

INDOT BRIDGE INSPECTION MANUAL

PART 3

LOAD RATING

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PART 3: LOAD RATING

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3-1.0 INTRODUCTION

The primary purpose of this part of the manual is to provide guidance for load rating, determining the safe load carrying capacity, and posting of bridges within the state of Indiana. It should be noted that the term bridge referenced throughout this Part of the Manual refers to a SNBI length structure or culvert. For situations that are not covered by the guidance in this manual, the *AASHTO Manual for Bridge Evaluation*, 3rd Edition including all interim revisions governs. Any variance with these guidelines is discussed in the following sections. At no point shall the requirements set forth in this document conflict with state or federal law. In the event of discrepancy, the law shall apply.

3-2.0 REFERENCE MATERIAL

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Indiana Department of Transportation. *Indiana TrafficWise*. <https://511in.org>

Indiana Size and Weight Regulation, IC 9-20 (2024) [IGA | 2025 Indiana Code](#)

[Indiana Administrative Code | IARP](#)

Sener, Kadir Can; Washeleski, Teresa L.; and Connor, Robert, "Development of Load Rating Procedures for Railroad Flatcars for Use as Highway Bridges Based on Experimental and Numerical Studies - Phase III Final Report" (2015). *Indiana Local Technical Assistance Program (LTAP) Technical Reports*. Paper 8. <https://docs.lib.purdue.edu/inltaptechs/8>

Vehicle weight limitations – Interstate System, 23 U.S.C. 127 (2021)

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3-3.0 ROLES AND RESPONSIBILITIES

Load rating roles for the Owners, Indiana Department of Transportation, and Load Rating Engineers are described within this portion of the manual.

3-3.01 Indiana Department of Transportation

The Indiana Department of Transportation (INDOT) is responsible for ensuring that Owners are in compliance with State law, State procedure, and the *National Bridge Inspection Standards* (NBIS) as given in 23 CFR 650 Subpart C, Bridges, Structures, and Hydraulics.

3-3.02 Owner

Owners within the state of Indiana include the state, counties, other local agencies, toll roads, and private firms owning bridges open to public traffic. For bridges within their authority, Owners are responsible for the following items:

- Ensuring all bridges within their jurisdiction are load rated for their in-service condition.
- Ensuring that new bridges, replacement bridges, or rehabilitated bridges are load rated as within the allowable timeframes as given in Section 3-4.03.
- Maintaining all required load rating documentation.
- Posting, restricting, and closing bridges as required and within allowable timeframes.
- Ensuring all required restriction signs are in place, legible, and clear of obstructions in conformance with the IMUTCD.
- Ensuring that parties performing load ratings on behalf of the Owner have a documented quality control plan which includes each load rating being checked by an engineer, other than the load rater, in accordance with Part 4 of this manual.

3-3.03 Load Rating Engineer

Qualifications for a Load Rating Engineer (LRE) are discussed in Part 1 of the INDOT Bridge Inspection Manual (IBIM). The engineering expertise necessary to properly evaluate a bridge varies with each bridge type. Complex bridges require specialized engineering knowledge. An LRE must be a registered Professional Engineer in the state of Indiana and must be suitably qualified to evaluate the specific bridge types being load rated. The LRE is responsible for signing,

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sealing, and dating all load rating calculations and must be actively involved in verifying their quality and accuracy. The qualified LRE is also responsible for submitting all required documentation in accordance with Section 3-6.0.

3-4.0 PROCEDURE

This section outlines when load ratings must be performed, required submittals, and notification procedures.

All load rating requests for State bridges shall be submitted through the Load Rating Request Application (LRRRA). Any plans, sketches, notes, and photos (where applicable) must be uploaded into LRRRA. The LRE will upload the Load Rating Summary Report and load rating model into LRRRA for INDOT review. Upon completion of the load rating request, LRRRA will transfer all documentation to INDOT's Electronic Records Management System (ERMS) Archives within the Bridge File Documents section.

Load ratings for Local bridges shall be performed by the Owner or its designated appointee. Load rating documentation, as described in Section 3-6.0, shall be uploaded to INDOT's Electronic Records Management System (ERMS) Archives within the Bridge File Documents section.

3-4.01 Modeling Guidelines & Assumptions

AASHTOWare Bridge Rating (BrR) shall be used to perform load ratings whenever possible for State and Local bridges. It is permissible to use other programs in cases where the use of BrR is insufficient or not plausible due to software limitations.

Typically, it is not necessary to analyze concrete bridge decks on redundant girder systems. Concrete decks that have significant deterioration, along with other deck types such as steel or timber decks must be load rated.

Analytical methods shall be used for load rating whenever possible. Though plans may not be available for some bridges, it may be possible to perform analytical load ratings for certain bridge types. For example, field measurements can be taken for steel or timber bridges and metal pipes without plans. This information along with material property assumptions based on the era of construction could be used as the basis of evaluation.

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Historical State and Local standard drawings for prestressed I-beam, box beams, reinforced concrete slabs, and arches may be used as the basis for evaluation, provided those details are not associated with known problems that adversely affect structural capacity. Where documented problems exist with older details, and common practices of that era chose to take exception to those details, reliance on such provisions is not appropriate.

Research and review of bridge history records, testing reports, repair or rehabilitation plans may be helpful to determine the load carrying capacity of the structure. In addition, another bridge within close proximity to the location, having similar geometry, built within the same year, or by the same contractor may have available plans. The available plan set could be used as the basis of evaluation.

In service load rating models must include deterioration as documented by Bridge Inspection. Deterioration may be present in multiple members of the bridge and may change over the structure's lifespan through repairs, retrofits, or continued deterioration. Additional areas of deterioration may also appear over time. For this reason, State load rating models must reflect the deterioration reported at each specific location along each member, even if that deterioration does not govern the overall rating. The Load Rating Summary Report must include the Load Rating Engineer's interpretation of the deterioration documented by the Bridge Inspector for the date of the inspection, along with an explanation of how this deterioration was incorporated into the load rating model. This process is also recommended for Local bridges.

Load rating models prepared for design review purposes should include a separate model for each construction phase that will carry traffic.

3-4.02 Load Rating Requirements

To inform decision making, INDOT requires that all bridges, not on the Indiana Toll Road or Extra-Heavy-Duty Highways, be load rated for the design load(s) reported for SNBI Item B.LR.01, as described in Section 3-5.01(01), at both the Inventory and Operating levels. For this reason, additional Inventory and Operating rating factors shall be documented in BRADIN, although not all are reported to the SNBI.

For State bridges with sidewalks, the design load should include pedestrian loads in accordance with *Indiana Design Manual* 403-3.09. It is recommended that the design load considers pedestrian loads as described in the MBE for Local bridges.

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All bridges on the Indiana Toll Road or any State owned or maintained bridge within 15 miles of an Indiana Toll Road gate are to be load rated at the Operating Rating level for the Toll Road Truck configurations in agreement with *Indiana Design Manual* Chapter 403. In addition, load ratings for the Toll Road Truck configurations are to be collected at the Routine (Annual) Permit level.

Any bridge located on the Extra-Heavy-Duty Highways, as described in IC 9-20-5-4, is to be load rated at the Operating Rating level for the Michigan Train Truck configurations in agreement with the *Indiana Design Manual* Chapter 403. In addition, load ratings for Michigan Train Truck configurations are to be collected at the Routine (Annual) Permit level.

3-4.03 Load Rating Frequency

In accordance with the Code of Federal Regulations, load ratings are required whenever there is a change in condition where strength or performance of a structural component is affected such as, but not limited to, damage and/or deterioration, reconstruction, new construction, or changes in dead or live loads.

In addition to federal regulations, the State requires load rating evaluations during design development and throughout the bridge life cycle to ensure that the existing and proposed conditions meet public safety requirements. For information on additional load rating data collected by INDOT outside the limits of the SNBI, refer to Sections 3-4.02.

The following sections describe situations requiring load rating evaluations under State procedures or federal regulations.

3-4.03(01) Project Scoping

Although not required by federal regulations, the Owner is encouraged to perform a load rating evaluation prior to programming bridge design projects to help determine whether an existing structure should be rehabilitated or replaced.

The State uses existing load rating models and data to support simplified project scoping evaluations before design contracts or engineering plans are prepared. For example, before programming State bridge projects, District Bridge Asset Engineers (BAE) submit Project Scoping requests in LRRR for preliminary scoping evaluations to be performed. These preliminary evaluations rely on existing load rating models and data to determine whether an in-service bridge may have sufficient capacity for minor improvements such as a rigid concrete overlay, thin polymeric overlay, or bridge railing replacement.

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Although useful for preliminary planning, this load rating information has limitations at the preliminary stage. A more complex rehabilitation scope of work (e.g., widening or member replacement) requires detailed plans to be modeled accurately.

3-4.03(02) Design Review for New, Replacement, or Rehabilitated Structures

Although not required by federal regulations, the Owner should consider completing a preliminary load rating during the design stages and prior to construction.

This evaluation should consider all applicable construction phases. In addition to the ratings for the final constructed project, State load ratings are to include a summary of the legal load ratings for each phase of construction that will carry traffic. If any traffic-carrying construction phase produces legal load ratings lower than those currently reported in BRADIN, the reported load ratings shall be updated to reflect the controlling phase prior to construction. A Project Commitment is to be created to coordinate load rating updates with INDOT Bridge Evaluation two weeks prior to construction.

For State structures, a preliminary load rating evaluation shall be completed based on the Bridge Designer's New Design load rating request in LRRA, in accordance with the *Indiana Design Manual* (IDM). Documentation of this evaluation is required as part of INDOT's Final Tracings Submission. This evaluation is performed near the final stages of design to confirm that the completed structure will not require posting or restrictions. It also provides an opportunity for a third-party review while preparing the load rating model and rating factors, thus supporting an expedited submittal upon completion of construction.

It is recommended that Local structures also have a load rating evaluation performed prior to construction.

Completed new, replaced, and rehabilitated bridges must have load ratings performed in accordance with Section 3-4.03(06) of the IBIM.

3-4.03(03) Repairs and Retrofits

The Owner should consider performing a load rating prior to initiating any bridge repairs. For State structures, a load rating evaluation is required prior to reopening a bridge after closure, or prior to construction activities for nonclosure situations. Refer to the *Indiana Design Manual* for guidance related to requesting a load rating for State bridges.

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Bridges that undergo repairs or retrofits affecting load carrying capacity must have load ratings completed in accordance with Section 3-4.03(06).

3-4.03(04) Precast Concrete 3-Sided Structures and Box Culverts

Unlike typical bridge design projects, structural details needed for design review load rating evaluations for precast concrete 3-sided structures and box culverts are not available until after the contract award and fabricator selection. Following letting, a Bridge Load Rating Calculation and Summary (RPD 700-B-301d) shall be provided by the Contractor for State owned precast concrete 3-sided structures and box culverts as described in Section C.5 Precast Concrete 3-Sided Structures and Box Culverts of the LPA & State Shop Drawing & Falsework Review Procedure. This guidance is located on the INDOT Construction Information webpage, under Construction Management Resources. For Bridge File documentation and to support oversize overweight permit evaluation, the Engineer of Record is to submit a New Design request in LRRR uploading the shop drawings, load rating calculations, and Load Rating Calculation and Summary as provided by the Contractor.

Local agencies should also consider obtaining load ratings for precast concrete 3-sided structures and box culverts prior to fabrication. It would be beneficial for this request to include all load rating data required for reporting to the SNBI.

Completed State and Local precast concrete 3-sided structures and box culverts must have load ratings performed in accordance with Section 3-4.03(06) of the IBIM.

3-4.03(05) Temporary Bridges

The Contractor is responsible for load rating temporary bridges in accordance with RSP 713-B-327 Temporary Bridges and Approaches. Temporary bridges shall be load rated in accordance with the MBE and the requirements of this Part.

Completed temporary bridges must have load ratings performed and documented in accordance with Section 3-4.03(06) and Section 3-6.0 of this manual.

3-4.03(06) Completion of Construction

To comply with Federal Regulations and to be in agreement with Part 2 of the IBIM, load ratings representing the completed construction for all bridges shall be completed and documented in BRADIN no later than 90 calendar days following completion of the inspection field operations.

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To document load ratings following the completion of construction of State bridges, the Bridge Inspector shall request a Construction Complete load rating evaluation in LRRA. The LRE will review the preliminary load rating model and documentation, previously submitted during the design review process, and update as necessary with respect to available as-built drawings or construction change documents.

3-4.03(07) Change in Condition

For bridges with newly discovered damage or increased deterioration affecting the strength or performance of a structural component, a load rating evaluation shall be performed. For State bridges, the Bridge Inspector shall submit a Condition Change load rating evaluation request in LRRA.

A load rating that considers deterioration shall be documented, as described in Section 3-6.0, for all bridges with a superstructure condition rating (SNBI B.C.02) or a culvert condition rating (SNBI B.C.04) of 4 or less. This evaluation shall consider the affected member(s).

For bridges with redundant substructures, such as solid concrete piers or abutments, a load rating evaluation considering deterioration shall be documented when the substructure condition rating (SNBI B.C.03) is 3 or less. Engineers should use sound judgment determining less redundant substructures with increased risk of failure due to localized deterioration, examples include NSTM, straddle bents, or post-tensioned substructures involving large cantilever. A load rating evaluation for less redundant substructures shall be documented considering deterioration when the substructure condition rating (SNBI B.C.03) is 4 or less. Due to BrR limitations, it may be necessary to perform a load rating evaluation outside of BrR for certain substructure components. This substructure evaluation may be compared to the controlling superstructure load rating to determine the overall limiting component. Documented load ratings shall correspond to the limiting component of the bridge for each reported configuration.

Deck deterioration should be considered in the load rating for bridges when the deck condition rating (SNBI B.C.01) is 4 or less. Deck deterioration may affect the load carrying capacity of bridges with timber decks, concrete slab spans, or composite superstructures. It may also affect beam capacity for composite beam-and-slab systems. Concrete deck slabs on redundant girder superstructures do not typically control the load rating evaluation. Timber decks exhibiting excessive deformations or deflections often control the load rating and therefore shall be evaluated.

A new load rating evaluation shall be performed for each subsequent reduction in component condition rating. If the change in condition does not alter the previously reported load rating

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factors, the evaluation shall still be documented in accordance with Section 3-6.0. This documentation shall include a new certified Load Rating Summary Report, the date of review noted in the load rating model, and submission of a new report in BRADIN updating B.LR.03 to reflect the date of the condition change load rating evaluation.

Load ratings for bridges identified as having a change in condition shall be documented within 90 calendar days from the date the change is identified.

Refer to Section 3-4.03(08) regarding more severe changes in condition.

3-4.03(08) Critical Findings

A Critical Finding (CF) is a structural or safety related deficiency that poses an immediate threat to public safety and requires immediate action. A bridge Critical Finding represents an immediate safety concern and is to be reported in accordance with the guidance provided in Part 2 of the IBIM.

When the Bridge Inspector reports a Critical Finding that may reduce a bridge's gross live load carrying capacity, an expedited load rating shall be coordinated with the immediate corrective actions recommended in the Critical Finding report.

Depending on the level of the Critical Finding, an expedited load rating may be required. For State bridges, the Bridge Inspector is to submit a Condition Change with sub-type Critical Finding request in LRRA to facilitate corrective action decision making.

There are two levels of Critical Findings – Urgent and Severe.

- **URGENT** – Requires immediate corrective action(s) as recommended by Bridge Inspection to be executed no later than three (3) calendar days from the date that the critical finding is discovered.
- **SEVERE** – Requires the immediate corrective action(s) as recommended by Bridge Inspection to be executed no later than thirty (30) calendar days from the date that the critical finding is discovered.

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3-4.04 Closure Requirements

In accordance with MBE 6A.8.1 & 6B.7.1, bridges not capable of carrying a minimum legal Commercial Vehicle Safe Posting Load or Emergency Vehicle Gross Safe Posting Load of three (3) tons must be closed. For rating methodologies other than LRFR, the Legal level is equivalent to Operating Level.

3-4.05 Posting, Restriction, and Closure Notification

In addition to the procedures described in Section 3-4.0, when load ratings indicate that a load posting, restriction, or change to either is required, the LRE shall document the load ratings in BRADIN coding SNBI Items B.PS.01 and B.PS.02 of the deficiency and immediately notify the Bridge Inspector to initiate a critical finding report as outlined in Section 2-3.02, item 8 of this manual. For State bridges, the Bridge Weight Limit Notification Form shall be completed and distributed in accordance with INDOT Operations Memorandum 18-02.

The Owner must install all required signage and/or barriers within the critical finding timeframes specified in Part 2 of this manual. Once installed, the Bridge Inspector is responsible for obtaining and uploading photos into iTAMS at the asset level, to document the bridge posting, closure, or restriction. Posting-related SNBI items and associated BRADIN fields shall be updated by the Load Rating Engineer or Bridge Inspector for final resolution of the critical finding.

If field conditions prevent placement of the bridge weight limit signs, restrictions, or closures in accordance with IMUTCD requirements, a sign placement exception shall be coordinated with and prepared jointly by the Bridge Inspector, Owner, and LRE. The sign placement exception must be approved by the Statewide Bridge Inspection Program Manager. For State bridges, coordination shall include the appropriate District Traffic Engineer. For Local bridges, it is recommended that the Indiana Local Technical Assistance Program (LTAP) be consulted for input. Documentation of the approved exception shall be uploaded to the Documents section in iTAMS.

The Owner is responsible for maintaining all bridge weight limit postings or closures, ensuring required signage remains in place, consistent with the load ratings documented in BRADIN, and in conformance with the IMUTCD.

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3-4.06 Permitting

Permit loads are live load configurations that exceed federal and state legal load limits. These loads may be authorized for travel under Routine (Annual) or Special (Limited Crossing) permits. The Code of Federal Regulations requires that all routine and special permit loads be analyzed for each bridge crossed to verify the bridge can safely carry the permitted load.

Per MBE 6A.4.5.2 a permit load, being heavier than legal, cannot cross a bridge with any legal load rating factor that is less than 1.0. For State bridges with any legal load rating less than 1.0, a restriction should be created in TrafficWise (CARS) that does not allow vehicles over 80,000 lbs to cross.

To supplement Indiana's automated oversize overweight permitting system (OSW System), INDOT collects supplemental permit data described within this section.

3-4.06(01) Routine (Annual) Permit Loads

Per the MBE 6A.4.5.3.1, Routine (Annual) Permits Loads are usually valid for unlimited trips over a period of time, not to exceed one year. Permit vehicles may travel within normal traffic flow and operate at normal speeds without any movement restrictions. On the State system, all Routine (Annual) Permits are limited to specified routes, either designated through permit review or restricted to extra heavy-duty or toll routes.

Routine (Annual) Permits may be issued along routes designated in State law or Local ordinance permitting loads that exceed federal or state legal limits. Permit load rating methodology is described in MBE 6A.4.5 for LRFR and MBE 6B.8 for LFR. Figure 3-4.06(01) provides a list of Potential State Routine (Annual) Permit Loads. INDOT or the State may issue Routine (Annual) Permits for travel on the Indiana Toll Road as described in 135 IAC 2-4. To evaluate load capacity along this corridor, INDOT requires that any bridge carrying the Indiana Toll Road, and any State bridge within 15 miles of an Indiana Toll Road gate, have documented load ratings for the Toll Road Truck Loads at the Routine (Annual) Permit Level. Local bridges on routes leading to toll gates are recommended to have documented load ratings for the Toll Road Truck Loads at the Routine (Annual) Permit Level. A lane load should be included with all Toll Road configurations when required by the MBE depending on load rating method and bridge geometry. Appendix B provides supplementary information regarding the Indiana Toll Road.

INDOT may issue Routine (Annual) Permits for travel on the Extra Heavy-Duty Highways, as defined in IC 9-20-5-4. To assess capacity for these route segments, all bridges on the Extra

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Heavy-Duty Highways shall have documented load ratings for Michigan Train Truck configurations at the Routine (Annual) Permit level. Bridge inventory within reasonable access to an Extra Heavy-Duty Highway may be subject to heavier loads. Owners should be aware of bridges within reasonable access to these highways and are recommended to evaluate for Michigan Train Truck loads at the Routine (Annual) Permit level. A lane load should be included with all Michigan Train Truck configurations when required by the MBE based on rating method and bridge geometry. Appendix B provides supplementary information regarding Extra-Heavy-Duty Highways.

Indiana's OSW System allows Routine (Annual) Permits to be issued for most bridges on the State's network. The OSW System evaluates each bridge along the route requested by the carrier. If a bridge lacks adequate load capacity for the requested Routine (Annual) Permit configuration, the OSW System prevents the permit from being approved for that crossing.

Local bridges on routes governed by overweight-travel ordinances must be evaluated for the Local agency's applicable Routine (Annual) Permit loads.

Route Designated Loads
Toll Road Loading No. 1
Toll Road Loading No. 2
Special Toll Road Truck
Michigan Train Truck #5
Michigan Train Truck #8

Figure 1: 3-4.06(01) Potential State Routine (Annual) Permit Loads

3-4.06(02) Special (Limited Crossing) Permit Loads

Special permits are used for larger, heavier, less frequent loads and often include additional limitations.

For State bridges, special permit load ratings shall be documented in BRADIN for each of the special permit loads shown in Figure 3-4.06(02) Sample Special Permit Loads. Documenting these rating factors is required to support Indiana's OSW System. These configurations represent a small sample set of special (limited crossing) permit loads requesting travel within the state. These documented rating factors serve as baseline values that support preliminary routing decisions made

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within Indiana's OSW System. Each Sample Special Permit Load shall be evaluated as a single trip, mixed with traffic, and without reduction in speed.

Special Permit Loads
Superload – 11 Axles
Superload – 13 Axles
Superload – 14 Axles
Superload – 19 Axles (305K)
Superload – 19 Axles (480.09K)

Figure 2:3-4.06(02) Sample Special Permit Loads

Indiana's OSW System assists with evaluating and documenting Special (Limited Crossing) Permit load ratings for each individual special permit load requesting travel on State routes. All permits issued by Indiana's OSW System include provisions requiring the driver or carrier to contact the appropriate municipality prior to movement.

Before permission to cross is granted, Local bridges must be evaluated to verify they can safely carry each Special (Limited Crossing) Permit load requesting passage. Local agencies are not required to document load rating factors for the Sample Special Permit Loads listed in Figure 3-4.06(02).

3-5.0 LOADS, LOAD RATING, AND POSTING

The following portion of the manual has been reorganized to update terminology and align with FHWA Specifications for the National Bridge Inventory. BRADIN is the authoritative data source for all SNBI load rating fields (B.LR, B.PS, and B.EP) that are referenced within this portion of the manual.

3-5.01 LOADS AND LOAD RATING

Vehicular loads are classified into three main categories: design loads, legal loads, and permit loads. Each category is discussed in greater detail within this section. Load configurations are provided in Appendix A.

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3-5.01(01) Design Load - B.LR.01

The design load represents the live load configurations for which the bridge was designed. For widened or rehabilitated bridges, this is to be the most restrictive design load governing any portion of the bridge. The applicable design load is typically listed on the plans for which the structural element in question was designed. The design load may vary based on the design method, design criteria of the structural element, year of construction, or capacity requirements of the route carried. Figure 3-5.01(01) provides a list of common design loads for State bridges.

As described in *Indiana Design Manual 403-3.0*, the Indiana Toll Road and Extra Heavy-Duty Highways are designed to accommodate permitted vehicles exceeding legal weight limits, as outlined in 135 IAC 2-4 and IC 9-20-5-4, respectively. Appendix B provides supplementary information regarding the Indiana Toll Road and Extra-Heavy-Duty Highways. When coding B.LR.01, bridges designed for these loads should make use of the SNBI code X.

Local agencies may have ordinances permitting heavy-load travel along designated routes. In such cases, bridges within their inventory may need to accommodate specific design loads to meet operational requirements.

Truck Configuration
HL-93
Fatigue*
H-20
HS-20
HS-25
Alternate Military
Toll Road Loading No. 1
Toll Road Loading No. 2
Special Toll Road Truck
Michigan Train Truck #5
Michigan Train Truck #8

Figure 3-5.01(01) Potential Design Loads

- * The Fatigue configuration shall be used for evaluating the Fatigue Limit State at the Inventory rating level per MBE Table 6A.4.2.2-1 when LRFR rating methodology is used for steel structures.

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3-5.01(02) Design Method – B.LR.02

The method by which the governing structural element was designed. The design method may be determined by the design plans, design characteristics of the bridge, or agency procedure at the time the bridge was built.

3-5.01(03) Load Rating Date – B.LR.03

The date of the most recent load rating performed by the LRE. The load rating date shall be updated whenever the LRE performs a reevaluation to assess defects identified during inspections that may affect the strength or serviceability of the bridge. If the LRE determines that the load rating results do not change based on the field observations, B.LR.03 shall be updated using the date of the LRE's evaluation. B.LR.03 is not intended to document the date of a structural review as defined in the SNBI.

