Bridge Preservation and Wisconsin Asset Management System (WISAMS)

2018 National Bridge Preservation Partnership Conference

Bill Oliva

Wisconsin DOT

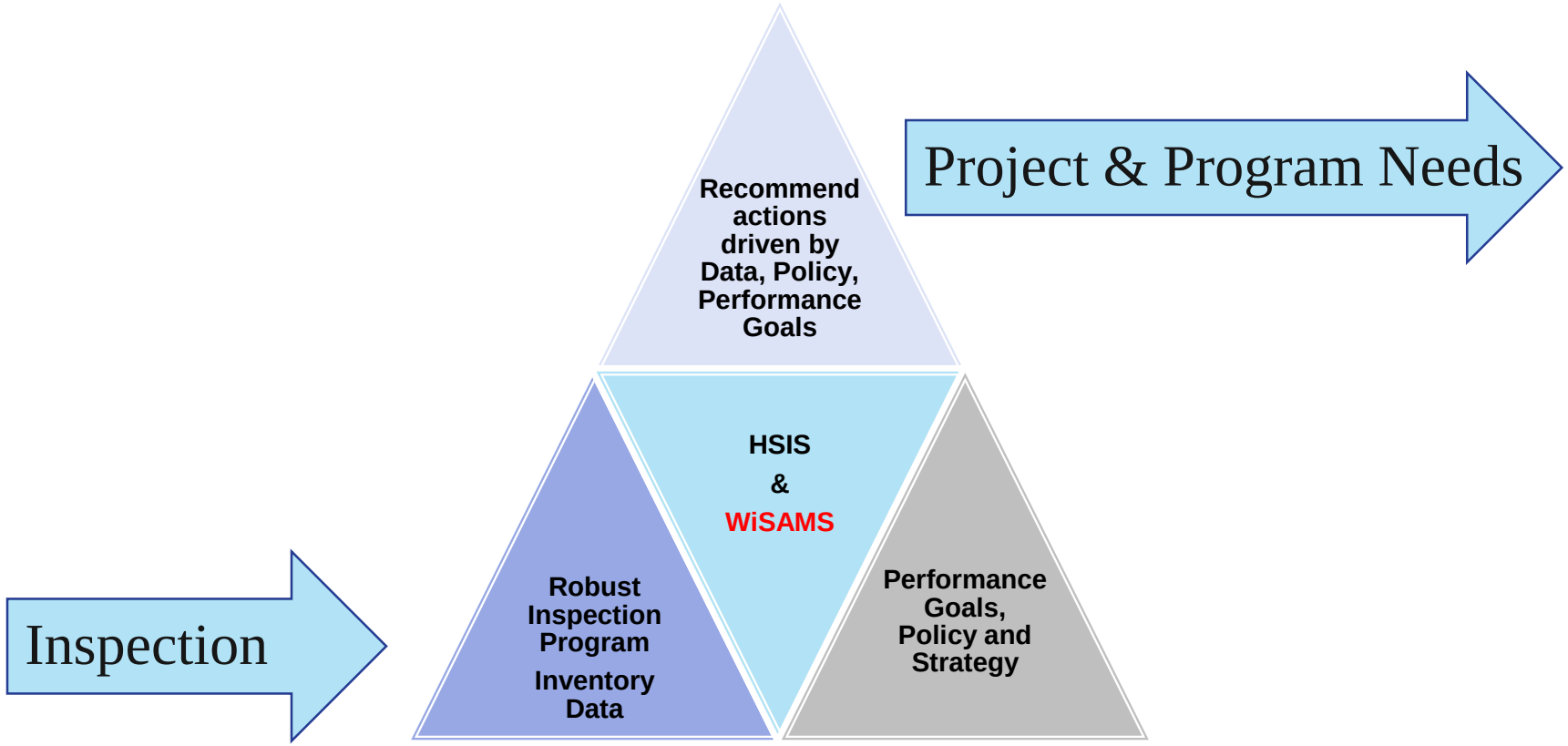
WISCONSIN DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURES

NATIONAL BRIDGE PRESERVATION PARTNERSHIP CONFERENCE 2018
nbppc
BRIDGE PRESERVATION: PRACTICES WE CAN NOT AFFORD TO DEFER

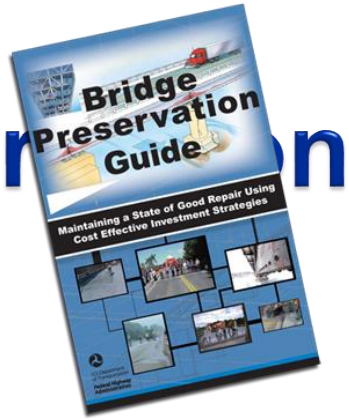
Presentation Outline

- Preservation Policy
- Preventative Maintenance Agreement
- Wisconsin Structures Asset Management System (WiSAMS)
- Scenario Planning and Program Effectiveness
- Structures Program Performance

Bridge Management

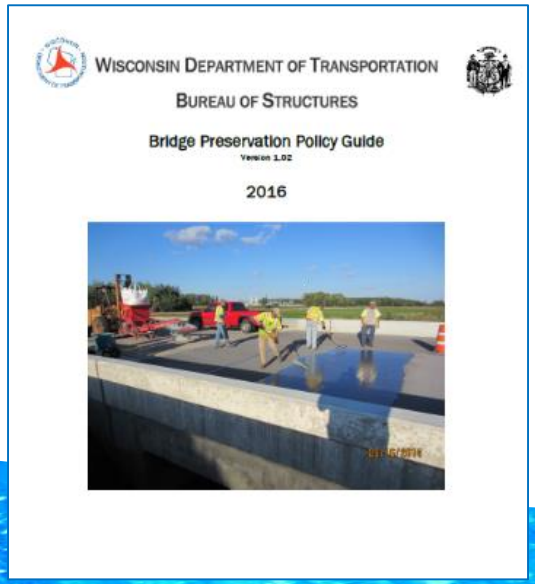


The main goal of the Bridge Preservation Policy



- Maximize the useful life of bridges in a cost effective way

- Identifies more preservation activities to consider along lifecycle of bridge



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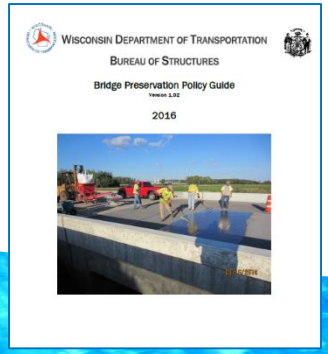
The main goal of the Bridge Preservation Policy

- Applying the right treatments at the right time
  - Optimal and consistent treatments driven by condition and timing
- Create preservation-specific objectives and performance measures
- Identify preservation activities, eligibility and needs to meet objectives



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Bridge Preservation Policy

- Objectives and performance measures

Objective	Target/Goals	Performance Measure
Maintain bridges in good or fair condition	95% of bridges	Percentage of bridge in good or fair condition(NBI rating 5 or higher)
Maintain bridge decks in good or fair condition	95% of bridge decks	Percentage of bridge decks in good or fair condition (NBI Rating 5 or higher)
Seal eligible concrete decks (NBI rating 6 or higher) with sealant every 4 years	Seal 25% eligible concrete decks	Number of decks sealed (sq. ft of deck area) each year during a 4 year period

