



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

March 13, 2017

## CIRCULAR LETTER 2017-09

### STRUCTURE INFORMATION AND PROCEDURE (SIP) MANUAL UPDATE

COUNTY ENGINEERS / SUPERINTENDENTS OF HIGHWAYS  
MUNICIPAL ENGINEERS / DIRECTORS OF PUBLIC WORKS / MAYORS  
METROPOLITAN PLANNING ORGANIZATIONS – DIRECTORS  
TOWNSHIP HIGHWAY COMMISSIONERS  
CONSULTING ENGINEERS

This Circular Letter is to advise you the *Illinois Highway Information System: Structure Information and Procedure (SIP) Manual* was recently revised. These revisions involve many sections of the *SIP Manual*, and all inspections from today forward shall use the condition rating guidelines of the revised manual.

The SIP Manual is available on the IDOT website at the following link:  
[http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Manuals-Guides-&-Handbooks/Highways/ISIS\\_Manual\\_Internet.pdf](http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Manuals-Guides-&-Handbooks/Highways/ISIS_Manual_Internet.pdf).

The updates are listed on the “Revisions” pages (ii and iii) in the front of the manual and are also attached to this circular letter. To print only the pages that have been revised, print the attached PDF file with the duplex setting turned on. Please review the changes to the manual as soon as possible.

Questions regarding this circular letter may be directed to the Local Policy and Technology Unit by telephone at (217) 785-5048 or by email at [DOT.LocalPolicy@illinois.gov](mailto:DOT.LocalPolicy@illinois.gov).

Sincerely,

Handwritten signature of Maureen E. Kastl in blue ink.

Maureen E. Kastl, P.E.  
Engineer of Local Roads and Streets

Handwritten signature of D. Carl Puzey in blue ink.

D. Carl Puzey, P.E., S.E.  
Engineer of Bridges and Structures

JK/tw

cc: Dan Brydl, FHWA - Illinois Division  
Gary Iles, Illinois Department of Natural Resources  
Elias Ajami, Illinois State Toll Highway Authority  
Joel Moore, Illinois Association of County Engineers  
Joe Schatteman, Illinois Municipal League  
Bryan Smith, Township Officials of Illinois  
Charlie Montgomery, Township Highway Commissioners of Illinois

## Revisions

Date	Item #	Item Name	Action
2/1/2017	32	Approach Roadway Width	Update Item Description
2/1/2017	51	Total Bridge Roadway Width On	Update Item Description
2/1/2017	58	Deck Condition	Update Code Description
2/1/2017	60	Substructure Condition	Update Code Description
2/1/2017	60A/B	Substructure Material	Update Code Description
2/1/2017	70	Bridge Posting Level	Update Code Description
7/1/2016	COMPLETE MANUAL UPGRADE		
7/1/2011	31A	Structural Steel Weight	Update Screen Location
7/1/2011	34	Skew Direction	Update Screen Location
7/1/2011	47	Maximum Single Roadway Width	Update Item Description
7/1/2011	58	Deck Condition	Update Code Description
7/1/2011	59B	Last Paint Type	Update Code Description
7/1/2011	59B	Last Paint Type	Update Code Description
7/1/2011	60	Substructure Condition	Update Item Description
7/1/2011	60	Substructure Condition	Update Code Description
7/1/2011	60	Substructure Condition	Update Code Description
7/1/2011	60	Substructure Condition	Update Code Description
7/1/2011	62D	Culvert Opening Area (Sq. Ft.)	Update Code Description
7/1/2011	63	Method Used To Determine Opr. Rating	Update Code Description
7/1/2011	65	Method Used To Determine Inv. Rating	Update Code Description
7/1/2011	71	Waterway Adequacy Appraisal	Update Code Description
7/1/2011	92A	Fracture Critical Inspection Interval	Update Item Description
7/1/2011	93A	Fracture Critical Inspection Date	Update Item Description
7/1/2011	100	Special Systems	Update Code Description
7/1/2011	108A	Type Of Wearing Surface	Update Code Description
7/1/2011	131	HBP Eligibility	Update Item Footnote
1/1/2009	131	Name Index	Update Item Name
1/1/2009	131	Numerical Index	Update Item Name
1/1/2009	6	Feature Crossed	Update Item Description
1/1/2009	6A	Designated Critical Facility List	Remove Manual Page
1/1/2009	58	Deck Condition	Update Item Description
1/1/2009	58	Deck Condition	Update Code Description
1/1/2009	59	Superstructure Condition	Update Item Description
1/1/2009	59	Superstructure Condition	Update Code Description
1/1/2009	92A1	Fracture Critical Bridge Type	Update Code Description
1/1/2009	92C1	Special Feature Type	Update Code Description
1/1/2009	93A1	Fracture Critical Appraisal Rating	Update Code Description
1/1/2009	93A6	Fracture Critical Inspection Method	New Item
1/1/2009	93B5	Underwater Inspection Category	Update Code Description
1/1/2009	93B8	Underwater Inspected Substr. Units	New Item
1/1/2009	93C4	Special Feature Inspection Remarks	Update Code Description
1/1/2009	123	Microfilm Done By	Update Item Name
1/1/2009	124	Microfilm Type	Update Item Name
1/1/2009	125	Microfilm Remarks	Update Item Name
1/1/2009	126	Microfilm Beginning Frame Number	Update Item Name
1/1/2009	127	Microfilm Ending Frame Number	Update Item Name
1/1/2009	133	Structurally Deficient	New Item