3-5.01(04) Load Rating Method – B.LR.04

The method used to calculate the load rating for the standard AASHTO HS-20 or HL-93 loading, reported for B.LR.05 (Inventory Load Rating Factor) and B.LR.06 (Operating Load Rating Factor).

The two primary analytical load rating methods are Load and Resistance Factor Rating (LRFR) and Load Factor Rating (LFR). All bridges designed using Load and Resistance Factor Design (LRFD) shall be evaluated using the LRFR method.

FHWA's October 30, 2006, memorandum on Bridge Load Ratings for the National Bridge Inventory requires that all bridges built or reconstructed after 2010 using LRFD be rated using LRFR. The memorandum also states that bridges built or reconstructed prior to 2010 using ASD or LFD may be evaluated using LRFR or LFR.

For State bridges, LRFR is the preferred load rating method regardless of the original design methodology. In some situations, LRFR may be more restrictive than the load rating method associated with the bridge's original design. This may result in overly conservative ratings for existing structures that perform adequately under routine traffic and exhibit no signs of distress. In such cases, the LFR method may be considered. Justification for the use of LFR shall be documented. The rationale for selecting LFR shall be included in the load rating documentation. One load rating method should be used to evaluate a bridge.

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It is recommended that Local bridges be rated using the method described above for State bridges.

As defined in this manual, load ratings fall into three categories, design loads, legal loads, and permit loads. Regardless of the load rating method reported for B.LR.04, load ratings shall be determined for all applicable loads as described in Sections 3-4.02, 3-5.01(01), 3-4.06 and 3-5.03(01) in this manual. This is necessary for determining the load capacity and safe posting load of a bridge.

Discussion of the load rating methodologies is provided in the subsections below.

1. Load Factor Rating (LFR)

Except where otherwise noted in this manual, Load Factor Rating (LFR) analyses should follow the procedures outlined in the MBE.

Regarding MBE C6B.7.2, the Notional Rating Load (NRL) shall not be used as a screening load for AASHTO Specialized Hauling Vehicles in Indiana. Indiana collects and uses the NRL rating factor to inform State programming and permit decision-making. Indiana does not report NRL load ratings to the SNBI.

Design load, legal load, and permit load classifications are not directly defined within the Load Factor Rating provisions of MBE 6B. Therefore, these loads shall be evaluated as follows. When reporting B.LR.05 and B.LR.06, Design Loads shall be evaluated at both the LFR Inventory and Operating levels. When reporting B.LR.07, the Legal Loads are to be evaluated at the LFR Operating level. All Permit Loads shall be evaluated at the LFR Operating level.

2. Allowable Stress Rating (ASR)

Allowable Strength Rating (ASR) may be used only for timber, masonry, and railroad flatcar structures. All other bridges designed using Allowable or Working Stress methods shall be load rated using LRFR or LFR methodology.

3. Load and Resistance Factor Rating (LRFR)

Except as noted in this manual, Load and Resistance Factor Rating (LRFR) analysis should follow the procedures outlined in MBE.

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Regarding MBE 6A.4.3.1, it is not permissible in Indiana to use HL-93 Design Load as a screening load to determine whether to rate legal loads. Similarly, it is not permissible to use the Notional Rating Load, NRL, as a screening load for the AASHTO Specialized Hauling Vehicles as discussed in MBE C6A.4.4.2.1b and C6A.8.2. Indiana does not report on the NRL.

Lastly, regarding MBE 6A.4.5.2, applicable permit loads shall be evaluated and documented regardless of legal load rating results.

As discussed in MBE 6A.5.4 and except for segmentally constructed bridges, Service limit states regarding crack control need not be considered for determining the safe posting load of State reinforced concrete or prestressed concrete in-service bridge components. Crack control is a means for ensuring longevity of the structure and is therefore most applicable for design load evaluation. For Local bridges, the use of crack control limit states (Service I and III) for determining the safe posting load or permit rating is at the discretion of the Owner. For State bridges, the Service I limit state shall be evaluated for permit ratings. Due to the high volume of permit loads traveling on state routes, Indiana considers the provisions of 6A.5.4 when evaluating State bridges for permit loads.

MBE C6A.6.4.2.2 states that the live load factors for the Service II limit state were not established through reliability-based calibration but were selected based on engineering judgment and expert opinion. The level of reliability represented by this serviceability check is unknown. When load ratings are controlled by Service II, posting consideration and safe posting loads may be calculated using strength rating factors. Additional guidance regarding this situation, including modeling and reporting procedure, can be found in the Load Rating Aid on the Bridge Design website.

The condition factor Φ_C and system factor Φ_S should be used per MBE 6A.4.2.3 & 6A.4.2.4 respectively. Where material properties are unknown, assumptions can be made per MBE 6A.5.2 and 6A.6.2. Regarding MBE 6A.5.8, if the conditions of this article are met for reinforced concrete slab bridges, shear capacity need not be checked for Design Loads and Legal Loads. Similarly, shear needs not be evaluated for any proposed work on reinforced concrete slab bridges. For any other reinforced, prestressed, or post-tensioned concrete bridge, the shear capacity should be evaluated for Design Loads, Legal Loads, and Permit Loads regardless of condition or distress. When shear controls, refined analysis may be used to more accurately model boundary conditions and loading scenarios.

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4. Load Testing (LT)

Section 8 of the MBE discusses the use of load testing to verify component and system performance under a known live load and provides an alternative evaluation methodology to analytical load rating. Load testing for State and Local bridges should be coordinated with INDOT Central Office Bridge Inspection and Bridge Evaluation.

5. Assigned Rating (AR)

Assigned ratings based solely on bridge conditions or the availability of original design plans, rather than analytical load rating calculations, are not permitted.

6. Field Evaluation and Documented Engineering Judgment (EJ)

Decisions supporting the use of engineering judgment should be clear to an experienced observer. Only when bridge geometry or material properties are not available and cannot be obtained by physical measurements or without destructive testing, may engineering judgment be applied in lieu of analytical methods. MBE 6.1.4 discusses the use of engineering judgment in place of analytical methods when the necessary details to load rate are missing or incomplete.

Engineering judgment shall not be used as the sole basis for waiving the results of calculations, non-destructive load testing for capacity evaluation, or inspection findings. The process for determining decisions regarding posting, restricting, and closure shall be documented in a manner that identifies the serviceability, limiting component, risk of failure, and imminent safety hazard.

For load rating purposes, engineering judgment should be based on the current condition of the structure, including information gathered by qualified personnel, drawings or details from the era of construction, knowledge of AASHTO and local codes and design manuals of the time, and available live load history.

When using engineering judgment to evaluate a bridge, consideration should be given to the typical size, weight, and configuration of the loads it routinely carries. For example, a bridge predominantly serving passenger vehicles should not automatically be assumed to be capable of supporting an HS-20 load solely based on its age or continued service. Non-destructive testing and/or load testing should be considered to verify capacity.

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Once a baseline engineering judgment rating is determined, the LRE may compare simple-span shear, and moment demands generated by loads routinely carried by the bridge with those that are produced by legal loads. This comparison may help the LRE assess whether the bridge's historical usage provides a reasonable basis for load rating assumptions. This baseline assessment shall be re-evaluated for changes in condition or deterioration.

When field measurements are collected for primary structural components and are used to perform analytical load ratings, B.LR.04 is to be coded with respect to the load rating methodology used. B.LR.04 should not be coded EJ.

When an analytical approach is used based on assumed similar drawings or details, B.LR.04 is to be coded EJ.

When a bridge has been load rated using analytical methods, but the Owner has elected to post it for a weight limit that is less than the calculated safe posting load, it is not considered to have been load rated using engineering judgment. This is a posting decision, rather than a load rating methodology. The calculated load ratings shall be reported in BRADIN and the methodology used to calculate the load ratings shall be recorded for B.LR.04. The Owner's decision to post below the allowable safe posting load limits shall be documented in the Load Rating Summary Report and in the notes in BRADIN.

Load ratings that rely on engineering judgment require coordination between the Load Rating Engineer and the Bridge Inspector. This coordination ensures that the structure's observed performance under routine traffic conditions is appropriately reflected in the rating. Following any bridge inspection that shows a drop in the superstructure, substructure or culvert condition rating, the load ratings must be reviewed considering the updated bridge condition. This review verifies that the bridge continues to perform satisfactorily under the loads that engineering judgment has assumed it routinely carries.

The LRE shall report and document the basis for use of engineering judgment. The LRE's assessment should consider all available information to determine the load rating, including, but not limited to:

- **Year of construction and common material properties for that era,**
- **Assumed design load,**
- **All field measurable structure dimensions,**
- **Similar standard drawings as available,**
- **Load path redundancy,**

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- **Level of risk,**
- **Deterioration levels and location,**
- **Results of any load testing,**
- **Physical evidence of distress such as transverse cracks in high moment regions or diagonal cracks in high shear regions, and**
- **Changes to the structure such as increased dead loads since original construction.**

3-5.01(05) Inventory Load Rating Factor – B.LR.05

The Inventory Rating level reflects the live load level that can safely utilize a structure indefinitely. The Inventory Rating level provides valuable information to the Owner and shall be evaluated.

When reporting B.LR.05 to the SNBI, bridges that are load rated in accordance with Load and Resistance Factor methodology as described in Section 3-5.01(04), shall be load rated for the HL-93 design load at the Inventory Rating level. Bridges load rated using all other methodologies shall be load rated for the HS-20 design load and lane load at the Inventory Rating level.

For bridges with sidewalks, when evaluating State bridges for pedestrian loads, the Inventory Rating should reflect the controlling condition of the options described in the *Indiana Design Manual* 403-3.09.

Refer to Section 3-4.02 for additional Inventory Ratings to be documented in BRADIN that are not reported to the SNBI.

3-5.01(06) Operating Load Rating Factor – B.LR.06

The Operating Rating level represents the bridge's maximum permissible live load carrying capacity. Allowing unlimited numbers of vehicles to use the bridge at the Operating Rating level may shorten the life of the bridge. The Operating Rating level provides valuable information to the Owner and shall be evaluated.

When reporting B.LR.06 to the SNBI, bridges that are load rated in accordance with Load and Resistance Factor methodology as described in Section 3-5.01(04), shall be load rated for the HL-93 design load at the Operating Rating level. Bridges load rated using all other methodologies shall be load rated for the HS-20 design load and lane load at and the Operating Rating level.

For State bridges with sidewalks, when evaluating pedestrian loads, the Operating Rating should reflect the controlling condition of the options described in the *Indiana Design Manual* 403-3.09.

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Refer to Section 3-4.02 for additional Operating Ratings to be documented in BRADIN that are not reported to the SNBI.

3-5.01(07) Controlling Legal Load Rating Factor – B.LR.07

This value is the minimum rating factor reported for the legal loads listed in Figure 3-5.03(01) Required Legal Loads. When the controlling legal load rating factor is less than 1.0, either posting or restricting traffic is required.

3-5.01(08) Routine Permit Loads – B.LR.08

This field reports whether the bridge carries routine permit loads or whether routine permit loads are restricted from the bridge.

Indiana's OSW System allows for Routine (Annual) Permits to be issued automatically for most bridges on the State's network. Each bridge is evaluated by the OSW System for the route requested by the carrier. If the bridge does not have adequate load capacity for the requested Routine (Annual) Permit configuration, the OSW System restricts the Routine (Annual) Permit from crossing. For this reason, B.LR.08 will be coded B for most State bridges. Since Local bridges are not evaluated by Indiana's OSW System, the LRE must coordinate with the responsible agencies to determine whether a route segment is evaluated for Routine (Annual) Permit loads.

1. Code A: Bridge carries routine permit loads. Load capacity is adequate for all routine permit loads approved for the route segment; no routine permit loads are restricted. All State bridges that are available to Indiana's OSW System for Routine (Annual) Permits may be restricted from travel based on the load capacity of the bridges along a route segment. For this reason, State bridges available to the OSW System should not be coded "A". The evaluation and restriction of Routine (Annual) Permits may vary for Local agencies.
2. Code B: Bridge carries routine permit loads. Load capacity is adequate for some routine permit loads approved for the route segment, but some routine permit loads are restricted. Unless posted or restricted, State bridges available to Indiana's OSW System should be coded "B". The evaluation and restriction of Routine (Annual) Permits may vary for Local agencies.
3. Code C: Bridge does not carry routine permit loads. Load capacity is inadequate for all routine permit loads approved for the route segment. Routine permit loads are restricted

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from the bridge. Posted State bridges that have a rating factor less than 1.0 when evaluated for AASHTO legal loads do not have adequate load capacity for Routine (Annual) Permits. These posted State and Local bridges are to be coded “C”.

4. Code N: Bridge does not carry routine permit loads. Routine permit loads are not approved for the route segment. State bridges that are not available to the OSW System are to be coded “N”. An example of this would be where a restriction has been created in TrafficWise (CARS) that does not allow for oversized and overweight travel inside the I465 loop, along routes such as I65 and I70.

3-5.02 LOAD POSTING STATUS

Bridge weight limit postings restrict heavy vehicles to ensure public safety and to protect structurally deficient bridges from damage and failure. Because postings can significantly affect commercial freight movement, school transportation, emergency services, and local agricultural operations, the decision to post a bridge should not be made lightly. It requires thorough engineering analysis, a clear understanding of operational impacts, and careful coordination among all responsible parties. For this reason, communication and deliberation among the Load Rating Engineer, Bridge Inspector, Owner, and Maintainer are essential before implementing any weight restriction.

The following factors should be evaluated prior to determining whether a bridge posting is warranted:

- The appropriate level of load rating analysis has been completed to establish the structure’s safe load-carrying capacity. For example, initial evaluations may be performed using simplified girder-line analysis; however, a more refined analysis may provide improved accuracy and potentially eliminate the need for posting. Although refined analysis may require additional time and resources, it can provide significant value to the Owner.
- For load ratings performed using the LRFR methodology, whether applicable provisions within the Manual for Bridge Evaluation have been properly considered, including Average Daily Truck Traffic (ADTT), riding surface condition, enforceable speed limits, and other relevant operational factors. Whether consideration of these provisions would require additional routine assessment of the Bridge Inspector.
- The load rating analysis includes uncertainties or assumptions that could be reduced or validated through additional field measurements, nondestructive evaluation, or targeted testing. Whether the timing, expense, and available resources necessary to obtain field measurements is feasible.

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- The possibility of installing temporary support or shoring to eliminate the need for posting.
- Whether an alternate route is available and, if so, whether that route has the capacity and geometric characteristics necessary to safely accommodate the diverted traffic volume.
- Operational controls, such as restricting travel over limiting structural members, could mitigate overstress concerns and eliminate the need for posting.
- Whether the Owner has programmed a design or rehabilitation project for the bridge that could incorporate structural improvements and the anticipated timeline for those improvements.

A narrative discussing the decision-making path leading up to posting shall be included in the Load Rating Summary Report and in BRADIN. The narrative should identify the member(s) controlling the low legal load rating and characterize impacts to traffic. The intent is to inform the Owner which structural member(s) governs the low legal load rating and to explain why posting is being recommended. This narrative does not require high granularity, but it shall identify the controlling member(s) clearly enough for the Owner to understand the basis for the rating. Where applicable, the narrative should also describe any opportunities for the Owner to mitigate the need for posting.

While identifying the controlling member(s) is an important part of the narrative, it is also essential to describe how the posting may affect the surrounding community. These impacts may include effects on local businesses, schools, municipal services, emergency routes, tourism, and other traffic-dependent activities. By identifying these impacts, the Owner can better understand the broader implications of posting and evaluate whether alternative measures might be warranted.

If posting is unavoidable, it is especially important for the Owner to understand which member(s) and locations are controlling the rating and whether targeted retrofits could eliminate the need for posting. Guidance from Section 3-4.05 Posting Notification shall be followed to establish or modify the existing bridge weight limit posting.

3-5.02(01) Load Posting Status – B.PS.01

The load posting status of the bridge.

Bridges that cannot safely carry the applicable legal loads, as defined in Section 3-5.03(01) and shown in Figure 3-5.03(01) Required Legal Loads must be posted or restricted. The need for restriction is indicated by the bridge having a legal load rating factor of less than 1.0 for at least one of the required vehicles.

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A bridge may be posted at a lower limit than the maximum allowable per the load rating when the Owner determines that a more conservative restriction is appropriate. The Owner retains the authority to implement a lower posting when necessary to address safety concerns, operational requirements, or other conditions that warrant additional precaution beyond the calculated load-carrying capacity.

Appropriate coding for Load Posting Status of B.PS.01 requires deliberate communication among the Load Rating Engineer, Bridge Inspector, Owner, and Maintainer.

When both a weight and other load restriction exist at the bridge, use the code for the weight restriction.

1. Support Conditions

- **Permanent Bridge (P)** – Permanent bridge in place with no supports.
- **Temporary Bridge (T)** – Temporary bridge in place to carry traffic while the permanent bridge is closed and awaiting repair, rehabilitation, or replacement. A temporary bridge may be utilized by the Owner to address Critical Findings as described in Part 2 of this manual.
- **Supported Bridge (S)** – Bridge with shoring, supports, repairs, or supplemental members in place to keep the bridge open. Temporary shoring, supports, repairs or supplemental members may be utilized by the Owner to supplement weight limit posting to address Critical Findings as described in Part 2 of this manual.

2. No Restriction

- **New (N)** – Bridge is newly constructed and not yet open to traffic but is expected to be open within 12 months.
- **Open (O)** – Bridge is open with no restrictions. To maintain federal compliance, it is necessary for the Owner to communicate to the Bridge Inspector when a bridge is open to traffic.

3. Posted or Restricted

- **Needs Action (A)** – Bridge that is open with load posting recommended, but no posting signs in place, or a posting sign that is not legally enforceable. When the LRE identifies

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the need for action, the Bridge Inspector is to be notified to initiate Severe Critical Finding procedures as described in Part 2 of this manual.

- **Weight (P)** – Bridge is posted with a weight limit sign or signs. When performing a load rating evaluation for a bridge that has an existing weight limit posting, the LRE shall verify the existing weight limit sign is adequate with respect to the maximum allowable tonnage per the load rating analysis.
- **Other (R)** – A posting sign or other traffic control device(s) at the bridge that reduces loading by reducing speed (to reduce impact), limiting the number of lanes or vehicles, or restricting commercial vehicles in general. Bridge may be partially closed to reduce loading.
- **Needs Reduction (D)** – Bridge is posted, with posting reduction recommended but not implemented. When the LRE identifies that the existing weight limit posting needs to be reduced, the Bridge Inspector is to be notified to initiate Severe Critical Finding procedures as described in Part 2 of this manual.
- **Missing (M)** – Bridge has a legally enforceable load posting and was posted, but one or more required signs are missing or illegible. If during the load rating evaluation, the LRE identifies that a load posting sign is missing, the Bridge Inspector is to be notified to initiate Severe Critical Finding procedures as described in Part 2 of this manual.

4. Closed

- **Closed (C)** – Bridge is closed to all traffic. A partial closure is considered a restriction (See Other) Refer to Section 3-4.04 regarding bridge closure posting requirements.

3-5.02(02) Posting Status Change Date – B.PS.02

The date on which any of the posting status items described in Section 3-5.02(01) changed for the bridge. This includes multiple posting status changes occurring within the SNBI reporting window. If the LRE's analysis indicates that a bridge needs to be posted, or that the existing posting value is deficient, the posting status shall be coded as PA, TA, SA, PD, TD, or SD, and the date of the LRE's observation shall be reported for B.PS.02. If the Inspector identifies that a bridge is missing signage, the posting status shall be coded as PM, TM, or SM, with the Inspector's date of discovery reported for B.PS.02. Once new or updated signage is installed, the posting status shall be coded as PP, TP, or SP following the Inspector's observation of installation, and the installation date shall be reported for B.PS.02. Each of these observations shall be reported, even if the deficiency is resolved within 30 days of discovery.

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3-5.03 LOAD EVALUATION AND POSTING

3-5.03(01) Legal Load Configuration – B.EP.01

Legal loads are live load configurations used to determine the safe load carrying capacity and posting of a bridge. The list of required legal load configurations in Figure 3-5.03(01) address loads conforming to IC 9-20-4 that are considered legal and may travel unrestricted on state and local highways. This legal load category is described in the MBE Section 6A.4.4 for Load and Resistance Factor Rating (LRFR) and in Section 6B.7.2 for Load Factor Rating (LFR). All bridges carrying highway traffic within the state of Indiana must be rated for the legal loads listed in Figure 3-5.03(01). Any of the required legal loads not explicitly mentioned in the MBE should be considered a state legal load as discussed in the MBE.

Included as legal loads are the Emergency Vehicles, EV2 and EV3, as required by 23 U.S.C. 127 and provided by the Fixing America's Surface Transportation (FAST) Act. These vehicles will be referred to as “FAST Act EVs” throughout this document. The FAST Act increased the weight limits for emergency vehicles beyond the limits given in the Federal Bridge Formula, yet it specified that these vehicles are to be considered at the legal load level for bridge load rating.

The FAST Act EVs are considered to occupy one lane with the remaining lanes occupied by the controlling legal load (excluding the FAST Act EVs); the controlling legal load may vary bridge to bridge and should be determined by analysis. If using the simplified live load distribution equations, choose the appropriate equation according to the number of design lanes. Where one-lane distribution is used, do not include the 1.2 multiple presence factor from the AASHTO LRFD specifications. Except for buried structures, a live load factor of 1.3 should be used irrespective of the ADTT. Alternatively, guidance from NCHRP Project 20-01/Task 410 may be used. This research established live load factors calibrated following a reliability analysis consistent with LRFD/LRFR methodology. Appendix E provides NCHRP 20-01/Task 410 guidance on the application of live loads and LRFR and LFR load factors.

Indiana Code Section IC 9-20-11-2 allows garbage trucks to travel with single axle loads of up to 24,000lbs and tandem axle loads of up to a combined 42,000lbs on all routes except the interstate system. To assess for this allowance, all State and Local bridges are to be evaluated for the IN Tandem configuration. When the IN Tandem legal load rating factor is less than 1.0, only the R12-1 sign shall be used for posting Commercial Vehicles. INDOT requires the Alternate Military load rating to be documented in BRADIN. INDOT scales the Alternate Military rating factor to compute load capacity and safe posting load for IN Tandem values for all bridges.

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Truck Configuration	SNBI B.EP.01	Acceptable Posting Type (SNBI B.EP.04)
EV2	EV2	EV (G A D)
EV3	EV3	EV (G A D)
NRL ^{1,2}	NRL	N/A
Alt Military ²	N/A	N/A
IN Tandem	IN Tandem	G
IN 20	IN 20	Single-Unit (G or T)
AASHTO Type 3	3	Single-Unit (G or T)
SU4	SU4	Single-Unit (G or T)
SU5	SU5	Single-Unit (G or T)
SU6	SU6	Single-Unit (G or T)
SU7	SU7	Single-Unit (G or T)
IN 36	IN 36	Single-Trailer (G or T)
AASHTO Type 3S2	3S2	Single-Trailer (G or T)
AASHTO Type 3-3	3-3 ³	Multi-Trailer (G or T)
AASHTO Lane-Type	N/A	Multi-Trailer (G or T)

Figure 4:3-5.03(01) Required Legal Loads

¹Not required for Engineering Judgment (EJ) methodology.

²Not to be used for load posting.

³Limiting of AASHTO Lane-Type and Type 3-3 is reported for 3-3 to the SNBI.

3-5.03(02) Legal Load Rating Factor – B.EP.02

The load rating factor for the legal load configuration. Rating factors for each load listed in Figure 3-5.03(01) Required Legal Loads must be documented for all bridges within the state of Indiana. Legal load rating factors reported to the SNBI are to be without consideration of reduced force effects from postings or restrictions that affect traffic operation, e.g. that limit speed, number of lanes, number of trucks, or do not allow commercial vehicles.

3-5.03(03) Posting Type – B.EP.03

The type of posting at the bridge.

There are two distinct bridge posting types: posting for commercial vehicles and posting for emergency vehicles. A bridge may require one type, both types, or neither, as described below.

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1. Commercial Vehicles, Posting Type G or T

Two posting options are available for restricting commercial vehicle traffic. The gross vehicle weight (GVW), Posting Type G and Posting Type T, which uses vehicle silhouette truck loads, (single-unit, single-trailer, multi-trailer). For State bridges Posting Type G is the preferred option. **Posting Type T may be used instead of Posting Type G, except for bridges where the IN Tandem legal load rating factor is less than 1.0.** Refer to Figure 3-5.03(01), for acceptable posting types for each vehicle configuration. Under no circumstances shall a bridge weight limit posting allow a load to cross if it exceeds the safe load carrying capacity of the bridge.