Bridge Preservation Policy

- Preservation activities and expected frequency

Bridge Component	Bridge Preservation Type	Activity Description	Preventive Maintenance Type	Action Frequency (years)
All	Preventive Maintenance	Sweeping, power washing, cleaning	Cyclical	1-2
Deck	Preventive Maintenance	Deck washing	Cyclical	1
		Deck Sweeping		1
		Deck Sealing/Crack Sealing		4-5
		Thin polymer (Epoxy) overlays		10
		Drainage cleaning/repair		As needed
		Joint cleaning		
		Deck Patching	Condition Based	1- 2
		Chloride extraction		1 -2
		Asphalt overlay with membrane		12-15
		Polymer modified Asphalt overlay		6-12
		Joint seal replacement		10
		Drainage cleaning/repair		1
	Repair or Rehab Element	Rigid concrete overlays	Condition Based	As needed
		Structural Reinforced concrete overlay		
		Deck joint replacement		
		Eliminate joints		

Bridge Preservation Policy

- Activities and eligibility

	NBI Item 58	Deck Element Distress Area (%) ①	Preservation Activity	Benefit to Deck from action	Application Frequency (in years)
Concrete Deck/Slab	=6		Deck Sweeping/Washing	Extend Service Life	1 to 2
		<20%	Crack Sealing	Extend Service Life	3 to 5
		<20%	Deck Sealing	Service life extended	3 to 5
		<5% ②	Deck Patching	Service life maintained	As needed
		<5%	Deck Patching, Cathodic Protection	Extend Service Life	As needed
		<10%	HMA w/ membrane	Improve NBI (58) ≥ 7	8 to 12
		<20%	Polymer Modified Asphalt Overlay	Improve NBI (58) ≥ 7	12 to 15
		<20%	Concrete Overlay	Improve NBI (58) ≥ 7	12 to 30

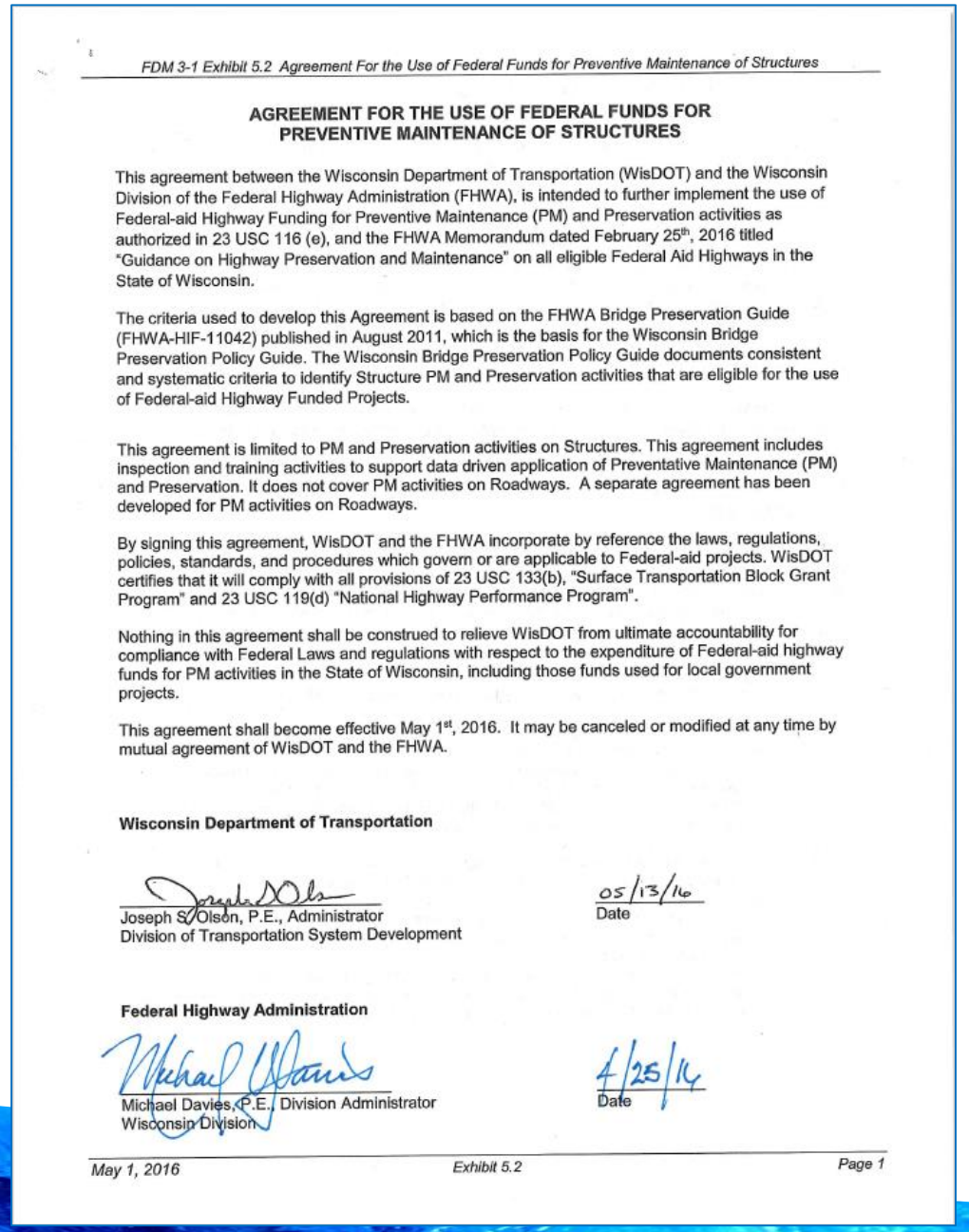
Bridge Preservation Policy

- Activities and eligibility

Super	Steel Elements	Item 59 ≥ 5		N/A	Superstructure Washing/Cleaning	NA	1 to 2
			3440	CS2 + CS3 Area> 5% ⑥	Painting - Spot	CS1	1 to 5
				CS3 Area ≤ 25% ⑥	Painting - Zone	CS1 ①	5 to 7
				CS3 Area ≥ 25% ⑥	Painting - Complete	CS1 ②	15 to 20
		Item 59 ≥ 4		CS2, CS3, or CS4	Superstructure Restoration ③	NBI ≥ 7	5 to 20
	Bearings	Item 59 ≥ 5		CS3 or CS4	Bearing Reset/Repair	CS1 or CS2	1 to 5
				CS2 or CS3	Bearing Cleaning/Painting	CS1 or CS2	5 to 7
				CS3 or CS4	Bearing Replacement	CS1or CS2	10 to 15

FHWA PM Agreement

Agreement for the use of Federal Funds for Preventative Maintenance of Structures



FDM 3-1 Exhibit 5.2 Agreement For the Use of Federal Funds for Preventive Maintenance of Structures

AGREEMENT FOR THE USE OF FEDERAL FUNDS FOR PREVENTIVE MAINTENANCE OF STRUCTURES

This agreement between the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Division of the Federal Highway Administration (FHWA), is intended to further implement the use of Federal-aid Highway Funding for Preventive Maintenance (PM) and Preservation activities as authorized in 23 USC 116 (e), and the FHWA Memorandum dated February 25th, 2016 titled "Guidance on Highway Preservation and Maintenance" on all eligible Federal Aid Highways in the State of Wisconsin.

