Changes to be addressed in future Second Edition of NJDOT Highway Bridge Load Rating Manual:

Date of Revision	Section/Table/Figure Revised	Summary of Revision
9/10/12	Table B.1.1 and B.1.2	Corrected appendix figure references in the **Figure** column (example *13*.1.1 corrected to *C*.1.1)
9/10/12	Table B.1.1	For **Type** "Steel Multi-Beam or Multi-Girder" and "Steel Girder and Floor beam System", changed the **Exterior Members** column to "Manual Appendix D Section D.3 (Lever Rule)" instead of the original equations provided
9/10/12	Table B.1.2	Under **Exterior Members** column, all references were corrected to "Manual Appendix D Section D.3" (instead of D.1)
9/10/12	Table E.3.6.1	Split **Superstructure Type** "Three Girder Bridges" to Welded (0.85) and Riveted (0.90)

TABLE B.1.1 – ASR/LFR DISTRIBUTION FACTORS FOR MOMENT IN WHEEL LOADS

Type	Figure	Member	Exterior Members	Interior Members
Steel Multi-Beam or Multi-Girder	C.1.1	Beam, Girder	Manual Appendix D Section D.3 (Lever Rule)	AASHTO 2002 Standard Specification Table 3.23.1.
Steel Girder and Floor beam System	C.1.2 C.1.5	Stringer, Girder	Manual Appendix D Section D.3 (Lever Rule)	AASHTO 2002 Standard Specification Table 3.23.1
PS Concrete Voided Slab, PS Concrete Adjacent Box Beam	C.2.1 C.2.3	Voided Slab, Box Beam	DF = 1 or S/D (whichever is less) S = width of the precast member D = (5.75 - 0.5 × Number of lanes) + 0.7 × Number of lanes $(1 - 0.2C)^2$ C = 0.8 × W/L for W/L < 1; C = 0.8 for W/L > 1 W = Overall width in ft of the bridge measured perpendicular to the longitudinal beams L = Span length measured parallel to longitudinal beams in feet The above equation is not valid if skew angle exceeds 45^o.	
PS Concrete I-Beam (Narrow/Wide Top Flange)	C.2.2	I-Beam	Footnote F of AASHTO 2002 Standard Specification Table 3.23.1 and Appendix D Section D.1	AASHTO 2002 Standard Specification Table 3.23.1

TABLE B.1.1 – ASR/LFR DISTRIBUTION FACTORS FOR MOMENT IN WHEEL LOADS (Contd.)

Type	Figure	Member	Exterior Members	Interior Members
PS Concrete Spread Box Beam	C.2.4	Box Beam	Determined by applying to beams the reaction of wheel loads obtained by assuming the flooring to act as a simple span of length S between beams, but shall not be less than $2N_L/N_B$	$DF = 2\ N_L / N_B + (K \times S) / L$ N_L = Number of lanes N_B = Number of beams, $(4 \leq N_B \leq 10)$ S = Beam spacing in feet, $(6.57 \leq S \leq 11.00)$ L = Span Length in feet $K = 0.07W - N_L\ (0.10\ N_L - 0.26) - 0.20\ N_B - 0.12$ W = Numeric value of roadway width between curbs expressed in feet, $(32 \leq W \leq 66)$
Reinforced Concrete Slab	C.3.1	Slab Section	DF = 1/E, where E = Width of slab in ft over which a wheel load is distributed E = (4 + 0.06S), where S = Effective Span Length in ft as defined in AASHTO 2002 Standard Specification Article 3.24.1	
Reinforced Concrete Beam	C.3.1	Beam (Rect., T, Double-T)	Footnote F of AASHTO 2002 Standard Specification Table 3.23.1 and Appendix D Section D.1	AASHTO 2002 Standard Specification Table 3.23.1
Glued-Laminated Timber Slab	C.4.1	Slab	Two or more traffic lanes: $DF = W_p/(3.75+L/28)$ or $W_p/5.00$ (whichever is greater) One traffic lane: $DF = W_p/(4.25+L/28)$ or $W_p/5.50$ (whichever is greater) W_p = panel width in feet, $(3.5 \leq W_p \leq 4.5)$ and L = span length	
Glued-Laminated Timber Beam	C.4.2	Beam	Footnote F of AASHTO 2002 Standard Specification Table 3.23.1 and Appendix D Section D.1	AASHTO 2002 Standard Specification Table 3.23.1

