



DOE Bridge and Public Road Management



Cindy Hunt
Office of Engineering and
Construction Management

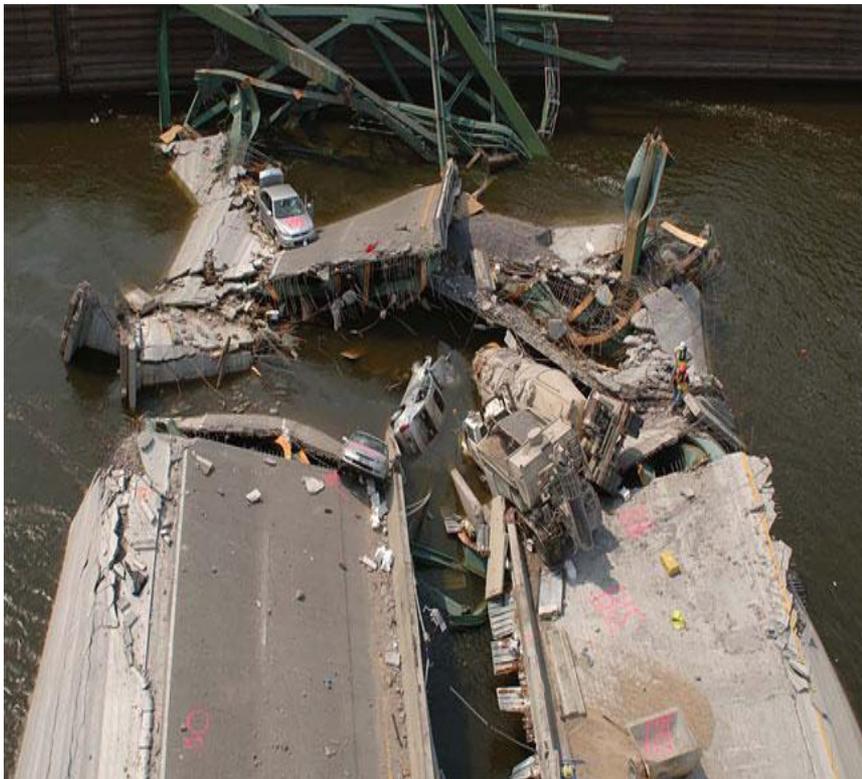
June 15, 2010



Why Bridge Inspection Matters

I-35W Bridge Collapse

Minneapolis, Minnesota



- **Government Accountability Office Report**
- **U.S. DOT's Office of the Inspector General, Federal Highway Administration Audit**
- **Bridge Life Extension Act of 2009 (H.R.1682 / S.1701)**
 - Bridge Management System
 - Corrosion mitigation and prevention methods
 - Maintenance
 - Inspector Qualifications



Responsibilities of Bridge Ownership

Standards

Recognize bridge inspection requirements and standards

Qualifications

Engage a qualified bridge inspection organization

Execution

Assure that required inspections are conducted for each bridge

Record Keeping

Maintain bridge inspection and property records

STANDARDS

QUALIFICATIONS

EXECUTION

RECORD KEEPING



Inspection Standards

Vehicle Bridges

- 23 CFR Part 650, Subpart C - National Bridge Inspection Standards (NBIS)



U.S. Department of Transportation
Federal Highway Administration



Train Bridges

- 49 CFR Part 213, Appendix C - Statement of Agency Policy on the Safety of Railroad Bridges
- American Railway Engineering and Maintenance-of-Way Association (AREMA) Bridge Inspection Handbook

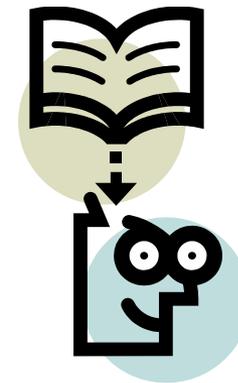


AREMA[®]

The American Railway Engineering and Maintenance-of-Way Association

Pedestrian Bridges

- AASHTO MBE-1, Manual for Bridge Evaluation, 1st Edition, 2008, with 2010 Interim Revisions