The criteria used to develop this Agreement is based on the FHWA Bridge Preservation Guide (FHWA-HIF-11042) published in August 2011, which is the basis for the Wisconsin Bridge Preservation Policy Guide. The Wisconsin Bridge Preservation Policy Guide documents consistent and systematic criteria to identify Structure PM and Preservation activities that are eligible for the use of Federal-aid Highway Funded Projects.

This agreement is limited to PM and Preservation activities on Structures. This agreement includes inspection and training activities to support data driven application of Preventative Maintenance (PM) and Preservation. It does not cover PM activities on Roadways. A separate agreement has been developed for PM activities on Roadways.

By signing this agreement, WisDOT and the FHWA incorporate by reference the laws, regulations, policies, standards, and procedures which govern or are applicable to Federal-aid projects. WisDOT certifies that it will comply with all provisions of 23 USC 133(b), "Surface Transportation Block Grant Program" and 23 USC 119(d) "National Highway Performance Program".

Nothing in this agreement shall be construed to relieve WisDOT from ultimate accountability for compliance with Federal Laws and regulations with respect to the expenditure of Federal-aid highway funds for PM activities in the State of Wisconsin, including those funds used for local government projects.

This agreement shall become effective May 1st, 2016. It may be canceled or modified at any time by mutual agreement of WisDOT and the FHWA.

Wisconsin Department of Transportation

Joseph S. Olsen, P.E., Administrator
Division of Transportation System Development

05/13/16
Date

Federal Highway Administration

Michael Davies, P.E., Division Administrator
Wisconsin Division

4/25/16
Date

May 1, 2016 *Exhibit 5.2* *Page 1*

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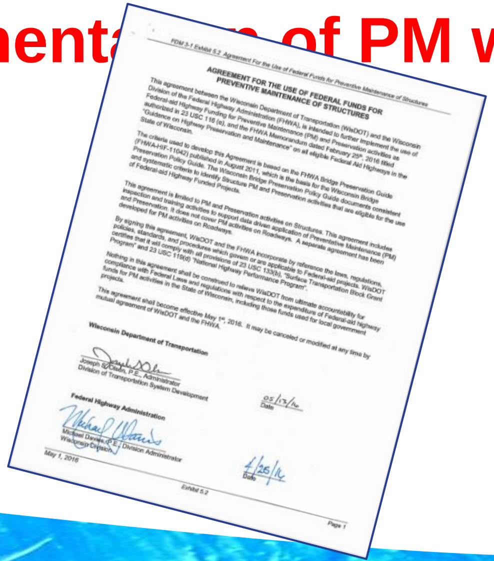
Changes to PM Agreement

- Operational Structure Asset Management System to identify and prioritize structure work activities (HSIS & WISAMS).
- More work types that support Preventative Maintenance and Preservation
- **Systematic criteria, tools, and process for implementation of PM work**


AGREEMENT FOR THE USE OF FEDERAL FUNDS FOR PREVENTIVE MAINTENANCE OF STRUCTURES

Examples of PM and Preservation to structures may include but are not limited to the following:

• Power washing decks or bridges to remove chlorides & de-icing chemicals • Sealing cracks or joints • Sealing decks • Concrete deck patching • Thin Polymer Overlay • Asphalt deck overlay with membrane • Polymer Modified Asphalt deck overlay (low permeability) • Concrete deck overlay • Installation of a Cathodic Protection System • Chloride Extraction	• Repair bridge length culverts (aprons, barrels, slope protection) • Riprap placement • Channel Restoration • Removing large debris from channels • Channel scour mitigation & repair • Slope protection repair • Significant erosion around abutments, wing-walls, and slope paving
• Clean Expansion Joints • Open expansion joint replacement with a waterproof joint • Joint gland repair and replacement • Expansion joint repair or joint replacement • Expansion joint elimination	• Bridge approach restoration • Structural concrete and steel repairs including wing walls (except vehicle damage) • Bridge Rail Restoration/Retrofit to New Standards • Installing vehicle warning systems • Bridge sign placement and repair to include Load and Clearance Posting and protective Tiger Board on Bridge
• Spot painting • Zone repainting • Complete repainting • Spot repainting with complete overcoat • Bearing repairs, painting, or replacements • Railing spot & zone painting • Railing retro-fit and replacement	• Repair Anchor Rod • Repair Galvanizing (rails & bearings) • Pin & Hanger replacement • Retrofit of Fracture Critical details and Fatigue Prone details

Existing FIIPS Work Types

Existing Structure Work Types
Bridge Replacement
Bridge Elimination
New Bridge
Rehab Deck Overlay
Rehab Deck Replacement
Other

New FIIPS Work Types

Status	Structure Work Type Codes	Structure Work Type Descriptions	Estimated Service Life Extensio
Proposed	01	NEW STRUCTURE - BRIDGE OR BOX CULVERT	75
Proposed	03	OVERLAY DECK - CONCRETE	20
Proposed	06	REPLACE DECK	40
Proposed	07	PAINT (COMPLETE)	27
Proposed	08	REPLACE SUPERSTRUCTURE	50
Proposed	20	OVERLAY DECK - CONCRETE / NEW RAIL AND JOINTS	20
Proposed	21	OVERLAY DECK - BIT. HOT MIX ASPHALT (HMA)	20
Proposed	58	OVERLAY DECK - CONCRETE / NEW JOINTS	20
Proposed	65	OVERLAY DECK - BIT. POLYMER MODIFIED ASPHALT (PMA)	20
Proposed	68	REPLACE DECK / WIDENING	40
Proposed	77	OVERLAY DECK - THIN POLYMER	10
Proposed	80	REPLACE DECK / PAINT (COMPLETE)	50
Proposed	91	REPLACE STRUCTURE	75
Proposed	92	OVERLAY DECK - POLYESTER POLYMER	20
Proposed	95	REPLACE DECK / THIN POLY OVLY / PAINT (COMPLETE)	50
Proposed	96	OVERLAY DECK - THIN POLYMER / REPAIR JOINTS	12
Proposed	97	REPLACE DECK / THIN POLYMER OVERLAY	50
Proposed	98	OVERLAY DECK - CONCRETE / PAINT	20
Proposed	99	OVERLAY DECK - THIN POLYMER / NEW JOINTS	15
Proposed	02	WIDEN BRIDGE	50
Proposed	04	REPAIR JOINTS	8
Proposed	09	WIDEN - BOX CULVERT EXTENSION	50
Proposed	10	REPAIR SUPERSTRUCTURE - RESTORE CONDITION AND CAPACITY	25
Proposed	11	REPLACE RAILING OR PARAPET	25
Proposed	12	REPAIR RAILING OR PARAPET	15
Proposed	14	REPAIR SUBSTRUCTURE - RESTORE CONDITION AND CAPACITY	25
Proposed	28	REPAIR DECK - FULL DEPTH	8
Proposed	29	REPAIR OR RESET BEARINGS	40
Proposed	35	SEAL DECK- CONCRETE	4
Proposed	40	RAISE STRUCTURE	5
Proposed	42	REPLACE BEARINGS	50
Proposed	43	OTHER (UNSPECIFIED "LET" WORK TYPES)	
Proposed	49	REPLACE JOINTS	12
Proposed	66	REPAIR SCOUR COUNTERMEASURES (RIPRAP OR OTHER)	10
Proposed	72	REPLACE OR REPAIR WINGWALLS	50
Proposed	75	PAINT (ZONE OR SPOT)	12
Proposed	79	REPAIR BOX CULVERT	40
Proposed	90	ELIMINATION - BRIDGE OR BOX CULVERT	
Proposed	93	RAISE STRUCTURE / REPLACE DECK	50
Proposed	94	REPLACE OR REPAIR APPROACH SLABS	15
Current	BR	BRIDGE REPLACEMENT	
Current	EL	BRIDGE ELIMINATION	
Current	NB	NEW BRIDGE	
Current	OL	REHAB DECK OVERLAY	
Current	OT	OTHER	
Current	RE	REHAB DECK REPLACEMENT	