## Revisions

Date	Item #	Item Name	Action
1/1/2009	134	Functionally Obsolete	New Item
1/1/2009	135-199	Not Used; Reserved For IDOT	Update Item Number
1/1/2009	Form	Fracture Critical Inspection Form	Updated Form
7/1/2007	All	All Item Headings	Removed MMI References
7/1/2007	3	Structure County	Update Item Description
7/1/2007	6 & 6A	Feature Crossed & Desig. Critical Facility	Update Item Description
7/1/2007	22A	Reporting Agency	Update Item Description
7/1/2007	36B,C,D	Railing Appraisal (Approach Guardrails)	Update Code Description
7/1/2007	58-62	Condition/Element Rating - General	Update Item Description
7/1/2007	58	Deck Condition	Update Code Description
7/1/2007	59	Superstructure Condition	Update Code Description
7/1/2007	60	Substructure Condition	Update Code Description
7/1/2007	60 A/B	Substructure Material	New Item
7/1/2007	62	Culvert Condition	Update Code Description
7/1/2007	70	Bridge Posting Level	Update Code Description
7/1/2007	70A1	Allow. Single Unit Vehicle Wt. Limit	Added New Code
7/1/2007	70A2	Posted Single Unit Vehicle Wt. Limit	Added New Code
7/1/2007	70B1	Allow. Comb. Veh. Type 3S-1 Wt. Limit	Update Code Description
7/1/2007	70B2	Posted Comb. Veh. Type 3S-1 Wt. Limit	Update Code Description
7/1/2007	70C1	Allow. Comb. Veh. Type 3S-2 Wt. Limit	Update Code Description
7/1/2007	70C2	Posted Comb. Veh. Type 3S-2 Wt. Limit	Update Code Description
7/1/2007	72	Approach Roadway Alignment Appraisal	Update Code Description
7/1/2007	90A1	Bridge Inspection By (Name 1)	Update Item Name
7/1/2007	90A2	Bridge Inspection By (Name 2)	New Item
7/1/2007	91	Inspection Interval (Routine NBI)	Update Item Description
7/1/2007	92A1	Fracture Critical Bridge Type	Update Item Description
7/1/2007	92C	Special Feature Interval	Update Code Description
7/1/2007	92C1	Special Feature Type	New Item
7/1/2007	92C2	Special Feature Start Date	New Item
7/1/2007	92C3	Special Feature Close Date	New Item
7/1/2007	92C4	Special Feature Initiated By	New Item
7/1/2007	92C5	Special Feature Type Remarks	New Item
7/1/2007	93A3	Fracture Critical Inspection By (Name 1)	Update Item Name
7/1/2007	93A5	Fracture Critical Inspection By (Name 2)	New Item
7/1/2007	93B3	Underwater Inspection By (Name 1)	Update Item Name
7/1/2007	93B7	Underwater Inspection By (Name 2)	New Item
7/1/2007	93C	Special Feature Inspection Date	Update Code Description
7/1/2007	93C1	Special Feature Condition Status	New Item
7/1/2007	93C2A	Special Feature Inspector Name 1	New Item
7/1/2007	93C2B	Special Feature Inspector Name 2	New Item
7/1/2007	93C4	Special Feature Inspection Remarks	New Item
7/1/2007	113	Scour Critical Evaluation	Update Code Description
7/1/2007	131	Highway Bridge Program	Update Item Name
7/1/2007	200-210	Reserved For Traffic Permits Section	Update Item Description
7/1/2007	300-499	Reserved For Bureau Of Bridges	Update Item Description

Effective Date: 7/1/2016	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: No	Item Name	<b>STRUCTURAL STEEL WEIGHT</b>	Item No. <b>31A</b>
History Kept: No			Sheet 1 of 1
Structures	All		
Update Screen	Inventory	SIMS Field Name	
SIMS Table(s)	SIMD001 & ISISummaryStateandLocal		StructSteel

### ITEM DESCRIPTION

This item indicates the total weight of all structural steel shapes and plates, steel and iron castings, steel forging, wrought iron and miscellaneous metals. It includes cables, anchor bolts, cast bronze plates, lead plates and rolled copper-alloy plates, but does not include shear connectors, reinforcement or prestress steel for concrete, drainage systems, light standards, overhead sign structures, mast arms, sign posts, elastomeric bearings and joints. This weight is indicated on the bridge plans.

