00		0.0000	-0.0332
1	36.50	0.00	-0.73	0.00	0.73	0.0000	-0.0000

Name: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Description: Load Case 2 - Member Dist'd Loads (DC1:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	4.23	0.00	4.23	0.0000	-0.0000
1	3.65	13.91	3.39	0.00		0.0000	-0.1922
1	7.30	24.73	2.54	0.00		0.0000	-0.3637
1	10.95	32.45	1.69	0.00		0.0000	-0.4979
1	14.60	37.09	0.85	0.00		0.0000	-0.5832
1	18.25	38.64	-0.00	0.00		0.0000	-0.6124

1	21.90	37.09	-0.85	0.00		0.0000	-0.5832
1	25.55	32.45	-1.69	0.00		0.0000	-0.4979
1	29.20	24.73	-2.54	0.00		0.0000	-0.3637
1	32.85	13.91	-3.39	0.00		0.0000	-0.1922
1	36.50	-0.00	-4.23	0.00	4.23	0.0000	-0.0000

Name: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Description: Load Case 4 - Concrete Deck Load (Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	3.34	0.00	3.34	0.0000	-0.0000
1	3.65	10.96	2.67	0.00		0.0000	-0.1515
1	7.30	19.48	2.00	0.00		0.0000	-0.2866
1	10.95	25.57	1.33	0.00		0.0000	-0.3924
1	14.60	29.23	0.67	0.00		0.0000	-0.4595
1	18.25	30.44	-0.00	0.00		0.0000	-0.4825
1	21.90	29.23	-0.67	0.00		0.0000	-0.4595
1	25.55	25.57	-1.33	0.00		0.0000	-0.3924
1	29.20	19.48	-2.00	0.00		0.0000	-0.2866
1	32.85	10.96	-2.67	0.00		0.0000	-0.1515
1	36.50	0.00	-3.34	0.00	3.34	0.0000	-0.0000

Name: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Description: Load Case 5 - Railing Loads (DC2:Stage 1:D,DC)
Load Type: DC
Stage: Non-composite (Stage 1)

Span	Distance (ft)	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction X (kip)	Deflection Y (in)	Deflection (in)
1	0.00	-0.00	0.22	0.00	0.22	0.0000	-0.0000
1	3.65	0.74	0.18	0.00		0.0000	-0.0102
1	7.30	1.31	0.13	0.00		0.0000	-0.0193
1	10.95	1.72	0.09	0.00		0.0000	-0.0264
1	14.60	1.97	0.04	0.00		0.0000	-0.0309
1	18.25	2.05	-0.00	0.00		0.0000	-0.0325
1	21.90	1.97	-0.04	0.00		0.0000	-0.0309
1	25.55	1.72	-0.09	0.00		0.0000	-0.0264
1	29.20	1.31	-0.13	0.00		0.0000	-0.0193
1	32.85	0.74	-0.18	0.00		0.0000	-0.0102
1	36.50	-0.00	-0.22	0.00	0.22	0.0000	-0.0000

Live Load Actions

Vehicle Name: EV2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	25.56	0.00	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	50.68	0.00	0.00	0.00	22.48	-1.80			0.0000	0.0000	0.0000	0.0000		
1	7.30	87.45	0.00	0.00	0.00	19.39	-3.60			0.0000	0.0000	0.0000	0.0000		
1	10.95	110.30	0.00	0.00	0.00	16.31	-5.39			0.0000	0.0000	0.0000	0.0000		
1	14.60	119.24	0.00	0.00	0.00	13.22	-7.19			0.0000	0.0000	0.0000	0.0000		
1	18.25	114.26	0.00	0.00	0.00	10.13	-10.13			0.0000	0.0000	0.0000	0.0000		
1	21.90	119.24	0.00	0.00	0.00	7.19	-13.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	110.30	0.00	0.00	0.00	5.39	-16.31			0.0000	0.0000	0.0000	0.0000		
1	29.20	87.45	0.00	0.00	0.00	3.60	-19.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	50.68	0.00	0.00	0.00	1.80	-22.48			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-25.56	25.56	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: EV3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)

1	0.00	0.00	0.00	0.00	0.00	37.62	0.00	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	74.42	0.00	0.00	0.00	33.01	-1.66			0.0000	0.0000	0.0000	0.0000		
1	7.30	128.03	0.00	0.00	0.00	28.39	-4.83			0.0000	0.0000	0.0000	0.0000		
1	10.95	160.84	0.00	0.00	0.00	23.78	-8.16			0.0000	0.0000	0.0000	0.0000		
1	14.60	177.33	0.00	0.00	0.00	19.16	-11.48			0.0000	0.0000	0.0000	0.0000		
1	18.25	179.92	0.00	0.00	0.00	14.81	-14.81			0.0000	0.0000	0.0000	0.0000		
1	21.90	177.33	0.00	0.00	0.00	11.48	-19.16			0.0000	0.0000	0.0000	0.0000		
1	25.55	160.84	0.00	0.00	0.00	8.16	-23.78			0.0000	0.0000	0.0000	0.0000		
1	29.20	128.03	0.00	0.00	0.00	4.83	-28.39			0.0000	0.0000	0.0000	0.0000		
1	32.85	74.42	0.00	0.00	0.00	1.66	-33.01			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.62	37.62	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	32.07	0.00	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	62.60	0.00	0.00	0.00	27.76	-1.92			0.0000	0.0000	0.0000	-0.3798		
1	7.30	105.78	0.00	0.00	0.00	23.45	-3.83			0.0000	0.0000	0.0000	-0.7229		
1	10.95	131.69	0.00	0.00	0.00	19.47	-5.75			0.0000	0.0000	0.0000	-0.9924		
1	14.60	142.10	0.00	0.00	0.00	15.64	-7.98			0.0000	0.0000	0.0000	-1.1574		
1	18.25	139.39	0.00	0.00	0.00	11.81	-11.81			0.0000	0.0000	0.0000	-1.2123		
1	21.90	142.10	0.00	0.00	0.00	7.98	-15.64			0.0000	0.0000	0.0000	-1.1574		
1	25.55	131.69	0.00	0.00	0.00	5.75	-19.47			0.0000	0.0000	0.0000	-0.9924		
1	29.20	105.78	0.00	0.00	0.00	3.83	-23.45			0.0000	0.0000	0.0000	-0.7229		
1	32.85	62.60	0.00	0.00	0.00	1.92	-27.76			0.0000	0.0000	0.0000	-0.3798		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-32.07	32.07	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Truck + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	37.33	0.00	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	73.27	0.00	0.00	0.00	32.02	-1.97			0.0000	0.0000	0.0000	-0.4602		
1	7.30	124.74	0.00	0.00	0.00	26.82	-4.04			0.0000	0.0000	0.0000	-0.8751		
1	10.95	156.58	0.00	0.00	0.00	22.04	-6.22			0.0000	0.0000	0.0000	-1.2008		
1	14.60	170.54	0.00	0.00	0.00	17.53	-8.82			0.0000	0.0000	0.0000	-1.4016		
1	18.25	169.02	0.00	0.00	0.00	13.12	-13.12			0.0000	0.0000	0.0000	-1.4687		
1	21.90	170.54	0.00	0.00	0.00	8.82	-17.53			0.0000	0.0000	0.0000	-1.4016		
1	25.55	156.58	0.00	0.00	0.00	6.22	-22.04			0.0000	0.0000	0.0000	-1.2008		
1	29.20	124.74	0.00	0.00	0.00	4.04	-26.82			0.0000	0.0000	0.0000	-0.8751		
1	32.85	73.27	0.00	0.00	0.00	1.97	-32.02			0.0000	0.0000	0.0000	-0.4602		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-37.33	37.33	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	28.29	0.00	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.03	0.00	0.00	0.00	25.29	-1.50			0.0000	0.0000	0.0000	-0.3506		
1	7.30	100.57	0.00	0.00	0.00	22.30	-4.35			0.0000	0.0000	0.0000	-0.6702		
1	10.95	130.61	0.00	0.00	0.00	19.31	-7.34			0.0000	0.0000	0.0000	-0.9283		
1	14.60	147.16	0.00	0.00	0.00	16.32	-10.33			0.0000	0.0000	0.0000	-1.0928		
1	18.25	150.21	0.00	0.00	0.00	13.32	-13.32			0.0000	0.0000	0.0000	-1.1411		
1	21.90	147.16	0.00	0.00	0.00	10.33	-16.32			0.0000	0.0000	0.0000	-1.0928		
1	25.55	130.61	0.00	0.00	0.00	7.34	-19.31			0.0000	0.0000	0.0000	-0.9283		
1	29.20	100.57	0.00	0.00	0.00	4.35	-22.30			0.0000	0.0000	0.0000	-0.6702		
1	32.85	57.03	0.00	0.00	0.00	1.50	-25.29			0.0000	0.0000	0.0000	-0.3506		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-28.29	28.29	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Tandem + Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	33.54	0.00	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	67.70	0.00	0.00	0.00	29.55	-1.55			0.0000	0.0000	0.0000	-0.4310		
1	7.30	119.53	0.00	0.00	0.00	25.66	-4.56			0.0000	0.0000	0.0000	-0.8224		
1	10.95	155.50	0.00	0.00	0.00	21.88	-7.81			0.0000	0.0000	0.0000	-1.1368		
1	14.60	175.60	0.00	0.00	0.00	18.21	-11.17			0.0000	0.0000	0.0000	-1.3369		
1	18.25	179.84	0.00	0.00	0.00	14.64	-14.64			0.0000	0.0000	0.0000	-1.3975		
1	21.90	175.60	0.00	0.00	0.00	11.17	-18.21			0.0000	0.0000	0.0000	-1.3369		
1	25.55	155.50	0.00	0.00	0.00	7.81	-21.88			0.0000	0.0000	0.0000	-1.1368		
1	29.20	119.53	0.00	0.00	0.00	4.56	-25.66			0.0000	0.0000	0.0000	-0.8224		
1	32.85	67.70	0.00	0.00	0.00	1.55	-29.55			0.0000	0.0000	0.0000	-0.4310		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-33.54	33.54	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: HL-93 (US)
Vehicle Type: Lane

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	5.26	0.00	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000
1	3.65	10.67	0.00	0.00	0.00	4.26	-0.05			0.0000	0.0000	0.0000	-0.0804		
1	7.30	18.96	0.00	0.00	0.00	3.36	-0.21			0.0000	0.0000	0.0000	-0.1522		
1	10.95	24.89	0.00	0.00	0.00	2.58	-0.47			0.0000	0.0000	0.0000	-0.2084		
1	14.60	28.44	0.00	0.00	0.00	1.89	-0.84			0.0000	0.0000	0.0000	-0.2442		
1	18.25	29.63	0.00	0.00	0.00	1.31	-1.31			0.0000	0.0000	0.0000	-0.2564		
1	21.90	28.44	0.00	0.00	0.00	0.84	-1.89			0.0000	0.0000	0.0000	-0.2442		
1	25.55	24.89	0.00	0.00	0.00	0.47	-2.58			0.0000	0.0000	0.0000	-0.2084		
1	29.20	18.96	0.00	0.00	0.00	0.21	-3.36			0.0000	0.0000	0.0000	-0.1522		
1	32.85	10.67	0.00	0.00	0.00	0.05	-4.26			0.0000	0.0000	0.0000	-0.0804		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-5.26	5.26	0.00	0.0000	0.0000	0.0000	0.0000	0.000	0.000

Vehicle Name: NRL
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	30.32	0.00	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	58.42	0.00	0.00	0.00	25.91	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	106.84	0.00	0.00	0.00	21.96	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	145.39	0.00	0.00	0.00	18.46	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	166.83	0.00	0.00	0.00	14.99	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	172.30	0.00	0.00	0.00	11.52	-11.52			0.0000	0.0000	0.0000	0.0000		
1	21.90	166.83	0.00	0.00	0.00	8.23	-14.99			0.0000	0.0000	0.0000	0.0000		
1	25.55	145.39	0.00	0.00	0.00	5.38	-18.46			0.0000	0.0000	0.0000	0.0000		
1	29.20	106.84	0.00	0.00	0.00	2.95	-21.96			0.0000	0.0000	0.0000	0.0000		
1	32.85	58.42	0.00	0.00	0.00	1.02	-25.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-30.32	30.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU4
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.61	0.00	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	52.72	0.00	0.00	0.00	23.38	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	90.87	0.00	0.00	0.00	20.15	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	114.44	0.00	0.00	0.00	16.92	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	130.24	0.00	0.00	0.00	13.69	-7.89			0.0000	0.0000	0.0000	0.0000		
1	18.25	132.64	0.00	0.00	0.00	10.45	-10.45			0.0000	0.0000	0.0000	0.0000		
1	21.90	130.24	0.00	0.00	0.00	7.89	-13.69			0.0000	0.0000	0.0000	0.0000		
1	25.55	114.44	0.00	0.00	0.00	5.38	-16.92			0.0000	0.0000	0.0000	0.0000		
1	29.20	90.87	0.00	0.00	0.00	2.95	-20.15			0.0000	0.0000	0.0000	0.0000		
1	32.85	52.72	0.00	0.00	0.00	1.02	-23.38			0.0000	0.0000	0.0000	0.0000		

1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.61	26.61	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU5
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.04	0.00	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.11	0.00	0.00	0.00	25.33	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	97.49	0.00	0.00	0.00	21.62	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	123.50	0.00	0.00	0.00	17.91	-5.38			0.0000	0.0000	0.0000	0.0000		
1	14.60	139.58	0.00	0.00	0.00	14.22	-8.23			0.0000	0.0000	0.0000	0.0000		
1	18.25	138.93	0.00	0.00	0.00	11.22	-11.22			0.0000	0.0000	0.0000	0.0000		
1	21.90	139.58	0.00	0.00	0.00	8.23	-14.22			0.0000	0.0000	0.0000	0.0000		
1	25.55	123.50	0.00	0.00	0.00	5.38	-17.91			0.0000	0.0000	0.0000	0.0000		
1	29.20	97.49	0.00	0.00	0.00	2.95	-21.62			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.11	0.00	0.00	0.00	1.02	-25.33			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.04	29.04	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU6
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.67	0.00	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.53	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	105.04	0.00	0.00	0.00	21.36	-1.88			0.0000	0.0000	0.0000	0.0000		
1	10.95	135.33	0.00	0.00	0.00	17.28	-4.20			0.0000	0.0000	0.0000	0.0000		
1	14.60	151.01	0.00	0.00	0.00	13.81	-7.05			0.0000	0.0000	0.0000	0.0000		
1	18.25	154.07	0.00	0.00	0.00	10.34	-10.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	151.01	0.00	0.00	0.00	7.05	-13.81			0.0000	0.0000	0.0000	0.0000		
1	25.55	135.33	0.00	0.00	0.00	4.20	-17.28			0.0000	0.0000	0.0000	0.0000		
1	29.20	105.04	0.00	0.00	0.00	1.88	-21.36			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.53	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.67	29.67	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: SU7
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	29.90	0.00	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	57.53	0.00	0.00	0.00	25.52	-0.69			0.0000	0.0000	0.0000	0.0000		
1	7.30	105.04	0.00	0.00	0.00	21.13	-1.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	141.44	0.00	0.00	0.00	16.83	-3.17			0.0000	0.0000	0.0000	0.0000		
1	14.60	158.75	0.00	0.00	0.00	12.88	-5.87			0.0000	0.0000	0.0000	0.0000		
1	18.25	163.31	0.00	0.00	0.00	9.16	-9.16			0.0000	0.0000	0.0000	0.0000		
1	21.90	158.75	0.00	0.00	0.00	5.87	-12.88			0.0000	0.0000	0.0000	0.0000		
1	25.55	141.44	0.00	0.00	0.00	3.17	-16.83			0.0000	0.0000	0.0000	0.0000		
1	29.20	105.04	0.00	0.00	0.00	1.39	-21.13			0.0000	0.0000	0.0000	0.0000		
1	32.85	57.53	0.00	0.00	0.00	0.69	-25.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-29.90	29.90	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.83	0.00	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	46.98	0.00	0.00	0.00	20.83	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	80.46	0.00	0.00	0.00	17.84	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	100.44	0.00	0.00	0.00	14.85	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	111.37	0.00	0.00	0.00	11.86	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	111.75	0.00	0.00	0.00	9.06	-9.06			0.0000	0.0000	0.0000	0.0000		

1	21.90	111.37	0.00	0.00	0.00	7.02	-11.86			0.0000	0.0000	0.0000	0.0000		
1	25.55	100.44	0.00	0.00	0.00	4.99	-14.85			0.0000	0.0000	0.0000	0.0000		
1	29.20	80.46	0.00	0.00	0.00	2.95	-17.84			0.0000	0.0000	0.0000	0.0000		
1	32.85	46.98	0.00	0.00	0.00	1.02	-20.83			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.83	23.83	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3-3
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	20.46	0.00	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	39.54	0.00	0.00	0.00	17.54	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	67.20	0.00	0.00	0.00	14.90	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	82.99	0.00	0.00	0.00	12.27	-4.11			0.0000	0.0000	0.0000	0.0000		
1	14.60	92.23	0.00	0.00	0.00	9.64	-5.78			0.0000	0.0000	0.0000	0.0000		
1	18.25	90.77	0.00	0.00	0.00	7.46	-7.46			0.0000	0.0000	0.0000	0.0000		
1	21.90	92.23	0.00	0.00	0.00	5.78	-9.64			0.0000	0.0000	0.0000	0.0000		
1	25.55	82.99	0.00	0.00	0.00	4.11	-12.27			0.0000	0.0000	0.0000	0.0000		
1	29.20	67.20	0.00	0.00	0.00	2.43	-14.90			0.0000	0.0000	0.0000	0.0000		
1	32.85	39.54	0.00	0.00	0.00	0.84	-17.54			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-20.46	20.46	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: Type 3S2
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	21.86	0.00	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	41.96	0.00	0.00	0.00	18.61	-0.93			0.0000	0.0000	0.0000	0.0000		
1	7.30	72.85	0.00	0.00	0.00	16.15	-2.69			0.0000	0.0000	0.0000	0.0000		
1	10.95	92.68	0.00	0.00	0.00	13.70	-4.55			0.0000	0.0000	0.0000	0.0000		
1	14.60	102.77	0.00	0.00	0.00	11.25	-6.40			0.0000	0.0000	0.0000	0.0000		
1	18.25	106.53	0.00	0.00	0.00	8.79	-8.79			0.0000	0.0000	0.0000	0.0000		
1	21.90	102.77	0.00	0.00	0.00	6.40	-11.25			0.0000	0.0000	0.0000	0.0000		
1	25.55	92.68	0.00	0.00	0.00	4.55	-13.70			0.0000	0.0000	0.0000	0.0000		
1	29.20	72.85	0.00	0.00	0.00	2.69	-16.15			0.0000	0.0000	0.0000	0.0000		
1	32.85	41.96	0.00	0.00	0.00	0.93	-18.61			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-21.86	21.86	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 2F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	16.32	0.00	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	32.74	0.00	0.00	0.00	14.52	-1.20			0.0000	0.0000	0.0000	0.0000		
1	7.30	57.38	0.00	0.00	0.00	12.72	-2.39			0.0000	0.0000	0.0000	0.0000		
1	10.95	73.93	0.00	0.00	0.00	10.93	-3.75			0.0000	0.0000	0.0000	0.0000		
1	14.60	82.38	0.00	0.00	0.00	9.13	-5.54			0.0000	0.0000	0.0000	0.0000		
1	18.25	82.73	0.00	0.00	0.00	7.34	-7.34			0.0000	0.0000	0.0000	0.0000		
1	21.90	82.38	0.00	0.00	0.00	5.54	-9.13			0.0000	0.0000	0.0000	0.0000		
1	25.55	73.93	0.00	0.00	0.00	3.75	-10.93			0.0000	0.0000	0.0000	0.0000		
1	29.20	57.38	0.00	0.00	0.00	2.39	-12.72			0.0000	0.0000	0.0000	0.0000		
1	32.85	32.74	0.00	0.00	0.00	1.20	-14.52			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-16.32	16.32	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 3F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.66	0.00	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	47.15	0.00	0.00	0.00	20.91	-1.02			0.0000	0.0000	0.0000	0.0000		

1	7.30	81.88	0.00	0.00	0.00	18.16	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	104.19	0.00	0.00	0.00	15.40	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	116.16	0.00	0.00	0.00	12.65	-7.14			0.0000	0.0000	0.0000	0.0000		
1	18.25	120.44	0.00	0.00	0.00	9.90	-9.90			0.0000	0.0000	0.0000	0.0000		
1	21.90	116.16	0.00	0.00	0.00	7.14	-12.65			0.0000	0.0000	0.0000	0.0000		
1	25.55	104.19	0.00	0.00	0.00	4.99	-15.40			0.0000	0.0000	0.0000	0.0000		
1	29.20	81.88	0.00	0.00	0.00	2.95	-18.16			0.0000	0.0000	0.0000	0.0000		
1	32.85	47.15	0.00	0.00	0.00	1.02	-20.91			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.66	23.66	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 4F1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	26.02	0.00	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	51.39	0.00	0.00	0.00	22.79	-0.84			0.0000	0.0000	0.0000	0.0000		
1	7.30	88.21	0.00	0.00	0.00	19.56	-2.43			0.0000	0.0000	0.0000	0.0000		
1	10.95	113.70	0.00	0.00	0.00	16.33	-4.79			0.0000	0.0000	0.0000	0.0000		
1	14.60	129.35	0.00	0.00	0.00	13.09	-7.30			0.0000	0.0000	0.0000	0.0000		
1	18.25	130.43	0.00	0.00	0.00	9.86	-9.86			0.0000	0.0000	0.0000	0.0000		
1	21.90	129.35	0.00	0.00	0.00	7.30	-13.09			0.0000	0.0000	0.0000	0.0000		
1	25.55	113.70	0.00	0.00	0.00	4.79	-16.33			0.0000	0.0000	0.0000	0.0000		
1	29.20	88.21	0.00	0.00	0.00	2.43	-19.56			0.0000	0.0000	0.0000	0.0000		
1	32.85	51.39	0.00	0.00	0.00	0.84	-22.79			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-26.02	26.02	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Vehicle Name: 5C1
Vehicle Type: Axle Load

Span	Distance (ft)	Pos Moment (kip-ft)	Neg Moment (kip-ft)	Pos Axial (kip)	Neg Axial (kip)	Pos Shear (kip)	Neg Shear (kip)	Pos Reaction (kip)	Neg Reaction (kip)	Pos X Deflection (in)	Neg X Deflection (in)	Pos Y Deflection (in)	Neg Y Deflection (in)	Pos Reaction Percent Impact (%)	Neg Reaction Percent Impact (%)
1	0.00	0.00	0.00	0.00	0.00	23.27	0.00	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000
1	3.65	46.26	0.00	0.00	0.00	20.51	-1.02			0.0000	0.0000	0.0000	0.0000		
1	7.30	80.10	0.00	0.00	0.00	17.76	-2.95			0.0000	0.0000	0.0000	0.0000		
1	10.95	101.53	0.00	0.00	0.00	15.01	-4.99			0.0000	0.0000	0.0000	0.0000		
1	14.60	112.61	0.00	0.00	0.00	12.26	-7.02			0.0000	0.0000	0.0000	0.0000		
1	18.25	116.01	0.00	0.00	0.00	9.50	-9.50			0.0000	0.0000	0.0000	0.0000		
1	21.90	112.61	0.00	0.00	0.00	7.02	-12.26			0.0000	0.0000	0.0000	0.0000		
1	25.55	101.53	0.00	0.00	0.00	4.99	-15.01			0.0000	0.0000	0.0000	0.0000		
1	29.20	80.10	0.00	0.00	0.00	2.95	-17.76			0.0000	0.0000	0.0000	0.0000		
1	32.85	46.26	0.00	0.00	0.00	1.02	-20.51			0.0000	0.0000	0.0000	0.0000		
1	36.50	0.00	0.00	0.00	0.00	-0.00	-23.27	23.27	0.00	0.0000	0.0000	0.0000	0.0000	33.000	0.000

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	Override	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name: B9
Description: Original Interior Girder
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:51:15
Same As Structure Member Name: B8
Member Alternative Name - Existing: Wizard Alternative
Member Alternative Name - Current: Wizard Alternative
Pedestrian Live Load Force: lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		

LFD Multi LL Factor Shear At Supports:	
LFD Multi LL Factor Deflection:	
LFD Single LL Factor Moment:	
LFD Single LL Factor Shear:	
LFD Single LL Factor Shear At Supports:	
LFD Single LL Factor Deflection:	
Analysis Module Name - LRFR:	
LRFR Condition Factor:	Good or Satisfactory
LRFR System Factor:	All Other Girder/Slab Bridges
Distribution Factor Input Method Type:	Simplified
ASD POI Tenth Points Indicator:	TRUE
ASD POI Section Change Points Indicator:	TRUE
ASD POI User-Defined Points Indicator:	TRUE
LFD POI Tenth Points Indicator:	TRUE
LFD POI Section Change Points Indicator:	TRUE
LFD POI User-Defined Points Indicator:	TRUE
LFD Allow Moment Redistribution Indicator:	
LRFR POI Tenth Points Indicator:	TRUE
LRFR POI Section Change Points Indicator:	TRUE
LRFR POI User-Defined Points Indicator:	TRUE
LRFR Allow Moment Redistribution Indicator:	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	
LRFR Allow Plastic Redistribution Indicator:	
LRFR Evaluate Remaining Fatigue Life Indicator:	
LRFR Consider Flange Lateral Bending Stress Indicator:	
LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	
LRFD Allow Plastic Redistribution Indicator:	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Ignore Long Reinf In Negative Moment Capacity:	
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	
ASD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Field Measured Section Properties Indicator:	
LRFR System Factor Override:	
LRFD POI Generated At Stiffeners Indicator:	
LRFR POI Generated At Stiffeners Indicator:	
LFD Allow Plastic Analysis of Cover Plate Indicator:	
LFD Ignore Shear Indicator:	
Self Load Case Engine Assigned Indicator:	
Self Load Case Name:	
Simple DL Continuous LL Indicator:	
Sufficiently connected to act as a unit:	
LFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name: B10
Description: Original Interior Girder
Creation Timestamp: Friday, May 03, 2019 10:53:17
Last Modified Timestamp: Monday, May 13, 2019 13:51:15
Same As Structure Member Name: B8
Member Alternative Name - Existing: Wizard Alternative
Member Alternative Name - Current: Wizard Alternative
Pedestrian Live Load Force: lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name: Wizard Alternative
Description: Member alternative generated using the design wizard

Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:		
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:		
LRFR Use Appendix A6 For Flexural Resistance Indicator:		
LRFR Allow Plastic Redistribution Indicator:		
LRFR Evaluate Remaining Fatigue Life Indicator:		
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:		
LRFD Use Appendix A6 For Flexural Resistance Indicator:		
LRFD Allow Plastic Redistribution Indicator:		
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Ignore Long Reinf In Negative Moment Capacity:		
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:		
ASD Ignore Long Reinf In Negative Moment Capacity:		
LRFR Field Measured Section Properties Indicator:		
LRFR System Factor Override:		
LRFD POI Generated At Stiffeners Indicator:		
LRFR POI Generated At Stiffeners Indicator:		
LFD Allow Plastic Analysis of Cover Plate Indicator:		
LFD Ignore Shear Indicator:		
Self Load Case Engine Assigned Indicator:		
Self Load Case Name:		
Simple DL Continuous LL Indicator:		

Sufficiently connected to act as a unit:
LFD DF for Permit Loads With Routine Traffic Indicator:
LRFD DF for Permit Loads With Routine Traffic Indicator:
LRFD Distribution Factor Input Method Type: Simplified
LFD Distribution Factor Input Method Type: Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B11
Description:	Original Interior Girder
Creation Timestamp:	Friday, May 03, 2019 10:53:17
Last Modified Timestamp:	Monday, May 13, 2019 13:51:15
Same As Structure Member Name:	B8
Member Alternative Name - Existing:	Wizard Alternative
Member Alternative Name - Current:	Wizard Alternative
Pedestrian Live Load Force:	lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

Support Number	Support Type	X Translation Type	Y Translation Type	Z Rotation Type

1	Pinned	Fixed	Fixed	Free
2	Roller	Free	Fixed	Free

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Wizard Alternative	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LFD	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:		
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	

LFD POI User-Defined Points Indicator:	TRUE
LFD Allow Moment Redistribution Indicator:	
LRFR POI Tenth Points Indicator:	TRUE
LRFR POI Section Change Points Indicator:	TRUE
LRFR POI User-Defined Points Indicator:	TRUE
LRFR Allow Moment Redistribution Indicator:	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	
LRFR Allow Plastic Redistribution Indicator:	
LRFR Evaluate Remaining Fatigue Life Indicator:	
LRFR Consider Flange Lateral Bending Stress Indicator:	
LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	
LRFD Allow Plastic Redistribution Indicator:	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Ignore Long Reinf In Negative Moment Capacity:	
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	
ASD Ignore Long Reinf In Negative Moment Capacity:	
LRFR Field Measured Section Properties Indicator:	
LRFR System Factor Override:	
LRFD POI Generated At Stiffeners Indicator:	
LRFR POI Generated At Stiffeners Indicator:	
LFD Allow Plastic Analysis of Cover Plate Indicator:	
LFD Ignore Shear Indicator:	
Self Load Case Engine Assigned Indicator:	
Self Load Case Name:	
Simple DL Continuous LL Indicator:	
Sufficiently connected to act as a unit:	
LFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD DF for Permit Loads With Routine Traffic Indicator:	
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	27.0000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Shear Connector Profile

Distance (ft)	Length (ft)	Connector Name	Number Per Row	Number Of Spaces	Transverse Spacing (in)
0.00	36.50				

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications

LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR		System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B12
Description:	Original Exterior Girder)
Creation Timestamp:	Friday, May 03, 2019 10:53:17
Last Modified Timestamp:	Tuesday, May 14, 2019 13:55:38
Same As Structure Member Name:	B8
Member Alternative Name - Existing:	B12 (Original Exterior Girder)
Member Alternative Name - Current:	B12 (Original Exterior Girder)
Pedestrian Live Load Force:	lb/ft

Member Loads

Distributed Member Loads

Load Case Name	Distance (ft)	Length (ft)	Load Start (kip/ft)	Load End (kip/ft)	Direction Type	WS Field Measured
DC1	0.00	36.50	0.116	0.116	X direction	FALSE

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	B12 (Original Exterior Girder)	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Friday, May 03, 2019 10:53:17	
Last Modified Timestamp:	Monday, May 13, 2019 13:56:55	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in

Default Rating Method:	LRFR	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	
Distribution Factor Input Method Type:	Simplified	
ASD POI Tenth Points Indicator:	TRUE	
ASD POI Section Change Points Indicator:	TRUE	
ASD POI User-Defined Points Indicator:	TRUE	
LFD POI Tenth Points Indicator:	TRUE	
LFD POI Section Change Points Indicator:	TRUE	
LFD POI User-Defined Points Indicator:	TRUE	
LFD Allow Moment Redistribution Indicator:	FALSE	
LRFR POI Tenth Points Indicator:	TRUE	
LRFR POI Section Change Points Indicator:	TRUE	
LRFR POI User-Defined Points Indicator:	TRUE	
LRFR Allow Moment Redistribution Indicator:	FALSE	
LRFR Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFR Allow Plastic Redistribution Indicator:	TRUE	
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE	
LRFR Consider Flange Lateral Bending Stress Indicator:		
LRFD POI Tenth Points Indicator:	TRUE	
LRFD POI Section Change Points Indicator:	TRUE	
LRFD POI User-Defined Points Indicator:	TRUE	
LRFD Allow Moment Redistribution Indicator:	TRUE	
LRFD Use Appendix A6 For Flexural Resistance Indicator:	TRUE	
LRFD Allow Plastic Redistribution Indicator:	FALSE	
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE	
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFD Distribution Factor Application Method Type:	By Point of Interest	
LRFR Distribution Factor Application Method Type:	By Point of Interest	
LFD Distribution Factor Application Method Type:	By Point of Interest	
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE	
LRFR Field Measured Section Properties Indicator:	FALSE	
LRFR System Factor Override:	FALSE	
LRFD POI Generated At Stiffeners Indicator:	FALSE	
LRFR POI Generated At Stiffeners Indicator:	FALSE	
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE	
LFD Ignore Shear Indicator:	FALSE	
Self Load Case Engine Assigned Indicator:	TRUE	
Self Load Case Name:		
Simple DL Continuous LL Indicator:	FALSE	
Sufficiently connected to act as a unit:	TRUE	
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE	
LRFD Distribution Factor Input Method Type:	Simplified	
LFD Distribution Factor Input Method Type:	Simplified	

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Deflection	0.00	36.500	0.153	0.077					Constant
Moment	0.00	36.500	0.278	0.278					Constant
Shear	0.00	36.500	0.450	0.450					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	37.5000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	Override	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

Girder Member

Name:	B13	
Description:	Channel member - no live load	
Creation Timestamp:	Monday, May 13, 2019 10:47:03	
Last Modified Timestamp:	Tuesday, May 14, 2019 13:55:31	
Same As Structure Member Name:	B8	
Member Alternative Name - Existing:	Copy of B12 (Original Exterior Girder)	
Member Alternative Name - Current:	Copy of B12 (Original Exterior Girder)	
Pedestrian Live Load Force:		lb/ft

Member Loads

Settlement

Load Case	Support Number	X Translation Settlement (in)	Y Translation Settlement (in)	Z Rotation Settlement (Radians)
	1			
	2			

Supports

General

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

Elastic

Support Number	X Translation Spring Constant (kip/ft)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Override Z Rot Spring Const Indicator
1				
2				

3D General

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

3D Elastic

Support Number	X Rotation Spring Constant (kip-in/rad)	X Translation Spring Constant (kip/ft)	Y Rotation Spring Constant (kip-in/rad)	Y Translation Spring Constant (kip/ft)	Z Rotation Spring Constant (kip-in/rad)	Z Translation Spring Constant (kip/ft)	Override Z Rot Spring Const Indicator
1							
2							

Member Alt - Steel Rolled Beam - Xsect.

Name:	Copy of B12 (Original Exterior Girder)	
Description:	Member alternative generated using the design wizard	
Creation Timestamp:	Monday, May 13, 2019 10:47:03	
Last Modified Timestamp:	Monday, May 13, 2019 13:19:27	
Cross Section Based Indicator:	TRUE	
System Of Units:	US Customary	
Additional Self Load:		kip/ft
Additional Self Load Percent:		%
Beam Projection Start:		in
Beam Projection End:		in
Default Rating Method:	LRFR	
Analysis Module Name - ASD:		
Analysis Module Name - LFD:	AASHTO LFD	
Analysis Module Name - LRFD:	AASHTO LRFD	
ASD Inv Structural Steel Factor:		
ASD Inv Concrete Factor:		
ASD Inv Rebar Factor:		
ASD Inv Bearing Stiffener Factor:		
ASD Opr Structural Steel Factor:		
ASD Opr Concrete Factor:		
ASD Opr Rebar Factor:		
ASD Opr Bearing Stiffener Factor:		
Default Structural Steel Name:	1905 to 1936	
Default Deck Concrete Name:	Original Concrete Deck	
Default Deck Reinf Steel Name:		
Default Weld Name:		
Default Bolt Name:		
Haunch Type:		
Haunch Embedded Flange Indicator:		
Impact Factor Adjustment:	0.000	
Impact Factor Override:	0.0	%
Impact Factor Type:	Standard - AASHTO	
LRFD Constant Impact Factor:	33.0	%
LRFD Fatigue Impact Factor:	15.0	%
LFD Multi LL Factor Moment:		
LFD Multi LL Factor Shear:		
LFD Multi LL Factor Shear At Supports:		
LFD Multi LL Factor Deflection:		
LFD Single LL Factor Moment:		
LFD Single LL Factor Shear:		
LFD Single LL Factor Shear At Supports:		
LFD Single LL Factor Deflection:		
Analysis Module Name - LRFR:	AASHTO LRFR	
LRFR Condition Factor:	Good or Satisfactory	
LRFR System Factor:	All Other Girder/Slab Bridges	

Distribution Factor Input Method Type:	Simplified
ASD POI Tenth Points Indicator:	TRUE
ASD POI Section Change Points Indicator:	TRUE
ASD POI User-Defined Points Indicator:	TRUE
LFD POI Tenth Points Indicator:	TRUE
LFD POI Section Change Points Indicator:	TRUE
LFD POI User-Defined Points Indicator:	TRUE
LFD Allow Moment Redistribution Indicator:	FALSE
LRFR POI Tenth Points Indicator:	TRUE
LRFR POI Section Change Points Indicator:	TRUE
LRFR POI User-Defined Points Indicator:	TRUE
LRFR Allow Moment Redistribution Indicator:	FALSE
LRFR Use Appendix A6 For Flexural Resistance Indicator:	FALSE
LRFR Allow Plastic Redistribution Indicator:	FALSE
LRFR Evaluate Remaining Fatigue Life Indicator:	FALSE
LRFR Consider Flange Lateral Bending Stress Indicator:	
LRFD POI Tenth Points Indicator:	TRUE
LRFD POI Section Change Points Indicator:	TRUE
LRFD POI User-Defined Points Indicator:	TRUE
LRFD Allow Moment Redistribution Indicator:	FALSE
LRFD Use Appendix A6 For Flexural Resistance Indicator:	FALSE
LRFD Allow Plastic Redistribution Indicator:	FALSE
LFD Include Bearing Stiffeners In Rating Indicator:	TRUE
LRFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFD Distribution Factor Application Method Type:	By Point of Interest
LRFR Distribution Factor Application Method Type:	By Point of Interest
LFD Distribution Factor Application Method Type:	By Point of Interest
LFD Ignore Long Reinf In Negative Moment Capacity:	FALSE
ASD Ignore Long Reinf In Negative Moment Capacity:	FALSE
LRFR Field Measured Section Properties Indicator:	FALSE
LRFR System Factor Override:	FALSE
LRFD POI Generated At Stiffeners Indicator:	FALSE
LRFR POI Generated At Stiffeners Indicator:	FALSE
LFD Allow Plastic Analysis of Cover Plate Indicator:	FALSE
LFD Ignore Shear Indicator:	FALSE
Self Load Case Engine Assigned Indicator:	TRUE
Self Load Case Name:	
Simple DL Continuous LL Indicator:	FALSE
Sufficiently connected to act as a unit:	FALSE
LFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD DF for Permit Loads With Routine Traffic Indicator:	FALSE
LRFD Distribution Factor Input Method Type:	Simplified
LFD Distribution Factor Input Method Type:	Simplified

Import Event

LRFD Live Load Distribution Factors

Action Type	Distance (ft)	Length (ft)	Multi Lane Factor	Single Lane Factor	Start Single Lane Factor	End Single Lane Factor	Start Multi Lane Factor	End Multi Lane Factor	Factor Variation Type
Moment	0.00	36.500	0.500	0.600					Constant
Shear	0.00	18.250	0.500	0.600					Constant
Shear	18.25	1.825	0.500	0.600					Constant
Shear	20.07	3.650	0.500	0.600					Constant
Shear	23.72	3.650	0.500	0.600					Constant
Shear	27.37	3.650	0.500	0.600					Constant
Shear	31.02	3.650	0.500	0.600					Constant
Shear	34.67	1.825	0.500	0.600					Constant
Deflection	0.00	36.500	0.167	0.100					Constant

Cross Sections

Name:	Cross Section 1	
Cross Section Type:	Rolled Shape	
Steel Shape Name:	B16x40	
Steel Shape Steel Name:	1905 to 1936	
Deck Concrete Name:	Original Concrete Deck	
Deck Tributary Width:	37.5000	in
Deck Eff Width Std:		in
Deck Eff Width LRFD:		in
Deck Actual Thickness:	6.0000	in
Deck Eff Thickness:	0.5000	in
Modular Ratio:		
Haunch Type:	Flange edges	
Haunch Thickness:		in
Haunch Width:		in

Cross Section Ranges

Start Section Name	End Section Name	Web Variation Type	Distance (ft)	Length (ft)
Cross Section 1	Cross Section 1	None	0.00	36.50

Lateral Support Range

Distance (ft)	Length (ft)
0.00	36.50

Spec Selection

Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors
ASD		System Default	MBE 3rd, Std 17th	N/A
LFD	AASHTO LFD	System Default	MBE 3rd, Std 17th	2002 AASHTO Std. Specifications
LRFD	AASHTO LRFD	System Default	LRFD 8th	2017 AASHTO LRFD Spec
LRFR	AASHTO LRFR	System Default	MBE 3rd, LRFD 8th	2017 AASHTO LRFR Spec

BrR Output

Bridge Name: South Fog Rd
NBI Structure ID: South Fog Rd
Bridge ID: 207245 X-202B

Analyzed By: BrR
Analyze Date: Wednesday, May 15, 2019 07:05:52
Analysis Engine: AASHTO LRFR Engine Version 6.8.3.3001
Analysis Preference Setting: None

Report By: brr
Report Date: Wednesday, May 15, 2019 07:14:18

Structure Definition Name: Superstructure
Member Name: B1
Member Alternative Name: B1 (Widened Exterior Girder)

Load and Resistance Factor Rating Summary

Live Load		Rating Factor	Controls	Girder Summary Capacity (Ton)	Span	Location (ft)	Percent	Impact	Lane
EV2	Legal	2.459	STRENGTH-I Steel Flexure	63.39	1	21.90	60.0	As Requested	As Requested
EV3	Legal	1.622	STRENGTH-I Steel Flexure	62.52	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Inventory	1.344	STRENGTH-I Steel Flexure	48.39	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Operating	1.742	STRENGTH-I Steel Flexure	62.73	1	18.25	50.0	As Requested	As Requested
NRL	Legal	1.693	STRENGTH-I Steel Flexure	67.73	1	18.25	50.0	As Requested	As Requested
SU4	Legal	2.200	STRENGTH-I Steel Flexure	59.39	1	18.25	50.0	As Requested	As Requested
SU5	Legal	2.100	STRENGTH-I Steel Flexure	65.10	1	18.25	50.0	As Requested	As Requested
SU6	Legal	1.894	STRENGTH-I Steel Flexure	65.81	1	18.25	50.0	As Requested	As Requested
SU7	Legal	1.786	STRENGTH-I Steel Flexure	69.23	1	18.25	50.0	As Requested	As Requested
Type 3	Legal	2.611	STRENGTH-I Steel Flexure	65.27	1	18.25	50.0	As Requested	As Requested
Type 3 -3	Legal	3.180	STRENGTH-I Steel Flexure	127.18	1	21.90	60.0	As Requested	As Requested
Type 3S2	Legal	2.739	STRENGTH-I Steel Flexure	98.59	1	18.25	50.0	As Requested	As Requested
2F1	Legal	3.527	STRENGTH-I Steel Flexure	52.90	1	18.25	50.0	As Requested	As Requested
3F1	Legal	2.422	STRENGTH-I Steel Flexure	55.71	1	18.25	50.0	As Requested	As Requested
4F1	Legal	2.237	STRENGTH-I Steel Flexure	60.40	1	18.25	50.0	As Requested	As Requested
5C1	Legal	2.515	STRENGTH-I Steel Flexure	100.60	1	18.25	50.0	As Requested	As Requested

Note:
"N/A" indicates not applicable
"**" indicates not available

Reactions
Live Load EV2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	15.17	Axle Load	0.00	Axle Load
2	4.57	N/A	15.17	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	48.68	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	83.99	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	105.93	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	110.26	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	114.52	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	109.74	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	114.52	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	110.32	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	105.93	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	83.99	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	48.68	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	15.17	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	13.34	Axle Load	-1.07	Axle Load
7.30(B)	20.0	2.74	N/A	11.51	Axle Load	-2.13	Axle Load
10.95(B)	30.0	1.83	N/A	9.67	Axle Load	-3.20	Axle Load
12.16(B)	33.3	1.53	N/A	9.07	Axle Load	-3.55	Axle Load
14.60(B)	40.0	0.91	N/A	7.84	Axle Load	-4.27	Axle Load
18.25(B)	50.0	0.00	N/A	6.01	Axle Load	-6.01	Axle Load
21.90(B)	60.0	-0.91	N/A	4.27	Axle Load	-7.84	Axle Load
24.32(B)	66.6	-1.52	N/A	3.56	Axle Load	-9.06	Axle Load
25.55(B)	70.0	-1.83	N/A	3.20	Axle Load	-9.67	Axle Load
29.20(B)	80.0	-2.74	N/A	2.13	Axle Load	-11.51	Axle Load
32.85(B)	90.0	-3.66	N/A	1.07	Axle Load	-13.34	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-15.17	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load EV3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	22.32	Axle Load	0.00	Axle Load
2	4.57	N/A	22.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	71.48	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	122.97	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	154.47	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	160.50	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	170.32	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	172.80	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	170.32	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	160.59	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	154.47	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	122.97	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	71.48	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	22.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	19.58	Axle Load	-0.99	Axle Load
7.30(B)	20.0	2.74	N/A	16.85	Axle Load	-2.87	Axle Load
10.95(B)	30.0	1.83	N/A	14.11	Axle Load	-4.84	Axle Load
12.16(B)	33.3	1.53	N/A	13.20	Axle Load	-5.49	Axle Load
14.60(B)	40.0	0.91	N/A	11.37	Axle Load	-6.81	Axle Load
18.25(B)	50.0	0.00	N/A	8.79	Axle Load	-8.79	Axle Load
21.90(B)	60.0	-0.91	N/A	6.81	Axle Load	-11.37	Axle Load
24.32(B)	66.6	-1.52	N/A	5.51	Axle Load	-13.18	Axle Load
25.55(B)	70.0	-1.83	N/A	4.84	Axle Load	-14.11	Axle Load
29.20(B)	80.0	-2.74	N/A	2.87	Axle Load	-16.85	Axle Load
32.85(B)	90.0	-3.66	N/A	0.99	Axle Load	-19.58	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-22.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load HL-93 (US)
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	22.15	Truck + Lane	0.00	Tandem + Lane
2	4.57	N/A	22.15	Truck + Lane	0.00	Tandem + Lane

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane
3.65(B)	10.0	15.02	N/A	70.37	Truck + Lane	0.00	Tandem + Lane
7.30(B)	20.0	26.70	N/A	119.80	Truck + Lane	0.00	Tandem + Lane
10.95(B)	30.0	35.05	N/A	150.38	Truck + Lane	0.00	Tandem + Lane
12.16(B)	33.3	37.08	N/A	157.43	Tandem + Lane	0.00	Tandem + Lane
14.60(B)	40.0	40.06	N/A	168.65	Tandem + Lane	0.00	Tandem + Lane
18.25(B)	50.0	41.73	N/A	172.72	Tandem + Lane	0.00	Tandem + Lane
21.90(B)	60.0	40.06	N/A	168.65	Tandem + Lane	0.00	Tandem + Lane
24.32(B)	66.6	37.11	N/A	157.55	Tandem + Lane	0.00	Tandem + Lane
25.55(B)	70.0	35.05	N/A	150.38	Truck + Lane	0.00	Tandem + Lane
29.20(B)	80.0	26.70	N/A	119.80	Truck + Lane	0.00	Tandem + Lane
32.85(B)	90.0	15.02	N/A	70.37	Truck + Lane	0.00	Tandem + Lane
36.50(L)	100.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	22.15	Truck + Lane	0.00	Tandem + Lane
3.65(B)	10.0	3.66	N/A	19.00	Truck + Lane	-1.17	Truck + Lane
7.30(B)	20.0	2.74	N/A	15.91	Truck + Lane	-2.70	Tandem + Lane
10.95(B)	30.0	1.83	N/A	13.08	Truck + Lane	-4.63	Tandem + Lane
12.16(B)	33.3	1.53	N/A	12.25	Tandem + Lane	-5.29	Tandem + Lane
14.60(B)	40.0	0.91	N/A	10.80	Tandem + Lane	-6.63	Tandem + Lane
18.25(B)	50.0	0.00	N/A	8.68	Tandem + Lane	-8.68	Tandem + Lane
21.90(B)	60.0	-0.91	N/A	6.63	Tandem + Lane	-10.80	Tandem + Lane
24.32(B)	66.6	-1.52	N/A	5.30	Tandem + Lane	-12.24	Tandem + Lane
25.55(B)	70.0	-1.83	N/A	4.63	Tandem + Lane	-13.08	Truck + Lane
29.20(B)	80.0	-2.74	N/A	2.70	Tandem + Lane	-15.91	Truck + Lane
32.85(B)	90.0	-3.66	N/A	1.17	Truck + Lane	-19.00	Truck + Lane
36.50(L)	100.0	-4.57	N/A	-0.00	Tandem + Lane	-22.15	Truck + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load NRL
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	17.99	Axle Load	0.00	Axle Load
2	4.57	N/A	17.99	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	56.11	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	102.61	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	139.63	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	148.24	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	160.23	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	165.48	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	160.23	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	148.36	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	139.63	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	102.61	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	56.11	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	17.99	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	15.37	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	13.03	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	10.95	Axle Load	-3.19	Axle Load
12.16(B)	33.3	1.53	N/A	10.27	Axle Load	-3.70	Axle Load
14.60(B)	40.0	0.91	N/A	8.89	Axle Load	-4.88	Axle Load
18.25(B)	50.0	0.00	N/A	6.83	Axle Load	-6.83	Axle Load
21.90(B)	60.0	-0.91	N/A	4.88	Axle Load	-8.89	Axle Load
24.32(B)	66.6	-1.52	N/A	3.71	Axle Load	-10.26	Axle Load
25.55(B)	70.0	-1.83	N/A	3.19	Axle Load	-10.95	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-13.03	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-15.37	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-17.99	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU4
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	15.79	Axle Load	0.00	Axle Load
2	4.57	N/A	15.79	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	50.64	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	87.27	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	109.91	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	115.73	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	125.08	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	127.40	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	125.08	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	115.83	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	109.91	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	87.27	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	50.64	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	15.79	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	13.87	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	11.96	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	10.04	Axle Load	-3.19	Axle Load
12.16(B)	33.3	1.53	N/A	9.40	Axle Load	-3.68	Axle Load
14.60(B)	40.0	0.91	N/A	8.12	Axle Load	-4.68	Axle Load
18.25(B)	50.0	0.00	N/A	6.20	Axle Load	-6.20	Axle Load
21.90(B)	60.0	-0.91	N/A	4.68	Axle Load	-8.12	Axle Load
24.32(B)	66.6	-1.52	N/A	3.69	Axle Load	-9.39	Axle Load
25.55(B)	70.0	-1.83	N/A	3.19	Axle Load	-10.04	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-11.96	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-13.87	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-15.79	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU5
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	17.23	Axle Load	0.00	Axle Load
2	4.57	N/A	17.23	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	54.85	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	93.64	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	118.62	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	125.52	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	134.06	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	133.43	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	134.06	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	125.62	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	118.62	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	93.64	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	54.85	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	17.23	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	15.03	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	12.83	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	10.63	Axle Load	-3.19	Axle Load
12.16(B)	33.3	1.53	N/A	9.90	Axle Load	-3.70	Axle Load
14.60(B)	40.0	0.91	N/A	8.44	Axle Load	-4.88	Axle Load
18.25(B)	50.0	0.00	N/A	6.66	Axle Load	-6.66	Axle Load
21.90(B)	60.0	-0.91	N/A	4.88	Axle Load	-8.44	Axle Load
24.32(B)	66.6	-1.52	N/A	3.71	Axle Load	-9.88	Axle Load
25.55(B)	70.0	-1.83	N/A	3.19	Axle Load	-10.63	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-12.83	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-15.03	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-17.23	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU6
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	17.61	Axle Load	0.00	Axle Load
2	4.57	N/A	17.61	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	55.26	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	100.88	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	129.98	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	135.65	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	145.03	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	147.97	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	145.03	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	135.72	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	129.98	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	100.88	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	55.26	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	17.61	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	15.14	Axle Load	-0.41	Axle Load
7.30(B)	20.0	2.74	N/A	12.67	Axle Load	-1.11	Axle Load
10.95(B)	30.0	1.83	N/A	10.25	Axle Load	-2.49	Axle Load
12.16(B)	33.3	1.53	N/A	9.57	Axle Load	-3.00	Axle Load
14.60(B)	40.0	0.91	N/A	8.19	Axle Load	-4.18	Axle Load
18.25(B)	50.0	0.00	N/A	6.13	Axle Load	-6.13	Axle Load
21.90(B)	60.0	-0.91	N/A	4.18	Axle Load	-8.19	Axle Load
24.32(B)	66.6	-1.52	N/A	3.01	Axle Load	-9.56	Axle Load
25.55(B)	70.0	-1.83	N/A	2.49	Axle Load	-10.25	Axle Load
29.20(B)	80.0	-2.74	N/A	1.11	Axle Load	-12.67	Axle Load
32.85(B)	90.0	-3.66	N/A	0.41	Axle Load	-15.14	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-17.61	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU7
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	17.74	Axle Load	0.00	Axle Load
2	4.57	N/A	17.74	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	55.26	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	100.88	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	135.84	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	143.53	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	152.47	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	156.85	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	152.47	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	143.64	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	135.84	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	100.88	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	55.26	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	17.74	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	15.14	Axle Load	-0.41	Axle Load
7.30(B)	20.0	2.74	N/A	12.53	Axle Load	-0.83	Axle Load
10.95(B)	30.0	1.83	N/A	9.98	Axle Load	-1.88	Axle Load
12.16(B)	33.3	1.53	N/A	9.21	Axle Load	-2.30	Axle Load
14.60(B)	40.0	0.91	N/A	7.64	Axle Load	-3.48	Axle Load
18.25(B)	50.0	0.00	N/A	5.43	Axle Load	-5.43	Axle Load
21.90(B)	60.0	-0.91	N/A	3.48	Axle Load	-7.64	Axle Load
24.32(B)	66.6	-1.52	N/A	2.31	Axle Load	-9.20	Axle Load
25.55(B)	70.0	-1.83	N/A	1.88	Axle Load	-9.98	Axle Load
29.20(B)	80.0	-2.74	N/A	0.83	Axle Load	-12.53	Axle Load
32.85(B)	90.0	-3.66	N/A	0.41	Axle Load	-15.14	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-17.74	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	14.14	Axle Load	0.00	Axle Load
2	4.57	N/A	14.14	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	45.12	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	77.27	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	96.47	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	99.97	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	106.96	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	107.33	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	106.96	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	100.01	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	96.47	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	77.27	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	45.12	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	14.14	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	12.36	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	10.59	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	8.81	Axle Load	-2.96	Axle Load
12.16(B)	33.3	1.53	N/A	8.22	Axle Load	-3.36	Axle Load
14.60(B)	40.0	0.91	N/A	7.03	Axle Load	-4.17	Axle Load
18.25(B)	50.0	0.00	N/A	5.38	Axle Load	-5.38	Axle Load
21.90(B)	60.0	-0.91	N/A	4.17	Axle Load	-7.03	Axle Load
24.32(B)	66.6	-1.52	N/A	3.37	Axle Load	-8.21	Axle Load
25.55(B)	70.0	-1.83	N/A	2.96	Axle Load	-8.81	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-10.59	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-12.36	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-14.14	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3-3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	12.14	Axle Load	0.00	Axle Load
2	4.57	N/A	12.14	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	37.98	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	64.54	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	79.71	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	83.15	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	88.58	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	87.18	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	88.58	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	83.22	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	79.71	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	64.54	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	37.98	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	12.14	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	10.40	Axle Load	-0.50	Axle Load
7.30(B)	20.0	2.74	N/A	8.84	Axle Load	-1.44	Axle Load
10.95(B)	30.0	1.83	N/A	7.28	Axle Load	-2.44	Axle Load
12.16(B)	33.3	1.53	N/A	6.76	Axle Load	-2.77	Axle Load
14.60(B)	40.0	0.91	N/A	5.72	Axle Load	-3.43	Axle Load
18.25(B)	50.0	0.00	N/A	4.43	Axle Load	-4.43	Axle Load
21.90(B)	60.0	-0.91	N/A	3.43	Axle Load	-5.72	Axle Load
24.32(B)	66.6	-1.52	N/A	2.77	Axle Load	-6.75	Axle Load
25.55(B)	70.0	-1.83	N/A	2.44	Axle Load	-7.28	Axle Load
29.20(B)	80.0	-2.74	N/A	1.44	Axle Load	-8.84	Axle Load
32.85(B)	90.0	-3.66	N/A	0.50	Axle Load	-10.40	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-12.14	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3S2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	12.97	Axle Load	0.00	Axle Load
2	4.57	N/A	12.97	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	40.30	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	69.97	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	89.01	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	92.98	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	98.71	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	102.32	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	98.71	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	93.04	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	89.01	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	69.97	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	40.30	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	12.97	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	11.04	Axle Load	-0.55	Axle Load
7.30(B)	20.0	2.74	N/A	9.59	Axle Load	-1.60	Axle Load
10.95(B)	30.0	1.83	N/A	8.13	Axle Load	-2.70	Axle Load
12.16(B)	33.3	1.53	N/A	7.65	Axle Load	-3.06	Axle Load
14.60(B)	40.0	0.91	N/A	6.67	Axle Load	-3.80	Axle Load
18.25(B)	50.0	0.00	N/A	5.22	Axle Load	-5.22	Axle Load
21.90(B)	60.0	-0.91	N/A	3.80	Axle Load	-6.67	Axle Load
24.32(B)	66.6	-1.52	N/A	3.07	Axle Load	-7.64	Axle Load
25.55(B)	70.0	-1.83	N/A	2.70	Axle Load	-8.13	Axle Load
29.20(B)	80.0	-2.74	N/A	1.60	Axle Load	-9.59	Axle Load
32.85(B)	90.0	-3.66	N/A	0.55	Axle Load	-11.04	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-12.97	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 2F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	9.68	Axle Load	0.00	Axle Load
2	4.57	N/A	9.68	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	31.44	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	55.11	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	71.00	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	74.56	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	79.12	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	79.46	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	79.12	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	74.61	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	71.00	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	55.11	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	31.44	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	9.68	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	8.62	Axle Load	-0.71	Axle Load
7.30(B)	20.0	2.74	N/A	7.55	Axle Load	-1.42	Axle Load
10.95(B)	30.0	1.83	N/A	6.48	Axle Load	-2.22	Axle Load
12.16(B)	33.3	1.53	N/A	6.13	Axle Load	-2.58	Axle Load
14.60(B)	40.0	0.91	N/A	5.42	Axle Load	-3.29	Axle Load
18.25(B)	50.0	0.00	N/A	4.35	Axle Load	-4.35	Axle Load
21.90(B)	60.0	-0.91	N/A	3.29	Axle Load	-5.42	Axle Load
24.32(B)	66.6	-1.52	N/A	2.58	Axle Load	-6.13	Axle Load
25.55(B)	70.0	-1.83	N/A	2.22	Axle Load	-6.48	Axle Load
29.20(B)	80.0	-2.74	N/A	1.42	Axle Load	-7.55	Axle Load
32.85(B)	90.0	-3.66	N/A	0.71	Axle Load	-8.62	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-9.68	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 3F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	14.04	Axle Load	0.00	Axle Load
2	4.57	N/A	14.04	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	45.28	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	78.64	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	100.07	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	104.54	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	111.56	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	115.68	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	111.56	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	104.60	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	100.07	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	78.64	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	45.28	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	14.04	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	12.41	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	10.77	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	9.14	Axle Load	-2.96	Axle Load
12.16(B)	33.3	1.53	N/A	8.60	Axle Load	-3.36	Axle Load
14.60(B)	40.0	0.91	N/A	7.50	Axle Load	-4.24	Axle Load
18.25(B)	50.0	0.00	N/A	5.87	Axle Load	-5.87	Axle Load
21.90(B)	60.0	-0.91	N/A	4.24	Axle Load	-7.50	Axle Load
24.32(B)	66.6	-1.52	N/A	3.37	Axle Load	-8.59	Axle Load
25.55(B)	70.0	-1.83	N/A	2.96	Axle Load	-9.14	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-10.77	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-12.41	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-14.04	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 4F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	15.44	Axle Load	0.00	Axle Load
2	4.57	N/A	15.44	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	49.36	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	84.72	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	109.20	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	115.73	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	124.23	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	125.27	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	124.23	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	115.83	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	109.20	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	84.72	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	49.36	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	15.44	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	13.52	Axle Load	-0.50	Axle Load
7.30(B)	20.0	2.74	N/A	11.60	Axle Load	-1.44	Axle Load
10.95(B)	30.0	1.83	N/A	9.69	Axle Load	-2.84	Axle Load
12.16(B)	33.3	1.53	N/A	9.05	Axle Load	-3.33	Axle Load
14.60(B)	40.0	0.91	N/A	7.77	Axle Load	-4.33	Axle Load
18.25(B)	50.0	0.00	N/A	5.85	Axle Load	-5.85	Axle Load
21.90(B)	60.0	-0.91	N/A	4.33	Axle Load	-7.77	Axle Load
24.32(B)	66.6	-1.52	N/A	3.34	Axle Load	-9.04	Axle Load
25.55(B)	70.0	-1.83	N/A	2.84	Axle Load	-9.69	Axle Load
29.20(B)	80.0	-2.74	N/A	1.44	Axle Load	-11.60	Axle Load
32.85(B)	90.0	-3.66	N/A	0.50	Axle Load	-13.52	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-15.44	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 5C1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	4.57	N/A	13.81	Axle Load	0.00	Axle Load
2	4.57	N/A	13.81	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	15.02	N/A	44.43	Axle Load	0.00	Axle Load
7.30(B)	20.0	26.70	N/A	76.93	Axle Load	0.00	Axle Load
10.95(B)	30.0	35.05	N/A	97.51	Axle Load	0.00	Axle Load
12.16(B)	33.3	37.08	N/A	101.70	Axle Load	0.00	Axle Load
14.60(B)	40.0	40.06	N/A	108.15	Axle Load	0.00	Axle Load
18.25(B)	50.0	41.73	N/A	111.42	Axle Load	0.00	Axle Load
21.90(B)	60.0	40.06	N/A	108.15	Axle Load	0.00	Axle Load
24.32(B)	66.6	37.11	N/A	101.76	Axle Load	0.00	Axle Load
25.55(B)	70.0	35.05	N/A	97.51	Axle Load	0.00	Axle Load
29.20(B)	80.0	26.70	N/A	76.93	Axle Load	0.00	Axle Load
32.85(B)	90.0	15.02	N/A	44.43	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	4.57	N/A	13.81	Axle Load	0.00	Axle Load
3.65(B)	10.0	3.66	N/A	12.17	Axle Load	-0.60	Axle Load
7.30(B)	20.0	2.74	N/A	10.54	Axle Load	-1.75	Axle Load
10.95(B)	30.0	1.83	N/A	8.90	Axle Load	-2.96	Axle Load
12.16(B)	33.3	1.53	N/A	8.36	Axle Load	-3.36	Axle Load
14.60(B)	40.0	0.91	N/A	7.27	Axle Load	-4.17	Axle Load
18.25(B)	50.0	0.00	N/A	5.64	Axle Load	-5.64	Axle Load
21.90(B)	60.0	-0.91	N/A	4.17	Axle Load	-7.27	Axle Load
24.32(B)	66.6	-1.52	N/A	3.37	Axle Load	-8.35	Axle Load
25.55(B)	70.0	-1.83	N/A	2.96	Axle Load	-8.90	Axle Load
29.20(B)	80.0	-2.74	N/A	1.75	Axle Load	-10.54	Axle Load
32.85(B)	90.0	-3.66	N/A	0.60	Axle Load	-12.17	Axle Load
36.50(L)	100.0	-4.57	N/A	-0.00	Axle Load	-13.81	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Report by Action: ☑ Flexure ☑ Shear ☑ Overload ☑ Critical

Detailed Rating Results
B1 (Widened Exterior Girder)
EV2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2551.81
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**15.17**	**6.877**	**177.26**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2551.81
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**48.68**	**6.322**	**162.95**
3.65	10.0	Shear	kip	156.95	3.66	13.34	7.880	203.11
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.22	99.000	2551.81
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**83.99**	**3.544**	**91.35**
7.30	20.0	Shear	kip	156.95	2.74	11.51	9.202	237.20
7.30	20.0	Overload	ksi	-36.00	-2.32	-7.29	99.000	2551.81
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**105.93**	**2.742**	**70.67**
10.95	30.0	Shear	kip	156.95	1.83	9.67	11.025	284.18
10.95	30.0	Overload	ksi	-36.00	-3.04	-9.19	99.000	2551.81
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**110.26**	**2.578**	**66.44**
12.16	33.3	Shear	kip	145.96	1.53	9.07	10.956	282.41
12.16	33.3	Overload	ksi	-36.00	-3.22	-9.57	99.000	2551.81
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**114.52**	**2.459**	**63.39**
14.60	40.0	Shear	kip	145.96	0.91	7.84	12.733	328.20
14.60	40.0	Overload	ksi	-36.00	-3.51	-10.04	99.000	2551.81
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**109.74**	**2.553**	**65.82**
18.25	50.0	Shear	kip	145.96	0.00	6.01	16.740	431.50
18.25	50.0	Overload	ksi	-36.00	-3.66	-9.62	99.000	2551.81
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**114.52**	**2.459**	**63.39**
21.90	60.0	Shear	kip	145.96	-0.91	-7.84	12.733	328.20
21.90	60.0	Overload	ksi	-36.00	-3.51	-10.04	99.000	2551.81
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**110.32**	**2.576**	**66.40**
24.32	66.6	Shear	kip	145.96	-1.52	-9.06	10.969	282.73
24.32	66.6	Overload	ksi	-36.00	-3.25	-9.67	99.000	2551.81
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**105.93**	**2.742**	**70.67**

25.55	70.0	Shear	kip	156.95	-1.83	-9.67	11.025	284.18
25.55	70.0	Overload	ksi	-36.00	-3.04	-9.19	99.000	2551.81
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**83.99**	**3.544**	**91.35**
29.20	80.0	Shear	kip	156.95	-2.74	-11.51	9.202	237.20
29.20	80.0	Overload	ksi	-36.00	-2.32	-7.29	99.000	2551.81
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**48.68**	**6.322**	**162.95**
32.85	90.0	Shear	kip	156.95	-3.66	-13.34	7.880	203.11
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.22	99.000	2551.81
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2551.81
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-15.17**	**6.877**	**177.26**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2551.81