New FIIPS Work Types

Primary

Incidental

Existing

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Proposed	58	OVERLAY DECK - CONCRETE / NEW JOINTS	20
Proposed	65	OVERLAY DECK - BIT. POLYMER MODIFIED ASPHALT (PMA)	20
Proposed	68	REPLACE DECK / WIDENING	40
Proposed	77	OVERLAY DECK - THIN POLYMER	10
Proposed	80	REPLACE DECK / PAINT (COMPLETE)	50
Proposed	91	REPLACE STRUCTURE	75
Proposed	92	OVERLAY DECK - POLYESTER POLYMER	20
Proposed	95	REPLACE DECK / THIN POLY OVLY / PAINT (COMPLETE)	50
Proposed	96	OVERLAY DECK - THIN POLYMER / REPAIR JOINTS	12
Proposed	97	REPLACE DECK / THIN POLYMER OVERLAY	50
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Current	BR	BRIDGE REPLACEMENT	
Current	EL	BRIDGE ELIMINATION	
Current	NB	NEW BRIDGE	
Current	OL	REHAB DECK OVERLAY	
Current	OT	OTHER	
Current	RE	REHAB DECK REPLACEMENT	

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Federal Improvement Types

		WisDOT Structure Work Types																																							
Federal Improvement Types	Description	NEW STRUCTURE - BRIDGE OR BOX CULVERT	OVERLAY DECK - CONCRETE	REPLACE DECK	PAINT (COMPLETE)	REPLACE SUPERSTRUCTURE	OVERLAY DECK - CONCRETE / NEW RAIL AND JOINTS	OVLY DECK - BIT. HOT MIX ASPHALT (HMA) W/ MEMBRANE	OVERLAY DECK - CONCRETE / NEW JOINTS	OVERLAY DECK - BIT. POLYMER MODIFIED ASPHALT (PMA)	REPLACE DECK / WIDENING	OVERLAY DECK - THIN POLYMER	REPLACE DECK / PAINT (COMPLETE)	REPLACE STRUCTURE	OVERLAY DECK - POLYESTER POLYMER	REPLACE DECK / THIN POLY OVLY / PAINT (COMPLETE)	OVERLAY DECK - THIN POLYMER / REPAIR JOINTS	REPLACE DECK / THIN POLYMER OVERLAY	OVERLAY DECK - CONCRETE / PAINT	OVERLAY DECK - THIN POLYMER / NEW JOINTS	WIDEN BRIDGE	REPAIR JOINTS	WIDEN - BOX CULVERT EXTENSION	REPAIR SUPERSTRUCT. - RESTORE CONDITION & CAPACITY	REPLACE RAILING OR PARAPET	REPAIR RAILING OR PARAPET	REPAIR SUBSTRUCT. - RESTORE CONDITION & CAPACITY	REPAIR DECK - FULL DEPTH	REPAIR OR RESET BEARINGS	SEAL DECK- CONCRETE	RAISE STRUCTURE	REPLACE BEARINGS	OTHER (UNSPECIFIED "LET" WORK TYPES)	REPLACE JOINTS	REPAIR SCOUR COUNTERMEASURES (RIPRAP OR OTHER)	REPLACE OR REPAIR WINGWALLS	PAINT (ZONE OR SPOT)	REPAIR BOX CULVERT	BRIDGE INSPECTION AND BRIDGE RELATED TRAINING	OTHER ASSET INSPECTION	ELIMINATION - BRIDGE OR BOX CULVERT	RAISE STRUCTURE / REPLACE DECK	REPLACE OR REPAIR APPROACH SLABS
Code		01	03	06	07	08	20	21	58	65	68	77	80	91	92	95	96	97	98	99	02	04	09	10	11	12	14	28	29	35	40	42	43	49	66	72	75	79	84	85	90	93	94
8	New Bridge	X																																									
9	Bridge Replacement (Obsolete)																																										
10	Bridge Replacement													X																											X		
11	Bridge Replacement - No Added Capacity																																										
12	Bridge Rehabilitation (Obsolete)																																										
13	Bridge Rehabilitation		X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X			X	X			X		X			X	X	X
14	Bridge Rehabilitation - No Added Capacity																																										
15	Preliminary Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X
16	Right of Way																																										
17	Construction Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X
40	Special Bridge																				X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X				X	X
47	Bridge Preservation		X		X		X	X	X	X		X	X		X	X	X	X	X	X		X		X			X	X	X	X		X	X	X			X	X					X
48	Bridge Protection																														X		X		X							X	
49	Bridge Inspection and Bridge Related Training																																						X				
56	Other Asset Inspection																																							X			
57	Safety-Non Infrastructure																																										
58	Freight																																										
59	Bridge Resurfacing		X				X	X	X	X		X			X		X		X	X																							

Wisconsin Structure Asset Management System (WiSAMS)

- A tool to determine optimal work candidates for improving the condition of structures and more…..
- Work candidates include rehabilitating or replacing structure elements as well as replacing structures entirely.
- Relies on historical bridge inspection data. It also relies on user-refined eligibility criteria applied to work candidates and deterioration curves.

WiSAMS

- Data import from HSI, FIIPS, and other storage locations (Condition, costs, deterioration data, etc.)
- Identification of Primary and Incidental work candidates based on existing bridge age and condition
- Calculation of the cost of selected work items
- Calculation of the Condition Assessment Index (CAI) of the bridge prior to and after work candidate.

