ENGINEERING STUDY
IOWA HIGHWAY RESEARCH BOARD
PROJECT HR – 239
PHASE IV

FINAL REPORT

LOAD RATING FOR STANDARD BRIDGES

IOWA DEPARTMENT OF TRANSPORTATION
AMES, IOWA 50010

OCTOBER 2008
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Summary Ratings

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ACKNOWLEDGEMENT

Project HR-239 was sponsored by the Highway Research Advisory Board and the Iowa Department of Transportation. The Highway Research Advisory Board approved expenditures from the Secondary Road Research Fund to conduct the engineering study. The engineering determinations for this project were conducted by Stanley Consultants, Inc.
INTRODUCTION

Load Rating: Evaluation of the capacity of a bridge to carry vehicle loads

Standard Bridge: Bridge built according to standards issued by the Iowa Department of Transportation

Inventory Rating: Load level which can safely utilize the bridge for an indefinite period of time

Operating Rating: Absolute maximum permissible load level for the bridge

A load rating states the load in tons which a vehicle can impose on a bridge. Changes in guidelines, standards, and customary uses of bridges require analyses of bridges to be updated and revaluated.

In this report, sixteen secondary and primary bridge standards for two types of bridges are rated for AASHTO HS20-44 vehicle configuration utilizing Load Factor methodology.

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<thead>
<tr>
<th>Precast Beam</th>
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The ratings apply only to those bridges which:
1. are built according to the applicable bridge standard plans,
2. have no structural deterioration or damage, and
3. have no added wearing surface in excess of one-half inch integral wearing surface.

The Inventory and Operating Ratings are based on the standard AASHTO HS20-44 loading. These ratings were done utilizing Load Factor methodology.
Load ratings listed in this report are in compliance with the 1994 AASHTO Manual for Condition Evaluation of Bridges, second edition, including interim revisions through 2000.

Summary sheets contain any additional qualifications for interpreting the load ratings.

The proper use and application of these bridge ratings requires due consideration and evaluation by a qualified engineer of all relevant factors affecting these ratings. Anyone using any part of these bridge ratings assumes sole responsibility for their proper application.

References:

**Manual for Condition Evaluation of Bridges, 2nd edition**
prepared by Highway Subcommittee on Bridges and Structures

**Standard Specifications For Highway Bridges, 17th ed.**
as amended by Interim Specifications,
prepared by Highway Subcommittee on Bridges and Structures
Summary for Iowa DOT Precast Concrete Beam Bridges

H24-87
H30-87
H24S-87
H30S-87
H24SI-05
H30SI-05
H24-06
H30-06
H40-06
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H24-87 Beam Bridge Standards Issued 1987

2'-8" High Barrier Rail

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2'-5" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 24 feet.
H30-87 Beam Bridge Standards Issued 1987

2'-8" High Barrier Rail

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2'-5" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 30 feet.
H24S-87 Beam Bridge Standards Issued 1987

2'-8" High Barrier Rail

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2'-5" High Open Rail

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H30S-87 Beam Bridge Standards Issued 1987

2'-8" High Barrier Rail

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2. Nominal roadway width is 30 feet.

2'-5" High Open Rail

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H24SI-05 Beam Bridge Standards Issued 2005

2'-10" High Barrier Rail

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2'-5" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 24 feet.
2'-10" High Barrier Rail

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2'-10" High Open Rail

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2'-8" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
   2. Nominal roadway width is 40 feet.
H44-07 Beam Bridge Standards Issued 2007

2'-10" High Barrier Rail

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2'-8" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 44 feet.
Summary for Iowa DOT Standard Concrete Slab Bridges

J24-87
J30C-87
J24-06
J30-06
J40-06
J44-06
2'-8" High Barrier Rail

**Built with Flat Bottom Option:**

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2'-5" High Open Rail

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**Note:**
1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 24 feet.
J30C-87 Slab Bridge Standards Issued 1987

2'-8" High Barrier Rail

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2'-5" High Open Rail

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Note:  
1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.  
2. Nominal roadway width is 30 feet.
J24-06 Slab Bridge Standards Issued 2006

2'-5" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 24 feet.
J30-06 Slab Bridge Standards Issued 2006

2'-8" High Barrier Rail

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2'-5" High Open Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 30 feet.
2'-8" High Barrier Rail

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Note: 1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 40 feet.
### 2'-8" High Barrier Rail

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</table>

**Note:**
1. Ratings were calculated using 1/2" integral wearing surface deducted from the slab as shown on the standard plans.
2. Nominal roadway width is 44 feet.