Detailed Rating Results
B1 (Widened Exterior Girder)
EV3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3816.61
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**22.32**	**4.673**	**180.14**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3816.61
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**71.48**	**4.305**	**165.97**
3.65	10.0	Shear	kip	156.95	3.66	19.58	5.366	206.87
3.65	10.0	Overload	ksi	-36.00	-1.30	-6.20	99.000	3816.61
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**122.97**	**2.421**	**93.32**
7.30	20.0	Shear	kip	156.95	2.74	16.85	6.285	242.30
7.30	20.0	Overload	ksi	-36.00	-2.32	-10.67	99.000	3816.61
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**154.47**	**1.880**	**72.49**
10.95	30.0	Shear	kip	156.95	1.83	14.11	7.561	291.49
10.95	30.0	Overload	ksi	-36.00	-3.04	-13.41	99.000	3816.61
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**160.50**	**1.771**	**68.27**
12.16	33.3	Shear	kip	145.96	1.53	13.20	7.527	290.16
12.16	33.3	Overload	ksi	-36.00	-3.22	-13.93	99.000	3816.61
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**170.32**	**1.654**	**63.75**
14.60	40.0	Shear	kip	145.96	0.91	11.37	8.785	338.67
14.60	40.0	Overload	ksi	-36.00	-3.51	-14.93	99.000	3816.61
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**172.80**	**1.622**	**62.52**

18.25	50.0	Shear	kip	145.96	0.00	8.79	11.455	441.59
18.25	50.0	Overload	ksi	-36.00	-3.66	-15.14	99.000	3816.61
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**170.32**	**1.654**	**63.75**
21.90	60.0	Shear	kip	145.96	-0.91	-11.37	8.785	338.67
21.90	60.0	Overload	ksi	-36.00	-3.51	-14.93	99.000	3816.61
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**160.59**	**1.770**	**68.22**
24.32	66.6	Shear	kip	145.96	-1.52	-13.18	7.536	290.51
24.32	66.6	Overload	ksi	-36.00	-3.25	-14.07	99.000	3816.61
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**154.47**	**1.880**	**72.49**
25.55	70.0	Shear	kip	156.95	-1.83	-14.11	7.561	291.49
25.55	70.0	Overload	ksi	-36.00	-3.04	-13.41	99.000	3816.61
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**122.97**	**2.421**	**93.32**
29.20	80.0	Shear	kip	156.95	-2.74	-16.85	6.285	242.30
29.20	80.0	Overload	ksi	-36.00	-2.32	-10.67	99.000	3816.61
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**71.48**	**4.305**	**165.97**
32.85	90.0	Shear	kip	156.95	-3.66	-19.58	5.366	206.87
32.85	90.0	Overload	ksi	-36.00	-1.30	-6.20	99.000	3816.61
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3816.61
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-22.32**	**4.673**	**180.14**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3816.61

Detailed Rating Results
B1 (Widened Exterior Girder)
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location							Inventory Rating	Inventory Load Rating	Operating Rating	Operating Load Rating
(ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Factor	(Ton)	Factor	(Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**22.15**	**3.902**	**140.46**	**5.058**	**182.08**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**70.37**	**3.623**	**130.44**	**4.697**	**169.08**
3.65	10.0	Shear	kip	156.95	3.66	19.00	4.583	164.98	5.941	213.87
3.65	10.0	Overload	ksi	-36.00	-1.30	-6.11	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**119.80**	**2.059**	**74.11**	**2.669**	**96.07**

7.30	20.0	Shear	kip	156.95	2.74	15.91	5.513	198.47	7.146	257.27
7.30	20.0	Overload	ksi	-36.00	-2.32	-10.40	99.000	3564.00	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**150.38**	**1.600**	**57.61**	**2.075**	**74.68**
10.95	30.0	Shear	kip	156.95	1.83	13.08	6.757	243.27	8.760	315.35
10.95	30.0	Overload	ksi	-36.00	-3.04	-13.05	99.000	3564.00	99.000	3564.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**156.58**	**1.504**	**54.14**	**1.950**	**70.19**
12.16	33.3	Shear	kip	145.96	1.53	12.18	6.756	243.22	8.758	315.29
12.16	33.3	Overload	ksi	-36.00	-3.22	-13.59	99.000	3564.00	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**163.79**	**1.425**	**51.29**	**1.847**	**66.49**
14.60	40.0	Shear	kip	145.96	0.91	10.40	7.957	286.44	10.314	371.32
14.60	40.0	Overload	ksi	-36.00	-3.51	-14.36	99.000	3564.00	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**162.33**	**1.430**	**51.49**	**1.854**	**66.74**
18.25	50.0	Shear	kip	145.96	0.00	7.78	10.714	385.71	13.889	500.00
18.25	50.0	Overload	ksi	-36.00	-3.66	-14.23	99.000	3564.00	99.000	3564.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**163.79**	**1.425**	**51.29**	**1.847**	**66.49**
21.90	60.0	Shear	kip	145.96	-0.91	-10.40	7.957	286.44	10.314	371.32
21.90	60.0	Overload	ksi	-36.00	-3.51	-14.36	99.000	3564.00	99.000	3564.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**156.66**	**1.503**	**54.11**	**1.948**	**70.14**
24.32	66.6	Shear	kip	145.96	-1.52	-12.17	6.765	243.53	8.769	315.69
24.32	66.6	Overload	ksi	-36.00	-3.25	-13.73	99.000	3564.00	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**150.38**	**1.600**	**57.61**	**2.075**	**74.68**
25.55	70.0	Shear	kip	156.95	-1.83	-13.08	6.757	243.27	8.760	315.35
25.55	70.0	Overload	ksi	-36.00	-3.04	-13.05	99.000	3564.00	99.000	3564.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**119.80**	**2.059**	**74.11**	**2.669**	**96.07**
29.20	80.0	Shear	kip	156.95	-2.74	-15.91	5.513	198.47	7.146	257.27
29.20	80.0	Overload	ksi	-36.00	-2.32	-10.40	99.000	3564.00	99.000	3564.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**70.37**	**3.623**	**130.44**	**4.697**	**169.08**
32.85	90.0	Shear	kip	156.95	-3.66	-19.00	4.583	164.98	5.941	213.87
32.85	90.0	Overload	ksi	-36.00	-1.30	-6.11	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-22.15**	**3.902**	**140.46**	**5.058**	**182.08**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B1 (Widened Exterior Girder)
HL-93 (US)

Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**19.90**	**4.342**	**156.32**	**5.629**	**202.64**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**65.02**	**3.921**	**141.17**	**5.083**	**183.00**
3.65	10.0	Shear	kip	156.95	3.66	17.53	4.966	178.78	6.438	231.75
3.65	10.0	Overload	ksi	-36.00	-1.30	-5.64	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**114.80**	**2.148**	**77.34**	**2.785**	**100.25**
7.30	20.0	Shear	kip	156.95	2.74	15.23	5.761	207.39	7.468	268.84
7.30	20.0	Overload	ksi	-36.00	-2.32	-9.96	99.000	3564.00	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**149.35**	**1.611**	**58.01**	**2.089**	**75.20**
10.95	30.0	Shear	kip	156.95	1.83	12.98	6.807	245.04	8.823	317.64
10.95	30.0	Overload	ksi	-36.00	-3.04	-12.96	99.000	3564.00	99.000	3564.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**157.43**	**1.496**	**53.85**	**1.939**	**69.80**
12.16	33.3	Shear	kip	145.96	1.53	12.25	6.717	241.83	8.708	313.48
12.16	33.3	Overload	ksi	-36.00	-3.22	-13.66	99.000	3564.00	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**168.65**	**1.384**	**49.81**	**1.794**	**64.57**
14.60	40.0	Shear	kip	145.96	0.91	10.80	7.660	275.76	9.930	357.47
14.60	40.0	Overload	ksi	-36.00	-3.51	-14.78	99.000	3564.00	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**172.72**	**1.344**	**48.39**	**1.742**	**62.73**
18.25	50.0	Shear	kip	145.96	0.00	8.68	9.604	345.74	12.450	448.19
18.25	50.0	Overload	ksi	-36.00	-3.66	-15.14	99.000	3564.00	99.000	3564.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**168.65**	**1.384**	**49.81**	**1.794**	**64.57**
21.90	60.0	Shear	kip	145.96	-0.91	-10.80	7.660	275.76	9.930	357.47
21.90	60.0	Overload	ksi	-36.00	-3.51	-14.78	99.000	3564.00	99.000	3564.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**157.55**	**1.495**	**53.80**	**1.937**	**69.74**
24.32	66.6	Shear	kip	145.96	-1.52	-12.24	6.724	242.07	8.717	313.80

24.32	66.6	Overload	ksi	-36.00	-3.25	-13.81	99.000	3564.00	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**149.35**	**1.611**	**58.01**	**2.089**	**75.20**
25.55	70.0	Shear	kip	156.95	-1.83	-12.98	6.807	245.04	8.823	317.64
25.55	70.0	Overload	ksi	-36.00	-3.04	-12.96	99.000	3564.00	99.000	3564.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**114.80**	**2.148**	**77.34**	**2.785**	**100.25**
29.20	80.0	Shear	kip	156.95	-2.74	-15.23	5.761	207.39	7.468	268.84
29.20	80.0	Overload	ksi	-36.00	-2.32	-9.96	99.000	3564.00	99.000	3564.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**65.02**	**3.921**	**141.17**	**5.083**	**183.00**
32.85	90.0	Shear	kip	156.95	-3.66	-17.53	4.966	178.78	6.438	231.75
32.85	90.0	Overload	ksi	-36.00	-1.30	-5.64	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-19.90**	**4.342**	**156.32**	**5.629**	**202.64**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B1 (Widened Exterior Girder)
NRL
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**17.99**	**5.798**	**231.91**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**56.11**	**5.484**	**219.37**
3.65	10.0	Shear	kip	156.95	3.66	15.37	6.836	273.43
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.87	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**102.61**	**2.901**	**116.03**
7.30	20.0	Shear	kip	156.95	2.74	13.03	8.126	325.04
7.30	20.0	Overload	ksi	-36.00	-2.32	-8.91	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**139.63**	**2.080**	**83.21**
10.95	30.0	Shear	kip	156.95	1.83	10.95	9.737	389.49
10.95	30.0	Overload	ksi	-36.00	-3.04	-12.12	99.000	3960.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**148.24**	**1.917**	**76.69**
12.16	33.3	Shear	kip	145.96	1.53	10.27	9.672	386.90

12.16	33.3	Overload	ksi	-36.00	-3.22	-12.87	99.000	3960.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**160.23**	**1.758**	**70.31**
14.60	40.0	Shear	kip	145.96	0.91	8.89	11.229	449.16
14.60	40.0	Overload	ksi	-36.00	-3.51	-14.04	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**165.48**	**1.693**	**67.73**
18.25	50.0	Shear	kip	145.96	0.00	6.83	14.728	589.13
18.25	50.0	Overload	ksi	-36.00	-3.66	-14.50	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**160.23**	**1.758**	**70.31**
21.90	60.0	Shear	kip	145.96	-0.91	-8.89	11.229	449.16
21.90	60.0	Overload	ksi	-36.00	-3.51	-14.04	99.000	3960.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**148.36**	**1.916**	**76.62**
24.32	66.6	Shear	kip	145.96	-1.52	-10.26	9.683	387.34
24.32	66.6	Overload	ksi	-36.00	-3.25	-13.00	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**139.63**	**2.080**	**83.21**
25.55	70.0	Shear	kip	156.95	-1.83	-10.95	9.737	389.49
25.55	70.0	Overload	ksi	-36.00	-3.04	-12.12	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**102.61**	**2.901**	**116.03**
29.20	80.0	Shear	kip	156.95	-2.74	-13.03	8.126	325.04
29.20	80.0	Overload	ksi	-36.00	-2.32	-8.91	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**56.11**	**5.484**	**219.37**
32.85	90.0	Shear	kip	156.95	-3.66	-15.37	6.836	273.43
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.87	99.000	3960.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-17.99**	**5.798**	**231.91**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B1 (Widened Exterior Girder)
SU4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**15.79**	**6.605**	**178.34**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**50.64**	**6.077**	**164.09**
3.65	10.0	Shear	kip	156.95	3.66	13.87	7.575	204.53

3.65	10.0	Overload	ksi	-36.00	-1.30	-4.39	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**87.27**	**3.411**	**92.09**
7.30	20.0	Shear	kip	156.95	2.74	11.96	8.856	239.11
7.30	20.0	Overload	ksi	-36.00	-2.32	-7.57	99.000	2673.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**109.91**	**2.643**	**71.35**
10.95	30.0	Shear	kip	156.95	1.83	10.04	10.626	286.91
10.95	30.0	Overload	ksi	-36.00	-3.04	-9.54	99.000	2673.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**115.73**	**2.456**	**66.31**
12.16	33.3	Shear	kip	145.96	1.53	9.40	10.567	285.30
12.16	33.3	Overload	ksi	-36.00	-3.22	-10.04	99.000	2673.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**125.08**	**2.252**	**60.79**
14.60	40.0	Shear	kip	145.96	0.91	8.12	12.300	332.10
14.60	40.0	Overload	ksi	-36.00	-3.51	-10.96	99.000	2673.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**127.40**	**2.200**	**59.39**
18.25	50.0	Shear	kip	145.96	0.00	6.20	16.230	438.21
18.25	50.0	Overload	ksi	-36.00	-3.66	-11.17	99.000	2673.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**125.08**	**2.252**	**60.79**
21.90	60.0	Shear	kip	145.96	-0.91	-8.12	12.300	332.10
21.90	60.0	Overload	ksi	-36.00	-3.51	-10.96	99.000	2673.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**115.83**	**2.453**	**66.24**
24.32	66.6	Shear	kip	145.96	-1.52	-9.39	10.579	285.64
24.32	66.6	Overload	ksi	-36.00	-3.25	-10.15	99.000	2673.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**109.91**	**2.643**	**71.35**
25.55	70.0	Shear	kip	156.95	-1.83	-10.04	10.626	286.91
25.55	70.0	Overload	ksi	-36.00	-3.04	-9.54	99.000	2673.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**87.27**	**3.411**	**92.09**
29.20	80.0	Shear	kip	156.95	-2.74	-11.96	8.856	239.11
29.20	80.0	Overload	ksi	-36.00	-2.32	-7.57	99.000	2673.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**50.64**	**6.077**	**164.09**
32.85	90.0	Shear	kip	156.95	-3.66	-13.87	7.575	204.53
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.39	99.000	2673.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-15.79**	**6.605**	**178.34**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B1 (Widened Exterior Girder)
SU5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3069.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**17.23**	**6.053**	**187.65**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3069.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**54.85**	**5.610**	**173.91**
3.65	10.0	Shear	kip	156.95	3.66	15.03	6.992	216.77
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.76	99.000	3069.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**93.64**	**3.179**	**98.54**
7.30	20.0	Shear	kip	156.95	2.74	12.83	8.254	255.88
7.30	20.0	Overload	ksi	-36.00	-2.32	-8.13	99.000	3069.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**118.62**	**2.449**	**75.91**
10.95	30.0	Shear	kip	156.95	1.83	10.63	10.039	311.20
10.95	30.0	Overload	ksi	-36.00	-3.04	-10.30	99.000	3069.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**125.52**	**2.264**	**70.19**
12.16	33.3	Shear	kip	145.96	1.53	9.90	10.040	311.24
12.16	33.3	Overload	ksi	-36.00	-3.22	-10.89	99.000	3069.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**134.06**	**2.101**	**65.13**
14.60	40.0	Shear	kip	145.96	0.91	8.44	11.840	367.05
14.60	40.0	Overload	ksi	-36.00	-3.51	-11.75	99.000	3069.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**133.43**	**2.100**	**65.10**
18.25	50.0	Shear	kip	145.96	0.00	6.66	15.116	468.58
18.25	50.0	Overload	ksi	-36.00	-3.66	-11.69	99.000	3069.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**134.06**	**2.101**	**65.13**
21.90	60.0	Shear	kip	145.96	-0.91	-8.44	11.840	367.05
21.90	60.0	Overload	ksi	-36.00	-3.51	-11.75	99.000	3069.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**125.62**	**2.262**	**70.13**
24.32	66.6	Shear	kip	145.96	-1.52	-9.88	10.053	311.63
24.32	66.6	Overload	ksi	-36.00	-3.25	-11.01	99.000	3069.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**118.62**	**2.449**	**75.91**
25.55	70.0	Shear	kip	156.95	-1.83	-10.63	10.039	311.20
25.55	70.0	Overload	ksi	-36.00	-3.04	-10.30	99.000	3069.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**93.64**	**3.179**	**98.54**
29.20	80.0	Shear	kip	156.95	-2.74	-12.83	8.254	255.88
29.20	80.0	Overload	ksi	-36.00	-2.32	-8.13	99.000	3069.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**54.85**	**5.610**	**173.91**
32.85	90.0	Shear	kip	156.95	-3.66	-15.03	6.992	216.77
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.76	99.000	3069.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3069.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-17.23**	**6.053**	**187.65**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3069.00

Detailed Rating Results
B1 (Widened Exterior Girder)
SU6
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3440.25
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**17.61**	**5.924**	**205.84**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3440.25
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**55.26**	**5.569**	**193.52**
3.65	10.0	Shear	kip	156.95	3.66	15.14	6.941	241.21
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.80	99.000	3440.25
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**100.88**	**2.951**	**102.53**
7.30	20.0	Shear	kip	156.95	2.74	12.67	8.356	290.36
7.30	20.0	Overload	ksi	-36.00	-2.32	-8.76	99.000	3440.25
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**129.98**	**2.235**	**77.66**
10.95	30.0	Shear	kip	156.95	1.83	10.25	10.403	361.49
10.95	30.0	Overload	ksi	-36.00	-3.04	-11.28	99.000	3440.25
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**135.65**	**2.095**	**72.81**
12.16	33.3	Shear	kip	145.96	1.53	9.57	10.380	360.72
12.16	33.3	Overload	ksi	-36.00	-3.22	-11.77	99.000	3440.25
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**145.03**	**1.942**	**67.48**
14.60	40.0	Shear	kip	145.96	0.91	8.19	12.189	423.57
14.60	40.0	Overload	ksi	-36.00	-3.51	-12.71	99.000	3440.25
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**147.97**	**1.894**	**65.81**
18.25	50.0	Shear	kip	145.96	0.00	6.13	16.410	570.25
18.25	50.0	Overload	ksi	-36.00	-3.66	-12.97	99.000	3440.25
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**145.03**	**1.942**	**67.48**
21.90	60.0	Shear	kip	145.96	-0.91	-8.19	12.189	423.57
21.90	60.0	Overload	ksi	-36.00	-3.51	-12.71	99.000	3440.25
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**135.72**	**2.094**	**72.76**
24.32	66.6	Shear	kip	145.96	-1.52	-9.56	10.393	361.16
24.32	66.6	Overload	ksi	-36.00	-3.25	-11.89	99.000	3440.25
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**129.98**	**2.235**	**77.66**
25.55	70.0	Shear	kip	156.95	-1.83	-10.25	10.403	361.49
25.55	70.0	Overload	ksi	-36.00	-3.04	-11.28	99.000	3440.25

29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**100.88**	**2.951**	**102.53**
29.20	80.0	Shear	kip	156.95	-2.74	-12.67	8.356	290.36
29.20	80.0	Overload	ksi	-36.00	-2.32	-8.76	99.000	3440.25
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**55.26**	**5.569**	**193.52**
32.85	90.0	Shear	kip	156.95	-3.66	-15.14	6.941	241.21
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.80	99.000	3440.25
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3440.25
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-17.61**	**5.924**	**205.84**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3440.25

Detailed Rating Results
B1 (Widened Exterior Girder)
SU7
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3836.25
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**17.74**	**5.878**	**227.78**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3836.25
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**55.26**	**5.569**	**215.79**
3.65	10.0	Shear	kip	156.95	3.66	15.14	6.941	268.98
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.80	99.000	3836.25
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**100.88**	**2.951**	**114.33**
7.30	20.0	Shear	kip	156.95	2.74	12.53	8.446	327.30
7.30	20.0	Overload	ksi	-36.00	-2.32	-8.76	99.000	3836.25
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**135.84**	**2.138**	**82.85**
10.95	30.0	Shear	kip	156.95	1.83	9.98	10.682	413.94
10.95	30.0	Overload	ksi	-36.00	-3.04	-11.79	99.000	3836.25
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**143.53**	**1.980**	**76.73**
12.16	33.3	Shear	kip	145.96	1.53	9.21	10.789	418.08
12.16	33.3	Overload	ksi	-36.00	-3.22	-12.46	99.000	3836.25
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**152.47**	**1.847**	**71.58**
14.60	40.0	Shear	kip	145.96	0.91	7.64	13.070	506.48
14.60	40.0	Overload	ksi	-36.00	-3.51	-13.36	99.000	3836.25
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**156.85**	**1.786**	**69.23**
18.25	50.0	Shear	kip	145.96	0.00	5.43	18.526	717.87
18.25	50.0	Overload	ksi	-36.00	-3.66	-13.75	99.000	3836.25

21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**152.47**	**1.847**	**71.58**
21.90	60.0	Shear	kip	145.96	-0.91	-7.64	13.070	506.48
21.90	60.0	Overload	ksi	-36.00	-3.51	-13.36	99.000	3836.25
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**143.64**	**1.979**	**76.67**
24.32	66.6	Shear	kip	145.96	-1.52	-9.20	10.805	418.69
24.32	66.6	Overload	ksi	-36.00	-3.25	-12.59	99.000	3836.25
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**135.84**	**2.138**	**82.85**
25.55	70.0	Shear	kip	156.95	-1.83	-9.98	10.682	413.94
25.55	70.0	Overload	ksi	-36.00	-3.04	-11.79	99.000	3836.25
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**100.88**	**2.951**	**114.33**
29.20	80.0	Shear	kip	156.95	-2.74	-12.53	8.446	327.30
29.20	80.0	Overload	ksi	-36.00	-2.32	-8.76	99.000	3836.25
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**55.26**	**5.569**	**215.79**
32.85	90.0	Shear	kip	156.95	-3.66	-15.14	6.941	268.98
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.80	99.000	3836.25
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3836.25
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-17.74**	**5.878**	**227.78**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3836.25

Detailed Rating Results
B1 (Widened Exterior Girder)
Type 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2475.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**14.14**	**7.378**	**184.45**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2475.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**45.12**	**6.821**	**170.52**
3.65	10.0	Shear	kip	156.95	3.66	12.36	8.502	212.54
3.65	10.0	Overload	ksi	-36.00	-1.30	-3.92	99.000	2475.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**77.27**	**3.852**	**96.30**
7.30	20.0	Shear	kip	156.95	2.74	10.59	10.002	250.05
7.30	20.0	Overload	ksi	-36.00	-2.32	-6.71	99.000	2475.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**96.47**	**3.011**	**75.28**
10.95	30.0	Shear	kip	156.95	1.83	8.81	12.107	302.69
10.95	30.0	Overload	ksi	-36.00	-3.04	-8.37	99.000	2475.00

12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**99.97**	**2.843**	**71.08**
12.16	33.3	Shear	kip	145.96	1.53	8.22	12.084	302.11
12.16	33.3	Overload	ksi	-36.00	-3.22	-8.68	99.000	2475.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**106.96**	**2.633**	**65.83**
14.60	40.0	Shear	kip	145.96	0.91	7.03	14.199	354.96
14.60	40.0	Overload	ksi	-36.00	-3.51	-9.37	99.000	2475.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**107.33**	**2.611**	**65.27**
18.25	50.0	Shear	kip	145.96	0.00	5.38	18.727	468.17
18.25	50.0	Overload	ksi	-36.00	-3.66	-9.41	99.000	2475.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**106.96**	**2.633**	**65.83**
21.90	60.0	Shear	kip	145.96	-0.91	-7.03	14.199	354.96
21.90	60.0	Overload	ksi	-36.00	-3.51	-9.37	99.000	2475.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**100.01**	**2.841**	**71.04**
24.32	66.6	Shear	kip	145.96	-1.52	-8.21	12.099	302.48
24.32	66.6	Overload	ksi	-36.00	-3.25	-8.77	99.000	2475.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**96.47**	**3.011**	**75.28**
25.55	70.0	Shear	kip	156.95	-1.83	-8.81	12.107	302.69
25.55	70.0	Overload	ksi	-36.00	-3.04	-8.37	99.000	2475.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**77.27**	**3.852**	**96.30**
29.20	80.0	Shear	kip	156.95	-2.74	-10.59	10.002	250.05
29.20	80.0	Overload	ksi	-36.00	-2.32	-6.71	99.000	2475.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**45.12**	**6.821**	**170.52**
32.85	90.0	Shear	kip	156.95	-3.66	-12.36	8.502	212.54
32.85	90.0	Overload	ksi	-36.00	-1.30	-3.92	99.000	2475.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2475.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-14.14**	**7.378**	**184.45**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2475.00

Detailed Rating Results
B1 (Widened Exterior Girder)
Type 3-3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**12.14**	**8.590**	**343.60**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**37.98**	**8.103**	**324.13**
3.65	10.0	Shear	kip	156.95	3.66	10.40	10.100	404.01
3.65	10.0	Overload	ksi	-36.00	-1.30	-3.30	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**64.54**	**4.612**	**184.46**
7.30	20.0	Shear	kip	156.95	2.74	8.84	11.974	478.97
7.30	20.0	Overload	ksi	-36.00	-2.32	-5.60	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**79.71**	**3.644**	**145.76**
10.95	30.0	Shear	kip	156.95	1.83	7.28	14.653	586.12
10.95	30.0	Overload	ksi	-36.00	-3.04	-6.92	99.000	3960.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**83.15**	**3.418**	**136.72**
12.16	33.3	Shear	kip	145.96	1.53	6.76	14.693	587.74
12.16	33.3	Overload	ksi	-36.00	-3.22	-7.22	99.000	3960.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**88.58**	**3.180**	**127.18**
14.60	40.0	Shear	kip	145.96	0.91	5.72	17.470	698.81
14.60	40.0	Overload	ksi	-36.00	-3.51	-7.76	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**87.18**	**3.214**	**128.57**
18.25	50.0	Shear	kip	145.96	0.00	4.43	22.740	909.59
18.25	50.0	Overload	ksi	-36.00	-3.66	-7.64	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**88.58**	**3.180**	**127.18**
21.90	60.0	Shear	kip	145.96	-0.91	-5.72	17.470	698.81
21.90	60.0	Overload	ksi	-36.00	-3.51	-7.76	99.000	3960.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**83.22**	**3.415**	**136.60**
24.32	66.6	Shear	kip	145.96	-1.52	-6.75	14.713	588.51
24.32	66.6	Overload	ksi	-36.00	-3.25	-7.29	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**79.71**	**3.644**	**145.76**
25.55	70.0	Shear	kip	156.95	-1.83	-7.28	14.653	586.12
25.55	70.0	Overload	ksi	-36.00	-3.04	-6.92	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**64.54**	**4.612**	**184.46**
29.20	80.0	Shear	kip	156.95	-2.74	-8.84	11.974	478.97
29.20	80.0	Overload	ksi	-36.00	-2.32	-5.60	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**37.98**	**8.103**	**324.13**
32.85	90.0	Shear	kip	156.95	-3.66	-10.40	10.100	404.01
32.85	90.0	Overload	ksi	-36.00	-1.30	-3.30	99.000	3960.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-12.14**	**8.590**	**343.60**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B1 (Widened Exterior Girder)
Type 3S2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**12.97**	**8.042**	**289.52**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**40.30**	**7.636**	**274.89**
3.65	10.0	Shear	kip	156.95	3.66	11.04	9.518	342.64
3.65	10.0	Overload	ksi	-36.00	-1.30	-3.50	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**69.97**	**4.254**	**153.14**
7.30	20.0	Shear	kip	156.95	2.74	9.59	11.046	397.65
7.30	20.0	Overload	ksi	-36.00	-2.32	-6.07	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**89.01**	**3.263**	**117.47**
10.95	30.0	Shear	kip	156.95	1.83	8.13	13.121	472.36
10.95	30.0	Overload	ksi	-36.00	-3.04	-7.73	99.000	3564.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**92.98**	**3.057**	**110.04**
12.16	33.3	Shear	kip	145.96	1.53	7.65	12.993	467.73
12.16	33.3	Overload	ksi	-36.00	-3.22	-8.07	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**98.71**	**2.853**	**102.72**
14.60	40.0	Shear	kip	145.96	0.91	6.67	14.967	538.80
14.60	40.0	Overload	ksi	-36.00	-3.51	-8.65	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**102.32**	**2.739**	**98.59**
18.25	50.0	Shear	kip	145.96	0.00	5.22	19.294	694.60
18.25	50.0	Overload	ksi	-36.00	-3.66	-8.97	99.000	3564.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**98.71**	**2.853**	**102.72**
21.90	60.0	Shear	kip	145.96	-0.91	-6.67	14.967	538.80
21.90	60.0	Overload	ksi	-36.00	-3.51	-8.65	99.000	3564.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**93.04**	**3.055**	**109.96**
24.32	66.6	Shear	kip	145.96	-1.52	-7.64	13.007	468.24
24.32	66.6	Overload	ksi	-36.00	-3.25	-8.15	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**89.01**	**3.263**	**117.47**
25.55	70.0	Shear	kip	156.95	-1.83	-8.13	13.121	472.36
25.55	70.0	Overload	ksi	-36.00	-3.04	-7.73	99.000	3564.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**69.97**	**4.254**	**153.14**
29.20	80.0	Shear	kip	156.95	-2.74	-9.59	11.046	397.65
29.20	80.0	Overload	ksi	-36.00	-2.32	-6.07	99.000	3564.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**40.30**	**7.636**	**274.89**
32.85	90.0	Shear	kip	156.95	-3.66	-11.04	9.518	342.64
32.85	90.0	Overload	ksi	-36.00	-1.30	-3.50	99.000	3564.00

36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-12.97**	**8.042**	**289.52**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00

Detailed Rating Results
B1 (Widened Exterior Girder)
2F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	1485.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**9.68**	**10.774**	**161.61**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	1485.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**31.44**	**9.786**	**146.79**
3.65	10.0	Shear	kip	156.95	3.66	8.62	12.198	182.97
3.65	10.0	Overload	ksi	-36.00	-1.30	-2.73	99.000	1485.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**55.11**	**5.401**	**81.01**
7.30	20.0	Shear	kip	156.95	2.74	7.55	14.024	210.35
7.30	20.0	Overload	ksi	-36.00	-2.32	-4.78	99.000	1485.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**71.00**	**4.091**	**61.36**
10.95	30.0	Shear	kip	156.95	1.83	6.48	16.449	246.74
10.95	30.0	Overload	ksi	-36.00	-3.04	-6.16	99.000	1485.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**74.56**	**3.812**	**57.18**
12.16	33.3	Shear	kip	145.96	1.53	6.13	16.203	243.05
12.16	33.3	Overload	ksi	-36.00	-3.22	-6.47	99.000	1485.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**79.12**	**3.560**	**53.40**
14.60	40.0	Shear	kip	145.96	0.91	5.42	18.430	276.45
14.60	40.0	Overload	ksi	-36.00	-3.51	-6.93	99.000	1485.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**79.46**	**3.527**	**52.90**
18.25	50.0	Shear	kip	145.96	0.00	4.35	23.121	346.81
18.25	50.0	Overload	ksi	-36.00	-3.66	-6.96	99.000	1485.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**79.12**	**3.560**	**53.40**
21.90	60.0	Shear	kip	145.96	-0.91	-5.42	18.430	276.45
21.90	60.0	Overload	ksi	-36.00	-3.51	-6.93	99.000	1485.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**74.61**	**3.809**	**57.14**
24.32	66.6	Shear	kip	145.96	-1.52	-6.13	16.220	243.29
24.32	66.6	Overload	ksi	-36.00	-3.25	-6.54	99.000	1485.00

25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**71.00**	**4.091**	**61.36**
25.55	70.0	Shear	kip	156.95	-1.83	-6.48	16.449	246.74
25.55	70.0	Overload	ksi	-36.00	-3.04	-6.16	99.000	1485.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**55.11**	**5.401**	**81.01**
29.20	80.0	Shear	kip	156.95	-2.74	-7.55	14.024	210.35
29.20	80.0	Overload	ksi	-36.00	-2.32	-4.78	99.000	1485.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**31.44**	**9.786**	**146.79**
32.85	90.0	Shear	kip	156.95	-3.66	-8.62	12.198	182.97
32.85	90.0	Overload	ksi	-36.00	-1.30	-2.73	99.000	1485.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	1485.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-9.68**	**10.774**	**161.61**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	1485.00

Detailed Rating Results
B1 (Widened Exterior Girder)
3F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2277.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**14.04**	**7.429**	**170.87**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2277.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**45.28**	**6.796**	**156.31**
3.65	10.0	Shear	kip	156.95	3.66	12.41	8.471	194.83
3.65	10.0	Overload	ksi	-36.00	-1.30	-3.93	99.000	2277.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**78.64**	**3.785**	**87.06**
7.30	20.0	Shear	kip	156.95	2.74	10.77	9.829	226.06
7.30	20.0	Overload	ksi	-36.00	-2.32	-6.83	99.000	2277.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**100.07**	**2.903**	**66.76**
10.95	30.0	Shear	kip	156.95	1.83	9.14	11.672	268.45
10.95	30.0	Overload	ksi	-36.00	-3.04	-8.69	99.000	2277.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**104.54**	**2.719**	**62.53**
12.16	33.3	Shear	kip	145.96	1.53	8.60	11.556	265.79
12.16	33.3	Overload	ksi	-36.00	-3.22	-9.07	99.000	2277.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**111.56**	**2.525**	**58.07**
14.60	40.0	Shear	kip	145.96	0.91	7.50	13.308	306.08
14.60	40.0	Overload	ksi	-36.00	-3.51	-9.78	99.000	2277.00

18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**115.68**	**2.422**	**55.71**
18.25	50.0	Shear	kip	145.96	0.00	5.87	17.144	394.32
18.25	50.0	Overload	ksi	-36.00	-3.66	-10.14	99.000	2277.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**111.56**	**2.525**	**58.07**
21.90	60.0	Shear	kip	145.96	-0.91	-7.50	13.308	306.08
21.90	60.0	Overload	ksi	-36.00	-3.51	-9.78	99.000	2277.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**104.60**	**2.717**	**62.49**
24.32	66.6	Shear	kip	145.96	-1.52	-8.59	11.569	266.08
24.32	66.6	Overload	ksi	-36.00	-3.25	-9.17	99.000	2277.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**100.07**	**2.903**	**66.76**
25.55	70.0	Shear	kip	156.95	-1.83	-9.14	11.672	268.45
25.55	70.0	Overload	ksi	-36.00	-3.04	-8.69	99.000	2277.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**78.64**	**3.785**	**87.06**
29.20	80.0	Shear	kip	156.95	-2.74	-10.77	9.829	226.06
29.20	80.0	Overload	ksi	-36.00	-2.32	-6.83	99.000	2277.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**45.28**	**6.796**	**156.31**
32.85	90.0	Shear	kip	156.95	-3.66	-12.41	8.471	194.83
32.85	90.0	Overload	ksi	-36.00	-1.30	-3.93	99.000	2277.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2277.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-14.04**	**7.429**	**170.87**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2277.00

Detailed Rating Results
B1 (Widened Exterior Girder)
4F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**15.44**	**6.755**	**182.39**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**49.36**	**6.235**	**168.34**
3.65	10.0	Shear	kip	156.95	3.66	13.52	7.771	209.82
3.65	10.0	Overload	ksi	-36.00	-1.30	-4.28	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**84.72**	**3.514**	**94.87**
7.30	20.0	Shear	kip	156.95	2.74	11.60	9.123	246.33
7.30	20.0	Overload	ksi	-36.00	-2.32	-7.35	99.000	2673.00

10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**109.20**	**2.660**	**71.82**
10.95	30.0	Shear	kip	156.95	1.83	9.69	11.011	297.29
10.95	30.0	Overload	ksi	-36.00	-3.04	-9.48	99.000	2673.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**115.73**	**2.456**	**66.30**
12.16	33.3	Shear	kip	145.96	1.53	9.05	10.976	296.34
12.16	33.3	Overload	ksi	-36.00	-3.22	-10.05	99.000	2673.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**124.23**	**2.267**	**61.21**
14.60	40.0	Shear	kip	145.96	0.91	7.77	12.854	347.07
14.60	40.0	Overload	ksi	-36.00	-3.51	-10.89	99.000	2673.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**125.27**	**2.237**	**60.40**
18.25	50.0	Shear	kip	145.96	0.00	5.85	17.201	464.44
18.25	50.0	Overload	ksi	-36.00	-3.66	-10.98	99.000	2673.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**124.23**	**2.267**	**61.21**
21.90	60.0	Shear	kip	145.96	-0.91	-7.77	12.854	347.07
21.90	60.0	Overload	ksi	-36.00	-3.51	-10.89	99.000	2673.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**115.83**	**2.453**	**66.24**
24.32	66.6	Shear	kip	145.96	-1.52	-9.04	10.989	296.70
24.32	66.6	Overload	ksi	-36.00	-3.25	-10.15	99.000	2673.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**109.20**	**2.660**	**71.82**
25.55	70.0	Shear	kip	156.95	-1.83	-9.69	11.011	297.29
25.55	70.0	Overload	ksi	-36.00	-3.04	-9.48	99.000	2673.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**84.72**	**3.514**	**94.87**
29.20	80.0	Shear	kip	156.95	-2.74	-11.60	9.123	246.33
29.20	80.0	Overload	ksi	-36.00	-2.32	-7.35	99.000	2673.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**49.36**	**6.235**	**168.34**
32.85	90.0	Shear	kip	156.95	-3.66	-13.52	7.771	209.82
32.85	90.0	Overload	ksi	-36.00	-1.30	-4.28	99.000	2673.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-15.44**	**6.755**	**182.39**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B1 (Widened Exterior Girder)
5C1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)

0.00	0.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**156.95**	**4.57**	**13.81**	**7.555**	**302.19**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**44.43**	**6.926**	**277.06**
3.65	10.0	Shear	kip	156.95	3.66	12.17	8.633	345.34
3.65	10.0	Overload	ksi	-36.00	-1.30	-3.86	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**76.93**	**3.869**	**154.76**
7.30	20.0	Shear	kip	156.95	2.74	10.54	10.046	401.86
7.30	20.0	Overload	ksi	-36.00	-2.32	-6.68	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**97.51**	**2.979**	**119.15**
10.95	30.0	Shear	kip	156.95	1.83	8.90	11.978	479.11
10.95	30.0	Overload	ksi	-36.00	-3.04	-8.46	99.000	3960.00
12.16	**33.3**	**Flexure**	**kip-ft**	**458.46**	**37.08**	**101.70**	**2.795**	**111.78**
12.16	33.3	Shear	kip	145.96	1.53	8.36	11.879	475.15
12.16	33.3	Overload	ksi	-36.00	-3.22	-8.83	99.000	3960.00
14.60	**40.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**108.15**	**2.604**	**104.17**
14.60	40.0	Shear	kip	145.96	0.91	7.27	13.735	549.40
14.60	40.0	Overload	ksi	-36.00	-3.51	-9.48	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**458.46**	**41.73**	**111.42**	**2.515**	**100.60**
18.25	50.0	Shear	kip	145.96	0.00	5.64	17.854	714.17
18.25	50.0	Overload	ksi	-36.00	-3.66	-9.76	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**458.46**	**40.06**	**108.15**	**2.604**	**104.17**
21.90	60.0	Shear	kip	145.96	-0.91	-7.27	13.735	549.40
21.90	60.0	Overload	ksi	-36.00	-3.51	-9.48	99.000	3960.00
24.32	**66.6**	**Flexure**	**kip-ft**	**458.46**	**37.11**	**101.76**	**2.793**	**111.71**
24.32	66.6	Shear	kip	145.96	-1.52	-8.35	11.892	475.68
24.32	66.6	Overload	ksi	-36.00	-3.25	-8.92	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**464.98**	**35.05**	**97.51**	**2.979**	**119.15**
25.55	70.0	Shear	kip	156.95	-1.83	-8.90	11.978	479.11
25.55	70.0	Overload	ksi	-36.00	-3.04	-8.46	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**464.98**	**26.70**	**76.93**	**3.869**	**154.76**
29.20	80.0	Shear	kip	156.95	-2.74	-10.54	10.046	401.86
29.20	80.0	Overload	ksi	-36.00	-2.32	-6.68	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**464.98**	**15.02**	**44.43**	**6.926**	**277.06**
32.85	90.0	Shear	kip	156.95	-3.66	-12.17	8.633	345.34
32.85	90.0	Overload	ksi	-36.00	-1.30	-3.86	99.000	3960.00
36.50	100.0	Flexure	kip-ft	464.98	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**156.95**	**-4.57**	**-13.81**	**7.555**	**302.19**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: South Fog Rd
NBI Structure ID: South Fog Rd
Bridge ID: 207245 X-202B

Analyzed By: BrR
Analyze Date: Wednesday, May 15, 2019 07:05:52
Analysis Engine: AASHTO LRFR Engine Version 6.8.3.3001
Analysis Preference Setting: None

Report By: brr
Report Date: Wednesday, May 15, 2019 07:14:20

Structure Definition Name: Superstructure
Member Name: B2
Member Alternative Name: B2

Load and Resistance Factor Rating Summary

Live Load		Rating Factor	Controls	Girder Summary Capacity (Ton)	Span	Location (ft)	Percent	Impact	Lane
EV2	Legal	2.157	STRENGTH-I Steel Flexure	55.60	1	21.90	60.0	As Requested	As Requested
EV3	Legal	1.421	STRENGTH-I Steel Flexure	54.78	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Inventory	1.178	STRENGTH-I Steel Flexure	42.40	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Operating	1.527	STRENGTH-I Steel Flexure	54.96	1	18.25	50.0	As Requested	As Requested
NRL	Legal	1.484	STRENGTH-I Steel Flexure	59.35	1	18.25	50.0	As Requested	As Requested
SU4	Legal	1.927	STRENGTH-I Steel Flexure	52.03	1	18.25	50.0	As Requested	As Requested
SU5	Legal	1.840	STRENGTH-I Steel Flexure	57.04	1	18.25	50.0	As Requested	As Requested
SU6	Legal	1.659	STRENGTH-I Steel Flexure	57.66	1	18.25	50.0	As Requested	As Requested
SU7	Legal	1.565	STRENGTH-I Steel Flexure	60.66	1	18.25	50.0	As Requested	As Requested
Type 3	Legal	2.287	STRENGTH-I Steel Flexure	57.19	1	18.25	50.0	As Requested	As Requested
Type 3 -3	Legal	2.789	STRENGTH-I Steel Flexure	111.54	1	21.90	60.0	As Requested	As Requested
Type 3S2	Legal	2.400	STRENGTH-I Steel Flexure	86.39	1	18.25	50.0	As Requested	As Requested
2F1	Legal	3.090	STRENGTH-I Steel Flexure	46.35	1	18.25	50.0	As Requested	As Requested
3F1	Legal	2.122	STRENGTH-I Steel Flexure	48.82	1	18.25	50.0	As Requested	As Requested
4F1	Legal	1.960	STRENGTH-I Steel Flexure	52.92	1	18.25	50.0	As Requested	As Requested
5C1	Legal	2.204	STRENGTH-I Steel Flexure	88.15	1	18.25	50.0	As Requested	As Requested

Note:
"N/A" indicates not applicable
"**" indicates not available

Reactions
Live Load EV2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	25.56	Axle Load	0.00	Axle Load
2	5.15	N/A	25.56	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	53.05	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	91.54	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	115.46	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	124.81	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	119.60	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	124.81	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	115.46	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	91.54	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	53.05	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	25.56	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	22.48	Axle Load	-1.80	Axle Load
7.30(B)	20.0	3.09	N/A	19.39	Axle Load	-3.60	Axle Load
10.95(B)	30.0	2.06	N/A	16.31	Axle Load	-5.39	Axle Load
14.60(B)	40.0	1.03	N/A	13.22	Axle Load	-7.19	Axle Load
18.25(B)	50.0	0.00	N/A	10.13	Axle Load	-10.13	Axle Load
21.90(B)	60.0	-1.03	N/A	7.19	Axle Load	-13.22	Axle Load
25.55(B)	70.0	-2.06	N/A	5.39	Axle Load	-16.31	Axle Load
29.20(B)	80.0	-3.09	N/A	3.60	Axle Load	-19.39	Axle Load
32.85(B)	90.0	-4.12	N/A	1.80	Axle Load	-22.48	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-25.56	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load EV3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	37.62	Axle Load	0.00	Axle Load
2	5.15	N/A	37.62	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	77.90	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	134.02	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	168.36	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	185.63	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	188.33	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	185.63	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	168.36	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	134.02	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	77.90	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	37.62	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	33.01	Axle Load	-1.66	Axle Load
7.30(B)	20.0	3.09	N/A	28.39	Axle Load	-4.83	Axle Load
10.95(B)	30.0	2.06	N/A	23.78	Axle Load	-8.16	Axle Load
14.60(B)	40.0	1.03	N/A	19.16	Axle Load	-11.48	Axle Load
18.25(B)	50.0	0.00	N/A	14.81	Axle Load	-14.81	Axle Load
21.90(B)	60.0	-1.03	N/A	11.48	Axle Load	-19.16	Axle Load
25.55(B)	70.0	-2.06	N/A	8.16	Axle Load	-23.78	Axle Load
29.20(B)	80.0	-3.09	N/A	4.83	Axle Load	-28.39	Axle Load
32.85(B)	90.0	-4.12	N/A	1.66	Axle Load	-33.01	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-37.62	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load HL-93 (US)
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
2	5.15	N/A	37.33	Truck + Lane	0.00	Tandem + Lane

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane
3.65(B)	10.0	16.91	N/A	76.70	Truck + Lane	0.00	Tandem + Lane
7.30(B)	20.0	30.06	N/A	130.57	Truck + Lane	0.00	Tandem + Lane
10.95(B)	30.0	39.45	N/A	163.90	Truck + Lane	0.00	Tandem + Lane
14.60(B)	40.0	45.09	N/A	183.81	Tandem + Lane	0.00	Tandem + Lane
18.25(B)	50.0	46.97	N/A	188.25	Tandem + Lane	0.00	Tandem + Lane
21.90(B)	60.0	45.09	N/A	183.81	Tandem + Lane	0.00	Tandem + Lane
25.55(B)	70.0	39.45	N/A	163.90	Truck + Lane	0.00	Tandem + Lane
29.20(B)	80.0	30.06	N/A	130.57	Truck + Lane	0.00	Tandem + Lane
32.85(B)	90.0	16.91	N/A	76.70	Truck + Lane	0.00	Tandem + Lane
36.50(L)	100.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
3.65(B)	10.0	4.12	N/A	32.02	Truck + Lane	-1.97	Truck + Lane
7.30(B)	20.0	3.09	N/A	26.82	Truck + Lane	-4.56	Tandem + Lane
10.95(B)	30.0	2.06	N/A	22.04	Truck + Lane	-7.81	Tandem + Lane
14.60(B)	40.0	1.03	N/A	18.21	Tandem + Lane	-11.17	Tandem + Lane
18.25(B)	50.0	0.00	N/A	14.64	Tandem + Lane	-14.64	Tandem + Lane
21.90(B)	60.0	-1.03	N/A	11.17	Tandem + Lane	-18.21	Tandem + Lane
25.55(B)	70.0	-2.06	N/A	7.81	Tandem + Lane	-22.04	Truck + Lane
29.20(B)	80.0	-3.09	N/A	4.56	Tandem + Lane	-26.82	Truck + Lane
32.85(B)	90.0	-4.12	N/A	1.97	Truck + Lane	-32.02	Truck + Lane
36.50(L)	100.0	-5.15	N/A	-0.00	Tandem + Lane	-37.33	Truck + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load NRL
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	30.32	Axle Load	0.00	Axle Load
2	5.15	N/A	30.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	61.15	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	111.84	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	152.18	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	174.63	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	180.36	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	174.63	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	152.18	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	111.84	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	61.15	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	30.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	25.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	21.96	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	18.46	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.03	N/A	14.99	Axle Load	-8.23	Axle Load
18.25(B)	50.0	0.00	N/A	11.52	Axle Load	-11.52	Axle Load
21.90(B)	60.0	-1.03	N/A	8.23	Axle Load	-14.99	Axle Load
25.55(B)	70.0	-2.06	N/A	5.38	Axle Load	-18.46	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-21.96	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-25.91	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-30.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU4
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	26.61	Axle Load	0.00	Axle Load
2	5.15	N/A	26.61	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	55.19	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	95.12	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	119.79	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	136.33	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	138.85	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	136.33	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	119.79	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	95.12	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	55.19	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	26.61	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	23.38	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	20.15	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	16.92	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.03	N/A	13.69	Axle Load	-7.89	Axle Load
18.25(B)	50.0	0.00	N/A	10.45	Axle Load	-10.45	Axle Load
21.90(B)	60.0	-1.03	N/A	7.89	Axle Load	-13.69	Axle Load
25.55(B)	70.0	-2.06	N/A	5.38	Axle Load	-16.92	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-20.15	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-23.38	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-26.61	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU5
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	29.04	Axle Load	0.00	Axle Load
2	5.15	N/A	29.04	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	59.78	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	102.05	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	129.28	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	146.11	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	145.43	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	146.11	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	129.28	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	102.05	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	59.78	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	29.04	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	25.33	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	21.62	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	17.91	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.03	N/A	14.22	Axle Load	-8.23	Axle Load
18.25(B)	50.0	0.00	N/A	11.22	Axle Load	-11.22	Axle Load
21.90(B)	60.0	-1.03	N/A	8.23	Axle Load	-14.22	Axle Load
25.55(B)	70.0	-2.06	N/A	5.38	Axle Load	-17.91	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-21.62	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-25.33	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-29.04	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU6
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	29.67	Axle Load	0.00	Axle Load
2	5.15	N/A	29.67	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	60.22	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	109.95	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	141.66	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	158.07	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	161.27	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	158.07	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	141.66	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	109.95	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	60.22	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	29.67	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	3.09	N/A	21.36	Axle Load	-1.88	Axle Load
10.95(B)	30.0	2.06	N/A	17.28	Axle Load	-4.20	Axle Load
14.60(B)	40.0	1.03	N/A	13.81	Axle Load	-7.05	Axle Load
18.25(B)	50.0	0.00	N/A	10.34	Axle Load	-10.34	Axle Load
21.90(B)	60.0	-1.03	N/A	7.05	Axle Load	-13.81	Axle Load
25.55(B)	70.0	-2.06	N/A	4.20	Axle Load	-17.28	Axle Load
29.20(B)	80.0	-3.09	N/A	1.88	Axle Load	-21.36	Axle Load
32.85(B)	90.0	-4.12	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-29.67	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU7
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	29.90	Axle Load	0.00	Axle Load
2	5.15	N/A	29.90	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	60.22	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	109.95	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	148.05	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	166.18	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	170.95	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	166.18	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	148.05	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	109.95	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	60.22	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	29.90	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	3.09	N/A	21.13	Axle Load	-1.39	Axle Load
10.95(B)	30.0	2.06	N/A	16.83	Axle Load	-3.17	Axle Load
14.60(B)	40.0	1.03	N/A	12.88	Axle Load	-5.87	Axle Load
18.25(B)	50.0	0.00	N/A	9.16	Axle Load	-9.16	Axle Load
21.90(B)	60.0	-1.03	N/A	5.87	Axle Load	-12.88	Axle Load
25.55(B)	70.0	-2.06	N/A	3.17	Axle Load	-16.83	Axle Load
29.20(B)	80.0	-3.09	N/A	1.39	Axle Load	-21.13	Axle Load
32.85(B)	90.0	-4.12	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-29.90	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	23.83	Axle Load	0.00	Axle Load
2	5.15	N/A	23.83	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	49.17	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	84.22	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	105.14	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	116.57	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	116.98	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	116.57	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	105.14	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	84.22	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	49.17	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	23.83	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	20.83	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	17.84	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	14.85	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.03	N/A	11.86	Axle Load	-7.02	Axle Load
18.25(B)	50.0	0.00	N/A	9.06	Axle Load	-9.06	Axle Load
21.90(B)	60.0	-1.03	N/A	7.02	Axle Load	-11.86	Axle Load
25.55(B)	70.0	-2.06	N/A	4.99	Axle Load	-14.85	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-17.84	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-20.83	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-23.83	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3-3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	20.46	Axle Load	0.00	Axle Load
2	5.15	N/A	20.46	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	41.39	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	70.35	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	86.87	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	96.54	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	95.02	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	96.54	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	86.87	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	70.35	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	41.39	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	20.46	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	17.54	Axle Load	-0.84	Axle Load
7.30(B)	20.0	3.09	N/A	14.90	Axle Load	-2.43	Axle Load
10.95(B)	30.0	2.06	N/A	12.27	Axle Load	-4.11	Axle Load
14.60(B)	40.0	1.03	N/A	9.64	Axle Load	-5.78	Axle Load
18.25(B)	50.0	0.00	N/A	7.46	Axle Load	-7.46	Axle Load
21.90(B)	60.0	-1.03	N/A	5.78	Axle Load	-9.64	Axle Load
25.55(B)	70.0	-2.06	N/A	4.11	Axle Load	-12.27	Axle Load
29.20(B)	80.0	-3.09	N/A	2.43	Axle Load	-14.90	Axle Load
32.85(B)	90.0	-4.12	N/A	0.84	Axle Load	-17.54	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-20.46	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3S2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	21.86	Axle Load	0.00	Axle Load
2	5.15	N/A	21.86	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	43.92	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	76.26	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	97.01	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	107.58	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	111.51	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	107.58	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	97.01	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	76.26	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	43.92	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	21.86	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	18.61	Axle Load	-0.93	Axle Load
7.30(B)	20.0	3.09	N/A	16.15	Axle Load	-2.69	Axle Load
10.95(B)	30.0	2.06	N/A	13.70	Axle Load	-4.55	Axle Load
14.60(B)	40.0	1.03	N/A	11.25	Axle Load	-6.40	Axle Load
18.25(B)	50.0	0.00	N/A	8.79	Axle Load	-8.79	Axle Load
21.90(B)	60.0	-1.03	N/A	6.40	Axle Load	-11.25	Axle Load
25.55(B)	70.0	-2.06	N/A	4.55	Axle Load	-13.70	Axle Load
29.20(B)	80.0	-3.09	N/A	2.69	Axle Load	-16.15	Axle Load
32.85(B)	90.0	-4.12	N/A	0.93	Axle Load	-18.61	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-21.86	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 2F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	16.32	Axle Load	0.00	Axle Load
2	5.15	N/A	16.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	34.27	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	60.07	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	77.39	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	86.23	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	86.60	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	86.23	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	77.39	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	60.07	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	34.27	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	16.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	14.52	Axle Load	-1.20	Axle Load
7.30(B)	20.0	3.09	N/A	12.72	Axle Load	-2.39	Axle Load
10.95(B)	30.0	2.06	N/A	10.93	Axle Load	-3.75	Axle Load
14.60(B)	40.0	1.03	N/A	9.13	Axle Load	-5.54	Axle Load
18.25(B)	50.0	0.00	N/A	7.34	Axle Load	-7.34	Axle Load
21.90(B)	60.0	-1.03	N/A	5.54	Axle Load	-9.13	Axle Load
25.55(B)	70.0	-2.06	N/A	3.75	Axle Load	-10.93	Axle Load
29.20(B)	80.0	-3.09	N/A	2.39	Axle Load	-12.72	Axle Load
32.85(B)	90.0	-4.12	N/A	1.20	Axle Load	-14.52	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-16.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 3F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	23.66	Axle Load	0.00	Axle Load
2	5.15	N/A	23.66	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	49.35	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	85.70	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	109.06	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	121.59	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	126.08	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	121.59	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	109.06	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	85.70	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	49.35	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	23.66	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	20.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	18.16	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	15.40	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.03	N/A	12.65	Axle Load	-7.14	Axle Load
18.25(B)	50.0	0.00	N/A	9.90	Axle Load	-9.90	Axle Load
21.90(B)	60.0	-1.03	N/A	7.14	Axle Load	-12.65	Axle Load
25.55(B)	70.0	-2.06	N/A	4.99	Axle Load	-15.40	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-18.16	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-20.91	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-23.66	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 4F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	26.02	Axle Load	0.00	Axle Load
2	5.15	N/A	26.02	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	53.79	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	92.33	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	119.02	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	135.40	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	136.52	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	135.40	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	119.02	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	92.33	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	53.79	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	26.02	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	22.79	Axle Load	-0.84	Axle Load
7.30(B)	20.0	3.09	N/A	19.56	Axle Load	-2.43	Axle Load
10.95(B)	30.0	2.06	N/A	16.33	Axle Load	-4.79	Axle Load
14.60(B)	40.0	1.03	N/A	13.09	Axle Load	-7.30	Axle Load
18.25(B)	50.0	0.00	N/A	9.86	Axle Load	-9.86	Axle Load
21.90(B)	60.0	-1.03	N/A	7.30	Axle Load	-13.09	Axle Load
25.55(B)	70.0	-2.06	N/A	4.79	Axle Load	-16.33	Axle Load
29.20(B)	80.0	-3.09	N/A	2.43	Axle Load	-19.56	Axle Load
32.85(B)	90.0	-4.12	N/A	0.84	Axle Load	-22.79	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-26.02	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 5C1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	5.15	N/A	23.27	Axle Load	0.00	Axle Load
2	5.15	N/A	23.27	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	16.91	N/A	48.42	Axle Load	0.00	Axle Load
7.30(B)	20.0	30.06	N/A	83.85	Axle Load	0.00	Axle Load
10.95(B)	30.0	39.45	N/A	106.27	Axle Load	0.00	Axle Load
14.60(B)	40.0	45.09	N/A	117.87	Axle Load	0.00	Axle Load
18.25(B)	50.0	46.97	N/A	121.43	Axle Load	0.00	Axle Load
21.90(B)	60.0	45.09	N/A	117.87	Axle Load	0.00	Axle Load
25.55(B)	70.0	39.45	N/A	106.27	Axle Load	0.00	Axle Load
29.20(B)	80.0	30.06	N/A	83.85	Axle Load	0.00	Axle Load
32.85(B)	90.0	16.91	N/A	48.42	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	5.15	N/A	23.27	Axle Load	0.00	Axle Load
3.65(B)	10.0	4.12	N/A	20.51	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.09	N/A	17.76	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.06	N/A	15.01	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.03	N/A	12.26	Axle Load	-7.02	Axle Load
18.25(B)	50.0	0.00	N/A	9.50	Axle Load	-9.50	Axle Load
21.90(B)	60.0	-1.03	N/A	7.02	Axle Load	-12.26	Axle Load
25.55(B)	70.0	-2.06	N/A	4.99	Axle Load	-15.01	Axle Load
29.20(B)	80.0	-3.09	N/A	2.95	Axle Load	-17.76	Axle Load
32.85(B)	90.0	-4.12	N/A	1.02	Axle Load	-20.51	Axle Load
36.50(L)	100.0	-5.15	N/A	-0.00	Axle Load	-23.27	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Report by Action: ☑ Flexure ☑ Shear ☑ Overload ☑ Critical

Detailed Rating Results
B2
EV2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2551.81
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**25.56**	**3.671**	**94.63**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2551.81
3.65	10.0	Flexure	kip-ft	446.71	16.91	53.05	5.532	142.60
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**22.48**	**4.215**	**108.64**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.74	99.000	2551.81
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**91.54**	**3.083**	**79.45**
7.30	20.0	Shear	kip	142.51	3.09	19.39	4.931	127.10
7.30	20.0	Overload	ksi	-36.00	-2.68	-8.17	99.000	2551.81
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**115.46**	**2.374**	**61.19**
10.95	30.0	Shear	kip	142.51	2.06	16.31	5.919	152.56
10.95	30.0	Overload	ksi	-36.00	-3.52	-10.31	99.000	2551.81
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**124.81**	**2.157**	**55.60**
14.60	40.0	Shear	kip	142.51	1.03	13.22	7.367	189.89
14.60	40.0	Overload	ksi	-36.00	-4.03	-11.15	99.000	2551.81
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**119.60**	**2.237**	**57.67**
18.25	50.0	Shear	kip	142.51	0.00	10.13	9.698	249.96
18.25	50.0	Overload	ksi	-36.00	-4.19	-10.68	99.000	2551.81
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**124.81**	**2.157**	**55.60**
21.90	60.0	Shear	kip	142.51	-1.03	-13.22	7.367	189.89
21.90	60.0	Overload	ksi	-36.00	-4.03	-11.15	99.000	2551.81
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**115.46**	**2.374**	**61.19**
25.55	70.0	Shear	kip	142.51	-2.06	-16.31	5.919	152.56
25.55	70.0	Overload	ksi	-36.00	-3.52	-10.31	99.000	2551.81
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**91.54**	**3.083**	**79.45**
29.20	80.0	Shear	kip	142.51	-3.09	-19.39	4.931	127.10
29.20	80.0	Overload	ksi	-36.00	-2.68	-8.17	99.000	2551.81
32.85	90.0	Flexure	kip-ft	446.71	16.91	53.05	5.532	142.60

32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-22.48**	**4.215**	**108.64**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.74	99.000	2551.81
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2551.81
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-25.56**	**3.671**	**94.63**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2551.81

Detailed Rating Results
B2
EV3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3816.61
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**37.62**	**2.495**	**96.17**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3816.61
3.65	10.0	Flexure	kip-ft	446.71	16.91	77.90	3.767	145.24
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**33.01**	**2.870**	**110.65**
3.65	10.0	Overload	ksi	-36.00	-1.51	-6.96	99.000	3816.61
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**134.02**	**2.105**	**81.16**
7.30	20.0	Shear	kip	142.51	3.09	28.39	3.368	129.84
7.30	20.0	Overload	ksi	-36.00	-2.68	-11.97	99.000	3816.61
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**168.36**	**1.628**	**62.76**
10.95	30.0	Shear	kip	142.51	2.06	23.78	4.059	156.48
10.95	30.0	Overload	ksi	-36.00	-3.52	-15.03	99.000	3816.61
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**185.63**	**1.450**	**55.91**
14.60	40.0	Shear	kip	142.51	1.03	19.16	5.083	195.95
14.60	40.0	Overload	ksi	-36.00	-4.03	-16.58	99.000	3816.61
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**188.33**	**1.421**	**54.78**
18.25	50.0	Shear	kip	142.51	0.00	14.81	6.636	255.81
18.25	50.0	Overload	ksi	-36.00	-4.19	-16.82	99.000	3816.61
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**185.63**	**1.450**	**55.91**
21.90	60.0	Shear	kip	142.51	-1.03	-19.16	5.083	195.95
21.90	60.0	Overload	ksi	-36.00	-4.03	-16.58	99.000	3816.61
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**168.36**	**1.628**	**62.76**
25.55	70.0	Shear	kip	142.51	-2.06	-23.78	4.059	156.48
25.55	70.0	Overload	ksi	-36.00	-3.52	-15.03	99.000	3816.61
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**134.02**	**2.105**	**81.16**

29.20	80.0	Shear	kip	142.51	-3.09	-28.39	3.368	129.84
29.20	80.0	Overload	ksi	-36.00	-2.68	-11.97	99.000	3816.61
32.85	90.0	Flexure	kip-ft	446.71	16.91	77.90	3.767	145.24
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-33.01**	**2.870**	**110.65**
32.85	90.0	Overload	ksi	-36.00	-1.51	-6.96	99.000	3816.61
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3816.61
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-37.62**	**2.495**	**96.17**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3816.61

Detailed Rating Results
B2
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**37.33**	**2.083**	**74.99**	**2.700**	**97.21**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	76.70	3.171	114.15	4.110	147.97
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**32.02**	**2.451**	**88.24**	**3.178**	**114.39**
3.65	10.0	Overload	ksi	-36.00	-1.51	-6.85	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**130.57**	**1.791**	**64.46**	**2.321**	**83.56**
7.30	20.0	Shear	kip	142.51	3.09	26.82	2.954	106.35	3.829	137.86
7.30	20.0	Overload	ksi	-36.00	-2.68	-11.66	99.000	3564.00	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**163.90**	**1.386**	**49.88**	**1.796**	**64.66**
10.95	30.0	Shear	kip	142.51	2.06	22.04	3.628	130.60	4.702	169.29
10.95	30.0	Overload	ksi	-36.00	-3.52	-14.64	99.000	3564.00	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**178.52**	**1.249**	**44.98**	**1.620**	**58.31**
14.60	40.0	Shear	kip	142.51	1.03	17.53	4.604	165.73	5.968	214.84
14.60	40.0	Overload	ksi	-36.00	-4.03	-15.94	99.000	3564.00	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**176.93**	**1.253**	**45.11**	**1.624**	**58.48**
18.25	50.0	Shear	kip	142.51	0.00	13.12	6.207	223.44	8.046	289.65
18.25	50.0	Overload	ksi	-36.00	-4.19	-15.80	99.000	3564.00	99.000	3564.00