WiSAMS

- Deterioration of NBI values and Elements for a given window of time.
- Analysis of programmed work items (FIIPS), showing benefit of work to CAI
- Calculates “Criticality” or “Priority” for doing work on a particular structure *(under development).*

Condition Assessment Index (CAI)

This measure currently incorporates:

- **Deck**
- **Super Structure**
- **Sub-Structure**
- **Culvert**
- **Paint System**
- **Overlay, Joints, & Bearing**

Rules and Optimal Work Candidates

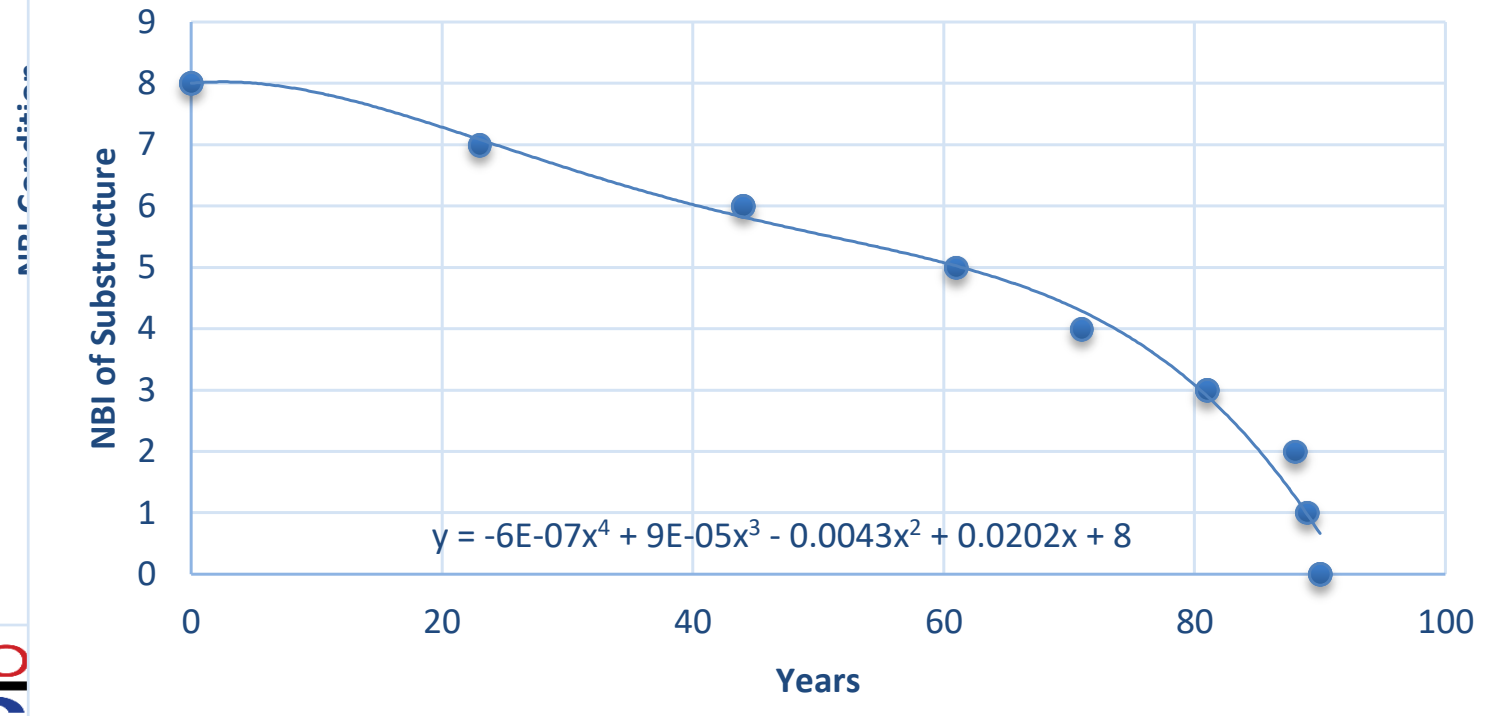
RULE ID	DATA FIELD(S)	CONSTRAINT(S)	WORK ACTION	ADD THESE MISCELLANEOUS ACTIONS, IF ELIGIBLE	REPORT FOR STATE OPTIMAL WORK CANDIDATES?
OVERLAY REVIEW					
15	DECK_NBI	≥ 7	Thin Polymer Overlay	20, 21, 22, 23, 24, 26, 27, 28, 29, 30	
	# OF OVERLAYS	0			
	DEFECT 1080	CS2+CS3+CS4 < 5%			
16	DECK NBI	6	PMA or Concrete Overlay	20, 21, 22, 23, 24, 26, 27, 28, 29, 30	
	# OF OVERLAYS	0			
	DEFECT 1080	CS2+CS3+CS4 < 20%			
17	DECK NBI	5	Concrete Overlay	20, 21, 22, 23, 24, 26, 27, 28, 29, 30	Yes
	# OF OVERLAYS	0			
	DEFECT 1080	CS2+CS3+CS4 < 20%			
18	DECK NBI	6, 7, 8	Replace PMA or Concrete Overlay	20, 21, 22, 23, 24, 26, 27, 28, 29, 30	
	# OF OVERLAYS	< 2			
	DEFECT 3210 OR 8911 OR 3220	CS2+CS3+CS4 < 20%			
	DEFECT 1080	CS2+CS3+CS4 < 20%			
19	DECK NBI	6, 7, 8	Replace Concrete Overlay	20, 21, 22, 23, 24, 26, 27, 28, 29, 30	Yes

Deterioration of Bridge Elements and NBI

Superstructure Deterioration

Deck Deterioration - NBI

Substructure Deterioration



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Priority, Criticality, and Vulnerability

- AADT
- AADTT
- Detour length
- Single Access
- 2030 Corridor
- Functional Class
- MPO
- Primary Hwy Freight System
- Long Truck Route
- OSOW Route
- High Clearance
- NHS
- SPV Max Vehicle Weight
- Load Posting
- Closure Risk
- Structure Age
- Ride, Wearing Surface
- Complex Structure
- Large Bridge
- Border Bridge
- Scour Critical/Fracture Critical
- Vertical Clearance Under
- Damage Inspection (Bridge Hits)

Information for DTIM and Regions

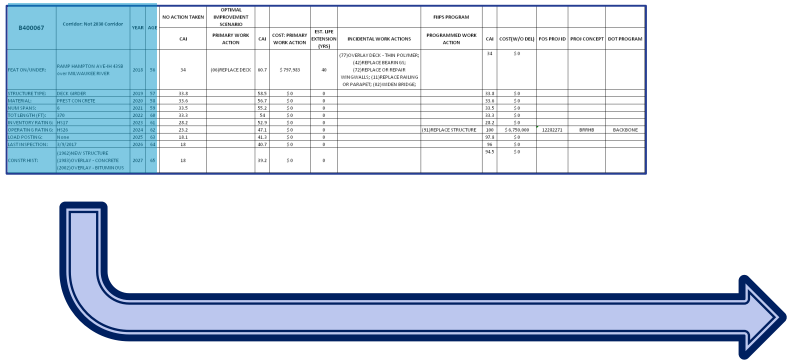
- Optimal Work
- Optimal Year
- Benefit of Work to the CAI
- Cost of Work
- **Incidental Work Items**