All regulatory posting signs shall conform to the *Indiana Manual on Uniform Traffic Control Devices* (IMUTCD). Sign details, including specific emergency vehicle posting signs, are provided in the *2024 Edition of the Standard Highway Signs* (SHS). Signs for Posting Types G and T must conform to IMUTCD Signs R12-1 and R12-5, respectively.

Where engineering judgment is warranted per Section 3-5.01(04), item 6, either Posting Type G or T option may be used.

When posting is required, each bridge shall be posted for no greater than the minimum calculated safe posting load. Except when the IN Tandem legal load rating factor is less than 1.0, Local agencies may use the Posting Type T at their discretion. Displayed posting tonnages shall not exceed the minimum calculated safe posting load among all required legal load configurations, excluding FAST Act EVs.

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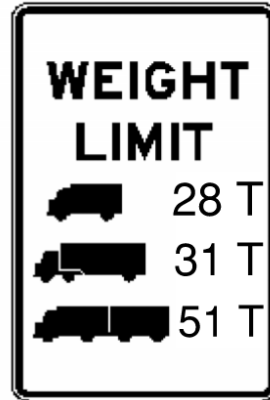
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Example 1 Signage:

See Sample Load Rating Report 1 in Appendix C.



R12-1



R12-5

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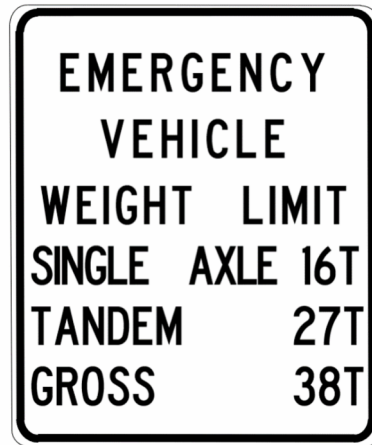
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2. Emergency Vehicles, Posting Type G|A|D

For bridges requiring posting due to emergency vehicles (FAST Act EV) safe posting loads, Posting Type G|A|D (IMUTCD Sign R12-7) shall be used as a standalone sign displaying the applicable single axle, tandem axle, and gross vehicle weight limits for emergency vehicles. IMUTCD Sign R12-7aP may be used when the bridge is also posted for commercial vehicles.

Example 2 Signage:

See Sample Load Rating Report 2 in Appendix C.



R12-7

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Example 3 Signage:

Refer to Sample Load Rating Report 3 in Appendix C. Because at least one required legal load - IN Tandem, IN 36, Lane-Type, and SU7 in this example - has a rating factor below 1.0, the bridge must be posted for all commercial vehicle traffic as described in Posting for Commercial Vehicles and Example 1. Because at least one FAST Act EV- EV2 and EV3 in this example - has a rating factor below 1.0, the bridge must also be posted for emergency vehicles as described in Posting for Emergency Vehicles and Example 2. Both of the following signs are required for this bridge.

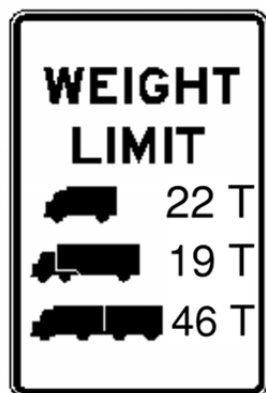


R12-1

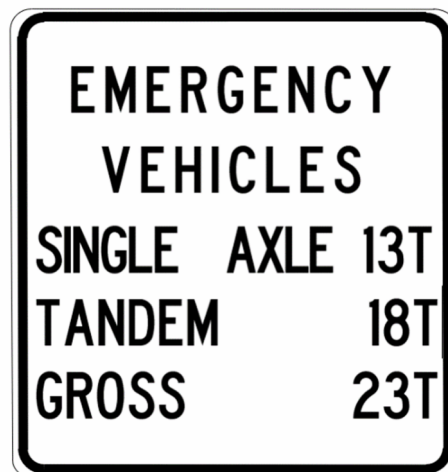


R12-7aP

If the IN Tandem legal load rating factor is greater than 1.0, and the Owner elects to use the R12-5 sign in place of the R12-1 sign, the combination of signs R12-5 and R12-7aP, is also acceptable.



R12-5



R12-7aP

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3. Closure Posting

For bridge closures, IMUTCD R11-2 sign shall be posted. Per IMUTCD Section 6F.08, “the words BRIDGE OUT (or BRIDGE CLOSED) may be substituted for ROAD (or STREET) CLOSED where applicable.” Refer to Part 2 of this Manual for the requirements related to physical barriers.

Example Bridge Closure Signage:



R11-2



R11-2

4. Advance Warning Posting

At a minimum, advance warning signage, including distance plaques, shall be placed at the nearest intersection prior to the bridge in all directions, or at other appropriate locations, to allow commercial vehicles an opportunity to turn around for State and Local bridges. This signage is intended to prevent overweight vehicles from turning onto the posted route.

Additional consideration should be given to the proximity of the nearest intersection to the bridge. Examples include, but are not limited to:

- A bridge located immediately adjacent to an intersection may not require advance warning posting at that intersection if the posting at the bridge is visible and unobstructed from that location.
- On roadway segments containing multiple load-posted bridges between intersections, advance warning posting is required only for the bridge with the lowest posted tonnage within that segment.
- When selecting locations for advance warning posting, care should be taken to avoid placing signs near alleyways or narrow roads that cannot feasibly accommodate larger vehicles.

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PART 3: LOAD RATING

- On limited access highways, additional advance warning posting shall be installed prior to the nearest exit ramp to provide overweight vehicles an opportunity to exit the facility.

Exceptions to the IMUTCD requirements, such as those described above, shall be in accordance with Section 3-4.05 of this manual.

For State and Local bridges, the advance warning sign assembly shall consist of the same signage posted at the bridge, along with the W16-3aP plaque indicating the distance to the bridge. Local agencies may use either the W16-3aP plaque or the W16-9P plaque. Any additional signage used by the Owner, beyond the required advance warning signage and distance plaque, shall conform to the IMUTCD.

Example Advance Warning Signage:



R12-1



W16-3aP



R12-1



W16-9P
(Local-Only Option)

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PART 3: LOAD RATING

3-5.03(04) Posting Value – B.EP.04

Where analytical models have been developed using Load and Resistance Factor Rating (LRFR), consistent with Section 3-5.01(04), item 3, load posting criteria shall conform to MBE 6A.8, except as noted in this manual. Load capacity shall be determined in accordance with MBE 6A.4.4.4. For legal load rating factors below 1.0, the safe posting load shall be determined in accordance with MBE 6A.8.3. For legal load rating factors greater than or equal to 1.0, the safe posting load is equivalent to the load capacity. All required legal loads listed in Figure 3-5.03(01) shall be evaluated for posting purposes.

Where analytical models have been developed using Load Factor Rating (LFR), consistent with Section 3-5.01(04), item 1, load posting criteria shall conform to MBE 6B.7, except as noted in this manual. Load capacity shall be determined in accordance with MBE 6B.4.1. The safe posting load is equivalent to the load capacity and further discussed in MBE 6B.7.3. All required legal loads listed in Figure 3-5.03(01) shall be evaluated for posting purposes.

When a load rating evaluation results in a Commercial Vehicle Safe Posting Load or Emergency Vehicle Gross Safe Posting Load less than five (5) tons, the Bridge Inspector shall be notified to initiate the Critical Finding in accordance with Part 2 of this manual.

In accordance with MBE 6A.8.1 & 6B.7.1, bridges not capable of carrying a minimum legal Commercial Vehicle Safe Posting Load or Emergency Vehicle Gross Safe Posting Load of three (3) tons must be closed. For rating methodologies other than LRFR, the Legal level is equivalent to Operating Level. **The Bridge Inspector shall be notified to initiate an Urgent Critical Finding and close the bridge to all vehicular traffic, as described in Part 2 of this manual.**

Where engineering judgment is warranted per Section 3-5.01(04), item 6, load posting criteria shall conform to MBE 6B.7. All required legal loads listed in Figure 3-5.03(01) shall be evaluated for posting purposes.

The Owner may select a posting value that is lower than the maximum allowable tonnage computed from the analytical load rating. In such cases, the load rating methodology used to evaluate the bridge as described in Section 3-5.01(04), and the corresponding load rating factors shall be reported in accordance with the analysis performed.

INDOT BRIDGE INSPECTION MANUAL

PART 3: LOAD RATING

1. Commercial Vehicles

If any required legal load, excluding FAST Act EVs, has a legal load rating factor below 1.0, the bridge shall be posted for the minimum safe posting load among all required legal loads. This requirement applies to all legal loads, even those with rating factors greater than or equal to 1.0. Although only one legal load may fall below the 1.0 threshold, posting must reflect the minimum safe posting load because legal load capacity, or safe posting load, may be higher for other legal loads with lighter gross vehicle weight (GVW).

Example 1:

Legal & Route Designated Loads				
Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	1.445	41.544	
	EV3	1.029	44.247	
			Single Axle: Tandem: Gross:	
Other	NRL	0.914		
	Alternate Military	1.173	28.152	
Single-Unit	IN 20	1.407	28.140	28.140
	AASHTO Type 3	1.245	31.125	31.125
	SU4	1.278	34.506	34.506
	SU5	1.154	35.774	35.774
	SU6	1.040	36.140	36.140
	SU7	0.958	37.123	36.425
Single-Trailer	IN 36	1.056	38.016	38.016
	AASHTO Type 3S2	1.431	51.516	51.516
	Toll Road Loading NO. 1 Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.412	56.480	56.480
	Lane-Type	1.600	64.000	64.000
	Special Toll Road Truck			
	Michigan Train Truck NO. 5 Michigan Train Truck NO. 8			

This sample Load Rating Summary Report (see Appendix C: Load Rating Report Documentation Example 1) shows all legal load rating factors for the bridge. Because at least one legal load configuration - SU7 in this example - has a rating factor below 1.0, the bridge must be posted for all commercial traffic. Although other legal loads have higher rating factors, the lower safe posting load calculated for the IN 20 load governs the posting value. In this example, the bridge would be posted for 28 tons. When there is a large

variation among calculated safe posting loads, it is permissible to consider rating vehicles in groups according to vehicle type. Refer to Section 3-5.03(03) for required posting type options.

2. **Emergency Vehicles**

If the legal load rating factor for either FAST Act EV is below 1.0, the bridge shall be posted for the applicable single axle, tandem, and gross safe posting load for all emergency vehicles, even if one of the FAST Act EV configurations has a rating factor greater than or equal to 1.0. Although unlikely, it is possible for the tandem safe posting load to exceed the gross safe posting load. In such cases, to minimize confusion, the tandem posting value shall be set less than or equal to the gross posting value on the R12-7 signage.

Example 2:

EV2 (28.75 T)	EV3 (43 T)	Safe Posting Loads
Rating Factor: 1.643	Rating Factor: 0.888	Single Axle: 16.75
Load Capacity: 47.24	Load Capacity: 38.18	Tandem: 27.528
		Gross: 38.184

This sample shows emergency vehicle load rating data reported in the Bridge Rating Application Database of Indiana (BRADIN). Because the rating factor for the EV3 configuration is below 1.0, the bridge must be posted for all emergency vehicles. The single axle, tandem, and gross vehicle safe posting loads were calculated in accordance with the guidance provided in the *Load Rating for the FAST Act’s Emergency Vehicles* memorandum and subsequent *Questions and Answers* document (see 3-2.0 for references). Refer to Section 3-5.03(03), item 2 for required signage.

INDOT BRIDGE INSPECTION MANUAL

PART 3: LOAD RATING

3-6.0 DOCUMENTATION

This section describes the load rating documentation required to maintain the Bridge File for all State and Local bridges in accordance with Section 2 (Bridge Files and Documentation) of the MBE and Part 2 of this manual. Examples of required documentation are provided in Appendix C.

3-6.01 Load Rating Summary Report

For all bridges the Load Rating Summary Report shall, at a minimum, include the following:

- Title sheet
- Load rating type, temporary, new, in service, rehabilitation, repair, or condition change
- Load rating method and program(s) used
- Plan availability
- Summary of bridge geometry and material properties
- Assumptions made due to missing plans, deterioration, or other uncertainties
- Documentation of any Owner, Bridge Inspector, or Agency decisions involving non-standard procedures, such as use of service limit states for posting or posting below legal load rating requirements.
- Sketches, photos, description and measurements of deterioration, and discussion on the LRE's application of the noted deterioration including any corresponding modifications made to the load rating model (if applicable). Inspectors and LRE's should be able to reference prior load ratings and easily identify changes during subsequent inspections.
- Initials and date of the QC reviewer
- Certification, including the stamp, signature, and date of a Professional Engineer (PE) licensed in Indiana, shall be affixed on each sheet reporting the following:
 - Rating factors and load capacity (in tons) for each phase of construction, for each applicable:
 - Design Load (Section 3-5.01(01))
 - Legal Load (Section 3-5.03(01))
 - Routine (Annual) Permit Load (Section 3-4.06(01))
 - Special (Limited Crossing) Permit Load (Section 3-4.06(02))
 - Safe posting load, as required, for each phase of construction, for each applicable Legal Load (Section 3-5.03(01))
- When multiple Legal & Routine Load summaries are required, the tables shall be provided on a single page in the following order:
 - Final Construction

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PART 3: LOAD RATING

- Strength and Service II (as necessary)
 - Maintenance of Traffic (MOT) Phase(s) – Including a note whether or not all legal ratings are greater than what is reported in BRADIN.
- Identification of the controlling member(s). When load ratings are performed due to a change in condition, as described in Section 3-4.03(07), supporting load ratings should be provided for each affected component (deck, superstructure, substructure). Being able to compare the overall controlling member(s) rating to the rating factor for the effected component may provide added value to the Owner.

If the details necessary to perform an analytical load rating are unavailable and cannot be obtained through physical measurements or without destructive testing, and engineering judgment has been used in accordance with Section 3-5.01(04), item 6, the Load Rating Summary Report and the BRADIN notes shall include appropriate justification for the resulting ratings.

3-6.02 Bridge Rating Application Database of Indiana (BRADIN)

BRADIN is the authoritative data source for all SNBI load rating fields (B.LR, B.PS, and B.EP) referenced in this portion of the manual. A new report shall be created in BRADIN whenever there are changes to load rating factors, Load Posting Status, or Posting Status Change Date.

Changes in load rating factors may result from the completion of temporary, new, rehabilitated, or repaired bridges as described in Sections 3-4.03(05) and 3-4.03(06), or from a change in condition as described in Sections 3-4.03(07) and 3-4.03(08).

When a temporary bridge carries traffic during construction, the load ratings for the temporary bridge shall be recorded in BRADIN for the permanent bridge, and B.PS.01 shall be coded as described in Section 3-5.02(01).

3-6.03 Load Rating Model

A copy of the load rating model shall be stored in INDOT's Electronic Records Management System (ERMS) Archives within the Bridge File Documents section. The load rating model may consist of analytical models created using applications such as BrR, MIDAS, CANDE and/or spreadsheets used to generate the documented load ratings. The load rating model shall include the first and last name, organization, and date performed by both the person responsible for creating the model and the person responsible for reviewing the model.

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PART 3: LOAD RATING

3-6.04 Permitting Data

As discussed in MBE 2.2.7, each State or Local bridge permit rating evaluation shall be documented as part of the Bridge File for the life of the bridge. Documentation shall include the permit load's axle weights and spacings, the approved route, the load rating results for each bridge crossed on that route, and the date the permit was approved for travel.

For State permits, load rating evaluations verifying that each bridge can safely carry State-issued Routine (Annual) Permits and Special (Limited Crossing) Permits are recorded in Indiana's OSW System.

INDOT BRIDGE INSPECTION MANUAL

PART 3: LOAD RATING

3-7.0 QUALITY CONTROL (QC) & QUALITY ASSURANCE (QA)

LREs are responsible for ensuring a high degree of accuracy and consistency in all load ratings they perform. INDOT Bridge Evaluation staff will periodically review load rating calculations and documentation for accuracy and completeness. Any load rating inaccuracies, errors, or procedural deficiencies shall be addressed promptly. For additional information on Quality Control (QC) and Quality Assurance (QA), refer to Part 4 of the IBIM.

3-7.01 Load Rating and Posting

A Quality Control (QC) review shall be carried out on 100% of all load ratings completed for State bridges. The QC review shall consist of an approved Load Rating Engineer's (LRE) evaluation of the load rating model, Load Rating Summary Report, and all load ratings reported in BRADIN, to verify completeness, accuracy, required documentation per Section 3-6.0, and adherence to the requirements in the INDOT BIM.

Locals are required to follow their documented QC/QA procedures.

As part of INDOT's Quality Assurance (QA) for load rating, a monthly review of all State and Local load rating and posting data shall be performed. The results of this review shall be communicated to the parties acting on behalf of the Owner. Overall findings and guidance shall be presented at the annual INDOT Bridge Inspection Workshop

3-7.02 Permitting

For State bridges, load rating data from BRADIN and load rating models from BrR are integrated into Indiana's automated oversize overweight permitting system (OSW System). For permit loads with a gross vehicle weight between 80,000lbs and 200,000lbs, the OSW System performs a Special (Limited Crossing) Permit Load rating evaluation, and automatically issues permits when the unrestricted permit rating factor is equal to or greater than 1.0. Permitting within this weight range is automated and relies on State load rating Quality Control (QC) processes being properly followed.

For permit loads exceeding 200,000lbs, and all bridges flagged for a manual review, the State's permitting process and associated Quality Control (QC), is shared among multiple State agencies. The OSW System requires the Carrier enter the vehicle's axle weights and configurations, and to upload PDF images documenting the axle weights and configuration as part of the permit request.

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- Department of Revenue - Motor Carrier Service (MCS) Quality Control: An MCS Agent shall compare the uploaded images with the axle weight and configuration data entered in the OSW System. Permit requests are approved or denied based on the accuracy of the Carrier's submitted data.
- OSW System Automation Quality Control: For approved requests, the OSW System generates a list of bridges along the route with Special (Limited Crossing) Permit Load ratings at multiple levels of traffic restriction. This automated generation of rating factors, referred to as a Bridge Study, relies on State load rating Quality Control (QC) processes being followed.
- INDOT Bridge Evaluation Quality Control: INDOT Bridge Evaluation shall perform a manual review of the Bridge Study for each permit request. As part of this QC process, the vehicle axle weight and configuration images uploaded by the Carrier are compared to the data entered into the OSW System. When information is consistent, the Carrier's configuration is used to manually generate independent Special (Limited Crossing) Permit Load Ratings.

Local agencies should document procedures for reviewing and recording approved permits including all documentation as described in Section 3-6.04.

INDOT and FHWA should have the ability to request and review these procedures and verify they are being followed.