21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**178.52**	**1.249**	**44.98**	**1.620**	**58.31**
21.90	60.0	Shear	kip	142.51	-1.03	-17.53	4.604	165.73	5.968	214.84
21.90	60.0	Overload	ksi	-36.00	-4.03	-15.94	99.000	3564.00	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**163.90**	**1.386**	**49.88**	**1.796**	**64.66**
25.55	70.0	Shear	kip	142.51	-2.06	-22.04	3.628	130.60	4.702	169.29
25.55	70.0	Overload	ksi	-36.00	-3.52	-14.64	99.000	3564.00	99.000	3564.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**130.57**	**1.791**	**64.46**	**2.321**	**83.56**
29.20	80.0	Shear	kip	142.51	-3.09	-26.82	2.954	106.35	3.829	137.86
29.20	80.0	Overload	ksi	-36.00	-2.68	-11.66	99.000	3564.00	99.000	3564.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	76.70	3.171	114.15	4.110	147.97
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-32.02**	**2.451**	**88.24**	**3.178**	**114.39**
32.85	90.0	Overload	ksi	-36.00	-1.51	-6.85	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-37.33**	**2.083**	**74.99**	**2.700**	**97.21**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B2
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**33.54**	**2.318**	**83.46**	**3.005**	**108.18**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	70.86	3.432	123.54	4.448	160.15
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**29.55**	**2.656**	**95.62**	**3.443**	**123.96**
3.65	10.0	Overload	ksi	-36.00	-1.51	-6.33	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**125.12**	**1.869**	**67.27**	**2.422**	**87.20**
7.30	20.0	Shear	kip	142.51	3.09	25.66	3.087	111.13	4.002	144.06
7.30	20.0	Overload	ksi	-36.00	-2.68	-11.17	99.000	3564.00	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**162.77**	**1.395**	**50.22**	**1.808**	**65.11**

10.95	30.0	Shear	kip	142.51	2.06	21.88	3.654	131.54	4.737	170.52
10.95	30.0	Overload	ksi	-36.00	-3.52	-14.53	99.000	3564.00	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**183.81**	**1.214**	**43.69**	**1.573**	**56.63**
14.60	40.0	Shear	kip	142.51	1.03	18.21	4.432	159.55	5.745	206.83
14.60	40.0	Overload	ksi	-36.00	-4.03	-16.41	99.000	3564.00	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**188.25**	**1.178**	**42.40**	**1.527**	**54.96**
18.25	50.0	Shear	kip	142.51	0.00	14.64	5.564	200.29	7.212	259.63
18.25	50.0	Overload	ksi	-36.00	-4.19	-16.81	99.000	3564.00	99.000	3564.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**183.81**	**1.214**	**43.69**	**1.573**	**56.63**
21.90	60.0	Shear	kip	142.51	-1.03	-18.21	4.432	159.55	5.745	206.83
21.90	60.0	Overload	ksi	-36.00	-4.03	-16.41	99.000	3564.00	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**162.77**	**1.395**	**50.22**	**1.808**	**65.11**
25.55	70.0	Shear	kip	142.51	-2.06	-21.88	3.654	131.54	4.737	170.52
25.55	70.0	Overload	ksi	-36.00	-3.52	-14.53	99.000	3564.00	99.000	3564.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**125.12**	**1.869**	**67.27**	**2.422**	**87.20**
29.20	80.0	Shear	kip	142.51	-3.09	-25.66	3.087	111.13	4.002	144.06
29.20	80.0	Overload	ksi	-36.00	-2.68	-11.17	99.000	3564.00	99.000	3564.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	70.86	3.432	123.54	4.448	160.15
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-29.55**	**2.656**	**95.62**	**3.443**	**123.96**
32.85	90.0	Overload	ksi	-36.00	-1.51	-6.33	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-33.54**	**2.318**	**83.46**	**3.005**	**108.18**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B2
NRL
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**30.32**	**3.095**	**123.81**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

3.65	10.0	Flexure	kip-ft	446.71	16.91	61.15	4.799	191.97
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**25.91**	**3.656**	**146.25**
3.65	10.0	Overload	ksi	-36.00	-1.51	-5.46	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**111.84**	**2.523**	**100.92**
7.30	20.0	Shear	kip	142.51	3.09	21.96	4.354	174.17
7.30	20.0	Overload	ksi	-36.00	-2.68	-9.99	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**152.18**	**1.801**	**72.04**
10.95	30.0	Shear	kip	142.51	2.06	18.46	5.227	209.09
10.95	30.0	Overload	ksi	-36.00	-3.52	-13.59	99.000	3960.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**174.63**	**1.542**	**61.66**
14.60	40.0	Shear	kip	142.51	1.03	14.99	6.497	259.88
14.60	40.0	Overload	ksi	-36.00	-4.03	-15.59	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**180.36**	**1.484**	**59.35**
18.25	50.0	Shear	kip	142.51	0.00	11.52	8.532	341.28
18.25	50.0	Overload	ksi	-36.00	-4.19	-16.11	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**174.63**	**1.542**	**61.66**
21.90	60.0	Shear	kip	142.51	-1.03	-14.99	6.497	259.88
21.90	60.0	Overload	ksi	-36.00	-4.03	-15.59	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**152.18**	**1.801**	**72.04**
25.55	70.0	Shear	kip	142.51	-2.06	-18.46	5.227	209.09
25.55	70.0	Overload	ksi	-36.00	-3.52	-13.59	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**111.84**	**2.523**	**100.92**
29.20	80.0	Shear	kip	142.51	-3.09	-21.96	4.354	174.17
29.20	80.0	Overload	ksi	-36.00	-2.68	-9.99	99.000	3960.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	61.15	4.799	191.97
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-25.91**	**3.656**	**146.25**
32.85	90.0	Overload	ksi	-36.00	-1.51	-5.46	99.000	3960.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-30.32**	**3.095**	**123.81**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B2
SU4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)

0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**26.61**	**3.526**	**95.21**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	55.19	5.318	143.59
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**23.38**	**4.052**	**109.39**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.93	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**95.12**	**2.967**	**80.10**
7.30	20.0	Shear	kip	142.51	3.09	20.15	4.746	128.13
7.30	20.0	Overload	ksi	-36.00	-2.68	-8.49	99.000	2673.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**119.79**	**2.288**	**61.77**
10.95	30.0	Shear	kip	142.51	2.06	16.92	5.705	154.02
10.95	30.0	Overload	ksi	-36.00	-3.52	-10.70	99.000	2673.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**136.33**	**1.975**	**53.32**
14.60	40.0	Shear	kip	142.51	1.03	13.69	7.117	192.15
14.60	40.0	Overload	ksi	-36.00	-4.03	-12.17	99.000	2673.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**138.85**	**1.927**	**52.03**
18.25	50.0	Shear	kip	142.51	0.00	10.45	9.402	253.85
18.25	50.0	Overload	ksi	-36.00	-4.19	-12.40	99.000	2673.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**136.33**	**1.975**	**53.32**
21.90	60.0	Shear	kip	142.51	-1.03	-13.69	7.117	192.15
21.90	60.0	Overload	ksi	-36.00	-4.03	-12.17	99.000	2673.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**119.79**	**2.288**	**61.77**
25.55	70.0	Shear	kip	142.51	-2.06	-16.92	5.705	154.02
25.55	70.0	Overload	ksi	-36.00	-3.52	-10.70	99.000	2673.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**95.12**	**2.967**	**80.10**
29.20	80.0	Shear	kip	142.51	-3.09	-20.15	4.746	128.13
29.20	80.0	Overload	ksi	-36.00	-2.68	-8.49	99.000	2673.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	55.19	5.318	143.59
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-23.38**	**4.052**	**109.39**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.93	99.000	2673.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-26.61**	**3.526**	**95.21**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B2
SU5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

							Legal	**Legal**

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Rating Factor	Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3069.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**29.04**	**3.232**	**100.18**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3069.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	59.78	4.909	152.19
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**25.33**	**3.740**	**115.94**
3.65	10.0	Overload	ksi	-36.00	-1.51	-5.34	99.000	3069.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**102.05**	**2.765**	**85.71**
7.30	20.0	Shear	kip	142.51	3.09	21.62	4.423	137.11
7.30	20.0	Overload	ksi	-36.00	-2.68	-9.11	99.000	3069.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**129.28**	**2.120**	**65.72**
10.95	30.0	Shear	kip	142.51	2.06	17.91	5.389	167.06
10.95	30.0	Overload	ksi	-36.00	-3.52	-11.54	99.000	3069.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**146.11**	**1.842**	**57.12**
14.60	40.0	Shear	kip	142.51	1.03	14.22	6.851	212.37
14.60	40.0	Overload	ksi	-36.00	-4.03	-13.05	99.000	3069.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**145.43**	**1.840**	**57.04**
18.25	50.0	Shear	kip	142.51	0.00	11.22	8.756	271.45
18.25	50.0	Overload	ksi	-36.00	-4.19	-12.99	99.000	3069.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**146.11**	**1.842**	**57.12**
21.90	60.0	Shear	kip	142.51	-1.03	-14.22	6.851	212.37
21.90	60.0	Overload	ksi	-36.00	-4.03	-13.05	99.000	3069.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**129.28**	**2.120**	**65.72**
25.55	70.0	Shear	kip	142.51	-2.06	-17.91	5.389	167.06
25.55	70.0	Overload	ksi	-36.00	-3.52	-11.54	99.000	3069.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**102.05**	**2.765**	**85.71**
29.20	80.0	Shear	kip	142.51	-3.09	-21.62	4.423	137.11
29.20	80.0	Overload	ksi	-36.00	-2.68	-9.11	99.000	3069.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	59.78	4.909	152.19
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-25.33**	**3.740**	**115.94**
32.85	90.0	Overload	ksi	-36.00	-1.51	-5.34	99.000	3069.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3069.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-29.04**	**3.232**	**100.18**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3069.00

Detailed Rating Results
B2
SU6
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3440.25
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**29.67**	**3.162**	**109.89**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3440.25
3.65	10.0	Flexure	kip-ft	446.71	16.91	60.22	4.873	169.35
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**25.52**	**3.713**	**129.02**
3.65	10.0	Overload	ksi	-36.00	-1.51	-5.38	99.000	3440.25
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**109.95**	**2.566**	**89.18**
7.30	20.0	Shear	kip	142.51	3.09	21.36	4.477	155.59
7.30	20.0	Overload	ksi	-36.00	-2.68	-9.82	99.000	3440.25
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**141.66**	**1.935**	**67.23**
10.95	30.0	Shear	kip	142.51	2.06	17.28	5.584	194.06
10.95	30.0	Overload	ksi	-36.00	-3.52	-12.65	99.000	3440.25
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**158.07**	**1.703**	**59.18**
14.60	40.0	Shear	kip	142.51	1.03	13.81	7.052	245.07
14.60	40.0	Overload	ksi	-36.00	-4.03	-14.12	99.000	3440.25
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**161.27**	**1.659**	**57.66**
18.25	50.0	Shear	kip	142.51	0.00	10.34	9.506	330.34
18.25	50.0	Overload	ksi	-36.00	-4.19	-14.40	99.000	3440.25
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**158.07**	**1.703**	**59.18**
21.90	60.0	Shear	kip	142.51	-1.03	-13.81	7.052	245.07
21.90	60.0	Overload	ksi	-36.00	-4.03	-14.12	99.000	3440.25
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**141.66**	**1.935**	**67.23**
25.55	70.0	Shear	kip	142.51	-2.06	-17.28	5.584	194.06
25.55	70.0	Overload	ksi	-36.00	-3.52	-12.65	99.000	3440.25
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**109.95**	**2.566**	**89.18**
29.20	80.0	Shear	kip	142.51	-3.09	-21.36	4.477	155.59
29.20	80.0	Overload	ksi	-36.00	-2.68	-9.82	99.000	3440.25
32.85	90.0	Flexure	kip-ft	446.71	16.91	60.22	4.873	169.35
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-25.52**	**3.713**	**129.02**
32.85	90.0	Overload	ksi	-36.00	-1.51	-5.38	99.000	3440.25
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3440.25
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-29.67**	**3.162**	**109.89**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3440.25

Detailed Rating Results
B2

SU7
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3836.25
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**29.90**	**3.138**	**121.60**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3836.25
3.65	10.0	Flexure	kip-ft	446.71	16.91	60.22	4.873	188.84
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**25.52**	**3.713**	**143.87**
3.65	10.0	Overload	ksi	-36.00	-1.51	-5.38	99.000	3836.25
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**109.95**	**2.566**	**99.45**
7.30	20.0	Shear	kip	142.51	3.09	21.13	4.526	175.38
7.30	20.0	Overload	ksi	-36.00	-2.68	-9.82	99.000	3836.25
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**148.05**	**1.851**	**71.73**
10.95	30.0	Shear	kip	142.51	2.06	16.83	5.735	222.22
10.95	30.0	Overload	ksi	-36.00	-3.52	-13.22	99.000	3836.25
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**166.18**	**1.620**	**62.78**
14.60	40.0	Shear	kip	142.51	1.03	12.88	7.562	293.05
14.60	40.0	Overload	ksi	-36.00	-4.03	-14.84	99.000	3836.25
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**170.95**	**1.565**	**60.66**
18.25	50.0	Shear	kip	142.51	0.00	9.16	10.732	415.86
18.25	50.0	Overload	ksi	-36.00	-4.19	-15.27	99.000	3836.25
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**166.18**	**1.620**	**62.78**
21.90	60.0	Shear	kip	142.51	-1.03	-12.88	7.562	293.05
21.90	60.0	Overload	ksi	-36.00	-4.03	-14.84	99.000	3836.25
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**148.05**	**1.851**	**71.73**
25.55	70.0	Shear	kip	142.51	-2.06	-16.83	5.735	222.22
25.55	70.0	Overload	ksi	-36.00	-3.52	-13.22	99.000	3836.25
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**109.95**	**2.566**	**99.45**
29.20	80.0	Shear	kip	142.51	-3.09	-21.13	4.526	175.38
29.20	80.0	Overload	ksi	-36.00	-2.68	-9.82	99.000	3836.25
32.85	90.0	Flexure	kip-ft	446.71	16.91	60.22	4.873	188.84
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-25.52**	**3.713**	**143.87**
32.85	90.0	Overload	ksi	-36.00	-1.51	-5.38	99.000	3836.25
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3836.25
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-29.90**	**3.138**	**121.60**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3836.25

Detailed Rating Results
B2
Type 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2475.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**23.83**	**3.939**	**98.47**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2475.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	49.17	5.969	149.22
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**20.83**	**4.547**	**113.68**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.39	99.000	2475.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**84.22**	**3.350**	**83.76**
7.30	20.0	Shear	kip	142.51	3.09	17.84	5.360	133.99
7.30	20.0	Overload	ksi	-36.00	-2.68	-7.52	99.000	2475.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**105.14**	**2.607**	**65.17**
10.95	30.0	Shear	kip	142.51	2.06	14.85	6.500	162.49
10.95	30.0	Overload	ksi	-36.00	-3.52	-9.39	99.000	2475.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**116.57**	**2.309**	**57.73**
14.60	40.0	Shear	kip	142.51	1.03	11.86	8.215	205.38
14.60	40.0	Overload	ksi	-36.00	-4.03	-10.41	99.000	2475.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**116.98**	**2.287**	**57.19**
18.25	50.0	Shear	kip	142.51	0.00	9.06	10.848	271.21
18.25	50.0	Overload	ksi	-36.00	-4.19	-10.45	99.000	2475.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**116.57**	**2.309**	**57.73**
21.90	60.0	Shear	kip	142.51	-1.03	-11.86	8.215	205.38
21.90	60.0	Overload	ksi	-36.00	-4.03	-10.41	99.000	2475.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**105.14**	**2.607**	**65.17**
25.55	70.0	Shear	kip	142.51	-2.06	-14.85	6.500	162.49
25.55	70.0	Overload	ksi	-36.00	-3.52	-9.39	99.000	2475.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**84.22**	**3.350**	**83.76**
29.20	80.0	Shear	kip	142.51	-3.09	-17.84	5.360	133.99
29.20	80.0	Overload	ksi	-36.00	-2.68	-7.52	99.000	2475.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	49.17	5.969	149.22
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-20.83**	**4.547**	**113.68**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.39	99.000	2475.00

36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2475.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-23.83**	**3.939**	**98.47**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2475.00

Detailed Rating Results
B2
Type 3-3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**20.46**	**4.586**	**183.43**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	41.39	7.091	283.65
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**17.54**	**5.402**	**216.09**
3.65	10.0	Overload	ksi	-36.00	-1.51	-3.70	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**70.35**	**4.011**	**160.44**
7.30	20.0	Shear	kip	142.51	3.09	14.90	6.417	256.66
7.30	20.0	Overload	ksi	-36.00	-2.68	-6.28	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**86.87**	**3.155**	**126.19**
10.95	30.0	Shear	kip	142.51	2.06	12.27	7.866	314.65
10.95	30.0	Overload	ksi	-36.00	-3.52	-7.76	99.000	3960.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**96.54**	**2.789**	**111.54**
14.60	40.0	Shear	kip	142.51	1.03	9.64	10.108	404.33
14.60	40.0	Overload	ksi	-36.00	-4.03	-8.62	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**95.02**	**2.816**	**112.65**
18.25	50.0	Shear	kip	142.51	0.00	7.46	13.173	526.92
18.25	50.0	Overload	ksi	-36.00	-4.19	-8.48	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**96.54**	**2.789**	**111.54**
21.90	60.0	Shear	kip	142.51	-1.03	-9.64	10.108	404.33
21.90	60.0	Overload	ksi	-36.00	-4.03	-8.62	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**86.87**	**3.155**	**126.19**
25.55	70.0	Shear	kip	142.51	-2.06	-12.27	7.866	314.65
25.55	70.0	Overload	ksi	-36.00	-3.52	-7.76	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**70.35**	**4.011**	**160.44**
29.20	80.0	Shear	kip	142.51	-3.09	-14.90	6.417	256.66
29.20	80.0	Overload	ksi	-36.00	-2.68	-6.28	99.000	3960.00

32.85	90.0	Flexure	kip-ft	446.71	16.91	41.39	7.091	283.65
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-17.54**	**5.402**	**216.09**
32.85	90.0	Overload	ksi	-36.00	-1.51	-3.70	99.000	3960.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-20.46**	**4.586**	**183.43**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B2
Type 3S2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**21.86**	**4.293**	**154.56**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	43.92	6.682	240.56
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**18.61**	**5.091**	**183.27**
3.65	10.0	Overload	ksi	-36.00	-1.51	-3.92	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**76.26**	**3.700**	**133.20**
7.30	20.0	Shear	kip	142.51	3.09	16.15	5.919	213.08
7.30	20.0	Overload	ksi	-36.00	-2.68	-6.81	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**97.01**	**2.825**	**101.70**
10.95	30.0	Shear	kip	142.51	2.06	13.70	7.044	253.58
10.95	30.0	Overload	ksi	-36.00	-3.52	-8.66	99.000	3564.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**107.58**	**2.502**	**90.09**
14.60	40.0	Shear	kip	142.51	1.03	11.25	8.660	311.74
14.60	40.0	Overload	ksi	-36.00	-4.03	-9.61	99.000	3564.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**111.51**	**2.400**	**86.39**
18.25	50.0	Shear	kip	142.51	0.00	8.79	11.177	402.37
18.25	50.0	Overload	ksi	-36.00	-4.19	-9.96	99.000	3564.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**107.58**	**2.502**	**90.09**
21.90	60.0	Shear	kip	142.51	-1.03	-11.25	8.660	311.74
21.90	60.0	Overload	ksi	-36.00	-4.03	-9.61	99.000	3564.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**97.01**	**2.825**	**101.70**
25.55	70.0	Shear	kip	142.51	-2.06	-13.70	7.044	253.58
25.55	70.0	Overload	ksi	-36.00	-3.52	-8.66	99.000	3564.00

29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**76.26**	**3.700**	**133.20**
29.20	80.0	Shear	kip	142.51	-3.09	-16.15	5.919	213.08
29.20	80.0	Overload	ksi	-36.00	-2.68	-6.81	99.000	3564.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	43.92	6.682	240.56
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-18.61**	**5.091**	**183.27**
32.85	90.0	Overload	ksi	-36.00	-1.51	-3.92	99.000	3564.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-21.86**	**4.293**	**154.56**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3564.00

Detailed Rating Results
B2
2F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	1485.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**16.32**	**5.752**	**86.28**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	1485.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	34.27	8.564	128.46
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**14.52**	**6.524**	**97.86**
3.65	10.0	Overload	ksi	-36.00	-1.51	-3.06	99.000	1485.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**60.07**	**4.697**	**70.46**
7.30	20.0	Shear	kip	142.51	3.09	12.72	7.515	112.72
7.30	20.0	Overload	ksi	-36.00	-2.68	-5.36	99.000	1485.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**77.39**	**3.542**	**53.12**
10.95	30.0	Shear	kip	142.51	2.06	10.93	8.830	132.46
10.95	30.0	Overload	ksi	-36.00	-3.52	-6.91	99.000	1485.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**86.23**	**3.122**	**46.83**
14.60	40.0	Shear	kip	142.51	1.03	9.13	10.663	159.95
14.60	40.0	Overload	ksi	-36.00	-4.03	-7.70	99.000	1485.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**86.60**	**3.090**	**46.35**
18.25	50.0	Shear	kip	142.51	0.00	7.34	13.394	200.91
18.25	50.0	Overload	ksi	-36.00	-4.19	-7.73	99.000	1485.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**86.23**	**3.122**	**46.83**
21.90	60.0	Shear	kip	142.51	-1.03	-9.13	10.663	159.95
21.90	60.0	Overload	ksi	-36.00	-4.03	-7.70	99.000	1485.00

25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**77.39**	**3.542**	**53.12**
25.55	70.0	Shear	kip	142.51	-2.06	-10.93	8.830	132.46
25.55	70.0	Overload	ksi	-36.00	-3.52	-6.91	99.000	1485.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**60.07**	**4.697**	**70.46**
29.20	80.0	Shear	kip	142.51	-3.09	-12.72	7.515	112.72
29.20	80.0	Overload	ksi	-36.00	-2.68	-5.36	99.000	1485.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	34.27	8.564	128.46
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-14.52**	**6.524**	**97.86**
32.85	90.0	Overload	ksi	-36.00	-1.51	-3.06	99.000	1485.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	1485.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-16.32**	**5.752**	**86.28**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	1485.00

Detailed Rating Results
B2
3F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2277.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**23.66**	**3.966**	**91.22**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2277.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	49.35	5.947	136.79
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**20.91**	**4.531**	**104.21**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.41	99.000	2277.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**85.70**	**3.292**	**75.72**
7.30	20.0	Shear	kip	142.51	3.09	18.16	5.267	121.13
7.30	20.0	Overload	ksi	-36.00	-2.68	-7.65	99.000	2277.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**109.06**	**2.513**	**57.80**
10.95	30.0	Shear	kip	142.51	2.06	15.40	6.266	144.11
10.95	30.0	Overload	ksi	-36.00	-3.52	-9.74	99.000	2277.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**121.59**	**2.214**	**50.92**
14.60	40.0	Shear	kip	142.51	1.03	12.65	7.700	177.09
14.60	40.0	Overload	ksi	-36.00	-4.03	-10.86	99.000	2277.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**126.08**	**2.122**	**48.82**
18.25	50.0	Shear	kip	142.51	0.00	9.90	9.932	228.43
18.25	50.0	Overload	ksi	-36.00	-4.19	-11.26	99.000	2277.00

21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**121.59**	**2.214**	**50.92**
21.90	60.0	Shear	kip	142.51	-1.03	-12.65	7.700	177.09
21.90	60.0	Overload	ksi	-36.00	-4.03	-10.86	99.000	2277.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**109.06**	**2.513**	**57.80**
25.55	70.0	Shear	kip	142.51	-2.06	-15.40	6.266	144.11
25.55	70.0	Overload	ksi	-36.00	-3.52	-9.74	99.000	2277.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**85.70**	**3.292**	**75.72**
29.20	80.0	Shear	kip	142.51	-3.09	-18.16	5.267	121.13
29.20	80.0	Overload	ksi	-36.00	-2.68	-7.65	99.000	2277.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	49.35	5.947	136.79
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-20.91**	**4.531**	**104.21**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.41	99.000	2277.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2277.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-23.66**	**3.966**	**91.22**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2277.00

Detailed Rating Results
B2
4F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**26.02**	**3.606**	**97.37**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	53.79	5.456	147.31
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**22.79**	**4.157**	**112.23**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.80	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**92.33**	**3.056**	**82.51**
7.30	20.0	Shear	kip	142.51	3.09	19.56	4.889	132.00
7.30	20.0	Overload	ksi	-36.00	-2.68	-8.24	99.000	2673.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**119.02**	**2.303**	**62.17**
10.95	30.0	Shear	kip	142.51	2.06	16.33	5.911	159.59
10.95	30.0	Overload	ksi	-36.00	-3.52	-10.63	99.000	2673.00
14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**135.40**	**1.988**	**53.68**
14.60	40.0	Shear	kip	142.51	1.03	13.09	7.437	200.81
14.60	40.0	Overload	ksi	-36.00	-4.03	-12.09	99.000	2673.00

18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**136.52**	**1.960**	**52.92**
18.25	50.0	Shear	kip	142.51	0.00	9.86	9.965	269.04
18.25	50.0	Overload	ksi	-36.00	-4.19	-12.19	99.000	2673.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**135.40**	**1.988**	**53.68**
21.90	60.0	Shear	kip	142.51	-1.03	-13.09	7.437	200.81
21.90	60.0	Overload	ksi	-36.00	-4.03	-12.09	99.000	2673.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**119.02**	**2.303**	**62.17**
25.55	70.0	Shear	kip	142.51	-2.06	-16.33	5.911	159.59
25.55	70.0	Overload	ksi	-36.00	-3.52	-10.63	99.000	2673.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**92.33**	**3.056**	**82.51**
29.20	80.0	Shear	kip	142.51	-3.09	-19.56	4.889	132.00
29.20	80.0	Overload	ksi	-36.00	-2.68	-8.24	99.000	2673.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	53.79	5.456	147.31
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-22.79**	**4.157**	**112.23**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.80	99.000	2673.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-26.02**	**3.606**	**97.37**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B2
5C1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**142.51**	**5.15**	**23.27**	**4.033**	**161.33**
0.00	0.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00
3.65	10.0	Flexure	kip-ft	446.71	16.91	48.42	6.061	242.46
3.65	**10.0**	**Shear**	**kip**	**142.51**	**4.12**	**20.51**	**4.618**	**184.71**
3.65	10.0	Overload	ksi	-36.00	-1.51	-4.32	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**83.85**	**3.365**	**134.61**
7.30	20.0	Shear	kip	142.51	3.09	17.76	5.383	215.34
7.30	20.0	Overload	ksi	-36.00	-2.68	-7.49	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**106.27**	**2.579**	**103.15**
10.95	30.0	Shear	kip	142.51	2.06	15.01	6.430	257.20
10.95	30.0	Overload	ksi	-36.00	-3.52	-9.49	99.000	3960.00

14.60	**40.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**117.87**	**2.284**	**91.35**
14.60	40.0	Shear	kip	142.51	1.03	12.26	7.947	317.88
14.60	40.0	Overload	ksi	-36.00	-4.03	-10.53	99.000	3960.00
18.25	**50.0**	**Flexure**	**kip-ft**	**446.71**	**46.97**	**121.43**	**2.204**	**88.15**
18.25	50.0	Shear	kip	142.51	0.00	9.50	10.343	413.71
18.25	50.0	Overload	ksi	-36.00	-4.19	-10.84	99.000	3960.00
21.90	**60.0**	**Flexure**	**kip-ft**	**446.71**	**45.09**	**117.87**	**2.284**	**91.35**
21.90	60.0	Shear	kip	142.51	-1.03	-12.26	7.947	317.88
21.90	60.0	Overload	ksi	-36.00	-4.03	-10.53	99.000	3960.00
25.55	**70.0**	**Flexure**	**kip-ft**	**446.71**	**39.45**	**106.27**	**2.579**	**103.15**
25.55	70.0	Shear	kip	142.51	-2.06	-15.01	6.430	257.20
25.55	70.0	Overload	ksi	-36.00	-3.52	-9.49	99.000	3960.00
29.20	**80.0**	**Flexure**	**kip-ft**	**446.71**	**30.06**	**83.85**	**3.365**	**134.61**
29.20	80.0	Shear	kip	142.51	-3.09	-17.76	5.383	215.34
29.20	80.0	Overload	ksi	-36.00	-2.68	-7.49	99.000	3960.00
32.85	90.0	Flexure	kip-ft	446.71	16.91	48.42	6.061	242.46
32.85	**90.0**	**Shear**	**kip**	**142.51**	**-4.12**	**-20.51**	**4.618**	**184.71**
32.85	90.0	Overload	ksi	-36.00	-1.51	-4.32	99.000	3960.00
36.50	100.0	Flexure	kip-ft	446.71	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**142.51**	**-5.15**	**-23.27**	**4.033**	**161.33**
36.50	100.0	Overload	ksi	-36.00	-0.00	-0.00	99.000	3960.00

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: South Fog Rd
NBI Structure ID: South Fog Rd
Bridge ID: 207245 X-202B

Analyzed By: BrR
Analyze Date: Wednesday, May 15, 2019 07:05:52
Analysis Engine: AASHTO LRFR Engine Version 6.8.3.3001
Analysis Preference Setting: None

Report By: brr
Report Date: Wednesday, May 15, 2019 07:14:21

Structure Definition Name: Superstructure
Member Name: B7
Member Alternative Name: B7 (Original Interior Girder)

Load and Resistance Factor Rating Summary

Live Load		Rating Factor	Controls	Girder Summary Capacity (Ton)	Span	Location (ft)	Percent	Impact	Lane
EV2	Legal	0.619	STRENGTH-I Steel Flexure	15.95	1	14.60	40.0	As Requested	As Requested
EV3	Legal	0.399	STRENGTH-I Steel Flexure	15.37	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Inventory	0.330	STRENGTH-I Steel Flexure	11.90	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Operating	0.428	STRENGTH-I Steel Flexure	15.42	1	18.25	50.0	As Requested	As Requested
NRL	Legal	0.416	STRENGTH-I Steel Flexure	16.65	1	18.25	50.0	As Requested	As Requested
SU4	Legal	0.541	STRENGTH-I Steel Flexure	14.60	1	18.25	50.0	As Requested	As Requested
SU5	Legal	0.516	STRENGTH-I Steel Flexure	16.00	1	18.25	50.0	As Requested	As Requested
SU6	Legal	0.466	STRENGTH-I Steel Flexure	16.18	1	18.25	50.0	As Requested	As Requested
SU7	Legal	0.439	STRENGTH-I Steel Flexure	17.02	1	18.25	50.0	As Requested	As Requested
Type 3	Legal	0.642	STRENGTH-I Steel Flexure	16.04	1	18.25	50.0	As Requested	As Requested
Type 3 -3	Legal	0.790	STRENGTH-I Steel Flexure	31.61	1	18.25	50.0	As Requested	As Requested
Type 3S2	Legal	0.673	STRENGTH-I Steel Flexure	24.24	1	18.25	50.0	As Requested	As Requested
2F1	Legal	0.867	STRENGTH-I Steel Flexure	13.00	1	18.25	50.0	As Requested	As Requested
3F1	Legal	0.595	STRENGTH-I Steel Flexure	13.70	1	18.25	50.0	As Requested	As Requested
4F1	Legal	0.550	STRENGTH-I Steel Flexure	14.85	1	18.25	50.0	As Requested	As Requested
5C1	Legal	0.618	STRENGTH-I Steel Flexure	24.73	1	18.25	50.0	As Requested	As Requested

Note:
"N/A" indicates not applicable
"**" indicates not available

Reactions
Live Load EV2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	25.56	Axle Load	0.00	Axle Load
2	6.50	N/A	25.56	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	50.68	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	87.45	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	110.30	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	119.24	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	114.26	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	119.24	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	110.30	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	87.45	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	50.68	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	25.56	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	22.48	Axle Load	-1.80	Axle Load
7.30(B)	20.0	3.90	N/A	19.39	Axle Load	-3.60	Axle Load
10.95(B)	30.0	2.60	N/A	16.31	Axle Load	-5.39	Axle Load
14.60(B)	40.0	1.30	N/A	13.22	Axle Load	-7.19	Axle Load
18.25(B)	50.0	-0.00	N/A	10.13	Axle Load	-10.13	Axle Load
21.90(B)	60.0	-1.30	N/A	7.19	Axle Load	-13.22	Axle Load
25.55(B)	70.0	-2.60	N/A	5.39	Axle Load	-16.31	Axle Load
29.20(B)	80.0	-3.90	N/A	3.60	Axle Load	-19.39	Axle Load
32.85(B)	90.0	-5.20	N/A	1.80	Axle Load	-22.48	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-25.56	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load EV3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	37.62	Axle Load	0.00	Axle Load
2	6.50	N/A	37.62	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	74.42	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	128.03	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	160.84	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	177.33	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	179.92	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	177.33	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	160.84	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	128.03	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	74.42	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	37.62	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	33.01	Axle Load	-1.66	Axle Load
7.30(B)	20.0	3.90	N/A	28.39	Axle Load	-4.83	Axle Load
10.95(B)	30.0	2.60	N/A	23.78	Axle Load	-8.16	Axle Load
14.60(B)	40.0	1.30	N/A	19.16	Axle Load	-11.48	Axle Load
18.25(B)	50.0	-0.00	N/A	14.81	Axle Load	-14.81	Axle Load
21.90(B)	60.0	-1.30	N/A	11.48	Axle Load	-19.16	Axle Load
25.55(B)	70.0	-2.60	N/A	8.16	Axle Load	-23.78	Axle Load
29.20(B)	80.0	-3.90	N/A	4.83	Axle Load	-28.39	Axle Load
32.85(B)	90.0	-5.20	N/A	1.66	Axle Load	-33.01	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-37.62	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load HL-93 (US)
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
2	6.50	N/A	37.33	Truck + Lane	0.00	Tandem + Lane

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane
3.65(B)	10.0	21.35	N/A	73.27	Truck + Lane	0.00	Tandem + Lane
7.30(B)	20.0	37.96	N/A	124.74	Truck + Lane	0.00	Tandem + Lane
10.95(B)	30.0	49.83	N/A	156.58	Truck + Lane	0.00	Tandem + Lane
14.60(B)	40.0	56.95	N/A	175.60	Tandem + Lane	0.00	Tandem + Lane
18.25(B)	50.0	59.32	N/A	179.84	Tandem + Lane	0.00	Tandem + Lane
21.90(B)	60.0	56.95	N/A	175.60	Tandem + Lane	0.00	Tandem + Lane
25.55(B)	70.0	49.83	N/A	156.58	Truck + Lane	0.00	Tandem + Lane
29.20(B)	80.0	37.96	N/A	124.74	Truck + Lane	0.00	Tandem + Lane
32.85(B)	90.0	21.35	N/A	73.27	Truck + Lane	0.00	Tandem + Lane
36.50(L)	100.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
3.65(B)	10.0	5.20	N/A	32.02	Truck + Lane	-1.97	Truck + Lane
7.30(B)	20.0	3.90	N/A	26.82	Truck + Lane	-4.56	Tandem + Lane
10.95(B)	30.0	2.60	N/A	22.04	Truck + Lane	-7.81	Tandem + Lane
14.60(B)	40.0	1.30	N/A	18.21	Tandem + Lane	-11.17	Tandem + Lane
18.25(B)	50.0	-0.00	N/A	14.64	Tandem + Lane	-14.64	Tandem + Lane
21.90(B)	60.0	-1.30	N/A	11.17	Tandem + Lane	-18.21	Tandem + Lane
25.55(B)	70.0	-2.60	N/A	7.81	Tandem + Lane	-22.04	Truck + Lane
29.20(B)	80.0	-3.90	N/A	4.56	Tandem + Lane	-26.82	Truck + Lane
32.85(B)	90.0	-5.20	N/A	1.97	Truck + Lane	-32.02	Truck + Lane
36.50(L)	100.0	-6.50	N/A	-0.00	Tandem + Lane	-37.33	Truck + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load NRL
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	30.32	Axle Load	0.00	Axle Load
2	6.50	N/A	30.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	58.42	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	106.84	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	145.39	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	166.83	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	172.30	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	166.83	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	145.39	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	106.84	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	58.42	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	30.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	25.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	21.96	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	18.46	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.30	N/A	14.99	Axle Load	-8.23	Axle Load
18.25(B)	50.0	-0.00	N/A	11.52	Axle Load	-11.52	Axle Load
21.90(B)	60.0	-1.30	N/A	8.23	Axle Load	-14.99	Axle Load
25.55(B)	70.0	-2.60	N/A	5.38	Axle Load	-18.46	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-21.96	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-25.91	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-30.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU4
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	26.61	Axle Load	0.00	Axle Load
2	6.50	N/A	26.61	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	52.72	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	90.87	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	114.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	130.24	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	132.64	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	130.24	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	114.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	90.87	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	52.72	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	26.61	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	23.38	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	20.15	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	16.92	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.30	N/A	13.69	Axle Load	-7.89	Axle Load
18.25(B)	50.0	-0.00	N/A	10.45	Axle Load	-10.45	Axle Load
21.90(B)	60.0	-1.30	N/A	7.89	Axle Load	-13.69	Axle Load
25.55(B)	70.0	-2.60	N/A	5.38	Axle Load	-16.92	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-20.15	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-23.38	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-26.61	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU5
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	29.04	Axle Load	0.00	Axle Load
2	6.50	N/A	29.04	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	57.11	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	97.49	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	123.50	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	139.58	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	138.93	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	139.58	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	123.50	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	97.49	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	57.11	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	29.04	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	25.33	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	21.62	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	17.91	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.30	N/A	14.22	Axle Load	-8.23	Axle Load
18.25(B)	50.0	-0.00	N/A	11.22	Axle Load	-11.22	Axle Load
21.90(B)	60.0	-1.30	N/A	8.23	Axle Load	-14.22	Axle Load
25.55(B)	70.0	-2.60	N/A	5.38	Axle Load	-17.91	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-21.62	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-25.33	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-29.04	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU6
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	29.67	Axle Load	0.00	Axle Load
2	6.50	N/A	29.67	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	57.53	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	105.04	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	135.33	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	151.01	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	154.07	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	151.01	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	135.33	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	105.04	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	57.53	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	29.67	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	3.90	N/A	21.36	Axle Load	-1.88	Axle Load
10.95(B)	30.0	2.60	N/A	17.28	Axle Load	-4.20	Axle Load
14.60(B)	40.0	1.30	N/A	13.81	Axle Load	-7.05	Axle Load
18.25(B)	50.0	-0.00	N/A	10.34	Axle Load	-10.34	Axle Load
21.90(B)	60.0	-1.30	N/A	7.05	Axle Load	-13.81	Axle Load
25.55(B)	70.0	-2.60	N/A	4.20	Axle Load	-17.28	Axle Load
29.20(B)	80.0	-3.90	N/A	1.88	Axle Load	-21.36	Axle Load
32.85(B)	90.0	-5.20	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-29.67	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU7
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	29.90	Axle Load	0.00	Axle Load
2	6.50	N/A	29.90	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	57.53	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	105.04	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	141.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	158.75	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	163.31	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	158.75	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	141.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	105.04	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	57.53	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	29.90	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	3.90	N/A	21.13	Axle Load	-1.39	Axle Load
10.95(B)	30.0	2.60	N/A	16.83	Axle Load	-3.17	Axle Load
14.60(B)	40.0	1.30	N/A	12.88	Axle Load	-5.87	Axle Load
18.25(B)	50.0	-0.00	N/A	9.16	Axle Load	-9.16	Axle Load
21.90(B)	60.0	-1.30	N/A	5.87	Axle Load	-12.88	Axle Load
25.55(B)	70.0	-2.60	N/A	3.17	Axle Load	-16.83	Axle Load
29.20(B)	80.0	-3.90	N/A	1.39	Axle Load	-21.13	Axle Load
32.85(B)	90.0	-5.20	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-29.90	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	23.83	Axle Load	0.00	Axle Load
2	6.50	N/A	23.83	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	46.98	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	80.46	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	100.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	111.37	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	111.75	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	111.37	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	100.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	80.46	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	46.98	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	23.83	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	20.83	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	17.84	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	14.85	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.30	N/A	11.86	Axle Load	-7.02	Axle Load
18.25(B)	50.0	-0.00	N/A	9.06	Axle Load	-9.06	Axle Load
21.90(B)	60.0	-1.30	N/A	7.02	Axle Load	-11.86	Axle Load
25.55(B)	70.0	-2.60	N/A	4.99	Axle Load	-14.85	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-17.84	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-20.83	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-23.83	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3-3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	20.46	Axle Load	0.00	Axle Load
2	6.50	N/A	20.46	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	39.54	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	67.20	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	82.99	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	92.23	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	90.77	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	92.23	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	82.99	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	67.20	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	39.54	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	20.46	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	17.54	Axle Load	-0.84	Axle Load
7.30(B)	20.0	3.90	N/A	14.90	Axle Load	-2.43	Axle Load
10.95(B)	30.0	2.60	N/A	12.27	Axle Load	-4.11	Axle Load
14.60(B)	40.0	1.30	N/A	9.64	Axle Load	-5.78	Axle Load
18.25(B)	50.0	-0.00	N/A	7.46	Axle Load	-7.46	Axle Load
21.90(B)	60.0	-1.30	N/A	5.78	Axle Load	-9.64	Axle Load
25.55(B)	70.0	-2.60	N/A	4.11	Axle Load	-12.27	Axle Load
29.20(B)	80.0	-3.90	N/A	2.43	Axle Load	-14.90	Axle Load
32.85(B)	90.0	-5.20	N/A	0.84	Axle Load	-17.54	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-20.46	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3S2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	21.86	Axle Load	0.00	Axle Load
2	6.50	N/A	21.86	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	41.96	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	72.85	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	92.68	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	102.77	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	106.53	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	102.77	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	92.68	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	72.85	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	41.96	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	21.86	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	18.61	Axle Load	-0.93	Axle Load
7.30(B)	20.0	3.90	N/A	16.15	Axle Load	-2.69	Axle Load
10.95(B)	30.0	2.60	N/A	13.70	Axle Load	-4.55	Axle Load
14.60(B)	40.0	1.30	N/A	11.25	Axle Load	-6.40	Axle Load
18.25(B)	50.0	-0.00	N/A	8.79	Axle Load	-8.79	Axle Load
21.90(B)	60.0	-1.30	N/A	6.40	Axle Load	-11.25	Axle Load
25.55(B)	70.0	-2.60	N/A	4.55	Axle Load	-13.70	Axle Load
29.20(B)	80.0	-3.90	N/A	2.69	Axle Load	-16.15	Axle Load
32.85(B)	90.0	-5.20	N/A	0.93	Axle Load	-18.61	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-21.86	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 2F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	16.32	Axle Load	0.00	Axle Load
2	6.50	N/A	16.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	32.74	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	57.38	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	73.93	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	82.38	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	82.73	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	82.38	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	73.93	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	57.38	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	32.74	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	16.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	14.52	Axle Load	-1.20	Axle Load
7.30(B)	20.0	3.90	N/A	12.72	Axle Load	-2.39	Axle Load
10.95(B)	30.0	2.60	N/A	10.93	Axle Load	-3.75	Axle Load
14.60(B)	40.0	1.30	N/A	9.13	Axle Load	-5.54	Axle Load
18.25(B)	50.0	-0.00	N/A	7.34	Axle Load	-7.34	Axle Load
21.90(B)	60.0	-1.30	N/A	5.54	Axle Load	-9.13	Axle Load
25.55(B)	70.0	-2.60	N/A	3.75	Axle Load	-10.93	Axle Load
29.20(B)	80.0	-3.90	N/A	2.39	Axle Load	-12.72	Axle Load
32.85(B)	90.0	-5.20	N/A	1.20	Axle Load	-14.52	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-16.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 3F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	23.66	Axle Load	0.00	Axle Load
2	6.50	N/A	23.66	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	47.15	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	81.88	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	104.19	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	116.16	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	120.44	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	116.16	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	104.19	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	81.88	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	47.15	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	23.66	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	20.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	18.16	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	15.40	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.30	N/A	12.65	Axle Load	-7.14	Axle Load
18.25(B)	50.0	-0.00	N/A	9.90	Axle Load	-9.90	Axle Load
21.90(B)	60.0	-1.30	N/A	7.14	Axle Load	-12.65	Axle Load
25.55(B)	70.0	-2.60	N/A	4.99	Axle Load	-15.40	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-18.16	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-20.91	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-23.66	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 4F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	26.02	Axle Load	0.00	Axle Load
2	6.50	N/A	26.02	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	51.39	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	88.21	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	113.70	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	129.35	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	130.43	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	129.35	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	113.70	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	88.21	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	51.39	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	26.02	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	22.79	Axle Load	-0.84	Axle Load
7.30(B)	20.0	3.90	N/A	19.56	Axle Load	-2.43	Axle Load
10.95(B)	30.0	2.60	N/A	16.33	Axle Load	-4.79	Axle Load
14.60(B)	40.0	1.30	N/A	13.09	Axle Load	-7.30	Axle Load
18.25(B)	50.0	-0.00	N/A	9.86	Axle Load	-9.86	Axle Load
21.90(B)	60.0	-1.30	N/A	7.30	Axle Load	-13.09	Axle Load
25.55(B)	70.0	-2.60	N/A	4.79	Axle Load	-16.33	Axle Load
29.20(B)	80.0	-3.90	N/A	2.43	Axle Load	-19.56	Axle Load
32.85(B)	90.0	-5.20	N/A	0.84	Axle Load	-22.79	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-26.02	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 5C1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	6.50	N/A	23.27	Axle Load	0.00	Axle Load
2	6.50	N/A	23.27	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	21.35	N/A	46.26	Axle Load	0.00	Axle Load
7.30(B)	20.0	37.96	N/A	80.10	Axle Load	0.00	Axle Load
10.95(B)	30.0	49.83	N/A	101.53	Axle Load	0.00	Axle Load
14.60(B)	40.0	56.95	N/A	112.61	Axle Load	0.00	Axle Load
18.25(B)	50.0	59.32	N/A	116.01	Axle Load	0.00	Axle Load
21.90(B)	60.0	56.95	N/A	112.61	Axle Load	0.00	Axle Load
25.55(B)	70.0	49.83	N/A	101.53	Axle Load	0.00	Axle Load
29.20(B)	80.0	37.96	N/A	80.10	Axle Load	0.00	Axle Load
32.85(B)	90.0	21.35	N/A	46.26	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	6.50	N/A	23.27	Axle Load	0.00	Axle Load
3.65(B)	10.0	5.20	N/A	20.51	Axle Load	-1.02	Axle Load
7.30(B)	20.0	3.90	N/A	17.76	Axle Load	-2.95	Axle Load
10.95(B)	30.0	2.60	N/A	15.01	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.30	N/A	12.26	Axle Load	-7.02	Axle Load
18.25(B)	50.0	-0.00	N/A	9.50	Axle Load	-9.50	Axle Load
21.90(B)	60.0	-1.30	N/A	7.02	Axle Load	-12.26	Axle Load
25.55(B)	70.0	-2.60	N/A	4.99	Axle Load	-15.01	Axle Load
29.20(B)	80.0	-3.90	N/A	2.95	Axle Load	-17.76	Axle Load
32.85(B)	90.0	-5.20	N/A	1.02	Axle Load	-20.51	Axle Load
36.50(L)	100.0	-6.50	N/A	-0.00	Axle Load	-23.27	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Report by Action: ☑ Flexure ☑ Shear ☑ Overload ☑ Critical

Detailed Rating Results
B7 (Original Interior Girder)
EV2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2551.81
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**25.56**	**1.772**	**45.67**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2551.81
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**50.68**	**2.061**	**53.12**
3.65	10.0	Shear	kip	73.79	5.20	22.48	2.065	53.22
3.65	10.0	Overload	ksi	-30.00	-3.90	-9.26	99.000	2551.81
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**87.45**	**1.031**	**26.57**
7.30	20.0	Shear	kip	73.79	3.90	19.39	2.451	63.18
7.30	20.0	Overload	ksi	-30.00	-6.93	-15.97	99.000	2551.81
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**110.30**	**0.724**	**18.67**
10.95	30.0	Shear	kip	73.79	2.60	16.31	2.984	76.90
10.95	30.0	Overload	ksi	-30.00	-9.10	-20.14	73.965	1906.50
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**119.24**	**0.619**	**15.95**
14.60	40.0	Shear	kip	73.79	1.30	13.22	3.765	97.04
14.60	40.0	Overload	ksi	-30.00	-10.40	-21.78	62.450	1609.71
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**114.26**	**0.628**	**16.18**
18.25	50.0	Shear	kip	73.79	0.00	-10.13	5.021	129.43
18.25	50.0	Overload	ksi	-30.00	-10.83	-20.87	63.094	1626.29
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**119.24**	**0.619**	**15.95**
21.90	60.0	Shear	kip	73.79	-1.30	-13.22	3.765	97.04
21.90	60.0	Overload	ksi	-30.00	-10.40	-21.78	62.450	1609.71
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**110.30**	**0.724**	**18.67**
25.55	70.0	Shear	kip	73.79	-2.60	-16.31	2.984	76.90
25.55	70.0	Overload	ksi	-30.00	-9.10	-20.14	73.965	1906.50
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**87.45**	**1.031**	**26.57**
29.20	80.0	Shear	kip	73.79	-3.90	-19.39	2.451	63.18
29.20	80.0	Overload	ksi	-30.00	-6.93	-15.97	99.000	2551.81
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**50.68**	**2.061**	**53.12**

32.85	90.0	Shear	kip	73.79	-5.20	-22.48	2.065	53.22
32.85	90.0	Overload	ksi	-30.00	-3.90	-9.26	99.000	2551.81
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2551.81
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-25.56**	**1.772**	**45.67**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2551.81

Detailed Rating Results
B7 (Original Interior Girder)
EV3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3816.61
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**37.62**	**1.204**	**46.41**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3816.61
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**74.42**	**1.403**	**54.11**
3.65	10.0	Shear	kip	73.79	5.20	33.01	1.406	54.20
3.65	10.0	Overload	ksi	-30.00	-3.90	-13.59	99.000	3816.61
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**128.03**	**0.704**	**27.14**
7.30	20.0	Shear	kip	73.79	3.90	28.39	1.674	64.54
7.30	20.0	Overload	ksi	-30.00	-6.93	-23.38	72.985	2813.69
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**160.84**	**0.497**	**19.15**
10.95	30.0	Shear	kip	73.79	2.60	23.78	2.046	78.88
10.95	30.0	Overload	ksi	-30.00	-9.10	-29.37	50.724	1955.50
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**177.33**	**0.416**	**16.04**
14.60	40.0	Shear	kip	73.79	1.30	19.16	2.597	100.13
14.60	40.0	Overload	ksi	-30.00	-10.40	-32.39	41.991	1618.82
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**179.92**	**0.399**	**15.37**
18.25	50.0	Shear	kip	73.79	0.00	-14.81	3.436	132.46
18.25	50.0	Overload	ksi	-30.00	-10.83	-32.86	40.069	1544.74
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**177.33**	**0.416**	**16.04**
21.90	60.0	Shear	kip	73.79	-1.30	-19.16	2.597	100.13
21.90	60.0	Overload	ksi	-30.00	-10.40	-32.39	41.991	1618.82
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**160.84**	**0.497**	**19.15**
25.55	70.0	Shear	kip	73.79	-2.60	-23.78	2.046	78.88
25.55	70.0	Overload	ksi	-30.00	-9.10	-29.37	50.724	1955.50
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**128.03**	**0.704**	**27.14**

29.20	80.0	Shear	kip	73.79	-3.90	-28.39	1.674	64.54
29.20	80.0	Overload	ksi	-30.00	-6.93	-23.38	72.985	2813.69
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**74.42**	**1.403**	**54.11**
32.85	90.0	Shear	kip	73.79	-5.20	-33.01	1.406	54.20
32.85	90.0	Overload	ksi	-30.00	-3.90	-13.59	99.000	3816.61
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3816.61
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-37.62**	**1.204**	**46.41**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3816.61

Detailed Rating Results
B7 (Original Interior Girder)
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**37.33**	**1.005**	**36.19**	**1.303**	**46.91**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**73.27**	**1.181**	**42.52**	**1.531**	**55.12**
3.65	10.0	Shear	kip	73.79	5.20	32.02	1.201	43.23	1.557	56.04
3.65	10.0	Overload	ksi	-30.00	-3.90	-13.38	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**124.74**	**0.599**	**21.55**	**0.776**	**27.94**
7.30	20.0	Shear	kip	73.79	3.90	26.82	1.468	52.86	1.903	68.52
7.30	20.0	Overload	ksi	-30.00	-6.93	-22.78	74.914	2696.91	74.914	2696.91
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**156.58**	**0.423**	**15.22**	**0.548**	**19.73**
10.95	30.0	Shear	kip	73.79	2.60	22.04	1.829	65.83	2.371	85.34
10.95	30.0	Overload	ksi	-30.00	-9.10	-28.60	52.104	1875.76	52.104	1875.76
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**170.54**	**0.358**	**12.90**	**0.465**	**16.73**
14.60	40.0	Shear	kip	73.79	1.30	17.53	2.353	84.69	3.050	109.79
14.60	40.0	Overload	ksi	-30.00	-10.40	-31.15	43.663	1571.87	43.663	1571.87
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**169.02**	**0.352**	**12.66**	**0.456**	**16.41**

18.25	50.0	Shear	kip	73.79	0.00	-13.12	3.214	115.70	4.166	149.98
18.25	50.0	Overload	ksi	-30.00	-10.83	-30.87	42.652	1535.48	42.652	1535.48
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**170.54**	**0.358**	**12.90**	**0.465**	**16.73**
21.90	60.0	Shear	kip	73.79	-1.30	-17.53	2.353	84.69	3.050	109.79
21.90	60.0	Overload	ksi	-30.00	-10.40	-31.15	43.663	1571.87	43.663	1571.87
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**156.58**	**0.423**	**15.22**	**0.548**	**19.73**
25.55	70.0	Shear	kip	73.79	-2.60	-22.04	1.829	65.83	2.371	85.34
25.55	70.0	Overload	ksi	-30.00	-9.10	-28.60	52.104	1875.76	52.104	1875.76
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**124.74**	**0.599**	**21.55**	**0.776**	**27.94**
29.20	80.0	Shear	kip	73.79	-3.90	-26.82	1.468	52.86	1.903	68.52
29.20	80.0	Overload	ksi	-30.00	-6.93	-22.78	74.914	2696.91	74.914	2696.91
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**73.27**	**1.181**	**42.52**	**1.531**	**55.12**
32.85	90.0	Shear	kip	73.79	-5.20	-32.02	1.201	43.23	1.557	56.04
32.85	90.0	Overload	ksi	-30.00	-3.90	-13.38	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-37.33**	**1.005**	**36.19**	**1.303**	**46.91**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B7 (Original Interior Girder)
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**33.54**	**1.119**	**40.27**	**1.450**	**52.21**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**67.70**	**1.278**	**46.02**	**1.657**	**59.66**
3.65	10.0	Shear	kip	73.79	5.20	29.55	1.301	46.84	1.687	60.72
3.65	10.0	Overload	ksi	-30.00	-3.90	-12.36	99.000	3564.00	99.000	3564.00

7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**119.53**	**0.625**	**22.49**	**0.810**	**29.16**
7.30	20.0	Shear	kip	73.79	3.90	25.66	1.534	55.24	1.989	71.61
7.30	20.0	Overload	ksi	-30.00	-6.93	-21.83	78.177	2814.36	78.177	2814.36
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**155.50**	**0.426**	**15.33**	**0.552**	**19.87**
10.95	30.0	Shear	kip	73.79	2.60	21.88	1.842	66.31	2.388	85.96
10.95	30.0	Overload	ksi	-30.00	-9.10	-28.40	52.465	1888.73	52.465	1888.73
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**175.60**	**0.348**	**12.53**	**0.451**	**16.24**
14.60	40.0	Shear	kip	73.79	1.30	18.21	2.265	81.53	2.936	105.69
14.60	40.0	Overload	ksi	-30.00	-10.40	-32.07	42.405	1526.59	42.405	1526.59
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**179.84**	**0.330**	**11.90**	**0.428**	**15.42**
18.25	50.0	Shear	kip	73.79	0.00	-14.64	2.881	103.71	3.734	134.44
18.25	50.0	Overload	ksi	-30.00	-10.83	-32.84	40.087	1443.14	40.087	1443.14
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**175.60**	**0.348**	**12.53**	**0.451**	**16.24**
21.90	60.0	Shear	kip	73.79	-1.30	-18.21	2.265	81.53	2.936	105.69
21.90	60.0	Overload	ksi	-30.00	-10.40	-32.07	42.405	1526.59	42.405	1526.59
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**155.50**	**0.426**	**15.33**	**0.552**	**19.87**
25.55	70.0	Shear	kip	73.79	-2.60	-21.88	1.842	66.31	2.388	85.96
25.55	70.0	Overload	ksi	-30.00	-9.10	-28.40	52.465	1888.73	52.465	1888.73
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**119.53**	**0.625**	**22.49**	**0.810**	**29.16**
29.20	80.0	Shear	kip	73.79	-3.90	-25.66	1.534	55.24	1.989	71.61
29.20	80.0	Overload	ksi	-30.00	-6.93	-21.83	78.177	2814.36	78.177	2814.36
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**67.70**	**1.278**	**46.02**	**1.657**	**59.66**
32.85	90.0	Shear	kip	73.79	-5.20	-29.55	1.301	46.84	1.687	60.72
32.85	90.0	Overload	ksi	-30.00	-3.90	-12.36	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-33.54**	**1.119**	**40.27**	**1.450**	**52.21**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B7 (Original Interior Girder)
NRL
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**30.32**	**1.494**	**59.75**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**58.42**	**1.788**	**71.51**
3.65	10.0	Shear	kip	73.79	5.20	25.91	1.791	71.64
3.65	10.0	Overload	ksi	-30.00	-3.90	-10.67	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**106.84**	**0.844**	**33.74**
7.30	20.0	Shear	kip	73.79	3.90	21.96	2.164	86.57
7.30	20.0	Overload	ksi	-30.00	-6.93	-19.51	87.464	3498.55
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**145.39**	**0.550**	**21.98**
10.95	30.0	Shear	kip	73.79	2.60	18.46	2.635	105.40
10.95	30.0	Overload	ksi	-30.00	-9.10	-26.55	56.115	2244.58
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**166.83**	**0.442**	**17.69**
14.60	40.0	Shear	kip	73.79	1.30	14.99	3.320	132.80
14.60	40.0	Overload	ksi	-30.00	-10.40	-30.47	44.636	1785.42
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**172.30**	**0.416**	**16.65**
18.25	50.0	Shear	kip	73.79	0.00	-11.52	4.418	176.71
18.25	50.0	Overload	ksi	-30.00	-10.83	-31.47	41.841	1673.64
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**166.83**	**0.442**	**17.69**
21.90	60.0	Shear	kip	73.79	-1.30	-14.99	3.320	132.80
21.90	60.0	Overload	ksi	-30.00	-10.40	-30.47	44.636	1785.42
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**145.39**	**0.550**	**21.98**
25.55	70.0	Shear	kip	73.79	-2.60	-18.46	2.635	105.40
25.55	70.0	Overload	ksi	-30.00	-9.10	-26.55	56.115	2244.58
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**106.84**	**0.844**	**33.74**
29.20	80.0	Shear	kip	73.79	-3.90	-21.96	2.164	86.57
29.20	80.0	Overload	ksi	-30.00	-6.93	-19.51	87.464	3498.55
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**58.42**	**1.788**	**71.51**
32.85	90.0	Shear	kip	73.79	-5.20	-25.91	1.791	71.64
32.85	90.0	Overload	ksi	-30.00	-3.90	-10.67	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-30.32**	**1.494**	**59.75**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B7 (Original Interior Girder)

SU4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**26.61**	**1.702**	**45.94**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**52.72**	**1.981**	**53.49**
3.65	10.0	Shear	kip	73.79	5.20	23.38	1.985	53.59
3.65	10.0	Overload	ksi	-30.00	-3.90	-9.63	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**90.87**	**0.992**	**26.78**
7.30	20.0	Shear	kip	73.79	3.90	20.15	2.359	63.69
7.30	20.0	Overload	ksi	-30.00	-6.93	-16.60	99.000	2673.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**114.44**	**0.698**	**18.85**
10.95	30.0	Shear	kip	73.79	2.60	16.92	2.876	77.64
10.95	30.0	Overload	ksi	-30.00	-9.10	-20.90	71.289	1924.82
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**130.24**	**0.566**	**15.29**
14.60	40.0	Shear	kip	73.79	1.30	13.69	3.637	98.19
14.60	40.0	Overload	ksi	-30.00	-10.40	-23.79	57.176	1543.75
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**132.64**	**0.541**	**14.60**
18.25	50.0	Shear	kip	73.79	0.00	-10.45	4.868	131.44
18.25	50.0	Overload	ksi	-30.00	-10.83	-24.23	54.349	1467.43
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**130.24**	**0.566**	**15.29**
21.90	60.0	Shear	kip	73.79	-1.30	-13.69	3.637	98.19
21.90	60.0	Overload	ksi	-30.00	-10.40	-23.79	57.176	1543.75
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**114.44**	**0.698**	**18.85**
25.55	70.0	Shear	kip	73.79	-2.60	-16.92	2.876	77.64
25.55	70.0	Overload	ksi	-30.00	-9.10	-20.90	71.289	1924.82
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**90.87**	**0.992**	**26.78**
29.20	80.0	Shear	kip	73.79	-3.90	-20.15	2.359	63.69
29.20	80.0	Overload	ksi	-30.00	-6.93	-16.60	99.000	2673.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**52.72**	**1.981**	**53.49**
32.85	90.0	Shear	kip	73.79	-5.20	-23.38	1.985	53.59
32.85	90.0	Overload	ksi	-30.00	-3.90	-9.63	99.000	2673.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-26.61**	**1.702**	**45.94**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B7 (Original Interior Girder)
SU5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3069.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**29.04**	**1.559**	**48.34**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3069.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.11**	**1.829**	**56.69**
3.65	10.0	Shear	kip	73.79	5.20	25.33	1.832	56.80
3.65	10.0	Overload	ksi	-30.00	-3.90	-10.43	99.000	3069.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**97.49**	**0.925**	**28.66**
7.30	20.0	Shear	kip	73.79	3.90	21.62	2.198	68.15
7.30	20.0	Overload	ksi	-30.00	-6.93	-17.81	95.849	2971.32
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**123.50**	**0.647**	**20.06**
10.95	30.0	Shear	kip	73.79	2.60	17.91	2.717	84.22
10.95	30.0	Overload	ksi	-30.00	-9.10	-22.56	66.056	2047.75
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**139.58**	**0.528**	**16.38**
14.60	40.0	Shear	kip	73.79	1.30	14.22	3.501	108.52
14.60	40.0	Overload	ksi	-30.00	-10.40	-25.49	53.347	1653.76
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**138.93**	**0.516**	**16.00**
18.25	50.0	Shear	kip	73.79	0.00	-11.22	4.534	140.55
18.25	50.0	Overload	ksi	-30.00	-10.83	-25.37	51.890	1608.61
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**139.58**	**0.528**	**16.38**
21.90	60.0	Shear	kip	73.79	-1.30	-14.22	3.501	108.52
21.90	60.0	Overload	ksi	-30.00	-10.40	-25.49	53.347	1653.76
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**123.50**	**0.647**	**20.06**
25.55	70.0	Shear	kip	73.79	-2.60	-17.91	2.717	84.22
25.55	70.0	Overload	ksi	-30.00	-9.10	-22.56	66.056	2047.75
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**97.49**	**0.925**	**28.66**
29.20	80.0	Shear	kip	73.79	-3.90	-21.62	2.198	68.15
29.20	80.0	Overload	ksi	-30.00	-6.93	-17.81	95.849	2971.32
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.11**	**1.829**	**56.69**
32.85	90.0	Shear	kip	73.79	-5.20	-25.33	1.832	56.80
32.85	90.0	Overload	ksi	-30.00	-3.90	-10.43	99.000	3069.00

36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3069.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-29.04**	**1.559**	**48.34**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3069.00

Detailed Rating Results
B7 (Original Interior Girder)
SU6
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3440.25
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**29.67**	**1.526**	**53.03**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3440.25
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.53**	**1.815**	**63.09**
3.65	10.0	Shear	kip	73.79	5.20	25.52	1.819	63.20
3.65	10.0	Overload	ksi	-30.00	-3.90	-10.51	99.000	3440.25
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**105.04**	**0.858**	**29.82**
7.30	20.0	Shear	kip	73.79	3.90	21.36	2.225	77.34
7.30	20.0	Overload	ksi	-30.00	-6.93	-19.18	88.966	3091.57
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**135.33**	**0.590**	**20.52**
10.95	30.0	Shear	kip	73.79	2.60	17.28	2.815	97.82
10.95	30.0	Overload	ksi	-30.00	-9.10	-24.72	60.283	2094.85
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**151.01**	**0.489**	**16.98**
14.60	40.0	Shear	kip	73.79	1.30	13.81	3.604	125.23
14.60	40.0	Overload	ksi	-30.00	-10.40	-27.58	49.311	1713.56
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**154.07**	**0.466**	**16.18**
18.25	50.0	Shear	kip	73.79	0.00	-10.34	4.922	171.05
18.25	50.0	Overload	ksi	-30.00	-10.83	-28.14	46.792	1626.04
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**151.01**	**0.489**	**16.98**
21.90	60.0	Shear	kip	73.79	-1.30	-13.81	3.604	125.23
21.90	60.0	Overload	ksi	-30.00	-10.40	-27.58	49.311	1713.56
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**135.33**	**0.590**	**20.52**
25.55	70.0	Shear	kip	73.79	-2.60	-17.28	2.815	97.82
25.55	70.0	Overload	ksi	-30.00	-9.10	-24.72	60.283	2094.85
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**105.04**	**0.858**	**29.82**
29.20	80.0	Shear	kip	73.79	-3.90	-21.36	2.225	77.34
29.20	80.0	Overload	ksi	-30.00	-6.93	-19.18	88.966	3091.57

32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.53**	**1.815**	**63.09**
32.85	90.0	Shear	kip	73.79	-5.20	-25.52	1.819	63.20
32.85	90.0	Overload	ksi	-30.00	-3.90	-10.51	99.000	3440.25
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3440.25
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-29.67**	**1.526**	**53.03**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3440.25