### CODING INSTRUCTIONS

A nine-digit field.

Enter the weight of the items described above in pounds.

Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: Yes	Item Name	<b>APPROACH ROADWAY WIDTH</b>	Item No. <b>32</b>
History Kept: No			Sheet 1 of 2
Structures	Highway On		
Update Screen	Inventory	SIMS Field Name	
SIMS Table(s)	SIMD001 & ISISummaryStateandLocal		ApprRdwyWidth

### ITEM DESCRIPTION

This item provides a number that represents the normal width of usable roadway approaching the structure. Usable roadway width will include the width of traffic lanes and the widths of shoulders where shoulders are defined as follows:

Shoulders must be constructed and normally maintained flush with the adjacent traffic lane, and must be structurally adequate for all weather and traffic conditions consistent with the facility carried.

Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not to be considered a shoulder for this item. When there is a variation between the approaches at either end of the structure, record and code the most restrictive of the approach conditions.

This item is to be recorded for the highway on the structure only.

### CODING INSTRUCTIONS

A four-digit field, composed of feet and tenths of feet.

Enter the value filling leading spaces with zeros.

Enter 0.0' if there is no highway on the structure.

For structures with medians of any type and double-decked structures, this item should be coded as the sum of the usable roadway widths for the approach roadways (i.e., all median widths that do not qualify as shoulders should not be included in this dimension).

Effective Date: 7/1/2016	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>			
	Structure Information and Procedure Manual			
NBIS Required: No	Item Name	<b>SIDEWALKS UNDER STR. INDICATOR</b>	Item No.	<b>50C</b>
History Kept: No			Sheet	1 of 1
Structures	Highway Under			
Update Screen	Inventory		SIMS Field Name	
SIMS Table(s)	SIMD001 & ISISummaryStateandLocal		SidewalkUnderStr	

### ITEM DESCRIPTION

This item indicates whether or not sidewalks exist under the structure. Brush or safety curbs less than 18 inches in width are not to be considered sidewalks.

### CODING INSTRUCTIONS

A one-digit field.

Enter the appropriate code for all structures.

<u>Code</u>	<u>Sidewalks Under Structure</u>
0	None
1	On one side, not separated from roadway
2	On both sides, not separated from roadway
3	On one side, separated from roadway
4	On both sides, separated from roadway

Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: Yes	Item Name	<b>TOTAL BRIDGE ROADWAY WIDTH ON</b>	Item No. <b>51</b>
History Kept: No			Sheet 1 of 1
Structures	Highway On		
Update Screen	Inventory	SIMS Field Name	
SIMS Table(s)	SIMD001 & ISISummaryStateandLocal		BridgeRdwyWidth

### ITEM DESCRIPTION

This item records the most restrictive minimum distance between curbs or rails on the structure roadway. For structures with closed medians and usually for double decked structures, recorded data will be the sum of the most restrictive minimum distances for all roadways of the inventory routes carried on the structure\*. The measurement should be exclusive of flared areas for ramps.

\* Raised or non-mountable medians, open medians and barrier widths are to be excluded from the summation along with barrier-protected bicycle and equestrian lanes.

Refer to Appendix C, Figure 3.1.

### CODING INSTRUCTIONS

A four-digit field, with one decimal position.

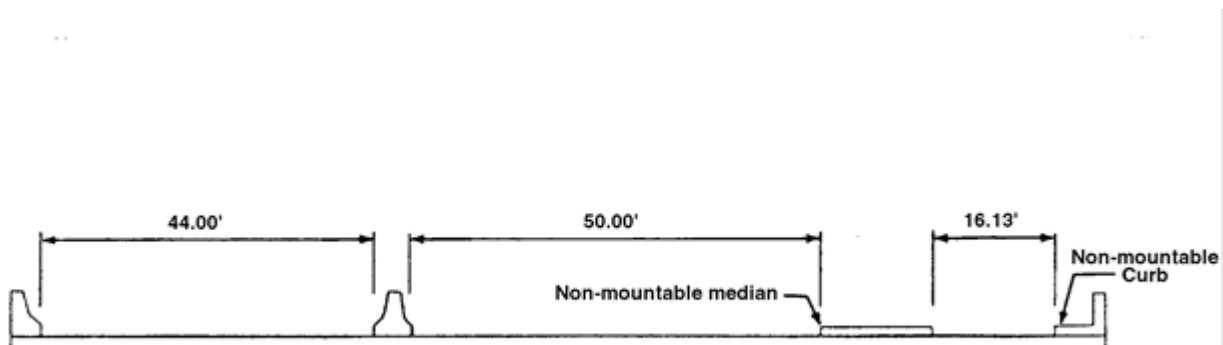
Enter the measurement in feet and tenths of a foot.

