



DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
INTRADEPARTMENTAL CORRESPONDENCE

REFERRED TO

- REFERRED FOR ACTION
ANSWER FOR MY SIGNATURE
FOR FILE
FOR YOUR INFORMATION
FOR SIGNATURE
RETURN TO ME
PLEASE SEE ME
PLEASE TELEPHONE ME
FOR APPROVAL
PLEASE ADVISE ME

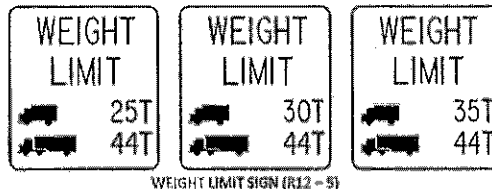
BY DATE
BY DATE
BY DATE

MEMORANDUM

TO: CHRISTOPHER P. KNOTTS, P.E.
DOTD CHIEF ENGINEER
FROM: DANA FENG, Ph.D., P.E.
ASSISTANT BRIDGE DESIGN ENGINEER ADMINISTRATOR
DATE: January 10, 2018
SUBJECT: Request to revise EDSM I.1.1.8

Mr. Knotts,

In November 15, 2013, the Federal Highway Administration released a memorandum outline the requirement of load rating for Specialized Hauling Vehicles (SHVs). To comply with the memorandum, LA DOTD Bridge Section has analyzed over 6,000 on-system bridges. Based on the analysis results, we deemed it is necessary to revise EDSM I.1.1.8 to add three more posting signs for SHV posting. The recommended posting signs are as follow:



Attached for your approval is the revised EDSM I.1.1.8 comply with the latest AASHTO Manual for Bridge Evaluation and the FHWA SHV memorandum.

The current EDSM and FHWA SHV memorandum are included for your reference.

Attachments

cc: Mr. Paul Fossier
Mr. Nick Fagerburg

Handwritten signatures and approval lines for Paul Fossier and another official.

1/11/18
DATE
1/11/18
DATE
1/11/18
DATE

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

ENGINEERING DIRECTIVES AND STANDARDS

Volume	Chapter	Section	Directive Number	Effective Date
I	1	1	8	Jan 11, 2018

SUBJECT: ESTABLISHMENT OF UNIFORM, REGULATORY TRUCK WEIGHT LIMIT FOR STRUCTURALLY DEFICIENT HIGHWAY BRIDGES LOCATED ON PUBLIC ROAD

- PURPOSE:** This directive establishes a policy for determining the need for legal truck weight limits on structurally deficient bridges in accordance with the rules set forth in the *National Bridge Inspection Standards* published in the Federal Register, the *Manual on Uniform traffic Control Devices for Streets and Highways*, *The Manual for Bridge Evaluation (MBE)* by American Association of State Highway and Transportation Official (AASHTO), and *LADOTD Bridge Design and Evaluation Manual (BDEM)*.
- SCOPE:** This directive is applicable to all bridges located on public roads in the State of Louisiana.

POLICY: It is the policy of the Department to require the placement of regulatory truck weight limits on all bridges which are not structurally adequate to carry the maximum legal truck weights allowed by Louisiana law. All regulatory truck weight limits shall be recorded in the Department's file management databases and the proper public officials shall be notified of this act.

All bridges shall be structurally evaluated according to the latest version of the *AASHTO MBE*, and *LADOTD BDEM*. Trucks used to evaluate bridges are listed in *LADOTD BDEM*. These trucks are selected to simulate Louisiana design, legal, and overload trucks. Legal trucks are utilized to estimate the weight limits required for structurally deficient bridges.

The weight limit requirements shall be determined using legal truck (including Specialized Hauling Vehicle (SHV)) rating factors to select one of the eleven posting categories as shown on the Table-1. Category 8, 9, and 10 signs are not to be used on Interstate bridges due to the 40T weight limit restriction stipulated by FHWA on Interstate highways.

When truck weight limits are required, they shall be expressed by one of seven regulatory highway signs from the R12 Series of FHWA's MUTCD. Weight limit values will be provided in five (5) ton increments with noted exceptions to minimize the sign legend variations and thereby standardize the weight limit signing practice of the Department.