Detailed Rating Results
B7 (Original Interior Girder)
SU7
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3836.25
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**29.90**	**1.514**	**58.68**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3836.25
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.53**	**1.815**	**70.35**
3.65	10.0	Shear	kip	73.79	5.20	25.52	1.819	70.48
3.65	10.0	Overload	ksi	-30.00	-3.90	-10.51	99.000	3836.25
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**105.04**	**0.858**	**33.25**
7.30	20.0	Shear	kip	73.79	3.90	21.13	2.250	87.17
7.30	20.0	Overload	ksi	-30.00	-6.93	-19.18	88.966	3447.44
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**141.44**	**0.565**	**21.89**
10.95	30.0	Shear	kip	73.79	2.60	16.83	2.891	112.02
10.95	30.0	Overload	ksi	-30.00	-9.10	-25.83	57.680	2235.10
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**158.75**	**0.465**	**18.01**
14.60	40.0	Shear	kip	73.79	1.30	12.88	3.865	149.75
14.60	40.0	Overload	ksi	-30.00	-10.40	-28.99	46.906	1817.61
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**163.31**	**0.439**	**17.02**
18.25	50.0	Shear	kip	73.79	0.00	-9.16	5.557	215.33
18.25	50.0	Overload	ksi	-30.00	-10.83	-29.83	44.144	1710.58
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**158.75**	**0.465**	**18.01**
21.90	60.0	Shear	kip	73.79	-1.30	-12.88	3.865	149.75
21.90	60.0	Overload	ksi	-30.00	-10.40	-28.99	46.906	1817.61
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**141.44**	**0.565**	**21.89**
25.55	70.0	Shear	kip	73.79	-2.60	-16.83	2.891	112.02
25.55	70.0	Overload	ksi	-30.00	-9.10	-25.83	57.680	2235.10

29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**105.04**	**0.858**	**33.25**
29.20	80.0	Shear	kip	73.79	-3.90	-21.13	2.250	87.17
29.20	80.0	Overload	ksi	-30.00	-6.93	-19.18	88.966	3447.44
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**57.53**	**1.815**	**70.35**
32.85	90.0	Shear	kip	73.79	-5.20	-25.52	1.819	70.48
32.85	90.0	Overload	ksi	-30.00	-3.90	-10.51	99.000	3836.25
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3836.25
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-29.90**	**1.514**	**58.68**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3836.25

Detailed Rating Results
B7 (Original Interior Girder)
Type 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2475.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**23.83**	**1.901**	**47.52**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2475.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**46.98**	**2.224**	**55.59**
3.65	10.0	Shear	kip	73.79	5.20	20.83	2.228	55.69
3.65	10.0	Overload	ksi	-30.00	-3.90	-8.58	99.000	2475.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**80.46**	**1.120**	**28.01**
7.30	20.0	Shear	kip	73.79	3.90	17.84	2.664	66.60
7.30	20.0	Overload	ksi	-30.00	-6.93	-14.69	99.000	2475.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**100.44**	**0.796**	**19.89**
10.95	30.0	Shear	kip	73.79	2.60	14.85	3.276	81.91
10.95	30.0	Overload	ksi	-30.00	-9.10	-18.34	81.225	2030.63
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**111.37**	**0.662**	**16.56**
14.60	40.0	Shear	kip	73.79	1.30	11.86	4.198	104.95
14.60	40.0	Overload	ksi	-30.00	-10.40	-20.34	66.865	1671.61
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**111.75**	**0.642**	**16.04**
18.25	50.0	Shear	kip	73.79	0.00	-9.06	5.617	140.43
18.25	50.0	Overload	ksi	-30.00	-10.83	-20.41	64.509	1612.73
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**111.37**	**0.662**	**16.56**
21.90	60.0	Shear	kip	73.79	-1.30	-11.86	4.198	104.95
21.90	60.0	Overload	ksi	-30.00	-10.40	-20.34	66.865	1671.61

25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**100.44**	**0.796**	**19.89**
25.55	70.0	Shear	kip	73.79	-2.60	-14.85	3.276	81.91
25.55	70.0	Overload	ksi	-30.00	-9.10	-18.34	81.225	2030.63
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**80.46**	**1.120**	**28.01**
29.20	80.0	Shear	kip	73.79	-3.90	-17.84	2.664	66.60
29.20	80.0	Overload	ksi	-30.00	-6.93	-14.69	99.000	2475.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**46.98**	**2.224**	**55.59**
32.85	90.0	Shear	kip	73.79	-5.20	-20.83	2.228	55.69
32.85	90.0	Overload	ksi	-30.00	-3.90	-8.58	99.000	2475.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2475.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-23.83**	**1.901**	**47.52**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2475.00

Detailed Rating Results
B7 (Original Interior Girder)
Type 3-3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**20.46**	**2.213**	**88.52**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**39.54**	**2.642**	**105.67**
3.65	10.0	Shear	kip	73.79	5.20	17.54	2.646	105.86
3.65	10.0	Overload	ksi	-30.00	-3.90	-7.22	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**67.20**	**1.341**	**53.65**
7.30	20.0	Shear	kip	73.79	3.90	14.90	3.189	127.57
7.30	20.0	Overload	ksi	-30.00	-6.93	-12.27	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**82.99**	**0.963**	**38.51**
10.95	30.0	Shear	kip	73.79	2.60	12.27	3.965	158.61
10.95	30.0	Overload	ksi	-30.00	-9.10	-15.16	98.302	3932.07
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**92.23**	**0.800**	**31.99**
14.60	40.0	Shear	kip	73.79	1.30	9.64	5.165	206.62
14.60	40.0	Overload	ksi	-30.00	-10.40	-16.84	80.739	3229.57
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**90.77**	**0.790**	**31.61**
18.25	50.0	Shear	kip	73.79	0.00	-7.46	6.821	272.84
18.25	50.0	Overload	ksi	-30.00	-10.83	-16.58	79.421	3176.84

21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**92.23**	**0.800**	**31.99**
21.90	60.0	Shear	kip	73.79	-1.30	-9.64	5.165	206.62
21.90	60.0	Overload	ksi	-30.00	-10.40	-16.84	80.739	3229.57
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**82.99**	**0.963**	**38.51**
25.55	70.0	Shear	kip	73.79	-2.60	-12.27	3.965	158.61
25.55	70.0	Overload	ksi	-30.00	-9.10	-15.16	98.302	3932.07
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**67.20**	**1.341**	**53.65**
29.20	80.0	Shear	kip	73.79	-3.90	-14.90	3.189	127.57
29.20	80.0	Overload	ksi	-30.00	-6.93	-12.27	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**39.54**	**2.642**	**105.67**
32.85	90.0	Shear	kip	73.79	-5.20	-17.54	2.646	105.86
32.85	90.0	Overload	ksi	-30.00	-3.90	-7.22	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-20.46**	**2.213**	**88.52**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B7 (Original Interior Girder)
Type 3S2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**21.86**	**2.072**	**74.59**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**41.96**	**2.489**	**89.62**
3.65	10.0	Shear	kip	73.79	5.20	18.61	2.494	89.78
3.65	10.0	Overload	ksi	-30.00	-3.90	-7.66	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**72.85**	**1.237**	**44.54**
7.30	20.0	Shear	kip	73.79	3.90	16.15	2.942	105.91
7.30	20.0	Overload	ksi	-30.00	-6.93	-13.31	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**92.68**	**0.862**	**31.04**
10.95	30.0	Shear	kip	73.79	2.60	13.70	3.551	127.83
10.95	30.0	Overload	ksi	-30.00	-9.10	-16.93	88.025	3168.90
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**102.77**	**0.718**	**25.84**
14.60	40.0	Shear	kip	73.79	1.30	11.25	4.425	159.30
14.60	40.0	Overload	ksi	-30.00	-10.40	-18.77	72.455	2608.38

18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**106.53**	**0.673**	**24.24**
18.25	50.0	Shear	kip	73.79	0.00	-8.79	5.787	208.35
18.25	50.0	Overload	ksi	-30.00	-10.83	-19.46	67.671	2436.17
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**102.77**	**0.718**	**25.84**
21.90	60.0	Shear	kip	73.79	-1.30	-11.25	4.425	159.30
21.90	60.0	Overload	ksi	-30.00	-10.40	-18.77	72.455	2608.38
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**92.68**	**0.862**	**31.04**
25.55	70.0	Shear	kip	73.79	-2.60	-13.70	3.551	127.83
25.55	70.0	Overload	ksi	-30.00	-9.10	-16.93	88.025	3168.90
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**72.85**	**1.237**	**44.54**
29.20	80.0	Shear	kip	73.79	-3.90	-16.15	2.942	105.91
29.20	80.0	Overload	ksi	-30.00	-6.93	-13.31	99.000	3564.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**41.96**	**2.489**	**89.62**
32.85	90.0	Shear	kip	73.79	-5.20	-18.61	2.494	89.78
32.85	90.0	Overload	ksi	-30.00	-3.90	-7.66	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-21.86**	**2.072**	**74.59**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00

Detailed Rating Results
B7 (Original Interior Girder)
2F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	1485.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**16.32**	**2.776**	**41.63**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	1485.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**32.74**	**3.190**	**47.85**
3.65	10.0	Shear	kip	73.79	5.20	14.52	3.196	47.94
3.65	10.0	Overload	ksi	-30.00	-3.90	-5.98	99.000	1485.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**57.38**	**1.571**	**23.56**
7.30	20.0	Shear	kip	73.79	3.90	12.72	3.735	56.03
7.30	20.0	Overload	ksi	-30.00	-6.93	-10.48	99.000	1485.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**73.93**	**1.081**	**16.21**
10.95	30.0	Shear	kip	73.79	2.60	10.93	4.451	66.77
10.95	30.0	Overload	ksi	-30.00	-9.10	-13.50	99.000	1485.00

14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**82.38**	**0.895**	**13.43**
14.60	40.0	Shear	kip	73.79	1.30	9.13	5.449	81.74
14.60	40.0	Overload	ksi	-30.00	-10.40	-15.05	90.393	1355.90
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**82.73**	**0.867**	**13.00**
18.25	50.0	Shear	kip	73.79	0.00	-7.34	6.935	104.03
18.25	50.0	Overload	ksi	-30.00	-10.83	-15.11	87.141	1307.12
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**82.38**	**0.895**	**13.43**
21.90	60.0	Shear	kip	73.79	-1.30	-9.13	5.449	81.74
21.90	60.0	Overload	ksi	-30.00	-10.40	-15.05	90.393	1355.90
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**73.93**	**1.081**	**16.21**
25.55	70.0	Shear	kip	73.79	-2.60	-10.93	4.451	66.77
25.55	70.0	Overload	ksi	-30.00	-9.10	-13.50	99.000	1485.00
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**57.38**	**1.571**	**23.56**
29.20	80.0	Shear	kip	73.79	-3.90	-12.72	3.735	56.03
29.20	80.0	Overload	ksi	-30.00	-6.93	-10.48	99.000	1485.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**32.74**	**3.190**	**47.85**
32.85	90.0	Shear	kip	73.79	-5.20	-14.52	3.196	47.94
32.85	90.0	Overload	ksi	-30.00	-3.90	-5.98	99.000	1485.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	1485.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-16.32**	**2.776**	**41.63**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	1485.00

Detailed Rating Results
B7 (Original Interior Girder)
3F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2277.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**23.66**	**1.914**	**44.02**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2277.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**47.15**	**2.216**	**50.96**
3.65	10.0	Shear	kip	73.79	5.20	20.91	2.220	51.05
3.65	10.0	Overload	ksi	-30.00	-3.90	-8.61	99.000	2277.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**81.88**	**1.101**	**25.32**
7.30	20.0	Shear	kip	73.79	3.90	18.16	2.618	60.21
7.30	20.0	Overload	ksi	-30.00	-6.93	-14.95	99.000	2277.00

10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**104.19**	**0.767**	**17.64**
10.95	30.0	Shear	kip	73.79	2.60	15.40	3.159	72.65
10.95	30.0	Overload	ksi	-30.00	-9.10	-19.03	78.302	1800.95
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**116.16**	**0.635**	**14.61**
14.60	40.0	Shear	kip	73.79	1.30	12.65	3.935	90.50
14.60	40.0	Overload	ksi	-30.00	-10.40	-21.21	64.106	1474.44
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**120.44**	**0.595**	**13.70**
18.25	50.0	Shear	kip	73.79	0.00	-9.90	5.143	118.28
18.25	50.0	Overload	ksi	-30.00	-10.83	-22.00	59.855	1376.67
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**116.16**	**0.635**	**14.61**
21.90	60.0	Shear	kip	73.79	-1.30	-12.65	3.935	90.50
21.90	60.0	Overload	ksi	-30.00	-10.40	-21.21	64.106	1474.44
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**104.19**	**0.767**	**17.64**
25.55	70.0	Shear	kip	73.79	-2.60	-15.40	3.159	72.65
25.55	70.0	Overload	ksi	-30.00	-9.10	-19.03	78.302	1800.95
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**81.88**	**1.101**	**25.32**
29.20	80.0	Shear	kip	73.79	-3.90	-18.16	2.618	60.21
29.20	80.0	Overload	ksi	-30.00	-6.93	-14.95	99.000	2277.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**47.15**	**2.216**	**50.96**
32.85	90.0	Shear	kip	73.79	-5.20	-20.91	2.220	51.05
32.85	90.0	Overload	ksi	-30.00	-3.90	-8.61	99.000	2277.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2277.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-23.66**	**1.914**	**44.02**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2277.00

Detailed Rating Results
B7 (Original Interior Girder)
4F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**26.02**	**1.740**	**46.99**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**51.39**	**2.033**	**54.88**
3.65	10.0	Shear	kip	73.79	5.20	22.79	2.036	54.98
3.65	10.0	Overload	ksi	-30.00	-3.90	-9.39	99.000	2673.00

7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**88.21**	**1.022**	**27.59**
7.30	20.0	Shear	kip	73.79	3.90	19.56	2.430	65.61
7.30	20.0	Overload	ksi	-30.00	-6.93	-16.11	99.000	2673.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**113.70**	**0.703**	**18.98**
10.95	30.0	Shear	kip	73.79	2.60	16.33	2.980	80.45
10.95	30.0	Overload	ksi	-30.00	-9.10	-20.77	71.753	1937.33
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**129.35**	**0.570**	**15.40**
14.60	40.0	Shear	kip	73.79	1.30	13.09	3.801	102.62
14.60	40.0	Overload	ksi	-30.00	-10.40	-23.62	57.568	1554.34
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**130.43**	**0.550**	**14.85**
18.25	50.0	Shear	kip	73.79	0.00	-9.86	5.160	139.31
18.25	50.0	Overload	ksi	-30.00	-10.83	-23.82	55.274	1492.39
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**129.35**	**0.570**	**15.40**
21.90	60.0	Shear	kip	73.79	-1.30	-13.09	3.801	102.62
21.90	60.0	Overload	ksi	-30.00	-10.40	-23.62	57.568	1554.34
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**113.70**	**0.703**	**18.98**
25.55	70.0	Shear	kip	73.79	-2.60	-16.33	2.980	80.45
25.55	70.0	Overload	ksi	-30.00	-9.10	-20.77	71.753	1937.33
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**88.21**	**1.022**	**27.59**
29.20	80.0	Shear	kip	73.79	-3.90	-19.56	2.430	65.61
29.20	80.0	Overload	ksi	-30.00	-6.93	-16.11	99.000	2673.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**51.39**	**2.033**	**54.88**
32.85	90.0	Shear	kip	73.79	-5.20	-22.79	2.036	54.98
32.85	90.0	Overload	ksi	-30.00	-3.90	-9.39	99.000	2673.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-26.02**	**1.740**	**46.99**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B7 (Original Interior Girder)
5C1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**6.50**	**23.27**	**1.946**	**77.85**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**46.26**	**2.258**	**90.32**
3.65	10.0	Shear	kip	73.79	5.20	20.51	2.262	90.48
3.65	10.0	Overload	ksi	-30.00	-3.90	-8.45	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**80.10**	**1.125**	**45.01**
7.30	20.0	Shear	kip	73.79	3.90	17.76	2.676	107.03
7.30	20.0	Overload	ksi	-30.00	-6.93	-14.63	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**101.53**	**0.787**	**31.48**
10.95	30.0	Shear	kip	73.79	2.60	15.01	3.241	129.66
10.95	30.0	Overload	ksi	-30.00	-9.10	-18.54	80.355	3214.22
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**112.61**	**0.655**	**26.20**
14.60	40.0	Shear	kip	73.79	1.30	12.26	4.061	162.44
14.60	40.0	Overload	ksi	-30.00	-10.40	-20.57	66.127	2645.07
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**59.32**	**116.01**	**0.618**	**24.73**
18.25	50.0	Shear	kip	73.79	0.00	-9.50	5.356	214.22
18.25	50.0	Overload	ksi	-30.00	-10.83	-21.19	62.145	2485.78
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**56.95**	**112.61**	**0.655**	**26.20**
21.90	60.0	Shear	kip	73.79	-1.30	-12.26	4.061	162.44
21.90	60.0	Overload	ksi	-30.00	-10.40	-20.57	66.127	2645.07
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**49.83**	**101.53**	**0.787**	**31.48**
25.55	70.0	Shear	kip	73.79	-2.60	-15.01	3.241	129.66
25.55	70.0	Overload	ksi	-30.00	-9.10	-18.54	80.355	3214.22
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**37.96**	**80.10**	**1.125**	**45.01**
29.20	80.0	Shear	kip	73.79	-3.90	-17.76	2.676	107.03
29.20	80.0	Overload	ksi	-30.00	-6.93	-14.63	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**21.35**	**46.26**	**2.258**	**90.32**
32.85	90.0	Shear	kip	73.79	-5.20	-20.51	2.262	90.48
32.85	90.0	Overload	ksi	-30.00	-3.90	-8.45	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-6.50**	**-23.27**	**1.946**	**77.85**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Note:
*Adj-LL is only applicable for Permit load rating.

Bridge Name: South Fog Rd
NBI Structure ID: South Fog Rd
Bridge ID: 207245 X-202B

Analyzed By: BrR
Analyze Date: Wednesday, May 15, 2019 07:05:52
Analysis Engine: AASHTO LRFR Engine Version 6.8.3.3001
Analysis Preference Setting: None

Report By: brr
Report Date: Wednesday, May 15, 2019 07:14:22

Structure Definition Name: Superstructure
Member Name: B8
Member Alternative Name: B8 Original Interior Girder)

Load and Resistance Factor Rating Summary

Live Load		Rating Factor	Controls	Girder Summary Capacity (Ton)	Span	Location (ft)	Percent	Impact	Lane
EV2	Legal	0.488	STRENGTH-I Steel Flexure	12.59	1	18.25	50.0	As Requested	As Requested
EV3	Legal	0.310	STRENGTH-I Steel Flexure	11.95	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Inventory	0.257	STRENGTH-I Steel Flexure	9.25	1	18.25	50.0	As Requested	As Requested
HL-93 (US)	Operating	0.333	STRENGTH-I Steel Flexure	12.00	1	18.25	50.0	As Requested	As Requested
NRL	Legal	0.324	STRENGTH-I Steel Flexure	12.95	1	18.25	50.0	As Requested	As Requested
SU4	Legal	0.421	STRENGTH-I Steel Flexure	11.36	1	18.25	50.0	As Requested	As Requested
SU5	Legal	0.402	STRENGTH-I Steel Flexure	12.45	1	18.25	50.0	As Requested	As Requested
SU6	Legal	0.362	STRENGTH-I Steel Flexure	12.58	1	18.25	50.0	As Requested	As Requested
SU7	Legal	0.342	STRENGTH-I Steel Flexure	13.24	1	18.25	50.0	As Requested	As Requested
Type 3	Legal	0.499	STRENGTH-I Steel Flexure	12.48	1	18.25	50.0	As Requested	As Requested
Type 3 -3	Legal	0.615	STRENGTH-I Steel Flexure	24.58	1	18.25	50.0	As Requested	As Requested
Type 3S2	Legal	0.524	STRENGTH-I Steel Flexure	18.85	1	18.25	50.0	As Requested	As Requested
2F1	Legal	0.674	STRENGTH-I Steel Flexure	10.12	1	18.25	50.0	As Requested	As Requested
3F1	Legal	0.463	STRENGTH-I Steel Flexure	10.65	1	18.25	50.0	As Requested	As Requested
4F1	Legal	0.428	STRENGTH-I Steel Flexure	11.55	1	18.25	50.0	As Requested	As Requested
5C1	Legal	0.481	STRENGTH-I Steel Flexure	19.24	1	18.25	50.0	As Requested	As Requested

Note:
"N/A" indicates not applicable
"**" indicates not available

Reactions
Live Load EV2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	25.56	Axle Load	0.00	Axle Load
2	8.53	N/A	25.56	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	50.68	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	87.45	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	110.30	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	119.24	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	114.26	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	119.24	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	110.30	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	87.45	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	50.68	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	25.56	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	22.48	Axle Load	-1.80	Axle Load
7.30(B)	20.0	5.12	N/A	19.39	Axle Load	-3.60	Axle Load
10.95(B)	30.0	3.41	N/A	16.31	Axle Load	-5.39	Axle Load
14.60(B)	40.0	1.71	N/A	13.22	Axle Load	-7.19	Axle Load
18.25(B)	50.0	-0.00	N/A	10.13	Axle Load	-10.13	Axle Load
21.90(B)	60.0	-1.71	N/A	7.19	Axle Load	-13.22	Axle Load
25.55(B)	70.0	-3.41	N/A	5.39	Axle Load	-16.31	Axle Load
29.20(B)	80.0	-5.12	N/A	3.60	Axle Load	-19.39	Axle Load
32.85(B)	90.0	-6.82	N/A	1.80	Axle Load	-22.48	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-25.56	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load EV3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	37.62	Axle Load	0.00	Axle Load
2	8.53	N/A	37.62	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	74.42	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	128.03	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	160.84	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	177.33	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	179.92	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	177.33	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	160.84	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	128.03	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	74.42	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load EV3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	37.62	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	33.01	Axle Load	-1.66	Axle Load
7.30(B)	20.0	5.12	N/A	28.39	Axle Load	-4.83	Axle Load
10.95(B)	30.0	3.41	N/A	23.78	Axle Load	-8.16	Axle Load
14.60(B)	40.0	1.71	N/A	19.16	Axle Load	-11.48	Axle Load
18.25(B)	50.0	-0.00	N/A	14.81	Axle Load	-14.81	Axle Load
21.90(B)	60.0	-1.71	N/A	11.48	Axle Load	-19.16	Axle Load
25.55(B)	70.0	-3.41	N/A	8.16	Axle Load	-23.78	Axle Load
29.20(B)	80.0	-5.12	N/A	4.83	Axle Load	-28.39	Axle Load
32.85(B)	90.0	-6.82	N/A	1.66	Axle Load	-33.01	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-37.62	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load HL-93 (US)
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
2	8.53	N/A	37.33	Truck + Lane	0.00	Tandem + Lane

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane
3.65(B)	10.0	28.01	N/A	73.27	Truck + Lane	0.00	Tandem + Lane
7.30(B)	20.0	49.79	N/A	124.74	Truck + Lane	0.00	Tandem + Lane
10.95(B)	30.0	65.36	N/A	156.58	Truck + Lane	0.00	Tandem + Lane
14.60(B)	40.0	74.69	N/A	175.60	Tandem + Lane	0.00	Tandem + Lane
18.25(B)	50.0	77.80	N/A	179.84	Tandem + Lane	0.00	Tandem + Lane
21.90(B)	60.0	74.69	N/A	175.60	Tandem + Lane	0.00	Tandem + Lane
25.55(B)	70.0	65.36	N/A	156.58	Truck + Lane	0.00	Tandem + Lane
29.20(B)	80.0	49.79	N/A	124.74	Truck + Lane	0.00	Tandem + Lane
32.85(B)	90.0	28.01	N/A	73.27	Truck + Lane	0.00	Tandem + Lane
36.50(L)	100.0	0.00	N/A	0.00	Tandem + Lane	0.00	Tandem + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load HL-93 (US)
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	37.33	Truck + Lane	0.00	Tandem + Lane
3.65(B)	10.0	6.82	N/A	32.02	Truck + Lane	-1.97	Truck + Lane
7.30(B)	20.0	5.12	N/A	26.82	Truck + Lane	-4.56	Tandem + Lane
10.95(B)	30.0	3.41	N/A	22.04	Truck + Lane	-7.81	Tandem + Lane
14.60(B)	40.0	1.71	N/A	18.21	Tandem + Lane	-11.17	Tandem + Lane
18.25(B)	50.0	-0.00	N/A	14.64	Tandem + Lane	-14.64	Tandem + Lane
21.90(B)	60.0	-1.71	N/A	11.17	Tandem + Lane	-18.21	Tandem + Lane
25.55(B)	70.0	-3.41	N/A	7.81	Tandem + Lane	-22.04	Truck + Lane
29.20(B)	80.0	-5.12	N/A	4.56	Tandem + Lane	-26.82	Truck + Lane
32.85(B)	90.0	-6.82	N/A	1.97	Truck + Lane	-32.02	Truck + Lane
36.50(L)	100.0	-8.53	N/A	-0.00	Tandem + Lane	-37.33	Truck + Lane

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load NRL
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	30.32	Axle Load	0.00	Axle Load
2	8.53	N/A	30.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	58.42	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	106.84	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	145.39	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	166.83	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	172.30	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	166.83	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	145.39	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	106.84	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	58.42	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load NRL
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	30.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	25.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	21.96	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	18.46	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.71	N/A	14.99	Axle Load	-8.23	Axle Load
18.25(B)	50.0	-0.00	N/A	11.52	Axle Load	-11.52	Axle Load
21.90(B)	60.0	-1.71	N/A	8.23	Axle Load	-14.99	Axle Load
25.55(B)	70.0	-3.41	N/A	5.38	Axle Load	-18.46	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-21.96	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-25.91	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-30.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU4
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	26.61	Axle Load	0.00	Axle Load
2	8.53	N/A	26.61	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	52.72	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	90.87	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	114.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	130.24	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	132.64	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	130.24	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	114.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	90.87	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	52.72	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU4
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	26.61	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	23.38	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	20.15	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	16.92	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.71	N/A	13.69	Axle Load	-7.89	Axle Load
18.25(B)	50.0	-0.00	N/A	10.45	Axle Load	-10.45	Axle Load
21.90(B)	60.0	-1.71	N/A	7.89	Axle Load	-13.69	Axle Load
25.55(B)	70.0	-3.41	N/A	5.38	Axle Load	-16.92	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-20.15	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-23.38	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-26.61	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU5
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	29.04	Axle Load	0.00	Axle Load
2	8.53	N/A	29.04	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	57.11	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	97.49	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	123.50	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	139.58	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	138.93	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	139.58	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	123.50	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	97.49	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	57.11	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU5
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	29.04	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	25.33	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	21.62	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	17.91	Axle Load	-5.38	Axle Load
14.60(B)	40.0	1.71	N/A	14.22	Axle Load	-8.23	Axle Load
18.25(B)	50.0	-0.00	N/A	11.22	Axle Load	-11.22	Axle Load
21.90(B)	60.0	-1.71	N/A	8.23	Axle Load	-14.22	Axle Load
25.55(B)	70.0	-3.41	N/A	5.38	Axle Load	-17.91	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-21.62	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-25.33	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-29.04	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU6
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	29.67	Axle Load	0.00	Axle Load
2	8.53	N/A	29.67	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	57.53	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	105.04	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	135.33	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	151.01	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	154.07	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	151.01	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	135.33	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	105.04	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	57.53	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU6
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	29.67	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	5.12	N/A	21.36	Axle Load	-1.88	Axle Load
10.95(B)	30.0	3.41	N/A	17.28	Axle Load	-4.20	Axle Load
14.60(B)	40.0	1.71	N/A	13.81	Axle Load	-7.05	Axle Load
18.25(B)	50.0	-0.00	N/A	10.34	Axle Load	-10.34	Axle Load
21.90(B)	60.0	-1.71	N/A	7.05	Axle Load	-13.81	Axle Load
25.55(B)	70.0	-3.41	N/A	4.20	Axle Load	-17.28	Axle Load
29.20(B)	80.0	-5.12	N/A	1.88	Axle Load	-21.36	Axle Load
32.85(B)	90.0	-6.82	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-29.67	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load SU7
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	29.90	Axle Load	0.00	Axle Load
2	8.53	N/A	29.90	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	57.53	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	105.04	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	141.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	158.75	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	163.31	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	158.75	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	141.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	105.04	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	57.53	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load SU7
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	29.90	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	25.52	Axle Load	-0.69	Axle Load
7.30(B)	20.0	5.12	N/A	21.13	Axle Load	-1.39	Axle Load
10.95(B)	30.0	3.41	N/A	16.83	Axle Load	-3.17	Axle Load
14.60(B)	40.0	1.71	N/A	12.88	Axle Load	-5.87	Axle Load
18.25(B)	50.0	-0.00	N/A	9.16	Axle Load	-9.16	Axle Load
21.90(B)	60.0	-1.71	N/A	5.87	Axle Load	-12.88	Axle Load
25.55(B)	70.0	-3.41	N/A	3.17	Axle Load	-16.83	Axle Load
29.20(B)	80.0	-5.12	N/A	1.39	Axle Load	-21.13	Axle Load
32.85(B)	90.0	-6.82	N/A	0.69	Axle Load	-25.52	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-29.90	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	23.83	Axle Load	0.00	Axle Load
2	8.53	N/A	23.83	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	46.98	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	80.46	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	100.44	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	111.37	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	111.75	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	111.37	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	100.44	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	80.46	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	46.98	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	23.83	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	20.83	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	17.84	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	14.85	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.71	N/A	11.86	Axle Load	-7.02	Axle Load
18.25(B)	50.0	-0.00	N/A	9.06	Axle Load	-9.06	Axle Load
21.90(B)	60.0	-1.71	N/A	7.02	Axle Load	-11.86	Axle Load
25.55(B)	70.0	-3.41	N/A	4.99	Axle Load	-14.85	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-17.84	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-20.83	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-23.83	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3-3
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	20.46	Axle Load	0.00	Axle Load
2	8.53	N/A	20.46	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	39.54	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	67.20	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	82.99	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	92.23	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	90.77	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	92.23	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	82.99	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	67.20	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	39.54	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3-3
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	20.46	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	17.54	Axle Load	-0.84	Axle Load
7.30(B)	20.0	5.12	N/A	14.90	Axle Load	-2.43	Axle Load
10.95(B)	30.0	3.41	N/A	12.27	Axle Load	-4.11	Axle Load
14.60(B)	40.0	1.71	N/A	9.64	Axle Load	-5.78	Axle Load
18.25(B)	50.0	-0.00	N/A	7.46	Axle Load	-7.46	Axle Load
21.90(B)	60.0	-1.71	N/A	5.78	Axle Load	-9.64	Axle Load
25.55(B)	70.0	-3.41	N/A	4.11	Axle Load	-12.27	Axle Load
29.20(B)	80.0	-5.12	N/A	2.43	Axle Load	-14.90	Axle Load
32.85(B)	90.0	-6.82	N/A	0.84	Axle Load	-17.54	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-20.46	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load Type 3S2
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	21.86	Axle Load	0.00	Axle Load
2	8.53	N/A	21.86	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	41.96	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	72.85	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	92.68	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	102.77	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	106.53	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	102.77	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	92.68	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	72.85	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	41.96	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load Type 3S2
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	21.86	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	18.61	Axle Load	-0.93	Axle Load
7.30(B)	20.0	5.12	N/A	16.15	Axle Load	-2.69	Axle Load
10.95(B)	30.0	3.41	N/A	13.70	Axle Load	-4.55	Axle Load
14.60(B)	40.0	1.71	N/A	11.25	Axle Load	-6.40	Axle Load
18.25(B)	50.0	-0.00	N/A	8.79	Axle Load	-8.79	Axle Load
21.90(B)	60.0	-1.71	N/A	6.40	Axle Load	-11.25	Axle Load
25.55(B)	70.0	-3.41	N/A	4.55	Axle Load	-13.70	Axle Load
29.20(B)	80.0	-5.12	N/A	2.69	Axle Load	-16.15	Axle Load
32.85(B)	90.0	-6.82	N/A	0.93	Axle Load	-18.61	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-21.86	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 2F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	16.32	Axle Load	0.00	Axle Load
2	8.53	N/A	16.32	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	32.74	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	57.38	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	73.93	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	82.38	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	82.73	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	82.38	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	73.93	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	57.38	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	32.74	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 2F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	16.32	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	14.52	Axle Load	-1.20	Axle Load
7.30(B)	20.0	5.12	N/A	12.72	Axle Load	-2.39	Axle Load
10.95(B)	30.0	3.41	N/A	10.93	Axle Load	-3.75	Axle Load
14.60(B)	40.0	1.71	N/A	9.13	Axle Load	-5.54	Axle Load
18.25(B)	50.0	-0.00	N/A	7.34	Axle Load	-7.34	Axle Load
21.90(B)	60.0	-1.71	N/A	5.54	Axle Load	-9.13	Axle Load
25.55(B)	70.0	-3.41	N/A	3.75	Axle Load	-10.93	Axle Load
29.20(B)	80.0	-5.12	N/A	2.39	Axle Load	-12.72	Axle Load
32.85(B)	90.0	-6.82	N/A	1.20	Axle Load	-14.52	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-16.32	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 3F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	23.66	Axle Load	0.00	Axle Load
2	8.53	N/A	23.66	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	47.15	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	81.88	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	104.19	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	116.16	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	120.44	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	116.16	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	104.19	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	81.88	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	47.15	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 3F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	23.66	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	20.91	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	18.16	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	15.40	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.71	N/A	12.65	Axle Load	-7.14	Axle Load
18.25(B)	50.0	-0.00	N/A	9.90	Axle Load	-9.90	Axle Load
21.90(B)	60.0	-1.71	N/A	7.14	Axle Load	-12.65	Axle Load
25.55(B)	70.0	-3.41	N/A	4.99	Axle Load	-15.40	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-18.16	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-20.91	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-23.66	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 4F1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	26.02	Axle Load	0.00	Axle Load
2	8.53	N/A	26.02	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	51.39	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	88.21	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	113.70	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	129.35	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	130.43	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	129.35	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	113.70	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	88.21	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	51.39	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 4F1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	26.02	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	22.79	Axle Load	-0.84	Axle Load
7.30(B)	20.0	5.12	N/A	19.56	Axle Load	-2.43	Axle Load
10.95(B)	30.0	3.41	N/A	16.33	Axle Load	-4.79	Axle Load
14.60(B)	40.0	1.71	N/A	13.09	Axle Load	-7.30	Axle Load
18.25(B)	50.0	-0.00	N/A	9.86	Axle Load	-9.86	Axle Load
21.90(B)	60.0	-1.71	N/A	7.30	Axle Load	-13.09	Axle Load
25.55(B)	70.0	-3.41	N/A	4.79	Axle Load	-16.33	Axle Load
29.20(B)	80.0	-5.12	N/A	2.43	Axle Load	-19.56	Axle Load
32.85(B)	90.0	-6.82	N/A	0.84	Axle Load	-22.79	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-26.02	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Reactions
Live Load 5C1
Impact = 33.000 %

Support	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
1	8.53	N/A	23.27	Axle Load	0.00	Axle Load
2	8.53	N/A	23.27	Axle Load	0.00	Axle Load

Note:
Impact and distribution factors included in above live load reactions.

Moment Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip-ft)	DW Load (kip-ft)	+(LL+I) (kip-ft)	Controlling Live Load	-(LL+I) (kip-ft)	Controlling Live Load
0.00(R)	0.0	-0.00	N/A	0.00	Axle Load	0.00	Axle Load
3.65(B)	10.0	28.01	N/A	46.26	Axle Load	0.00	Axle Load
7.30(B)	20.0	49.79	N/A	80.10	Axle Load	0.00	Axle Load
10.95(B)	30.0	65.36	N/A	101.53	Axle Load	0.00	Axle Load
14.60(B)	40.0	74.69	N/A	112.61	Axle Load	0.00	Axle Load
18.25(B)	50.0	77.80	N/A	116.01	Axle Load	0.00	Axle Load
21.90(B)	60.0	74.69	N/A	112.61	Axle Load	0.00	Axle Load
25.55(B)	70.0	65.36	N/A	101.53	Axle Load	0.00	Axle Load
29.20(B)	80.0	49.79	N/A	80.10	Axle Load	0.00	Axle Load
32.85(B)	90.0	28.01	N/A	46.26	Axle Load	0.00	Axle Load
36.50(L)	100.0	0.00	N/A	0.00	Axle Load	0.00	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load moments.

Sides:
(B) Both
(L) Left
(R) Right

Shear Summary
Live Load 5C1
Impact = ** %

Span 1

Location (ft)	Percent	DC Load (kip)	DW Load (kip)	+(LL+I) (kip)	Controlling Live Load	-(LL+I) (kip)	Controlling Live Load
0.00(R)	0.0	8.53	N/A	23.27	Axle Load	0.00	Axle Load
3.65(B)	10.0	6.82	N/A	20.51	Axle Load	-1.02	Axle Load
7.30(B)	20.0	5.12	N/A	17.76	Axle Load	-2.95	Axle Load
10.95(B)	30.0	3.41	N/A	15.01	Axle Load	-4.99	Axle Load
14.60(B)	40.0	1.71	N/A	12.26	Axle Load	-7.02	Axle Load
18.25(B)	50.0	-0.00	N/A	9.50	Axle Load	-9.50	Axle Load
21.90(B)	60.0	-1.71	N/A	7.02	Axle Load	-12.26	Axle Load
25.55(B)	70.0	-3.41	N/A	4.99	Axle Load	-15.01	Axle Load
29.20(B)	80.0	-5.12	N/A	2.95	Axle Load	-17.76	Axle Load
32.85(B)	90.0	-6.82	N/A	1.02	Axle Load	-20.51	Axle Load
36.50(L)	100.0	-8.53	N/A	-0.00	Axle Load	-23.27	Axle Load

Note:
"N/A" indicates not applicable
"**" indicates not available

Note:
Impact and distribution factors included in above live load shears.

Sides:
(B) Both
(L) Left
(R) Right

Report by Action: ☑ Flexure ☑ Shear ☑ Overload ☑ Critical

Detailed Rating Results
B8 Original Interior Girder)
EV2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2551.81
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**25.56**	**1.703**	**43.90**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2551.81
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**50.68**	**1.948**	**50.21**
3.65	10.0	Shear	kip	73.79	6.82	22.48	2.003	51.62
3.65	10.0	Overload	ksi	-30.00	-5.12	-9.26	99.000	2551.81
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**87.45**	**0.914**	**23.56**
7.30	20.0	Shear	kip	73.79	5.12	19.39	2.397	61.78
7.30	20.0	Overload	ksi	-30.00	-9.09	-15.97	93.332	2405.70
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**110.30**	**0.603**	**15.54**
10.95	30.0	Shear	kip	73.79	3.41	16.31	2.941	75.80
10.95	30.0	Overload	ksi	-30.00	-11.94	-20.14	59.887	1543.64
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**119.24**	**0.490**	**12.64**
14.60	40.0	Shear	kip	73.79	1.71	13.22	3.738	96.36
14.60	40.0	Overload	ksi	-30.00	-13.64	-21.78	47.568	1226.10
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**114.26**	**0.488**	**12.59**
18.25	50.0	Shear	kip	73.79	0.00	-10.13	5.021	129.43
18.25	50.0	Overload	ksi	-30.00	-14.21	-20.87	46.916	1209.30
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**119.24**	**0.490**	**12.64**
21.90	60.0	Shear	kip	73.79	-1.71	-13.22	3.738	96.36
21.90	60.0	Overload	ksi	-30.00	-13.64	-21.78	47.568	1226.10
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**110.30**	**0.603**	**15.54**
25.55	70.0	Shear	kip	73.79	-3.41	-16.31	2.941	75.80
25.55	70.0	Overload	ksi	-30.00	-11.94	-20.14	59.887	1543.64
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**87.45**	**0.914**	**23.56**
29.20	80.0	Shear	kip	73.79	-5.12	-19.39	2.397	61.78
29.20	80.0	Overload	ksi	-30.00	-9.09	-15.97	93.332	2405.70
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**50.68**	**1.948**	**50.21**

32.85	90.0	Shear	kip	73.79	-6.82	-22.48	2.003	51.62
32.85	90.0	Overload	ksi	-30.00	-5.12	-9.26	99.000	2551.81
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2551.81
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-25.56**	**1.703**	**43.90**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2551.81

Detailed Rating Results
B8 Original Interior Girder)
EV3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3816.61
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**37.62**	**1.157**	**44.62**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3816.61
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**74.42**	**1.326**	**51.13**
3.65	10.0	Shear	kip	73.79	6.82	33.01	1.364	52.57
3.65	10.0	Overload	ksi	-30.00	-5.12	-13.59	99.000	3816.61
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**128.03**	**0.624**	**24.07**
7.30	20.0	Shear	kip	73.79	5.12	28.39	1.637	63.11
7.30	20.0	Overload	ksi	-30.00	-9.09	-23.38	63.745	2457.48
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**160.84**	**0.414**	**15.94**
10.95	30.0	Shear	kip	73.79	3.41	23.78	2.017	77.75
10.95	30.0	Overload	ksi	-30.00	-11.94	-29.37	41.070	1583.31
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**177.33**	**0.330**	**12.71**
14.60	40.0	Shear	kip	73.79	1.71	19.16	2.579	99.43
14.60	40.0	Overload	ksi	-30.00	-13.64	-32.39	31.984	1233.04
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**179.92**	**0.310**	**11.95**
18.25	50.0	Shear	kip	73.79	0.00	-14.81	3.436	132.46
18.25	50.0	Overload	ksi	-30.00	-14.21	-32.86	29.795	1148.65
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**177.33**	**0.330**	**12.71**
21.90	60.0	Shear	kip	73.79	-1.71	-19.16	2.579	99.43
21.90	60.0	Overload	ksi	-30.00	-13.64	-32.39	31.984	1233.04
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**160.84**	**0.414**	**15.94**
25.55	70.0	Shear	kip	73.79	-3.41	-23.78	2.017	77.75
25.55	70.0	Overload	ksi	-30.00	-11.94	-29.37	41.070	1583.31
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**128.03**	**0.624**	**24.07**

29.20	80.0	Shear	kip	73.79	-5.12	-28.39	1.637	63.11
29.20	80.0	Overload	ksi	-30.00	-9.09	-23.38	63.745	2457.48
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**74.42**	**1.326**	**51.13**
32.85	90.0	Shear	kip	73.79	-6.82	-33.01	1.364	52.57
32.85	90.0	Overload	ksi	-30.00	-5.12	-13.59	99.000	3816.61
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3816.61
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-37.62**	**1.157**	**44.62**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3816.61

Detailed Rating Results
B8 Original Interior Girder)
HL-93 (US)
Truck + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj-LL*	LL	Inventory Rating Factor	Inventory Load Rating (Ton)	Operating Rating Factor	Operating Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**37.33**	**0.966**	**34.79**	**1.253**	**45.10**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**73.27**	**1.116**	**40.19**	**1.447**	**52.09**
3.65	10.0	Shear	kip	73.79	6.82	32.02	1.165	41.93	1.510	54.35
3.65	10.0	Overload	ksi	-30.00	-5.12	-13.38	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**124.74**	**0.531**	**19.11**	**0.688**	**24.78**
7.30	20.0	Shear	kip	73.79	5.12	26.82	1.436	51.70	1.861	67.01
7.30	20.0	Overload	ksi	-30.00	-9.09	-22.78	65.430	2355.48	65.430	2355.48
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**156.58**	**0.352**	**12.67**	**0.456**	**16.43**
10.95	30.0	Shear	kip	73.79	3.41	22.04	1.802	64.89	2.336	84.11
10.95	30.0	Overload	ksi	-30.00	-11.94	-28.60	42.187	1518.75	42.187	1518.75
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**170.54**	**0.284**	**10.23**	**0.368**	**13.26**
14.60	40.0	Shear	kip	73.79	1.71	17.53	2.336	84.10	3.028	109.02
14.60	40.0	Overload	ksi	-30.00	-13.64	-31.15	33.258	1197.28	33.258	1197.28
18.25	**50.0**	**Flexure**		**178.15**	**77.80**	**169.02**	**0.273**	**9.85**	**0.355**	**12.76**

			kip-ft							
18.25	50.0	Shear	kip	73.79	0.00	-13.12	3.214	115.70	4.166	149.98
18.25	50.0	Overload	ksi	-30.00	-14.21	-30.87	31.716	1141.77	31.716	1141.77
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**170.54**	**0.284**	**10.23**	**0.368**	**13.26**
21.90	60.0	Shear	kip	73.79	-1.71	-17.53	2.336	84.10	3.028	109.02
21.90	60.0	Overload	ksi	-30.00	-13.64	-31.15	33.258	1197.28	33.258	1197.28
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**156.58**	**0.352**	**12.67**	**0.456**	**16.43**
25.55	70.0	Shear	kip	73.79	-3.41	-22.04	1.802	64.89	2.336	84.11
25.55	70.0	Overload	ksi	-30.00	-11.94	-28.60	42.187	1518.75	42.187	1518.75
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**124.74**	**0.531**	**19.11**	**0.688**	**24.78**
29.20	80.0	Shear	kip	73.79	-5.12	-26.82	1.436	51.70	1.861	67.01
29.20	80.0	Overload	ksi	-30.00	-9.09	-22.78	65.430	2355.48	65.430	2355.48
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**73.27**	**1.116**	**40.19**	**1.447**	**52.09**
32.85	90.0	Shear	kip	73.79	-6.82	-32.02	1.165	41.93	1.510	54.35
32.85	90.0	Overload	ksi	-30.00	-5.12	-13.38	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-37.33**	**0.966**	**34.79**	**1.253**	**45.10**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B8 Original Interior Girder)
HL-93 (US)
Tandem + Lane
Impact: With Impact
Lane: Single Lane

Span 1

Location							**Inventory Rating**	**Inventory Load Rating**	**Operating Rating**	**Operating Load Rating**
(ft)	**Percent**	**Limit State**	**Units**	**Capacity**	**DL + Adj-LL***	**LL**	**Factor**	**(Ton)**	**Factor**	**(Ton)**
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**33.54**	**1.076**	**38.72**	**1.394**	**50.19**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**67.70**	**1.208**	**43.49**	**1.566**	**56.38**

3.65	10.0	Shear	kip	73.79	6.82	29.55	1.262	45.43	1.636	58.90
3.65	10.0	Overload	ksi	-30.00	-5.12	-12.36	99.000	3564.00	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**119.53**	**0.554**	**19.95**	**0.718**	**25.86**
7.30	20.0	Shear	kip	73.79	5.12	25.66	1.501	54.02	1.945	70.03
7.30	20.0	Overload	ksi	-30.00	-9.09	-21.83	68.280	2458.06	68.280	2458.06
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**155.50**	**0.354**	**12.76**	**0.459**	**16.54**
10.95	30.0	Shear	kip	73.79	3.41	21.88	1.816	65.36	2.353	84.72
10.95	30.0	Overload	ksi	-30.00	-11.94	-28.40	42.479	1529.26	42.479	1529.26
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**175.60**	**0.276**	**9.93**	**0.358**	**12.88**
14.60	40.0	Shear	kip	73.79	1.71	18.21	2.249	80.96	2.915	104.95
14.60	40.0	Overload	ksi	-30.00	-13.64	-32.07	32.300	1162.79	32.300	1162.79
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**179.84**	**0.257**	**9.25**	**0.333**	**12.00**
18.25	50.0	Shear	kip	73.79	0.00	-14.64	2.881	103.71	3.734	134.44
18.25	50.0	Overload	ksi	-30.00	-14.21	-32.84	29.808	1073.10	29.808	1073.10
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**175.60**	**0.276**	**9.93**	**0.358**	**12.88**
21.90	60.0	Shear	kip	73.79	-1.71	-18.21	2.249	80.96	2.915	104.95
21.90	60.0	Overload	ksi	-30.00	-13.64	-32.07	32.300	1162.79	32.300	1162.79
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**155.50**	**0.354**	**12.76**	**0.459**	**16.54**
25.55	70.0	Shear	kip	73.79	-3.41	-21.88	1.816	65.36	2.353	84.72
25.55	70.0	Overload	ksi	-30.00	-11.94	-28.40	42.479	1529.26	42.479	1529.26
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**119.53**	**0.554**	**19.95**	**0.718**	**25.86**
29.20	80.0	Shear	kip	73.79	-5.12	-25.66	1.501	54.02	1.945	70.03
29.20	80.0	Overload	ksi	-30.00	-9.09	-21.83	68.280	2458.06	68.280	2458.06
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**67.70**	**1.208**	**43.49**	**1.566**	**56.38**
32.85	90.0	Shear	kip	73.79	-6.82	-29.55	1.262	45.43	1.636	58.90
32.85	90.0	Overload	ksi	-30.00	-5.12	-12.36	99.000	3564.00	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-33.54**	**1.076**	**38.72**	**1.394**	**50.19**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00	99.000	3564.00

Detailed Rating Results
B8 Original Interior Girder)

NRL
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**30.32**	**1.436**	**57.44**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**58.42**	**1.690**	**67.59**
3.65	10.0	Shear	kip	73.79	6.82	25.91	1.737	69.49
3.65	10.0	Overload	ksi	-30.00	-5.12	-10.67	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**106.84**	**0.748**	**29.93**
7.30	20.0	Shear	kip	73.79	5.12	21.96	2.117	84.66
7.30	20.0	Overload	ksi	-30.00	-9.09	-19.51	76.391	3055.63
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**145.39**	**0.458**	**18.30**
10.95	30.0	Shear	kip	73.79	3.41	18.46	2.597	103.89
10.95	30.0	Overload	ksi	-30.00	-11.94	-26.55	45.434	1817.38
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**166.83**	**0.350**	**14.02**
14.60	40.0	Shear	kip	73.79	1.71	14.99	3.297	131.87
14.60	40.0	Overload	ksi	-30.00	-13.64	-30.47	33.998	1359.94
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**172.30**	**0.324**	**12.95**
18.25	50.0	Shear	kip	73.79	0.00	-11.52	4.418	176.71
18.25	50.0	Overload	ksi	-30.00	-14.21	-31.47	31.112	1244.50
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**166.83**	**0.350**	**14.02**
21.90	60.0	Shear	kip	73.79	-1.71	-14.99	3.297	131.87
21.90	60.0	Overload	ksi	-30.00	-13.64	-30.47	33.998	1359.94
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**145.39**	**0.458**	**18.30**
25.55	70.0	Shear	kip	73.79	-3.41	-18.46	2.597	103.89
25.55	70.0	Overload	ksi	-30.00	-11.94	-26.55	45.434	1817.38
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**106.84**	**0.748**	**29.93**
29.20	80.0	Shear	kip	73.79	-5.12	-21.96	2.117	84.66
29.20	80.0	Overload	ksi	-30.00	-9.09	-19.51	76.391	3055.63
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**58.42**	**1.690**	**67.59**
32.85	90.0	Shear	kip	73.79	-6.82	-25.91	1.737	69.49
32.85	90.0	Overload	ksi	-30.00	-5.12	-10.67	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-30.32**	**1.436**	**57.44**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B8 Original Interior Girder)
SU4
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**26.61**	**1.636**	**44.17**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**52.72**	**1.872**	**50.55**
3.65	10.0	Shear	kip	73.79	6.82	23.38	1.925	51.98
3.65	10.0	Overload	ksi	-30.00	-5.12	-9.63	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**90.87**	**0.880**	**23.75**
7.30	20.0	Shear	kip	73.79	5.12	20.15	2.307	62.28
7.30	20.0	Overload	ksi	-30.00	-9.09	-16.60	89.819	2425.11
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**114.44**	**0.581**	**15.69**
10.95	30.0	Shear	kip	73.79	3.41	16.92	2.834	76.53
10.95	30.0	Overload	ksi	-30.00	-11.94	-20.90	57.721	1558.47
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**130.24**	**0.449**	**12.12**
14.60	40.0	Shear	kip	73.79	1.71	13.69	3.611	97.50
14.60	40.0	Overload	ksi	-30.00	-13.64	-23.79	43.550	1175.85
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**132.64**	**0.421**	**11.36**
18.25	50.0	Shear	kip	73.79	0.00	-10.45	4.868	131.44
18.25	50.0	Overload	ksi	-30.00	-14.21	-24.23	40.414	1091.17
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**130.24**	**0.449**	**12.12**
21.90	60.0	Shear	kip	73.79	-1.71	-13.69	3.611	97.50
21.90	60.0	Overload	ksi	-30.00	-13.64	-23.79	43.550	1175.85
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**114.44**	**0.581**	**15.69**
25.55	70.0	Shear	kip	73.79	-3.41	-16.92	2.834	76.53
25.55	70.0	Overload	ksi	-30.00	-11.94	-20.90	57.721	1558.47
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**90.87**	**0.880**	**23.75**
29.20	80.0	Shear	kip	73.79	-5.12	-20.15	2.307	62.28
29.20	80.0	Overload	ksi	-30.00	-9.09	-16.60	89.819	2425.11
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**52.72**	**1.872**	**50.55**
32.85	90.0	Shear	kip	73.79	-6.82	-23.38	1.925	51.98
32.85	90.0	Overload	ksi	-30.00	-5.12	-9.63	99.000	2673.00

36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-26.61**	**1.636**	**44.17**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B8 Original Interior Girder)
SU5
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3069.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**29.04**	**1.499**	**46.48**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3069.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.11**	**1.728**	**53.58**
3.65	10.0	Shear	kip	73.79	6.82	25.33	1.777	55.09
3.65	10.0	Overload	ksi	-30.00	-5.12	-10.43	99.000	3069.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**97.49**	**0.820**	**25.42**
7.30	20.0	Shear	kip	73.79	5.12	21.62	2.150	66.65
7.30	20.0	Overload	ksi	-30.00	-9.09	-17.81	83.715	2595.15
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**123.50**	**0.539**	**16.70**
10.95	30.0	Shear	kip	73.79	3.41	17.91	2.678	83.01
10.95	30.0	Overload	ksi	-30.00	-11.94	-22.56	53.484	1658.01
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**139.58**	**0.419**	**12.99**
14.60	40.0	Shear	kip	73.79	1.71	14.22	3.476	107.76
14.60	40.0	Overload	ksi	-30.00	-13.64	-25.49	40.634	1259.65
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**138.93**	**0.402**	**12.45**
18.25	50.0	Shear	kip	73.79	0.00	-11.22	4.534	140.55
18.25	50.0	Overload	ksi	-30.00	-14.21	-25.37	38.585	1196.14
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**139.58**	**0.419**	**12.99**
21.90	60.0	Shear	kip	73.79	-1.71	-14.22	3.476	107.76
21.90	60.0	Overload	ksi	-30.00	-13.64	-25.49	40.634	1259.65
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**123.50**	**0.539**	**16.70**
25.55	70.0	Shear	kip	73.79	-3.41	-17.91	2.678	83.01
25.55	70.0	Overload	ksi	-30.00	-11.94	-22.56	53.484	1658.01
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**97.49**	**0.820**	**25.42**
29.20	80.0	Shear	kip	73.79	-5.12	-21.62	2.150	66.65
29.20	80.0	Overload	ksi	-30.00	-9.09	-17.81	83.715	2595.15

32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.11**	**1.728**	**53.58**
32.85	90.0	Shear	kip	73.79	-6.82	-25.33	1.777	55.09
32.85	90.0	Overload	ksi	-30.00	-5.12	-10.43	99.000	3069.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3069.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-29.04**	**1.499**	**46.48**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3069.00

Detailed Rating Results
B8 Original Interior Girder)
SU6
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3440.25
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**29.67**	**1.467**	**50.99**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3440.25
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.53**	**1.716**	**59.62**
3.65	10.0	Shear	kip	73.79	6.82	25.52	1.764	61.30
3.65	10.0	Overload	ksi	-30.00	-5.12	-10.51	99.000	3440.25
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**105.04**	**0.761**	**26.45**
7.30	20.0	Shear	kip	73.79	5.12	21.36	2.176	75.63
7.30	20.0	Overload	ksi	-30.00	-9.09	-19.18	77.703	2700.18
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**135.33**	**0.492**	**17.08**
10.95	30.0	Shear	kip	73.79	3.41	17.28	2.775	96.42
10.95	30.0	Overload	ksi	-30.00	-11.94	-24.72	48.810	1696.14
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**151.01**	**0.387**	**13.46**
14.60	40.0	Shear	kip	73.79	1.71	13.81	3.579	124.36
14.60	40.0	Overload	ksi	-30.00	-13.64	-27.58	37.560	1305.20
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**154.07**	**0.362**	**12.58**
18.25	50.0	Shear	kip	73.79	0.00	-10.34	4.922	171.05
18.25	50.0	Overload	ksi	-30.00	-14.21	-28.14	34.794	1209.11
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**151.01**	**0.387**	**13.46**
21.90	60.0	Shear	kip	73.79	-1.71	-13.81	3.579	124.36
21.90	60.0	Overload	ksi	-30.00	-13.64	-27.58	37.560	1305.20
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**135.33**	**0.492**	**17.08**
25.55	70.0	Shear	kip	73.79	-3.41	-17.28	2.775	96.42
25.55	70.0	Overload	ksi	-30.00	-11.94	-24.72	48.810	1696.14

29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**105.04**	**0.761**	**26.45**
29.20	80.0	Shear	kip	73.79	-5.12	-21.36	2.176	75.63
29.20	80.0	Overload	ksi	-30.00	-9.09	-19.18	77.703	2700.18
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.53**	**1.716**	**59.62**
32.85	90.0	Shear	kip	73.79	-6.82	-25.52	1.764	61.30
32.85	90.0	Overload	ksi	-30.00	-5.12	-10.51	99.000	3440.25
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3440.25
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-29.67**	**1.467**	**50.99**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3440.25

Detailed Rating Results
B8 Original Interior Girder)
SU7
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3836.25
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**29.90**	**1.456**	**56.42**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3836.25
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.53**	**1.716**	**66.49**
3.65	10.0	Shear	kip	73.79	6.82	25.52	1.764	68.36
3.65	10.0	Overload	ksi	-30.00	-5.12	-10.51	99.000	3836.25
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**105.04**	**0.761**	**29.49**
7.30	20.0	Shear	kip	73.79	5.12	21.13	2.200	85.25
7.30	20.0	Overload	ksi	-30.00	-9.09	-19.18	77.703	3010.99
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**141.44**	**0.470**	**18.22**
10.95	30.0	Shear	kip	73.79	3.41	16.83	2.849	110.41
10.95	30.0	Overload	ksi	-30.00	-11.94	-25.83	46.702	1809.70
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**158.75**	**0.368**	**14.27**
14.60	40.0	Shear	kip	73.79	1.71	12.88	3.837	148.70
14.60	40.0	Overload	ksi	-30.00	-13.64	-28.99	35.728	1384.45
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**163.31**	**0.342**	**13.24**
18.25	50.0	Shear	kip	73.79	0.00	-9.16	5.557	215.33
18.25	50.0	Overload	ksi	-30.00	-14.21	-29.83	32.825	1271.97
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**158.75**	**0.368**	**14.27**
21.90	60.0	Shear	kip	73.79	-1.71	-12.88	3.837	148.70
21.90	60.0	Overload	ksi	-30.00	-13.64	-28.99	35.728	1384.45

25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**141.44**	**0.470**	**18.22**
25.55	70.0	Shear	kip	73.79	-3.41	-16.83	2.849	110.41
25.55	70.0	Overload	ksi	-30.00	-11.94	-25.83	46.702	1809.70
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**105.04**	**0.761**	**29.49**
29.20	80.0	Shear	kip	73.79	-5.12	-21.13	2.200	85.25
29.20	80.0	Overload	ksi	-30.00	-9.09	-19.18	77.703	3010.99
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**57.53**	**1.716**	**66.49**
32.85	90.0	Shear	kip	73.79	-6.82	-25.52	1.764	68.36
32.85	90.0	Overload	ksi	-30.00	-5.12	-10.51	99.000	3836.25
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3836.25
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-29.90**	**1.456**	**56.42**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3836.25

Detailed Rating Results
B8 Original Interior Girder)
Type 3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2475.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**23.83**	**1.827**	**45.69**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2475.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**46.98**	**2.101**	**52.54**
3.65	10.0	Shear	kip	73.79	6.82	20.83	2.161	54.01
3.65	10.0	Overload	ksi	-30.00	-5.12	-8.58	99.000	2475.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**80.46**	**0.994**	**24.84**
7.30	20.0	Shear	kip	73.79	5.12	17.84	2.605	65.13
7.30	20.0	Overload	ksi	-30.00	-9.09	-14.69	99.000	2475.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**100.44**	**0.662**	**16.56**
10.95	30.0	Shear	kip	73.79	3.41	14.85	3.229	80.74
10.95	30.0	Overload	ksi	-30.00	-11.94	-18.34	65.766	1644.14
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**111.37**	**0.525**	**13.13**
14.60	40.0	Shear	kip	73.79	1.71	11.86	4.169	104.21
14.60	40.0	Overload	ksi	-30.00	-13.64	-20.34	50.930	1273.25
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**111.75**	**0.499**	**12.48**
18.25	50.0	Shear	kip	73.79	0.00	-9.06	5.617	140.43
18.25	50.0	Overload	ksi	-30.00	-14.21	-20.41	47.968	1199.21

21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**111.37**	**0.525**	**13.13**
21.90	60.0	Shear	kip	73.79	-1.71	-11.86	4.169	104.21
21.90	60.0	Overload	ksi	-30.00	-13.64	-20.34	50.930	1273.25
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**100.44**	**0.662**	**16.56**
25.55	70.0	Shear	kip	73.79	-3.41	-14.85	3.229	80.74
25.55	70.0	Overload	ksi	-30.00	-11.94	-18.34	65.766	1644.14
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**80.46**	**0.994**	**24.84**
29.20	80.0	Shear	kip	73.79	-5.12	-17.84	2.605	65.13
29.20	80.0	Overload	ksi	-30.00	-9.09	-14.69	99.000	2475.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**46.98**	**2.101**	**52.54**
32.85	90.0	Shear	kip	73.79	-6.82	-20.83	2.161	54.01
32.85	90.0	Overload	ksi	-30.00	-5.12	-8.58	99.000	2475.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2475.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-23.83**	**1.827**	**45.69**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2475.00

Detailed Rating Results
B8 Original Interior Girder)
Type 3-3
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**20.46**	**2.128**	**85.10**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**39.54**	**2.497**	**99.86**
3.65	10.0	Shear	kip	73.79	6.82	17.54	2.567	102.67
3.65	10.0	Overload	ksi	-30.00	-5.12	-7.22	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**67.20**	**1.189**	**47.58**
7.30	20.0	Shear	kip	73.79	5.12	14.90	3.119	124.76
7.30	20.0	Overload	ksi	-30.00	-9.09	-12.27	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**82.99**	**0.802**	**32.06**
10.95	30.0	Shear	kip	73.79	3.41	12.27	3.908	156.33
10.95	30.0	Overload	ksi	-30.00	-11.94	-15.16	79.592	3183.69
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**92.23**	**0.634**	**25.36**
14.60	40.0	Shear	kip	73.79	1.71	9.64	5.129	205.17
14.60	40.0	Overload	ksi	-30.00	-13.64	-16.84	61.498	2459.93

18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**90.77**	**0.615**	**24.58**
18.25	50.0	Shear	kip	73.79	0.00	-7.46	6.821	272.84
18.25	50.0	Overload	ksi	-30.00	-14.21	-16.58	59.057	2362.26
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**92.23**	**0.634**	**25.36**
21.90	60.0	Shear	kip	73.79	-1.71	-9.64	5.129	205.17
21.90	60.0	Overload	ksi	-30.00	-13.64	-16.84	61.498	2459.93
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**82.99**	**0.802**	**32.06**
25.55	70.0	Shear	kip	73.79	-3.41	-12.27	3.908	156.33
25.55	70.0	Overload	ksi	-30.00	-11.94	-15.16	79.592	3183.69
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**67.20**	**1.189**	**47.58**
29.20	80.0	Shear	kip	73.79	-5.12	-14.90	3.119	124.76
29.20	80.0	Overload	ksi	-30.00	-9.09	-12.27	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**39.54**	**2.497**	**99.86**
32.85	90.0	Shear	kip	73.79	-6.82	-17.54	2.567	102.67
32.85	90.0	Overload	ksi	-30.00	-5.12	-7.22	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-20.46**	**2.128**	**85.10**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Detailed Rating Results
B8 Original Interior Girder)
Type 3S2
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**21.86**	**1.992**	**71.71**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**41.96**	**2.353**	**84.69**
3.65	10.0	Shear	kip	73.79	6.82	18.61	2.419	87.08
3.65	10.0	Overload	ksi	-30.00	-5.12	-7.66	99.000	3564.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**72.85**	**1.097**	**39.50**
7.30	20.0	Shear	kip	73.79	5.12	16.15	2.877	103.58
7.30	20.0	Overload	ksi	-30.00	-9.09	-13.31	99.000	3564.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**92.68**	**0.718**	**25.84**
10.95	30.0	Shear	kip	73.79	3.41	13.70	3.500	125.99
10.95	30.0	Overload	ksi	-30.00	-11.94	-16.93	71.272	2565.77