INDOT BRIDGE INSPECTION MANUAL

PART 3: LOAD RATING

3-8.0 APPENDICES

INDOT BRIDGE INSPECTION MANUAL

PART 3: LOAD RATING

3-8.01 Appendix A: Vehicle Configurations

3-8.01 Appendix A: Vehicle Configurations

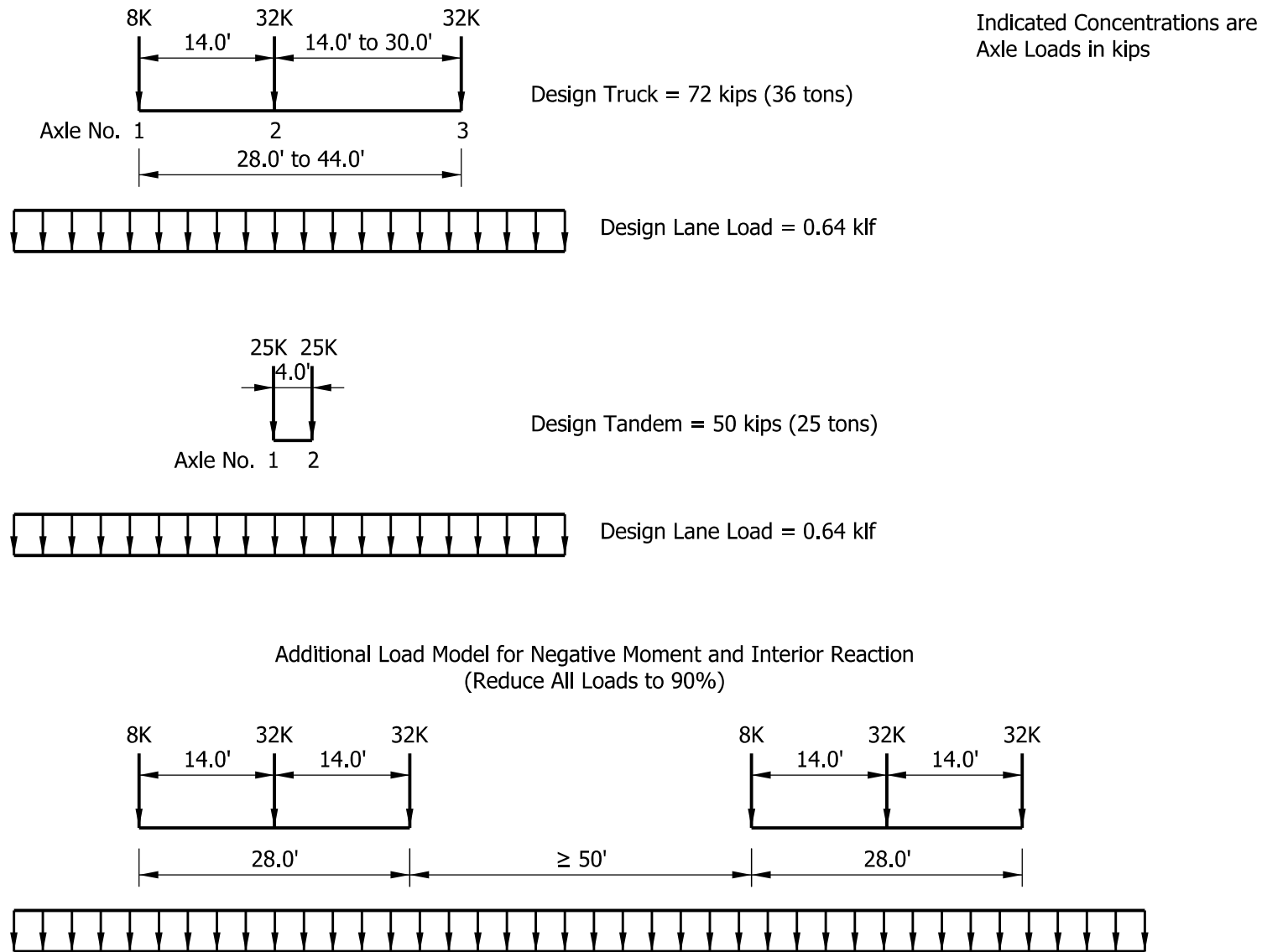


**Figure A-1
HL-93 Loading**

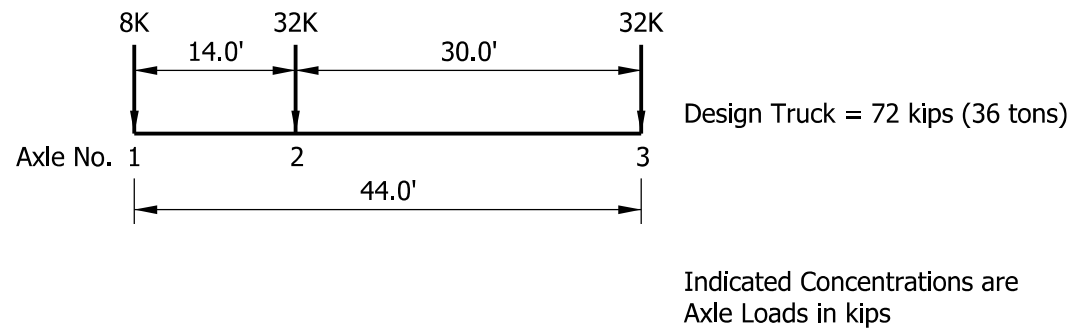


Figure A-2
Fatigue Loading

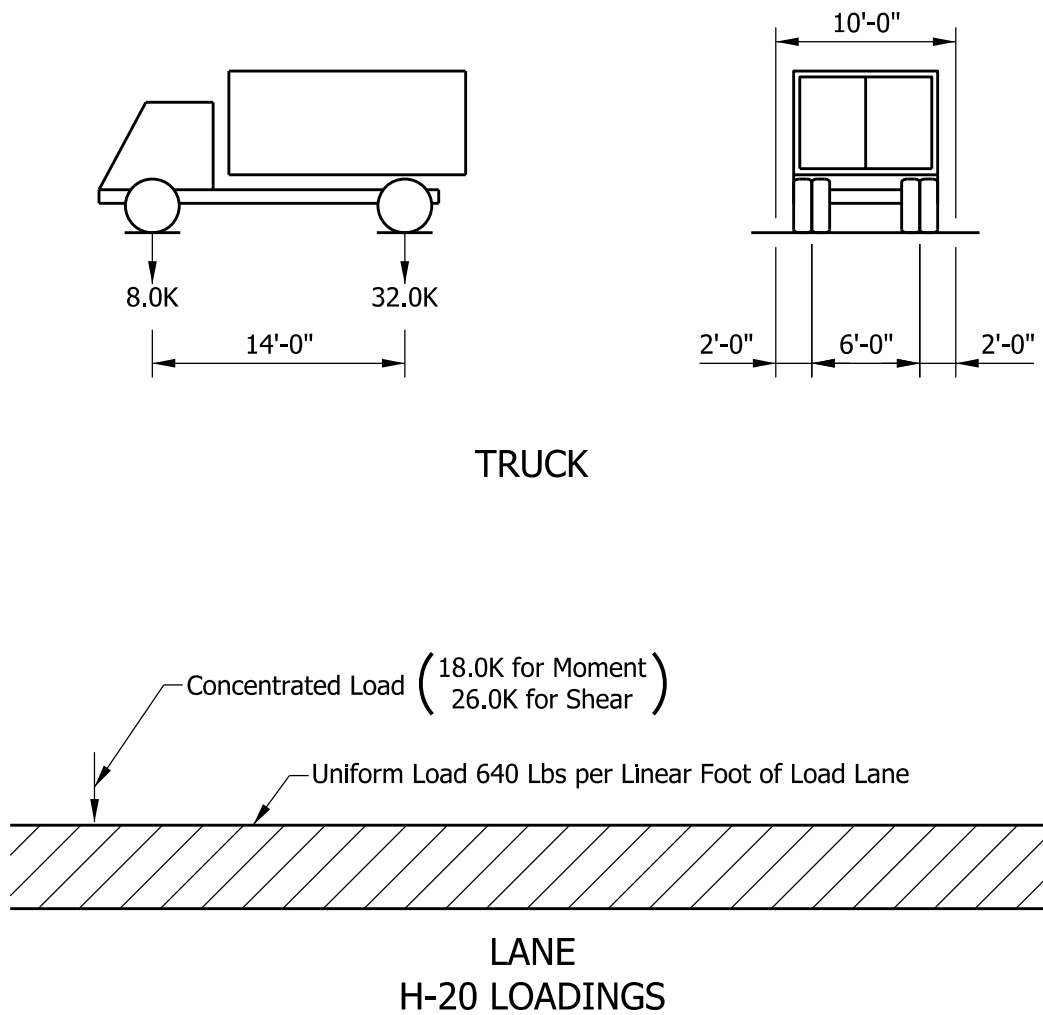
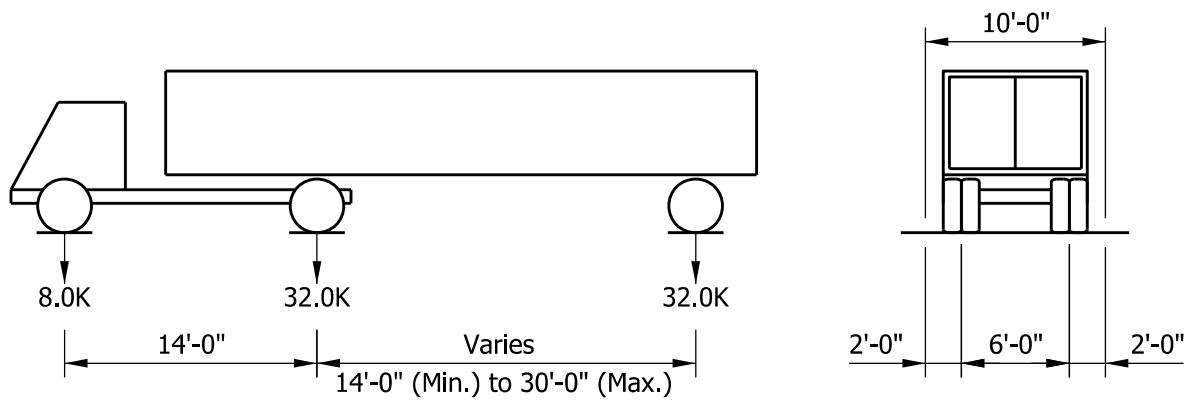
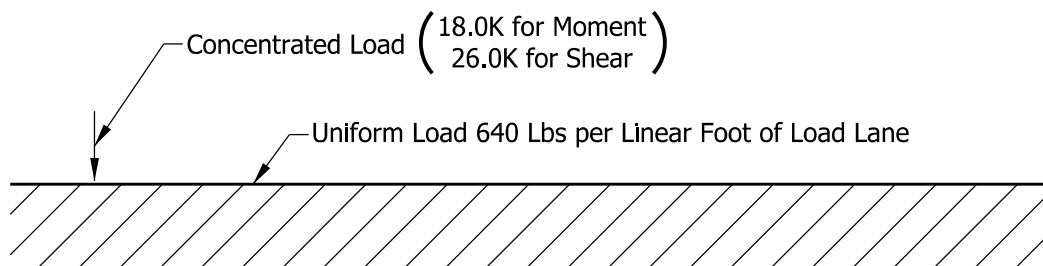


Figure A-3
H-20 Loading



TRUCK



LANE
HS-20 LOADINGS

Figure A-4
HS-20 Loading

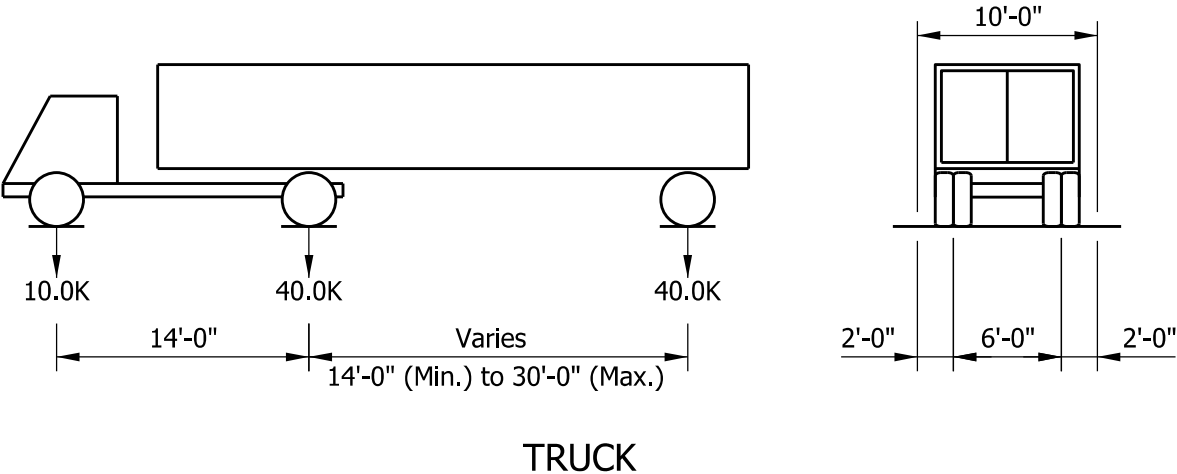
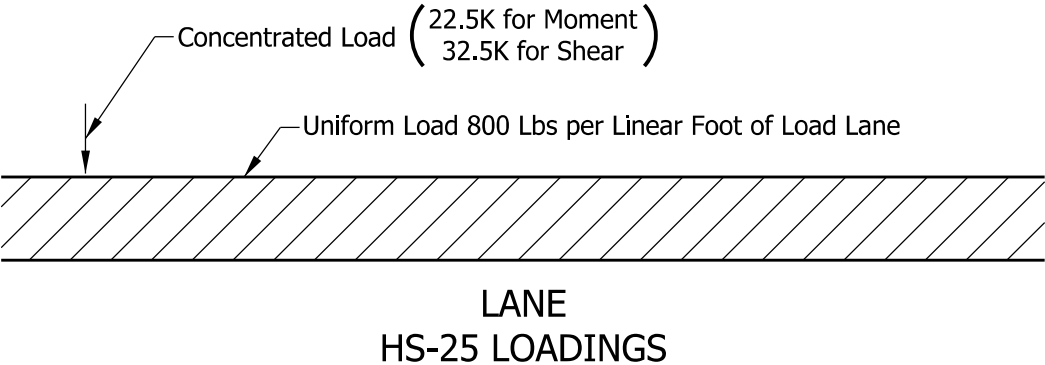
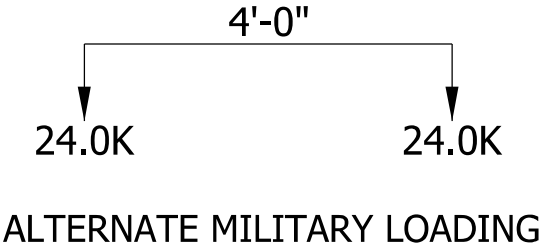


Figure A-5
HS-25 And Alternate Military Loading

3-8.01 Appendix A: Vehicle Configurations

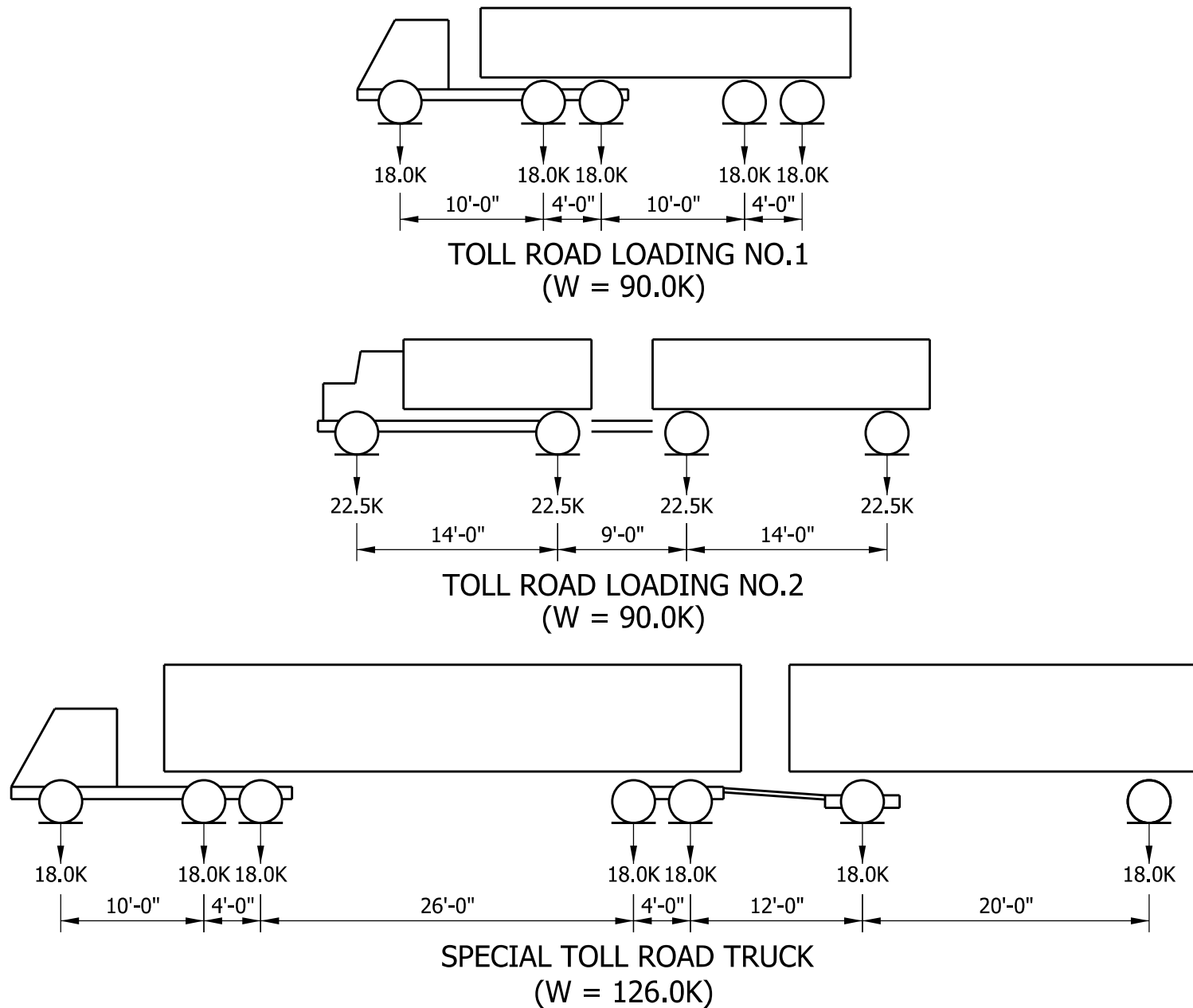
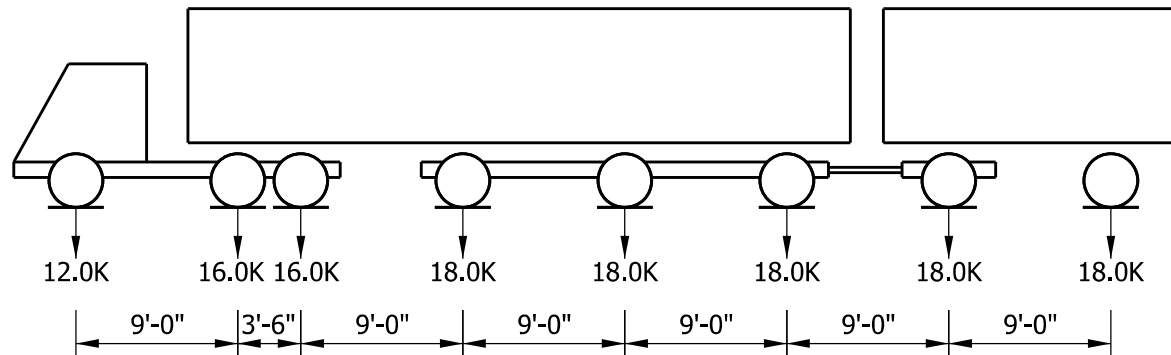
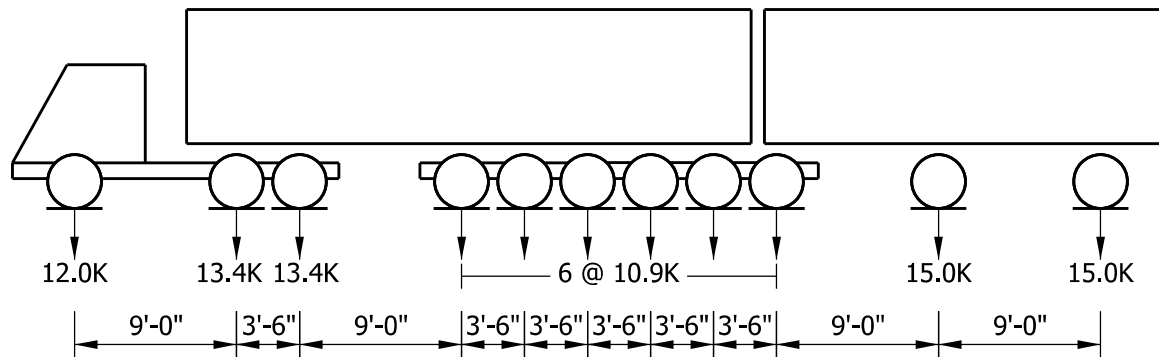


Figure A-6
Toll Road Truck Loads



MICHIGAN TRAIN TRUCK NO. 5
(W = 134.0K)



MICHIGAN TRAIN TRUCK NO. 8
(W = 134.2K)

Figure A-7
Michigan Train Truck Loads

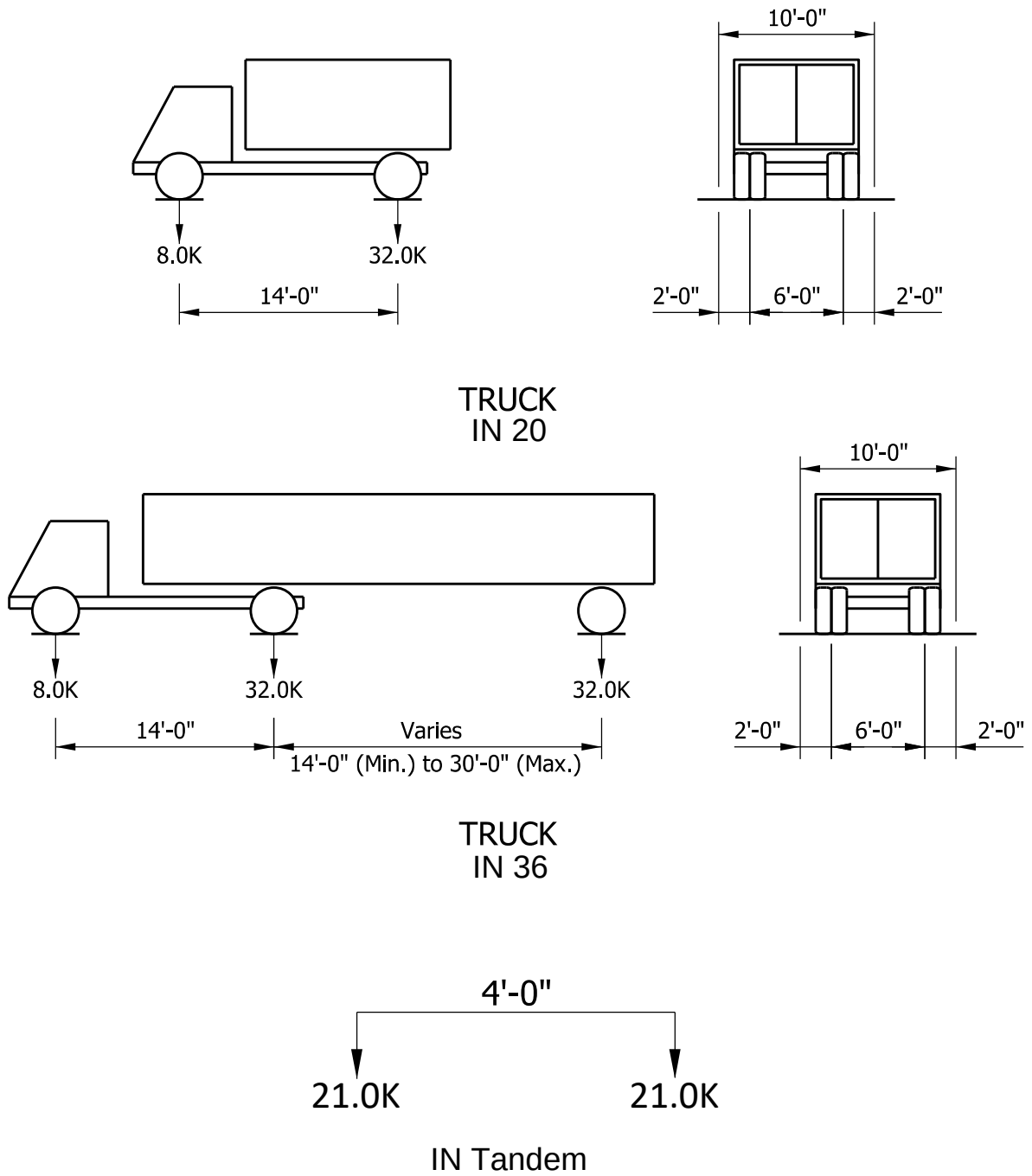
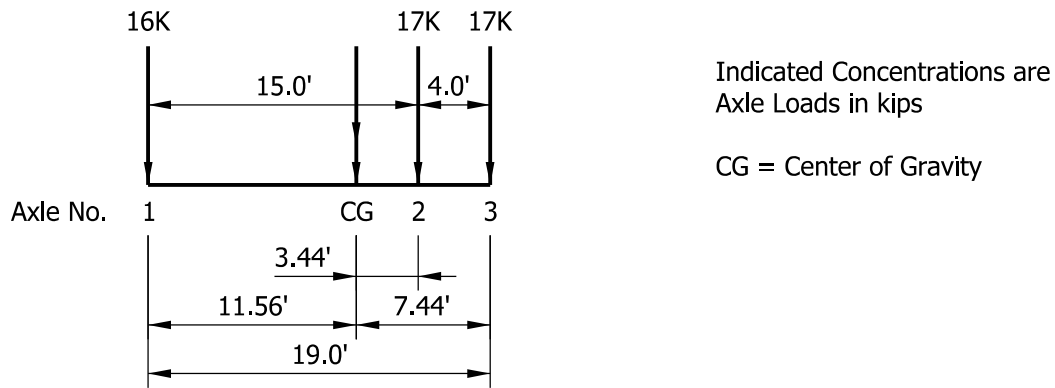
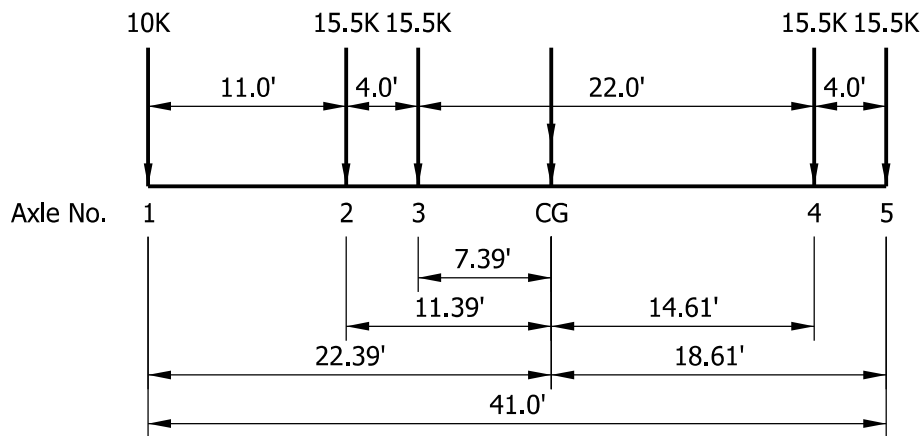


Figure A-8
State Vehicle Loads (Truck Only)

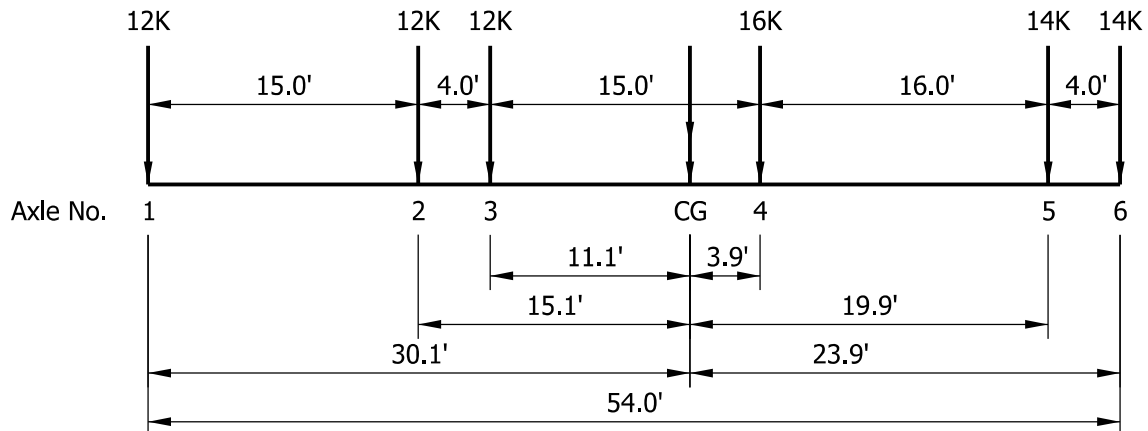
3-8.01 Appendix A: Vehicle Configurations



TYPE 3 UNIT
Weight = 50 kips (25 tons)

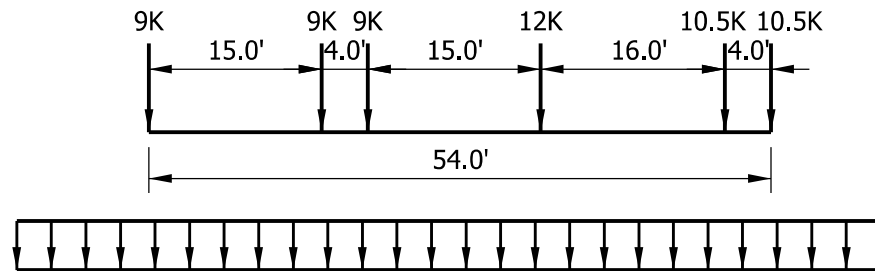


TYPE 3S2 UNIT
Weight = 72 kips (36 tons)



TYPE 3-3 UNIT
Weight = 80 kips (40 tons)