Where traffic runs directly on the top slab (or wearing surface) of a culvert, code the actual roadway width (curb-to-curb or rail-to-rail). This will also apply where the fill is minimal and headwalls or parapets affect the flow of traffic.

Where the roadway is on fill carried across a culvert or structure under fill, and the headwalls or parapets do not affect the flow of traffic, enter 000.0. This is considered proper inasmuch as a filled section simply maintains the roadway cross-section.

EXAMPLE:

Total Bridge Roadway Width from below: 110.13' (Enter 110.1)



Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: Yes	Item Name	<b>DECK CONDITION</b>	Item No. <b>58</b>
History Kept: Yes			Sheet 1 of 5
Structures	Highway On		
Update Screen	Routine	SIMS Field Name	
SIMS Table(s)	SIMD002 & ISISummaryStateandLocal		DeckCondition

### ITEM DESCRIPTION

This item describes the overall condition rating of the Deck.

Concrete decks should be inspected for cracking, scaling, spalling, leaching, potholing, delamination, and full or partial depth failures. Aggregate pop-outs on bare concrete decks should be considered primarily as a wearing surface and riding quality problem with only a minor effect on the Deck Condition Rating. Steel grid decks should be inspected for broken welds or grids, section loss, and growth of filled grids from corrosion. Timber decks should be inspected for splitting, crushing, fastener failure, and deterioration from rot.

The condition evaluation should be primarily based on the appearance of the underside of the deck (deck soffit). The condition of the wearing surface, parapets / bridge railings, curbs, median, sidewalks, drain system, light standards and expansion joints may be recorded on the inspection form. These component conditions should not be considered in the overall deck condition.

On bridges where the deck is integral with the superstructure, the superstructure condition rating may be affected by the deck condition rating. However, the deck condition rating will not be affected by the superstructure condition rating, except as noted for slab and PPC deck beam bridges. The deck carries the wheel loads to the superstructure beams. The superstructure, in conjunction with the deck carries the loads to the substructure units. The stress planes are perpendicular to each other. It should be noted, however, that the superstructure condition rating differs from the deck condition rating in that it is more related to the ability to carry overall vehicular loading rather than the individual wheel loads for which the deck is designed. For example, an integral deck may have instances of full depth failures which have little or no effect on the ability of the superstructure to perform its function.

Needed repairs should be recorded on designated forms and reported to appropriate personnel in accordance with the policies of the maintaining agency.

History is retained for this item based on each Inspection Date (Item 90).

“Section loss” refers to the loss of section properties used for design.



# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>DECK CONDITION</b>	Item No.	<b>58</b>
		Sheet	2 of 5

### CODING INSTRUCTIONS

A one-digit field.

Rate and code the structure's condition in accordance with the "Condition Ratings - General" described on the preceding pages (Item No. 58-62 discussion, pages 1 of 2 and 2 of 2).

The Condition Rating Guides for Specific Deck Types on the following pages (pages 3 of 5 through 5 of 5) are intended only to provide some assistance in recognizing typical kinds of deck deficiencies and relating them to an appropriate Deck Condition Rating.

All Deck Types will use the same coding guidelines as described below for deck rating codes of N, 9, 1, and 0 (zero).

### FOR ALL DECK MATERIAL TYPES

### CONDITION RATING GUIDES FOR CODES N, 9, 1 AND 0

<u>Code</u>	<u>Description</u>
<b>N</b>	Culverts or structures without decks, such as filled arch bridges, e.g. Items 43A/B coded A07, 107, or 111.
<b>9</b>	New deck.
<b>1</b>	Deck in "imminent failure" condition requiring bridge closure or temporary measures to allow structure to remain open.
<b>0</b>	Deck that has failed and is beyond repair, requiring bridge closure.

**Condition Rating Guides for codes 2 through 8** pertaining to specific deck material types are described on the following pages.

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>DECK CONDITION</b>	Item No.	<b>58</b>
		Sheet	3 of 5

### CONDITION RATING GUIDES FOR SPECIFIC DECK MATERIALS

#### CONCRETE BRIDGE DECKS

General Note: For slab and precast prestressed concrete (PPC) deck beam bridges, the deck condition rating (Item 58) shall be rated the same as the superstructure (Item 59) using the superstructure criteria, except for PPC deck beam with 4" or more of reinforced concrete overlay, in which case the overlay shall be rated as the deck.