14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**102.77**	**0.569**	**20.48**
14.60	40.0	Shear	kip	73.79	1.71	11.25	4.394	158.19
14.60	40.0	Overload	ksi	-30.00	-13.64	-18.77	55.188	1986.78
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**106.53**	**0.524**	**18.85**
18.25	50.0	Shear	kip	73.79	0.00	-8.79	5.787	208.35
18.25	50.0	Overload	ksi	-30.00	-14.21	-19.46	50.320	1811.51
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**102.77**	**0.569**	**20.48**
21.90	60.0	Shear	kip	73.79	-1.71	-11.25	4.394	158.19
21.90	60.0	Overload	ksi	-30.00	-13.64	-18.77	55.188	1986.78
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**92.68**	**0.718**	**25.84**
25.55	70.0	Shear	kip	73.79	-3.41	-13.70	3.500	125.99
25.55	70.0	Overload	ksi	-30.00	-11.94	-16.93	71.272	2565.77
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**72.85**	**1.097**	**39.50**
29.20	80.0	Shear	kip	73.79	-5.12	-16.15	2.877	103.58
29.20	80.0	Overload	ksi	-30.00	-9.09	-13.31	99.000	3564.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**41.96**	**2.353**	**84.69**
32.85	90.0	Shear	kip	73.79	-6.82	-18.61	2.419	87.08
32.85	90.0	Overload	ksi	-30.00	-5.12	-7.66	99.000	3564.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3564.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-21.86**	**1.992**	**71.71**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3564.00

Detailed Rating Results
B8 Original Interior Girder)
2F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	1485.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**16.32**	**2.669**	**40.03**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	1485.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**32.74**	**3.015**	**45.23**
3.65	10.0	Shear	kip	73.79	6.82	14.52	3.100	46.50
3.65	10.0	Overload	ksi	-30.00	-5.12	-5.98	99.000	1485.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**57.38**	**1.393**	**20.89**
7.30	20.0	Shear	kip	73.79	5.12	12.72	3.653	54.79
7.30	20.0	Overload	ksi	-30.00	-9.09	-10.48	99.000	1485.00

10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**73.93**	**0.900**	**13.50**
10.95	30.0	Shear	kip	73.79	3.41	10.93	4.387	65.81
10.95	30.0	Overload	ksi	-30.00	-11.94	-13.50	89.349	1340.23
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**82.38**	**0.710**	**10.65**
14.60	40.0	Shear	kip	73.79	1.71	9.13	5.411	81.16
14.60	40.0	Overload	ksi	-30.00	-13.64	-15.05	68.852	1032.77
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**82.73**	**0.674**	**10.12**
18.25	50.0	Shear	kip	73.79	0.00	-7.34	6.935	104.03
18.25	50.0	Overload	ksi	-30.00	-14.21	-15.11	64.797	971.96
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**82.38**	**0.710**	**10.65**
21.90	60.0	Shear	kip	73.79	-1.71	-9.13	5.411	81.16
21.90	60.0	Overload	ksi	-30.00	-13.64	-15.05	68.852	1032.77
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**73.93**	**0.900**	**13.50**
25.55	70.0	Shear	kip	73.79	-3.41	-10.93	4.387	65.81
25.55	70.0	Overload	ksi	-30.00	-11.94	-13.50	89.349	1340.23
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**57.38**	**1.393**	**20.89**
29.20	80.0	Shear	kip	73.79	-5.12	-12.72	3.653	54.79
29.20	80.0	Overload	ksi	-30.00	-9.09	-10.48	99.000	1485.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**32.74**	**3.015**	**45.23**
32.85	90.0	Shear	kip	73.79	-6.82	-14.52	3.100	46.50
32.85	90.0	Overload	ksi	-30.00	-5.12	-5.98	99.000	1485.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	1485.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-16.32**	**2.669**	**40.03**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	1485.00

Detailed Rating Results
B8 Original Interior Girder)
3F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2277.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**23.66**	**1.840**	**42.32**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2277.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**47.15**	**2.094**	**48.16**
3.65	10.0	Shear	kip	73.79	6.82	20.91	2.153	49.51
3.65	10.0	Overload	ksi	-30.00	-5.12	-8.61	99.000	2277.00

7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**81.88**	**0.976**	**22.45**
7.30	20.0	Shear	kip	73.79	5.12	18.16	2.560	58.88
7.30	20.0	Overload	ksi	-30.00	-9.09	-14.95	99.000	2277.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**104.19**	**0.638**	**14.68**
10.95	30.0	Shear	kip	73.79	3.41	15.40	3.113	71.60
10.95	30.0	Overload	ksi	-30.00	-11.94	-19.03	63.399	1458.18
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**116.16**	**0.503**	**11.58**
14.60	40.0	Shear	kip	73.79	1.71	12.65	3.907	89.86
14.60	40.0	Overload	ksi	-30.00	-13.64	-21.21	48.829	1123.07
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**120.44**	**0.463**	**10.65**
18.25	50.0	Shear	kip	73.79	0.00	-9.90	5.143	118.28
18.25	50.0	Overload	ksi	-30.00	-14.21	-22.00	44.508	1023.68
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**116.16**	**0.503**	**11.58**
21.90	60.0	Shear	kip	73.79	-1.71	-12.65	3.907	89.86
21.90	60.0	Overload	ksi	-30.00	-13.64	-21.21	48.829	1123.07
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**104.19**	**0.638**	**14.68**
25.55	70.0	Shear	kip	73.79	-3.41	-15.40	3.113	71.60
25.55	70.0	Overload	ksi	-30.00	-11.94	-19.03	63.399	1458.18
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**81.88**	**0.976**	**22.45**
29.20	80.0	Shear	kip	73.79	-5.12	-18.16	2.560	58.88
29.20	80.0	Overload	ksi	-30.00	-9.09	-14.95	99.000	2277.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**47.15**	**2.094**	**48.16**
32.85	90.0	Shear	kip	73.79	-6.82	-20.91	2.153	49.51
32.85	90.0	Overload	ksi	-30.00	-5.12	-8.61	99.000	2277.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2277.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-23.66**	**1.840**	**42.32**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2277.00

Detailed Rating Results
B8 Original Interior Girder)
4F1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)
0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**26.02**	**1.673**	**45.17**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00

3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**51.39**	**1.921**	**51.86**
3.65	10.0	Shear	kip	73.79	6.82	22.79	1.975	53.32
3.65	10.0	Overload	ksi	-30.00	-5.12	-9.39	99.000	2673.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**88.21**	**0.906**	**24.47**
7.30	20.0	Shear	kip	73.79	5.12	19.56	2.376	64.16
7.30	20.0	Overload	ksi	-30.00	-9.09	-16.11	92.530	2498.30
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**113.70**	**0.585**	**15.80**
10.95	30.0	Shear	kip	73.79	3.41	16.33	2.937	79.30
10.95	30.0	Overload	ksi	-30.00	-11.94	-20.77	58.097	1568.61
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**129.35**	**0.452**	**12.20**
14.60	40.0	Shear	kip	73.79	1.71	13.09	3.774	101.90
14.60	40.0	Overload	ksi	-30.00	-13.64	-23.62	43.849	1183.92
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**130.43**	**0.428**	**11.55**
18.25	50.0	Shear	kip	73.79	0.00	-9.86	5.160	139.31
18.25	50.0	Overload	ksi	-30.00	-14.21	-23.82	41.101	1109.73
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**129.35**	**0.452**	**12.20**
21.90	60.0	Shear	kip	73.79	-1.71	-13.09	3.774	101.90
21.90	60.0	Overload	ksi	-30.00	-13.64	-23.62	43.849	1183.92
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**113.70**	**0.585**	**15.80**
25.55	70.0	Shear	kip	73.79	-3.41	-16.33	2.937	79.30
25.55	70.0	Overload	ksi	-30.00	-11.94	-20.77	58.097	1568.61
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**88.21**	**0.906**	**24.47**
29.20	80.0	Shear	kip	73.79	-5.12	-19.56	2.376	64.16
29.20	80.0	Overload	ksi	-30.00	-9.09	-16.11	92.530	2498.30
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**51.39**	**1.921**	**51.86**
32.85	90.0	Shear	kip	73.79	-6.82	-22.79	1.975	53.32
32.85	90.0	Overload	ksi	-30.00	-5.12	-9.39	99.000	2673.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	2673.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-26.02**	**1.673**	**45.17**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	2673.00

Detailed Rating Results
B8 Original Interior Girder)
5C1
Axle Load
Impact: With Impact
Lane: Single Lane

Span 1

Location (ft)	Percent	Limit State	Units	Capacity	DL + Adj -LL*	LL	Legal Rating Factor	Legal Load Rating (Ton)

0.00	0.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
0.00	**0.0**	**Shear**	**kip**	**73.79**	**8.53**	**23.27**	**1.871**	**74.85**
0.00	0.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00
3.65	**10.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**46.26**	**2.134**	**85.36**
3.65	10.0	Shear	kip	73.79	6.82	20.51	2.194	87.76
3.65	10.0	Overload	ksi	-30.00	-5.12	-8.45	99.000	3960.00
7.30	**20.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**80.10**	**0.998**	**39.92**
7.30	20.0	Shear	kip	73.79	5.12	17.76	2.617	104.67
7.30	20.0	Overload	ksi	-30.00	-9.09	-14.63	99.000	3960.00
10.95	**30.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**101.53**	**0.655**	**26.21**
10.95	30.0	Shear	kip	73.79	3.41	15.01	3.195	127.79
10.95	30.0	Overload	ksi	-30.00	-11.94	-18.54	65.062	2602.46
14.60	**40.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**112.61**	**0.519**	**20.77**
14.60	40.0	Shear	kip	73.79	1.71	12.26	4.032	161.30
14.60	40.0	Overload	ksi	-30.00	-13.64	-20.57	50.368	2014.73
18.25	**50.0**	**Flexure**	**kip-ft**	**178.15**	**77.80**	**116.01**	**0.481**	**19.24**
18.25	50.0	Shear	kip	73.79	0.00	-9.50	5.356	214.22
18.25	50.0	Overload	ksi	-30.00	-14.21	-21.19	46.210	1848.40
21.90	**60.0**	**Flexure**	**kip-ft**	**178.15**	**74.69**	**112.61**	**0.519**	**20.77**
21.90	60.0	Shear	kip	73.79	-1.71	-12.26	4.032	161.30
21.90	60.0	Overload	ksi	-30.00	-13.64	-20.57	50.368	2014.73
25.55	**70.0**	**Flexure**	**kip-ft**	**178.15**	**65.36**	**101.53**	**0.655**	**26.21**
25.55	70.0	Shear	kip	73.79	-3.41	-15.01	3.195	127.79
25.55	70.0	Overload	ksi	-30.00	-11.94	-18.54	65.062	2602.46
29.20	**80.0**	**Flexure**	**kip-ft**	**178.15**	**49.79**	**80.10**	**0.998**	**39.92**
29.20	80.0	Shear	kip	73.79	-5.12	-17.76	2.617	104.67
29.20	80.0	Overload	ksi	-30.00	-9.09	-14.63	99.000	3960.00
32.85	**90.0**	**Flexure**	**kip-ft**	**178.15**	**28.01**	**46.26**	**2.134**	**85.36**
32.85	90.0	Shear	kip	73.79	-6.82	-20.51	2.194	87.76
32.85	90.0	Overload	ksi	-30.00	-5.12	-8.45	99.000	3960.00
36.50	100.0	Flexure	kip-ft	178.15	0.00	0.00	99.000	3960.00
36.50	**100.0**	**Shear**	**kip**	**73.79**	**-8.53**	**-23.27**	**1.871**	**74.85**
36.50	100.0	Overload	ksi	-30.00	-0.00	-0.00	99.000	3960.00

Note:
*Adj-LL is only applicable for Permit load rating.

APPENDIX F –

PERSONNEL QUALIFICATIONS AND CERTIFICATES

Personnel Qualifications Statement

Name:	Brendan Prendeville
e-mail Address:	brendan.prendeville@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

POSITION: ***From the drop-down menu, select the organizational role for which qualifications apply.***

Choose an item: TL

EDUCATION: ***Attach a copy of diploma when qualification is based on education.***

Degree:	B.S. Civil Engineering	Year:	2004
School:	The Ohio State University		
Degree:		Year:	
School:			
Degree:		Year:	
School:			

PROFESSIONAL ENGINEERING LICENSE: ***Attach a copy of current PE registration.***

Discipline:	Civil Engineering
State(s):	Ohio (74728)

CERTIFICATIONS & MEMBERSHIPS: ***Attach a copy of current certifications (for example – Certified Tunnel Inspector, NICET Level III or IV Bridge Safety Inspector, NHI Certified Instructor).***

Certifications:	Certified Bridge Inspector
Memberships:	

Personnel Qualifications Statement

TRAINING: ***Attach a copy of each certificate.***

Year	Provider	Course #	Course Name
2005	NHI	130055	Safety Inspection of In-Service Bridges
2011	NHI	130053	Bridge Safety Inspection Refresher Training 2011
2016	NHI	130053	Bridge Safety Inspection Refresher Training 2016
2011	NHI	130078	Fracture Critical Inspection Techniques for Steel Bridges
2019	NHI	135047	Stream Stability and Scour at Highway Bridges
2019	NHI	135086	Stream Stability Factors and Concepts
2019	NHI	135087	Scour at Highway Bridges: Concepts and Definitions

INSPECTION EXPERIENCE: ***Use the table below to summarize the types of inspection activities completed and the responsibilities you fulfilled. Provide the contact information for a Professional Reference - person who can attest to your experience. Refer to Table 1. Abbreviations and Guidance for Describing Inspection Experience.***

Years	Bridge or Tunnel Type	Inspection Type *(enter number of bridges)*								Responsibility *(indicate position held)*						
		D	F	I	ID	O	R	S	U	RE	RI	RS	TL	TM	UD	US
2004 - Present	Steel beam		51	4	34		197						x	x		
	Steel truss		217		62		29						x	x		
	Pre-stress conc.				8		54						x	x		
	Timber						145						x	x		
2016,2017	Post-tens. conc.				x		x						x	x		
2016,2014	Steel arch		2										x	x		
2014	Cable stay		1		1									x		
Example:																
2004-2014	Multiple Beam, Steel						314						X			

Personnel Qualifications Statement

Professional Reference Name:	Ed Cinadr
e-mail Address:	ed.cinadr@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

EVALUATION EXPERIENCE: ***Use the table below to summarize the types of bridge evaluation activities completed and the responsibilities you fulfilled. Provide the contact information for a Professional Reference - person who can attest to your experience. Refer to Table 1. Abbreviations and Guidance for Describing Experience.***

Bridge or Tunnel Type	Evaluation Type *(enter number of bridges)*										Responsibility *(indicate position held)*							
	EE	FaE	FcE	LR	N	PA	Q	SE	U	V	LR	PM	RE	RP	RS	TR	UD	US
Steel Truss				95							95							
Steel Beam				42							42							
Concrete Beam				17							17							
Example:																		
All Types								82					X					

Professional Reference Name:	Ed Cinadr
e-mail Address:	ed.cinadr@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

Personnel Qualifications Statement

OTHER RELATED EXPERIENCE: ***Identify other bridge or tunnel related work, your role or responsibilities, and the activity duration.***

Activity Description	Responsibility	Years *(number of years)*

I affirm that all statements and data listed are true and correct.

Signature	Date
	4/11/2019

Table 1. Abbreviations and Guidance for Describing Experience

Bridge Type
Provide general descriptions of the types of bridges or tunnels inspected to best reflect your experience. Organize descriptions around superstructure type and material. For example: • 2-Girder, Steel, Riveted or Welded • Reinforced Concrete Beams/Slabs • CMP Pipes • Bored, unlined tunnel

Inspection Type	
D	Damage
F	Fracture Critical Member
I	Initial/Inventory
ID	In-Depth
O	Other
R	Routine
S	Special
U	Underwater

Evaluation Type	
E	Seismic Evaluation
Fa	Fatigue Evaluation
Fc	Fracture Evaluation
N	conducted or had oversight of non-destructive testing (NDT) to include weld & flaw inspection, or detection of mild and prestress reinforcing, or determination of unknown foundations
LR	Load Rating
Q	Quality Control/Assurance
SE	Scour Evaluation
PA	Scour Critical Plan of Action
V	Vehicle Traffic Volume Data Collection

Responsibility	
LR	Load Rater
PM	Program Manger
RE	Railroad Engineer
RI	Railroad Bridge Inspector
RP	Responsible Engineer
RS	Railroad Bridge Supervisor
TL	Inspection Team Leader
TM	Inspection Team Member
TR	Technical Reviewer
UD	Underwater Inspection Diver
US	Supervised or conducted Underwater Inspection

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:18 AM

Brendan J Prendeville

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.74728
License Issue Date	06/10/2010
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Dublin
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:18 AM**

Disclaimer: The Joint Commission and NCQA consider on-line status information as fulfilling the primary source verification requirement for verification of licensure in compliance with their respective credentialing standards.

U.S. Department
of Transportation

Federal Highway Administration

National Highway Institute

Certificate of Training

Brendan J. Prendeville

has satisfactorily completed training in

Safety Inspection of In-Service Bridges

Hosted by

Texas Department of Transportation

Location: **Austin, TX**

Hours of Instruction: **72**

Date: **March 7-18, 2005**

Continuing Education Units: **6.0**

Instructor

Moges Ayele

Director,
National Highway Institute

Ray L. Belk, SPHR, Director
Training, Quality, and Development Section

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Brendan J. Prendeville, P.E.

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

The American Council of Engineering Companies of WV

Date: **November 20-22, 2011** *Hours of Instruction:* **18**

Location: **Charleston, WV**

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James A Grundy
Instructor

Lorrie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

BRENDAN J. PRENDEVILLE

has demonstrated through practical and written examinations, attainment of SPRAT's Certification Requirements for Rope Access Work, and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

AWARDED: JANUARY 30, 2015
Expires: February 2, 2018

MICHAEL SEAL, SPRAT PRESIDENT

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U.S. Department
Of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Brendan J. Prendeville, P.E.

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

The American Council of Engineering Companies of WV

Date: **November 20-22, 2011** *Hours of Instruction:* **18**

Location: **Charleston, WV**

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Brendan Prendeville

has participated in

NHI Course 130053
"Bridge Inspection Refresher Training"

hosted by

ACEC of West Virgina

Date: *June 21-23, 2016*

Hours of Instruction: *18*

Location: *Charleston, WV*

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James A Grundy
Instructor

Lorrie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation

Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE

National Highway Institute

Certificate of Training

Brendan Prenderville

has participated in

FHWA-NHI-135047 Stream Stability and Scour at Highway Bridges for Bridge Inspectors

hosted by

Idaho Transportation Department

Date: *February 5, 2019*

Hours of Instruction: 8

Location: *Boise, ID*

James H Hitchman

Instructor

Local Coordinator

Instructor

Michael Davies

Michael Davies, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

NHI Course No. FHWA-NHI-135086

Stream Stability Factors and Concepts (Prerequisite) WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *1 hours*

Date: *1/24/2019*

Valerie Briggs, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

NHI Course No. FHWA-NHI-135087

Scour at Highway Bridges: Concepts and Definitions (Prerequisite) WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *1 hours*

Date: *1/24/2019*

Valerie Briggs, Director
National Highway Institute

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:20 AM

Edward Michael Cinadr

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.66077
License Issue Date	07/12/2001
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Worthington
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:20 AM**

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U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Certificate of Training

Edward M. Cinadr

has participated in

Safety Inspection of In-Service Bridges

hosted by

Caltrans - Structure Maintenance & Investigations
and Michael Baker Jr., Inc.

Hours of Instruction:
60 hours (10 days) Course # 130055

Date: *January 3 – 14, 2011*

Location: *Sacramento, California*

Instructor *Greg A. Kolle, P.E.*

Instructor *W. Ronald Gardner, P.E.*

Local Coordinator *Judi L Wong*

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Ed Cinadr

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James a Gindy
Instructor

Lorie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

EDWARD MICHAEL CINADR

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

MICHAEL SEAL, SPRAT PRESIDENT

AWARDED: JANUARY 30, 2015
Expires: February 3, 2018

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U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Edward Cinadr

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher

hosted by

Texas Department of Transportation

Date: *March 01-03, 2016*
Location: *Houston, TX*

Hours of Instruction: *18*

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Ed Cinadr

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James a Gindy
Instructor

Lorie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

MINNESOTA DEPARTMENT OF TRANSPORTATION

Certificate of Attendance

Professional Development Hours

Edward Cinadr

Participant Name

VIRTIS/OPIS Training Workshop

Education Activity

MnDOT Bridge Office

Activity Sponsor

Various Instructors

Instructor/Leader

July 12, 2000

Activity Date

8 (Eight)

Professional Development Hours

Activity Coordinator

The Office of Human Resources, Training and Development unit of Minnesota Department of Transportation has determined that this education activity meets the State of Minnesota Board of Registration Continuing Education Requirements. The Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, GeoScience and Interior Design (Board of AELSLAGID) has final authority to review and approve PDH's.

Please Attach any or all for your records:

- ☐ Registration Receipts
- ☐ Agenda/Syllabus
- ☐ Course Plan
- ☐ Seminar/Brochure Information
- ☐ Any Information Details
- ☐ The content and/or expected outcome of the education activity

CERTIFICATE OF COMPLETION

ED CINADR

has successfully completed the continuing education program:

"LOAD AND RESISTANCE FACTOR RATING (LRFR)"

and is entitled to 8.0 professional development hours (PDHs)

on March 22, 2006 in Salem, Oregon.

Bruce Johnson, P.E.
State Bridge Engineer

Oregon Department of Transportation
Bridge Section

Bala Sivakumar, P.E.
Chief Engineer

Lichtenstein Consulting Engineers, Inc.

Certificate of Attendance

This is to certify that

Edward Cinadr

Has completed 19 hours of continuing education classes, entitled "Design of Straight and Curved Girder Steel Bridges Using AASHTO LRFD Bridge Design Specification- 2007, Fourth Edition." The seminar topics included:

1-Brief background on Probability and Reliability aspect of AASHTO LRFD code, load models for strength and fatigue limit states, 2-Brief discussion of distribution factors for various load conditions and limit states, 3-Overview of the philosophy for making new changes to design provisions for steel bridges, 4-Overview of the major changes incorporated into code, 5-Defining compact, non-compact and slender sections, 6-Constructability limit state 7-Service limit state, 8-Fatigue and fracture limit state, 9-Strength limit state, 10-Design provisions for positive section, 11-Design provisions for negative section and use of Appendix A, 12-Design for shear and combined shear and bending, 13-Tips for economical ways of using high performance steel in I-girder and box steel bridge designs, 14–Gusset Plate Check and rating steel bridges, 15-Steel bridges behaving simple for dead load and continuous for live loads, 16-Design of continuous steel bridge system, 17-New and economical steel bridge systems, 18-Cross frames and their role in steel bridges, 19-Overview and use of computer program capable of designing I and box girder steel bridges using AASHTO LRFD Bridge Design Specifications. Other topics included design, analysis, fabrication and construction of curved steel girder bridges.

The seminar was taught by Dr. Atorod Azizinamini, P.E., Professor, University of Nebraska-Lincoln and Mr. Kenneth Wright, P.E., Vice President, HDR, Inc. The seminar was sponsored by Highway Bridge Services, located in Lincoln, Nebraska and was held during December 3 (8:00 a.m. to 5:00 p.m.), December 4 (8:00 a.m. to 4:30 p.m.), and December 5 (8:00 a.m. to noon), 2009 at the Holiday Inn Hotel (SeaTac) in Seattle, Washington.

Atorod Azizinamini, Ph.D. P.E.

LOUISIANA DEPARTMENT OF
TRANSPORTATION & DEVELOPMENT

LOCAL TECHNICAL ASSISTANCE PROGRAM
LTAP
LOUISIANA TRANSPORTATION RESEARCH CENTER

Certificate of Attendance

PRESENTED BY

Louisiana Department of Transportation and Development
And
Louisiana Local Technical Assistance Program

TO CERTIFY THAT

Edward Cinadr

HAS SATISFACTORILY COMPLETED 4 HOURS OF TRAINING

Bridge Load Rating in Louisiana

Mark B. Walsh
Director Local Technical
Assistance Program

September 25, 2015
Date

Baton Rouge, Louisiana
Location

2016 ODOT QCQA WORKSHOP

THE OKLAHOMA DEPARTMENT OF TRANSPORTATION

PROUDLY GRANTS

EDWARD CINADR

7 PROFESSIONAL DEVELOPMENT HOURS FOR ATTENDANCE OF THE 2016 ODOT QCQA WORKSHOP HELD MAY 24, 2016 AT THE MOORE/NORMAN TECHNOLOGY CENTER

Steven J. Jacobi, P.E.
Oklahoma DOT

Oklahoma Department of Transportation

Randall Leonard, P.E.
FHWA

Certificate for

Professional Development Hours

ED CINADR

BrR Load Rating Introductory Training
Presented by: Joe Kelley, Brad Kahn & Jai Lee
1.5 PDH
November 30, 2017
Burgess & Niple, Inc.

BURGESS & NIPLE

Ronald R. Schultz – President
Burgess & Niple, Inc.

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:22 AM

Dale Edward Poorman

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.52913
License Issue Date	12/19/1997
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Johnstown
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:22 AM**

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U.S. Department of Transportation

Federal Highway Administration

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Certifies that DALE E. POORMAN

has satisfactorily completed 15 hours of training in

INSPECTION OF FRACTURE CRITICAL BRIDGE MEMBERS

conducted by

MR. MARTY RISSEL - MR. GARY RUNCO
BYRD, TALLAMY, MacDONALD & LEWIS

JUNE 22-23, 1987	FRANKFORT, KENTUCKY
Date	Location
R.A. Barnhart	Martin C. Rissel
Federal Highway Administrator	Instructor
George M. Shrieves	Eric E. Evans
Director National Highway Institute	Coordinator

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130078-Fracture Critical Inspection Techniques
For Steel Bridges

hosted by

Ohio Department of Transportation

Date: January 17-20, 2012

Location: Columbus, OH

Hours of Instruction: 25 hours

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Dale E. Poorman

has satisfactorily completed training in

Safety Inspection of In-Service Bridges

conducted by

Roger Hove, Leslie Danovich & Frank Muchmore

Location: Lansing

Date: March 8, 2002

Hours of instruction: 80

Continuing Education Units: 6.0

Roger Hove
Instructor

Moges Ayele
Director, National Highway Institute
Federal Highway Administration

Dennna M. LaVoy
Coordinator

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Course

hosted by

West Virginia Department of Transportation

Date: February 14 – 16, 2012

Location: Parkersburg, WV

Hours of Instruction: Each Day of Training=6 hours

DAVID R. RESER, PE
Instructor

Billy Varney
Local Coordinator

Instructor

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130078-Fracture Critical Inspection Techniques
For Steel Bridges

hosted by

Ohio Department of Transportation

Date: January 17-20, 2012

Location: Columbus, OH

Hours of Instruction: 25 hours

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

DALE POORMAN

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

MICHAEL SEAL, SPRAT PRESIDENT

AWARDED: JANUARY 30, 2015
Expires: February 2, 2018

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U.S. Department
Of Transportation

Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE

Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Dale Poorman

has participated in

130053A – Bridge Inspection Refresher Course

hosted by

Illinois Department of Transportation

Location: **Springfield, Illinois**

Hours of instruction: **24**

Date: **February 27, 2007**

Sean A. Patrick

Instructor

Moges Ayele

Director, National Highway Institute
Federal Highway Administration

Coordinator

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Course

hosted by

West Virginia Department of Transportation

Date: February 14 – 16, 2012

Location: Parkersburg, WV

Hours of Instruction: Each Day of Training=6 hours

DAVID R. RESER, PE
Instructor

Billy Varney
Local Coordinator

Instructor

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Dale Poorman

has participated in

FHWA-NHI 130053 Bridge Inspection Refresher Training

hosted by

Utah Department of Transportation

Date: February 7-9, 2017

Hours of Instruction: 18

Location: Salt Lake City, UT

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

SPRAT®

Society of Professional Rope Access Technicians

Acknowledges that

DALE POORMAN

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

Level II Rope Access Technician

SPRAT #080313

AWARDED: February 01, 2018
Expires: February 1, 2021

CHARLEY RANKIN, EVALUATIONS COMMITTEE CHAIR

WILLIAM McCOOK (TROLL), SPRAT PRESIDENT

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EWI Training

Certificate Of Completion

This is to certify that

Dale Poorman

has successfully completed training in

Review of Nondestructive Evaluation Methods

Date: February 25, 2020 Duration: 4 hours

Roger Spencer

Roger Spencer, ASNT Level III (RT, UT, ET)

APPENDIX G –

HEALTH AND SAFETY PLAN

PROJECT WORK PLAN (PWP) AND HEALTH & SAFETY PLAN (HSP)	
Project Name:	**Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH**
Client:	**Portsmouth Mission Alliance**
Contract No.:	**DE-EM00004062**
B&N Proj. No.:	**58733**
PLAN APPROVED	
Signature:	
Name:	**Edward M. Cinadr, PE**
Title:	**Director of Facility Inspection**
Date:	**5/27/2020**

Prepared by:
BURGESS & NIPLE, INC.
5085 REED ROAD
COLUMBUS, OH 43220

EMERGENCY CONTACT LIST	
Project Name:	**Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH**
Client:	**Portsmouth Mission Alliance**
B&N Project No.:	**58733**

IN THE EVENT OF AN ON-SITE EMERGENCY WHILE WORKING, IMMEDIATELY CONTACT THE APPROPRIATE AGENCY OR PERSONNEL:

NAME	NUMBER
Emergency Fire, Police or Medical Assistance	911
Stephanie Puckett	740-897-4412
Craig Opperman	740-897-2240 (office) 740-648-0958 (cell)
BURGESS & NIPLE, Brendan Prendeville	614-849-2279 (mobile)
BURGESS & NIPLE, Ed Cinadr	614-296-0522 (mobile)
BURGESS & NIPLE, Dale Poorman	614-849-2278 (mobile)

DAMAGE PLAN

In case of an accident, damage, or stolen property, an employee should follow these steps:

1. Obtain an accident or police report
2. Complete *Incident Report Form* (Appendix 3)
3. Notify project *Incident Manager*, Ed Cinadr and project *Site Health and Safety Coordinator*, Brendan Prendeville or Project Engineer, Mike Seal
4. *Incident Manger* will notify the following personnel to handle insurance issues:

   David Wolfe (614) 459-7272 ext. 1285
5. *Site Health and Safety Coordinator* will contact PMA Project Manager, Craig Opperman if accident occurs on the jobsite.

PROJECT CONTACT LIST	
Project Name:	Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH
Client:	Portsmouth Mission Alliance
B&N Project No.:	**58733**

NAME	CONTACT INFO
Brendan Prendeville Burgess & Niple, Inc.	Project Manager / Project Engineer Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 brendan.prendeville@burgessniple.com (614) 459-2050x1364 (office) (614) 849-2278 (cell) (614) 451-1385 (fax)
Craig Opperman Manager of Special Projects	Project Manager PMA Craig.opperman@ports.pppo.gov (740) 897-2440 (Office) (740) 648-0958 (Mobile)
Ed Cinadr Burgess & Niple, Inc.	Project Incident Manger Director of Facility Inspection Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 ed.cinadr@burgessniple.com (614) 459-2050x1480(office) (614) 296-0522 (cell) (614) 451-1385 (fax)
Dale Poorman Burgess & Niple, Inc.	Site Health and Safety Coordinator Project Engineer Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 dale.poorman@burgessniple.com 614-459-2050 614-849-2278 (cell) 614-451-1385 (fax)

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PROJECT WORK & SAFETY PLAN	
Project Name:	Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH
Client:	Portsmouth Mission Alliance

1.0 INTRODUCTION

1.1 General Information

Burgess & Niple, Inc. (B&N) has completed this Project Work & Safety Plan (PWSP) to serve as a guide for activities to be conducted at the Portsmouth Gaseous Diffusion Plant in Piketon, OH. The purpose of this plan is to provide guidance for overall project goals, procedures to be followed, contact information, initial schedule of work, site hazard evaluation, personnel protection, site control, and emergency response procedures to be implemented as they apply to the work activities to be performed at the site.

These policies and procedures must be followed by on-site B&N personnel, contract personnel, or site visitors, and constitutes the project PWSP. The Site Health and Safety Coordinator (SHSC) will review this plan with each person working at the project site, so that everyone will be familiar with this plan and the hazards of the work to be performed.

Due to past events or operational practices at the subject site, hazardous conditions may arise in the work area during the field operations. For this reason, on-site Burgess & Niple personnel must read this document and must be knowledgeable of the appropriate health and safety measures needed to assure a safe working environment. This plan serves as a summary of health and safety procedures to be followed at this site.

1.2 Project Description

B&N will perform inspection activities on the following bridge structures:

Bridge Name
South Fog Road Bridge
North Access Culvert

1.3 Planned Site Activities

Site activities include inspection of the bridge and culvert by experienced personnel. B&N shall provide the following types of inspection in conformance with the detailed tasks identified in the RFP for Purchase Order No. DE-EM00004062.

South Fog Road Bridge and North Access Culvert

Limits of Inspection

- South Fog Road - Steel beam span from the south abutment to the north abutment (including approaches). North Access Culvert – inlet to outlet and top roadway/approaches.

Hands-on Access and Visual Inspection

- Steel beams
- Culvert
- Fatigue Prone Details (welded bars along bottom flange of beams)
- Abutments
- Channel
- Potential scour issues

Lane Closures

- No lane closures or traffic control is expected for the above noted inspection.

Photographs

- Digital photographs of any significant and/or typical conditions will be taken and included in the report

Testing

- Magnetic particle testing is to be used to investigate and document cracks

Cracks

- Mark location on structure
- Photograph every crack
- Create a sketch of the crack with dimensions showing limits of crack development

PROCEDURES FOR REPORTING SIGNIFICANT DEFICIENCIES

Deficiencies found during the inspection that are determined to severely affect the safe load carrying capacity of the bridge or pose a threat to the traveling public will be reported immediately to Craig Opperman.

A letter, along with color photographs and sketches, documenting the finding will be sent as soon as possible to the Project Manager.

1.4 Access Methods

The following access methods will be used in singularly or in combinations to perform the hands-on inspection of each truss bridge. All access will be performed in accordance with OSHA Federal and State rules and regulations regarding personal protective equipment and fall protection requirements for fall protection.

- All access will be from the ground or short step ladders.

2.0 POTENTIAL SAFETY HAZARDS

In order to promote the safety and well being of personnel conducting work at the project site, they shall be informed as to the potential hazards that may be encountered there. These hazards involved are primarily related to falling hazards. The project site will be periodically reevaluated to determine if the level of risk has changed.

2.1 Project Specific Hazards

- Traffic on bridges is typically light; however, high speeds are sometimes encountered. “Bridge inspection Ahead” or similar signs will be placed at each approach to warn drivers of the work ahead.

A Task Hazard Assessment form has been completed for the bridge inspection activities (see Appendix 2).

2.2 Physical Hazards

Potential hazards encountered in field inspection activities are highlighted in the following table.

TYPE	HAZARD
BIOLOGICAL	BIRD WASTE
BIOLOGICAL	LACK OF OXYGEN
BIOLOGICAL	ASBESTOS
BIOLOGICAL	USED SYRINGES
BIOLOGICAL	CHEMICALS (VAPORS, GASES, & LIQUIDS)
BIOLOGICAL	HUMAN WASTE (RAW SEWAGE)
BIOLOGICAL	ENGINE EXHAUST
BIOLOGICAL	BLASTING MATERIAL
BIOLOGICAL	DUST
BIOLOGICAL	LEAD PAINT (OVER SPRAY)

TYPE	HAZARD
BIOLOGICAL	LEAD PAINT (CHIPS)
ENVIRONMENTAL	POISONOUS PLANTS & BRIARS
ENVIRONMENTAL	VEGETATION OVERGROWTH
ENVIRONMENTAL	SLIPPERY SURFACES (GREASE, ALGAE, ETC.)
ENVIRONMENTAL	INCLEMENT WEATHER
ENVIRONMENTAL	WILD ANIMALS (ANGRY BIRDS)
ENVIRONMENTAL	WATER (DROWNING)
ENVIRONMENTAL	BITING AND STINGING INSECTS
ENVIRONMENTAL	POWER LINES
PHYSICAL	ENTRAPMENT
PHYSICAL	UNSECURED LADDERS, CATWALKS, & HANDRAILS
PHYSICAL	CRUSHING BY MECHANICAL ACCESS EQUIPMENT
PHYSICAL	FAILURE OF MECHANICAL ACCESS EQUIPMENT
PHYSICAL	BROKEN GLASS
PHYSICAL	TRAFFIC (BOAT, AUTO, & RAIL)
PHYSICAL	SHARP OBJECTS
PHYSICAL	FALLING
PHYSICAL	MACHINERY (BRIDGE)
PHYSICAL	FALLING OBJECTS
PHYSICAL	VAGRANTS

Safety habits recommended to reduce the risk of illness or injury are outlined below based on type of hazard:

1. Biological

- **Histoplasmosis** - Avoid breathing dust from bird waste by
  - A. Not disturbing waste material.
  - B. Using appropriate mask to filter air for breathing when in poorly vented area.
  - C. Wet down bird waste to reduce dust.
- **Exhaust Fumes**
  - A. Avoid prolonged exposure to exhaust fumes (shut down engines when not operating machinery).
  - B. Avoid affected locations during periods of peak traffic.
- **Infection**
  - A. Clean and protect cuts and abrasions.
  - B. Avoid facial contact with unclean surfaces.
  - C. Obtain tetanus shots when appropriate.
  - D. Wash hands when appropriate.

2. Environmental

A. Do not work on surfaces slick with ice, snow, grease, algae, etc.
B. Use care when working on wet surfaces.
C. Use care when working in windy conditions (be aware of ropes and equipment which could be blown into traffic).
D. Be aware of electric lines, utilities stationary power lines at site, lights, etc., in work area. Avoid physical contact of line with body, access equipment, safety equipment, etc.

E. Avoid shorting of extension cords resulting from cutting, wear or abrasion, breaking, wetting, etc., of extension cords.
F. Avoid shorting of electrical equipment by wetting or improper operation and care.
G. Move to safe location during electrical storms.

3. Physical Hazards

A. Properly utilize fall protection equipment.
B, Avoid climbing on or attaching to loose or unstable surfaces, members that are not able to safely support human loads. **Note: Do not tie off to a concrete handrail for any reason**.
C. Be aware of physical limitations (fatigue, hot, cold, etc.) and distractions.
D. Wear safety vests where vehicular traffic is encountered. Avoid working alone.
E. When working in or around access equipment:
   1. Be instructed of proper operation and limitations of equipment.
   2. Do not operate if safety devices are not functioning properly.
   3. Be properly tied off to access equipment.
   4. Tie off all ladders.
   5. Be aware of crushing hazards.
F. Be aware of falling debris especially when working above or below other personnel by informing others of your location and intention.
G. Wear helmet, eye protection, and hearing protection where appropriate.
H. (See training manual for clothing, shoes, hair, etc.)
I. Avoid mechanical and electrical components at site unless proper lockout procedure has been performed.

2.3 Weather Related Hazards

The activities included in the scope of work are to be conducted outside, and therefore are subject to weather conditions. Precipitation, or extremes in temperature, can pose health or safety hazards and shall be considered. Extra care shall be taken when working in wet conditions. A location will be designated outside the work area where personnel can take rest breaks from extreme weather conditions. Burgess & Niple personnel shall be able to recognize the symptoms of heat and cold stress, and take the appropriate measures to alleviate them. Since the field activities at this site are to be conducted in outside conditions proper clothing will be worn

3.0 SAFETY PRECAUTIONS

In order to reduce the health and safety risk to workers at the project site, the following precautions will be observed:

- Inspection teams will be comprised of a minimum of two persons due to safety issues.

- On-site personnel must be trained on equipment that is being utilized, safety procedures to be followed, and emergency procedures and communications to be practiced.

- All on-site personnel should make use of their senses to alert themselves to potentially dangerous situations which they should avoid (e.g., presence of sharp objects or potential objects that could fall onto personnel).

3.1 Equipment Safety Inspections

Personal Protective Equipment (PPE) will be worn at all times to protect the inspectors from any potential hazards. The following PPE will be worn at all times: hard hat or bump cap, steel toed boots, reflective vests, eye protection, personal floatation devices while working around the culvert, and chest or hip waders while working around water.

The inspection personnel shall inspect their PPE on a daily basis. If potentially hazardous deficiencies are found during the daily inspections, the equipment will be replaced by extra equipment that will be available at the project site.

PPE shall be inspected prior to each use for mildew, wear, damage and other deterioration, and defective components shall be removed from service if their strength or function may be adversely affected.

Equipment with significant defects, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes are to be withdrawn from service immediately, and will be tagged or marked as unusable, or destroyed.

3.2 Confined Spaces

The following definitions were used to determine if an inspection element is classified as a confined space requiring a permit. It is not anticipated that confined spaces will be entered during this project.

Confined Space: A space which:
(1) is large enough to permit bodily entry
(2) has limited or restricted means for entry or exit; and

(3) is not designed for continuous employee occupancy.
Some confined spaces require a permit, training, and special equipment to enter (see “Permit Required Confined Space” definition below).

Permit Required Confined Space (PRCS): A confined space which also has one of these characteristics:

(1) contains or has known potential to contain a hazardous atmosphere;
(2) contains liquids or solids with the potential to drown or engulf an entrant;
(3) has inwardly converging walls or floors or a configuration that could trap or asphyxiate a person; or
(4) contains any other recognized serious safety or health hazard.

The following items in most cases will be classified as PRCS:

Steel Box Pier Caps	Steel Box Tower Legs and Struts
Steel Box Girders	Concrete Girders
Steel Box Arch Ribs	Anchorage Chambers
Steel Box Truss Arch Members	Abutment Chambers
Steel Box Columns	Storage Tanks
Culverts	Sewers

The North Access Culvert will be treated as a non-permit required confined space. 4-gas meters will be utilized during the entrance to the culvert. If hazardous air quality is confronted the inspectors will immediately vacate the culvert until it is known that the air quality has improved.

3.3 Traffic Control

Traffic control will not be utilized in this inspection.

3.4 Working over Waterways

Flotation devices will be worn by inspectors while inspecting the North Access Culvert.

4.0 PERSONNEL REQUIREMENTS

4.1 Incident Manager

The Incident Manager, to whom on-site health hazards or emergencies shall be reported, is B&N’s Project Engineer, Brendan Prendeville. This report shall be made in writing, and include factors relating to the incident. A duplicate copy of this report shall also be submitted to Burgess & Niple's Corporate Health and Safety Officer (CHSO).

4.2 Site Health and Safety Coordinator

The Site Health and Safety Coordinator (SHSC) will be Dale Poorman. This person shall direct site activities, and implement the safety and health protection procedures outlined in this plan. He will have primary responsibility for:

- Assuring that inspection personnel have read the PWSP and are aware of the potential hazards of the site and the proper procedures of handling those hazards should they occur, including the health and safety provisions and standards in this plan;
- Assuring that proper personal protection equipment is available and utilized properly by the inspection team;
- Monitoring the performance of inspection personnel to ensure that health and safety procedures are being performed, in addition to correcting any performances that do not comply with the PWSP;
- Coordinating safety procedures with the local authorities;
- Advising the inspection team on health and safety matters relative to the site;
- Posting a copy of the PWSP at the site with emergency telephone numbers and directions to the nearest telephone;
- Assuring that inspection personnel observe the appropriate work zones; and
- Reporting safety violations to the CHSO.

In addition to these responsibilities, the SHSC shall be responsible for making modifications to the PWSP during the course of the project, based upon the results of the site-monitoring program.

4.3 Project Personnel

Project personnel involved in on-site investigations and operations are responsible for:

- Informing themselves of the guidelines outlined within the PWSP, especially any aspects that they do not understand.
- Notifying the SHSC of any special medical conditions (i.e., allergies, pregnancy, diabetes) and, if necessary, assuring that on-site personnel are aware of any such conditions.

- Taking reasonable precautions to prevent injury to themselves and to their fellow employees; being alert to potentially harmful situations.

- Performing only those tasks that they believe they can do safely and immediately reporting any accidents and/or unsafe conditions to the SHSC.

- Practicing good housekeeping by keeping tools and equipment orderly and out of potentially harmful situations.

- Reporting injuries.

On-site personnel are responsible for implementing this PWSP in order to promote a safe work environment.

5.0 DESIGNATION OF THE LEVELS OF PROTECTION

OHSA designations for Levels of Respiratory PPE are contained within Appendix 4. Level D personal protective equipment will be utilized during field activities on this project. If conditions warrant Level C or higher personnel protection, personnel will leave the work area until conditions return to acceptable Level D conditions. If Level C PPE or above are required, this HSP must be amended to address the atmospheric hazards.

Level D protection will be selected when it has been determined that there is no possibility of skin contact with contamination or respiratory hazard. This level is primarily a work uniform. Employees should wear work boots or other specialty shoes. Gym shoes, sandals, and casual shoes are not permitted. Protective clothing should be properly sized to provide freedom of movement without excessive looseness. Long hair should be tied in a manner to keep it out of the fall arrest equipment. Oversized or loose clothing, exposed shirt tail, long hair, jewelry, etc., could become entangled in the equipment causing failure or injury.

6.0 DELINEATION OF THE WORK AREA

The work area shall include the bridge sites outlined in Section 1.2.

7.0 CONTROL PROCEDURES

The work area is for authorized personnel. Personnel and equipment should be kept to a minimum, consistent with effective site operations.

8.0 TRAINING REQUIREMENTS FOR PERSONNEL

The SHSC will be trained in the safety aspects of the work. The SHSC responsible for this project will be the project manager assigned to this project. On-site personnel shall

also be familiar with the location and use of any emergency equipment (i.e. rescue equipment, etc.) required at the project site. Personnel will also be familiar with any special procedures (i.e., climbing techniques, etc.) that will be performed during the assessment.

8.1 Climbing Training

No climbing activities will occur during this inspection.

9.0 MEDICAL REQUIREMENTS

9.1 Health Monitoring

Burgess & Niple provides annual medical surveillance programs for employees who have risk of exposure to environmental/hazardous waste products. There is no indication that such products will be encountered during this project. Therefore, the probability of exposure to such waste products is judged to be extremely low.

9.2 Site Specific Requirements

No site specific medical requirements are required for this project.

10.0 ON-SITE EMERGENCIES

10.1 Emergency Procedures

Emergency Situation

Site activities present a potential risk to on-site personnel. During routine operations, establishing good work practices, staying alert and using proper personal protective equipment minimizes a risk. Unpredictable events such as physical injury may occur and must be anticipated. If an emergency occurs these procedures should be followed:

- In the event that any on-site personnel experience adverse effects or symptoms of exposure while on the scene, Burgess & Niple personnel shall immediately halt work and act according to the instructions provided by the SHSC;
- The discovery of a condition that would suggest the existence of a situation more hazardous than anticipated, should result in the evacuation of Burgess & Niple personnel, followed by re-evaluation of the hazard and the level of personal protection required;

- In the event of an incident, the Project Manager/ Site Health and Safety Officer shall prepare a memorandum detailing all aspects of the incident. Follow-up action must be taken to correct the situation that caused the incident.

Project Telephone

At a minimum, the PM and the SHSC shall have on person a mobile phone. In locations where there is no mobile phone coverage, a satellite/cellular phone belonging to B&N will also be at the project site. All personnel shall have a two-way radio for instant communication between team members.

Emergency Communications

All personnel shall have a two-way radio.

Emergency Organizations

SEE PAGE 1 FOR EMERGENCY PHONE NUMBERS. A list of the organizations whose assistance might be required to deal with an on-site emergency is provided on Page 1 of this manual.

It may be necessary to coordinate activities with these organizations prior to beginning project operations.

Emergency Equipment

A first-aid kit will be available on-site; in the event a worker suffers a physical injury. On-site personnel certified in first aid can administer treatment to an injured worker.

10.2 Emergency Medical Care

Local Hospitals

SOMC Waverly Urgent Care
835 W Emmitt Ave
Waverly, OH 45690
Phone: 740-947-7662

11.0 SUMMARY

Burgess & Niple personnel involved with the scope of work for the subject project shall be familiar with the possible hazards involved, the safety procedures, and other inherent factors outlined in this plan. Prior to the commencement of work on the project, the

Project Manager/SHSC should discuss general procedures to be implemented, addressing local safety and health requirements and any site-specific conditions that may require additional precautions. Additionally, an on-site safety briefing will be conducted by a qualified safety coordinator from PMA which will identify any site-specific hazards which may be encountered. The following acceptance form is required to be signed by all site staff and subcontracting personnel.

HEALTH AND SAFETY PLAN ACCEPTANCE

I have had the opportunity to read and ask questions about this HSP. My signature certifies that I understand the procedures, equipment, and restrictions of this plan and agree to abide by them.

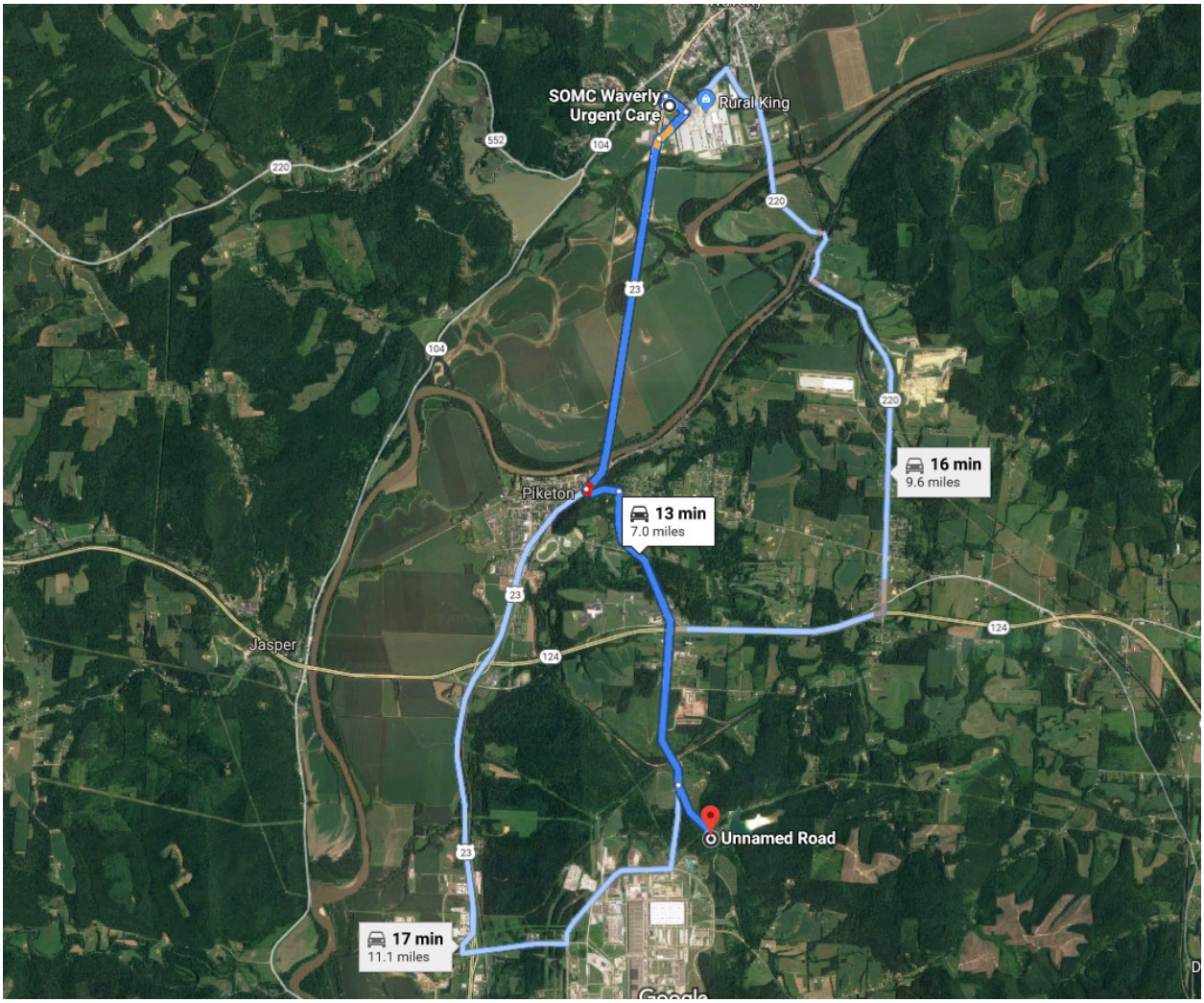
SIGNATURE PAGE

No.	Name	Signature	Date	Company
1	Brendan Prendeville		**5/27/20**	B&N
2	Dale Poorman		**5/27/20**	B&N
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

APPENDIX 1

Map to Local Hospitals

835 W Emmitt Ave
Waverly, OH 45690
Phone: 740-947-7662



APPENDIX 2

TASK HAZARD ASSESSMENT

TASK NAME: Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH

Equipment/tools: Hard hat, safety vest, steel toed boots, eye protection, measuring devices

Hazardous chemicals: None

Relative risk ranking: Low

Potential hazards

Check or add all that apply to site conditions

( ) Ground intrusion(underline)	( ) Chemical (underline)	(✓) Biological (underline)
Drilling	Vapor generation	Toxic or irritant plants
Excavation	Dust generation	Pathogens
Direct push	Mat'l contact	Insects
Sampling	( ) Electrical (underline)	( ) Fire/explosion (underline)
( ) Heavy equip. operation	Ovrhd./underg. utilities	Flammable materials
(✓) Physical exertion/strain	Energized equipment	Fuel lines
(✓) Slick/wet surfaces	Power tools	Hot work
(✓) Uneven terrain	(✓) Pedestrian traffic	Compressed gases
(✓) Falls from elev. >6 ft	(✓) Vehicle traffic	(✓) Confined space/O_2 def.
( ) Engulfment	( ) Noise (>85 dba)	(✓) Heat stress
( ) Cold stress	(✓) Work over water	( ) Explosive ordnance

Control and protective measures

Identify & reference location of control measures for each hazard listed above (HSM, SOPs, Standard Safe Work Practices, etc.).

( ) Equip. Operator Training ( ) Equip. Certific./Inspections (✓) PPE Level: D

(✓) Air Monitoring Equipment:

(✓) Specialized Training: Climbing/Rope Access, Rescue, CPR/First Aid

(✓) Site Control/Safe Access: SHSC to limit unauthorized personnel on work site

(✓) SOPs/Guidelines: (See HSP Sections 1.0, 2.0, 3.0)

( ) Engineering Controls:

(✓) Safe Work Practices: (See HSP Sections 1.0, 2.0. 3.0)

( ) Other:

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if monitoring data (see Action Levels) and site conditions warrant it (as determined by the SHSC). Any change to these initial levels must be noted here and documented with a completed ROC form.

EPA level of protection	( ) A ( ) D	( ) B (✓) D modified	( ) C ( ) Not permitted
Respirator (Level c and up)	( ) SCBA, airline ( ) HEPA	( ) purif. resp. ( ) dust pre-filters	( ) OV/AG cart ( ) other: _____
Protective clothing	( ) encap. suit ( ) Saranex	( ) Tyvek ( ) splash suit	( ) PE Tyvek ( ) other
Head, face **Eyes, ears**	(✓) hard hat ( ) splash shield	(✓) safety glasses ( ) ear plugs/muffs	( ) goggles ( ) other_____
Gloves (outer) (inner)	( ) nitrile_____ ( ) nitrile _____	( ) neoprene ( ) vinyl	( ) PVC (✓) other: Leather
Footwear	(✓) steel-toed leather ( ) hip waders	( ) overboots/covers ( ) shin/knee guards	( ) steel-toed rubber ( ) Climbing boot or shoe

Modifications: _____

APPENDIX 3

INCIDENT REPORT FORM

B&N HEALTH & SAFETY PLAN

INCIDENT REPORT FORM

To: Incident Manger/Site Health & Safety Coordinator Date: _____

From: _____

Location of Incident: _____

Description of Incident: _____

Cause of Incident: _____

Treatment Received: _____

Physicians Recommendations: _____

Returned to Work: _____

REV 0505MEB

Appendix 4

OSHA Levels of Respiratory PPE

OSHA 1926.65 Appendix B

General Description and Discussion of the Levels of Protection and Protective Gear

This appendix sets forth information about personal protective equipment (PPE) protection levels which may be used to assist employers in complying with the PPE requirements of this section.

As required by the standard, PPE must be selected which will protect employees from the specific hazards which they are likely to encounter during their work on-site.

Selection of the appropriate PPE is a complex process which should take into consideration a variety of factors. Key factors involved in this process are identification of the hazards, or suspected hazards; their routes of potential hazard to employees (inhalation, skin absorption, ingestion, and eye or skin contact); and the performance of the PPE materials (and seams) in providing a barrier to these hazards. The amount of protection provided by PPE is material-hazard specific. That is, protective equipment materials will protect well against some hazardous substances and poorly, or not at all, against others. In many instances, protective equipment materials cannot be found which will provide continuous protection from the particular hazardous substance. In these cases the breakthrough time of the protective material should exceed the work durations.

Other factors in this selection process to be considered are matching the PPE to the employee's work requirements and task-specific conditions. The durability of PPE materials, such as tear strength and seam strength, should be considered in relation to the employee's tasks. The effects of PPE in relation to heat stress and task duration are a factor in selecting and using PPE. In some cases layers of PPE may be necessary to provide sufficient protection, or to protect expensive PPE inner garments, suits or equipment.

The more that is known about the hazards at the site, the easier the job of PPE selection becomes. As more information about the hazards and conditions at the site becomes available, the site supervisor can make decisions to up-grade or down-grade the level of PPE protection to match the tasks at hand.

The following are guidelines which an employer can use to begin the selection of the appropriate PPE. As noted above, the site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. It should be cautioned that the listing below does not fully address the performance of the specific PPE material in relation to the specific hazards at the job site, and that PPE selection, evaluation and re-selection is an ongoing process until sufficient information about the hazards and PPE performance is obtained.

Part A. Personal protective equipment is divided into four categories based on the degree of protection afforded. (See Part B of this appendix for further explanation of Levels A, B, C, and D hazards.)

I. Level A - To be selected when the greatest level of skin, respiratory, and eye protection is required.

The following constitute Level A equipment; it may be used as appropriate;

1. Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).

2. Totally-encapsulating chemical-protective suit.

3. Coveralls.(1)

4. Long underwear.(1)

5. Gloves, outer, chemical-resistant.

6. Gloves, inner, chemical-resistant.

7. Boots, chemical-resistant, steel toe and shank.

8. Hard hat (under suit).(1)

9. Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit).

II. Level B - The highest level of respiratory protection is necessary but a lesser level of skin protection is needed.

The following constitute Level B equipment; it may be used as appropriate.

1. Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

2. Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls).

3. Coveralls.(1)

4. Gloves, outer, chemical-resistant.

5. Gloves, inner, chemical-resistant.

6. Boots, outer, chemical-resistant steel toe and shank.

7. Boot-covers, outer, chemical-resistant (disposable).(1)

8. Hard hat.(1)

9. [Reserved]

10. Face shield.(1)

III. Level C - The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met.

The following constitute Level C equipment; it may be used as appropriate.

1. Full-face or half-mask, air purifying respirators (NIOSH approved).

2. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).

3. Coveralls.(1)

4. Gloves, outer, chemical-resistant.

5. Gloves, inner, chemical-resistant.

6. Boots (outer), chemical-resistant steel toe and shank.(1)

7. Boot-covers, outer, chemical-resistant (disposable).(1)

8. Hard hat.(1)

9. Escape mask.(1)

10. Face shield.(1)

IV. Level D - A work uniform affording minimal protection, used for nuisance contamination only.

The following constitute Level D equipment; it may be used as appropriate:

1. Coveralls.

2. Gloves.(1)

3. Boots/shoes, chemical-resistant steel toe and shank.

4. Boots, outer, chemical-resistant (disposable).(1)

5. Safety glasses or chemical splash goggles*.

6. Hard hat.(1)

7. Escape mask.(1)

8. Face shield.(1)

Footnote (1) Optional, as applicable.

Part B. The types of hazards for which levels A, B, C, and D protection are appropriate are described below:

I. Level A - Level A protection should be used when:

1. The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured (or potential for) high concentration of atmospheric vapors, gases, or particulates; or the site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the skin;

2. Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or 3. Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.

II. Level B - Level B protection should be used when:

1. The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection;

2. The atmosphere contains less than 19.5 percent oxygen; or 3. The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor

detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.

Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.

III. Level C - Level C protection should be used when:

1. The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;

2. The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and

3. All criteria for the use of air-purifying respirators are met.

IV. Level D - Level D protection should be used when:

1. The atmosphere contains no known hazard; and

2. Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Note: As stated before, combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

As an aid in selecting suitable chemical protective clothing, it should be noted that the National Fire Protection Association is developing standards on chemical protective clothing. These standards are currently undergoing public review prior to adoption, including:

NFPA 1991 - Standard on Vapor-Protective Suits for Hazardous Chemical

Emergencies (EPA Level A Protective Clothing) NFPA 1992 - Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies (EPA Level B Protective Clothing) NFPA 1993 - Standard on Liquid Splash-Protective Suits for Non-emergency, Non-flammable Hazardous Chemical Situations (EPA Level B Protective Clothing)

These standards would apply documentation and performance requirements to the manufacture of chemical protective suits. Chemical protective suits meeting these requirements would be labeled as compliant with the appropriate standard. When these standards are adopted by the National Fire Protection Association, it is recommended that chemical protective suits which meet these standards be used.

NORTH ACCESS ROAD CULVERT

X-203-17-C

BRIDGE INSPECTION REPORT

- BRIDGE INSPECTION FIELD REPORT
- BRIDGE INSPECTION FIELD REPORT FORM
- LEVEL I SCOUR ANALYSIS AND SCOUR PLAN OF ACTION
- LOAD RATING ANALYSIS
- NATIONAL BRIDGE INSPECTION INVENTORY DATA ITEMS
- PERSONNEL QUALIFICATIONS AND CERTIFICATES
- HEALTH AND SAFETY PLAN

BURGESS & NIPLE

5085 Reed Road | Columbus, OH 43220 | 614.459.2050

Mr. Craig Opperman, PE, PS
Portsmouth Mission Alliance, LLC
3930 US 23 South
Piketon, Ohio 45661

Re: 2020 Inspection of Shyville Road (North Access Road)
Culvert over Little Beaver Creek
Bridge No. 218050 X-203-17-C

July 24, 2020

Dear Mr. Opperman:

On June 3, 2020, Burgess & Niple, Inc. (B&N) performed a routine inspection of the Shyville Road (North Access Road) Culvert over Little Beaver Creek located near the Gaseous Diffusion Plant complex near Piketon, Ohio **(photos 1 through 3)**. The Burgess & Niple inspection team consisted of Brendan Prendeville, PE and Dale Poorman, PE. Craig Opperman, PE, PS accompanied the inspection team during this field work.

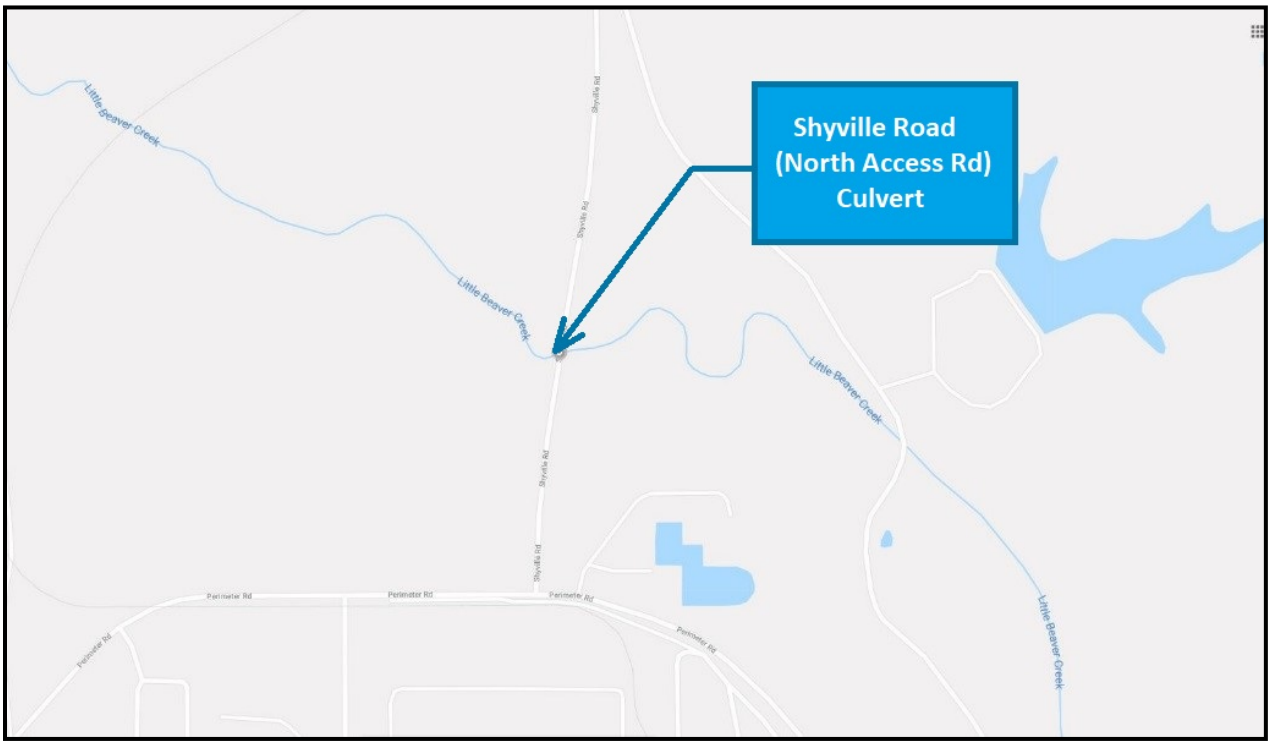
The Shyville Road (North Access Road) Culvert, Structure No. X-203-17-C, was originally a 144-inch diameter corrugated metal pipe (CMP) culvert conveying Little Beaver Creek north of the Piketon Gaseous Diffusion Plant in Pike County, Ohio. The estimated original construction date is 1953. The culvert was slip lined with a 108-inch (9-foot 0-inch) inside diameter HDPE pipe in 2020 due to deterioration of the culvert. The structure supports two lanes of traffic and embankment for the Shyville Road (North Access Road) and is located within the Portsmouth Gaseous Diffusion Plant site owned by the U.S. Department of Energy. The structure is 220.5 feet long and is under approximately 30 feet of fill.