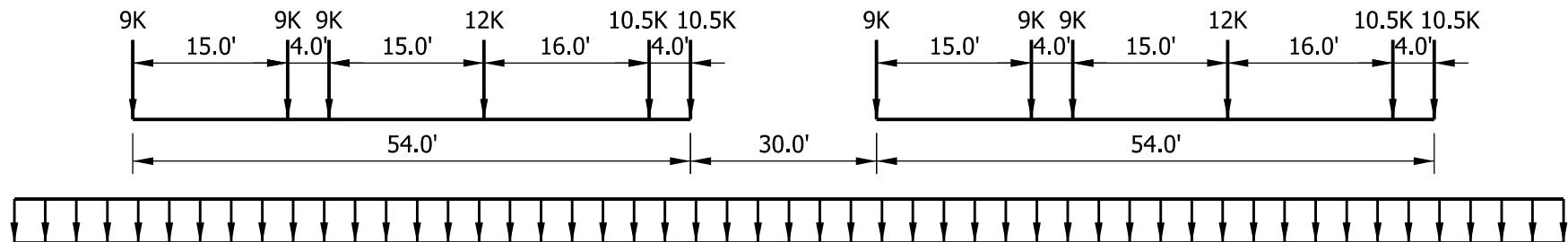
Figure A-9
AASHTO Legal Loads



Indicated Concentrations are
Axle Loads in kips
(75% of Type 3-3)

Legal Lane Weight/ft = 0.2 klf

Lane Type Loading
for Spans Greater Than 200 ft



Lane Type Loading
for Negative Moment and Interior Reaction

Figure A-10
Lane-Type Loading

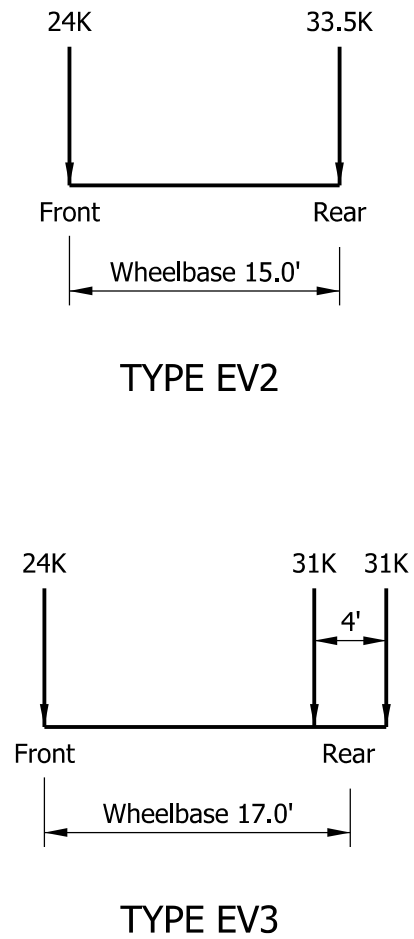
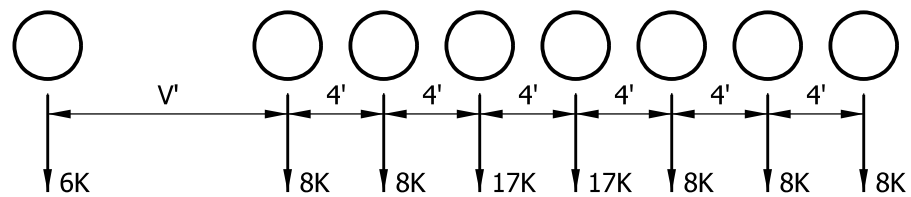


Figure A-11
FAST Act EV Loads



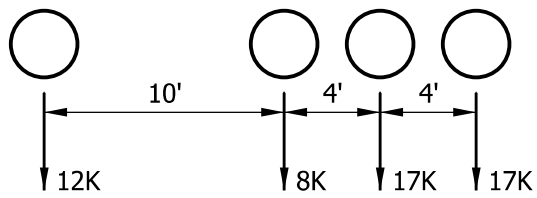
V = Variable Drive Axle Spacing - 6'-0" to 14'-0". Spacing to be used is that which produces maximum load effects.

Axles that do not contribute to the maximum load effect under consideration shall be neglected.

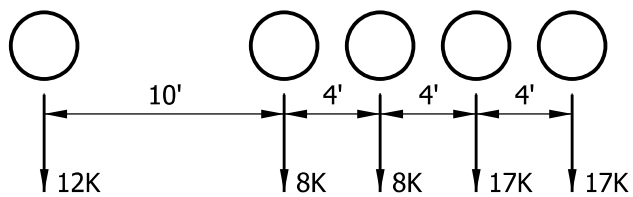
Maximum GVW = 80 Kips

Axle Gage Width = 6'-0"

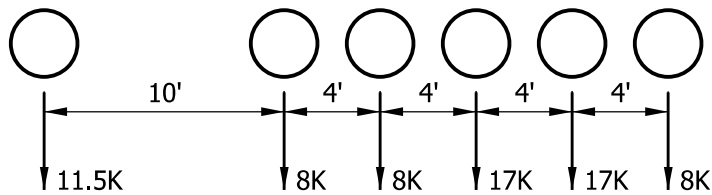
Figure A-12
Notional Rating Load (NRL)



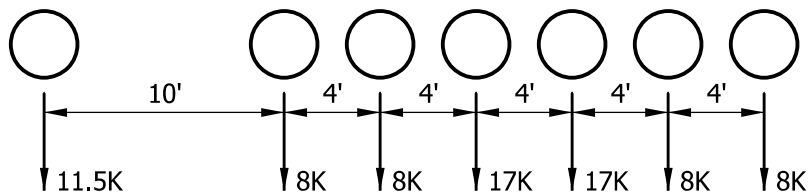
SU4 TRUCK
GVW = 54 kips



SU5 TRUCK
GVW = 62 kips



SU6 TRUCK
GVW = 69.5 kips



SU7 TRUCK
GVW = 77.5 kips

Figure A-13
Specialized Hauling Vehicles (SHV)

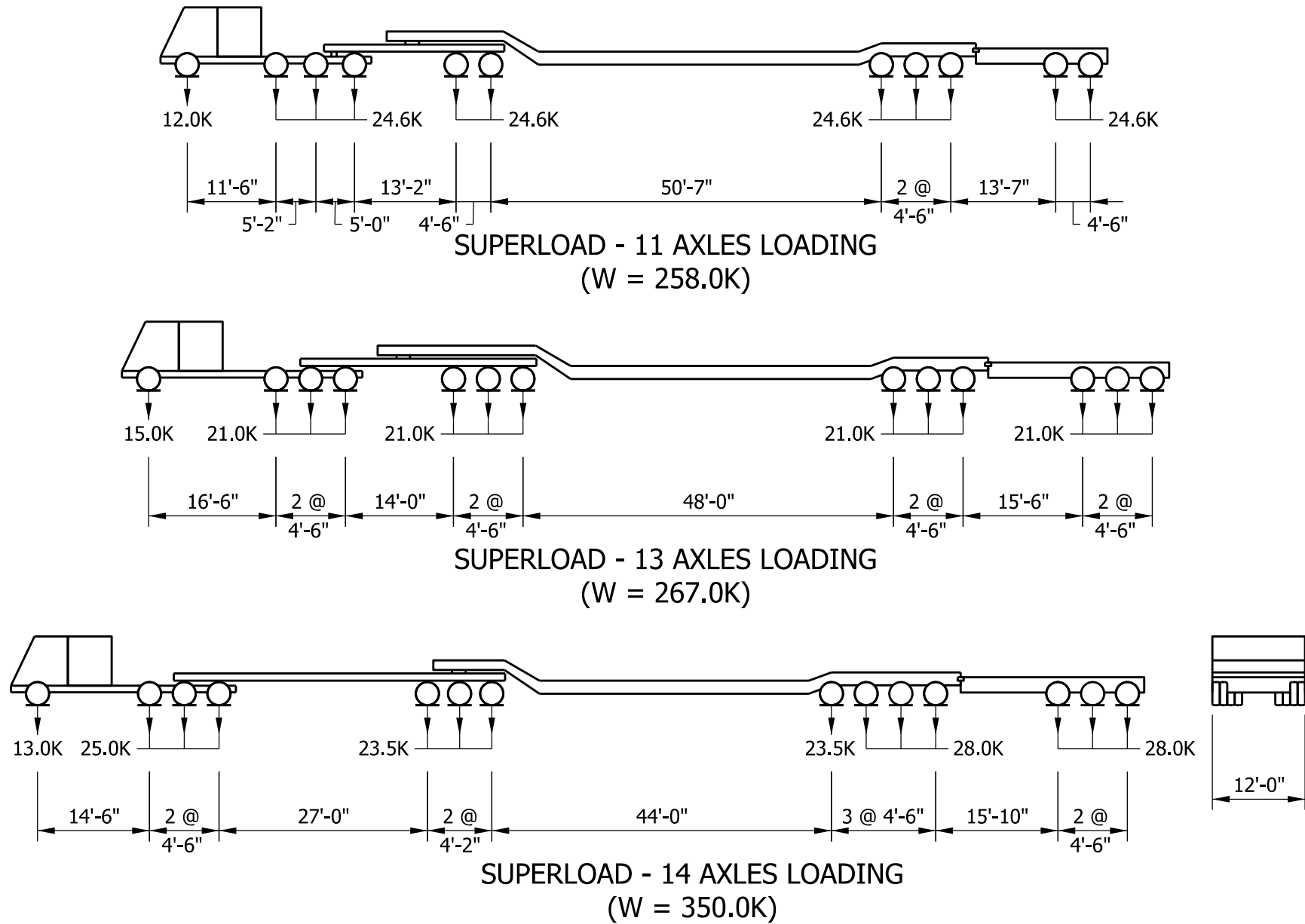


Figure A-14
Superload Vehicle Loads

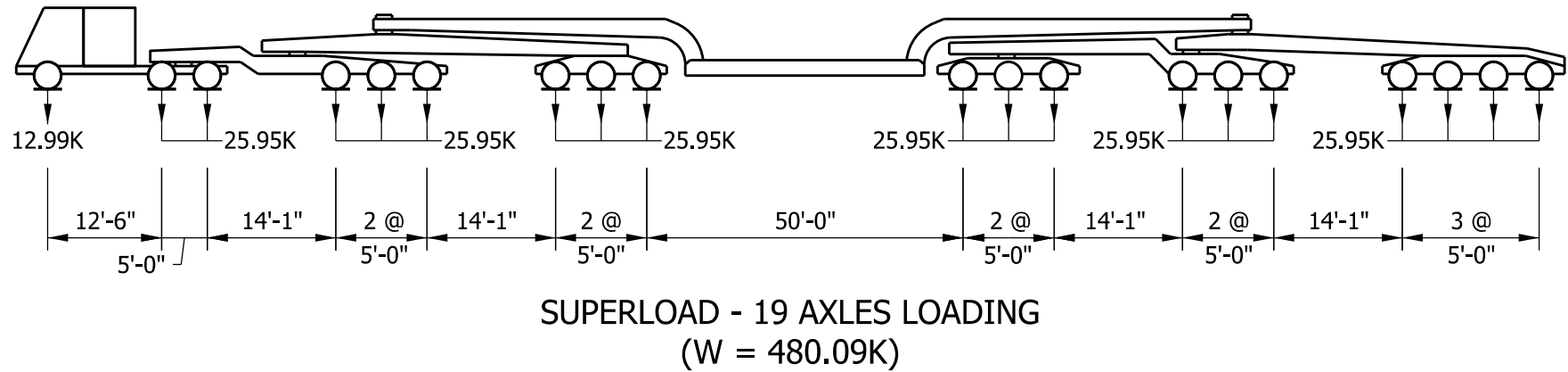
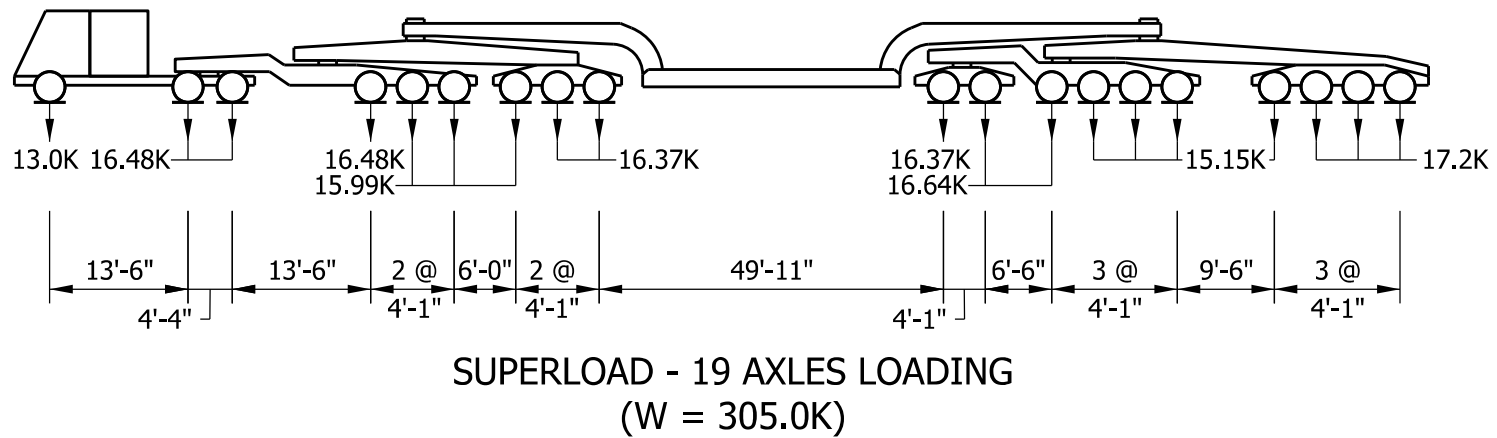


Figure A-15
Superload Vehicle Loads

3-8.02 Appendix B: Extra-Heavy Duty Highways

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

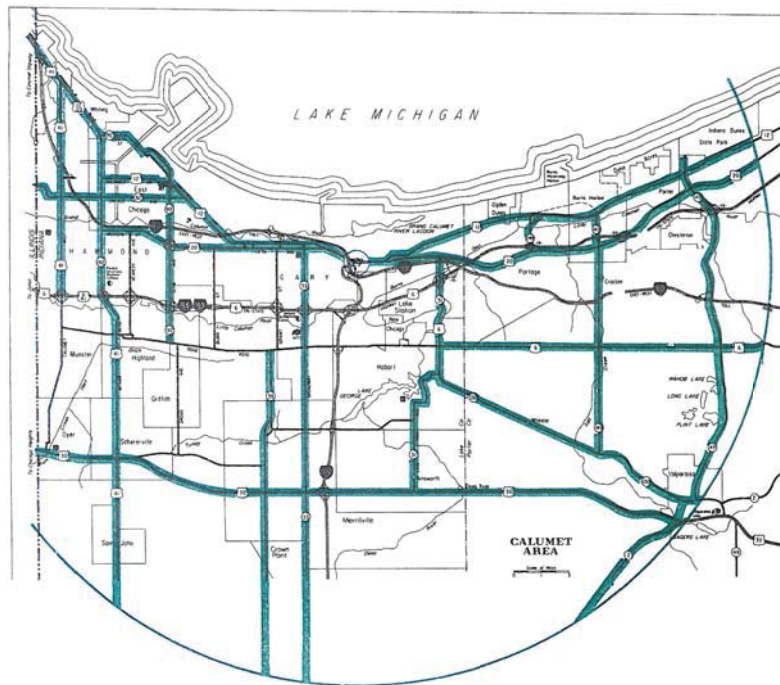
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



17

Exit 17

Note that the following are excluded: All Interstate Highways, Indiana Harbor Canal Lift Bridges, and SR 51 Northbound between US 20 and I-94.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

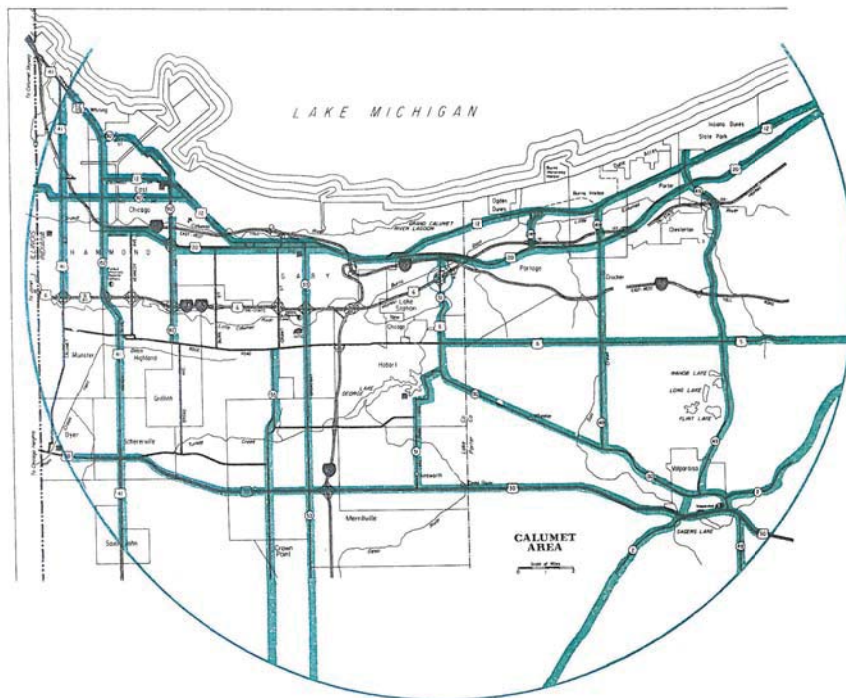
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 21

Note that the following are excluded: All Interstate Highways, Indiana Harbor Canal Lift Bridges, and SR 51 Northbound between US 20 and I-94.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

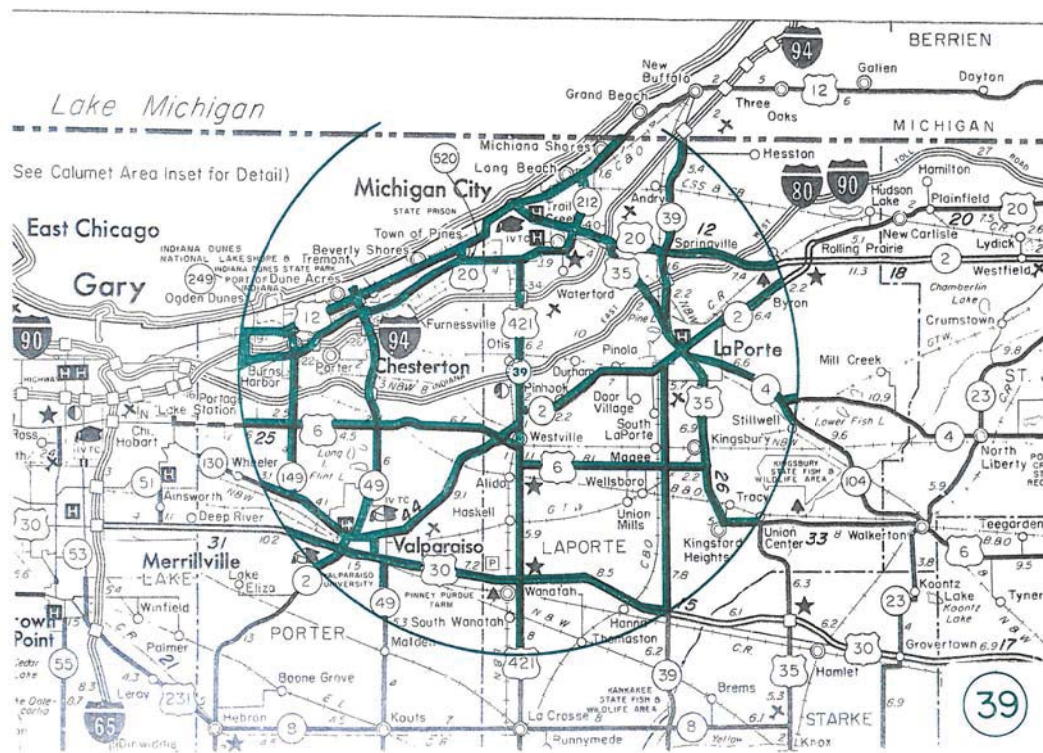
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 39

Note that the following are excluded: All Interstate Highways.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

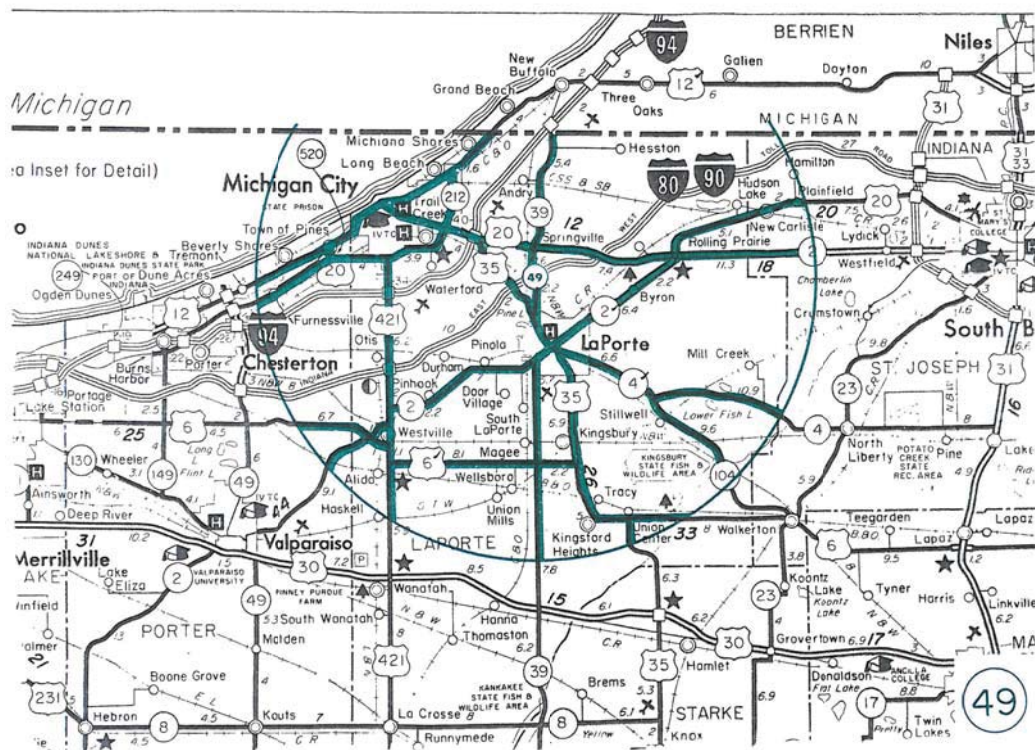
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 49

Note that the following are excluded: All Interstate Highways.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

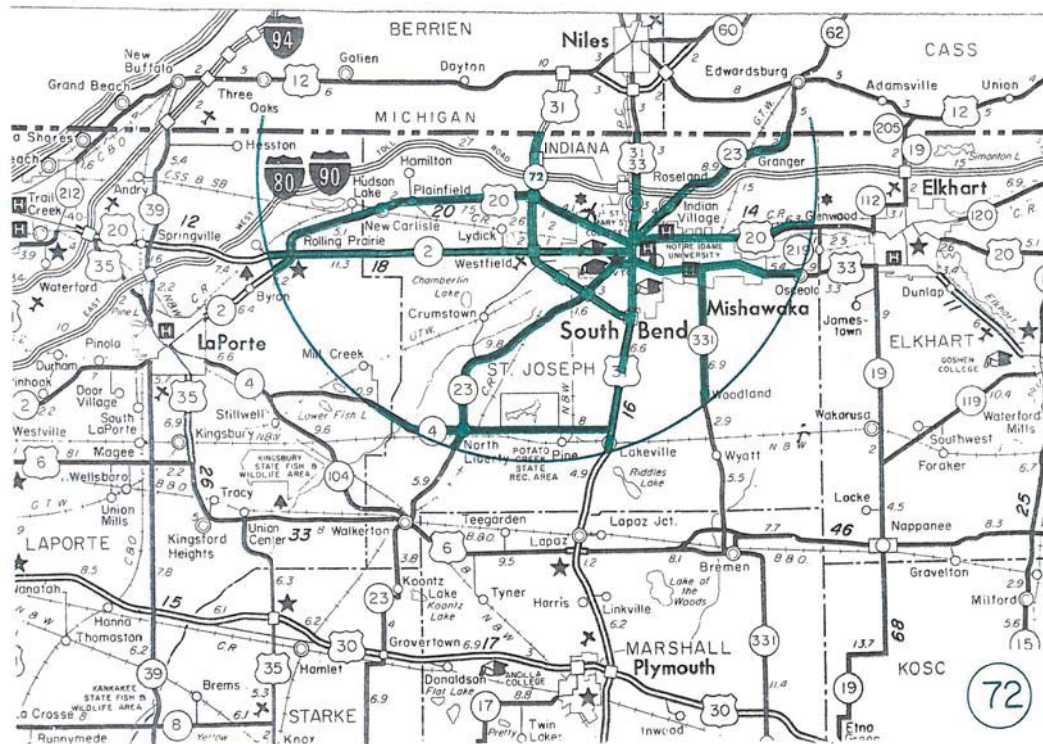
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 72