Asset Management Tools

- WiSAMS output

B400067	Corridor: Not 2030 Corridor	YEAR	AGE	NO ACTION TAKEN	OPTIMAL IMPROVEMENT SCENARIO					FIIPS PROGRAM					
				CAI	PRIMARY WORK ACTION	CAI	COST: PRIMARY WORK ACTION	EST. LIFE EXTENSION (YRS)	INCIDENTAL WORK ACTIONS	PROGRAMMED WORK ACTION	CAI	COST(W/O DEL)	FOS PROJ ID	PROJ CONCEPT	DOT PROGRAM
FEAT ON/UNDER:	RAMP HAMPTON AVE-IH 43SB over MILWAUKEE RIVER	2018	56	34	(06)REPLACE DECK	60.7	$ 797,983	40	(77)OVERLAY DECK - THIN POLYMER; (42)REPLACE BEARINGS; (72)REPLACE OR REPAIR WINGWALLS; (11)REPLACE RAILING OR PARAPET; (02)WIDEN BRIDGE;		34	$ 0			
STRUCTURE TYPE:	DECK GIRDER	2019	57	33.8		58.5	$ 0	0			33.8	$ 0			
MATERIAL:	PREST CONCRETE	2020	58	33.6		56.7	$ 0	0			33.6	$ 0			
NUM SPANS:	6	2021	59	33.5		55.2	$ 0	0			33.5	$ 0			
TOT LENGTH (FT):	370	2022	60	33.3		54	$ 0	0			33.3	$ 0			
INVENTORY RATING:	HS17	2023	61	28.2		52.9	$ 0	0			28.2	$ 0			
OPERATING RATING:	HS26	2024	62	23.2		47.1	$ 0	0		(91)REPLACE STRUCTURE	100	$ 6,750,000	12282271	BRRHB	BACKBONE
LOAD POSTING:	None	2025	63	18.1		41.3	$ 0	0			97.8	$ 0			
LAST INSPECTION:	3/9/2017	2026	64	18		40.7	$ 0	0			96	$ 0			
CONSTR HIST:	(1962)NEW STRUCTURE (1983)OVERLAY - CONCRETE (2002)OVERLAY - BITUMINOUS	2027	65	18		39.2	$ 0	0			94.5	$ 0			

Asset Management Tools

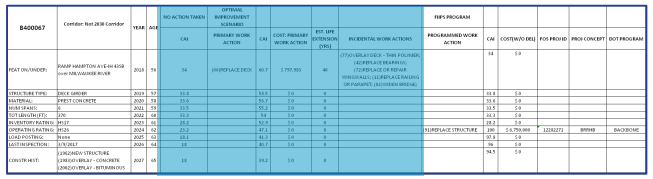


B400067	Corridor: Not 2030 Corridor	YEAR	AGE
FEAT ON/UNDER:	RAMP HAMPTON AVE-IH 43SB over MILWAUKEE RIVER	2018	56
STRUCTURE TYPE:	DECK GIRDER	2019	57
MATERIAL:	PREST CONCRETE	2020	58
NUM SPANS:	6	2021	59
TOT LENGTH (FT):	370	2022	60
INVENTORY RATING:	HS17	2023	61
OPERATING RATING:	HS26	2024	62
LOAD POSTING:	None	2025	63
LAST INSPECTION:	3/9/2017	2026	64
CONSTR HIST:	(1962)NEW STRUCTURE (1983)OVERLAY - CONCRETE (2002)OVERLAY - BITUMINOUS	2027	65

WISCONSIN DEPARTMENT OF TRANSPORTATION

BUREAU OF STRUCTURES

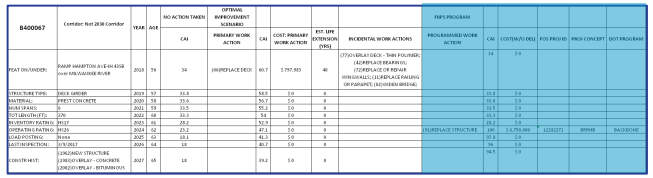
Asset Management Tools



- Condition Assessment Index
- Cost estimates

NO ACTION TAKEN	OPTIMAL IMPROVEMENT SCENARIO				
CAI	PRIMARY WORK ACTION	CAI	COST: PRIMARY WORK ACTION	EST. LIFE EXTENSION (YRS)	INCIDENTAL WORK ACTIONS
34	(06)REPLACE DECK	60.7	$ 797,983	40	(77)OVERLAY DECK - THIN POLYMER; (42)REPLACE BEARINGS; (72)REPLACE OR REPAIR WINGWALLS; (11)REPLACE RAILING OR PARAPET; (02)WIDEN BRIDGE;
33.8		58.5	$ 0	0	
33.6		56.7	$ 0	0	
33.5		55.2	$ 0	0	
33.3		54	$ 0	0	
28.2		52.9	$ 0	0	
23.2		47.1	$ 0	0	
18.1		41.3	$ 0	0	
18		40.7	$ 0	0	
18		39.2	$ 0	0	

Asset Management Tools



- Information from WisDOT FIIPS financial system

FIIPS PROGRAM					
PROGRAMMED WORK ACTION	CAI	COST(W/O DEL)	FOS PROJ ID	PROJ CONCEPT	DOT PROGRAM
	34	$ 0			
	33.8	$ 0			
	33.6	$ 0			
	33.5	$ 0			
	33.3	$ 0			
	28.2	$ 0			
(91)REPLACE STRUCTURE	100	$ 6,750,000	12282271	BRRHB	BACKBONE
	97.8	$ 0			
	96	$ 0			
	94.5	$ 0			