TABLE 1 - POSTING CATEGORIES AND WEIGHT LIMITS

CATEGORY	SIGN TYPE	WEIGHT LIMIT
1	R11-2	CLOSED
2	R12-1	03T
3	R12-1	05T
4	R12-5	10T Single Unit Truck – 15T Combination Truck
5	R12-5	15T Single Unit Truck – 25 T Combination Truck
6	R12-5	20T Single Unit Truck – 35T Combination Truck
7	R12-5	25T Single Unit Truck – 40T Combination Truck
8	R12-5	25T Single Unit Truck – 44T Combination Truck
9	R12-5	30T Single Unit Truck – 44T Combination Truck
10	R12-5	35T Single Unit Truck – 44T Combination Truck
11		NO LIMIT REQUIRED

These signs depicted in Figure 1 are interpreted to restrict truck weight limit in the following context:

- A. The bridge closed sign (R11-2) closes a bridge to all traffic.
- B. The weight limit sign (R12-1) limits the gross weight of all vehicles and all vehicle combinations to no more than the specified weight limit.



A. BRIDGE CLOSED SIGN (R11-2)



B. WEIGHT LIMIT SIGN (R12-1)

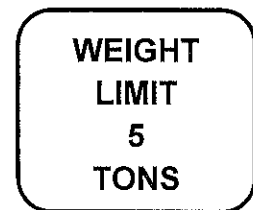


FIGURE 1 – BRIDGE WEIGHT LIMIT SIGNS R11-2 AND R12-1

These weight limit signs (R12-5) depicted in Figure 2 are interpreted to restrict truck weight limit of the gross weight of all single truck vehicles to the displayed first number and the gross weight of all vehicle combinations to the displayed second number. The depicted legal trucks are interpreted to merely symbolize all vehicles and all vehicle combinations respectively.

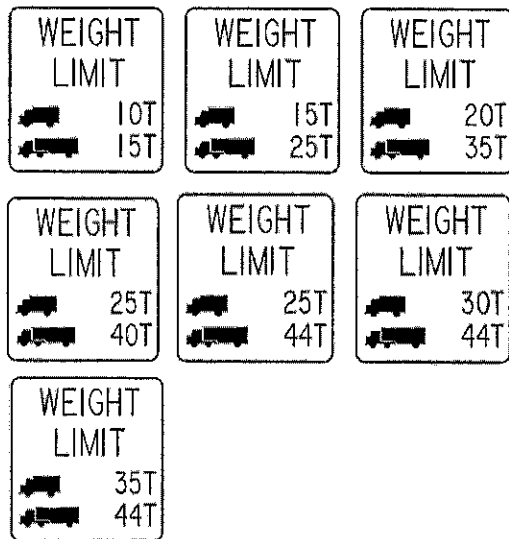


FIGURE 2 – BRIDGE WEIGHT LIMIT SIGNS R12-5

Bridge weight limit sign locations: When regulatory weight limits are required for a bridge, weight limit signs shall be installed near each abutment and approximately 1000 feet in advance of each abutment. Additionally, the heads of the route on which the bridge is located shall be signed with the weight limits and the distance to the bridge along the route. If there is a series of bridges with weight limits on a route, the most restrictive weight limit and distance to the nearest affected bridge shall appear on the head of the route sign. Figure 3 illustrates the head of route signage. MUTCD must be followed.

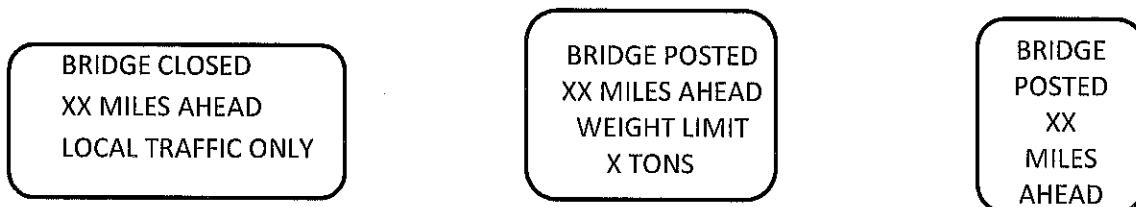


FIGURE 3 – WEIGHT LIMIT SIGNS AT THE HEAD OF ROUTE

IMPLEMENTATION: The State Bridge Rating Engineer shall be responsible for the implementation of this policy.