<u>Code</u>	<u>Description</u>
-------------	--------------------

- |          |   |
|----------|---|
| <b>8</b> | VERY GOOD. Transverse cracks < 0.06" at > 15' intervals may be present but no spalling, scaling, pop-outs or delamination.  |
| <b>7</b> | GOOD. Some transverse cracks < 0.06" at > 5' intervals over the majority of the deck, light scaling (less than 1/4" depth) or pop-outs may be present, no spalling.   |
| <b>6</b> | SATISFACTORY. Transverse cracks < 0.06" at < 5' or > 0.06" at > 5' intervals over a majority of the deck, spalls and delaminations may be present on up to 5% of the deck riding surface or soffit area, up to 10% of the deck soffit may be spalled, delaminated, and map cracked.   |
| <b>5</b> | FAIR. Transverse cracks > 0.06" at < 5' intervals with or without leaching in the majority of the deck, isolated longitudinal cracks < 0.06" in majority of deck, spalls and delaminations may be present on up to 10% of the deck surface or soffit area, up to 25% of the deck surface or soffit may be spalled, delaminated and map cracked, up to 10% loss of primary reinforcement in any 6' bay length. |
| <b>4</b> | POOR. Longitudinal cracks > 0.06" in majority of deck, spalls and delaminations may be present on up to 25% of the deck surface or soffit area, up to 50% of the deck surface or soffit may be spalled, delaminated and map cracked, up to 30% loss of primary reinforcement in any 6' bay length.  |
| <b>3</b> | SERIOUS. Condition is similar to the description for a condition rating of "4", though more extensive full depth failures are evident to the point that wheel loads may need restricted or temporary measures implemented.  |
| <b>2</b> | CRITICAL. Full depth failures needing patching over much of the deck on a regular basis which requires special inspections to keep the bridge open, possibly with reduced load limits, temporary measures may be needed to allow continued use of the structure. The Bureau of Bridges and Structures shall be notified immediately.  |

**NOTE:** For codes N, 9, 1 and 0 (zero) Condition Rating Guides pertaining to all deck material types, refer to Item No. 58, Page 2 of 5.

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name

**DECK CONDITION**

Item No.

**58**

Sheet

4 of 5

### CONDITION RATING GUIDES FOR SPECIFIC DECK MATERIALS

#### STEEL BRIDGE DECK

Code

Description

- 8** VERY GOOD. Tightly secured to floor system with no rust.
- 7** GOOD. Sound connections with minor rusting, no cracked welds.
- 6** SATISFACTORY. Considerable rusting with indications of initial section loss, sound connections with isolated cracked welds and/or isolated broken grids.
- 5** FAIR. Heavy rusting with areas of up to 10% section loss in a 6 foot wide bay, isolated loose connections, numerous cracked welds and/or broken grids, grid sections may be uplifting in isolated areas without danger of breaking loose.
- 4** POOR. Heavy rusting resulting in considerable section loss up to 30% in a 6 foot wide bay and numerous holes in grid or deck structural elements resulting in many welds cracked and/or grids broken, uplifting of grid sections may be occurring throughout deck with danger of breaking loose.
- 3** SERIOUS. Severe or critical signs of structural distress are visible to the point where vehicular loads may need to be restricted. Sections have broken loose and are being repaired occasionally.
- 2** CRITICAL. Same as condition rating of "3" but special inspections are required to allow bridge to remain open, possibly with reduced load limits. The Bureau of Bridges and Structures shall be notified immediately.

**NOTE:** For codes N, 9, 1 and 0 (zero) Condition Rating Guides pertinent to all deck material types, refer to Item No. 58, Page 2 of 5.

Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: Yes	Item Name	<b>SUBSTRUCTURE CONDITION</b>	Item No. <b>60</b>
History Kept: Yes			Sheet 1 of 5
Structures	Highway On		
Update Screen	Routine	SIMS Field Name	
SIMS Table(s)	SIMD002 & ISISummaryStateandLocal		SubstrCondition

### ITEM DESCRIPTION

This item describes the physical condition of piers, abutments, piles, fenders, footings or other substructure components as it affects the structural sufficiency of the bridge.

The substructure components should be inspected for visible signs of distress, including evidence of cracking, section loss, settlement, misalignment, scour, collision damage and corrosion. These components include stems, breastwalls, crash walls, columns & piles, caps, bearing seats, backwalls, wingwalls, fender systems and paint.

The rating given to Item 93B1 (Underwater Appraisal Rating) may have a significant effect on this item if scour or subsurface deterioration has substantially affected the overall condition of the substructure. The rating assigned to this item should be no greater than that given to Item 93B1. Structures not having a separate underwater inspection must have the underwater condition incorporated into the Routine inspection. The rating for Item 113 (Scour Critical Evaluation) is unrelated unless significant scour has actually occurred at the bridge. When observed scour requires a rating of 3 or less for Item 60, the rating for Item 113 shall be re-evaluated.

Integral-abutment wingwalls to the first construction or expansion joint shall be included in the evaluation. For non-integral superstructure and substructure units, the substructure shall be considered as the portion below the bearings except that it shall also include abutment backwalls. For structures where the substructure and superstructure are integral, the substructure shall be considered as the portion of the bridge below the intersection of the bottom of the superstructure with the vertical column or wall face.