Note that the following are excluded: All Interstate Highways and over posted height on SR 2 between US 31 and SR 23.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

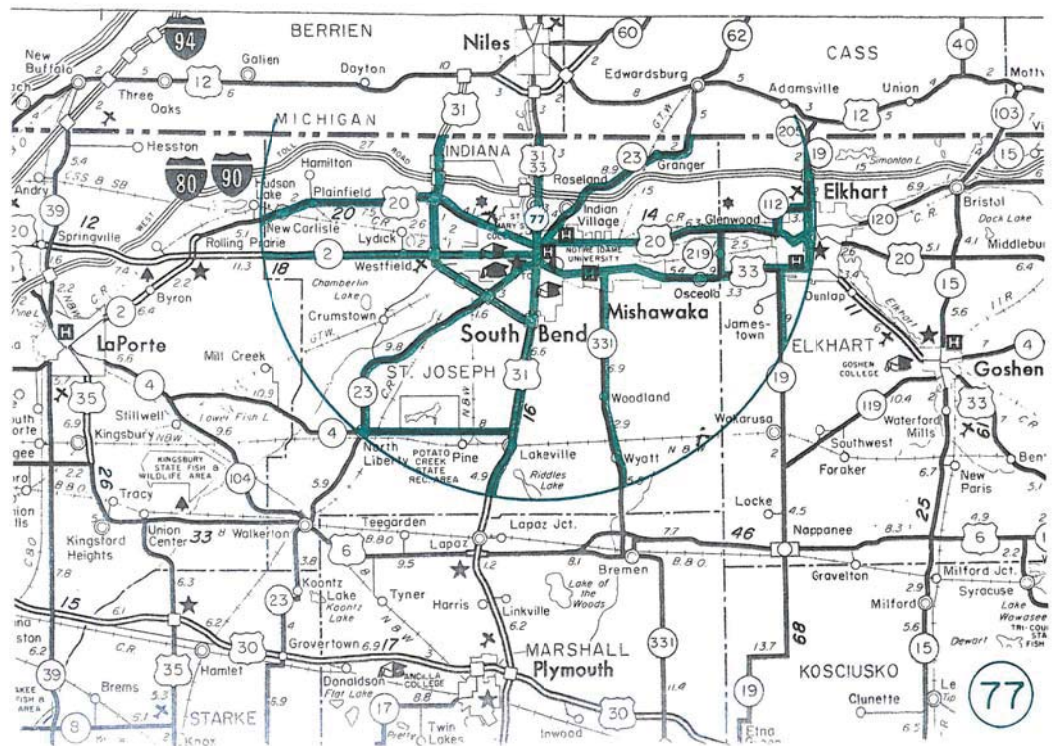
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 77

Note that the following are excluded: All Interstate Highways and over posted height on SR 2 between US 31 and SR 23.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

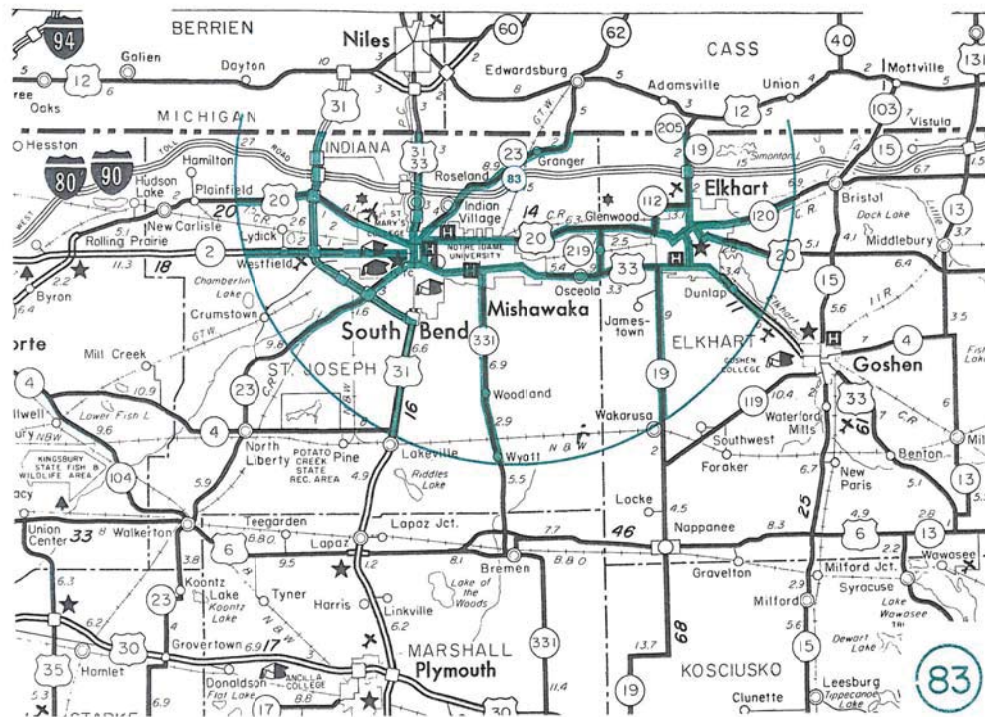
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 83

Note that the following are excluded: All Interstate Highways and over posted height on SR 2 between US 31 and SR 23.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

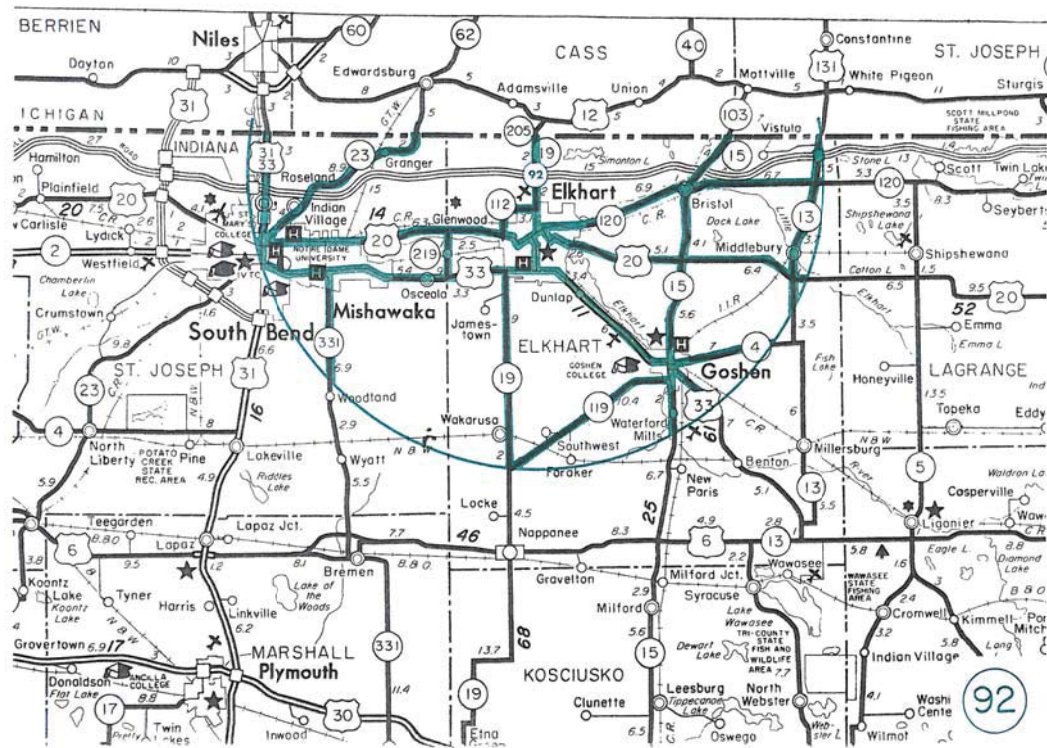
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 92

Note that the following are excluded: All Interstate Highways.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

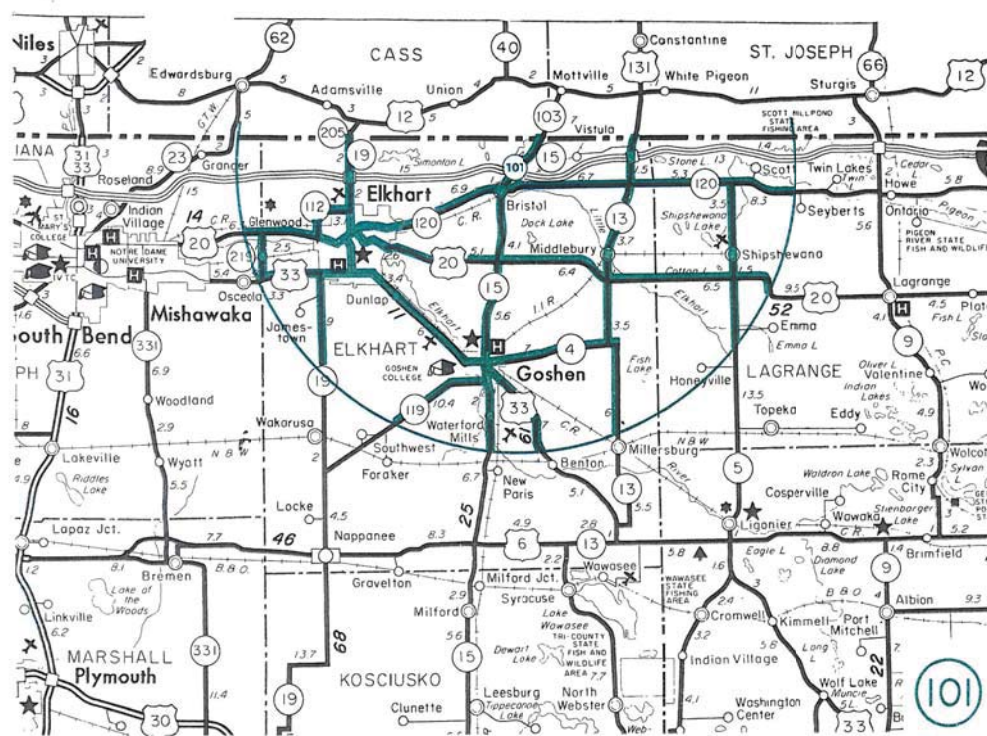
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 101

Note that the following are excluded: All Interstate Highways and any vehicles with an overall length in excess of 95 feet.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

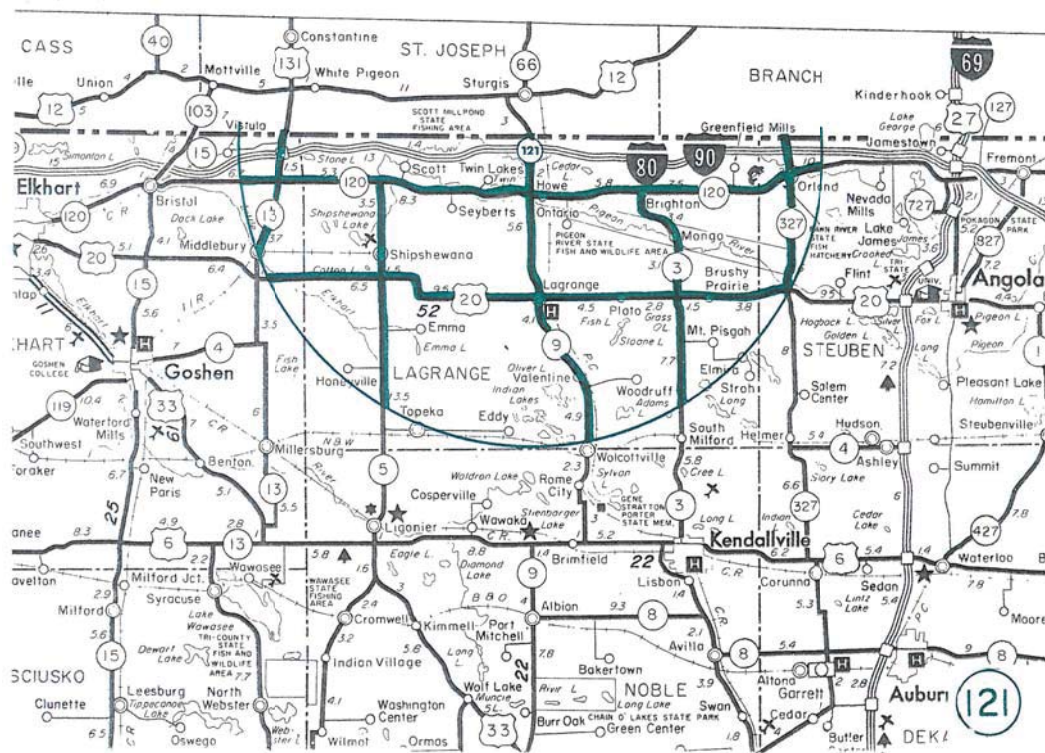
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 121

Note that the following are excluded: All Interstate Highways.

Notes: -

INDOT Coding Guide: *Bridge Reporting for Appraisal & Greater Inventory*

Item Number: 501.02 **Item Name:** "Heavy Duty Truck Route"

Main Tab/Sub Tab: Aux. Forms/O.V. (501) **Misc. Fields:** 501 Overall Comments

Main Tab/Sub Tab: Load Rating/Struc. Data (1) **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

Main Tab/Sub Tab: - **Misc. Fields:** -

NBIS: ☐ Yes **Toll Road:** ☒ Yes

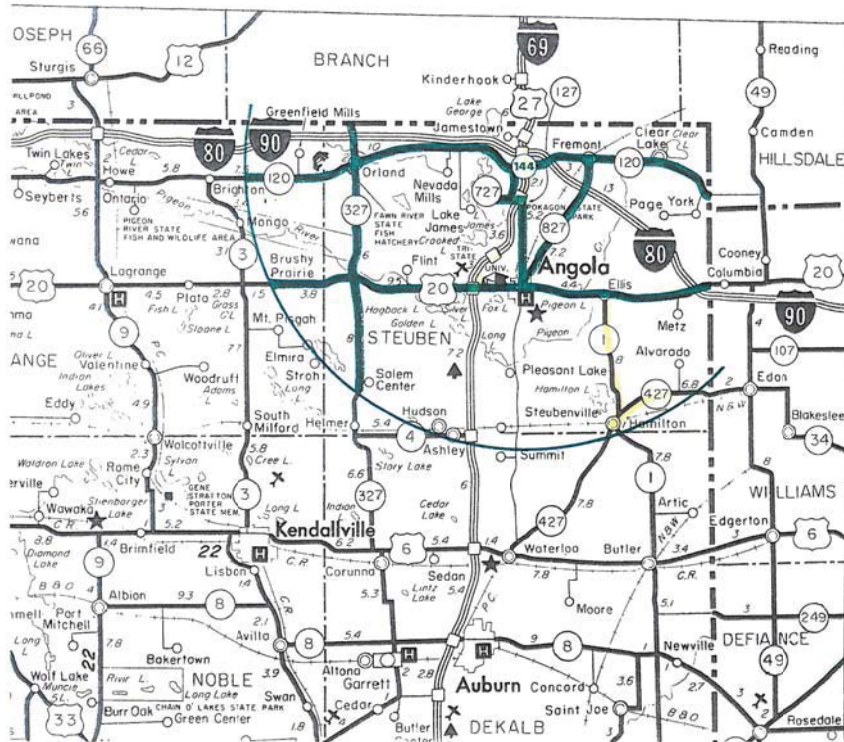
INDOT: ☒ Yes **County/Local:** ☒ Yes

Input Format: ☒ Drop-Down ☐ Manual

X ☐ Check Box ☐ Read-Only

Description: "Heavy Duty Truck Route" (continued)

Instructions: See the detailed map below for Heavy Duty Truck Routes in Indiana, which are defined as any route carrying public vehicular traffic within a 15 mile radius of Toll Road exits.



Exit 144

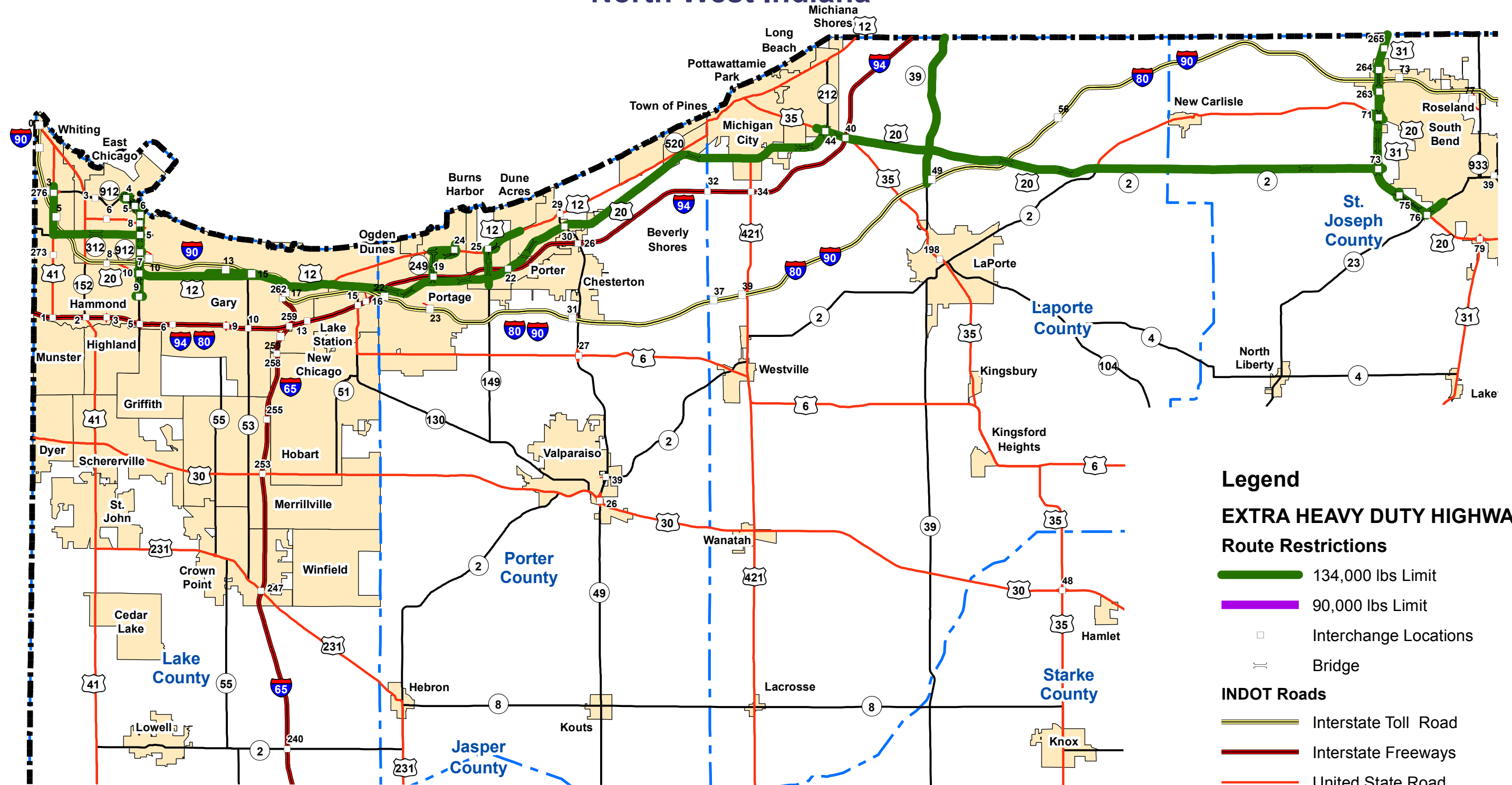
Note that the following are excluded: All Interstate Highways, SR 1, and SR 427.

Notes: -

INDIANA EXTRA HEAVY DUTY HIGHWAYS

North West Indiana

3-8.02 Appendix B: Extra Heavy Duty Highways



Legend

EXTRA HEAVY DUTY HIGHWAYS

Route Restrictions

— 134,000 lbs Limit

— 90,000 lbs Limit

Interchange Locations

Bridge

INDOT Roads

Interstate Toll Road

Interstate Freeways

United State Road

State Road

Interchange Ramps

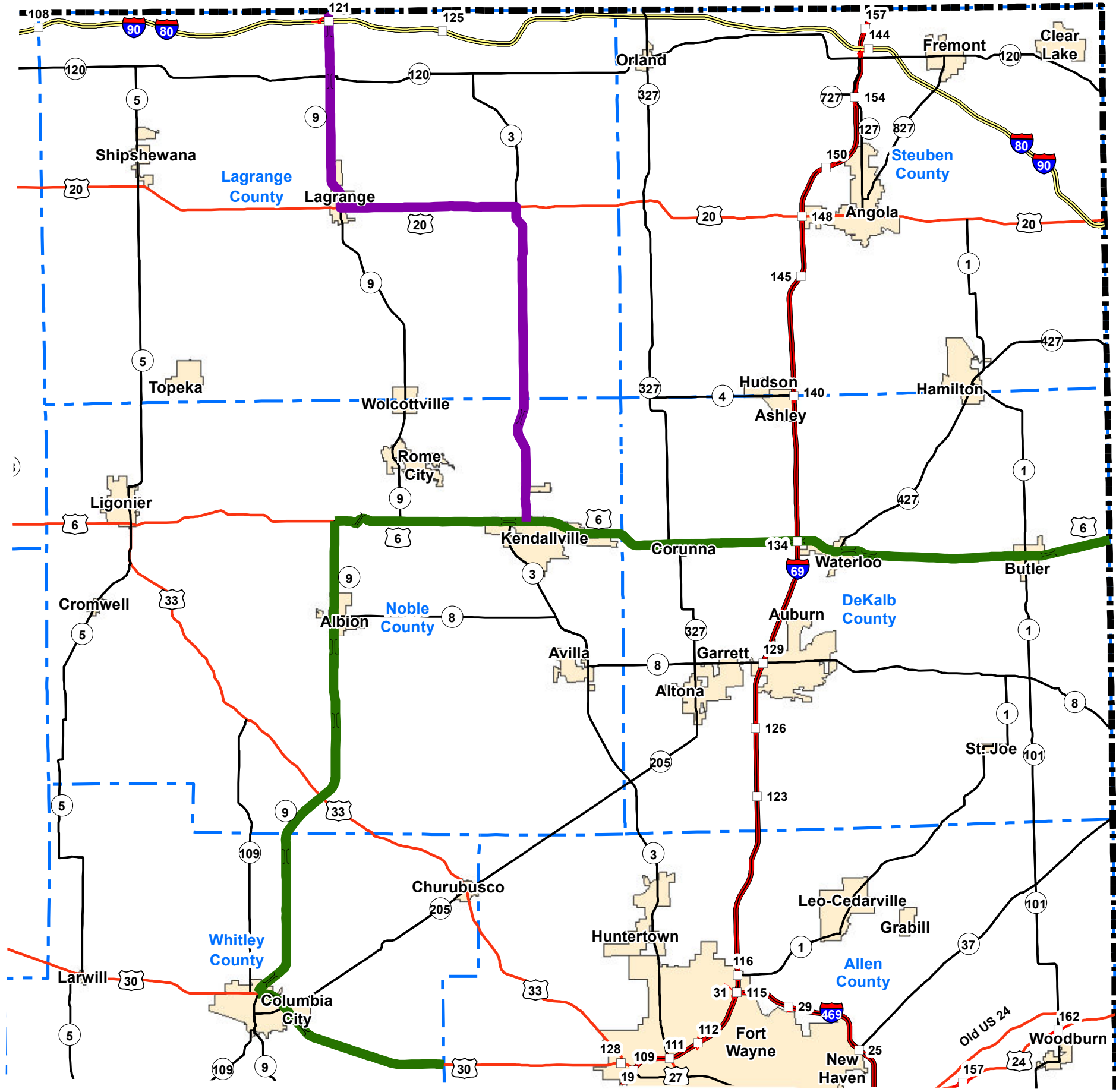
INDIANA State Boundary

County Boundaries

3-8.02 Appendix B: Extra Heavy Duty Highways

INDIANA EXTRA HEAVY DUTY HIGHWAYS

North East Indiana



- Legend**
- EXTRA HEAVY DUTY HIGHWAYS**
- Route Restrictions**
- 134,000 lbs Limit
 - 90,000 lbs Limit
 - Interchange Locations
 - System 1 Bridge
- INDOT Roads**
- Interstate Toll Road
 - Interstate Freeways
 - United State Road
 - State Road
 - Interchange Ramps
 - INDIANA State Boundary
 - County Boundaries



IC 9-20-5 Chapter 5. Heavy Duty Highways and Extra Heavy Duty Highways

9-20-5-1	Establishment and designation of heavy duty and extra heavy duty highways; removal of designation; publication of map
9-20-5-2	Maximum weight limitations; heavy duty highways
9-20-5-3	Designation of heavy duty highways; conditions
9-20-5-4	Extra heavy duty highways; listing; expiration
9-20-5-4.5	Repealed
9-20-5-5	Maximum size and weight limitations; extra heavy duty highways; expiration
9-20-5-6	Safety procedures; implementation
9-20-5-7	Special weight permits; extra heavy duty highways; fee; additional permit fee
9-20-5-8	Conditions under which permits not to be issued

IC 9-20-5-1 Establishment and designation of heavy duty and extra heavy duty highways; removal of designation; publication of map

Sec. 1. (a) The Indiana department of transportation may adopt rules under IC 4-22-2 to do the following:

- (1) Establish and designate a highway as a heavy duty highway.
- (2) Remove the designation of a highway or part of a highway as a heavy duty highway.