The original culvert construction is a round 144-inch (12-foot 0-inch) inside diameter steel corrugated metal pipe (CMP) with 6-inch wide by 2-inch deep corrugations and 0.138 inch thick. At an unknown date, the original CMP was repaired by installing a 128-inch (10-foot 8-inch) inside diameter steel CMP liner with grout placed between the original and steel liner sections. This inner CMP is also composed of 6-inch wide by 2-inch deep corrugations; however, it is 0.109 inches thick, slightly thinner than the original CMP section. Both the original and the steel liner CMP are composed of 18-inch wide sections with a galvanized coating. No protective bituminous coating is present along inside the steel CMP liner. In 2020 the culvert was again slip lined using a 108-inch (9-foot 0-inch) inside diameter HDPE liner with threaded connections between segments and grout installed between the steel liner and the HDPE liner **(photo 4)**. ***Since the new diameter is less than 10 feet, the culvert no longer is classified as a bridge under ODOT and NBIS standards***. Additionally, a load rating was performed in 2019 with no load posting required. The culvert was slip lined which will not reduce the current load rating and therefore the culvert was not load rated for 2020.

The culvert is classified as a non-permit confined space based on an investigation by Portsmouth Mission Alliance personnel. For this report, locations of significant finding are noted following FHWA policy of distance from outlet and with the circular cross section referenced by the hours on a clock looking upstream. A total of eight HDPE pipe segments were used in the current liner.

This report includes the following attachments:

- Appendix A – ODOT Culvert Inspection Field Report Form
- Appendix B – Level I Scour Assessment and Scour Plan of Action
- Appendix C – Load Rating Analysis
- Appendix D – NBI Data Items
- Appendix E – Team Qualifications



Culvert Location

This bridge inspection was performed in accordance with the following documents:

- Manual of Bridge Inspection, Ohio Department of Transportation, 2014 v8.
- Manual for Condition Evaluation of Bridge, 2nd Edition, American Association of State Highway and Transportation Officials (AASHTO), 2011.
- Bridge Inspector's Reference Manual (BIRM), U.S. Department of Transportation, revised December 2012.

The culvert load rating was updated in 2019. A load rating was not included in the scope for 2020 (if authorized) – due to the repaired condition, the capacity for the structure would not be reduced; therefore not required. According to AASHTO 3.6.1.2.6 and Section 911 of the ODOT Bridge Design Manual the live load effects on the structure can be neglected due to the depth of the fill and the span length of the culvert. The culvert's thrust capacity was reduced slightly (by 5%) to account for the deterioration to the floor of the CMP. This slight reduction is appropriate mainly due to the makeup of the actual culvert being two concentric corrugated metal pipes with concrete grout infill between the steel pipes. The load rating calculations conservatively only consider the effective culvert capacity to be the diameter of the interior pipe with 10 gage thickness. Additionally, the live load effects are negligible due to the approximate 30 feet of fill over the culvert.

The culvert is rated **VERY GOOD** based on the recent slip line rehabilitation. Rating criteria is as follows:

Code	Description
N	NOT APPLICABLE
9	EXCELLENT CONDITION
8	VERY GOOD CONDITION - no problems noted.
7	GOOD CONDITION - some minor problems.
6	SATISFACTORY CONDITION - structural elements show some minor deterioration.
5	FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
4	POOR CONDITION - advanced section loss, deterioration, spalling or scour.
3	SERIOUS CONDITION - loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	CRITICAL CONDITION - advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	"IMMINENT" FAILURE CONDITION - major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put back in light service.
0	FAILED CONDITION - out of service - beyond corrective action.

RECOMMENDATIONS

The following recommendations should be performed to maintain the current level of service for this structure for the next five years.

- Install additional riprap at the culvert outlet. Riprap should be greater than 2 feet in diameter to prevent washout during high flow condition.
- Monitor the joints between segments of the HDPE liner for any leakage and misalignment.

Photo 1 – Looking west at the culvert inlet. Note: projecting edge of original culvert with square end, partial height headwall. Recent slip lining has reduced the culvert diameter from the original 12 feet to 9 feet.

Photo 2 –Looking south at the roadway above the culvert. Note: no settlement observed in pavement or guardrail.

Photo 3 – Looking east at the culvert outlet. Note: riprap installed in the downstream channel.

Photo 4 – SKU tag found on inside face of HDPE liner.

SUMMARY OF FINDINGS

The culvert is in ***Very Good*** Condition, or 8 on the NBIS condition rating guidelines. Specific condition of individual culvert items are as follows:

ITEM	RATING
CULVERT	8 – VERY GOOD
CHANNEL	5 – FAIR
APPROACHES	8 - VERY GOOD

Culvert General

The general condition of the culvert is ***Good***.

- Misalignment of the segments at the joints were observed at the following locations:
  - Joint 1 – up to 1 1/2-inch misalignment between the diameter of the segments exists from the 7 o'clock to the 12 o'clock positions **(photo 5)**.
  - Joint 2 – longitudinal opening between segments at the 5 o'clock position **(photo 6)**.
  - Joint 4 – 1 3/4-inch misalignment between the diameter of the segments exists at the 6 o'clock position.
- Seal is bulging between the segments at joint 4 at the 9 o'clock position **(photo 7)**.
- Fibrous material apparently used to help seal the joints and grout were observed at joint 6 between the 5 o'clock and 8 o'clock positions, joint 7 at the 5 o'clock position and joint 8 between the 5 o'clock and the 8 o'clock positions **(photo 8)**.

Culvert Alignment

The culvert barrel alignment is in ***Good*** condition.

- Segments 2, 3 and 4 appear to have a flatter slope than other segments based on observed speed of flow and width of water inside the culvert **(photo 9)**. This likely is an as-built condition of the original culvert or previous slip line repair.
- No signs of settlement were observed in the roadway or guardrail above the culvert **(photo 2)**.

Culvert Shape

The culvert shape is in ***Good*** condition.

- The HDPE liner has experienced slight flattening with the inside horizontal diameter measured at 9 feet 5 inches at joint 2 from the outlet.

Culvert Headwall/Endwall

The headwall and endwall are in ***Good*** condition.

- No significant deficiencies were noted in the partial height headwall and endwall **(photos 1 and 3)**.

Culvert Apron

Cast-in-place concrete aprons exist at the inlet and outlet and are in ***Fair*** condition.

- The inlet apron exhibits no significant settlement or deterioration and is poured directly against the original concrete culvert **(photo 1)**.
- The outlet apron has historical settlement of approximately 2 feet and rotated slightly towards the endwall **(photo 10)**. The apron is undermined 6 inches vertically with 2 feet of penetration. The apron consists of a 6-inch thick slab with an 18-inch deep curtain wall (total of 24 inches from top of apron to bottom of curtain wall).

Scour

The scour rating is **7 – Countermeasures have been installed to correct previously existing problem with scour**.

- The outlet apron flowline is 2 feet above the downstream channel flowline (measured 8 feet downstream from the end of the apron) with the apron curtain wall undermined and settled **(photo 10)**. Class A riprap was installed during the recent slip lining project to fill the scour hole in the downstream channel noted in the 2019 report; however, it appears that some of the riprap has washed downstream. The stream bed is still armored with riprap with no areas of unprotected channel observed downstream of the outlet.
- The inlet apron flowline is 3 inches above the upstream channel flowline with no scour observed.

Channel Alignment

The channel alignment is in ***Good*** condition.

- Little Beaver Creek has a slight bend approximately 50 feet upstream of the headwall **(photo 11)** is aligned well with the culvert inlet. The creek is straight downstream of the culvert with riprap placed in the scour hole noted in the 2019 inspection near the outlet **(photo 12)**.

Channel Protection

The channel protection is in ***Fair*** condition.

- Upstream, the channel banks are naturally vegetated and intact. Rip rap is present along the stream bed on both banks **(photo 11)**. This has not changed.
- Downstream, riprap has been placed in the previously noted 80-foot diameter scour pool **(photo 12)**. Some of the riprap has been washed downstream, again creating a scour pool. Riprap still armors the channel bed within this pool.

Hydraulic Opening

The hydraulic opening is in ***Fair*** condition.

- The inner diameter of the 9-foot 0-inch diameter HDPE liner reduces the hydraulic opening of the original 12-foot 0-inch culvert by 44% **(photo 1)**. This reduced opening can cause headwater buildup and change the flow characteristics through the culvert.
- The culvert end treatment consists of a projecting edge with square end, partial height headwall and endwall **(photos 1 and 3)**. No signs of scour due to turbulent flow and/or headwater buildup were observed at the inlet.
- Some of the riprap placed in the large scour hole downstream of the outlet has been washed downstream as a result of the outlet flow velocity. The effect that the reduced culvert diameter has on the downstream channel has not been determined.

Approach Wearing Surface

The approach wearing surfaces and shoulders are in ***Good*** condition with no deficiencies noted.

Embankment

The approach embankments are in ***Good*** condition.

- The embankment damage noted during the 2019 inspection north of the culvert inlet has been filled and armored with crushed aggregate.
- Minor embankment erosion is present along the south face of the downstream culvert. This has not significantly changed since the prior inspection.
- Two trees are growing above the culvert outlet.

Approach Guardrail

The approach guardrail is in ***Good*** condition with no significant deficiencies noted.

INSPECTION PHOTOGRAPHS

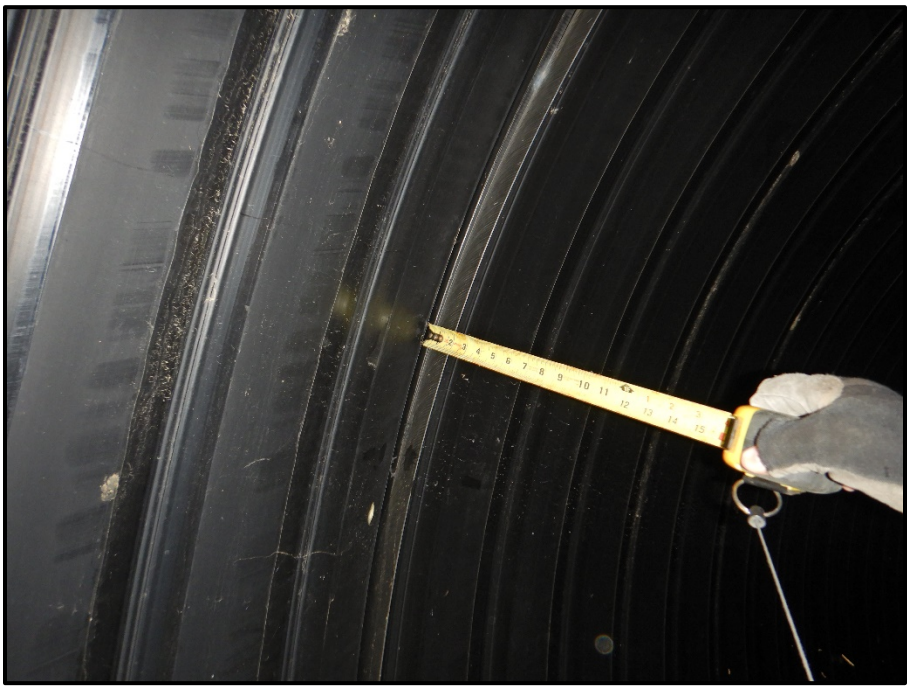


Photo 5 – Looking northeast at joint 1 inside the culvert at the 10 o'clock position. Note: 1 1/2-inch offset between the diameter of the adjacent segments due to fit-up of the threaded connection.

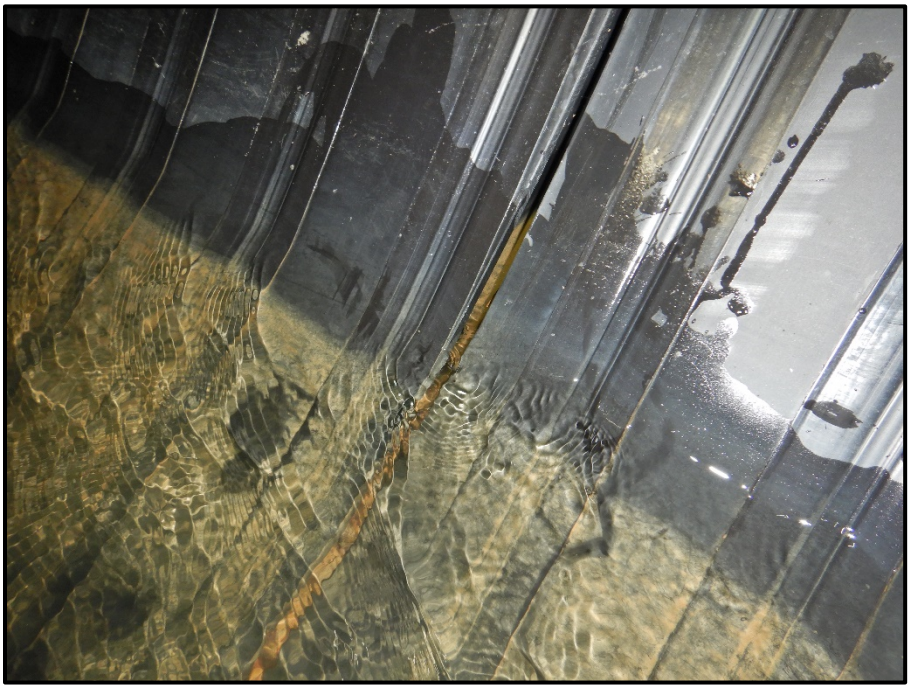


Photo 6 – Looking southeast at joint 2 inside the culvert at the 5 o'clock position. Note: opening in joint between segments due to fit-up of threaded connection.

Photo 7 – Looking north at joint 4 inside the culvert at the 9 o'clock position. Note: section possible caught on bolt during slip lining.

Photo 8 – Looking east at joint 6 inside the culvert between the 5 o'clock and 8 o'clock positions. Note: Fibrous material and grout exist in the joint between segments. Personnel on-site identified this as towels used to limit leakage of grout during construction.

Photo 9 – Looking east inside the culvert from near the outlet. Note: slower flow and wider pool of water in segments 2, 3 and 4 indicating a flatter slope.

Photo 10 – Looking south at the apron at the outlet. Note: apron has historical settlement of approximately 2 feet.

Photo 11 – Looking east at the upstream channel from the culvert inlet. Note: channel changes direction approximately 50 feet upstream of the inlet. Channel banks are well vegetated.

Photo 12 – Looking west at the downstream channel from the culvert outlet. Note: riprap exists in channel downstream of the outlet.

We appreciate the opportunity to provide engineering services to you. If you have any questions or concerns, please feel free to contact this office.

Sincerely,

Brendan Prendeville, PE
Project Manager

STATE OF OHIO
7-24-20
BRENDAN J.
PRENDEVILLE
E-74728
REGISTERED
PROFESSIONAL ENGINEER

copy: Mr. Ed M. Cinadr, PE, Director of Facility Inspection
File

APPENDIX A

ODOT Culvert Field Report Form

STATE OF OHIO
BRIDGE INSPECTION FIELD REPORT

SFN
DIST 9

Bridge Number: North Access Road Culvert
Feature Intersected: Little Beaver Creek

Year Built
Municipality: Not applicable

APPROACH ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c1.	Wearing Surface (SF)						1
c2.	Slab (SF)						
c3.	Relief Joint (LF)						
c4.	Embankment (LF) ded						1
c5.	Guardrail (LF)						1
N36.	Safety Features: Tr, Gr, Tm	36)B N/A	36)C N/A	36)D N/A			
c6.	Approach Summary					(9-0)	8

DECK ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c7.1	Floor/Slab (SF)						
c7.2	Edge of Floor/Slab (LF)						
c8.	Wearing Surface (SF)						
c9.	Curbs/Sidewalk (LF)						
c10.	Median (LF)						
c11.	Railing (LF)						
N36.	Safety Features: Rail	36)A N/A					
c12.	Drainage (EA) ded						
c13.	Expansion Joint (LF) ded						
N58.	Deck Summary					(9-0)	

SUPERSTRUCTURE ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c14.	Alignment (EA) ded						
c15.1	Beams/Girders (LF)						
c15.2	Slab (SF)						
c16.	Diaphragm/X-Frames (EA)						
c17.	Stringers (LF)						
c18.	Floorbeams (LF)						
c19.	Truss Verticals (EA)						
c20.	Truss Diagonals (EA)						
c21.	Truss Upper Chord (EA)						
c22.	Truss Lower Chord (EA)						
c23.	Truss Gusset Plate (EA) ded						
c24.	Lateral Bracing (EA)						
c25.	Sway Bracing (EA)						
c26.	Bearing Devices (EA) ded						
c27.	Arch (LF)						
c28.	Arch Column/Hanger (EA)						
c29.	Arch Spandrel Walls (LF)						
c30.	Prot. Coating System (LF) ded						
c31.	Pins/Hangers/Hinges (EA) ded						
c32.	Fatigue (LF) ded						
N59.	Superstructure Summary					(9-0)	

SUBSTRUCTURE ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c33.	Abutment Walls (LF)						
c34.	Abutment Caps (LF)						
c35.	Abut. Colmns/Bents (EA)						
c36.	Pier Walls (LF)						
c37.	Pier Caps (LF)						
c38.	Pier Columns/Bents (EA)						
c39.	Backwalls (LF)						
c40.	Wingwalls (LF)						
c42.	Scour (LF) ded						
c43.	Slope Protection (LF) ded						
N60.	Substructure Summary					(9-0)	

CULVERT ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c44.	General (LF)						1
c45.	Alignment (LF) ded						1
c46.	Shape (LF) ded						1
c47.	Seams (LF) ded						1
c48.	Headwall/Endwall (LF)						1
c49.	Scour (LF) ded						1
c50.	Abutments (LF)						
N62.	Culvert Summary					(9-0)	8

CHANNEL ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c51.	Alignment (LF) ded						1
c52.	Protection (LF) ded						2
c53.	HydraulicOpening (EA) ded						2
c54.	Navigation Lights (EA) ded						
N61.	Channel Summary					(9-0)	5

SIGN/UTILITY ITEMS

		Qty.	condition state 1	2	3	4	cr TR
c55.	Signs (EA) ded						
c56.	Sign Supports (EA) ded						
c57.	Utilities (LF) ded						
N59, 60 or 62	General Appraisal					(9-0)	8
N41.	Operating Status					(Open, Restricted, or Closed)	A

Inspector Name Dale Poorman

Inspection Date/Type 06/03/2020 / RT ☑ FC ☐ UW ☐ SP ☐
Use mm/dd/yr

Reviewer Name Brendan Prendeville

Review Date 07/24/2020 Use mm/dd/yr

PE Number (Insp or Rev) 74728

*Key: "**Qty**" = Quantity necessary for Element Level inspection; "**(LF)**" = Linear Feet; "**(SF)**" = Square Feet; "**(EA)**" = Each or count; "**CR**" = 1,2,3 or 4 Condition Rating; "**TR**" = Transition Rating or weighted average of condition states; "**ded**" = dedicated or specific chart and guidance; "**c**" = condition prefix; "**N**" = NBIS rating*

APPENDIX B

Level 1 Scour Assessment and Scour Plan of Action

Department of Energy
Scour Evaluation Checklist

The purpose of this checklist is to verify that each bridge over water has been evaluated for scour in accordance with federal law and Department of Energy (DOE) policy. The checklist is based on metric #18 of the latest version of the Federal Highway Administration (FHWA) Metrics for the Oversight of the National Bridge Inspection (NBI) Program.

Metric #18: Inspection procedures – Scour

To meet this metric, each bridge over water must have a documented evaluation of scour vulnerability. For bridges determined to be scour critical, bridges with unknown foundations, bridges with countermeasures installed to mitigate an existing scour problem, or where an evaluation of scour vulnerability is not documented, prepare a Scour Critical Plan of Action (POA) and monitor the bridge in accordance with the POA.

DOE policy requires each operating or in-service bridge over water have a valid, documented scour evaluation, NBI Data Item 113 coded consistently with the results of the scour evaluation for vehicle bridges, and as applicable, documentation of a valid POA with evidence that the bridge is monitored in accordance with the POA. Valid scour evaluations and POAs are ones that follow the applicable DOE criteria, have been completed by a qualified engineer, have completed Quality Control and Quality Assurance reviews by qualified engineers, and are adequately documented. Evidence of bridge monitoring includes documentation for changes in scour during routine inspections, and for those under a POA, report of re-evaluation following a POA-defined trigger event.

A bridge may be:

a. Low Risk. Bridge with no history of scour problems and have a low likelihood for scour problems in the future.

b. Scour Critical. Bridge with unstable foundation element, an abutment or pier foundation, due to observed, assessed, or calculated scour as determined from a field assessment or scour evaluation.

c. Scour Susceptible. A bridge that based on a Level 1 Field Assessment is neither clearly scour critical or low risk. Further investigation is required to determine the status of the structure.

Apply the following guidance in conjunction with FHWA guidance when rating vulnerability to scour for both vehicle and railroad bridges:

DOE Coding Guidance	
Minimum Conditions	**Possible Outcomes**
The bridge is not over a waterway	NBI Item 113 = N
The bridge has failed due to scour and closed to traffic.	NBI Item 113 = 0
The bridge is unstable for either observed, assessed, or calculated scour. For example: • Scour within the limits of the footing or piles • Scour below spread-footing base or pile tips • Bridge at imminent risk of failure from scour	NBI Item 113 = 3, 2, or 1; requires a PCA/POA

Department of Energy
Scour Evaluation Checklist

DOE Coding Guidance	
Minimum Conditions	**Possible Outcomes**
The bridge is not over a waterway	NBI Item 113 = N
Bridges with neither a Field Assessment nor a Scour Evaluation If bridge is also over "tidal" waters OR If foundations are also "unknown"	NBI Item 113 = 6; requires a PCA/POA NBI Item 113 = T; requires a PCA/POA NBI Item 113 = U; requires a PCA/POA
The bridge has a documented Level 1 Field Assessment. For example: • Bridge foundation (including piles) on dry land well above flood water elevations • Scour within the limits of footing or piles (Example B) by assessment • Installed countermeasures supported by a hydraulic analysis	NBI Item 113 = 9 , 7, or 5 If NBI Item 113 = 7; provide documentation of an implemented POA
The bridge is low-risk, stable for assessed scour, and has a documented Level 1 Field Assessment. Includes: • Single span bridges with protected abutments • Bridges with foundations well above the flood plain • Bridges over dams or pools with small flows • Bridges over lined channels • Bridges with spread footings on non-erodible bedrock • Culverts with floors	NBI Item 113 = 8
The bridge is stable for calculated scour and has a documented HEC-18 Scour Evaluation • Scour above the top of footing (Example A) by calculation	NBI Item 113 = 8
The bridge is stable for calculated scour and had a documented HEC-18 Scour Evaluation • Action required to protect exposed foundations	NBI Item 113 = 4; requires a PCA/POA

Using the Checklist:

a. Populate structure identification information.
b. Identify supporting documents.
    a. Supporting documents provide evidence that a requirement is met. Each supporting document must be signed, dated, managed, and updated at appropriate intervals.
    b. Identify the person responsible for each document. Identify the document format (electronic or hard copy), and storage location.
c. Review document contents using the requirement list.
    a. Indicated whether the requirement is met (Y), not met (N), or not applicable (NA).
    b. Use the Notes section to describe documentation deficiencies.
    c. For a document that is not available but should be, reference a Plan of Corrective Action or provide a timeline for document completion in the Notes section.

Department of Energy
Scour Evaluation Checklist

NBI Structure Number *(if applicable)*: 218050 Little Beaver Creek	
Property Number:	**Property Name:**
Real Property Unique ID:	**Usage Code:**
Program Office:	**Site Name:**

Supporting Document Name/Date	Subject Matter Expert	Format (E/H)	Storage Location
	Name: Phone: Email: Position: Company:		

Y/N	Notes	Item
		DOE Qualification of Personnel – Responsible Engineer
Y	Is a culvert, not a bridge	1. Does the responsible engineer have the qualifications required to evaluate the bridge for scour and stream instability from floods?
Y		a. Does the engineer hold a current registration as a professional engineer?
Y		b. Does the engineer have at least 5 years of experience similar to the evaluation being performed?
Y		c. Has the engineer completed National Highway Institute (NHI) Stream Stability and Scour at Highway Bridges course or equivalent training?
		FHWA Metric #18: Inspection Procedures – Scour *Attachment 1 – Scour Evaluation Flowchart* provides an overview of the DOE Scour Evaluation Process
		2. Is evaluation for scour applicable to this structure?
Y	Is a culvert, not a bridge	a. Is the bridge over a waterway? (If yes, go to 3. If no, scour evaluation not needed; code Item 113 with N.)
N/A		b. Is the bridge open? (If yes, go to 3. If no, scour evaluation not needed; code Item 113 with 0.)
N/A		3. Is the bridge at risk based on observed scour? (If yes, go to 7. If no, go to 4.)
N/A		4. Does the bridge have a documented **Scour Evaluation** conducted IAW HEC-18? (If yes, go to 7. If no, go to 5.)
Y		5. Does the bridge have a documented **Level 1 Field Assessment**? (If yes, go to 6. If no, go to 7.)

Department of Energy
Scour Evaluation Checklist

Y/N	Notes	Item
Y		a. Has field data been collected and recorded using Attachment 2 - *Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment* template?
N/A	Is a culvert, not a bridge	6. Is the bridge conclusively at low risk for scour (Item 113 = 9, 8, or 5)? (If yes, go to 7. If no, go to 9.)
N/A		a. Is the bridge foundation (including piles) on dry land well above floodwater elevations? OR Is the bridge stable for calculated or assessed scour? OR Is the bridge stable with properly designed and installed countermeasures?
N/A		b. Is bridge foundation construction documented?
Y	Is a culvert, not a bridge	7. Has NBI Data Item 113 been correctly coded? (see FHWA memorandum *ACTION: Revision of Coding Guide, Item 113 - Scour Critical Bridges*, April 9, 2012 and DOE Coding Guidance)
Y		a. Does it match with the results of the completed **Scour Evaluation** or **Level 1 Field Assessment**?
N/A		b. If required to meet the definition of a low risk for scour, have countermeasures been properly designed and installed per HEC-23?
N/A		c. If NBI Data Item 113 has been coded 2 or less, is this rating consistent with NBI Data Item 60? (see FHWA *memorandum Revision of Coding Guide, Item 113 – Scour Critical Bridges*, April 27, 2001)
N/A		d. If NBI Data Item 113 has been coded 6, has a **Level 1 Field Assessment** or HEC-18 compliant **Scour Evaluation** been scheduled?
N/A	Is a culvert, not a bridge	8. Is the bridge scour critical or are the foundations unknown or are countermeasures installed but not supported by a hydraulic analysis? (If yes, go to 10. If no, go to 11.)
N/A	Is a culvert, not a bridge	9. Where a HEC-18 Scour Evaluation, Field Assessment, or Scour Critical Plan of Action (POA) does NOT exist, has a **Plan of Corrective Action (PCA)** been completed?
N/A		a. Does the PCA include a schedule for completing Scour Evaluation, Field Assessment, or POA?
N/A		b. Is the PCA up to date?
N/A		c. Has the PCA been provided to the DOE Bridge and Tunnel Program Manager?
Y	Is a culvert, not a bridge	10. Has a Scour Critical Plan of Action been developed?
		a. Does documentation exist and is it accessible?

Y/N	Notes	Item
Y		b. Does the POA follow the FHWA template? (See Attachment 3 - Federal Highways Administration, Scour Critical Bridge – Plan of Action template)
Y		c. Does the POA describe why the preferred actions were selected and address each of the following components: monitoring program development and implementation, timely installation of countermeasures to reduce the risk from scour, and schedule for construction of appropriate countermeasures to eliminate the risk from scour?
Y		d. Does the POA identify trigger events and required actions?
Y		e. Does the POA include a commitment to annual progress reporting until corrective actions are satisfied? Or indicate monitoring only?
Y		f. Did a qualified responsible engineer prepare the POA?
Y		g. Did a qualified engineer conduct and document quality control for the POA?
Y		h. Is the POA up to date (points of contact are current, changed conditions addressed)?
Y		i. Has the POA been correctly implemented and is there documentation demonstrating its implementation (i.e. a follow-up report)?
Y	Is a culvert, not a bridge	11. Has a **Level 1 Field Assessment** or **Scour Evaluation** been property documented and is documentation accessible? Is it tailored to the specific structure and availability of data?
Y		a. Is the document signed and sealed by the Responsible Engineer?
Y		b. Did a qualified Engineer conduct and document quality control for the assessment or evaluation?
Y		c. Are the qualifications of the Responsible Engineer, Team Member(s), and Underwater Diver(s), as appropriate documented in the report?
Y	Is a culvert, not a bridge	**Level 1 Field Assessment Data**
Y		a. Does the report follow the Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment template?
N/A	Is a culvert, not a bridge	**Scour Evaluation Report**
N/A		a. Does the scour evaluation report include a cover page; title page; executive summary; information about upstream conditions including the banks, main channel, floodplain, debris, and other features; identify conditions at the bridge including the substructure, superstructure, channel protection and scour countermeasures, and waterway area; and, describe up/downstream conditions including the banks, main channel, floodplain, and other features?

Department of Energy
Scour Evaluation Checklist

Y/N	Notes	Item
N/A		b. Does the scour evaluation report include current streambed elevation data plotted to a common datum along with historical elevations plotted to the same datum? Present sounding data in tabular form and on an elevation drawing? Note the location and depth of the streambed at each point where a sounding was taken? Note evidence of any stream migration?
N/A		c. Does the scour evaluation report include collected field data?
N/A		d. Does the scour evaluation report include calculations?
N/A		e. Does the scour evaluation report use sketches and photos to illustrate notes and findings? Does it include satellite images, modeling results, and scour plots appropriate to the level of evaluation conducted?
N/A		f. For vehicle bridges, does the scour evaluation report specifically identify recommended data entries for NBI Data Items 61, 71, and 113?
Y	Is a culvert, not a bridge	12. Is scour adequately monitored during **routine inspections**?
Y		a. Does the inspection report note the specific location and extent of any deterioration, damage, or undermining in stream channel or stream banks, substructure elements, or foundation? Note the condition of channel protection devices or scour countermeasures?
N/A		b. For vehicle bridges, does the inspection report note data entries made in most recent inspection report for NBI Data Items 60, 92, and 93?
N/A		c. Is sounding data collected with each routine inspection and reviewed by the Responsible Engineer?

Level 1 Field Assessment (often called a Level 1 Scour Evaluation) – A qualitative field review used to identify the potential for scour using all available data, including: as-built plans, hydraulic studies, soundings and other underwater investigations, streambed and foundation soils, and historical use. Conduct a site visit, if needed.

Level 2 Scour Evaluation - A quantitative engineering analysis of hydrologic data and streambed material properties.

Level 3 Scour Evaluation - A quantitative engineering analysis using more detailed hydrologic and streambed material property data to complete mathematical or physical model studies.

References:

Federal Highways Administration memorandum *ACTION: Revision of Coding Guide, Item 113 - Scour Critical Bridges*, April 9, 2012 and DOE Coding Guidance. https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/revguide.cfm

Federal Highways Administration, *FHWA-HIF-12-003, Hydraulic Engineering Circular No. (HEC) 18 Evaluating Scour at Bridges*, April 2012. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif12003.pdf.

Federal Highways Administration, *FHWA-HIF-12-004, Hydraulic Engineering Circular No. (HEC) 20 Stream Stability at Highway Bridges*, April 2012. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif12004.pdf.

Federal Highways Administration, *FHWA-HIF-09-111, Hydraulic Engineering Circular No. (HEC) 23 Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance,* September 2009. https://www.fhwa.dot.gov/engineering/hydraulics/pubs/09111/09111.pdf.

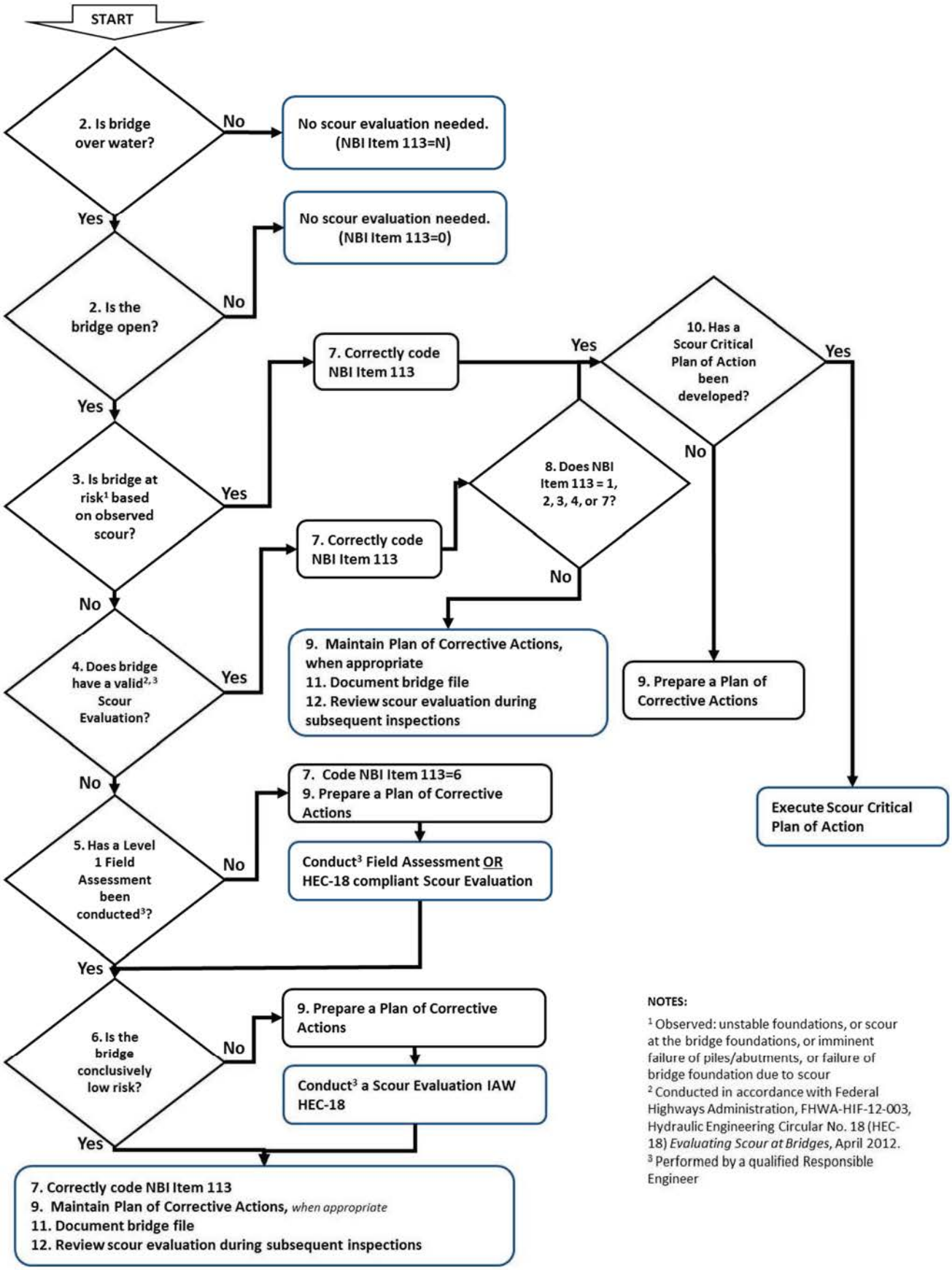
Federal Highways Administration memorandum *Revision of Coding Guide, Item 113 – Scour Critical Bridges*, April 27, 2001. https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/revguide.cfm

Federal Highways Administration, Scour Critical Bridge – Plan of Action template. https://www.fhwa.dot.gov/engineering/hydraulics/bridgehyd/poaform.cfm.

Attachments:

Attachment 1 – Scour Evaluation Process Flowchart
Attachment 2 – Template: Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment
Attachment 3 – Template: Scour Critical Bridge - Plan of Action

Scour Evaluation Process Flowchart



Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: 218050	
Property Number:	**Property Name:**
Real Property Unique ID:	**Usage Code:**
Program Office:	**Site:**
Location:	**Over:** Little Beaver Creek

1. SCOUR VULNERABILITY RATING

a. Scour Critical:	Yes	No	NA
Scour Susceptible:	High	Low	NA
Risk:	High	Low	
Foundation:	Known	Unknown	
Structure Type:	Bridge	Culvert	

b. Reasons for Rating:

2. RECOMMENDATIONS

a. Countermeasures:	Riprap	Scour Monitor	Inspection	Other
b. Level 2 Analysis Recommended		Yes	No	
c. Level 2 Priority:	High	Low	None	

d. Trigger Events: Culvert flows completely full, erosion at the inlet apron with piping noted.

e. Remarks:

3. SITE FIELD REVIEW

a. Evidence of Scour at Structure

1) Abutment or Pier Tilting or Moving	Yes	No
2) Slopes Washing in or Sloughing	Yes	No
3) Scour Holes Near Abutments / Bents	Yes	No
4) Bed Deposits Downstream	Yes	No
5) Bridge Railing Sagging	Yes	No
6) Debris	Yes	No
7) High-water Mark	Yes	No

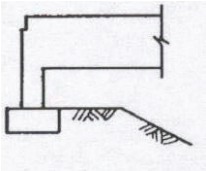
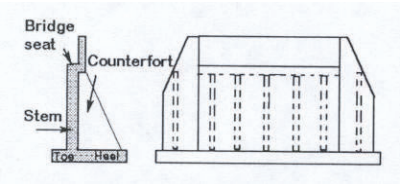
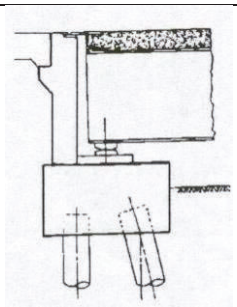
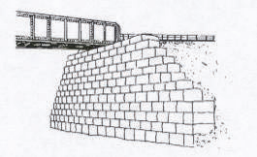
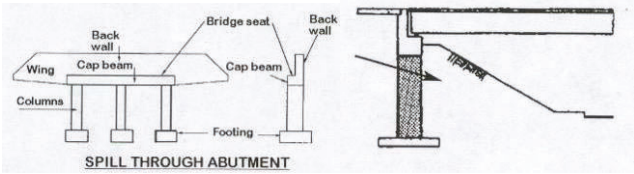
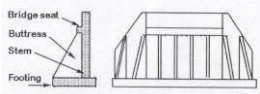
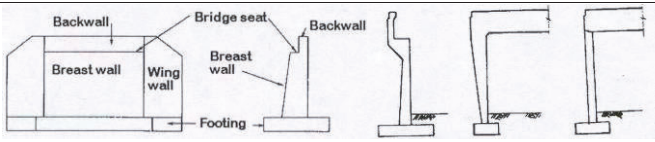
b. Feasibility of Monitoring During High Flow

1) Rod / Pole / Weight from Deck	Yes	No

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: 218050	
Property Number:	**Property Name:**

2) Fixed Monitoring Device	Yes	No
c. Feasibility of Adding Riprap or Other Scour Countermeasures	Yes	No

4. ABUTMENTS

a. Type	 Sill	 Counterfort	 Pile Bent
	 Gravity	 Spill-Through (Open)	
	 Buttress	 Cantilever	
	Bridge	Concrete Culvert	Channel Walls

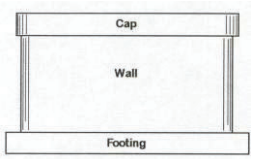
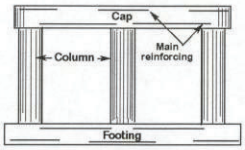
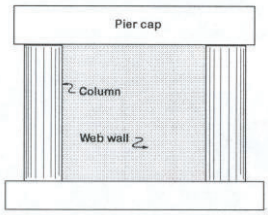
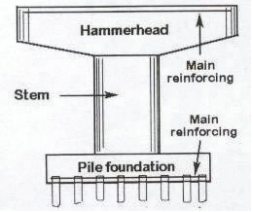
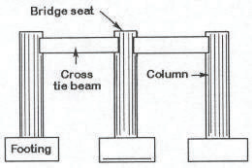
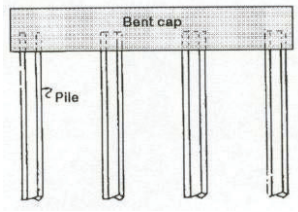
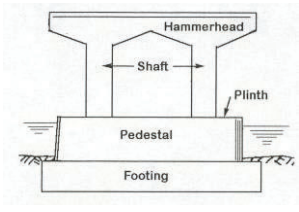
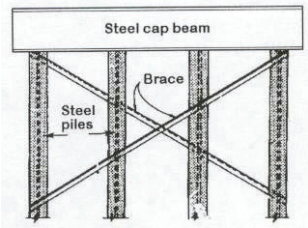
	Dimensions (ft)			Embedment (ft)	Scour Exposure (ft)
b. Foundation	L	W	D		

Spread Footings	Pile Caps	Piles	Drilled Shaft
Source of Data	Field Review	Design Plans	As-built Drawings
	Pile Driving Record	Inspection Reports	Other

c. Location from Bank			Left (ft)	Right (ft)
1) Set Back	Yes	No		
2) In Channel	Yes	No		
3) At Bank	Yes	No		

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment				
NBI Structure Number *(if applicable)*: 218050				
Property Number:		**Property Name:**		
d. Protection				
1) Riprap	Sand Cement	Grouted	Rubble	Other
Good	Seawall	None	Commercial Block	
2) Condition	**Good**	**Fair**	**Poor**	
Left				
Right				

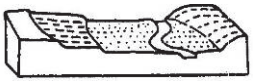
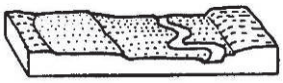
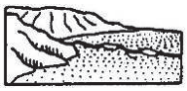
5. PIER (None)

a. Type	 Solid Wall	 Column Bent	 Column with Web Wall
	 Hammerhead	 Open Bent	 Pile Bent
	 Double Hammerhead		 Steel Bent
b. Shape	Square	Rounded	Sharp Nose

c. Width	Length	Number:	
d. Angle of Attack:	Flood Flow: °	Normal Flow: °	
e. Foundation	Dimensions (ft)	Embedment (ft)	Exposure (ft)

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment					
NBI Structure Number *(if applicable)*: 218050					
Property Number:			**Property Name:**		
(Worst pier)	L	W	D		
Pile	Spread Footing			Pile Cap	Drilled Shaft
Source of Data	Field Review		As-built Drawings		Design Plans
	Pile Driving Records		Inspection Reports		Other
f. Protection					
1) Riprap	Sand Cement		Grouted	Comm. Block	Rubble
	Seawall		None	None Apparent	Other
2) Condition	Good		Fair	Poor	

6. CHANNEL LATERAL STABILITY					
a. Bends					
1) Bridge Location	Upstream of Bend		Downstream of Bend		In Bend
2) Migration	Yes	No			
3) Countermeasures	Yes	No	Type: Riprap		
b. Bank Condition	Upstream		Downstream		
1) Eroding	Yes	No	Yes	No	
2) Stable	Yes	No	Yes	No	
3) Vegetated	Yes	No	Yes	No	
4) Seawall	Yes	No	Yes	No	
5) Countermeasures	Yes	No	Yes	No	Type:
c. Angle of Attack:	Flood Flow: Tangent			Normal Flow: Tangent	
d. Point Bar Under Bridge		Yes	No		
e. Islands or Bars	Upstream		Downstream		
1) Island	Yes	No	Yes	No	
2) Bar	Yes	No	Yes	No	

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment			
NBI Structure Number *(if applicable)*:			
Property Number: 218050		**Property Name:**	
f. Floodplains	Small (<2x channel)	 Narrow (2-10x channel)	 Wide (>10x channel)
g. Valley Setting	 No valley	Low relief (<30 m)	
	Moderate (30-300 m)	High relief (>300 m)	

7. CHANNEL VERTICAL STABILITY

a. Exposed Footing	Yes	No	Unknown	Not Applicable
b. Exposed Piles	Yes	No	Unknown	Not Applicable

c. Contraction Scour (Encroachment)

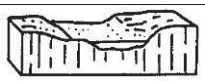
1) Overbank Flow	Left	Right		
2) Relief Bridge	Yes	No		
3) Roadway Over Topping	Yes	No	Unknown	Possible
4) Bridge Over Topping	Yes	No	Unknown	Possible

d. Long Term	1) Aggradation	Yes	No	Unknown
	2) Degradation	Yes	No	Unknown

e. Bed Material

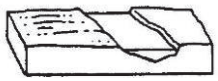
Silt-Clay	Silt	Sand	Gravel	Cobbles	Other

8. GEOMORPHOLOGY

a. Channel Boundaries	Alluvial	Semi-alluvial	 Non-alluvial

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment			
NBI Structure Number *(if applicable)*: 218050			
Property Number:		**Property Name:**	
b. Dam or Reservoir	Yes	No	
c. River Sinuosity	Straight (1-1.05)	Sinuous (1.06-1.25)	
	Meandering (1.25-2.0)	Highly Meandering (>35%)	Man Made
d. In-stream Mining/Dredging		Yes	No
e. Headcuts or Nickpoints		Yes	No
f. Diversions		Yes	No
g. Channel Modification		Yes	No
h. Stream Size	Small (<100 ft)	Medium (100-500 ft)	Large (> 500 ft)
i. Flow Habit	Ephemeral	Intermittent	
	Perennial but flashy	Perennial	Tidal
j. Braided Streams	Not braided (<5%)	Locally braided (5-35%)	Generally (>35%)
k. Anabranched Stream	No (<5%)	Locally (5-35%)	Generally (>35%)
l. Stream Width	Equiwidth	Wider at bends	Random
	Narrow point bars	Wider point bars	Irregular points
m. Natural Levees	Little or none	Concave	Well developed

Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment	
NBI Structure Number *(if applicable)*: 218050	
Property Number:	**Property Name:**

n. Apparent Incision	 Not Incised	Probably Incised	

9. OTHER CONSIDERATIONS				
a. Sediment Transport				
1) Live Bed Condition	Yes	No	Unknown	
2) Clear Water Condition	Yes	No	Unknown	
3) Armored Bed	Yes	No	Unknown	
b. Watershed	Agricultural	Forested	Swamp	Urban
c. Tidal Influence	Yes	No	Possible	
d. Tributaries	Upstream	Downstream	No factor	
	Distance to confluence of next stream/water body:			
e. Observed Stream Velocity: Low				

10. ADDITIONAL COMMENTS

a. Remarks:

11. Responsible Personnel

a. Responsible Engineer
1) Name: Dale Poorman
2) Organization: Burgess & Niple, Inc.
3) Organization Address: 5085 Reed Rd Columbus OH 43220
4) Phone Number/e-mail address: 614-459-2050/dale.poorman@burgessniple.com
5) Date Assessment Completed: 6/3/2020

b. Reviewer
1) Name: Brendan Prendeville
2) Organization: Burgess & Niple, Inc.
3) Organization Address: 5085 Reed Rd Columbus OH 43220
4) Phone Number/e-mail address: 614-459-2050/brendan.prendeville@burgessniple.com
5) Date Review Completed: 6/12/2020

INSTRUCTIONS FOR COMPLETING
Template: Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment

The Scour & Waterway Evaluation Field Data – Level 1 Scour Assessment form (the template) may be used to record the finding of a Level 1 Field Assessment and to inform subsequent routine Bridge Inspections for water crossings. It is completed by the Responsible Engineer and used by the inspection team leader during the on-site inspection. The form should be completed once, reviewed periodically, and updated on when conditions at the structure change.

OVERVIEW

The template includes a heading which identifies the bridge evaluated: NBI Structure Number (if applicable), Property Number, Property Name, Real Property Unique ID, Usage Code, Program Office, Site Name, Location (Route Number or latitude/longitude), and Over (waterway crossed). Item 1 provides a summary of the scour vulnerability rating, foundation status (known or unknown), and structure type (bridge or culvert). Item 1b provides space to include a narrative summary of the reasons for the rating recommendations of Item 1a. Item 2 provides a summary of recommended actions and includes an indication of the urgency (priority) of further action (e.g., the need for a follow-on Level 2 or 3 Scour Evaluation).

Items 1 and 2 should be completed last considering data obtained during the site field review as recorded under Items 3-10. Items 1 and 2 should "stand alone," indicate to a reviewer the vulnerability of the structure, and provide a concise summary of recommended actions.

ITEM 1 – SCOUR VULNERABILITY RATING

Part a: Scour Critical: Indicate scour critical status. **Yes** indicates the bridge should be rated 0, 1, 2, or 3 for NBI Item 113. **No** indicates the bridge is conclusively “Low Risk” from scour failure and should be rated 8, 9, or N.

Scour Susceptible: Based on the Field Review the bridge is neither clearly scour critical or low risk. NBI Item 113 is rated 6. Further investigation is required to determine the status of the structure. **High** indicates that the bridge is more likely to be scour critical. **Low** indicates that the bridge is more likely to be low risk. A Level 2 Engineering Evaluation will be required to determine the scour status of the bridge.

Note: Either the Scour Critical or Scour Susceptible line will be N/A depending on the results of the Level 1 scour evaluation.

Risk: The rating of **High** or **Low** risk is a judgment call and is meant to indicate the relative danger to bridge users with the bridge in its current condition. Risk is an additional basis for prioritizing follow-up actions. A high risk bridge (evidence or history of scour, shallow foundations, simply supported, susceptible to debris loading) on a high risk river (steep slope, high velocity, significant sediment loads) would receive a High risk rating. A low risk bridge (no evidence or history of scour, deep foundations and continuous superstructure, no debris) on a low risk river (moderate slope, low velocities, moderate sediment loads) would receive a Low risk rating. The inspector should base the rating on judgment and experience and consider structure and waterway characteristics that combine to provide a qualitative "hazard" evaluation.

Foundation: This rating is based on the availability of or lack of documentation on bridge foundation information. In general, an unknown foundation bridge would be coded "U" for Item 113.

Structure Type: Self explanatory.

Part b: Reasons for Rating: The section should focus on the specific conditions of bridge substructure elements (piers or abutments), the waterway, or countermeasures that resulted in the ratings of Part 1a. For example, observed scour, identified stream instability problems, or countermeasures that have deteriorated to the point that the integrity of the bridge is in question, would all be valid reasons to support the rating. The suggested NBI Data Item 113 coding should be provided as well as the reasoning for the coding. Do not leave this item blank.

ITEM 2 – RECOMMENDATIONS

Part a: Countermeasures: The engineer's field opinion of countermeasures suitable to reduce the risk to bridge users from a scour failure should be indicated. Riprap (or other structural countermeasures), scour monitoring (i.e., installation of fixed instrumentation or establishing a "flood watch"), or inspection (i.e., continue the normal inspection cycle) should be considered.

Part b: Level 2 Analysis Recommended. If a bridge is rated Scour Critical or Scour Susceptible for Item 1a, a Level 2 analysis is recommended.

Part c: Level 2 Priority. Based on a comparison with other Scour Critical or Scour Susceptible bridges at the site, a priority for additional analysis should be indicated. For example, a bridge rated in Item 1a as scour critical or highly scour susceptible, high risk, and unknown foundations would have the highest priority for further (Level 2) analysis. A low risk bridge with a known foundation (or a culvert) could be considered low priority (or no priority) for further evaluation.

Part d: Remarks. Explanatory information necessary to understand the recommendations should be provided in this section. For example, if a bridge could be in extreme danger of failure during the next runoff season, or if, in the opinion of the Inspector, countermeasure repairs are required immediately, that should be included here.

Part e: Trigger Events. Identify events that would initiate an operational or management action.

ITEM 3 – SITE FIELD REVIEW

Part a: Evidence of Scour at Structure: The general observations from the site field review should be recorded here. Any of these items, if observed at a structure, could indicate a serious scour threat. Accumulation of debris or an observed high water mark that verifies bridge overtopping could indicate that the bridge has been subjected to potentially severe hydraulic loads.

Part b: Feasibility of Monitoring During High Flows: In the event that a flood watch or installation of a fixed scour monitoring instrument is recommended, this section provides the Inspector's opinion of the feasibility of such a course of action.

Part c: Feasibility of Adding Countermeasures: Based on field observation, indicate the feasibility of using countermeasures to correct or reduce the risk from an observed scour problem(s).

ITEM 4 – ABUTMENTS

Part a: Type: Diagrams indicate the most common types of abutments found on bridges owned or inspected by the DOE. Circle the appropriate diagram.

Part b: Foundation: The length (L), width (W), and depth (D) of the abutment structure should be recorded. Length is measured in the direction of flow, width is the dimension perpendicular to the flow, and depth is the vertical dimension of the abutment from the highest elevation of the structure to the lowest elevation (e.g., bottom of spread footing or pile cap and/or tip of piles or drilled shafts). The purpose of these measurements is to provide an estimate of the obstruction to the flow presented by the abutment structure in the event further hydraulic analysis (Level 2 Scour Evaluation) is required.

The remaining embedment with reference to the observed ground elevation at the abutment should be recorded and should be consistent with the scour exposure (if any) as referenced to the original ground elevation on design or as-built drawings.

The foundation type should be noted as well as the source(s) of data on the abutment foundation.

Part c: Location from Bank: The location of the abutment with respect to existing channel banks (left and right) should be noted (distance set back from the channel, distance encroaching into the channel, at channel bank). These measured distances from existing banks should be recorded to support a Level 2 analysis, if necessary. Use the convention of left and right as viewed down stream.

Part d: Protection: Countermeasure protection, if any, should be noted and the condition of countermeasures rated on a scale of Good, Fair, or Poor.

ITEM 5 – PIER

Part a: Type: Diagrams indicate the most common types of piers found on bridges owned or inspected by the DOE. Circle the appropriate diagram or attach photos or sketches of actual structure.

Part b: Shape: The shape of the pier should be indicated to support further (Level 2) analysis, if necessary.

Part c: Width and Length: The Width of the pier perpendicular to the direction of flow as well as the Length of the pier (wall pier or pile bent) in the direction of flow should be measured and recorded. The number of piers should also be indicated.

Part d: Angle of Attack: The angle of the pier centerline to the direction of flow should be estimated for flood flow and normal flow (e.g., flow aligned with the pier would have a 0° angle of attack). Angle of attack is a critical input parameter for estimating pier scour in a follow-on Level 2 analysis, if necessary.

Part e: Foundation: The length (L), width (W), and depth (D) of the **Worst** pier should be recorded. The worst pier would be that pier that creates the greatest obstruction to the flow (e.g., greatest width, highest angle of attack, greatest amount of debris accumulation) and/or has the shallowest foundation. The length is measured in the direction of flow, the width is the dimension perpendicular to the flow, and the depth is the vertical dimension of the pier foundation below the original ground (stream bed) elevation.

The remaining embedment of the worst pier with reference to the observed ground elevation should be recorded and should be consistent with the scour exposure (if any) as referenced to the original ground elevation on design or as-built drawings.

The foundation type should be noted as well as the source(s) of data on the pier foundation.

Part f: Protection: Countermeasure protection, if any, should be noted and the condition of countermeasures rated on a scale of Good, Fair, Poor.

ITEM 6 – CHANNEL LATERAL STABILITY

Parts a and b: Bends and Bank Condition: Bends and bank condition in the bridge reach provide an indication of actively migrating meander bends or actively eroding channel banks, either of which could create a threat to the bridge. Vegetation on the channel banks could be an indication of relative stability. The existence of countermeasures against bend and bank instability in the bridge reach should be noted.

Part c: Angle of Attack: This entry should be consistent with the Item 5, Part d. The primary concern for channel lateral stability would be impinging flow on the bank.

Part d: Point Bar Under Bridge: A point bar in the bridge opening could indicate loss of channel conveyance capacity and increased hydraulic stress on bridge substructure elements in the active channel.

Part e: Islands or Bars: Islands or bars in the bridge reach could affect the flow angle of attack and determine the planform characteristics of the channel.

Parts f and g: Floodplains and Valley Setting: These geomorphic characteristics can influence the magnitude and severity of potential scour at a bridge.

ITEM 7 – CHANNEL VERTICAL STABILITY

Parts a and b: Exposed Footing or Piles: Exposed bridge footings or piles are good indicators of long-term degradation problems in the reach.

Part c: Contraction Scour: Contraction scour in the bridge reach is a direct result of the constriction of the floodplain by roadway approach embankments or loss of flow capacity at the bridge because of obstructions created by bridge substructure elements. The evaluation factors numbered (1) through (4) are indicators of either concentration of flow or possible flow relief on the left and right floodplains adjacent to the bridge.

Part d: Long-Term Trends: Channel profile and cross section records from previous inspection reports are good indicators of long-term trends toward either aggradation (raising of the channel bed) or degradation (lowering of the channel bed). These disturbances, which can occur over long reaches of a river, can usually be attributed to changes in delivery of water and sediment to the river channel.

Part e: Bed Material: Document the relationship of bed material size to stream instability and scour problems at bridges here.

ITEM 8 – GEOMORPHOLOGY

Parts a, c, and h through n:

Geomorphic Factors: These geomorphic factors are indicators of potential stream instability or scour problems at a bridge.

Part b: Dam or Reservoir: The presence of a dam or reservoir above the bridge reach could indicate significant changes to the flow regime and interruption of sediment supply with consequences (e.g., degradation) for river stability at the bridge.

Parts d and e: In-stream Mining/Dredging and Headcuts/Nickpoints: In-stream sand and gravel mining above a bridge can disrupt the sediment supply to the bridge reach causing potentially significant degradation at the bridge. In-stream mining below a bridge or other changes in downstream base level control could initiate a headcut or nickpoint which could move upstream and seriously undercut the bridge foundation.

Parts f and g: Diversions and Channel Modification: Diversion of water away from the channel or modifications such as channelization of a river reach adjacent to a bridge could cause channel response that might impact river stability at the bridge.

ITEM 9 – OTHER CONSIDERATIONS

Part a: Sediment Transport: The sediment transport condition is important to inspectors. A live-bed condition (usually in the main channel of a sand bed river) means that bed sediments are moving into the bridge reach and any scour at bridge substructure elements during a flood will likely fill in and not be visible after a flood. The clear-water condition (usually on well-vegetated overbank/floodplain areas) means that bed sediments are not moving into the bridge reach and any scour at bridge substructure elements during a flood will likely not fill in and will be visible after a flood.

The armored bed condition occurs when a layer of coarse bed materials (gravel) accumulates over and "armors" a finer underlying material (sand) against further scour for a specific flow event. Generally the armor layer can be easily disrupted and cannot be relied on to prevent further scour.

Part b: Watershed: Watershed conditions or changes in these conditions (e.g., drought, fire, urbanization) can be good indicators of potential downstream channel instability problems.

Part c: Tidal Influence: A tidally influenced reach of river (or estuary) will experience periods of flow reversal from flood tide to ebb tide. This creates a potentially hazardous scour condition, particularly for bridges over tidal nlets.

Part d: Tributaries: For bridges near tributary confluences, complex flow conditions can create unusual stream instability and scour problems. Variations in timing of flood peaks between a tributary and the main-stem river and changes in base level control are important factors to consider.

Part e: Observed Stream Velocity: High flow velocities in the bridge reach will obviously have an influence on scour potential. A quick estimate of flow velocity at a bridge can be obtained by recording the time of travel of a floating object through a known distance. Then, Velocity = Distance/Time (ft/sec).

ITEM 10 – ADDITIONAL COMMENTS

Part a: Remarks: While the templet was designed to record most factors related to stream stability and scour at bridges, it cannot anticipate all possible conditions in the field that might impact a bridge. Record additional factors in this section. For example, the potential for ice build-up or ice jam

break-up in colder regions can have significant impacts on a bridge. The potential for a Nor'easter on the East Coast, vulnerability to hurricane storm surge on the Southeast and Gulf Coasts, and the possibility of a tsunami on the West Coast or in Hawaii all may create unusual hydraulic conditions and a high potential for scour at a bridge. Exposed utility crossings are strong indicators of channel degradation problems.

ITEM 11 – RESPONSIBLE PERSONNEL

Identify the responsible engineer that performed the evaluation, the engineers who reviewed the evaluation as well as the applicable evaluation dates.

SCOUR CRITICAL BRIDGE - PLAN OF ACTION

1. GENERAL INFORMATION

NBI Structure No. or Property No.:	City, County, State:	Waterway:
218050	Piketon, Pike County, Ohio	Little Beaver Creek
Structure name: X-203-17-C	**State highway or facility carried:** North Access Road	**Owner:** Portsmouth Mission Alliance LLC

Year built:	Year rebuilt:	Bridge replacement plans (if scheduled):
1953		Anticipated opening date:

Structure type: ☐ Bridge ☒ Culvert

Structure size and description: 9-foot 0-inch HDPE pipe culvert. 220.5 feet long

Foundations: ☐ Known, type: _____ Depth: _____ ☒ Unknown

Subsurface soil information (*check all that apply*): ☐ Non-cohesive ☒ Cohesive ☐ Rock

Bridge ADT:	Year/ADT:	% Trucks:
2756	2016	10

Does the bridge provide service to emergency facilities and/or an evacuation route (Y/N)? Y

If so, describe: _____

2. RESPONSIBILITY FOR POA

Author(s) of POA (name, title, agency/organization, telephone, pager, email):
Dale Poorman, Engineer, Burgess & Niple, 614-459-2050, dale.poorman@burgessniple.com

Date: 6/3/2020 Dale E. Poorman

Concurrences on POA (name, title, agency/organization, telephone, pager, email):
Brendan J. Prendeville, PE, Bridge Engineer, Burgess & Niple, 614-459-2050, brendan.prendeville@burgessniple.com

POA updated by (name, title, agency, organization): _____ **Date of update:** ___

Items update: _____

POA to be updated every _____ **months by (name, title, agency/organization):**_____

Date of next update:_____

3. SCOUR VULNERABILITY

a. Current NBI Item 113 Code: ☐ 3 ☐ 2 ☐ 1 Other: 7

b. Source of Scour Critical Code: ☒ Observed ☐ Assessment ☐ Calculated Other: _____

c. **Scour Evaluation Summary:** _____

d. **Scour History:** _____

4. RECOMMENDED ACTION(S) (see Sections 6 and 7)

	Recommended		Implemented	
a. Increased Inspection Frequency	☐ Yes	☒ No	☐ Yes	☒ No
b. Fixed Monitoring Device(s)	☐ Yes	☒ No	☐ Yes	☒ No
c. Flood Monitoring Program	☐ Yes	☒ No	☐ Yes	☒ No
d. Hydraulic/Structural Countermeasures	☒ Yes	☐ No	☒ Yes	☐ No

5. NBI CODING INFORMATION

	Current	Previous
Inspection date	6/3/2020	5/8/2019
NBI Item 113 Scour Critical	7	3
NBI Item 60 Substructure	4	4
NBI Item 61 Channel & Channel Protection	5	5
NBI Item 71 Waterway Adequacy	9	9
Comments: (drift, scour holes, etc. - depict in sketches in Section 10)	_____	_____

6. MONITORING PROGRAM

☒ **Regular Inspection Program** ☐ w/surveyed cross sections

Items to Watch: _____

☐ **Increased Inspection Frequency of __ mo.** ☐ w/surveyed cross sections

Items to Watch: _____

☐ **Underwater Inspection Required**

Items to Watch: _____

☐ **Increased Underwater Inspection Frequency of __ mo.**

Items to Watch: _____

☐ **Fixed Monitoring Device(s)**

Type of Instrument: _____

Installation location(s): _____

Sample Interval: ☐ 30 min. ☐ 1 hr. ☐ 6 hrs. ☐ 12 hrs. ☐ Other: _____

Frequency of data download and review: ☐ Daily ☐ Weekly ☐ Monthly ☐ Other _____

Scour alert elevation(s) for each pier/abutment: _____

Scour critical elevations(s) for each pier/abutment:_____

Survey ties: _____

Criteria of termination for fixed monitoring: _____

☐ **Flood Monitoring Program**

Type: ☐ Visual inspection

☐ Instrument (*check all that apply*):

☐ Portable ☐ Geophysical ☐ Sonar ☐ Other: _____

Flood monitoring required: ☐ Yes ☐ No

Flood monitoring event defined by (*check all that apply*):

☐ Discharge _____ ☐ Stage _____

☐ Elev. measured from _____ ☐ Rainfall _____ (in/mm) per _____ (hour)

☐ Flood forecasting information: _____

☐ Flood warning system: _____

Frequency of flood monitoring: ☐1 hr. ☐3 hrs. ☐6 hrs. ☐ Other: _____

Post-flood monitoring required: ☐ No ☐Yes, within _____ days

Frequency of post-flood monitoring: ☐Daily ☐Weekly ☐Monthly ☐Other: _____
Criteria for termination of flood monitoring: _____

Criteria for termination of post-flood monitoring: _____

Scour alert elevation(s) for each pier/abutment: _____

Scour critical elevation(s) for each pier/abutment: _____

Note: Additional details for action(s) required may be included in Section 8.

Action(s) required if scour alert elevation detected (*include notification and closure procedures*): _____

Action(s) required if scour critical elevation detected (*include notification and closure procedures*): _____

Agency and department responsible for monitoring: _____

Contact person (*include name, title, telephone, pager, e-mail*): _____

7. COUNTERMEASURE RECOMMENDATIONS

Prioritize alternatives below. Include information on any hydraulic, structural or monitoring countermeasures.