If the substructure has Steel Fracture Critical Members, the rating of the substructure should be no higher than the rating for types E1, E2, E3 or E4 of Item 92A1 as recorded in Item 93A1.

Needed repairs should be recorded on designated forms and reported to appropriate personnel in accordance with the policies of the maintaining agency.

History is retained for this item based on each Inspection Date (Item 90).

NOTE: "Section loss" refers to the loss of section properties used for design.

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name    **SUBSTRUCTURE CONDITION**

Item No.    **60**

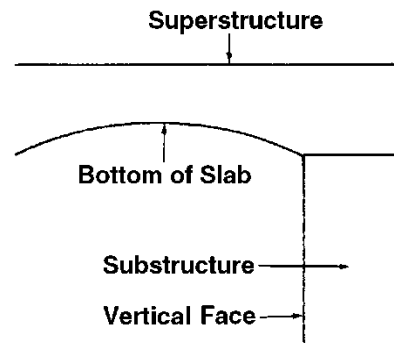
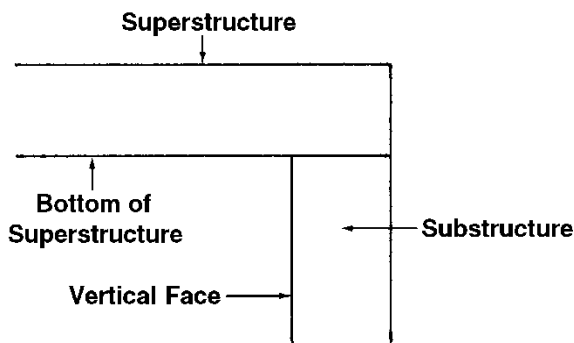
Sheet    2 of 5

### CODING INSTRUCTIONS

A one-digit field.

Rate and code the structure's condition in accordance with the "Condition Ratings - General" described on the preceding pages (Item No. 58-62 discussion, pages 1 of 2 and 2 of 2).

The Condition Rating Guides for Specific Substructure Types on the following pages (pages 3 of 5 through 5 of 5) are intended to provide some assistance in recognizing typical kinds of substructure deficiencies and relating them to an appropriate Substructure Condition Rating.



All Substructure Types will use the same coding guidelines as described below for substructure rating codes of N, 9, 1, and 0 (zero).

### FOR ALL SUBSTRUCTURE MATERIAL TYPES CONDITION RATING GUIDES FOR CODES N, 9, 1 AND 0

<u>Code</u>	<u>Description</u>
<b>N</b>	Culvert.
<b>9</b>	New substructure.
<b>1</b>	Substructure in "imminent failure" condition requiring bridge closure or temporary measures to allow structure to remain open.
<b>0</b>	Substructure that has failed and is beyond repair, requiring bridge closure.

**Condition Rating Guides for codes 2 through 8** pertaining to specific substructure material types are described on the following pages.

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>SUBSTRUCTURE CONDITION</b>	Item No.	<b>60</b>
		Sheet	3 of 5

### CONDITION RATING GUIDES FOR SPECIFIC SUBSTRUCTURE MATERIALS

#### CONCRETE OR MASONRY SUBSTRUCTURE

<u>Code</u>	<u>Description</u>
<b>8</b>	VERY GOOD. No significant defects. Shrinkage cracks, very light surface scaling, spalling or pop-outs which do not expose reinforcing steel. Insignificant damage caused by drift or collision with no misalignment and no corrective action warranted.
<b>7</b>	GOOD. Minor cracking, spalls or scaling with few incidences of exposed reinforcement with only surface rust. Minor scour may have occurred at the foundation.
<b>6</b>	SATISFACTORY. Moderate deterioration or disintegration, spalls, cracking and leaching on concrete or masonry units with up to 2% section loss or loss of bearing area. Shallow, local scour may have occurred near foundations with exposure of top of pile supported footings, less than 2' deep scour around pile bents. No exposed piles.
<b>5</b>	FAIR. Large portions of concrete or masonry units are spalled, scaled, or delaminated with exposed reinforcing steel up to 10% loss of concrete (horizontal cross section), up to 10% loss of reinforcement steel, extensive map cracking with leaching, spread footings with no undermining on soil and up to 5% undermining on rock, <u>less than 2' of exposed piles or seal coat below pile supported footings</u> , less than 6' deep scour around pile bents, up to 10% section loss of bearing seats or piles.
<b>4</b>	POOR. Active cracks in concrete and masonry units that indicate a reduction in the substructure unit's capacity to support the superstructure loads, up to 30% section loss of bearing seat(s) or pile(s), section loss of primary steel reinforcement up to 30%. Section loss of concrete up to 30%, undermining of spread footing which may be affecting the stability of the unit but no significant settlement has yet occurred, worst condition or combination of deterioration stated in condition rating "5". If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>3</b>	SERIOUS. Section losses up to 50%, loss of bearing seat area to cause more than 2" drop, adjacent column ties are broken causing the vertical reinforcement to be ineffective, severe scour or undermining of footings affecting the stability of the unit with some settlement of the substructure. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>2</b>	CRITICAL. Conditions worse than condition rating of "3", section loss greater than 50%, special feature inspection is required to allow bridge to remain open, measurable lateral or vertical movement, unstable structures. The Bureau of Bridges and Structures shall be notified immediately. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.