Regional Report - Detailed

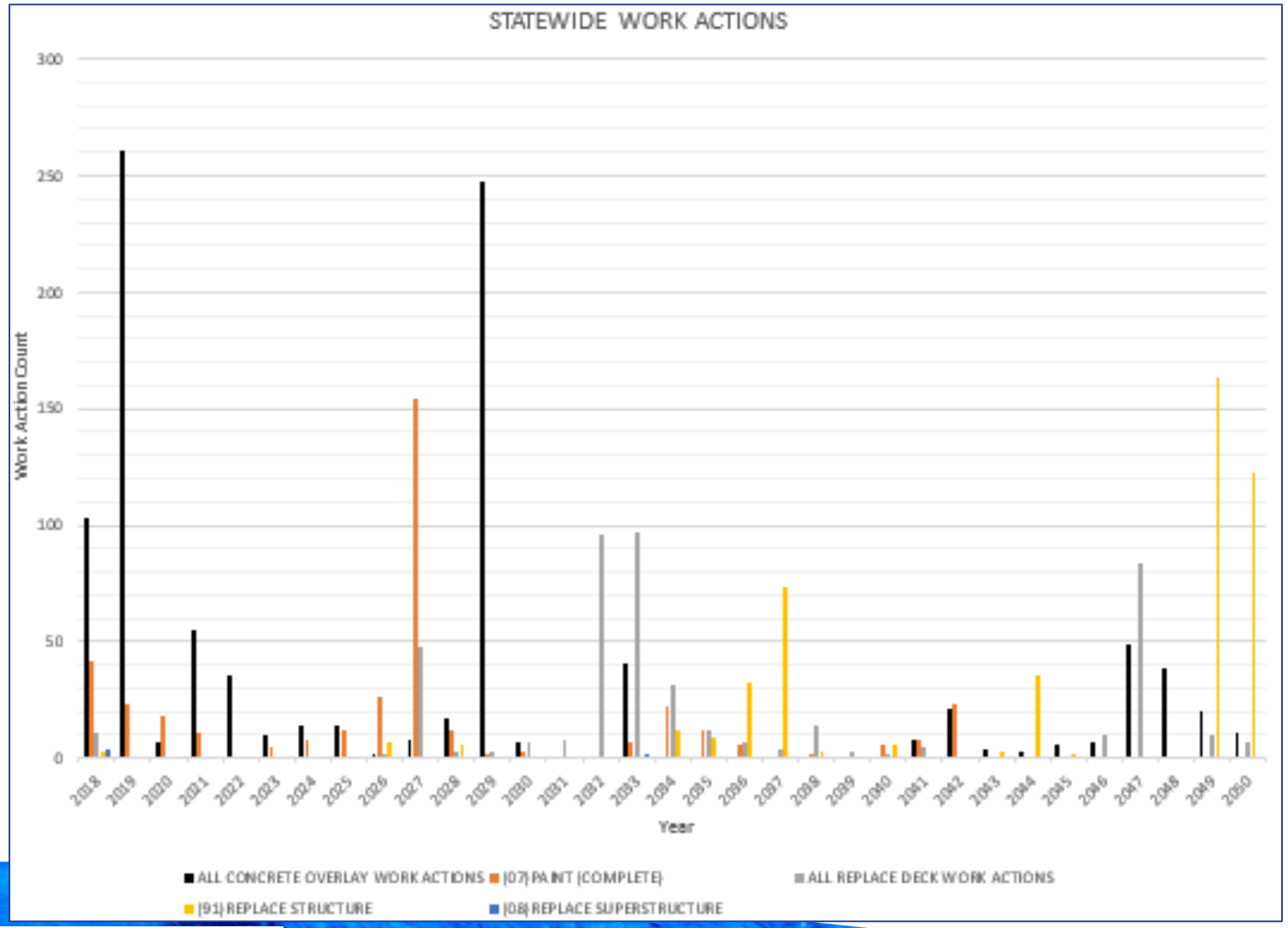
	2030 coor													
B120027	Corridor: C2	YEAR	AGE	NO ACTION TAKEN CAI	OPTIMAL IMPROVEMENT SCENARIO PRIMARY WORK ACTION	CAI	COST: PRIMARY WORK ACTION	EST. LIFE EXTENSION (YRS)	INCIDENTAL WORK ACTIONS	FIIPS PROGRAM PROGRAMMED WORK ACTION	CAI	FOS PROJ ID	PROJ CONCEPT	DOT PROGRAM
FEAT ON/UNDER:	USH 18-STH 60 over IA ROUTE 76	2017	43	85.3		85	$0	0			85			
STRUCTURE TYPE:	TIED ARCH	2018	44	83.7		84	$0	0			84			
MATERIAL:	STEEL	2019	45	81.9		82	$0	0		(92)OVERLAY DECK - POLYESTER POLYMER	87	16600367	BRIDGE REHABILITATION	SHR BRIDGES
NUM SPANS:	13	2020	46	79.9		80	$0	0			85			
TOT LENGTH (FT):	2557.6	2021	47	77.9		78	$0	0			83			
INVENTORY RATING:	HS15	2022	48	76	(58)OVERLAY DECK - CONCRETE / NEW JOINTS	88	$3,155,635	20	(75)PAINT (ZONE OR SPOT); (12)REPAIR RAILING OR PARAPET; (14)REPAIR SUBSTRUCTURE - RESTORE CONDITION AND CAPACITY;		81			
OPERATING RATING:	HS26	2023	49	74.1		85	$0	0			79			
LOAD POSTING:	EVALUATE PERMIT MANUALLY	2024	50	72.6		83	$0	0			73			
LAST INSPECTION:	8/20/2015	2025	51	71.2	(07)PAINT (COMPLETE)	88	$9,709,200		(12)REPAIR RAILING OR PARAPET;		72			

Regional Report

- **Needs Analysis Summary (by year)**

	NEEDS ANALYSIS - OPTIMAL SCENARIO												
	STRUCTURE SELECTION: XX REGION, STATE-OWNED STRUCTURES												
	# OF STRUCTURES: 684												
	ANALYSIS DATE: 5/22/2017												
	PROGRAM		(03)OVERLAY DECK - CONCRETE		(58)OVERLAY DECK - CONCRETE / NEW JOINTS		(98)OVERLAY DECK - CONCRETE / PAINT		(77)OVERLAY DECK - THIN POLYMER		(07)PAINT (COMPLETE)		(06)REPLACE
YEAR	OCCURRENCES	TOTAL COST	OCCURRENCES	TOTAL COST	OCCURRENCES	TOTAL COST	OCCURRENCES	TOTAL COST	OCCURRENCES	TOTAL COST	OCCURRENCES	TOTAL COST	OCCURRENC
2018	115	$ 24,536,015	75	$ 13,944,100	4	$ 1,712,861	0	$ 0	20	$ 2,812,152	5	$ 1,068,030	
2019	13	$ 3,384,119	6	$ 963,450	0	$ 0	0	$ 0	0	$ 0	5	$ 713,208	
2020	7	$ 1,415,599	4	$ 575,950	0	$ 0	0	$ 0	0	$ 0	3	$ 839,649	
2021	71	$ 12,850,272	64	$ 11,012,475	0	$ 0	1	$ 123,750	1	$ 205,824	2	$ 916,061	
2022	126	$ 30,161,717	110	$ 27,599,400	2	$ 1,007,307	2	$ 314,500	9	$ 938,208	2	$ 104,595	
2023	35	$ 8,545,026	24	$ 6,900,825	0	$ 0	0	$ 0	5	$ 358,356	5	$ 840,036	
2024	33	$ 10,494,240	13	$ 3,248,675	0	$ 0	0	$ 0	0	$ 0	13	$ 2,046,956	
2025	49	$ 14,209,921	22	$ 7,554,675	0	$ 0	0	$ 0	0	$ 0	20	$ 3,159,033	
2026	23	$ 6,930,862	5	$ 853,525	1	$ 177,958	0	$ 0	0	$ 0	15	$ 5,484,662	
2027	17	$ 9,567,866	8	$ 1,910,875	0	$ 0	0	$ 0	0	$ 0	2	$ 194,760	