(b) The Indiana department of transportation shall adopt rules under IC 4-22-2 to do the following:

- (1) Establish and designate a highway as an extra heavy duty highway.
- (2) Remove the designation of a highway or part of a highway as an extra heavy duty highway.

(c) Rules described in subsection (b)(1) must do the following:

- (1) Designate the highways listed in section 4 of this chapter (before its expiration) as extra heavy duty highways.
- (2) Establish maximum size and weight limits for vehicles operated with a special weight permit on an extra heavy duty highway as set forth in section 5 of this chapter (before its expiration).

(d) The Indiana department of transportation shall periodically publish a map showing all highways designated by the department at the time as heavy duty or extra heavy duty highways.

[Pre-1991 Recodification Citation: 9-8-1-12(d) part.]

As added by P.L.2-1991, SEC.8. Amended by P.L.66-2012, SEC.1.

IC 9-20-5-2 Maximum weight limitations; heavy duty highways

Sec. 2. Whenever the Indiana department of transportation designates a heavy duty highway, the department shall also fix the maximum weights of vehicles that may be transported on the highway. The maximum weights may not exceed the following limitations:

- (1) A vehicle may not have a maximum wheel weight, unladen or with load, in excess of eight hundred (800) pounds per inch width of tire, measured between the flanges of the rim, or an axle weight in excess of twenty-two thousand four hundred (22,400) pounds.
- (2) The total weight concentrated on the roadway surface from any tandem axle group may not exceed eighteen thousand (18,000) pounds for each axle of the assembly.
- (3) The total gross weight, with load, in pounds of a vehicle or combination of vehicles may not exceed eighty thousand (80,000) pounds.

[Pre-1991 Recodification Citation: 9-8-1-12(d) part.]

As added by P.L.2-1991, SEC.8.

IC 9-20-5-3 Designation of heavy duty highways; conditions

Sec. 3. The Indiana department of transportation may not designate a highway as a heavy

3-8.02 Appendix B: Extra-Heavy Duty Highways

duty highway unless the department finds that the highway is:

- (1) so constructed and can be so maintained; or
- (2) in such condition;

that the use of the highway as a heavy duty highway will not materially decrease or contribute materially to the decrease of the ordinary useful life of the highway.

[Pre-1991 Recodification Citation: 9-8-1-12(d) part.]

As added by P.L.2-1991, SEC.8. Amended by P.L.198-2016, SEC.340.

IC 9-20-5-4 Extra heavy duty highways; listing; expiration

Sec. 4. (a) In addition to the highways established and designated as heavy duty highways under section 1 of this chapter, the following highways are designated as extra heavy duty highways:

- (1) Highway 41, from 129th Street in Hammond to Highway 312.
- (2) Highway 312, from Highway 41 to State Road 912.
- (3) Highway 912, from Riley Road in East Chicago to the U.S. 20 interchange.
- (4) Highway 20, from Clark Road in Gary to Highway 39.
- (5) Highway 12, from one-fourth (1/4) mile west of the Midwest Steel entrance to Highway 249.
- (6) Highway 249, from Highway 12 to Highway 20.
- (7) Highway 12, from one and one-half (1 1/2) miles east of the Bethlehem Steel entrance to Highway 149.
- (8) Highway 149, from Highway 12 to a point thirty-six hundredths (.36) of a mile south of Highway 20.
- (9) Highway 39, from Highway 20 to the Michigan state line.
- (10) Highway 20, from Highway 39 to Highway 2.
- (11) Highway 2, from Highway 20 to Highway 31.
- (12) Highway 31, from the Michigan state line to Highway 23.
- (13) Highway 23, from Highway 31 to Olive Street in South Bend.
- (14) Highway 35, from South Motts Parkway thirty-four hundredths (.34) of a mile southeast to the point where Highway 35 intersects with the overpass for Highway 20/Highway 212.
- (15) State Road 249 from U.S. 12 to the point where State Road 249 intersects with Nelson Drive at the Port of Indiana.
- (16) State Road 912 from the 15th Avenue and 169th Street interchange one and six hundredths (1.06) miles north to the U.S. 20 interchange.
- (17) U.S. 20 from the State Road 912 interchange three and seventeen hundredths (3.17) miles east to U.S. 12.
- (18) U.S. 6 from the Ohio state line to State Road 9.
- (19) U.S. 30 from Allen County/Whitley County Line Road (also known as County Road 800 East) to State Road 9.
- (20) State Road 9 from U.S. 30 to U.S. 6.
- (21) State Road 39 from Interstate 80 to U.S. 20.
- (22) State Road 3 north from U.S. 6 to U.S. 20, U.S. 20 west from State Road 3 to State Road 9, State Road 9 north from U.S. 20 to the Michigan state line. However, the total gross weight, with load, of a vehicle or combination of vehicles operated with a special weight permit on these highways may not exceed ninety thousand (90,000) pounds.
- (23) Highway 912, at an intersection approximately thirty hundredths (.30) of a mile southwest of the intersection of Dickey Road and Riley Road in East Chicago. The total gross weight, with load, of a vehicle or combination of vehicles operated with a special weight permit on this highway may not exceed two hundred sixty-four thousand (264,000) pounds.

(b) This section expires on the later of the following dates:

- (1) The date on which rules described in section 1(c)(1) of this chapter are finally

3-8.02 Appendix B: Extra-Heavy Duty Highways

adopted.

(2) December 31, 2014.

[Pre-1991 Recodification Citation: 9-8-1-12(g).]

As added by P.L.2-1991, SEC.8. Amended by P.L.12-1991, SEC.4; P.L.123-1993, SEC.1; P.L.124-1993, SEC.1; P.L.119-1995, SEC.2; P.L.45-1999, SEC.1; P.L.79-2000, SEC.3; P.L.147-2002, SEC.2; P.L.10-2004, SEC.1; P.L.17-2006, SEC.1; P.L.134-2007, SEC.1; P.L.120-2011, SEC.1; P.L.66-2012, SEC.2.

IC 9-20-5-4.5 Repealed

As added by P.L.12-1991, SEC.5. Repealed by P.L.123-1993, SEC.2.

IC 9-20-5-5 Maximum size and weight limitations; extra heavy duty highways; expiration

Sec. 5. (a) Except as provided in subsection (b), the maximum size and weight limits for vehicles operated with a special weight permit on an extra heavy duty highway are as follows:

- (1) A vehicle may not have a maximum wheel weight, unladen or with load, in excess of eight hundred (800) pounds per inch width of tire, measured between the flanges of the rim.
- (2) A single axle weight may not exceed eighteen thousand (18,000) pounds.
- (3) An axle in an axle combination may not exceed thirteen thousand (13,000) pounds per axle, with the exception of one (1) tandem group that may weigh sixteen thousand (16,000) pounds per axle or a total of thirty-two thousand (32,000) pounds.
- (4) Except as provided in section 4(a)(22) of this chapter, the total gross weight, with load, of any vehicle or combination of vehicles may not exceed one hundred thirty-four thousand (134,000) pounds.
- (5) Axle spacings may not be less than three (3) feet, six (6) inches, between each axle in an axle combination.
- (6) Axle spacings may not be less than eight (8) feet between each axle or axle combination.

(b) A vehicle operated in accordance with section 4(a)(23) of this chapter may not have a:

- (1) maximum wheel weight, unladen or with load, in excess of one thousand six hundred fifty (1,650) pounds per inch width of tire, measured between the flanges of the rim; or
- (2) single axle weight that exceeds sixty-five thousand (65,000) pounds.

(c) This section expires on the later of the following dates:

- (1) The date on which rules described in section 1(c)(2) of this chapter are finally adopted.
- (2) December 31, 2014.

[Pre-1991 Recodification Citation: 9-8-1-12(h).]

As added by P.L.2-1991, SEC.8. Amended by P.L.134-2007, SEC.2; P.L.120-2011, SEC.2; P.L.66-2012, SEC.3; P.L.13-2013, SEC.35.

IC 9-20-5-6 Safety procedures; implementation

Sec. 6. The Indiana department of transportation shall implement procedures that, in cooperation with the state police department and local police departments, enhance the safety of citizens along and near extra heavy duty highways listed in section 4 of this chapter (before its expiration) or described in rules adopted by the Indiana department of transportation under section 1 of this chapter.

[Pre-1991 Recodification Citation: 9-8-1-12(j).]

As added by P.L.2-1991, SEC.8. Amended by P.L.66-2012, SEC.4.

IC 9-20-5-7 Special weight permits; extra heavy duty highways; fee;

3-8.02 Appendix B: Extra-Heavy Duty Highways

additional permit fee

Sec. 7. (a) The owner or operator of a vehicle or combination of vehicles having a total gross weight in excess of eighty thousand (80,000) pounds but less than two hundred sixty-four thousand (264,000) pounds must:

- (1) obtain a special weight registration permit;
- (2) register annually and pay annually a registration fee to the department of state revenue; and
- (3) install an approved automated vehicle identifier in each vehicle operating with a special weight permit;

to travel on an extra heavy duty highway.

(b) The fee for an annual registration under subsection (a) is twenty-five dollars (\$25). The fee imposed under this section must be deposited in the motor carrier regulation fund established under IC 8-2.1-23.

(c) The department of state revenue may impose an additional permit fee in an amount that may not exceed one dollar (\$1) on each trip permitted for a vehicle registered under subsection (a). This additional fee is for the use and maintenance of an automated vehicle identifier. The fee imposed under this section must be deposited in the motor carrier regulation fund established under IC 8-2.1-23.

[Pre-1991 Recodification Citation: 9-8-1-12(i) part; Pre-2016 Revision Citation: 9-29-6-1.5.]

As added by P.L.2-1991, SEC.8. Amended by P.L.122-1993, SEC.2; P.L.129-2001, SEC.30; P.L.120-2011, SEC.3; P.L.198-2016, SEC.341.

IC 9-20-5-8 Conditions under which permits not to be issued

Sec. 8. The Indiana department of transportation may not issue a permit under this chapter for the operation of a vehicle if any of the following conditions apply:

- (1) The owner or operator of the vehicle has not complied with IC 8-2.1-24.
- (2) The owner or operator of the vehicle has not provided the Indiana department of transportation with the owner's or operator's Social Security number or federal identification number.
- (3) The owner or operator of the vehicle has not registered the vehicle with the bureau, if the vehicle is required to be registered under IC 9-18 (before its expiration) or IC 9-18.1.
- (4) The owner or operator of the vehicle has not provided the department of state revenue full payment for a permit prior to transporting vehicles or loads subject to this article.

As added by P.L.122-1993, SEC.3. Amended by P.L.110-1995, SEC.30; P.L.257-2017, SEC.31; P.L.127-2021, SEC.2.

Indiana Code 2026

3-8.03 Appendix C: Load Rating Report Documentation Examples

LOAD RATING SUMMARY REPORT for DETERIORATION

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried: SR 15

Features Intersected: Little Elkhart River

District: 02 - Fort Wayne Toll Road: No – Bridge does not carry nor cross the Indiana Toll Road and is not within a 15-mile radius of a gate

County: 20 - Elkhart

Reference Post: 91 + 66

Extra Heavy Duty: False

Highway:

Rehabilitation History

Year Built:	1941	Description:
Years Rehabilitated:	1975	Contract X-XXXXX Rehab A: Replace Superstructure
	2019	DES XXXXXXXX Rehab B: Bridge Thin Deck Overlay

Geometry and Material Summary

Structure Type(s):	CPCIB - CONTINUOUS PRESTRESSED CONCRETE I-BEAM		
Span Length:	49'-7", 2 @ 50'-1", 49'-7"	O-to-O Coping:	48'-4"
Number of Girders:	7	Clear Roadway:	45'-4"
Girder Spacing:	6 @ 7'-6"	Left Overhang:	1'-8"
		Skew:	30° 00' 00" RT

Deck	Girder		
Original Thickness:	8"	Size/Type:	AASHTO Type II
Structural Thickness:	6.5"	Structural Steel Fy:	N/A
Additional Overlay:	N/A	Reinforcing Fy:	40 ksi
Deck Concrete f'c:	3 ksi	Girder Concrete f'c:	5 ksi
Reinforcing Fy:	40 ksi	Girder Concrete f'ci:	4 ksi
Stay-in-Place Forms:	15 psf	Strand Material:	1/2" Ø (7W-270ksi) LR

Modeling Assumptions

Plans Available:	TRUE	Deterioration:	TRUE
Shop Drawings:	N/A	Condition Factor:	Fair
Inspection Date:	MM/DD/YYYY	Future Wearing Surface:	Included with Design Loads (35 psf)

Executive Summary

Load rating incorporates deterioration as observed during INDOT MM/DD/YYYY inspection.

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: HL93

B.LR.02 - Design Method: LRFD

B.LR.03 - Load Rating Date: MM/DD/YYYY

B.LR.04 - Load Rating Method: LRFR

B.LR.05 - Inventory Load Rating Factor: 0.60

B.LR.06 Operating Load Rating Factor: 0.80

B.LR.07 - Controlling Legal Load Rating Factor: 0.95

B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PA

B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:

B.EP.03b - Additional Posting Types:

B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

T - Truck Silhouette

Single-Unit: Tons

Single-Trailer: Tons

Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons

EV Posted Tonnage (Tandem Axle): Tons

EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.601	21.636	0.808	29.088
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	1.445	41.544	
	EV3	1.029	44.247	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	0.914		
	Alternate Military	1.173	28.152	
Single-Unit	IN 20	1.407	28.140	28.140
	AASHTO Type 3	1.245	31.125	31.125
	SU4	1.278	34.506	34.506
	SU5	1.154	35.774	35.774
	SU6	1.040	36.140	36.140
	SU7	0.958	37.123	36.425
Single-Trailer	IN 36	1.056	38.016	38.016
	AASHTO Type 3S2	1.431	51.516	51.516
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.412	56.480	56.480
	Lane-Type	1.600	64.000	64.000
	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.070	138.030
13	Superload	1.170	156.195
14	Superload	0.838	146.650
19	Superload (305K)	1.058	161.345
19	Superload (480.09K)	0.766	183.874

LOAD RATING SUMMARY REPORT for DETERIORATION

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried:	I-65 SB		
Features Intersected:	Mutton Creek Ditch		
District:	03 - Greenfield	Toll Road:	No – Bridge does not carry nor cross the Indiana Toll Road and is not within a 15-mile radius of a gate
County:	36 - Jackson		
Reference Post:	46 + 32	Extra Heavy Duty	False
		Highway:	

Rehabilitation History

Year Built:	1959	Description:	
Years Rehabilitated:	1990	Contract X-XXXXX Rehab A:	Bridge Deck Replacement
	2013	DES XXXXXXXX Rehab B:	Bridge Thin Deck Overlay

Geometry and Material Summary

Structure Type(s):	KCSB - COMPOSITE CONTINUOUS STEEL BEAM		
Span Length:	50'-0", 60'-0", 50'-0"	O-to-O Coping:	42'-2"
Number of Girders:	8	Clear Roadway:	39'-06"
Girder Spacing:	6'-4", 5'-4", 4 @5'-0", 5'-4"	Left Overhang:	2'-7"
		Skew:	SQUARE

Deck		Girder	
Original Thickness:	8"	Size/Type:	W 30 x 108
Structural Thickness:	6.5"	Structural Steel Fy:	36 ksi
Additional Overlay:	N/A	Reinforcing Fy:	40 ksi
Deck Concrete f'c:	3 ksi	Girder Concrete f'c:	N/A
Reinforcing Fy:	40 ksi	Girder Concrete f'ci:	N/A
Stay-in-Place Forms:	15 psf	Strand Material:	N/A

Modeling Assumptions

Plans Available:	TRUE	Deterioration:	TRUE
Shop Drawings:	N/A	Condition Factor:	Fair
Inspection Date:	MM/DD/YYYY	Future Wearing Surface:	Included with Design Loads (35 psf)

Executive Summary

Load rating incorporates deterioration as observed during INDOT MM/DD/YYYY inspection.

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: HS20
 B.LR.02 - Design Method: LRFD
 B.LR.03 - Load Rating Date: MM/DD/YYYY
 B.LR.04 - Load Rating Method: LRFR
 B.LR.05 - Inventory Load Rating Factor: 1.23
 B.LR.06 Operating Load Rating Factor: 1.59
 B.LR.07 - Controlling Legal Load Rating Factor: 0.88
 B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PA
 B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:
 B.EP.03b - Additional Posting Types:
 B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

T - Truck Silhouette

Single-Unit: Tons

Single-Trailer: Tons

Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons

EV Posted Tonnage (Tandem Axle): Tons

EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.230	44.280	1.599	57.564
H-20				
HS-20	1.848	66.528	2.402	86.472
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	1.643	47.236	
	EV3	0.888	38.184	
			Single Axle:	16.750
			Tandem:	27.528
			Gross:	38.184
Other	NRL	1.619		
	Alternate Military	1.147	27.528	
Single-Unit	IN 20	1.720	34.400	
	AASHTO Type 3	1.619	40.475	
	SU4	1.311	35.397	
	SU5	1.311	40.641	
	SU6	1.311	45.557	
	SU7	1.311	50.801	
	IN 36	1.720	61.920	
Single-Trailer	AASHTO Type 3S2	1.776	63.936	
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.966	78.640	
	Lane-Type	2.620	104.800	
	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.321	170.409
13	Superload	1.375	183.563
14	Superload	0.994	173.950
19	Superload (305K)	1.376	209.840
19	Superload (480.09K)	0.893	214.360

LOAD RATING SUMMARY REPORT for DETERIORATION

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried:	I-65 NB/SB		
Features Intersected:	Emerson Avenue		
District:	03 - Greenfield	Toll Road:	No – Bridge does not carry nor cross the Indiana Toll Road and is not within a 15-mile radius of a gate
County:	49 - Marion	Extra Heavy Duty	False
Reference Post:	102 + 63	Highway:	

Rehabilitation History

Year Built:	1963	Description:	
Years Rehabilitated:	1979	Contract X-XXXXX Rehab A: Widening	
	2015	DES XXXXXXXX Rehab B: LMC overlay, barrier replacement	

Geometry and Material Summary

Structure Type(s):	CPCIB - CONTINUOUS PRESTRESSED CONCRETE I-BEAM		
Span Length:	45'-0", 55'-0", 45'-0"	O-to-O Coping:	77'-0"
Number of Girders:	12	Clear Roadway:	74'-0"
Girder Spacing:	11 @ 6'-6"	Left Overhang:	2'-9"
		Skew:	30° 00' 00" RT

Deck	Girder
Original Thickness:	8"
Structural Thickness:	6.5"
Additional Overlay:	1.75" - 0.5" mill = 1.25"
Deck Concrete f'c:	3 ksi
Reinforcing Fy:	40 ksi
Stay-in-Place Forms:	15 psf
	Size/Type:
	Structural Steel Fy:
	Reinforcing Fy:
	Girder Concrete f'c:
	Girder Concrete f'ci:
	Strand Material:

Modeling Assumptions

Plans Available:	TRUE	Deterioration:	TRUE
Shop Drawings:	N/A	Condition Factor:	Fair
Inspection Date:	MM/DD/YYYY	Future Wearing Surface:	Not included

Executive Summary

Load rating incorporates deterioration as observed during INDOT MM/DD/YYYY inspection.

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: HL93

B.LR.02 - Design Method: LRFD

B.LR.03 - Load Rating Date: MM/DD/YYYY

B.LR.04 - Load Rating Method: LRFR

B.LR.05 - Inventory Load Rating Factor: 0.71

B.LR.06 Operating Load Rating Factor: 0.97

B.LR.07 - Controlling Legal Load Rating Factor: 0.58

B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PA

B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:

B.EP.03b - Additional Posting Types:

B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

T - Truck Silhouette

Single-Unit: Tons

Single-Trailer: Tons

Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons

EV Posted Tonnage (Tandem Axle): Tons

EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.713	25.668	0.973	35.028
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	0.834	23.978	
	EV3	0.581	24.983	
			Single Axle:	13.970
			Tandem:	18.011
			Gross:	23.978
Other	NRL	0.945		
	Alternate Military	0.982	23.568	
Single-Unit	IN 20	1.106	22.120	22.120
	AASHTO Type 3	1.510	37.750	37.750
	SU4	1.380	37.260	37.260
	SU5	1.215	37.665	37.665
	SU6	1.088	37.808	37.808
	SU7	0.982	38.053	37.754
	IN 36	0.671	24.156	19.080
Single-Trailer	AASHTO Type 3S2	1.177	42.372	42.372
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.150	46.000	46.000
	Lane-Type	0.760	30.400	26.286
	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	0.638	82.302
13	Superload	0.648	86.508
14	Superload	0.548	95.900
19	Superload (305K)	0.632	96.380
19	Superload (480.09K)	0.525	126.024

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: HL93
 B.LR.02 - Design Method: LRFD
 B.LR.03 - Load Rating Date: MM/DD/YYYY
 B.LR.04 - Load Rating Method: LRFR
 B.LR.05 - Inventory Load Rating Factor: 0.71
 B.LR.06 Operating Load Rating Factor: 0.97
 B.LR.07 - Controlling Legal Load Rating Factor: 0.58
 B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PP
 B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type: G
 B.EP.03b - Additional Posting Types:
 B.EP.03c - Emergency Vehicle Posting Type: G|A|D

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: 19 Tons

T - Truck Silhouette

Single-Unit: Tons
 Single-Trailer: Tons
 Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): 13 Tons
 EV Posted Tonnage (Tandem Axle): 18 Tons
 EV Posted Tonnage (Gross): 23 Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.713	25.668	0.973	35.028
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	0.834	23.978	
	EV3	0.581	24.983	
			Single Axle:	13.970
			Tandem:	18.011
			Gross:	23.978
Other	NRL	0.945		
	Alternate Military	0.982	23.568	
Single-Unit	IN 20	1.106	22.120	22.120
	AASHTO Type 3	1.510	37.750	37.750
	SU4	1.380	37.260	37.260
	SU5	1.215	37.665	37.665
	SU6	1.088	37.808	37.808
	SU7	0.982	38.053	37.754
	IN 36	0.671	24.156	19.080
Single-Trailer	AASHTO Type 3S2	1.177	42.372	42.372
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.150	46.000	46.000
	Lane-Type	0.760	30.400	26.286
	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	0.638	82.302
13	Superload	0.648	86.508
14	Superload	0.548	95.900
19	Superload (305K)	0.632	96.380
19	Superload (480.09K)	0.525	126.024

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: HL93
 B.LR.02 - Design Method: LRFD
 B.LR.03 - Load Rating Date: MM/DD/YYYY
 B.LR.04 - Load Rating Method: LRFR
 B.LR.05 - Inventory Load Rating Factor: 0.71
 B.LR.06 Operating Load Rating Factor: 0.97
 B.LR.07 - Controlling Legal Load Rating Factor: 0.58
 B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PP
 B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type: T
 B.EP.03b - Additional Posting Types:
 B.EP.03c - Emergency Vehicle Posting Type: G|A|D

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

T - Truck Silhouette

Single-Unit:	22	Tons
Single-Trailer:	19	Tons
Multi-Trailer:	46	Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle):	13	Tons
EV Posted Tonnage (Tandem Axle):	18	Tons
EV Posted Tonnage (Gross):	23	Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.713	25.668	0.973	35.028
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	0.834	23.978	
	EV3	0.581	24.983	
			Single Axle:	13.970
			Tandem:	18.011
			Gross:	23.978
Other	NRL	0.945		
	Alternate Military	0.982	23.568	
Single-Unit	IN 20	1.106	22.120	22.120
	AASHTO Type 3	1.510	37.750	37.750
	SU4	1.380	37.260	37.260
	SU5	1.215	37.665	37.665
	SU6	1.088	37.808	37.808
	SU7	0.982	38.053	37.754
	IN 36	0.671	24.156	19.080
Single-Trailer	AASHTO Type 3S2	1.177	42.372	42.372
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
Multi-Trailer	AASHTO Type 3-3	1.150	46.000	46.000
	Lane-Type	0.760	30.400	26.286
	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	0.638	82.302
13	Superload	0.648	86.508
14	Superload	0.548	95.900
19	Superload (305K)	0.632	96.380
19	Superload (480.09K)	0.525	126.024

LOAD RATING SUMMARY REPORT for DETERIORATION

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	EJ
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	N/A
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried: SR 44

Features Intersected: Branch Little Blue River

District: 03 - Greenfield Toll Road: No – Bridge does not carry nor cross the Indiana Toll Road and is not within a 15-mile radius of a gate

County: 73 - Shelby

Reference Post: 44 + 28

Extra Heavy Duty: False

Highway:

Rehabilitation History

Year Built: 1941 **Description:**

Years Rehabilitated: 2000 Contract X-XXXXX Rehab A: Bridge Deck Replacement

Geometry and Material Summary

Structure Type(s): RCS - REINFORCED CONCRETE SLAB

Span Length: 20'-1" O-to-O Coping: 44'-6"

Number of Girders: N/A Clear Roadway: 42'-0"

Girder Spacing: N/A Left Overhang: N/A

Skew: 45° 00' 00"

Deck	Girder
Original Thickness: Unknown	Size/Type: N/A
Structural Thickness: Unknown	Structural Steel Fy: N/A
Additional Overlay: Unknown	Reinforcing Fy: N/A
Deck Concrete f'c: 2.5 ksi (Assumed)	Girder Concrete f'c: N/A
Reinforcing Fy: 33 ksi (Assumed)	Girder Concrete f'ci: N/A
Stay-in-Place Forms: N/A	Strand Material: N/A

Modeling Assumptions

Plans Available: FALSE Deterioration: TRUE

Shop Drawings: No Condition Factor: Fair

Inspection Date: MM/DD/YYYY Future Wearing Surface: Not included

Executive Summary

In accordance with the Manual for Bridge Evaluation, Third Edition, 2017, Section 6.1.4 - Necessary details for this bridge are unavailable. A physical inspection of the bridge was performed by a qualified inspector and evaluated by a qualified engineer to establish an approximate load rating based on rational criteria. Legal and Permit ratings were derived from a simple span moment comparison of the HS20 vehicle. Shear was assumed to not control for this slab structure. Material properties have been assumed based on guidance given in the MBE.