NOTE: For codes N, 9, 1 and 0 condition rating guides pertaining to all substructure material types, refer to Item 60 (Sheet 2 of 5).

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>SUBSTRUCTURE CONDITION</b>	Item No.	<b>60</b>
		Sheet	4 of 5

### CONDITION RATING GUIDES FOR SPECIFIC SUBSTRUCTURE MATERIALS

#### STEEL SUBSTRUCTURE

<u>Code</u>	<u>Description</u>
<b>8</b>	VERY GOOD. No significant defects, very minor damage caused by drift or collision with no misalignment.
<b>7</b>	GOOD. Some light surface rust, minor scour may have occurred.
<b>6</b>	SATISFACTORY. Up to 2% loss of steel section due to rust pitting may have occurred, but no effect on structural integrity of the substructure unit, shallow, local scour may have occurred at foundation with exposure of top of pile caps. No exposed piles.
<b>5</b>	FAIR. Corrosion has caused moderate section loss up to 10% but overall ability of substructure to support the structure is unaffected, cracks may be present in non-critical areas, fatigue cracks in primary members have been arrested, spread footings exposed with no undermining on soil and up to 5% undermining on rock, <u>less than 2' of piles or seal coat exposed below pile supported footings</u> , less than 6' deep scour around piles with pile caps installed above the ground, no misalignment or settlement noted.
<b>4</b>	POOR. Section loss up to 30% in critical areas of main steel members, localized buckling or cracks may be present in critical areas of primary members, undermining of spread footing which may be affecting the stability of the unit but no significant settlement has yet occurred, worse condition or combination of deterioration stated in condition rating "5". If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>3</b>	SERIOUS. Section losses up to 50%, severe scour or undermining of footings affecting the stability of the unit with some settlement of the substructure. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>2</b>	CRITICAL. Conditions worse than a condition rating of "3", section loss greater than 50%, special feature inspection is required to allow bridge to remain open, measurable lateral or vertical movement, unstable structures. The Bureau of Bridges and Structures shall be notified immediately. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.

NOTE: For codes N, 9, 1 and 0 condition rating guides pertaining to all substructure material types, refer to Item 60 (Sheet 2 of 5).

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>SUBSTRUCTURE CONDITION</b>	Item No.	<b>60</b>
		Sheet	5 of 5

### CONDITION RATING GUIDES FOR SPECIFIC SUBSTRUCTURE MATERIALS

#### TIMBER SUBSTRUCTURE

<u>Code</u>	<u>Description</u>
<b>8</b>	VERY GOOD. No significant defects, insignificant damage caused by drift or collision, scour is insignificant.
<b>7</b>	GOOD. Insignificant decay, cracking or splitting of timber, minor scour may have occurred.
<b>6</b>	SATISFACTORY. Surface decay, cracking, splitting of timber, fire damage limited to surface scorching of timber with up to 2% section loss, shallow, local scour may have occurred near foundations. No exposed piles.
<b>5</b>	FAIR. Minor decay, cracking or splitting of timber, a few secondary members may need replacement but primary members are performing their function as designed with section loss up to 10%, fire damage limited to surface charring of timber with minor section loss up to 10%, spread footings exposed with no undermining on soil and up to 5% undermining on rock, <u>less than 2' of piles or seal coat exposed below pile supported footings</u> , less than 6' deep scour around pile bents with pile caps installed above the ground, no misalignment or settlement noted.
<b>4</b>	POOR. Serious decay, cracking, splitting or crushing of primary timber with section loss up to 30%, fire damage with section loss up to 30% that has reduced the load carrying capacity of the substructure, exposure of timber piles greater than 2' as a result of erosion, reducing the penetration, undermining of spread footing which may be affecting the stability of the unit but no significant settlement has yet occurred, worst condition or combination of deterioration stated in condition rating "5". If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>3</b>	SERIOUS. Section losses up to 50%, severe scour or undermining of footings affecting the stability of the unit with some settlement of the substructure. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.
<b>2</b>	CRITICAL. Conditions worse than a condition rating of "3", section loss greater than 50%, special feature inspection is required to allow bridge to remain open, measurable lateral or vertical movement, unstable structures. The Bureau of Bridges and Structures shall be notified immediately. If the rating of this item is due to scour, the rating for Item 113 shall be re-evaluated.