- **STATE MAINTAINED HIGHWAY SYSTEM (ON-SYSTEM)**

All requests to change status of weight limits for bridges on the State maintained highway system shall be directed to the office of the Chief Engineer of the Office of Engineering through the State Bridge Rating Engineer for implementation.

In the event of an emergency, signing may be installed at bridge site in advance of the request for weight limits, and the limit action shall be filed immediately with the notification of advanced placement or removal of signing.

The State Bridge Rating Engineer is responsible for initiating and determining the weight limits of Louisiana bridges on State maintained highway system. The Chief Engineer of the Office of Engineering shall be the only approval authority for regulatory weight limit actions for bridges.

By copy of the Chief Engineer's Orders (CEOs), the following engineering function shall be advised.

- a. The Chief Maintenance Engineer is requested to have his or her personnel take the necessary action relative to the proper erection or removal of signing.
- b. The District ADA Engineer is given notice so that his or her personnel can plan the location for the head of route signs in advance of the bridge when necessary.
- c. The appropriate District Administrator is advised of the request so that he or she may provide any input they desire prior to the execution of weight limits and have a record of the original request for the District's bridge files.
- d. Transport Permit Manager is advised of the request so that permitting operations can prohibit routing of overload trucks over deficient bridges in handling permit loads.
- e. Bridge Maintenance Administrator, Bridge Design Engineer Administrator, and Highway Bridge Program Manager are advised so that the Bridge Maintenance file can be updated and bridge replacement/rehab project maybe initialed.

The bridge rating unit has the responsibility to assisting the State Bridge Rating Engineer in reviewing the on-system weight limit requirements after a report of a structural change in condition or due to modification and/or additions made to the structure. The Bridge Maintenance Section has the responsibility to assistant the State Bridge Rating Engineer in reviewing all the timber bridges and off-system bridge weight limits and cooperates with the appropriate District representatives.

When a structurally deficient bridge is rehabilitated in order to sustain the status, the District Administrator is responsible to submit to the State Bride Rating Engineer a request for a revised evaluation.

When a structurally deficient bridge is permanently removed from service, weight limit signs associated with the bridge shall be removed accordingly. The sign removal shall be concurrent with the notification of the District Administrator who is responsible to immediately advise the Chief Engineer and the State Bridge Rating Engineer of the action.

- **NON-STATE MAINTAINED HIGHWAY SYSTEM (OFF-SYSTEM)**

The responsibility for implementing weight limits for structurally deficient bridges on public roads which are not on the State maintained highway system (off-system) shall rest with the owner. The owner is responsible to implement procedures of routine review of weight limit requirements and establish weight limits on structurally deficient bridges within the policy of this directive. The compliance to the terms of this directive is subject to audit by the District Bridge Engineer. The weight limits shall be reported to the Bridge Maintenance Section quarterly for reviewing in accordance with Maintenance Directive #5.

- **ALLOWABLE STRESS RATING FOR TIMBER BRIDGES (ON-SYSTEM AND OFF-SYSTEM)**

Timber bridges may be evaluated and posted using either the Allowable Stress Rating (ASR) method or the Load and Resistance Factor Rating (LRFR) method. The instructions and tables contained in this section are intended to be used for timber bridges rated and posted using the ASR - Allowable Stress Rating method.

The ASR rating and posting legal trucks are shown in Figure 4 and Figure 5.