[STANDARDS](#)

[QUALIFICATIONS](#)

[EXECUTION](#)

[RECORD KEEPING](#)



Safety Inspection is not Equivalent to Condition Assessment

- **Safety Inspection**

- Specialized inspection to assure structural integrity and safety
- Results in determination of safe load-carrying capacity
- Data used to populate the National Bridge Inventory

- **Condition Assessment**

- Assess material condition
- Used to plan for deficiency correction, asset recapitalization, and condition reporting





Safety Inspection Frequency

- All Bridges - age, traffic characteristics, and known deficiencies help determine if more frequent inspection is required, otherwise
- Vehicle Bridges - regular intervals not to exceed twenty-four months
- Train Bridges - annually
- Pedestrian Bridges - regular intervals



STANDARDS

QUALIFICATIONS

EXECUTION

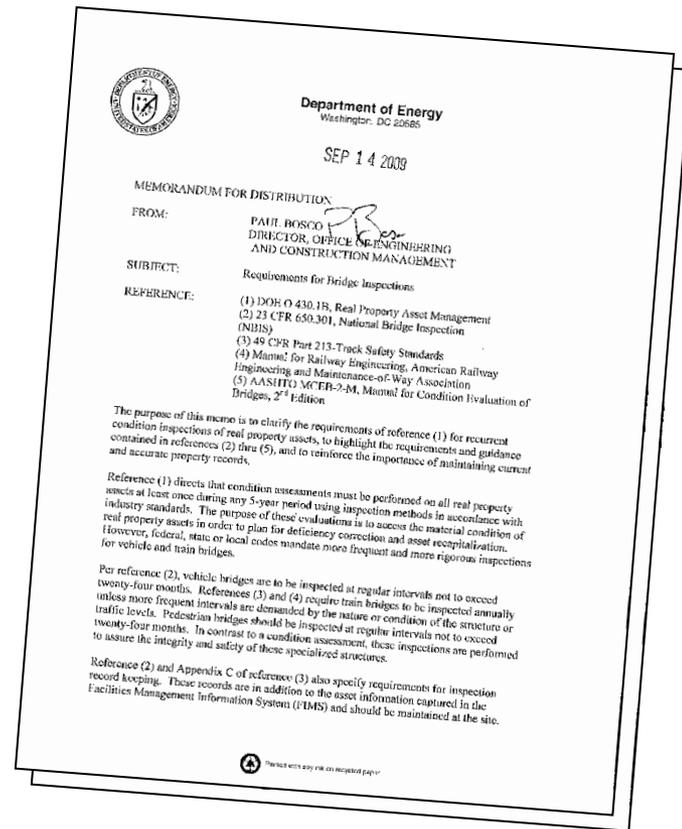
RECORD KEEPING



Recommended Practice for DOE Bridge Inspection

OECM memo of Sep 14, 2009

- Clarifies inspection requirements
- Provides inspection standards
- Reinforces importance of maintaining current and accurate property records



STANDARDS

QUALIFICATIONS

EXECUTION

RECORD KEEPING



Bridge Inspection Roles

<ul style="list-style-type: none"> • Bridge Manager <ul style="list-style-type: none"> - not required to be a DOE federal employee 	Site Management
--	------------------------

<ul style="list-style-type: none"> • Team Leader <ul style="list-style-type: none"> - a combination of education, training, and experience leads to qualification • Other Team Members <ul style="list-style-type: none"> - underwater bridge inspection diver - individual charged with the overall responsibility for load rating bridges 	Bridge Inspection Team
--	-------------------------------



STANDARDS

QUALIFICATIONS

EXECUTION

RECORD KEEPING



Progress Made in the Past Year

✓ FIMS Changes

- Usage codes to differentiate publically accessible bridges
- Safety Inspection Date field for all bridges

✓ Sites

- Completed necessary inspections
- Updated usage codes
- Populated inspection dates
- Verified bridge data during FIMS Data Validation