NBI Number:	XXXXXX	Rating Method:	EJ
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	N/A
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: U
 B.LR.02 - Design Method: U
 B.LR.03 - Load Rating Date: MM/DD/YYYY
 B.LR.04 - Load Rating Method: EJ
 B.LR.05 - Inventory Load Rating Factor: 1.03
 B.LR.06 Operating Load Rating Factor: 1.72
 B.LR.07 - Controlling Legal Load Rating Factor: 1.22
 B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PO
 B.PS.02 - Posting Status Change Date: MM/DD/YYYY

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:
 B.EP.03b - Additional Posting Types:
 B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

 T - Truck Silhouette
 Single-Unit: Tons
 Single-Trailer: Tons
 Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons
 EV Posted Tonnage (Tandem Axle): Tons
 EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	EJ
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	N/A
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93				
H-20				
HS-20	0.900	32.400	1.500	54.000
HS-25				
Alternate Military				
Toll Road Loading NO. 2				
Toll Road Loading NO. 1				
Special Toll Road Truck				
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	EJ
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	N/A
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	Deterioration	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	1.830	52.613	
	EV3	1.220	52.460	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL			
	Alternate Military	1.240	29.760	
	IN 20	1.500	30.000	
	AASHTO Type 3	1.750	43.750	
Single-Unit	SU4	1.500	40.500	
	SU5	1.430	44.330	
	SU6	1.360	47.260	
	SU7	1.360	52.700	
	IN 36	1.500	54.000	
Single-Trailer	AASHTO Type 3S2	1.910	68.760	
	Toll Road Loading NO. 1			
	Toll Road Loading NO. 2			
	AASHTO Type 3-3	2.120	84.800	
	Lane-Type			
Multi-Trailer	Special Toll Road Truck			
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	0.930	119.970
13	Superload	1.090	145.515
14	Superload	0.770	134.750
19	Superload (305K)	1.180	179.950
19	Superload (480.09K)	0.900	216.041

LOAD RATING SUMMARY REPORT for NEW DESIGN

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried: I-94 EB

Features Intersected: Beam Street, Pedestrian trail

District: 04 - La Porte Toll Road: Yes – Bridge is within a 15-mile radius of Indiana Toll Road gate

County: 64 - Porter

Reference Post: 23 + 89

Extra Heavy Duty: False

Highway:

Rehabilitation History

Year Built: **Description:**

Years Rehabilitated:

Geometry and Material Summary

Structure Type(s): KCSB - COMPOSITE CONTINUOUS STEEL BEAM

Span Length: 55'-6", 84'-9", 55'-6" O-to-O Coping: 65'-2"

Number of Girders: 9 Clear Roadway: 62'-4"

Girder Spacing: 8'-6" Left Overhang: 1'-5"

Skew: 46° 00' 00" LT.

Deck	Girder
Original Thickness: 8.0"	Size/Type: W 33 x 130
Structural Thickness: 7.5"	Structural Steel Fy: 50 ksi
Additional Overlay: None	Reinforcing Fy: N/A
Deck Concrete f'c: 4 ksi (Class "C")	Girder Concrete f'c: N/A
Reinforcing Fy: 60 ksi (Epoxy)	Girder Concrete f'ci: N/A
Stay-in-Place Forms: TRUE	Strand Material: N/A

Modeling Assumptions

Plans Available: TRUE Deterioration: FALSE

Shop Drawings: N/A Condition Factor: Good/Satisfactory

Inspection Date: N/A Future Wearing Surface: Included with Design Loads (35 psf)

Executive Summary

Existing structure controls rating factors for all vehicles. Results for all MOT phases included.

Structure designed for HL-93 and Toll Road Loading.

MOT Phase I has traffic on existing structure, MOT Phase II has traffic on a portion of new structure.

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: X
 B.LR.02 - Design Method: LRFD
 B.LR.03 - Load Rating Date: XX/XX/XXXX (update to match BRADIN report)
 B.LR.04 - Load Rating Method: LRFR
 B.LR.05 - Inventory Load Rating Factor: 0.97
 B.LR.06 Operating Load Rating Factor: 1.26
 B.LR.07 - Controlling Legal Load Rating Factor: 1.54
 B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PO
 B.PS.02 - Posting Status Change Date: 1/1/2025

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:
 B.EP.03b - Additional Posting Types:
 B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons
 T - Truck Silhouette
 Single-Unit: Tons
 Single-Trailer: Tons
 Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons
 EV Posted Tonnage (Tandem Axle): Tons
 EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.240	44.640	1.335	48.060
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			1.758	79.110
Toll Road Loading NO. 1			1.698	76.410
Special Toll Road Truck			1.681	105.903
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	2.688	77.280	
	EV3	2.003	86.129	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.809		
	Alternate Military	2.113	50.712	
Single-Unit	IN 20	2.566	51.320	
	AASHTO Type 3	2.811	70.275	
	SU4	2.334	63.018	
	SU5	2.210	68.510	
	SU6	2.063	71.689	
	SU7	1.900	73.625	
Single-Trailer	IN 36	1.544	55.584	
	AASHTO Type 3S2	2.191	78.876	
	Toll Road Loading NO. 1	1.701	76.545	
	Toll Road Loading NO. 2	1.767	79.515	
Multi-Trailer	AASHTO Type 3-3	2.014	80.560	
	Lane-Type	1.935	77.400	
	Special Toll Road Truck	1.696	106.848	
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.629	210.141
13	Superload	1.625	216.938
14	Superload	1.278	223.650
19	Superload (305K)	1.541	235.003
19	Superload (480.09K)	1.261	302.697

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [Existing Structure]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.972	34.992	1.260	45.360
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			1.652	74.340
Toll Road Loading NO. 1			1.544	69.480
Special Toll Road Truck			1.529	96.327
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [Existing Structure]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	2.593	74.549	
	EV3	1.807	77.701	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.576		
	Alternate Military	1.794	43.056	
Single-Unit	IN 20	2.319	46.380	
	AASHTO Type 3	2.511	62.775	
	SU4	2.289	61.803	
	SU5	2.020	62.620	
	SU6	1.809	62.863	
	SU7	1.639	63.511	
Single-Trailer	IN 36	1.470	52.920	
	AASHTO Type 3S2	1.996	71.856	
	Toll Road Loading NO. 1	1.618	72.810	
	Toll Road Loading NO. 2	1.647	74.115	
Multi-Trailer	AASHTO Type 3-3	1.985	79.400	
	Lane-Type	1.809	72.360	
	Special Toll Road Truck	1.420	89.460	
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads [Existing Structure]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.505	194.145
13	Superload	1.545	206.258
14	Superload	1.144	200.200
19	Superload (305K)	1.468	223.870
19	Superload (480.09K)	1.197	287.334

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [MOT Phase I]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	0.972	34.992	1.260	45.360
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			1.652	74.340
Toll Road Loading NO. 1			1.544	69.480
Special Toll Road Truck			1.529	96.327
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [MOT Phase I]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	2.593	74.549	
	EV3	1.807	77.701	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.576		
	Alternate Military	1.794	43.056	
Single-Unit	IN 20	2.319	46.380	
	AASHTO Type 3	2.511	62.775	
	SU4	2.289	61.803	
	SU5	2.020	62.620	
	SU6	1.809	62.863	
	SU7	1.639	63.511	
Single-Trailer	IN 36	1.470	52.920	
	AASHTO Type 3S2	1.996	71.856	
	Toll Road Loading NO. 1	1.618	72.810	
	Toll Road Loading NO. 2	1.647	74.115	
Multi-Trailer	AASHTO Type 3-3	1.985	79.400	
	Lane-Type	1.809	72.360	
	Special Toll Road Truck	1.420	89.460	
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads [MOT Phase I]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.505	194.145
13	Superload	1.545	206.258
14	Superload	1.144	200.200
19	Superload (305K)	1.468	223.870
19	Superload (480.09K)	1.197	287.334

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [MOT Phase II]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.240	44.640	1.335	48.060
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			1.758	79.110
Toll Road Loading NO. 1			1.698	76.410
Special Toll Road Truck			1.681	105.903
Michigan Train Truck NO. 5				
Michigan Train Truck NO. 8				

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [MOT Phase II]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	2.688	77.280	
	EV3	2.003	86.129	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.809		
	Alternate Military	2.113	50.712	
Single-Unit	IN 20	2.566	51.320	
	AASHTO Type 3	2.811	70.275	
	SU4	2.334	63.018	
	SU5	2.210	68.510	
	SU6	2.063	71.689	
	SU7	1.900	73.625	
Single-Trailer	IN 36	1.544	55.584	
	AASHTO Type 3S2	2.191	78.876	
	Toll Road Loading NO. 1	1.701	76.545	
	Toll Road Loading NO. 2	1.767	79.515	
Multi-Trailer	AASHTO Type 3-3	2.014	80.560	
	Lane-Type	1.935	77.400	
	Special Toll Road Truck	1.696	106.848	
	Michigan Train Truck NO. 5			
	Michigan Train Truck NO. 8			

Special Permit Loads [MOT Phase II]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	1.629	210.141
13	Superload	1.625	216.938
14	Superload	1.278	223.650
19	Superload (305K)	1.541	235.003
19	Superload (480.09K)	1.261	302.697

LOAD RATING SUMMARY REPORT for NEW DESIGN

BRIDGE NUMBER

XXX-XX-XXXX

NBI NUMBER

XXXXXX



NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Identification

Facility Carried: US 20

Features Intersected: Little Calumet River

District: 04 - La Porte Toll Road: Yes – Bridge is within a 15-mile radius of Indiana Toll Road gate

County: 64 - Porter

Reference Post: 28 + 65

Extra Heavy Duty True

Highway:

Rehabilitation History

Year Built: **Description:**

Years Rehabilitated:

Geometry and Material Summary

Structure Type(s): CPCIB - CONTINUOUS PRESTRESSED CONCRETE I-BEAM

Span Length: 38'-9", 39'-6", 38'-9" O-to-O Coping: 78'-5"

Number of Girders: 12 Clear Roadway: 75'-5"

Girder Spacing: 7'-3" Left Overhang: 1'-6"

Skew: SQUARE

Deck	Girder
Original Thickness: 8.0"	Size/Type: AASHTO Type II
Structural Thickness: 7.5"	Structural Steel Fy: N/A
Additional Overlay: None	Reinforcing Fy: 60 ksi (Epoxy)
Deck Concrete f'c: 4 ksi (Class "C")	Girder Concrete f'c: 5.0 ksi
Reinforcing Fy: 60 ksi (Epoxy)	Girder Concrete f'ci: 4.0 ksi
Stay-in-Place Forms: TRUE	Strand Material: 1/2" (7W-270) LR

Modeling Assumptions

Plans Available: TRUE Deterioration: FALSE

Shop Drawings: N/A Condition Factor: Good/Satisfactory

Inspection Date: N/A Future Wearing Surface: Included with Design Loads (35 psf)

Executive Summary

MOT Phase I rating factors controls.

Structure designed for HL-93, Michigan-Train Truck and Toll Road Loading.

MOT Phase I has traffic on portion of existing structure, MOT Phase II has traffic on a portion of new structure.

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

5.1 - Loads and Load Ratings

B.LR.01 - Design Load: X

B.LR.02 - Design Method: LRFD

B.LR.03 - Load Rating Date: XX/XX/XXXX (update to match BRADIN report)

B.LR.04 - Load Rating Method: LRFR

B.LR.05 - Inventory Load Rating Factor: 1.29

B.LR.06 Operating Load Rating Factor: 1.68

B.LR.07 - Controlling Legal Load Rating Factor: 2.06

B.LR.08 - Routine Permit Loads: B

5.2 - Load Posting Status

B.PS.01 - Load Posting Status: PO

B.PS.02 - Posting Status Change Date: 1/1/2025

5.3 Load Evaluation & Posting**B.EP.03 - Posting Type**

B.EP.03a - Commercial Vehicle Posting Type:

B.EP.03b - Additional Posting Types:

B.EP.03c - Emergency Vehicle Posting Type:

B.EP.04 - Posting Values*Commercial Vehicle Posting Values*

G - Gross: Tons

T - Truck Silhouette

Single-Unit: Tons

Single-Trailer: Tons

Multi-Trailer: Tons

Emergency Vehicle Posting Values

EV Posted Tonnage (Single Axle): Tons

EV Posted Tonnage (Tandem Axle): Tons

EV Posted Tonnage (Gross): Tons

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.299	46.764	1.684	60.624
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			2.341	105.345
Toll Road Loading NO. 1			1.893	85.185
Special Toll Road Truck			2.270	143.010
Michigan Train Truck NO. 5			2.169	145.323
Michigan Train Truck NO. 8			1.908	128.027

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	3.175	91.281	
	EV3	2.145	92.235	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.978		
	Alternate Military	2.307	55.368	
Single-Unit	IN 20	2.832	56.640	
	AASHTO Type 3	2.897	72.425	
	SU4	2.495	67.365	
	SU5	2.337	72.447	
	SU6	2.157	74.956	
	SU7	2.068	80.135	
Single-Trailer	IN 36	2.316	83.376	
	AASHTO Type 3S2	3.120	112.320	
	Toll Road Loading NO. 1	2.267	102.015	
	Toll Road Loading NO. 2	2.670	120.150	
Multi-Trailer	AASHTO Type 3-3	3.616	144.640	
	Lane-Type	5.273	210.920	
	Special Toll Road Truck	2.406	151.578	
	Michigan Train Truck NO. 5	2.483	166.361	
	Michigan Train Truck NO. 8	2.197	147.419	

Special Permit Loads

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	2.490	321.210
13	Superload	2.892	386.082
14	Superload	2.098	367.150
19	Superload (305K)	2.651	404.278
19	Superload (480.09K)	2.240	537.701

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [Existing Structure]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.299	46.764	1.684	60.624
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			2.341	105.345
Toll Road Loading NO. 1			1.893	85.185
Special Toll Road Truck			2.270	143.010
Michigan Train Truck NO. 5			2.169	145.323
Michigan Train Truck NO. 8			1.908	128.027

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [Existing Structure]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	3.065	88.119	
	EV3	2.035	87.505	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.868		
	Alternate Military	2.197	52.728	
Single-Unit	IN 20	2.722	54.440	
	AASHTO Type 3	2.787	69.675	
	SU4	2.385	64.395	
	SU5	2.227	69.037	
	SU6	2.047	71.133	
	SU7	1.958	75.873	
Single-Trailer	IN 36	2.206	79.416	
	AASHTO Type 3S2	3.010	108.360	
	Toll Road Loading NO. 1	2.157	97.065	
	Toll Road Loading NO. 2	2.560	115.200	
Multi-Trailer	AASHTO Type 3-3	3.506	140.240	
	Lane-Type	5.163	206.520	
	Special Toll Road Truck	2.296	144.648	
	Michigan Train Truck NO. 5	2.373	158.991	
	Michigan Train Truck NO. 8	2.087	140.038	

Special Permit Loads [Existing Structure]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	2.380	307.020
13	Superload	2.782	371.397
14	Superload	1.988	347.900
19	Superload (305K)	2.541	387.503
19	Superload (480.09K)	2.130	511.296

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [MOT Phase I]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.299	46.764	1.684	60.624
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			2.341	105.345
Toll Road Loading NO. 1			1.893	85.185
Special Toll Road Truck			2.270	143.010
Michigan Train Truck NO. 5			2.169	145.323
Michigan Train Truck NO. 8			1.908	128.027

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [MOT Phase I]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	2.985	85.819	
	EV3	1.955	84.065	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.788		
	Alternate Military	2.117	50.808	
Single-Unit	IN 20	2.642	52.840	
	AASHTO Type 3	2.707	67.675	
	SU4	2.305	62.235	
	SU5	2.147	66.557	
	SU6	1.967	68.353	
	SU7	1.878	72.773	
Single-Trailer	IN 36	2.126	76.536	
	AASHTO Type 3S2	2.930	105.480	
	Toll Road Loading NO. 1	2.077	93.465	
	Toll Road Loading NO. 2	2.480	111.600	
Multi-Trailer	AASHTO Type 3-3	3.426	137.040	
	Lane-Type	5.083	203.320	
	Special Toll Road Truck	2.216	139.608	
	Michigan Train Truck NO. 5	2.293	153.631	
	Michigan Train Truck NO. 8	2.007	134.670	

Special Permit Loads [MOT Phase I]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	2.300	296.700
13	Superload	2.702	360.717
14	Superload	1.908	333.900
19	Superload (305K)	2.461	375.303
19	Superload (480.09K)	2.050	492.092

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Design Loads [MOT Phase II]

Vehicle	Inventory Rating Factor	Inventory Load Capacity (Tons)	Operating Rating Factor	Operating Load Capacity (Tons)
HL-93	1.299	46.764	1.684	60.624
H-20				
HS-20				
HS-25				
Alternate Military				
Toll Road Loading NO. 2			2.341	105.345
Toll Road Loading NO. 1			1.893	85.185
Special Toll Road Truck			2.270	143.010
Michigan Train Truck NO. 5			2.169	145.323
Michigan Train Truck NO. 8			1.908	128.027

NBI Number:	XXXXXX	Rating Method:	LRFR
Bridge Number:	XXX-XX-XXXX	Rating Program/Version:	AASHTOWARE BrR 7.7.1.3001
DES Number:	XXXXXXX	Load Rater:	XXX on XX/XX/XXXX
Rating Type:	New Design	Reviewer:	XXX on XX/XX/XXXX

Legal & Route Designated Loads [MOT Phase II]

Silhouette Type	Vehicle	Rating Factor	Load Capacity (Tons)	Safe Posting Load (Tons)
Emergency Vehicle	EV2	3.065	88.119	
	EV3	2.035	87.505	
			Single Axle:	
			Tandem:	
			Gross:	
Other	NRL	1.868		
	Alternate Military	2.197	52.728	
Single-Unit	IN 20	2.722	54.440	
	AASHTO Type 3	2.787	69.675	
	SU4	2.385	64.395	
	SU5	2.227	69.037	
	SU6	2.047	71.133	
	SU7	1.958	75.873	
Single-Trailer	IN 36	2.206	79.416	
	AASHTO Type 3S2	3.010	108.360	
	Toll Road Loading NO. 1	2.157	97.065	
	Toll Road Loading NO. 2	2.560	115.200	
Multi-Trailer	AASHTO Type 3-3	3.506	140.240	
	Lane-Type	5.163	206.520	
	Special Toll Road Truck	2.296	144.648	
	Michigan Train Truck NO. 5	2.373	158.991	
	Michigan Train Truck NO. 8	2.087	140.038	

Special Permit Loads [MOT Phase II]

Number of Axles	Vehicle	Rating Factor	Load Capacity (Tons)
11	Superload	2.380	307.020
13	Superload	2.782	371.397
14	Superload	1.988	347.900
19	Superload (305K)	2.541	387.503
19	Superload (480.09K)	2.130	511.296

3-8.04 Appendix D: DELETED

3-8.05 Appendix E: NCHRP 20-01/Task 410 Guidance on the Application of Live Loads and LRFR and LFR Load Factors

LOAD AND RESISTANCE FACTOR (LRFR) METHOD

Generalized live load factors for the Strength I limit state are given in **Table 6A.4.4.2.3c-1** for use with LRFD multi-lane distribution factors or with refined methods of analysis for the load rating for emergency vehicles specified in FAST Act Emergency Vehicles Application on structures other than buried structures. The load factors have been calibrated for EV2 and EV3 based upon site traffic conditions and the estimated number of EV crossings per day.

If, in the Engineer's judgment, an increase in the live load factor is warranted due to conditions or situations not accounted for in the research (NCHRP 20-07 Task 410) when determining the safe legal load, the Engineer may increase the factors in **Table 6A.4.4.2.3c-1**.

Table 6A.4.4.2.3c-1 - Generalized Live Load Factors γ_L for FAST Act Emergency Vehicles

EV Frequency	Traffic Volume (One Direction)	Live Load Distribution	EV2	EV3
10 EV crossings per day	ADTT < 1000 free flowing	Two or more lanes DF ^a	1.10	1.10
	ADTT > 6000 free flowing		1.40	1.10
	ADTT > 6000 congested		1.50	1.20
10 EV crossings per day	ADTT < 1000 free flowing	From Refined Analysis	1.20	1.15
	ADTT > 6000 free flowing		1.50	1.35
	ADTT > 6000 congested		1.65	1.45
1 EV crossing per day	ADTT < 1000 free flowing	Two or more lanes DF ^a	1.10	1.10
	ADTT > 6000 free flowing		1.20	1.10
	ADTT > 6000 congested		1.30	1.10
1 EV crossing per day	ADTT < 1000 free flowing	From Refined Analysis	1.20	1.10
	ADTT > 6000 free flowing		1.30	1.20
	ADTT > 6000 congested		1.45	1.30

Notes:

^a DF = LRFD-distribution factor. When one-lane distribution factor is used, the built-in multiple presence factor should be divided out.

When bridges crossed by Emergency Vehicles are evaluated using a refined analysis, the same live load factor given in **Table 6A.4.4.2.3c-1** shall be applied on the Emergency Vehicle and on the governing AASHTO or state legal truck placed in the adjacent lane (with only one EV and legal truck on the span). Lane load is not required for simple spans up to 300 ft. A lane load equal to 0.20 klf is applied for all continuous spans in combination with only one EV on one span of the entire bridge in one lane and only one governing legal truck in the second lane. No lane load is applied in the second lane with the legal truck. The dynamic amplification factor is applied on the total live load effect.

Load factors given in **Table 6A.4.4.2.3c-1** shall also be used for the load rating of floor beams and transverse members.

LOAD FACTOR RATING (LFR) METHOD

Operating level load factors to be used for the load factor method for load rating FAST Act Emergency Vehicles are provided in **Table 6B.4.3-1**.

Table 6B.4.3-1 Operating Level Live Load Factors for FAST Act Emergency Vehicles

EV Frequency	Traffic Volume (One Direction)	Live Load Distribution	EV2	EV3
10 EV crossings per day	ADTT < 1000 free flowing	Two or more lanes DF ^b	1.10	1.10
	ADTT > 6000 free flowing		1.40	1.10
	ADTT > 6000 congested		1.50	1.20
1 EV crossing per day	ADTT < 1000 free flowing	Two or more lanes DF ^b	1.10	1.10
	ADTT > 6000 free flowing		1.20	1.10
	ADTT > 6000 congested		1.30	1.10

^b = AASHTO STD Specs.