☒ **Only monitoring required (see Section 6 and Section 10 – Attachment F)**

Estimated cost $_____

☐ **Structural/hydraulic countermeasures considered (see Section 10, Attachment F):**

Priority Ranking	**Estimated cost**
(1) _____	$ _____
(2) _____	$ _____
(3) _____	$ _____
(4) _____	$ _____
(5) _____	$ _____

Basis for the selection of the preferred scour countermeasure: _____

Countermeasure implementation project type:

☐ Proposed Construction Project ☐ Maintenance Project

☐ Programmed Construction - Project Lead Agency:

☐ Bridge Bureau ☐ Road Design ☐ Other _____

Agency and department responsible for countermeasure program (if different from Section 6 contact for monitoring): _____

Contact person (*include name, title, telephone, pager, e-mail*): _____

Target design completion date: _____

Target construction completion date: _____

Countermeasures already completed: _____

8. BRIDGE CLOSURE PLAN

Scour monitoring criteria for consideration of bridge closure:

- ☐ Water surface elevation reaches _____ at _____
- ☒ Overtopping road or structure
- ☐ Scour measurement results / Monitoring device (See Section 6)
- ☒ Observed structure movement / Settlement
- ☐ Discharge: _____ cfs/cms
- ☐ Flood forecast: _____
- ☐ Other: ☐ Debris accumulation ☐ Movement of riprap/other armor protection
  ☒ Loss of road embankment

Emergency repair plans (*include source(s), contact(s), cost, installation directions*): _____

Agency and department responsible for closure: Portsmouth Mission Alliance

Contact persons (name, title, agency/organization, telephone, pager, email): _____
Craig Opperman, Portsmouth Mission Alliance, 740-897-2440

Criteria for re-opening the bridge: Inspection of culvert after water recedes

Agency and person responsible for re-opening the bridge after inspection: Craig Opperman

9. DETOUR ROUTE

Detour route description (route number, from/to, distance from bridge, etc.) - Include map in Section 10, Attachment E. Road closed by gates/barrier at Fog Road. Bypass route: Perimeter Road to East Access Road.

Bridges on Detour Route:

Bridge Number	Waterway	Sufficiency Rating/ Load Limitations	Item 113 Code
207245 (X202B)	Little Beaver Creak	Posted for Load Restrictions.	6

Traffic control equipment (detour signing and barriers) and location(s): _____

Barriers or gates at beginning and end of road

Additional considerations or critical issues (susceptibility to overtopping, limited waterway adequacy, lane restrictions, etc.) : _____

News release, other public notice (include authorized person(s), information to be provided and limitations): _____ Site Public Relations Officer

10. ATTACHMENTS

Please indicate which materials are being submitted with this POA:

☐ **Attachment A: Boring logs and/or other subsurface information**

☐ **Attachment B: Cross sections from current and previous inspection reports**

☐ **Attachment C: Bridge elevation showing existing streambed, foundation depth(s) and observed and/or calculated scour depths**

☐ **Attachment D: Plan view showing location of scour holes, debris, etc.**

☒ **Attachment E: Map showing detour route(s)**

☐ **Attachment F: Supporting documentation, calculations, estimates and conceptual designs for scour countermeasures.**

☐ **Attachment G: Photos**

☐ **Attachment H: Other information: _____**

INSTRUCTIONS FOR COMPLETING
Template: Scour Critical Plan of Action

Overview

The Scour Critical Plan of Action form (the template) is a tool for developing a Scour Critical Plan of Action (POA). A Scour Critical POA describes the procedures for inspectors and engineers to implement before, during, and after a flood event to protect the traveling public. It describes the countermeasures considered and selected to address the vulnerability of the bridge to scour or stream instability. This template includes the minimum information recommended by the Federal Highway Administration (FHWA) for a POA.

The template contains ten sections. Sections 1 through 4 provide an executive summary. Sections 5 through 10 provide additional detail and identify attachments. All the fields in the template may be modified so that unique information may be added regarding local and site-specific scour and stream stability concerns, and local sources of information may be included. All blocks in this template will expand automatically to allow additional space. Where check boxes are provided, they can be checked by double-clicking on the box and selecting the "checked" option.

Section 1 – General Information

Section 1 of the template covers general information about the bridge.

The bridge replacement information provides a framework for decisions regarding the need for a structural or hydraulic countermeasure.

The structure type information provides insight on how the bridge could fail, if significant scour were to occur. For example, a simply-supported span bridge can fail suddenly, so the bridge should be closed as soon as scour becomes close to critical. Bridges with structural redundancy may allow more time to respond to an emergency situation.

The subsurface soil information comes from the boring logs in Attachment A of the POA. Indicate all the types of soil that are at the site by checking the boxes and then adding location information in the space below the boxes.

Also, identified in this section is bridge importance. This information is necessary so that the need for alternate routes or access contingencies can be identified.

Section 2 – Responsibility for POA

Section 2 of the template provides point of contact information for those responsible for preparing and maintaining the POA.

Concurrences on POA refers to the individuals or organizations which must concur with the contents of the POA. This may include individuals or organizations including site/Program/Agency management or county officials and law enforcement agencies who must agree with the bridge closure plans and the disruption the closure will have on the site or the public. **Gaining concurrence before an emergency occurs helps to minimize inter-agency conflicts during an emergency**.

Also, in Section 2 is information on the POA update: who will do the update, when, and what was updated. The POA should be reviewed and updated on a routine basis to ensure that the contents of the plan are still valid. After a major flood event, the POA should be reviewed to ensure that the plan functioned as intended. Changes to the plan may be required to make it function better during an emergency.

Section 3 – Scour Vulnerability

Section 3 of the template provides a summary of the scour status of the bridge.

In Section 3a, select the appropriate box for the **current** scour coding. If *Other* is selected, provide the appropriate code. For example, if the foundation is unknown mark *U* in the *Other* field.

In Section 3b indicate how the Item 113 code was determined. If the bridge has a *U* code, *unknown* must be written in the *Other* field.

In Section 3c, provides space for a narrative description to summarize the information from the scour evaluation. Some items to include are:

- Scour critical flood flow and scour depth
- 100- or 500-year flood flows
- Overtopping flow

Section 3d provides space to summarize the scour history, including when, where and how much scour or stream instability has been observed at the bridge. Also, information on scour countermeasures previously installed at the bridge and their performance should be included.

Section 4 – Recommended Action(s)

Section 4 of the template contains highlights from the recommended actions from Sections 6 and 7 of the template. Items 4a, 4b, and 4c refer to the main parts of the POA monitoring program. Item 4d refers to the hydraulic or structural countermeasure selected in Section 7. This section cannot be completed until Sections 6 and 7 are completed.

Section 5 – NBIS Coding Information

Section 5 of the template contains previous and current codes for the hydraulic related items of the NBI. This information provides a quick indication of observed or potential long-term problems or adverse trends that may affect the stability of the bridge foundations.

The *Inspection Date* corresponds to the date of the inspection when the NBI items were coded. If the Items were coded on a date different than the inspection date, this different date is indicated in the *Comments* block.

For additional details on NBI Items 113 and 60, see the FHWA Policy *Memorandum Revision of Coding Guide, Item 113 – Scour Critical Bridges* dated April 27, 2001.

Section 6 – Monitoring Program

There are three types of countermeasures which should be considered as part of the countermeasure program:

- Monitoring
- Hydraulic
- Structural

A monitoring countermeasure can be considered a key component of a POA, either alone or in combination with other countermeasures. Monitoring is highlighted in its own section, Section 6, in the template. Section 6 is subdivided into three additional subsections including:

- Inspection Frequency
- Fixed Monitoring
- Flood Monitoring

The first subsection of Section 6 covers information on the frequency of inspection. Bridges are usually inspected biennially. Bridge owners may choose to keep this schedule but may also specify inspectors look at certain items at the bridge to ensure stability with regard to scour. In this case, the *Regular Inspection Program* box is selected along with a list of the items to be watched. These items may include countermeasures, channel bed elevations, signs of movement or settlement.

Some bridge owners may choose to increase the frequency of inspection to less than the 2-year cycle. In this case, the *Increased Inspection Frequency* box is checked and the number of months between inspections is indicated. Usually only items pertinent to scour and stream stability would be observed and inspected. The specific items are indicated in the POA standard template.

Underwater inspections may also be required at the bridge. If the Underwater Inspection cycle remains on the regular schedule, then the *Underwater Inspection Required* box is checked. If an increased cycle is needed, then the *Increased Underwater Inspection Frequency* box is selected and the months between inspections indicated. In both cases the items for inspection and observation are indicated on the POA.

The second subsection of Section 6 covers information on Fixed Monitoring Devices. Fixed monitoring devices can provide continuous information about scour at the bridge site. This information can lead to early identification of potential scour problems.

The Fixed Monitoring box is selected if a bridge owner opts to use fixed monitoring devices at the bridge. The type of devices and location of devices are then described in the plan. Details about the devices may be included in Attachment F to the POA.

In most cases, the fixed monitoring device can send information continuously from the bridge site. However, this amount of information can become cumbersome, so most bridge owners only obtain or sample the information periodically. The sampling interval should be indicated on the POA and can be modified during flood events. If modified, the rationale for the change is noted on the POA.

The information received from the fixed monitoring device should be reviewed for developing scour problems. During normal flow, the information may be reviewed daily, weekly, or monthly. During flood events, the review frequency may increase. The POA should detail the frequency of review and identify who is conducting the review.

The Scour Critical Criteria should be determined by a Level 2 Scour Evaluation. The criteria should be indicated on the plan. Selecting an elevation higher than the scour critical elevation ensures sufficient time needed to take action in protecting the traveling public and possibly the bridge. This elevation, called the Scour Alert Criteria, should also be presented on the POA.

The third subsection of Section 6 describes monitoring actions that should be implemented during an actual flood event.

If the bridge owner inspects the bridge visually during a flood, then the *Visual Inspection* box is selected.

Those individuals visually observing the bridge may look for movement or settlement in the bridge or for a certain elevation of water, which could trigger the actions prescribed in the POA. If some kind of instrumentation is used to measure scour or water elevation, the *Instrument* box is selected and the applicable instrumentation type indicated. Both the *Visual Inspection* and the *Instrument* boxes may be selected.

The POA should document thresholds for the start and end of flood monitoring and note the frequency of the monitoring. These thresholds may include:

- Flood discharge
- Stage
- Water surface elevation
- Rainfall data

The POA should clearly describe the thresholds and how the threshold is determined. For example, the threshold discharge or stage may be tied to a nearby USGS gage. Some bridge owners have opted to mark their bridges with the threshold water surface elevations to ensure inspectors know when action should be taken. The POA should also describe the actions required when threshold values are reached.

The agency, department, position, or person responsible for inspecting or reviewing instrumentation data is listed at the end of Section 6 in the template. Some bridge owners may have maintenance staff rather than bridge inspectors monitor the bridge during a flood and then have bridge inspection staff conduct the post-flood inspection. All staff with responsibilities in implementing the POA should be listed. More than one person may be listed, especially to provide back up points- of-contact.

In some cases, the person at the bridge site during a flood event must confer with someone of greater authority in order to decide to close the bridge. This decision maker should also be listed in Section 6 of the POA Standard Template.

Finally, if action must be taken, the agency, department, position, or person responsible for taking the action is listed. For example, if the local law enforcement is to close the bridge and set up the detour route, this agency is listed in Section 6 of the template.

<u>Section 7 – Countermeasure Recommendations</u>

Section 7 of the template summarizes the alternative countermeasures considered for the bridge, as well as the final countermeasures selected and rationale. Guidance on the selection and design of scour countermeasures is presented in FHWA Hydraulic Engineering Circular No. 23, *Bridge Scour and Stream*

Instability Countermeasures. The circular contains a matrix presenting the various countermeasures and their attributes.

If a monitoring countermeasure is selected for the countermeasure program, the *Monitoring* box is selected. If a structural and/or hydraulic countermeasure is selected, then the *Structural/Hydraulic Scour Countermeasures Considered* box is selected. Both boxes may be selected, if needed.

Under the *Priority Ranking* and *Estimated Cost* columns, list the various countermeasures for consideration along with their corresponding estimated costs. The selected countermeasures are indicated and the reasons for selecting the countermeasures are explained on the *Basis for selection* line. Supporting information for the considered countermeasures should be attached. Include sufficient information to help independent reviewers understand the countermeasure selection process and the resulting decisions.

This section also includes boxes for indicating the countermeasure implementation project type.

The last part of Section 7 of the template requires information on agency/department/position/person responsible for designing and implementing the countermeasure program. More than one person may be listed, if appropriate.

Target design and construction dates should are also required.

Section 8 – Bridge Closure Plan

Section 8 of the template provides instructions for closing a bridge. Specifically, this section should include:

- Specific criteria indicating when to close the bridge
- Who should close the bridge
- Contact information, such as management or local law enforcement

Several examples of bridge closing conditions are provided. Select the conditions as appropriate. If the bridge owner has closure instructions specified in another document, these instructions should be referenced on the *Emergency repair plans* line.

The POA should also detail the process for reopening the bridge. In some cases, the bridge may be reopened when the floodwater has receded sufficiently. In other cases, the bridge will require inspection to ensure it is structurally sound. The reopening criteria should be listed. The agency or person who will inspect or make the decision to reopen the bridge should be identified in the plan.

Section 9 – Detour Route

Section 9 of the template describes potential detour routes, if the bridge is closed. The description should include route numbers, from/to locations, distances from closed bridge, as well as any other pertinent information. A map of the detour routes should be attached.

The bridges on the detour route should be listed in the *Bridges on Detour Route* table, along with restrictive factors for each bridge on the detour route, such as:

- Load restrictions
- Clearance restrictions
- Scour vulnerability condition

Additional items to present in Section 9 include:

- Required traffic control equipment
- Critical issues, such as flood overtopping vulnerability for bridges and roadways along the detour route, waterway adequacy of the detour bridges, and lane restrictions
- Authority to communicate with the media and public

Concurrence from local law enforcement agencies on the proposed detour and the closing procedures should be obtained and copies of the POA provided to these agencies.

Detours routes are not set in stone, but information should be provided on potential detours. Some factors to be considered in documenting in advance a detour route for a particular bridge include:

- Detours must be set up, taking into consideration the conditions existing at the time a detour is needed. For some bridges, it may not be possible to foresee what these conditions might be, which roads might be flooded, which bridges may already be closed, what will be the load and clearance restrictions for the proposed detour route, etc.
- DOT or bridge owner may have a designated department/office which is intimately familiar with their bridges and road systems, and are in the best position to quickly decide upon and coordinate a detour route for the given set of circumstances. This would be noted in the POA.
- Decisions are made on the basis of the conditions that exist at the time of the closure.

Consideration needs to be given to floods that may overtop bridges and approach roadways on the detour route. Actual detour routes should be based on roadway and bridge network status at the time the detour is proposed.

Section 10 – Attachments

Section 10 of the template identifies supporting materials and documents typically part of the POA.

Attachment E: Detour Map

APPENDIX C

Load Rating Analysis

EXECUTIVE SUMMARY—LOAD RATING RESULTS
NORTH ACCESS ROAD CULVERT
5/17/19, BURGESS & NIPLE, INC.

Rater: Joe M. Kelley, PE Signature:

Checker: Ben D. Eckert, EI Signature:

Reviewer: Edward M. Cinadr, PE Signature:

The following is a brief summary of the rating results for the above referenced bridge:

Truck	Rating Factor	Tons	Truck	Rating Factor	Tons
HL-93 (Operating)*	1.3	46.8	**4F1**	1.5	40.5
HL-93 (Inventory)*	1.0	36.0	**5C1**	1.5	60.0
Type 3	1.3	32.5	**SU4**	1.3	35.1
Type 3S2	1.3	46.8	**SU5**	1.3	40.3
Type 3-3	1.3	52.0	**SU6**	1.3	45.2
NRL	1.3	52.0	**SU7**	1.3	50.4
2F1	1.5	22.5	**EV2**	1.3	37.4
3F1	1.5	34.5	**EV3**	1.3	55.9

**based on 36-ton vehicle*

The bridge is currently posted as shown below. Based on the results of the load rating, the current posting is adequate.

BRIDGE LOAD RATING REPORT

PROJECT:	United States Department of Energy Load Ratings
SITE:	North Access Road over Little Beaver Creek
BRIDGE NUMBER:	218050 (X-203-17-C)
Bridge Description:	220.5 foot long corrugated metal pipe culvert
Spans (c/c Bearings):	10.4 feet
Alignment:	No skew
Bridge Plan Information:	No Plans Available
Material Strengths:	Fy (steel) = 33 ksi
Rating Method:	Load & Resistance Factor Rating (LRFR)
Rating Software:	Microsoft Excel
Special Assumptions:	The original CMP (Exterior) has been lined with a newer CMP (Interior) and the void between the two has been grouted. To account for the extra structural capacity of the original CMP the thickness of the newer CMP was increased in the calculations to 10 gauge. **Due to the excessive fill over the culvert resulting in negligible-to-zero live load effects, with further consideration given to the absence of deformation along the length of the culvert, the capacity of the culvert was not decreased due to the poor condition noted.**
Comments:	The minimum depth of fill above the culvert is 30.19 feet and the span of the culvert is 10.4 feet. Based on AASHTO LRFD 3.6.1.2.6 and section 911 of the ODOT Bridge Design Manual, the live load effect due to vehicular traffic is negligible. Therefore, the rating factors for the design and federal legal loads are assigned based on AASHTO Manual for Bridge Evaluation 6A.4.4.2.1 & C6A.1.1 and the state legal loads are assigned based on ODOT Bridge Design Manual 929. The culvert's thrust capacity was reduced slightly (by 5%) to account for the deterioration alon the bottom of the CMP. This slight reduction is appropriate mainly due to the makeup of the actual culvert being two concentric corrugated metal pipes with concrete grout infill between the steel pipes. The load rating calculations conservatively only consider the effective culvert capacity to be the diameter of the interior pipe with 10 gage thickness. Additionally, the live load effects are negligible due to the approximate 30 feet of fill over the culvert Calculations were performed and the structure has adequate capacity to support the dead load. **The structure is currently not posted. Based on the results of the load rating below, the structure does not require posting.**

Structure Rating Summary:

Loading	Gross Vehicle Weight (Tons)	Rating (Tons)	Rating (Metric Tons)	Rating Factor	Controlling Member	Controlling Location/ Force
HL-93 (Operating)	36	**46.8**	**42.4**	1.30	-	-
HL-93 (Inventory)	36	**36.0**	**32.6**	1.00	-	-
Type 3	25	**32.5**	**29.4**	1.30	-	-
Type 3S2	36	**46.8**	**42.4**	1.30	-	-
Type 3-3	40	**52.0**	**47.1**	1.30	-	-
NRL	40	**52.0**	**47.1**	1.30	-	-
2F1	15	**22.5**	**20.4**	1.50	-	-
3F1	23	**34.5**	**31.3**	1.50	-	-
4F1	27	**40.5**	**36.7**	1.50	-	-
5C1	40	**60.0**	**54.4**	1.50	-	-
SU4	27	**35.1**	**31.8**	1.30	-	-
SU5	31	**40.3**	**36.5**	1.30	-	-
SU6	34.75	**45.2**	**40.9**	1.30	-	-
SU7	38.75	**50.4**	**45.7**	1.30	-	-
EV2	28.75	**37.4**	**33.9**	1.30	-	-
EV3	43	**55.9**	**50.7**	1.30	-	-

Rated By:	Joe M. Kelley, PE (e-mail: joe.kelley@burgessniple.com)
Checked By:	Benjamin D. Eckert, EI (e-mail: ben.eckert@burgessniple.com)
Reviewed By:	Edward M. Cinadr, PE (e-mail: ed.cinadr@burgessniple.com)
Company:	Burgess & Niple 5085 Reed Road Columbus, Ohio 43220 Phone: (614) 459-2050 Fax: (614) 451-1385

STATE OF OHIO
EDWARD MICHAEL CINADR
E-66077
REGISTERED PROFESSIONAL ENGINEER

Date:	5/17/2019

5/17/2019

BURGESS & NIPLE, INC. - COMPUTATION SHEET

JOB NO.	*57488*	**JOB NAME**	*DOE Load Ratings*	**SHEET**	*1*	**OF**	*1* **SHEETS**
SUBJECT	*North Access Road Culvert*		**PREPARED BY**	*JMK*		**DATE**	*5/2/2019*
	Load Rating Notes & Calcs		**CHECKED BY**	*BDE*		**DATE**	*5/15/2019*

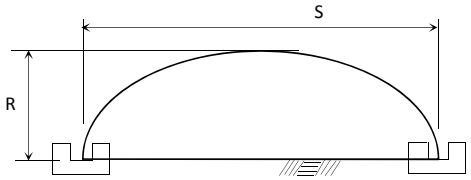
User input in black, formulas in red

Geometry

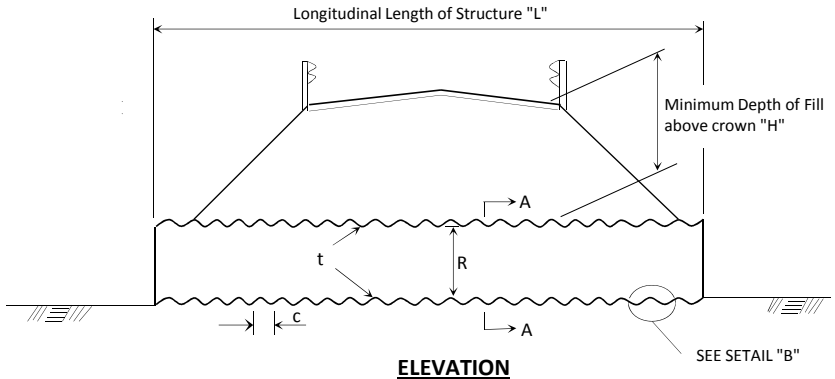
H =	30.38	ft
Hmin =	30.19	ft
S =	10.4	ft
R =	10.4	ft
L =	220.5	ft
Culvert Thickness =	0.109	in

Bridge No:	*North Access Road Culvert*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:		Of	
Year Built:	*1953*	Loaded Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

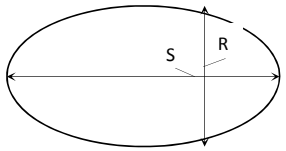
CORRUGATED METAL STRUCTURE (CIRCULAR & PIPE ARCH) & ARCHES



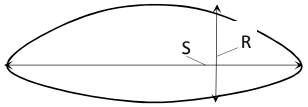
Section A-A
(ARCH)



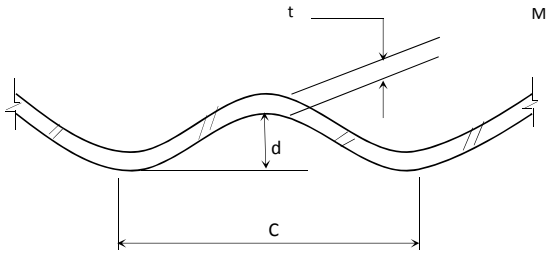
ELEVATION



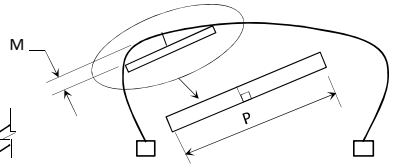
Section A-A
(CIRCULAR)



Section A-A
(PIPE ARCH)



DETAIL B
(METAL CORRUGATEION & GAGE INFORMATION)



Straight edge mid ordinate to check curvature:
Radius = $M/2 + P^2/(8M)$
P = Length of straight edge
M = Mid Ordinate

Determining Actual Radius *
(from field measurement)

* For unsymmetrical structures, structures deflected more than 5% from design shape, or those that show localized distortions require that the actual maximum radius be determined in those distorted areas as show above. Use two times the actual maximum radius rather than the span in structural design checks. Typically this provides a conservative evaluation of the structure. Calculate maximum existing top radius by taking measurements around the upper periphery of the culvert using a ruler of length "P" to obtain values of "M". This should be done at selected stations along length of culvert, particularly at locations with noticeable sag.

LRFR of In-Service, Corrugated Metal Pipe Structures

Based on **AASHTO LRFD** Bridge Design Specifications, Section 3, 4 & 12 & **NCSPA** Design Data Sheet No. 19 & **ODOT Bridge Design Manual** 2004 (effective 10-15-2010), Section 900

(do not use this spreadsheet to load rate Structural Plate Box Culverts)

Bridge No:	*North Access Road Culvert*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:		Of	
Year Built:	*1953*	Loaded Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

Structure Information (from existing bridge plans & field measurements):

("←" : choose from a drop-down list)

Structure Type (to determine Minimum Cover):	Corrugated Metal Pipe	←
Seam Type (to determine Seam Strength):	Annular pipe w/ spot welded, riveted or bolted seam	←
Structure Category (based on NCSPA Design Data Sheet No. 19)	Typical (NCSPA design data sheet No. 19, II. A. 1.)	←
* Depth of Fill "H" (ft) = (fill depth used for dead load calculations)	30.38	
* Minimum Cover Depth "H_{min}" (ft) = (fill depth used to check minimum cover requirement)	30.19	
Span Length "S" (ft) =	10.40	
Rise "R" (ft) =	10.40	
Longitudinal Length of Structure "L" (ft) =	220.50	
Determine Actual Top Radius "R_t" (ft) = (can be determined by field measurements or hand calculations)	5.20	

Based on AASHTO LRFD 3.6.1.2.6, The effects of live load maybe neglected when H>8' and H>Span Length, no need for LRFR.

*Since original CMP is line and grouted between it assumed to have larger capacity, there 10 gauge steel is used.

Metal Corrugation & Gage Information:	Metal Type	Steel	←
	Corrugation (if known)	6 x 2 (steel structural plate pipe)	←
	* Gage number (if known)	10	←
	c (in) =		
	d (in) =		
	t (in) =		
Pipe Crown Deflection ** (if any) =	0%		
Metal Loss based on materials field evaluation (if any) =	25%		

Note: if corrugation & gage number are known, leave the input cells for "c", "d" & "t" blank; if corrugation & gage number are unknown, field measurements of "c", "d" & "t" are required.

** reduction in rise divided by the span length from design shape in the unit of percentage

Bridge No:	*North Access Road Culvert*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:		Of	
Year Built:	*1953*	Loaded Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

Load Rating Input Sheet

Pipe Cross-Section Properties	A_s (in^2/ft) =	***2.003***	input these values based on metal type, corrugation, gage number or pipe wall thickness, see tables in worksheet "**section property tables**".
	r (in) =	***0.6820***	
	I x 10^{-3} (in^4/in) =	***78.200***	
Pipe Seam Strength	Seam Strength (k/ft) =	***62.0***	input the seam strength value based on metal type, corrugation, gage number or pipe wall thickness, see tables in worksheet "**seam strength tables**"
Backfill	δ = Soil density (k/ft^3) =	***0.120***	
	ϕ_E = Factor for Distribution of Live Load with Depth of Fill based on Backfill Type (per AASHTO LRFD 3.6.1.2.6)	***1.15***	1.15 used here for select granular backfill, change the factor ϕ_E to 1.0 for all other cases.
Load Factors	η_R (for nonredundant members) =	***1.05***	AASHTO LRFD 12.5.4. & 1.3.4
	γ_{EV} (Vertical Earth Pressure for CMPs) =	***1.95***	input the load factors based on the "**LRFR Load Factors**" table on the right
	γ_{LL} (HL-93 Loading - Inventory) =	***1.75***	
	γ_{LL} (HL-93 Loading - Operating) =	***1.35***	
	γ_{LL}(Ohio Legal Loads & SHVs - Operating - based on ADTT) =	***1.45***	
	ADTT =	***5000***	estimate the ADTT or input ADTT=5000 if unknown, do not leave blank
Condition Factor	φ_c =	***1.00***	AASHTO MBE 2nd Edition Table 6A.4.2.3-1 & C6A.4.2.3-1
System Factor	φ_s =	***1.00***	AASHTO MBE 2nd Edition Table 6A.4.2.4-1
	$\varphi_c \varphi_s \geq 0.85$ =	*1.00*	

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures

Based on **AASHTO LRFD** Bridge Design Specifications, Section 3, 4 & 12 & **NCSPA** Design Data Sheet No. 19 & **ODOT Bridge Design Manual** 2004 (effective 10-15-2010), Section 900

(do not use this spreadsheet to load rate Structural Plate Box Culverts)

A. Design Dimensions

1. For **typical structures**, use the actual field measured span for calculations.
2. For **unsymmetrical structures or those deflected over 5%**:

a. use 2 x the top radius (2 R_t) in lieu of span for calculations.

b. base critical buckling stress calculations on the theoretical design span, reducing the resulting allowable buckling stress by the appropriate multiplier to account for deflection " f " (NCSPA Design Data Sheet No. 19, Figure B.1.1).

3. For all **long span structures** (horizontal ellipse, low and high profile arches, inverted pear shapes and pear arches), as well as other horizontal ellipses, use 2 x actual top radius (2Rt) in all cases.

For typical structures:	Design Span = Actual Span "S" (ft) =	10.40

For unsymmetrical or deflect more than 5% structures:	Design Span (ft) = $2R_t$ =	10.40
	Pipe Crown Deflection =	0%
	Buckling Strength Reduction Factor, f * =	0.95

* reduction factor **f** is based on NCSPA Design Data Sheet No 19, II Structural Evaluation A.2.b & Appendix B.1, Figure B.1.1 for Unsymmetrical structures or structures deflected over 5% only.

long span structures:	Design Span (ft) = $2R_t$ =	10.40

Structure Category:	**Typical (NCSPA design data sheet No. 19, II. A. 1.)**

Then, **Span Length** used in Load Rating Calculation (ft)=	10.40
Then, **R_t** used in Load Rating Calculation (ft)=	5.20
$R_{t\,(max)}$ * (ft) =	

* Maximum Plate Radius allowed if Long Span Structural Plate Structures Selected

B. Design Properties

Conduits Mechanical & Section Properties:

Mechanical Properties:

Metal Type:	Steel	
F_y = Minimum Yield Point of the Metal	33	ksi
F_u = Minimum Tensile Strength of the Metal	45	ksi
E_m = Modulus of elasticity of metal	29000	ksi

Section Properties:

Corrugation:	6 x 2 (steel structural plate pipe)
Gage Number:	10
c (in) =	
d (in) =	
t (in) =	0.140
$t_{(min)}$** (in) =	

** Required Minimum Top Arc Thickness if Long Span Structural Plate Structures Selected

A_s (in^2/ft) =	2.003
r (in) =	0.6820
I x 10^{-3} (in^4/in) =	78.200

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures

C. Design Calculations:

Structure Type:	Corrugated Metal Pipe
Seam Type:	Annular pipe w/ spot welded, riveted or bolted seam
Longitudinal Length of Structure "L" (ft) =	220.50
AASHTO minimum cover, "h" (ft) =	1.30
Depth of cover used to check AASHTO minimum cover requirment "H_{min}" (ft) =	30.19
ϕ_{loss} = Section Properties reduction factor on the basis of metal loss from the materials field evaluation =	0.75
ϕ_1 = Resistance Factor for **wall area and buckling** (Table 12.5.5-1)	1.00
ϕ_2 = Resistance Factor for **seam strength** (Table 12.5.5-1)	0.67
δ = Soil density (k/ft^3)	0.120
k = soil stiffness factor =	0.22
ϕ_E = Factor for Distribution of Live Load with Depth of Fill based on Backfill Type (per AASHTO LRFD 3.6.1.2.6)=	1.15

Calculate the f_{cr} (critical buckling stress) : (AASHTO LRFD 12.7.2.4)

if: $S < \frac{r}{k}\sqrt{\frac{24E_m}{F_u}}, then\ f_{cr} = F_u - \frac{F_u^2}{48E_m}\left(\frac{kS}{r}\right)^2$

if: $S > \frac{r}{k}\sqrt{\frac{24E_m}{F_u}}, then\ f_{cr} = \frac{12E_m}{(kS/r)^2}$

Compare: S (in) = 124.80 < $\frac{r}{k}\sqrt{\frac{24E_m}{F_u}}$ = 385.53

Therefore, f_{cr} = 42.64 ksi

Calculate the T_{cap} (thrust capacity of the wall) :

Seam Strength (k/ft) = 62.0

T_{cap} = less of:	1. wall yield strength = $\phi_1\ \phi_{loss}\ F_y\ A$ =	49.6
	2. wall buckling strength = $f\ \phi_1\ \phi_{loss}\ f_{cr}\ A$ =	64.1
	3. seam strength = ϕ_2 x (seam strength) =	41.5

Therefore, T_{cap} = 39.5 k/ft

Calculate the T_E (pipe wall thrust due to earth cover) :

T_E = higher value of :	1. δ H (S/2) =	18.96	k/ft
	2. δ H R_t =	18.96	k/ft

Therefore, T_E = 18.96 k/ft

Calculate the $T_{(L+I)}$ (pipe wall thrust due to live load plus dynamic load allowance) :

$_{(L+IM)}$ = higher value of :	1. $\rho_{(L+IM)}$ (S/2) =		k/ft
	2. $\rho_{(L+IM)}$ R_t =		k/ft

$\rho_{(L+IM)}$: pressure at crown due to live load plus dynamic load allowance

Based on **AASHTO LRFD 3.6.1.1.2-1:**

Multiple Presence Factors, **m** =	1.2	← one lane loaded assumed here
adjust **m** based on ADTT =	1.00	See AASHTO LRFD C3.6.1.1.2
after ADTT adjustment, $\mathbf{m_{adj}}$ =	1.20	

Based on **AASHTO LRFD 3.6.2.2:**

Live load Dynamic Load Allowance, **IM** = 33(1.0-0.125 D_E) ≥ 0%

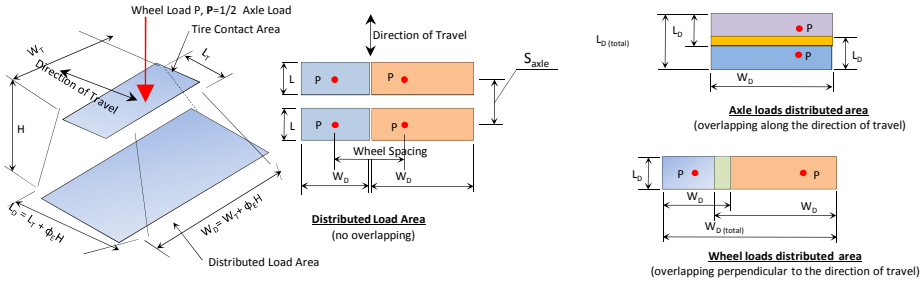
where, D_E = the minimum depth of earth cover above the structure (ft)

For this structure: Depth of Fill, D_E = **H**=	30.38	ft
IM =	0%	
(1+**IM**) =	1.00	

Calculations will be based on **AASHTO LRFD 3.6.1.2.5 & 6**:

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures



Where, $\mathbf{W_T}$ = Tire contact width, $\mathbf{L_T}$ = Tire contact length, $\mathbf{W_D}$ = Distributed load width, $\mathbf{L_D}$ = Distributed load length

The surface tire contact area for HL-93 loading (per AASHTO LRFD 3.6.1.2.5)**:**

$\mathbf{W_T}$ = 20" =	1.67	ft
$\mathbf{L_T}$ = 10" =	0.83	ft

The surface tire contact area for Ohio Legal Trucks (per AASHTO LRFD C3.6.1.2.5 Guideline):

$\mathbf{W_T}$ (in) = P/0.8

$\mathbf{L_T}$ (in) = 6.4γ(1+IM/100)

where, p = wheel load (kips)

γ = Load Factor for Ohio Legal Loads γ_{LL} = 1.45

IM = dynamic load allowance percent

So,

	2F1	4F1	EV2	EV3	3F1, 5C1, SU Trucks
P "heavy axle" wheel load with m_{adj} (kips) =	12.0	8.4	20.1	18.6	10.2
W_T (ft) =	1.25	0.88	2.09	1.94	1.06
L_T (ft) =	0.77	0.77	0.77	0.77	0.77

Distribution of wheel loads through earth fills (per AASHTO LRFD 3.6.1.2.6):

for **HL-93** Design Truck:

$W_D = 1.67+\phi_E H$=	36.60	ft
$L_D = 0.83 + \phi_E H$ =	35.77	ft

for **Ohio Legal Trucks** and **SHVs**:

	2F1	4F1	EV2	EV3	3F1, 5C1, SU Trucks
$W_D = W_T + \phi_E H$ =	36.19	35.81	37.03	36.87	36.00
$L_D = L_T + \phi_E H$ =	35.71	35.71	35.71	35.71	35.71

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures

Fill depth, H = 30.38 ft

Structure Total Length, L = 220.50 ft

[if $W_{D\ (total)}$ > L, use L = $W_{D\ (total)}$ in the calculations]

	HL-93 Truck	HL-93 Tandem	2F1	4F1	EV2	EV3	3F1, 5C1, SU Trucks
Heavy Axle Load (kips)	32.00	25.00	20.00	14.00	33.50	31.00	17.00
$P_{heavy\ (1+IM)\ \&}\ m_{adj}$ (kips) =	19.20	15.00	12.00	8.40	20.10	18.60	10.20
$S_{axle\ 1}$ (ft) =	0.00	4.00	0.00	4.00	4.00	4.00	4.00
Axle 2 Load (kips)	0.00	25.00	0.00	14.00	0.00	31.00	17.00
$P_{2\ (1+IM)\ \&}\ m_{adj}$ (kips) =	0.00	15.00	0.00	8.40	0.00	18.60	10.20
$S_{axle\ 2}$ (ft) =	0.00	0.00	0.00	0.00	4.00	0.00	4.00
Axle 3 Load (kips)	0.00	0.00	0.00	0.00	0.00	20.00	8.00
$P_{3\ (1+IM)\ \&}\ m_{adj}$ (kips) =	0.00	0.00	0.00	0.00	0.00	12.00	4.80
wheel spacing on axle	6.00	6.00	6.00	6.00	6.00	6.00	6.00
W_D (ft) =	36.60	36.60	36.19	35.81	37.03	36.87	36.00
$W_{D\ (total)}$ =	42.60	42.60	42.19	41.81	43.03	42.87	42.00
L_D (ft) =	35.77	35.77	35.71	35.71	35.71	35.71	35.71
$L_{D\ (total)}$ =	35.77	39.77	35.71	39.71	43.71	39.71	43.71
$A_D = W_{D(total)} \times L_{D(total)}$ =	1523.95	1694.36	1506.51	1660.37	1880.89	1702.56	1835.81
P_D (kips) =	38.40	60.00	24.00	33.60	40.20	98.40	50.40
$\rho_{(L+IM)} = P_D/A_D$ =	0.03	0.04	0.02	0.02	0.02	0.06	0.03
$T_{(L+IM)}$ (k/ft) =	0.13	0.18	0.08	0.11	0.11	0.30	0.14

$P_{(1+IM)\ \&}\ m_{adj}$ = axle wheel loads plus dynamic load allowance and adjusted multiple presence factor.

Axle 2 Load = 1st adjacent axle load to the heavy axle, if the $S_{axle\ 1}$ > 4', input Axle 2 load = 0.

$S_{axle\ 1}$ = distance from the heavy axle to the 1st adjacent axle, if the spacing is > 4', input S_{axle1} = 0.

Axle 3 Load = 2nd adjacent axle load to the heavy axle, if the $S_{axle\ 2}$ > 4', input Axle 3 load = 0.

$S_{axle\ 2}$ = distance from the 1st adjacent axle to the 2nd adjacent axle, if the spacing is > 4', input S_{axle2} = 0.

$\rho_{(L+IM)}$ = pressure at crown due to live load plus dynamic load allowance

A_D = Total Load Distributed Area

P_D = Total Load being Distributed

One lane loaded. Longitudinal pressure overlaps are considered for two adjacent heavy axle loads when the S_{axle} is ≤ 4 feet. If the span length is long enough for more axles of loads overlapping at crown location, hand calculations have to be done to consider the additional loads and P_D & A_D values have to be overwritten for those cases.

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures

D. Load Rating Factors for Ring Compression Structures:

1. Operating Load Rating Factor (RF_O):

a. RF_O based on wall strength

$$RF_{O-W} = \frac{\varphi_c \varphi_s T_{cap} - \gamma_{EV} \eta_R T_E}{\gamma_{LL} T_{(L+IM)}}$$

b. RF_O based on minimum cover requirements

$$RF_{O-C} = \frac{H_{\min}^{\ 2}}{C(h)^2}$$

Where, $C = 2.36\frac{H_{\min}}{S} + 0.528 \le 1.0 =$ 1.00

So, RF_{O-C} = 539.31

Operating Load Rating Factors, RF_O							
	HL-93 Truck	**HL-93 Tandem**	**2F1**	**4F1**	**EV2**	**EV3**	**3F1, 5C1, SU Trucks**
T_{cap}	39.46	39.46	39.46	39.46	39.46	39.46	39.46
$\varphi_c\ \varphi_s$	***1.00***						
T_E	18.96	18.96	18.96	18.96	18.96	18.96	18.96
γ_{EV}	***1.95***	***1.95***	***1.95***	***1.95***	***1.95***	***1.95***	***1.95***
η_R	***1.05***	***1.05***	***1.05***	***1.05***	***1.05***	***1.05***	***1.05***
$T_{(L+IM)}$	0.13	0.18	0.08	0.11	0.11	0.30	0.14
γ_{LL}	***1.35***	***1.35***	***1.45***	***1.45***	***1.45***	***1.45***	***1.45***
RF_{O-W}	3.67	2.61	5.40	4.25	4.02	1.49	3.13
RF_{O-C}	539.31	539.31	539.31	539.31	539.31	539.31	539.31
RF_O	3.67	2.61	5.40	4.25	4.02	1.49	3.13

2. Inventory Load Rating Factor (RF_i):

a. RF_i based on wall strength

$$RF_{i-w} = \frac{\varphi_c \varphi_s T_{cap} - \gamma_{EV} \eta_R T_E}{\gamma_{LL} T_{(L+IM)}}$$

b. RF_i based on minimum cover requirements

$$RF_{i-c} = \frac{H_{\min}^{\ 2}}{h^2}$$

Inventory Load Rating Factor, RF_i		
	HL-93 Truck	**HL-93 Tandem**
T_{cap}	39.46	39.46
$\varphi_c\ \varphi_s$	***1.00***	
T_E	18.96	18.96
γ_{EV}	***1.95***	***1.95***
η_R	***1.05***	***1.05***
$T_{(L+IM)}$	0.13	0.18
γ_{LL}	***1.75***	***1.75***
RF_{i-w}	2.83	2.01
RF_{i-c}	539.31	539.31
RF_i	2.83	2.01

Bridge No:	*North Access Road Cul*	PID Number:	--		
SFN:	*218050 (X-203-17-C)*	Project No:			
Year Built:	*1953*	Load Rated By:	*JMK*	Date:	*5/3/2019*
Bridge Type:	***CMP***	Checked By:	*BDE*	Date:	*5/15/2019*

LRFR of In-Service, Corrugated Metal Pipe Structures

Load Rating Summary				
Loading Type	**GVW (Tons)**	**Rating Factor - RF**		**Safe GVW (Tons)**
		Inventory	**Operating**	
HL-93	36	2.012	2.608	94
2F1	15		5.397	81
3F1	23		3.132	72
4F1	27		4.249	115
5C1	40		3.132	125
EV2	28.75		4.023	116
EV3	43		1.488	64
SU4	27		3.132	85
SU5	31		3.132	97
SU6	34.75		3.132	109
SU7	38.75		3.132	121

APPENDIX D

NBI Data Items

NBI Data Item	Item 1	Item 8	Item 5	Item 2	Item 3	Item 4	Item 6	Item 7
Data Item Name	State Code	Structure Number	Inventory Route	Highway Agency District	County (Parish) Code	Place Code	Features Intersected	Facility Carried by Structure
Length-Type of Data Item	3 digit Numeric	15 digit Alpha/Numeric	9 digit Alpha/Numeric	2 digit Alpha/Numeric	3 digit Numeric	5 digit Numeric	25 digit Alpha/Numeric	18 digit Alpha/Numeric
DOE Submission Requirement	Required	Required	Required	Required	Required	Required	Required	Required
DOE Specific Instructions		Use: FIMS Property Sequence Number		Item 2 should be coded 00 if Highway Agency District is unreported.				
Create one NBI record for each asset. Each row corresponds to a single bridge.	395	000000000218050	18000000	09	131	45661	Little Beaver Creek	North Access Road

Item 9	Item 10	Item 11	Item 12	Item 13	Item 16	Item 17	Item 19	Item 20	Item 21	Item 22	Item 26
Location	Inventory Route, Minimum Vertical Clearance	Kilometer point	Base Highway Network	LRS Inventory Route, Subroute Number	Latitude	Longitude	Bypass, Detour Length	Toll	Maintenance Responsibility	Owner	Functional Classification of Inventory Route
25 digit Alpha/Numeric	4 digit Numeric	7 digit Numeric	1 digit Numeric	12 digit Numeric	8 digit Numeric	9 digit Numeric	3 digit Numeric	1 digit Numeric	2 digit Numeric	2 digit Numeric	2 digit Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
	Enter in this form: "XX.XX" **meters** (e.g., for 8.8 meters, type 0880)	Enter in this form: "XXXX.XXX" (e.g., For 130.34, type 0130340)			e.g., for 35°27'18.55", enter "35271855"	e.g., for 81°5'50.65", enter "081055065"			Use 79 for Department of Energy (DOE)	Use 79 for Department of Energy (DOE)	
E of US 23, S of US32	9999	0000000	0		39027318	082994967	005	3	79	79	09

Item 27	Item 28	Item 29	Item 30	Item 31	Item 32	Item 33	Item 34	Item 35	Item 36	Item 37
Year Built	Lanes On and Under the Structure	Average Daily Traffic	Year of Average Daily Traffic	Design Load	Approach Roadway Width	Bridge Median	Skew	Structure Flared	Traffic Safety Features	Historical Significance
4 digit Numeric	4 digit Numeric	6 digit Numeric	4 digit Numeric	1 digit Numeric	4 digit Numeric	1 digit Numeric	2 digit Numeric	1 digit Numeric	4 digit Alpha/Numeric	1 digit Numeric
Required	Required	Estimate Required	Estimate Required	Required	Required	Required	Required	Required	Required	Required
	e.g., for 3 lanes on, 1 lane under, type "0301"									
1953	0200	2756	2017	0	040	0	00	0	N000	5
				No Plans available						

Item 38	Item 39	Item 40	Item 41	Item 42	Item 43	Item 44	Item 45	Item 46	Item 47	Item 48	Item 49
Navigation Control	Navigation Vertical Clearance	Navigation Horizontal Clearance	Structure, Open, Posted, or Closed to Traffic	Type of Service	Structure Type, Main	Structure Type, Approach Spans	Number of Spans in Main Unit	Number of Approach Spans	Inventory Route, Total Horizontal Clearance	Length of Maximum Span	Structure Length
1 digit Alpha/Numeric	4 digit Numeric	5 digit Numeric	1 digit Alpha/Numeric	2 digit Numeric	3 digit Numeric	3 digit Numeric	3 digit Numeric	4 digit Numeric	3 digit Numeric	5 digit Numeric	6 digit Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
N	0000	0000	A	15	019	000	001	0000	400	00009	000009

Item 50	Item 51	Item 52	Item 53	Item 54	Item 55	Item 56	Item 58	Item 59	Item 60	Item 61
Curb or Sidewalk Widths	Bridge Roadway Width, Curb-to-Curb	Deck Width, Out-to-Out	Minimum Vertical Clearance Over Bridge Roadway	Minimum Vertical Underclearance	Minimum Lateral Underclearance on Right	Minimum Lateral Underclearance on Left	Deck Condition Rating	Superstructure Condition Rating	Substructure Condition Rating	Channel/Channel Protection
6 digit Numeric	4 digit Numeric	4 digit Numeric	4 digit Numeric	5 digit Alpha/Numeric	4 digit Alpha/Numeric	3 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric
Required	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
000000	0000	0000	9999	N0000	N000	000	N	N	N	8
						Use a 3-digit number				

Item 62	Item 63	Item 64	Item 65	Item 66	Item 67	Item 68	Item 69	Item 70	Item 71
Culverts	Method Used to Determine Operating Rating	Operating Rating	Method Used to Determine Inventory Rating	Inventory Rating	Structural Evaluation Appraisal Rating	Deck Geometry Appraisal Rating	Underclearances, Vertical and Horizontal Appraisal Rating	Bridge Posting	Waterway Adequacy Appraisal Rating
1 digit Alpha/Numeric	1 digit Numeric	3 digit Numeric	1 digit Numeric	3 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric
Required	Required	Required	Required	Required	Not Required	Not Required	Not Required	Required	Required
7	8	424	8	326	7			5	9

Item 72	Item 75	Item 76	Item 90	Item 91	Item 92	Item 93	Item 94	Item 95	Item 96
Approach Roadway Alignment Appraisal Rating	Type of Work	Length of Structure Improvement	Inspection Date	Designated inspection Frequency	Critical Feature Inspection	Critical Feature Inspection Date	Bridge Improvement Cost ($000)	Roadway Improvement Cost ($000)	Total Project Cost ($000)
1 digit Alpha/Numeric	3 digit Alpha/Numeric	6 digit Numeric	4 digit Numeric	2 digit Numeric	9 digit Alpha/Numeric	12 digit Alpha/Numeric	6 digit Numeric	6 digit Numeric	6 digit Numeric
Required	Required	Optional	Required	Required	Required	Required	Optional	Optional	Optional
8			0620	12	N N N				

Item 97	Item 98	Item 99	Item 100	Item 101	Item 102	Item 103	Item 104	Item 105	Item 106	Item 107
Year of Improvement Cost Estimate	Border Bridge	Border Bridge Structure Number	STRAHNET Highway Designation	Parallel Structure Designation	Direction of Traffic	Temporary Structure Designation	Highway System of Inventory Route	Federal lands Highways	Year Reconstructed	Deck Structure Type
4 digit Numeric	5 digit Alpha/Numeric	15 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Numeric	1 digit Numeric	4 digit Numeric	1 digit Alpha/Numeric
Optional	Required	Required	Required	Required	Required	Required	Required	Required	Required	Required
			0	N	2		0	0		N

Item 108	Item 109	Item 110	Item 111	Item 112	Item 113	Item 114	Item 115	Item 116	
Wearing Surface/Protective System	Average Daily Truck Traffic	Designated National Network	Pier/Abutment Protection	NBIS Bridge Length	Scour Critical Bridges	Future Average Daily Traffic	Year of Future Average Daily Traffic	Minimum Navigational Vertical Clearance, Vertical Lift Bridge	
3 digit Alpha/Numeric	2 digit Numeric	1 digit Numeric	1 digit Numeric	1 digit Alpha/Numeric	1 digit Alpha/Numeric	6 digit Numeric	4 digit Numeric	4 digit Numeric	
Required	Required	Required	Required	Required	Required	Estimate Required	Estimate Required	Required	
									FHWA Data Sub-mission ↓
NNN	138	0	1	N	7	3500	2037		395000000000218

APPENDIX E

Qualifications

Personnel Qualifications Statement

Name:	Brendan Prendeville
e-mail Address:	brendan.prendeville@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

POSITION: ***From the drop-down menu, select the organizational role for which qualifications apply.***

Choose an item: TL

EDUCATION: ***Attach a copy of diploma when qualification is based on education.***

Degree:	B.S. Civil Engineering	Year:	2004
School:	The Ohio State University		
Degree:		Year:	
School:			
Degree:		Year:	
School:			

PROFESSIONAL ENGINEERING LICENSE: ***Attach a copy of current PE registration.***

Discipline:	Civil Engineering
State(s):	Ohio (74728)

CERTIFICATIONS & MEMBERSHIPS: ***Attach a copy of current certifications (for example – Certified Tunnel Inspector, NICET Level III or IV Bridge Safety Inspector, NHI Certified Instructor).***

Certifications:	Certified Bridge Inspector
Memberships:	

Personnel Qualifications Statement

TRAINING: ***Attach a copy of each certificate.***

Year	Provider	Course #	Course Name
2005	NHI	130055	Safety Inspection of In-Service Bridges
2011	NHI	130053	Bridge Safety Inspection Refresher Training 2011
2016	NHI	130053	Bridge Safety Inspection Refresher Training 2016
2011	NHI	130078	Fracture Critical Inspection Techniques for Steel Bridges
2019	NHI	135047	Stream Stability and Scour at Highway Bridges
2019	NHI	135086	Stream Stability Factors and Concepts
2019	NHI	135087	Scour at Highway Bridges: Concepts and Definitions

INSPECTION EXPERIENCE: ***Use the table below to summarize the types of inspection activities completed and the responsibilities you fulfilled. Provide the contact information for a Professional Reference - person who can attest to your experience. Refer to Table 1. Abbreviations and Guidance for Describing Inspection Experience.***

Years	Bridge or Tunnel Type	Inspection Type *(enter number of bridges)*								Responsibility *(indicate position held)*						
		D	F	I	ID	O	R	S	U	RE	RI	RS	TL	TM	UD	US
2004 - Present	Steel beam		51	4	34		197						x	x		
	Steel truss		217		62		29						x	x		
	Pre-stress conc.				8		54						x	x		
	Timber						145						x	x		
2016,2017	Post-tens. conc.				x		x						x	x		
2016,2014	Steel arch		2										x	x		
2014	Cable stay		1		1									x		
Example:																
2004-2014	Multiple Beam, Steel						314						X			

Personnel Qualifications Statement

Professional Reference Name:	Ed Cinadr
e-mail Address:	ed.cinadr@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

EVALUATION EXPERIENCE: ***Use the table below to summarize the types of bridge evaluation activities completed and the responsibilities you fulfilled. Provide the contact information for a Professional Reference - person who can attest to your experience. Refer to Table 1. Abbreviations and Guidance for Describing Experience.***

Bridge or Tunnel Type	Evaluation Type *(enter number of bridges)*										Responsibility *(indicate position held)*							
	EE	FaE	FcE	LR	N	PA	Q	SE	U	V	LR	PM	RE	RP	RS	TR	UD	US
Steel Truss				95							95							
Steel Beam				42							42							
Concrete Beam				17							17							
Example:																		
All Types								82					X					

Professional Reference Name:	Ed Cinadr
e-mail Address:	ed.cinadr@burgessniple.com
Employer's Name:	Burgess and Niple, Inc.
Employer's Street Address:	5085 Reed Rd
City, State, Zip Code:	Columbus OH 43220
Phone:	614-459-2050

Personnel Qualifications Statement

OTHER RELATED EXPERIENCE: ***Identify other bridge or tunnel related work, your role or responsibilities, and the activity duration.***

Activity Description	Responsibility	Years *(number of years)*

I affirm that all statements and data listed are true and correct.

Signature	Date
	4/11/2019

Table 1. Abbreviations and Guidance for Describing Experience

Bridge Type
Provide general descriptions of the types of bridges or tunnels inspected to best reflect your experience. Organize descriptions around superstructure type and material. For example: • 2-Girder, Steel, Riveted or Welded • Reinforced Concrete Beams/Slabs • CMP Pipes • Bored, unlined tunnel

Inspection Type	
D	Damage
F	Fracture Critical Member
I	Initial/Inventory
ID	In-Depth
O	Other
R	Routine
S	Special
U	Underwater

Evaluation Type	
E	Seismic Evaluation
Fa	Fatigue Evaluation
Fc	Fracture Evaluation
N	conducted or had oversight of non-destructive testing (NDT) to include weld & flaw inspection, or detection of mild and prestress reinforcing, or determination of unknown foundations
LR	Load Rating
Q	Quality Control/Assurance
SE	Scour Evaluation
PA	Scour Critical Plan of Action
V	Vehicle Traffic Volume Data Collection

Responsibility	
LR	Load Rater
PM	Program Manger
RE	Railroad Engineer
RI	Railroad Bridge Inspector
RP	Responsible Engineer
RS	Railroad Bridge Supervisor
TL	Inspection Team Leader
TM	Inspection Team Member
TR	Technical Reviewer
UD	Underwater Inspection Diver
US	Supervised or conducted Underwater Inspection

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:18 AM

Brendan J Prendeville

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.74728
License Issue Date	06/10/2010
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Dublin
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:18 AM**

Disclaimer: The Joint Commission and NCQA consider on-line status information as fulfilling the primary source verification requirement for verification of licensure in compliance with their respective credentialing standards.

U.S. Department
of Transportation

Federal Highway Administration

National Highway Institute

Certificate of Training

Brendan J. Prendeville

has satisfactorily completed training in

Safety Inspection of In-Service Bridges

Hosted by

Texas Department of Transportation

Location: **Austin, TX**

Hours of Instruction: **72**

Date: **March 7-18, 2005**

Continuing Education Units: **6.0**

Instructor

Moges Ayele

Director,
National Highway Institute

Ray L. Belk, SPHR, Director
Training, Quality, and Development Section

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Brendan J. Prendeville, P.E.

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

The American Council of Engineering Companies of WV

Date: **November 20-22, 2011** *Hours of Instruction:* **18**

Location: **Charleston, WV**

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James A Grundy
Instructor

Lorrie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

BRENDAN J. PRENDEVILLE

has demonstrated through practical and written examinations, attainment of SPRAT's Certification Requirements for Rope Access Work, and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

AWARDED: JANUARY 30, 2015
Expires: February 2, 2018

MICHAEL SEAL, SPRAT PRESIDENT

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U.S. Department
Of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Brendan J. Prendeville, P.E.

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

The American Council of Engineering Companies of WV

Date: **November 20-22, 2011** *Hours of Instruction:* **18**

Location: **Charleston, WV**

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Brendan Prendeville

has participated in

NHI Course 130053
"Bridge Inspection Refresher Training"

hosted by

ACEC of West Virgina

Date: *June 21-23, 2016*

Hours of Instruction: *18*

Location: *Charleston, WV*

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Mann
Instructor

James A Grundy
Instructor

Lorrie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation

Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE

National Highway Institute

Certificate of Training

Brendan Prenderville

has participated in

FHWA-NHI-135047 Stream Stability and Scour at Highway Bridges for Bridge Inspectors

hosted by

Idaho Transportation Department

Date: *February 5, 2019*

Hours of Instruction: 8

Location: *Boise, ID*

James H Hitchman

Instructor

Local Coordinator

Instructor

Michael Davies

Michael Davies, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

NHI Course No. FHWA-NHI-135086

Stream Stability Factors and Concepts (Prerequisite) WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *1 hours*

Date: *1/24/2019*

Valerie Briggs, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Brendan Prendeville

has participated in

NHI Course No. FHWA-NHI-135087

Scour at Highway Bridges: Concepts and Definitions (Prerequisite) WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *1 hours*

Date: *1/24/2019*

Valerie Briggs, Director
National Highway Institute

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:20 AM

Edward Michael Cinadr

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.66077
License Issue Date	07/12/2001
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Worthington
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:20 AM**

Disclaimer: The Joint Commission and NCQA consider on-line status information as fulfilling the primary source verification requirement for verification of licensure in compliance with their respective credentialing standards.

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Certificate of Training

Edward M. Cinadr

has participated in

Safety Inspection of In-Service Bridges

hosted by

Caltrans - Structure Maintenance & Investigations
and Michael Baker Jr., Inc.

Hours of Instruction:
60 hours (10 days) Course # 130055

Date: *January 3 – 14, 2011*

Location: *Sacramento, California*

Instructor *Greg A. Kolle, P.E.*

Instructor *W. Ronald Gardner, P.E.*

Local Coordinator *Judi L Wong*

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Ed Cinadr

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Wann
Instructor

James a Gindy
Instructor

Lorie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

EDWARD MICHAEL CINADR

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

MICHAEL SEAL, SPRAT PRESIDENT

AWARDED: JANUARY 30, 2015
Expires: February 3, 2018

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U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Edward Cinadr

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher

hosted by

Texas Department of Transportation

Date: *March 01-03, 2016*
Location: *Houston, TX*

Hours of Instruction: *18*

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Ed Cinadr

has participated in

FRACTURE CRITICAL INSPECTION TECHNIQUES FOR STEEL BRIDGES

hosted by

Oregon Department of Transportation

Hours of Instruction: 20

Date: February 1 - 4, 2011

Location: Portland, Oregon

J Eric Wann
Instructor

James a Gindy
Instructor

Lorie Schaefer
Local Coordinator

Richard Barnaby, Director
National Highway Institute

MINNESOTA DEPARTMENT OF TRANSPORTATION

Certificate of Attendance

Professional Development Hours

Edward Cinadr

Participant Name

VIRTIS/OPIS Training Workshop

Education Activity

MnDOT Bridge Office

Activity Sponsor

Various Instructors

Instructor/Leader

July 12, 2000

Activity Date

8 (Eight)

Professional Development Hours

Activity Coordinator

The Office of Human Resources, Training and Development unit of Minnesota Department of Transportation has determined that this education activity meets the State of Minnesota Board of Registration Continuing Education Requirements. The Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, GeoScience and Interior Design (Board of AELSLAGID) has final authority to review and approve PDH's.

Please Attach any or all for your records:

- ☐ Registration Receipts
- ☐ Agenda/Syllabus
- ☐ Course Plan
- ☐ Seminar/Brochure Information
- ☐ Any Information Details
- ☐ The content and/or expected outcome of the education activity

CERTIFICATE OF COMPLETION

ED CINADR

has successfully completed the continuing education program:

"LOAD AND RESISTANCE FACTOR RATING (LRFR)"

and is entitled to 8.0 professional development hours (PDHs)

on March 22, 2006 in Salem, Oregon.

Bruce Johnson, P.E.
State Bridge Engineer

Oregon Department of Transportation
Bridge Section

Bala Sivakumar, P.E.
Chief Engineer

Lichtenstein Consulting Engineers, Inc.

Certificate of Attendance

This is to certify that

Edward Cinadr

Has completed 19 hours of continuing education classes, entitled "Design of Straight and Curved Girder Steel Bridges Using AASHTO LRFD Bridge Design Specification- 2007, Fourth Edition." The seminar topics included:

1-Brief background on Probability and Reliability aspect of AASHTO LRFD code, load models for strength and fatigue limit states, 2-Brief discussion of distribution factors for various load conditions and limit states, 3-Overview of the philosophy for making new changes to design provisions for steel bridges, 4-Overview of the major changes incorporated into code, 5-Defining compact, non-compact and slender sections, 6-Constructability limit state 7-Service limit state, 8-Fatigue and fracture limit state, 9-Strength limit state, 10-Design provisions for positive section, 11-Design provisions for negative section and use of Appendix A, 12-Design for shear and combined shear and bending, 13-Tips for economical ways of using high performance steel in I-girder and box steel bridge designs, 14–Gusset Plate Check and rating steel bridges, 15-Steel bridges behaving simple for dead load and continuous for live loads, 16-Design of continuous steel bridge system, 17-New and economical steel bridge systems, 18-Cross frames and their role in steel bridges, 19-Overview and use of computer program capable of designing I and box girder steel bridges using AASHTO LRFD Bridge Design Specifications. Other topics included design, analysis, fabrication and construction of curved steel girder bridges.

The seminar was taught by Dr. Atorod Azizinamini, P.E., Professor, University of Nebraska-Lincoln and Mr. Kenneth Wright, P.E., Vice President, HDR, Inc. The seminar was sponsored by Highway Bridge Services, located in Lincoln, Nebraska and was held during December 3 (8:00 a.m. to 5:00 p.m.), December 4 (8:00 a.m. to 4:30 p.m.), and December 5 (8:00 a.m. to noon), 2009 at the Holiday Inn Hotel (SeaTac) in Seattle, Washington.

Atorod Azizinamini, Ph.D. P.E.

LOUISIANA DEPARTMENT OF
TRANSPORTATION & DEVELOPMENT

LOCAL TECHNICAL ASSISTANCE PROGRAM
LTAP
LOUISIANA TRANSPORTATION RESEARCH CENTER

Certificate of Attendance

PRESENTED BY

Louisiana Department of Transportation and Development
And
Louisiana Local Technical Assistance Program

TO CERTIFY THAT

Edward Cinadr

HAS SATISFACTORILY COMPLETED 4 HOURS OF TRAINING

Bridge Load Rating in Louisiana

Mark B. Walsh
Director Local Technical
Assistance Program

September 25, 2015
Date

Baton Rouge, Louisiana
Location

2016 ODOT QCQA WORKSHOP

THE OKLAHOMA DEPARTMENT OF TRANSPORTATION

PROUDLY GRANTS

EDWARD CINADR

7 PROFESSIONAL DEVELOPMENT HOURS FOR ATTENDANCE OF THE 2016 ODOT QCQA WORKSHOP HELD MAY 24, 2016 AT THE MOORE/NORMAN TECHNOLOGY CENTER

Steven J. Jacobi, P.E.
Oklahoma DOT

Oklahoma Department of Transportation

Randall Leonard, P.E.
FHWA

Certificate for

Professional Development Hours

ED CINADR

BrR Load Rating Introductory Training
Presented by: Joe Kelley, Brad Kahn & Jai Lee
1.5 PDH
November 30, 2017
Burgess & Niple, Inc.

BURGESS & NIPLE

Ronald R. Schultz – President
Burgess & Niple, Inc.