✓ National Bridge Inventory report based on FIMS data



Inspection Status of Operating DOE Bridges

June 2010		
	Compliant Inspection Complete	Compliant Inspection Not Complete
Controlled Access Vehicle	25	15
Public Access Vehicle	10*	
Controlled Access Train	3	
Controlled Access Pedestrian	3	3
Public Access Pedestrian	4	3

*9 bridges meet the 23 CFR 650 definitions of a bridge subject to the NBI (on a public highway and greater than 20' long)

DOE Inventory of Non-Operating, Controlled Access Bridges:

Vehicle Bridges: 8

Train Bridges: 2

Pedestrian Bridges: 1

[STANDARDS](#)

[QUALIFICATIONS](#)

[EXECUTION](#)

[RECORD KEEPING](#)



Property Record Maintenance

- **All DOE-owned bridges**
 - Create a FIMS property record for each bridge
 - Update inspection information, changes in load restriction, or operational status in FIMS within 60 days of inspection
- **For Train Bridges**
 - Collect and retain data per 49 CFR Part 213, Appendix C
- **For Public Access Vehicle Bridges**
 - Collect and retain data in accordance with the Recording and Coding Guide for the Structural Inventory and Appraisal of the Nation's Bridges, FHWA, December 1995



National Bridge Inventory

- Data on just under 600,000 of the nation's bridges located on public roads and publicly-accessible bridges on federal lands
- State-by-state summary analysis of the number, location, and general condition of highway bridges
- Data Uses:
 - Supports bi-annual report to Congress on the status of the Nation's bridges
 - Supports *Annual Material Report on New Bridge Construction and Bridge Rehabilitation*
 - Used to apportion funds for the Highway Bridge Program
 - Used to identify and classify the Strategic Highway Corridor Network



Structural Inventory & Appraisal Data Identification/Description

NBI Data

Fed Agency ID: 214059B00048N1 Import Date: 5/6/2010

Identification/Description | Load Rating/Geometry | Condition and Appraisal Data/Inspection Dates/Costs | Misc

STRUCTURE IDENTIFICATION

(1) State	214 - KY - KENTUCKY	(12) Base Highway Network	<input type="radio"/> Yes <input checked="" type="radio"/> No
(2) State Hwy. Agency Dist	06	(13A) LRS Inventory Route	
(3) County Code	117	(13B) Subroute No.	
(4) City/Place Code	00465	(26) Functional Class	17
(5) Inventory Route	1 3 1 00017 0	(6B) Critical Facility	<input checked="" type="checkbox"/>
(6A) Features Intersected	OHIO RIVER	(27) Year Built	1867 (106) Year Reconstructed 1955
(7) Facility Carried	SUSPENSION BRIDGE	(20) Toll	3 - FREE ROAD
(8) State Structure No.	059B00048N	(21) Maintained By	01 - STATE HIGHWAY AGENCY
(9) Location	SUSPENSION BR. OVR OHIO RV	(22) Owner	01 - STATE HIGHWAY AGENCY
(10) Inv. Rte. - Min. Vrt. Clr.	99.99 ft 99.99 m	(37) Historical Significance	1 - ON NATIONAL REGISTER
(11) Km Point	24.12 mi 38.82 km		

STRUCTURE DESCRIPTION, FOUNDATION AND DECK TYPE

(43A) Main Struct. Mat.	3 - STEEL	(44A) Approach Struct. Mat.	3 - STEEL
(43B) Main Struct. Type	13 - SUSPENSION	(44B) Approach Struct. Type	00 - OTHER
(45) No. of Main Spans	3	(46) No. of Approach Spans	16
(48) Max. Span Length	1,057.1 ft 322.2 m	(108) Wear Surf/Prot. System	
(49) Structure Length	2,162.1 ft 659.0 m	A) Type Wearing Surface	9 - OTHER
(107) Deck Type	3 - OPEN GRATING	B) Type Membrane	0 - NONE
		C) Deck Protection	0 - NONE

Show All Search ...