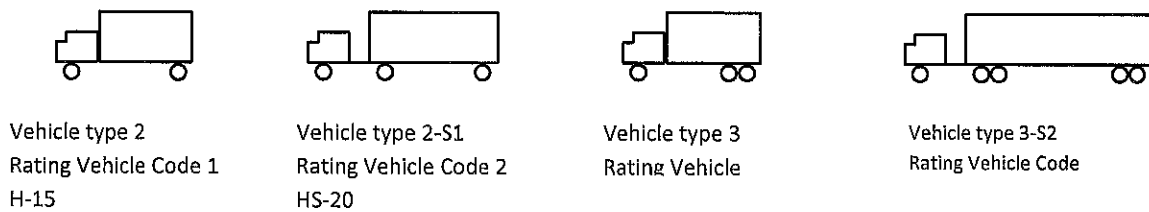


FIGURE 4. TIMBER BRIDGES ASR METHOD RATING VEHICLES

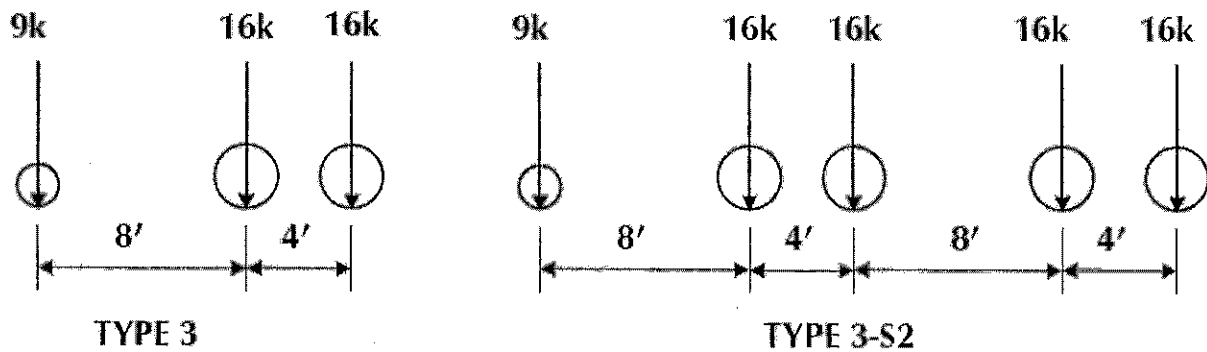


FIGURE 5. POSTING VEHICLES CONFIGURATION

The structural capacity of a bridge is expressed in terms of operating and posting loads. If the operating load is a Type 2 or Type 2-S1 truck configuration, the corresponding posting load is a Type 3 or Type 3-S2 truck configuration correspondingly. The structural capacity of a timber bridge is expressed as a three (3) digit code. The first digit designates the type of truck with Rating Vehicle Code 1, 2, 4, and 5. The remaining two (2) digits represent the gross weight of the truck in tons that the bridge should be limited for the designated truck type. If the weight for the operating load and posting load is in excess of the maximum statutory weight for each designated truck type, the bridge does not require weight limits. Otherwise, weight limits may be required.

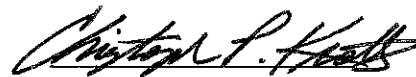
To determine the weight limit requirements, find the applicable range of value for the operating and posting loads in the Bridge Weight Limit Requirements (Table 2) in the first two (2) columns respectively. Find the weight limit requirements for each in the third column. If the applicable range for the operating load is above the double line,

select the lower weight limit requirement; if the applicable range for the operating load is below the double line, select the higher weight limit requirements.

Table 2- BRIDGE WEIGHT LIMITS REQUIREMENTS TABLE (ASR METHOD-TIMBER BRIDGES)

Operating Load Range or Value	Posting Load Range or Value	Weight Limit Requirements
100-102	400-402	R11-2 (CLOSED)
104-	404-	R12-1 (03T)
105-109	405-409	R12-1 (05T)
209-214	509-514	R12-1 (05T)
110-114	410-414	R12-5 (10T-15T)
215-224	515-524	R12-5 (10T-15T)
115-117	415-419	R12-5 (15T-25T)
225-228	525-534	R12-5 (15T-25T)
118-119		R12-5 (15T-25T)
229-234		R12-5 (15T-25T)
120-124	420-424	R12-5 (20T-35T)
235-239	535-539	R12-5 (20T-35T)
125-129	425-429	R12-5 (25T-40T)
240-243	540-543	R12-5 (25T-40T)
130-199	430-499	NO LIMITS REQUIRED
244-299	544-599	NO LIMITS REQUIRED

3. **OTHER ISSUANCES AFFECTED:** All directives, memoranda, or instructions issued heretofore in conflict with this directive are hereby rescinded.
4. **EFFECTIVE DATE:** This policy will become effective upon signature of the Chief Engineer.



Christopher P. Knotts, P.E.
Chief Engineer