Ohio | eLicense Ohio Professional Licensure

License Look Up

6/12/2020 8:22 AM

Dale Edward Poorman

Status	Active
Sub-Status	
Board	Engineers and Surveyors Board
License Type	Professional Engineer
License Number	PE.52913
License Issue Date	12/19/1997
License Expiration Date	12/31/2021
License Effective Date	01/01/2020
City	Johnstown
State	OH
Country	United States
Board Action	No

Current date & time: **6/12/2020 8:22 AM**

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U.S. Department of Transportation

Federal Highway Administration

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Certifies that DALE E. POORMAN

has satisfactorily completed 15 hours of training in

INSPECTION OF FRACTURE CRITICAL BRIDGE MEMBERS

conducted by

MR. MARTY RISSEL - MR. GARY RUNCO
BYRD, TALLAMY, MacDONALD & LEWIS

JUNE 22-23, 1987	FRANKFORT, KENTUCKY
Date	Location
R. A. Barnhart	Martin C. Rissel
Federal Highway Administrator	Instructor
George M. Shrieves	Eric R. Evans
Director National Highway Institute	Coordinator

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130078-Fracture Critical Inspection Techniques
For Steel Bridges

hosted by

Ohio Department of Transportation

Date: January 17-20, 2012

Location: Columbus, OH

Hours of Instruction: 25 hours

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Dale E. Poorman

has satisfactorily completed training in

Safety Inspection of In-Service Bridges

conducted by

Roger Hove, Leslie Danovich & Frank Muchmore

Location: Lansing

Date: March 8, 2002

Hours of instruction: 80

Continuing Education Units: 6.0

Roger Hove
Instructor

Moges Ayele
Director, National Highway Institute
Federal Highway Administration

Dennna M. LaVoy
Coordinator

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Course

hosted by

West Virginia Department of Transportation

Date: February 14 – 16, 2012

Location: Parkersburg, WV

Hours of Instruction: Each Day of Training=6 hours

DAVID R. RESER, PE
Instructor

Billy Varney
Local Coordinator

Instructor

Richard Barnaby, Director
National Highway Institute

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130078-Fracture Critical Inspection Techniques
For Steel Bridges

hosted by

Ohio Department of Transportation

Date: January 17-20, 2012

Location: Columbus, OH

Hours of Instruction: 25 hours

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

Acknowledges that

DALE POORMAN

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

LEVEL II ROPE ACCESS TECHNICIAN

IAN BEVAN, EVALUATIONS COMMITTEE CHAIR

MICHAEL SEAL, SPRAT PRESIDENT

AWARDED: JANUARY 30, 2015
Expires: February 2, 2018

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U.S. Department
Of Transportation

Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE

Training Solutions for Transportation Excellence

National Highway Institute

Certificate of Training

Dale Poorman

has participated in

130053A – Bridge Inspection Refresher Course

hosted by

Illinois Department of Transportation

Location: **Springfield, Illinois**

Hours of instruction: **24**

Date: **February 27, 2007**

Sean A. Patrick

Instructor

Moges Ayele

Director, National Highway Institute
Federal Highway Administration

Coordinator

Director, Office of Professional Development
Federal Highway Administration

U.S. Department
Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE
Training Solutions for Transportation Excellence

Dale Poorman

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Course

hosted by

West Virginia Department of Transportation

Date: February 14 – 16, 2012

Location: Parkersburg, WV

Hours of Instruction: Each Day of Training=6 hours

DAVID R. RESER, PE
Instructor

Billy Varney
Local Coordinator

Instructor

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Dale Poorman

has participated in

FHWA-NHI 130053 Bridge Inspection Refresher Training

hosted by

Utah Department of Transportation

Date: February 7-9, 2017

Hours of Instruction: 18

Location: Salt Lake City, UT

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS

SPRAT®

Society of Professional Rope Access Technicians

Acknowledges that

DALE POORMAN

has demonstrated through practical and written examinations,
attainment of SPRAT's
Certification Requirements for Rope Access Work,
and is therefore

CERTIFIED

Level II Rope Access Technician

SPRAT #080313

AWARDED: February 01, 2018
Expires: February 1, 2021

CHARLEY RANKIN, EVALUATIONS COMMITTEE CHAIR

WILLIAM McCOOK (TROLL), SPRAT PRESIDENT

©2012 - Present; Society of Professional Rope Access Technicians

EWI Training

Certificate Of Completion

This is to certify that

Dale Poorman

has successfully completed training in

Review of Nondestructive Evaluation Methods

Date: February 25, 2020 Duration: 4 hours

Roger Spencer

Roger Spencer, ASNT Level III (RT, UT, ET)

APPENDIX F –

Health and Safety Plan

PROJECT WORK PLAN (PWP) AND HEALTH & SAFETY PLAN (HSP)	
Project Name:	**Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH**
Client:	**Portsmouth Mission Alliance**
Contract No.:	**DE-EM00004062**
B&N Proj. No.:	**58733**
PLAN APPROVED	
Signature:	
Name:	**Edward M. Cinadr, PE**
Title:	**Director of Facility Inspection**
Date:	**5/27/2020**

Prepared by:
BURGESS & NIPLE, INC.
5085 REED ROAD
COLUMBUS, OH 43220

EMERGENCY CONTACT LIST	
Project Name:	**Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH**
Client:	**Portsmouth Mission Alliance**
B&N Project No.:	**58733**

IN THE EVENT OF AN ON-SITE EMERGENCY WHILE WORKING, IMMEDIATELY CONTACT THE APPROPRIATE AGENCY OR PERSONNEL:

NAME	NUMBER
Emergency Fire, Police or Medical Assistance	911
Stephanie Puckett	740-897-4412
Craig Opperman	740-897-2240 (office) 740-648-0958 (cell)
BURGESS & NIPLE, Brendan Prendeville	614-849-2279 (mobile)
BURGESS & NIPLE, Ed Cinadr	614-296-0522 (mobile)
BURGESS & NIPLE, Dale Poorman	614-849-2278 (mobile)

DAMAGE PLAN

In case of an accident, damage, or stolen property, an employee should follow these steps:

1. Obtain an accident or police report
2. Complete *Incident Report Form* (Appendix 3)
3. Notify project *Incident Manager*, Ed Cinadr and project *Site Health and Safety Coordinator*, Brendan Prendeville or Project Engineer, Mike Seal
4. *Incident Manger* will notify the following personnel to handle insurance issues:

   David Wolfe (614) 459-7272 ext. 1285
5. *Site Health and Safety Coordinator* will contact PMA Project Manager, Craig Opperman if accident occurs on the jobsite.

PROJECT CONTACT LIST	
Project Name:	Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH
Client:	Portsmouth Mission Alliance
B&N Project No.:	**58733**

NAME	CONTACT INFO
Brendan Prendeville Burgess & Niple, Inc.	Project Manager / Project Engineer Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 brendan.prendeville@burgessniple.com (614) 459-2050x1364 (office) (614) 849-2278 (cell) (614) 451-1385 (fax)
Craig Opperman Manager of Special Projects	Project Manager PMA Craig.opperman@ports.pppo.gov (740) 897-2440 (Office) (740) 648-0958 (Mobile)
Ed Cinadr Burgess & Niple, Inc.	Project Incident Manger Director of Facility Inspection Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 ed.cinadr@burgessniple.com (614) 459-2050x1480(office) (614) 296-0522 (cell) (614) 451-1385 (fax)
Dale Poorman Burgess & Niple, Inc.	Site Health and Safety Coordinator Project Engineer Burgess & Niple, Inc. 5085 Reed Road Columbus, OH 43220 dale.poorman@burgessniple.com 614-459-2050 614-849-2278 (cell) 614-451-1385 (fax)

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APPENDICES

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PROJECT WORK & SAFETY PLAN	
Project Name:	Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH
Client:	Portsmouth Mission Alliance

1.0 INTRODUCTION

1.1 General Information

Burgess & Niple, Inc. (B&N) has completed this Project Work & Safety Plan (PWSP) to serve as a guide for activities to be conducted at the Portsmouth Gaseous Diffusion Plant in Piketon, OH. The purpose of this plan is to provide guidance for overall project goals, procedures to be followed, contact information, initial schedule of work, site hazard evaluation, personnel protection, site control, and emergency response procedures to be implemented as they apply to the work activities to be performed at the site.

These policies and procedures must be followed by on-site B&N personnel, contract personnel, or site visitors, and constitutes the project PWSP. The Site Health and Safety Coordinator (SHSC) will review this plan with each person working at the project site, so that everyone will be familiar with this plan and the hazards of the work to be performed.

Due to past events or operational practices at the subject site, hazardous conditions may arise in the work area during the field operations. For this reason, on-site Burgess & Niple personnel must read this document and must be knowledgeable of the appropriate health and safety measures needed to assure a safe working environment. This plan serves as a summary of health and safety procedures to be followed at this site.

1.2 Project Description

B&N will perform inspection activities on the following bridge structures:

Bridge Name
South Fog Road Bridge
North Access Culvert

1.3 Planned Site Activities

Site activities include inspection of the bridge and culvert by experienced personnel. B&N shall provide the following types of inspection in conformance with the detailed tasks identified in the RFP for Purchase Order No. DE-EM00004062.

South Fog Road Bridge and North Access Culvert

Limits of Inspection

- South Fog Road - Steel beam span from the south abutment to the north abutment (including approaches). North Access Culvert – inlet to outlet and top roadway/approaches.

Hands-on Access and Visual Inspection

- Steel beams
- Culvert
- Fatigue Prone Details (welded bars along bottom flange of beams)
- Abutments
- Channel
- Potential scour issues

Lane Closures

- No lane closures or traffic control is expected for the above noted inspection.

Photographs

- Digital photographs of any significant and/or typical conditions will be taken and included in the report

Testing

- Magnetic particle testing is to be used to investigate and document cracks

Cracks

- Mark location on structure
- Photograph every crack
- Create a sketch of the crack with dimensions showing limits of crack development

PROCEDURES FOR REPORTING SIGNIFICANT DEFICIENCIES

Deficiencies found during the inspection that are determined to severely affect the safe load carrying capacity of the bridge or pose a threat to the traveling public will be reported immediately to Craig Opperman.

A letter, along with color photographs and sketches, documenting the finding will be sent as soon as possible to the Project Manager.

1.4 Access Methods

The following access methods will be used in singularly or in combinations to perform the hands-on inspection of each truss bridge. All access will be performed in accordance with OSHA Federal and State rules and regulations regarding personal protective equipment and fall protection requirements for fall protection.

- All access will be from the ground or short step ladders.

2.0 POTENTIAL SAFETY HAZARDS

In order to promote the safety and well being of personnel conducting work at the project site, they shall be informed as to the potential hazards that may be encountered there. These hazards involved are primarily related to falling hazards. The project site will be periodically reevaluated to determine if the level of risk has changed.

2.1 Project Specific Hazards

- Traffic on bridges is typically light; however, high speeds are sometimes encountered. “Bridge inspection Ahead” or similar signs will be placed at each approach to warn drivers of the work ahead.

A Task Hazard Assessment form has been completed for the bridge inspection activities (see Appendix 2).

2.2 Physical Hazards

Potential hazards encountered in field inspection activities are highlighted in the following table.

TYPE	HAZARD
BIOLOGICAL	BIRD WASTE
BIOLOGICAL	LACK OF OXYGEN
BIOLOGICAL	ASBESTOS
BIOLOGICAL	USED SYRINGES
BIOLOGICAL	CHEMICALS (VAPORS, GASES, & LIQUIDS)
BIOLOGICAL	HUMAN WASTE (RAW SEWAGE)
BIOLOGICAL	ENGINE EXHAUST
BIOLOGICAL	BLASTING MATERIAL
BIOLOGICAL	DUST
BIOLOGICAL	LEAD PAINT (OVER SPRAY)

TYPE	HAZARD
BIOLOGICAL	LEAD PAINT (CHIPS)
ENVIRONMENTAL	POISONOUS PLANTS & BRIARS
ENVIRONMENTAL	VEGETATION OVERGROWTH
ENVIRONMENTAL	SLIPPERY SURFACES (GREASE, ALGAE, ETC.)
ENVIRONMENTAL	INCLEMENT WEATHER
ENVIRONMENTAL	WILD ANIMALS (ANGRY BIRDS)
ENVIRONMENTAL	WATER (DROWNING)
ENVIRONMENTAL	BITING AND STINGING INSECTS
ENVIRONMENTAL	POWER LINES
PHYSICAL	ENTRAPMENT
PHYSICAL	UNSECURED LADDERS, CATWALKS, & HANDRAILS
PHYSICAL	CRUSHING BY MECHANICAL ACCESS EQUIPMENT
PHYSICAL	FAILURE OF MECHANICAL ACCESS EQUIPMENT
PHYSICAL	BROKEN GLASS
PHYSICAL	TRAFFIC (BOAT, AUTO, & RAIL)
PHYSICAL	SHARP OBJECTS
PHYSICAL	FALLING
PHYSICAL	MACHINERY (BRIDGE)
PHYSICAL	FALLING OBJECTS
PHYSICAL	VAGRANTS

Safety habits recommended to reduce the risk of illness or injury are outlined below based on type of hazard:

1. Biological

- **Histoplasmosis** - Avoid breathing dust from bird waste by
  - A. Not disturbing waste material.
  - B. Using appropriate mask to filter air for breathing when in poorly vented area.
  - C. Wet down bird waste to reduce dust.
- **Exhaust Fumes**
  - A. Avoid prolonged exposure to exhaust fumes (shut down engines when not operating machinery).
  - B. Avoid affected locations during periods of peak traffic.
- **Infection**
  - A. Clean and protect cuts and abrasions.
  - B. Avoid facial contact with unclean surfaces.
  - C. Obtain tetanus shots when appropriate.
  - D. Wash hands when appropriate.

2. Environmental

A. Do not work on surfaces slick with ice, snow, grease, algae, etc.
B. Use care when working on wet surfaces.
C. Use care when working in windy conditions (be aware of ropes and equipment which could be blown into traffic).
D. Be aware of electric lines, utilities stationary power lines at site, lights, etc., in work area. Avoid physical contact of line with body, access equipment, safety equipment, etc.

E. Avoid shorting of extension cords resulting from cutting, wear or abrasion, breaking, wetting, etc., of extension cords.
F. Avoid shorting of electrical equipment by wetting or improper operation and care.
G. Move to safe location during electrical storms.

3. Physical Hazards

A. Properly utilize fall protection equipment.
B, Avoid climbing on or attaching to loose or unstable surfaces, members that are not able to safely support human loads. **Note: Do not tie off to a concrete handrail for any reason**.
C. Be aware of physical limitations (fatigue, hot, cold, etc.) and distractions.
D. Wear safety vests where vehicular traffic is encountered. Avoid working alone.
E. When working in or around access equipment:
   1. Be instructed of proper operation and limitations of equipment.
   2. Do not operate if safety devices are not functioning properly.
   3. Be properly tied off to access equipment.
   4. Tie off all ladders.
   5. Be aware of crushing hazards.
F. Be aware of falling debris especially when working above or below other personnel by informing others of your location and intention.
G. Wear helmet, eye protection, and hearing protection where appropriate.
H. (See training manual for clothing, shoes, hair, etc.)
I. Avoid mechanical and electrical components at site unless proper lockout procedure has been performed.

2.3 Weather Related Hazards

The activities included in the scope of work are to be conducted outside, and therefore are subject to weather conditions. Precipitation, or extremes in temperature, can pose health or safety hazards and shall be considered. Extra care shall be taken when working in wet conditions. A location will be designated outside the work area where personnel can take rest breaks from extreme weather conditions. Burgess & Niple personnel shall be able to recognize the symptoms of heat and cold stress, and take the appropriate measures to alleviate them. Since the field activities at this site are to be conducted in outside conditions proper clothing will be worn

3.0 SAFETY PRECAUTIONS

In order to reduce the health and safety risk to workers at the project site, the following precautions will be observed:

- Inspection teams will be comprised of a minimum of two persons due to safety issues.

- On-site personnel must be trained on equipment that is being utilized, safety procedures to be followed, and emergency procedures and communications to be practiced.

- All on-site personnel should make use of their senses to alert themselves to potentially dangerous situations which they should avoid (e.g., presence of sharp objects or potential objects that could fall onto personnel).

3.1 Equipment Safety Inspections

Personal Protective Equipment (PPE) will be worn at all times to protect the inspectors from any potential hazards. The following PPE will be worn at all times: hard hat or bump cap, steel toed boots, reflective vests, eye protection, personal floatation devices while working around the culvert, and chest or hip waders while working around water.

The inspection personnel shall inspect their PPE on a daily basis. If potentially hazardous deficiencies are found during the daily inspections, the equipment will be replaced by extra equipment that will be available at the project site.

PPE shall be inspected prior to each use for mildew, wear, damage and other deterioration, and defective components shall be removed from service if their strength or function may be adversely affected.

Equipment with significant defects, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes are to be withdrawn from service immediately, and will be tagged or marked as unusable, or destroyed.

3.2 Confined Spaces

The following definitions were used to determine if an inspection element is classified as a confined space requiring a permit. It is not anticipated that confined spaces will be entered during this project.

Confined Space: A space which:
(1) is large enough to permit bodily entry
(2) has limited or restricted means for entry or exit; and

(3) is not designed for continuous employee occupancy.
Some confined spaces require a permit, training, and special equipment to enter (see “Permit Required Confined Space” definition below).

Permit Required Confined Space (PRCS): A confined space which also has one of these characteristics:

(1) contains or has known potential to contain a hazardous atmosphere;
(2) contains liquids or solids with the potential to drown or engulf an entrant;
(3) has inwardly converging walls or floors or a configuration that could trap or asphyxiate a person; or
(4) contains any other recognized serious safety or health hazard.

The following items in most cases will be classified as PRCS:

Steel Box Pier Caps	Steel Box Tower Legs and Struts
Steel Box Girders	Concrete Girders
Steel Box Arch Ribs	Anchorage Chambers
Steel Box Truss Arch Members	Abutment Chambers
Steel Box Columns	Storage Tanks
Culverts	Sewers

The North Access Culvert will be treated as a non-permit required confined space. 4-gas meters will be utilized during the entrance to the culvert. If hazardous air quality is confronted the inspectors will immediately vacate the culvert until it is known that the air quality has improved.

3.3 Traffic Control

Traffic control will not be utilized in this inspection.

3.4 Working over Waterways

Flotation devices will be worn by inspectors while inspecting the North Access Culvert.

4.0 PERSONNEL REQUIREMENTS

4.1 Incident Manager

The Incident Manager, to whom on-site health hazards or emergencies shall be reported, is B&N’s Project Engineer, Brendan Prendeville. This report shall be made in writing, and include factors relating to the incident. A duplicate copy of this report shall also be submitted to Burgess & Niple's Corporate Health and Safety Officer (CHSO).

4.2 Site Health and Safety Coordinator

The Site Health and Safety Coordinator (SHSC) will be Dale Poorman. This person shall direct site activities, and implement the safety and health protection procedures outlined in this plan. He will have primary responsibility for:

- Assuring that inspection personnel have read the PWSP and are aware of the potential hazards of the site and the proper procedures of handling those hazards should they occur, including the health and safety provisions and standards in this plan;
- Assuring that proper personal protection equipment is available and utilized properly by the inspection team;
- Monitoring the performance of inspection personnel to ensure that health and safety procedures are being performed, in addition to correcting any performances that do not comply with the PWSP;
- Coordinating safety procedures with the local authorities;
- Advising the inspection team on health and safety matters relative to the site;
- Posting a copy of the PWSP at the site with emergency telephone numbers and directions to the nearest telephone;
- Assuring that inspection personnel observe the appropriate work zones; and
- Reporting safety violations to the CHSO.

In addition to these responsibilities, the SHSC shall be responsible for making modifications to the PWSP during the course of the project, based upon the results of the site-monitoring program.

4.3 Project Personnel

Project personnel involved in on-site investigations and operations are responsible for:

- Informing themselves of the guidelines outlined within the PWSP, especially any aspects that they do not understand.
- Notifying the SHSC of any special medical conditions (i.e., allergies, pregnancy, diabetes) and, if necessary, assuring that on-site personnel are aware of any such conditions.

- Taking reasonable precautions to prevent injury to themselves and to their fellow employees; being alert to potentially harmful situations.

- Performing only those tasks that they believe they can do safely and immediately reporting any accidents and/or unsafe conditions to the SHSC.

- Practicing good housekeeping by keeping tools and equipment orderly and out of potentially harmful situations.

- Reporting injuries.

On-site personnel are responsible for implementing this PWSP in order to promote a safe work environment.

5.0 DESIGNATION OF THE LEVELS OF PROTECTION

OHSA designations for Levels of Respiratory PPE are contained within Appendix 4. Level D personal protective equipment will be utilized during field activities on this project. If conditions warrant Level C or higher personnel protection, personnel will leave the work area until conditions return to acceptable Level D conditions. If Level C PPE or above are required, this HSP must be amended to address the atmospheric hazards.

Level D protection will be selected when it has been determined that there is no possibility of skin contact with contamination or respiratory hazard. This level is primarily a work uniform. Employees should wear work boots or other specialty shoes. Gym shoes, sandals, and casual shoes are not permitted. Protective clothing should be properly sized to provide freedom of movement without excessive looseness. Long hair should be tied in a manner to keep it out of the fall arrest equipment. Oversized or loose clothing, exposed shirt tail, long hair, jewelry, etc., could become entangled in the equipment causing failure or injury.

6.0 DELINEATION OF THE WORK AREA

The work area shall include the bridge sites outlined in Section 1.2.

7.0 CONTROL PROCEDURES

The work area is for authorized personnel. Personnel and equipment should be kept to a minimum, consistent with effective site operations.

8.0 TRAINING REQUIREMENTS FOR PERSONNEL

The SHSC will be trained in the safety aspects of the work. The SHSC responsible for this project will be the project manager assigned to this project. On-site personnel shall

also be familiar with the location and use of any emergency equipment (i.e. rescue equipment, etc.) required at the project site. Personnel will also be familiar with any special procedures (i.e., climbing techniques, etc.) that will be performed during the assessment.

8.1 Climbing Training

No climbing activities will occur during this inspection.

9.0 MEDICAL REQUIREMENTS

9.1 Health Monitoring

Burgess & Niple provides annual medical surveillance programs for employees who have risk of exposure to environmental/hazardous waste products. There is no indication that such products will be encountered during this project. Therefore, the probability of exposure to such waste products is judged to be extremely low.

9.2 Site Specific Requirements

No site specific medical requirements are required for this project.

10.0 ON-SITE EMERGENCIES

10.1 Emergency Procedures

Emergency Situation

Site activities present a potential risk to on-site personnel. During routine operations, establishing good work practices, staying alert and using proper personal protective equipment minimizes a risk. Unpredictable events such as physical injury may occur and must be anticipated. If an emergency occurs these procedures should be followed:

- In the event that any on-site personnel experience adverse effects or symptoms of exposure while on the scene, Burgess & Niple personnel shall immediately halt work and act according to the instructions provided by the SHSC;
- The discovery of a condition that would suggest the existence of a situation more hazardous than anticipated, should result in the evacuation of Burgess & Niple personnel, followed by re-evaluation of the hazard and the level of personal protection required;

- In the event of an incident, the Project Manager/ Site Health and Safety Officer shall prepare a memorandum detailing all aspects of the incident. Follow-up action must be taken to correct the situation that caused the incident.

Project Telephone

At a minimum, the PM and the SHSC shall have on person a mobile phone. In locations where there is no mobile phone coverage, a satellite/cellular phone belonging to B&N will also be at the project site. All personnel shall have a two-way radio for instant communication between team members.

Emergency Communications

All personnel shall have a two-way radio.

Emergency Organizations

SEE PAGE 1 FOR EMERGENCY PHONE NUMBERS. A list of the organizations whose assistance might be required to deal with an on-site emergency is provided on Page 1 of this manual.

It may be necessary to coordinate activities with these organizations prior to beginning project operations.

Emergency Equipment

A first-aid kit will be available on-site; in the event a worker suffers a physical injury. On-site personnel certified in first aid can administer treatment to an injured worker.

10.2 Emergency Medical Care

Local Hospitals

SOMC Waverly Urgent Care
835 W Emmitt Ave
Waverly, OH 45690
Phone: 740-947-7662

11.0 SUMMARY

Burgess & Niple personnel involved with the scope of work for the subject project shall be familiar with the possible hazards involved, the safety procedures, and other inherent factors outlined in this plan. Prior to the commencement of work on the project, the

Project Manager/SHSC should discuss general procedures to be implemented, addressing local safety and health requirements and any site-specific conditions that may require additional precautions. Additionally, an on-site safety briefing will be conducted by a qualified safety coordinator from PMA which will identify any site-specific hazards which may be encountered. The following acceptance form is required to be signed by all site staff and subcontracting personnel.

HEALTH AND SAFETY PLAN ACCEPTANCE

I have had the opportunity to read and ask questions about this HSP. My signature certifies that I understand the procedures, equipment, and restrictions of this plan and agree to abide by them.

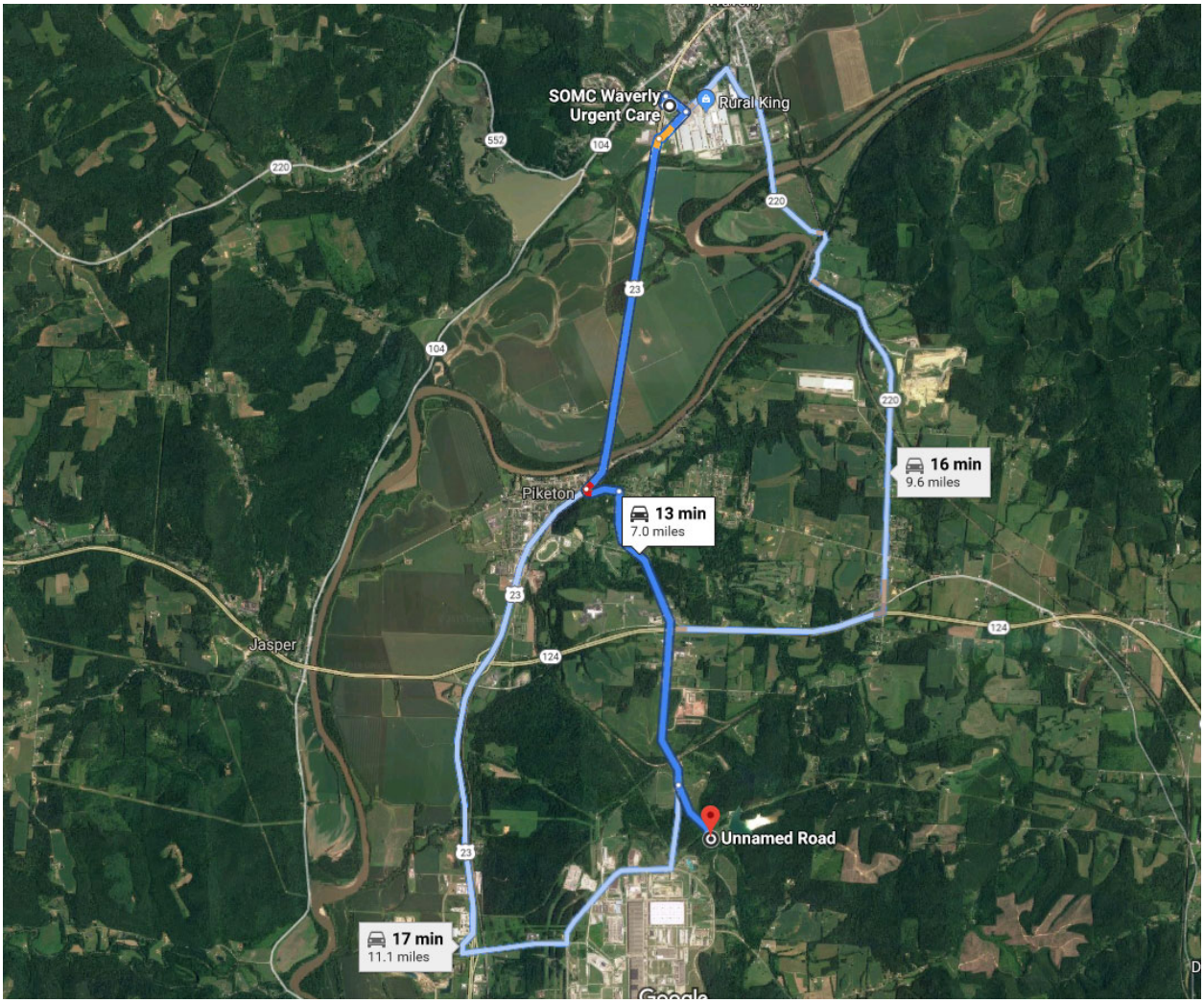
SIGNATURE PAGE

No.	Name	Signature	Date	Company
1	Brendan Prendeville		**5/27/20**	B&N
2	Dale Poorman		**5/27/20**	B&N
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

APPENDIX 1

Map to Local Hospitals

835 W Emmitt Ave
Waverly, OH 45690
Phone: 740-947-7662



APPENDIX 2

TASK HAZARD ASSESSMENT

TASK NAME: Annual Bridge Inspections – Portsmouth Gaseous Diffusion Plant – Piketon, OH

Equipment/tools: Hard hat, safety vest, steel toed boots, eye protection, measuring devices

Hazardous chemicals: None

Relative risk ranking: Low

Potential hazards

Check or add all that apply to site conditions

( ) Ground intrusion(underline)	( ) Chemical (underline)	(✓) Biological (underline)
Drilling	Vapor generation	Toxic or irritant plants
Excavation	Dust generation	Pathogens
Direct push	Mat'l contact	Insects
Sampling	( ) Electrical (underline)	( ) Fire/explosion (underline)
( ) Heavy equip. operation	Ovrhd./underg. utilities	Flammable materials
(✓) Physical exertion/strain	Energized equipment	Fuel lines
(✓) Slick/wet surfaces	Power tools	Hot work
(✓) Uneven terrain	(✓) Pedestrian traffic	Compressed gases
(✓) Falls from elev. >6 ft	(✓) Vehicle traffic	(✓) Confined space/O_2 def.
( ) Engulfment	( ) Noise (>85 dba)	(✓) Heat stress
( ) Cold stress	(✓) Work over water	( ) Explosive ordnance

Control and protective measures

Identify & reference location of control measures for each hazard listed above (HSM, SOPs, Standard Safe Work Practices, etc.).

( ) Equip. Operator Training ( ) Equip. Certific./Inspections (✓) PPE Level: D

(✓) Air Monitoring Equipment:

(✓) Specialized Training: Climbing/Rope Access, Rescue, CPR/First Aid

(✓) Site Control/Safe Access: SHSC to limit unauthorized personnel on work site

(✓) SOPs/Guidelines: (See HSP Sections 1.0, 2.0, 3.0)

( ) Engineering Controls:

(✓) Safe Work Practices: (See HSP Sections 1.0, 2.0. 3.0)

( ) Other:

Personal Protective Equipment (PPE)

Initial levels of protection were assigned to this work task based on the potential risk of exposure. These levels may be changed if monitoring data (see Action Levels) and site conditions warrant it (as determined by the SHSC). Any change to these initial levels must be noted here and documented with a completed ROC form.

EPA level of protection	( ) A ( ) D	( ) B (✓) D modified	( ) C ( ) Not permitted
Respirator (Level c and up)	( ) SCBA, airline ( ) HEPA	( ) purif. resp. ( ) dust pre-filters	( ) OV/AG cart ( ) other: _____
Protective clothing	( ) encap. suit ( ) Saranex	( ) Tyvek ( ) splash suit	( ) PE Tyvek ( ) other
Head, face **Eyes, ears**	(✓) hard hat ( ) splash shield	(✓) safety glasses ( ) ear plugs/muffs	( ) goggles ( ) other_____
Gloves (outer) (inner)	( ) nitrile_____ ( ) nitrile _____	( ) neoprene ( ) vinyl	( ) PVC (✓) other: Leather
Footwear	(✓) steel-toed leather ( ) hip waders	( ) overboots/covers ( ) shin/knee guards	( ) steel-toed rubber ( ) Climbing boot or shoe

Modifications: _____

APPENDIX 3

INCIDENT REPORT FORM

B&N HEALTH & SAFETY PLAN

INCIDENT REPORT FORM

To: Incident Manger/Site Health & Safety Coordinator Date: _____

From: _____

Location of Incident: _____

Description of Incident: _____

Cause of Incident: _____

Treatment Received: _____

Physicians Recommendations: _____

Returned to Work: _____

REV 0505MEB

Appendix 4

OSHA Levels of Respiratory PPE

OSHA 1926.65 Appendix B

General Description and Discussion of the Levels of Protection and Protective Gear

This appendix sets forth information about personal protective equipment (PPE) protection levels which may be used to assist employers in complying with the PPE requirements of this section.

As required by the standard, PPE must be selected which will protect employees from the specific hazards which they are likely to encounter during their work on-site.

Selection of the appropriate PPE is a complex process which should take into consideration a variety of factors. Key factors involved in this process are identification of the hazards, or suspected hazards; their routes of potential hazard to employees (inhalation, skin absorption, ingestion, and eye or skin contact); and the performance of the PPE materials (and seams) in providing a barrier to these hazards. The amount of protection provided by PPE is material-hazard specific. That is, protective equipment materials will protect well against some hazardous substances and poorly, or not at all, against others. In many instances, protective equipment materials cannot be found which will provide continuous protection from the particular hazardous substance. In these cases the breakthrough time of the protective material should exceed the work durations.

Other factors in this selection process to be considered are matching the PPE to the employee's work requirements and task-specific conditions. The durability of PPE materials, such as tear strength and seam strength, should be considered in relation to the employee's tasks. The effects of PPE in relation to heat stress and task duration are a factor in selecting and using PPE. In some cases layers of PPE may be necessary to provide sufficient protection, or to protect expensive PPE inner garments, suits or equipment.

The more that is known about the hazards at the site, the easier the job of PPE selection becomes. As more information about the hazards and conditions at the site becomes available, the site supervisor can make decisions to up-grade or down-grade the level of PPE protection to match the tasks at hand.

The following are guidelines which an employer can use to begin the selection of the appropriate PPE. As noted above, the site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. It should be cautioned that the listing below does not fully address the performance of the specific PPE material in relation to the specific hazards at the job site, and that PPE selection, evaluation and re-selection is an ongoing process until sufficient information about the hazards and PPE performance is obtained.

Part A. Personal protective equipment is divided into four categories based on the degree of protection afforded. (See Part B of this appendix for further explanation of Levels A, B, C, and D hazards.)

I. Level A - To be selected when the greatest level of skin, respiratory, and eye protection is required.

The following constitute Level A equipment; it may be used as appropriate;

1. Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).

2. Totally-encapsulating chemical-protective suit.

3. Coveralls.(1)

4. Long underwear.(1)

5. Gloves, outer, chemical-resistant.

6. Gloves, inner, chemical-resistant.

7. Boots, chemical-resistant, steel toe and shank.

8. Hard hat (under suit).(1)

9. Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit).

II. Level B - The highest level of respiratory protection is necessary but a lesser level of skin protection is needed.

The following constitute Level B equipment; it may be used as appropriate.

1. Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

2. Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls).

3. Coveralls.(1)

4. Gloves, outer, chemical-resistant.

5. Gloves, inner, chemical-resistant.

6. Boots, outer, chemical-resistant steel toe and shank.

7. Boot-covers, outer, chemical-resistant (disposable).(1)

8. Hard hat.(1)

9. [Reserved]

10. Face shield.(1)

III. Level C - The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met.

The following constitute Level C equipment; it may be used as appropriate.

1. Full-face or half-mask, air purifying respirators (NIOSH approved).

2. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).

3. Coveralls.(1)

4. Gloves, outer, chemical-resistant.

5. Gloves, inner, chemical-resistant.

6. Boots (outer), chemical-resistant steel toe and shank.(1)

7. Boot-covers, outer, chemical-resistant (disposable).(1)

8. Hard hat.(1)

9. Escape mask.(1)

10. Face shield.(1)

IV. Level D - A work uniform affording minimal protection, used for nuisance contamination only.

The following constitute Level D equipment; it may be used as appropriate:

1. Coveralls.

2. Gloves.(1)

3. Boots/shoes, chemical-resistant steel toe and shank.

4. Boots, outer, chemical-resistant (disposable).(1)

5. Safety glasses or chemical splash goggles*.

6. Hard hat.(1)

7. Escape mask.(1)

8. Face shield.(1)

Footnote (1) Optional, as applicable.

Part B. The types of hazards for which levels A, B, C, and D protection are appropriate are described below:

I. Level A - Level A protection should be used when:

1. The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured (or potential for) high concentration of atmospheric vapors, gases, or particulates; or the site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the skin;

2. Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or 3. Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.

II. Level B - Level B protection should be used when:

1. The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection;

2. The atmosphere contains less than 19.5 percent oxygen; or 3. The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor

detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.

Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.

III. Level C - Level C protection should be used when:

1. The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;

2. The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and

3. All criteria for the use of air-purifying respirators are met.

IV. Level D - Level D protection should be used when:

1. The atmosphere contains no known hazard; and

2. Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Note: As stated before, combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

As an aid in selecting suitable chemical protective clothing, it should be noted that the National Fire Protection Association is developing standards on chemical protective clothing. These standards are currently undergoing public review prior to adoption, including:

NFPA 1991 - Standard on Vapor-Protective Suits for Hazardous Chemical

Emergencies (EPA Level A Protective Clothing) NFPA 1992 - Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies (EPA Level B Protective Clothing) NFPA 1993 - Standard on Liquid Splash-Protective Suits for Non-emergency, Non-flammable Hazardous Chemical Situations (EPA Level B Protective Clothing)

These standards would apply documentation and performance requirements to the manufacture of chemical protective suits. Chemical protective suits meeting these requirements would be labeled as compliant with the appropriate standard. When these standards are adopted by the National Fire Protection Association, it is recommended that chemical protective suits which meet these standards be used.

INFRASTRUCTURE SUPPORT SERVICES

Contract DE-EM0004062

Deliverable #120

Scheduled Road and Bridge Inspections Report Part 3

PMA-PORTS-20-6552

September 2020

Culvert Assessment Report

Portsmouth Mission Alliance, LLC
managing the
Infrastructure Support Services at the
Portsmouth Gaseous Diffusion Plant
under contract DE-EM0004062 for the
U.S. DEPARTMENT OF ENERGY

Classification Review Required Prior to Public Release

INFRASTRUCTURE SUPPORT SERVICES

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Culvert Assessment Report

Prepared for the
U.S. Department of Energy
Office of Environmental Management

by
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September 2020

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APPENDICES

Appendix A: 2020 Culvert Assessment Exhibit A-1
Appendix B: Culvert Assessment Results Table B-1
Appendix C: Culvert Photographs C-1

ACRONYMS

CMP	Corrugated Metal Pipe
RCP	Reinforced Concrete Pipe
HDPE	High-density Polyethylene
DOE	U.S. Department of Energy
ISS	Infrastructure Support Services
ODOT	Ohio Department of Transportation
PMA	Portsmouth Mission Alliance, LLC
PORTS	Portsmouth Gaseous Diffusion Plant
ROM	Rough Order of Magnitude

1 INTRODUCTION

Beginning in December 2019 continuing through June 2020, as part of the Portsmouth Infrastructure Support Services (ISS) Contractor, Portsmouth Mission Alliance, LLC (PMA) performed inspections on 52 culverts and on the X-202A Fog Road Culvert Bridge (North) within the Portsmouth Gaseous Diffusion Plant (PORTS). The current culvert assessment task consists of the 52 culverts included in the ISS Contract along with X-202A. A map of the inspected culverts, along with their assessed condition, is included in Appendix A. Although inspection activities were performed in 2019-2020, this report is identified as the 2020 Assessment in accordance with report delivery date for Deliverable #120.

2 GENERAL OBSERVATIONS

Prior to the culvert inspection activities, assessment team members reviewed and studied the Ohio Department of Transportation's (ODOT) Culvert Management Manual. The manual communicates the ODOT internal procedures for the inventory and inspection of culverts and storm sewers under highways[1]. In this training, ODOT defines a culvert as "a structure that conveys water or forms a passageway through an embankment and is designed to support a super-imposed earth load or other fill material plus live loads." Further, ODOT specifies that any structure with a span, diameter, or multi-cell structure with a total span less than 10 feet (when measured parallel to the centerline of the roadway) should be classified as a culvert. This definition would be used in the re-categorization of Culvert #17, as further indicated below. As defined in the ODOT specifications, X-202A (Fog Road Bridge – North) qualifies as a culvert, as its span is less than 10 feet.

With information gathered in the Culvert Management Manual, the team developed a matrix using ten applicable criteria from the manual. This matrix allows a more quantifiable way of determining the condition of a pipe and removes some of the variability in the evaluation between the different teams assessing culverts for the year and future inspections. The team started the 2020 culvert assessment project on November 25, 2019, with a safety and projects requirement briefing. One team was then organized to inspect the 53 identified culverts, with inspection dividing lines generally based on quadrants within the PORTS site. The majority of the 53 culverts required for assessment are round, corrugated metal pipe (CMP) with a few exceptions, as identified in the Culvert Assessment Results Table included in Appendix B.

In general, the team discovered that in many cases, adjacent ditch lines need some basic clearing to remove impedances such as sediment and debris buildup. This clearing will be completed with the regular and on-going maintenance. Headwall separation from the culvert was discovered in a few instances during the inspection. The primary reason for structural failure of the CMP culvert and a corresponding recommendation for repair, however, is the deterioration of the pipe due to exposure of the metal to moisture and oxygen, which causes rust associated with degradation of the metal. Furthering the degradation process is abrasion from the sediment load carried in the storm water runoff. ODOT considers this process of corrosion, followed by abrasion from stream sediment, as one of the major causes of culvert deterioration.

This situation was encountered throughout the assessment, and in some cases had progressed to a point where the culvert bottom had completely deteriorated and was no longer present. In these cases, the culvert was given a "Poor," "Critical," or "Failed" rating and was recommended for repair. If not addressed, culvert damage could lead to major areas of concern in instances

[1] http://www.dot.state.oh.us/Divisions/Engineering/Hydraulics/Culvert%20Management/Pages/Culvert-Management.aspx

where the bottom of the culvert has deteriorated to a degree that storm water is being conveyed below the culvert instead of within the culvert. Under this scenario and during larger storm events, when the culvert is running at or near capacity, storm water can pull surrounding backfill material into the culvert creating areas of subsidence and sink holes. This situation was noted on a few on the culverts, as indicated in the Culvert Assessment Table included in Appendix B and shown in culvert photographs provided in Appendix C.

Sixteen of the 53 culverts are assessed as “Critical” or “Poor” and are recommended for immediate repair, an increase from last report. X-202A was also recommended for repair of the abutments. This report will provide details of the culverts recommended for repair along with the additional 36 culverts that were assessed and determined not to be in immediate need or repair. One culvert (Item #33) was not located.

Previously, the status of Culvert #17, the 144-inch circular culvert (lined with a 128-inch liner pipe) crossing under the North Access Road, was also identified as a potential area of concern. According to the ODOT Culvert Inventory and Inspection Manual, and as mentioned above, any culvert with a total span of greater than 120 inches should be considered a bridge and, therefore, should be inventoried and subject to the yearly monitoring and inspection program. Based on the ODOT definition, PMA recommended that this structure be assessed as a bridge. Accordingly, a subsequent bridge assessment was performed during April 2018 and May 2019. Since Culvert #17 was slip-lined with a 108-inch diameter line pipe, Culvert Item #17 could be reconsidered as a culvert. In 2020, Culvert #17 will be evaluated as both a bridge and culvert.

As indicated in the Culvert Assessment Results Table included in Appendix B, culverts were inventoried with the following:

- Pipe size (inches),
- Length (feet),
- Pipe material,
- Past Overall Condition,
- Current Overall condition, and
- Hierarchy of Repair.

The summarized results of these inventory conditions are provided in Section 3.

3 CULVERTS INSPECTION RESULTS

During this 2020 culvert assessment, the teams characterized the culverts into six categories:

- **Excellent (5)** – Culverts that are in as built condition or have no problems noted
- **Good (4)** – Culverts that exhibited some minor problems or show some structural elements with deterioration
- **Fair (3)** – Culverts that have all primary structural elements are sound but may have sections with minor losses
- **Poor (2)** – Culverts with advanced or serious section loss, deterioration, spalling, and affecting structural elements
- **Critical (1)** – Culverts that have major deterioration of structural components and are at risk of failure. Culverts are recommended for immediate repair or replacement
- **Failed (0)** – Culverts that have collapsed or no longer function and are beyond corrective action, requiring replacement to restore function

These categories were based on ten applicable items from the ODOT Culvert Management Manual listed below:

- Culvert Material Deterioration*
- Culvert Alignment*
- Culvert Shape* or Slab Condition
- Culvert Seam/Joint Condition*
- Channel Alignment
- Channel Protection
- Channel Flow Blockage into Culvert
- Channel Scour*
- Roadway Condition
- Embankment Condition

*Denotes Critical Items

These ten categories are ranked on a 5 (Excellent) to 0 (Failed) scale based on the condition of the culvert, channel, roadway, and embankment. The lowest score in the critical categories, marked by * above, would result in the classification of the culvert. A weighted average of the scores are calculated to determine a hierarchy of need for replacement. If any, or multiple categories received a 0 score, then the culvert would be classified as “Failed.”

All of the culverts are shown in the Culvert Assessment Exhibit included in Appendix A; they have been color coded based on the Overall Condition Rating. The summarized condition breakdown of all of the 53 culverts inspected is provided in Table 1. An “Unknown” characterization was provided when the culvert was not found and, therefore, inaccessible for inspection.

Table 1. Condition Breakdown of Inspected Culverts

Culvert Condition	Number of Culverts
Excellent	2
Good	14
Fair	20
Poor	6
Critical	10
Failed	0
Unknown	1
Totals	**53**

a. Previous Repair Activities

Based on previous culvert assessments and during the 2019/2020 construction season, two projects were initiated to repair culverts that were in "Poor" condition and not functioning as intended. The projects consisted of the re-lining two existing CMP culverts that had deteriorated and were in various stages of failure. Table 2 presents a list of the 2019/2020 culvert repair projects, along with pipe sizes and lengths.

These culverts were inspected during the current assessment and found to be constructed of durable material, well aligned, and functioning as intended. Correspondingly, these two culverts are characterized as in "Excellent" condition after completion of the projects.

Table 2. 2019/2020 Culvert Repair Project Information

Culvert Location	Host CMP Pipe Size Inside Diameter (in.)	Liner Size Inside Diameter (in.)	Total Pipe Length (ft.)
#17 North Access Rd, Little Beaver Creek	128	108	221
#65 Under Perimeter Rd at North Pike Avenue	60	48	375

b. Observations of Poor, Critical, and Failed Culverts

During the culvert assessment, 16 of the culverts were categorized as being in "Critical" or "Poor" condition and being of critical importance to address, with X-202A being added for repair. The following is a list of these 16 critical culverts recommended for further engineering evaluation and repair. Accompanying the list is a brief summary of the issues encountered and the recommended repair. Once a determination is made as to which culvert repairs are deemed critical to the U.S. Department of Energy (DOE), a repair solution will be defined and a Rough Order of Magnitude (ROM) cost for each repair will be determined. The Culvert Assessment Exhibit (included in Appendix A) identifies all of the culvert locations by color code based on the Overall Condition Rating determined through inspection.

- **ITEM #6. 78-inch CMP culvert located below "C" Road, south of Truck Access Road**

  The bottom of this culvert has deteriorated due to corrosion to the extent that most of the bottom is no longer present. Due to the identified deterioration, and the potential for subsidence and further erosional issues, this culvert has been identified as critical and in need of repair due to the presence of an adjacent overhead power structure.

- **ITEM #8. 84-inch CMP culvert in the Forested Area**

  The bottom of this culvert has deteriorated due to corrosion to a vast extent with most of the bottom being no longer present. Due to the identified deterioration, and the potential for subsidence and further erosional issues, this culvert has been identified as critical and in need of repair.

- **ITEM #11. 36-inch culvert below Principal Access Road**

  The bottom of this culvert has completely deteriorated due to corrosion, which has resulted in storm water flowing below the culvert. There is also separation between the inlet pipe and the headwall, which will also result in water flowing in unintended locations. These structural issues prompted the team to identify this culvert as needing repair.

- **ITEM #13. 42-inch CMP Culvert below the Booster Station Road leading to the Scrapyard**

  There is extreme deterioration of the bottom of this culvert that has resulted in the bottom folding up into the culvert restricting flow. The embankment exhibits subsidence due to the culvert condition.

- **ITEM #16. 36-inch Reduced to 24-inch CMP Culvert below Perimeter Road**

  The culvert embankment has been developing sinkholes, which are believed to be caused by subsidence and washout due to the pipe being corroded. Due to the culvert being full of sediment, it is difficult to tell the locations of the corroded pipe and the extent of which the pipe is damaged.

- **ITEM #21. 60-inch high-density polyethylene (HDPE) culvert below North Access Road**

  The pipe was cut approximately 5 feet from the outlet, resulting in approximately 20 feet of deformity that increases the width of the pipe area. The cut in the pipe exposes the pipe bedding, resulting in water flow underneath the pipe. For these reasons and due to the heavy use of the North Access Road, this culvert has been recommended for repair. The cause is believed to be an intentional cut during installation of a new utility line to allow for the deformation of the culvert to keep necessary clearances.

- **ITEM #29. 48-inch CMP Hewes Street**

  The bottom of the culvert has severe deterioration with portions of the pipe haunches (sidewall) completely rusted through and allowing for the infiltration of soil. This is leading to scour around the ends of the pipe and possible erosion issues underneath the roadway. One unknown factor for this repair is the ability to close the overlying road, as it is extensively used.

- **ITEM #30. 48-inch CMP culvert west of the X-230K under Cardinal Avenue**

  The bottom of the pipe has severe deterioration, resulting in parts of the bottom being completely rusted through and folding up into the pipe blocking flow. The deterioration of the pipe is allowing the bedding material to be swept away from the pipe and resulting in scour and materials loss around the pipe. One unknown factor for this repair is the ability to close the overlying road, as it is extensively used.

- **ITEM #31. 36-inch CMP storm drain under Perimeter Road, south of the East Portal**

  The bottom of the pipe has deteriorated, resulting in water flowing under the culvert. A concrete invert has been poured at the pipe inlet but past the lining the bottom is completely missing under the road. There is extensive settlement above and around the pipe and adjacent areas. One added point of complexity is that the eastern end of the pipe discharges into a catch basin that, in turn, connects to another storm drain conveying storm water to the north.

- **ITEM #35. 24-inch CMP culvert under the entrance to X-611 - Critical**

  The invert of the pipe has mostly corroded away, resulting in water flowing under the pipe and pulling soil away. Also there is scour at the inlet and outlet of the culvert.

- **ITEM #39. 24-inch CMP culvert under 27th Street, north of the X-533 yard**

  Both ends of the culvert have been partially crushed. Additionally, the bottom of the culvert is extremely deteriorated and storm water is flowing beneath the culvert and is, therefore, recommended for repair.

- **ITEM #42. 60-inch CMP culvert perpendicular to Fog Road south of X-624**

  The bottom of the pipe has completely deteriorated, resulting in water flowing under the culvert. The bottom quarter of the pipe is nearly completely missing. There is settlement above and around the pipe and adjacent areas along with erosion of the embankment around the headwall. Considering the ground settlement and the projected increase in use Fog Road, it is recommended that this storm drain be repaired.

- **ITEM #44. 18-inch transition to 24-inch CMP culvert under entrance to C-Lot from Truck Road**

  The culvert transitions from 18-inch to 24-inch under the roadway. At the location of this transition there is significant scour from this. Also at the headwall there is beginning to be scour and erosion of the embankment from poor channel alignment and the pipe being under sized. For these reasons, it is recommended that this culvert be repaired.

- **ITEM #50. 24-inch CMP culvert under Patrol Road and the corner of the security fence west of the C-Portal gravel lot**

  Both ends of the culvert are damaged and the inlet is missing the grate. The pipe is severely deteriorated, resulting in water flowing under the pipe. There is sediment buildup that has resulted in a 50% blockage at the outlet. For these reasons, it is recommended that this culvert be repaired.

- **ITEM #51. 30-inch culvert under the Main Entrance Road to the X-206A and 206B parking lots**

  The culvert has severe deterioration to the point the bottom of the pipe is no longer present and consequently is recommended for repair. There is sediment build up at both ends of the culvert that should be removed whether the culvert is replaced or not. Due to the high traffic nature of the Entrance Road, it is recommended that the repair take place during the weekend or other non-peak hours.

- **ITEM #52. 96-inch CMP culvert under Perimeter Road to X-2230M**

  The culvert has moderate deterioration to the point the bottom of the pipe no longer has the asphaltic coating and is developing holes in the culvert. The culvert consequently is recommended for repair.

- **ITEM #X-202A. Fog Road Bridge (North)**

  The bridge is showing deterioration of the invert, which in turn is causing scour under the abutments of the bridge. Due to the scour developing under the abutments, it is recommended for repair.

4 SUMMARY

During the 2020 culvert assessment project, the PMA team inspected the original 52 culverts and X-202A Fog Road Bridge (North). Inspection activities were performed during winter of 2019/2020. This date was chosen such that vegetation adjacent to culverts would be less and culvert access, both within and adjacent to the culverts, would be maximized.

The condition breakdown of all of the 52 culverts inspected is as indicated: the majority (36) of the culverts inspected were characterized as 2 “Excellent,” 15 “Good,” or 19 “Fair” and are not in need of immediate repairs. While the remaining 7 “Poor” and 9 “Critical” are recommended for repair before the next culvert inspection to prevent further issues or possible road closures. An

"Unknown" characterization was provided when the culvert was either not found or inaccessible for inspection.

As part of the on-going culvert upgrade process, another culvert repair project was initiated in 2019. Two culvert areas were contracted for repair and subsequently completed using slip lining repair techniques. After repair and during the 2020 culvert assessment project, the two culverts were re-categorized as being in "Excellent" overall condition post completion, with only Culvert 17 being in this report. To further the culvert upgrade process, a yearly culvert rehabilitation projects should be established to prevent an increasing amount of culverts in "Critical" or "Poor" condition within the PORTS site and maintain safe road conditions.

5 REFERENCES

North Wind, 2020, *Portsmouth Infrastructure Road Assessment Report – 2020*, North Wind Infrastructure and Technology, LLC, August 2020.

Ohio Department of Transportation, *Culvert Management Manual*, September 2018

APPENDIX A

2020 CULVERT ASSESSMENT EXHIBIT

DRAWING NUMBER
X-203-

CULVERT ID#	CULVERT CONDITION
1	Good
2	Fair
3	Fair
4	Fair
5	Good
6	Poor
7	Fair
8	Critical
9	Good
10	Fair
11	Critical
12	Fair
13	Critical
14	Good
15	Fair
16	Critical
17	Excellent
18	Fair
19	Good
20	Good
21	Poor
22	Fair
23	Fair
24	Good
25	Fair
26	Good
27	Good
28	Good
29	Poor
30	Critical
31	Poor
32	Good
33	Unknown
34	Good
35	Critical
36	Fair
37	Fair
38	Fair
39	Critical
40	Fair
41	Excellent
42	Critical
43	Fair
44	Poor
45	Good
46	Good
47	Fair
48	Fair
49	Fair
50	Critical
51	Critical
52	Poor
X-202A	Fair

500' 250 125 0 500'
SCALE: 1" = 500.0'

LEGEND

- EXCELLENT
- GOOD
- FAIR
- POOR*
- CRITICAL*
- UNKNOWN
- (1) CULVERT IDENTIFICATION

* RECOMMEND FOR REPAIR

This document has been reviewed and is UNCLASSIFIED and NOT UCNI. This review does not constitute clearance for public release.

_____ # _____
Authorized Derivative Classifier Date

REFERENCE DRAWINGS	OPEN CHANGES	REV	REVISION DESCRIPTION	DWN	ENG	DESIGN MANAGER	DATE

Fluor-BWXT | Portsmouth LLC
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AUTOCAD

PORTSMOUTH GASEOUS DIFFUSION PLANT
D & D PROJECT

2020 CULVERT ASSESSMENT EXHIBIT

FACILITY X-203
DRAWING NUMBER X-203-1-C
REV 0

APPENDIX B

CULVERT ASSESSMENT RESULTS TABLE

Table. Culvert Assessment Results Table

Culvert Number and Description		Current Culvert			Culvert Condition		Recommended for Repair in 2020-2021	Priority of Repair
Culvert Number	Location Description	Diameter I.D. (in)	Material	Length(ft)	2018	2020		
1	Below Security Fence Adjacent to Truck Access Rd	30	CMP	20	GOOD	GOOD	No	37
2	Below Security Fence Adjacent to Truck Access Rd	57	CMP	98	GOOD	FAIR	No	23
3	Below Truck Access Road	60	CMP	138	GOOD	FAIR	No	34
4	Storm Main Outlet	60	CMP	1810	GOOD	FAIR	No	21
5	Below "B" Rd, West of Truck Access Rd	58	HDPE	162	EXCELLENT	GOOD	No	43
6	Below "C" Rd, West of Truck Access Rd	78	CMP	210	POOR	POOR	Yes	11
7	Below Truck Access Road	84	CMP	220	GOOD	GOOD	No	39
8	CMP in Forested Area	84	CMP	125	FAIR	POOR	Yes	10
9	Below Perimeter, Which Feeds to X-230-J5, Concrete Bottom	80	CMP	210	GOOD	GOOD	No	40
10	Twin Culverts, Principal Access Rd	26	HDPE	188	EXCELLENT	FAIR	No	35
11	Principal Access Rd	36	CMP	80	POOR	CRITICAL	Yes	9
12	Below Perimeter Rd, next to Railroad	36	CMP	72	GOOD	FAIR	No	27
13	Booster Station Rd, leading to scrapyard	42	CMP	120	POOR	CRITICAL	Yes	3
14	Railroad to Scrapyard	30	HDPE	52	GOOD	GOOD	No	45
15	Below old Booster Station Rd, not in service	48	CMP	70	GOOD	FAIR	No	29
16	Below Perimeter Rd, 36" Inlet Reduced to 24" Outlet	36 Reduced to 24	CMP	0	GOOD	CRITICAL	Yes	2
17	North Access Rd, Little Beaver Creek	108	HDPE	221	POOR	EXCELLENT	No	52
18	Twin Culverts, under rd to firing range/Potential Disposal Site	48	CMP	80	GOOD	FAIR	No	32
19	Twin Culverts, Below Railroad North Access Rd	34	HDPE	176	EXCELLENT	GOOD	No	50
20	North Access Rd	36	HDPE	76	GOOD	GOOD	No	47
21	North Access Rd	60	HDPE	80	POOR	POOR	Yes	16
22	Perimeter Rd, North of East Access Rd Intersection	24	CMP	71	GOOD	FAIR	No	28
23	Twin Culverts, North of East Access Rd	72	CMP	210	GOOD	FAIR	No	18
24	Twin Culverts, East Access Rd	24	HDPE	67	EXCELLENT	GOOD	No	44
25	Southeast of X-100	48	RCP	62	GOOD	FAIR	No	31
26	Twin Culverts, Adjacent to X-749A	15	RCP	84	GOOD	GOOD	No	48
27	Corner of Perimeter Rd and Hewes St	54	RCP	191	EXCELLENT	GOOD	No	49
28	Perimeter Rd	72	HDPE	255	EXCELLENT	GOOD	No	46
29	Hewes St	48	CMP	90	FAIR	POOR	Yes	14
30	West of X-230K under Cardinal Avenue	48	CMP	108	POOR	CRITICAL	Yes	7
31	South of East Portal on Perimeter Rd	36	CMP	79	POOR	POOR	Yes	12
32	Parallel to 7th St from the X-670	15	RCP	65	GOOD	GOOD	No	42
33	Construction Rd, near former X-106B	24	RCP		UNKNOWN	UNKNOWN	No	53
34	North Side of X-735	24	CMP	63	GOOD	GOOD	No	41
35	Entrance to X-611	24	CMP	53	POOR	CRITICAL	Yes	6
36	Entrance to scale at C-lot	12	CMP	62	GOOD	FAIR	No	26

Culvert Number and Description		Current Culvert			Culvert Condition		Recommended for Repair in 2020-2021	Priority of Repair
Culvert Number	Location Description	Diameter I.D. (in)	Material	Length(ft)	2018	2020		
37	South entrance to gravel lot adjacent to C-lot entrance	18	CMP	60	GOOD	FAIR	No	22
38	North entrance to gravel lot adjacent to C-lot entrance	15	CMP	115	GOOD	FAIR	No	17
39	27th St, North of X-533	24	CMP	59	POOR	CRITICAL	Yes	8
40	Parallel to 20th St under entrance to X-640I	24	CMP	46	FAIR	FAIR	No	30
41	Parallel to Fog Rd under entrance to X-624	36	RCP	30	GOOD	EXCELLENT	No	51
42	Perpendicular to Fog Rd south of X-624	60	CMP	50	FAIR	CRITICAL	Yes	1
43	Parallel to Fog Rd under entrance to X-611A	60	CMP	80	GOOD	FAIR	No	24
44	Entrance to C-lot from Truck Rd	18 Increased to 24	CMP	58	GOOD	POOR	Yes	13
45	Entrance to C-lot from Truck Rd	18	CMP	56	GOOD	GOOD	No	36
46	Under Road Adjacent to X-680	15	CMP	74	GOOD	GOOD	No	38
47	Entrance to X-206E	16	CMP	52	FAIR	FAIR	No	19
48	Entrance to X-2207D	16	CMP	51	FAIR	FAIR	No	20
49	Under Patrol Rd and Security Fence West of C-Portal gravel lot	24	CMP	58	FAIR	FAIR	No	25
50	Under Patrol Rd and Security Fence West of C-Portal gravel lot(corner of fence)	24	CMP	28	POOR	CRITICAL	Yes	5
51	Under Main Entrance Rd	30	CMP	69	POOR	CRITICAL	Yes	4
52	Under Perimeter Rd to X-2230M	96	CMP	358	GOOD	POOR	Yes	15
X-202A	Fog Road Bridge (North)	72	Masonry	23	UNKNOWN	FAIR	Yes	33

APPENDIX C

CULVERT PHOTOGRAPHS

APPENDIX C

Culvert Photographs

Item #1 **Pipe Size – 30”** **Length – 20 ft** **Condition – Good**	
Item #2 **Pipe Size – 57”** **Length –98 ft** **Condition – Fair**	
Item #3 **Pipe Size – 60”** **Length – 138 ft** **Condition – Fair**	

Item #4 **Pipe Size – 60”** **Length – Unknown** **Condition – Fair**	
Item #5 **Pipe Size – 58”** **Length – 162 ft** **Condition – Good**	
Item #6 **Pipe Size – 78”** **Length – 210 ft** **Condition – Poor** **(Recommended for Repair)**	
Item #7 **Pipe Size – 84”** **Length – 220 ft** **Condition – Fair**	

Item #8 **Pipe Size – 84”** **Length – 125 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #9 **Pipe Size – 80” (Dual)** **Length – 210 ft** **Condition – Good**	
Item #10 **Pipe Size – 26” (Dual)** **Length – 188 ft** **Condition – Fair**	

Item #11 **Pipe Size – 36”** **Length – 80 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #12 **Pipe Size – 36”** **Length – 72 ft** **Condition – Fair**	
Item #13 **Pipe Size – 42”** **Length – 120 ft** **Condition – Critical** **(Recommended for Repair)**	

<u>Item #14</u> **Pipe Size – 30”** **Length – 52 ft** **Condition – Good**	
<u>Item #15</u> **Pipe Size – 48”** **Length – 70 ft** **Condition – Fair**	
<u>Item #16</u> **Pipe Size – 36” (Reduced to 24”)** **Length – 289 ft** **Condition – Critical** **(Recommended for Repair)**	

Item #17 **Pipe Size – 108”** **Length – 221 ft** **Condition – Excellent**	
Item #18 **Pipe Size – 48” (Dual)** **Length – 80 ft** **Condition – Fair**	
Item #19 **Pipe Size – 34” (Dual)** **Length – 176 ft** **Condition – Good**	

Item #20 **Pipe Size – 36”** **Length – 76 ft** **Condition – Good**	
Item #21 **Pipe Size – 60”** **Length – 80 ft** **Condition – Poor** **(Recommended for Repair)**	

Item #22 **Pipe Size – 24”** **Length – 71 ft** **Condition – Fair**	
Item #23 **Pipe Size – 72” (Dual)** **Length – 210 ft** **Condition – Fair**	
Item #24 **Pipe Size – 24” (Dual)** **Length – 67 ft** **Condition – Good**	

<u>Item #25</u> **Pipe Size – 48”** **Length – 62 ft** **Condition – Fair**	
<u>Item #26</u> **Pipe Size – 15” (Dual)** **Length – 84 ft** **Condition – Good**	
<u>Item #27</u> **Pipe Size – 54”** **Length – 191 ft** **Condition – Good**	

Item #28 **Pipe Size – 72”** **Length – 255 ft** **Condition – Good**	
Item #29 **Pipe Size – 48”** **Length – 90 ft** **Condition – Poor** **(Recommended for Repair)**	
Item #30 **Pipe Size – 48”** **Length – 108 ft** **Condition – Critical** **(Recommended for Repair)**	

<u>Item #31</u> **Pipe Size – 36”** **Length – 79 ft** **Condition – Poor** **(Recommended for Repair)**	
<u>Item #32</u> **Pipe Size – 15”** **Length – 65 ft** **Condition – Good**	
<u>Item #34</u> **Pipe Size – 24”** **Length – 63 ft** **Condition – Good**	

Item #35 **Pipe Size – 24”** **Length – 53 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #36 **Pipe Size – 12”** **Length – 62 ft** **Condition – Fair**	
Item #37 **Pipe Size – 18”** **Length – 60 ft** **Condition – Fair**	

Item #38 **Pipe Size – 15”** **Length – 115 ft** **Condition – Fair**	
Item #39 **Pipe Size – 24”** **Length – 59 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #40 **Pipe Size – 24”** **Length – 46 ft** **Condition – Fair**	

<u>Item #41</u> **Pipe Size – 36”** **Length – 30 ft** **Condition – Excellent**	
<u>Item #42</u> **Pipe Size – 60”** **Length – 50 ft** **Condition – Critical**	
<u>Item #43</u> **Pipe Size – 60”** **Length – 80 ft** **Condition – Fair**	

Item #44 **Pipe Size – 18 – 24”** **Length – 58 ft** **Condition – Poor**	
Item #45 **Pipe Size – 18”** **Length – 56 ft** **Condition – Good**	
Item #46 **Pipe Size – 15”** **Length – 74 ft** **Condition – Good**	

Item #47 **Pipe Size – 16”** **Length – 52 ft** **Condition – Fair**	
Item #48 **Pipe Size – 16”** **Length – 51 ft** **Condition – Fair**	
Item #49 **Pipe Size – 24”** **Length – 58 ft** **Condition – Fair**	

Item #50 **Pipe Size – 24”** **Length – 28 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #51 **Pipe Size – 30”** **Length – 69 ft** **Condition – Critical** **(Recommended for Repair)**	
Item #52 **Pipe Size – 96”** **Length – 358 ft** **Condition – Poor**	

<u>Item #X-202A</u> **Width – 72”** **Length – 23 ft** **Condition – Fair**	