Record: 9 of 11 No Filter Search



Structural Inventory & Appraisal Data

Condition and Appraisal Data/Dates/Costs

NBI Data

Fed Agency ID: 214059B00048N1 Import Date: 5/6/2010

Identification/Description | Load Rating/Geometry | **Condition and Appraisal Data/Inspection Dates/Costs** | Misc

CONDITION AND APPRAISAL DATA

(58) Deck	5	(67) Structural Evaluation	2
(59) Superstructure	6	(68) Deck Geometry	2
(60) Substructure	7	(69) Underclearances	N
(61) Channel	7	(71) Waterway Adequacy	9
(62) Culvert	N	(72) Approach Alignment	6
(36) Traffic Safety Features	0 0 0 0	(113) Scour Critical	3 - Scour critical. Foundations unstable for c
(75) Work Type	31 - REPLACE	1 - CONTRACT	
(76) Improvement Length	204.4 ft 62.3 m		

INSPECTION DATES

(90) Inspection Date: 10/07 (91) Freq. of Insp.: 12 mos. (92) Critical Feature Inspection (CFI): (93) Inspection Date:

<input checked="" type="checkbox"/> (A) Fracture Critical	Insp. Every: 24 mos.	(A) Last Insp.:	03/00
<input checked="" type="checkbox"/> (B) Underwater	Insp. Every: 60 mos.	(B) Last Insp.:	10/07
<input type="checkbox"/> Special Insp.	Insp. Every: mos.	(C) Last Insp.:	

COSTS

(94) Bridge Imp. Cost: 9826 ,000 (95) Roadway Imp. Cost: 0 ,000 (96) Total Project Cost: 9826 ,000

Show All Search ...

Record: 9 of 11 No Filter Search

STANDARDS

QUALIFICATIONS

EXECUTION

RECORD KEEPING



Public Road Mileage Inventory

What?

- *Public Road Mileage Inventory* required by 23 CFR 460

Why?

- Information supports each State's annual certification to FHWA
- Used to apportion federal highway safety funds



Bethel Valley Road in Oak Ridge, Tennessee



DOE Public Road Inventory

Who?

- Site/Program-Level
 - Maintain public access roads and conduct routine condition assessments
 - Maintain a property record for site roads in FIMS
 - Populate the FIMS Public Access Road Miles and Lane Miles data fields
- Agency-Level
 - Report Public Road Mileage to DOT FHWA annually



FIMS Data Fields

1. Review Property Record for Most Appropriate Usage Code

2. Populate All Data Fields

The screenshot shows the FIMS web application interface. The browser address bar displays the URL: <https://fims.doe.gov/newfims/common/controller.jsp?navtype=t&m=1&s=7&t=31&extradata=propertyType=5|propertyseqno=113126|propertyOwnec>. The page title is "FIMS - Property - OSF - Dimensions". The main content area is titled "Dimensions" and contains the following fields:

- Property (ID - Name): 603000 - Roads, Walks & Parking Lots
- Primary Unit of Measure: []
- Primary Quantity: [] 7. each
- Secondary Unit of Measure: []
- Secondary Quantity: []
- Roads section:
 - Public Access Miles: []
 - Non-Public Access Miles: []
 - Public Access Lane Miles: []
 - Non-Public Access Lane Miles: []
- Energy Consuming section:
 - EC Buildings/Facilities: [] 0 gsf
 - EC Metered Process (Excluded) Facilities: [] 0 gsf
 - Meters: [None] [] [] []
 - EMS4 Site: []

Update FIMS by 11/12/10 (prior to the FY10 Snapshot)



What's Coming

- Populate the FIMS *Public Access Road Miles* and *Lane Miles* data fields by November 12, 2010
- Verify all vehicle bridges during the 2011 FIMS Data Validation
- Develop a data submittal process in support of the National Bridge Inventory
- Monitor legislative actions for changes in National Bridge Inspection Standards



Questions???