NOTE: For codes N, 9, 1 and 0 condition rating guides pertaining to all substructure material types, refer to Item 60 (Sheet 2 of 5).



Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: No	Item Name	<b>SUBSTRUCTURE MATERIAL</b>	Item No. <b>60A/B</b>
History Kept: No			Sheet 1 of 1
Structures	All		
Update Screen	Inventory	SIMS Field Name	
SIMS Table(s)	SIMD001	SubstrMaterialCode	

### ITEM DESCRIPTION

This item records the most critical substructure supporting material in the abutments and piers. Item 60A is used for abutment material types. Item 60B is used for pier material types. For both items, the most critical material type should be coded.

When existing plans are available, the determination of critical material may be made using those plans. However, this item should be verified in the field. If existing plans are not available, the substructure material should be field verified. Only the portions of the substructure unit that are exposed to air at low water elevation should be considered in this determination. For example, substructure units with concrete footings on unrepaired timber piles are coded "2" (timber) if existing plans show timber piles and the piles are exposed, but "5" (concrete) if the existing plans are not available and piles are not exposed when field verified.

### CODING INSTRUCTIONS

A two-digit field.

Enter the appropriate code for the abutment material (Item 60A) and pier material (Item 60B).

<u>Code</u>	<u>Description</u>
1	Timber with repairs made
2	Timber
3	Steel
4	Masonry
5	Concrete
6	Exposed Steel (Not encased or buried)
7	Metal Shell
8	Precast Concrete (Not piles)
N	Not Applicable

#### EXAMPLES:

	<u>Item 60A</u>	<u>Item 60B</u>
One unrepaired timber abutment, one steel abutment, one unrepaired timber pier, one steel pier, and one masonry pier.	2	2
Concrete abutments with masonry fascia, one pier with five timber piles, of which three piles have been repaired.	5	1
Culverts	N	N
3-Sided structure on concrete footings.	5	N

NOTE: The term "supporting" refers to the material in the substructure that provides the structural basis for the substructure. For example, Steel piles encased in reinforced concrete, the code for this item would be "3" for steel, exposed or unexposed.

Effective Date: 2/1/2017	<b>ILLINOIS HIGHWAY INFORMATION SYSTEM</b>		
	Structure Information and Procedure Manual		
NBIS Required: Yes	Item Name	<b>BRIDGE POSTING LEVEL</b>	Item No. <span style="float: right;"><b>70</b></span>
History Kept: Yes			Sheet <span style="float: right;">1 of 2</span>
Structures	Highway On		
Update Screen	Load Rating	SIMS Field Name	
SIMS Table(s)	SIMD001 & ISISummaryStateandLocal		PostingLevel

### ITEM DESCRIPTION

This item evaluates the load capacity of a bridge in comparison to the State legal load.

The Bridge Posting Level differs from Item 67 - Structural Evaluation in that Item 67 uses the inventory rating while the bridge posting requirement is normally based on the operating stress level.

The National Bridge Inspection Standards require the posting of load limits only if the maximum legal load in the State produces stresses in excess of the operating stress level. If the load capacity at the operating level is such that posting is required, this item shall be coded 0 (zero) through 4. If no posting is required at the operating level, this item shall be coded "L" or "5".

Although posting a bridge for load-carrying capacity is required only when the maximum legal load exceeds the operating stress capacity, highway agencies may choose to post at lower stress levels. This posting practice may appear to produce conflicting coding when Item 41 - Bridge Status is coded to show the bridge as actually posted at the site and Item 70 - Bridge Posting is coded as bridge posting not required. Since different criteria are used for coding these 2 items, this coding is acceptable and correct when the highway agency elects to post at less than the operating stress level. Item 70 shall be coded 0 through 4 only if the legal load of the State exceeds that permitted under the operating stress capacity.

The use or presence of a temporary bridge affects the coding. The load capacity shall reflect the actual capacity of the temporary bridge at the operating stress level. This also applies to bridges shored up or repaired on a temporary basis.

# ILLINOIS HIGHWAY INFORMATION SYSTEM

## Structure Information and Procedure Manual

Item Name	<b>BRIDGE POSTING LEVEL</b>	Item No.	<b>70</b>
		Sheet	2 of 2

### **CODING INSTRUCTIONS**

The following values are used to code this item:

<u>Code</u>	<u>Relationship of Operating Rating Stress to Legal Load Stress</u>
N	Non-Highway (No Load Rating required)
L	Legal Loads Only (No permit overloads allowed)
5	No Posting or Legal Load Restrictions Required
Posting Required for the following codes:	
4	0.1 – 9.9% below
3	10.0 – 19.9% below
2	20.0 – 29.9% below
1	30.0 – 39.9% below
0	> 39.9% below

NOTE: Structures coded "0" thru "4" should also be coded in Items 70A1 thru 70C2, as applicable