TABLE B.1.2 – ASR/LFR DISTRIBUTION FACTORS FOR SHEAR IN WHEEL LOADS

Type	Figure	Member	Exterior Members	Interior Members
Steel Multi-Beam or Multi-Girder	C.1.1	Beam, Girder	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2
Steel Girder and Floor beam System	C.1.2 C.1.5	Stringer, Girder	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2
Prestressed Concrete Voided Slab	C.2.1	Voided Slab*	1.0	
Prestressed Concrete I-Beam (Narrow or Wide Top Flange)	C.2.2	I-Beam	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2
Prestressed Concrete Adjacent Box Beam	C.2.3	Adjacent Box Beam*	1.0	
PS Concrete Spread Box Beam	C.2.4	Spread Box Beam	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2
Reinforced Concrete Slab	C.3.1	Slab Section*	1.0	
Reinforced Concrete Beam (T or Double-T, Rectangular)	C.3.1	Rect. Beam, I-Beam*	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2
Glued-Laminated Timber Slab	C.4.1	Gluelam Slab*	$W_p/4 \geq 1$ W_p = width of the panel , ft and $3.5 \leq W_p \leq 4.5$	
Glued-Laminated Timber Beam	C.4.2	Gluelam Beam	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.3	AASHTO 2002 Std. Spec. Article 3.23.1.2 Manual Appendix D Section D.2

** Conservatively taken as 1.0*

necessarily reduce their calculated flexural resistance. But, it is appropriate to apply the reduced Condition Factor in the LRFR load rating analysis. If there are also losses in the reinforcing steel of this member, they shall be measured and accounted for in the load rating.

It is appropriate to also apply the reduced condition factor in the LRFR load rating analysis, even when the as-inspected section properties are used in the load rating as this reduction by itself does not fully account for the impaired resistance of the concrete component.

E.3.6 Strength Limit States System Factor, ϕ_S

System Factors are multipliers applied to the nominal resistance to reflect the level of redundancy of the complete superstructure system. Bridges that are less redundant will have their factor member capacities reduced, and, accordingly, will have lower ratings. The aim of the System Factor is to provide reserve capacity for safety of the traveling public.

Current NJDOT policy is to use the System Factors provided in Table E.3.6.1 when load rating for Flexural and Axial Effects for steel members and non-segmental concrete members.

TABLE E.3.6.1 [MBE 6A.4.2.4-1]: SYSTEM FACTOR, ϕ_s
FOR FLEXURAL AND AXIAL EFFECTS

Superstructure Type	ϕ_S
Welded Members in Two-Girder/Truss/Arch Bridges	0.85
Riveted Members in Two-Girder/Truss/Arch Bridges	0.90
Multiple Eyebar Members in Truss Bridges	0.90
All Other Girder Bridges and Slab Bridges	1.00
Floorbeams with Spacing >12ft. and Non-Continuous Stringers	0.85
Redundant Stringer Subsystems Between Floorbeams	1.00
Three Girder Bridges – Riveted	0.90
Three Girder Bridges – Welded	0.85
Four Girder Bridges *	0.95

** This is an NJDOT addition to the table that may be adjusted as per the LRE's judgment.*

The System factor is set equal to 1.0 when checking shear.

Subsystems that have redundant members shall not be penalized if the overall system is non-redundant (i.e. multi stringer deck framing members on a two-girder or truss bridge).

The System Factor is used with all live load models.