Cindy Hunt, PE, LEED AP
Facilities Engineer
Office of Engineering and Construction Management
Department of Energy
1000 Independence Ave, SW
Washington DC
202-586-4539
Cynthia.Hunt@hq.doe.gov



Structural Inventory & Appraisal Data

Load Rating/Geometry

NBI Data

Fed Agency ID: 214059B00048N1 Import Date: 5/6/2010

Identification/Description Load Rating/Geometry Condition and Appraisal Data/Inspection Dates/Costs Misc

LOAD RATING AND POSTING

(31) Design Load	4 - H20 (M18)	(41) Load Restriction	P - POSTED FOR LOAD
(66) Inventory Rating	17.0 tons 15.4 m tons	(70) Bridge Posting	2 - POSTING REQUIRED
(64) Operating Rating	17.0 tons 15.4 m tons	(63) Operating Rating Method	2 - ALLOWABLE STRESS (AS)
		(65) Inventory Rating Method	2 - ALLOWABLE STRESS (AS)

GEOMETRY, TRAFFIC, AND NAVIGATIONAL DATA

(16) Latitude	39° 5' 53.41"	(17) Longitude	84° 30' 3.46"	(51) Curb to Curb Width	24.9 ft 7.6 m
(19) Detour Length	1 mi 2 km	(52) Deck Width	30.2 ft 9.2 m		
(28) Lanes on Structure	2 Under 0	(32) Appr. Roadway Width	26.9 ft 8.2 m		
(42) Service On	1 - HIGHWAY	(33) Bridge Median	0 - NO MEDIAN		
Service Under	5 - WATERWAY	(34) Skew Angle	0 °		
(29) Avg. Daily Traffic	9580 (30) Year of ADT	2008	(35) Structure Flared	0	
(114) Future ADT	16094 (115) Year of Future ADT	2028	(47) Total Horiz. Clearance	24.6 ft 7.5 m	
(101) Parallel Structure	N	(50) Sidewalks Widths	LT: 7.9 ft 2.4 m RT: 7.9 ft 2.4 m		
(38) Navigation Control	<input type="radio"/> 0 (No) <input checked="" type="radio"/> 1 (Yes) <input type="radio"/> N (N/A)	(53) Min. Vert. Clear. over Deck	18.01 ft 5.49 m		
(39) Vertical Clearance	7.2 ft 2.2 m	(54) Min. Vert. Underclear.	0.00 ft 0.00 m		
(40) Horizontal Clearance	0.0 ft 0.0 m	Minimum Lateral Underclearance			
(111) Pier Abut. Protection	1 - NAV PROTECTION NOT REQUIRED	(55) Right:	15.4 ft 4.7 m		
		(54A, 55A) Ref. Feature	N - NOT A HIGHWAY OR RAILROAD		
		(56) Left:	0.0 ft 0.0 m		

Show All Search ...

Record: 9 of 11 No Filter Search



Structural Inventory & Appraisal

Miscellaneous Data

NBI Data

Fed Agency ID: 214059B00048N1 Import Date: 5/6/2010

Identification/Description | Load Rating/Geometry | Condition and Appraisal Data/Inspection Dates/Costs | Misc

MISC NBI DATA

(112) NBIS Length Yes No

(100) STRAHNET Highway Designation

(102) Direction of Traffic

(105) Federal Lands Highways

(97) Year of Cost Estimate

(98A) Border Br. State Code

(98B) Border Br. % Responsibility

(99) Border Br. Structure No.

(103) Temp. Str. Designation Yes No

(104) NHS Inventory Route Yes No

(109) ADTT (Truc %)

(110) Nat'l Network for Trucks Yes No

(116) Lift Br. Vertical Clearance ft m (Blank if not a lift bridge)

Status-SD-FO:

AsterSR:

Sufficiency Rating

Show All Search ...

Record: 9 of 11 No Filter Search

STANDARDS

QUALIFICATIONS

EXECUTION

RECORD KEEPING