Planning/Asset Management Tools



WISCONSIN DEPARTMENT OF TRANSPORTATION

BUREAU OF STRUCTURES

Performance Measures

Under consideration

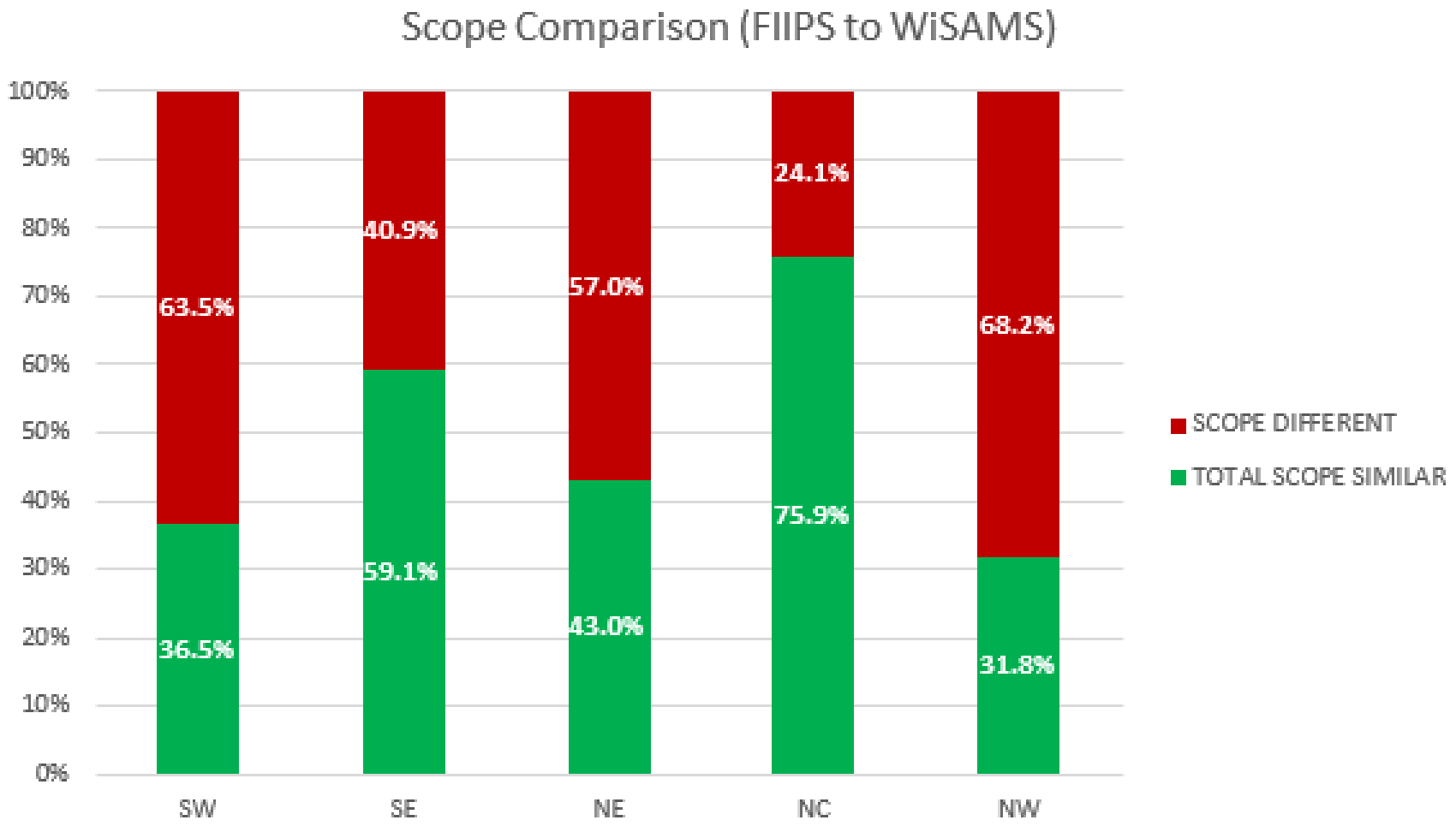
And being tracked

Measures – Structures Eligibility and Effectiveness (State & Local) *(New)*

This measure would include the following data collection and analysis:

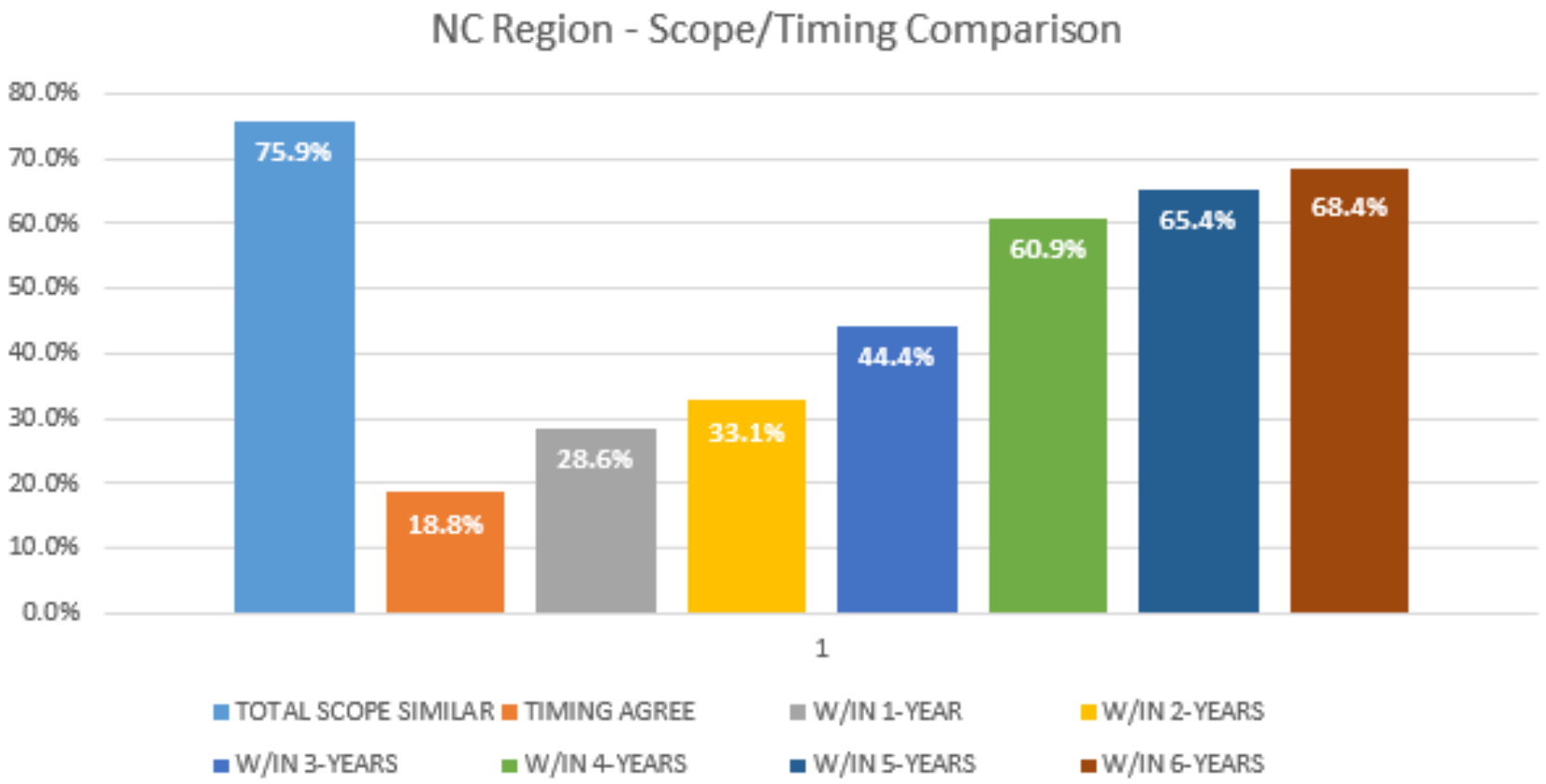
- Comparison of WISAMS optimal work type and FIIPS approved program. This would provide insight into calibration of WISAMS data as well as "other factors" that influence programming.
- Inclusion of incidental work types being incorporated in FIIPS/let projects.

Measures – Structures Eligibility and Effectiveness (State & Local) *(under development)*



BUREAU OF STRUCTURES

Measures – Structures Eligibility and Effectiveness (State & Local) *(under development)*

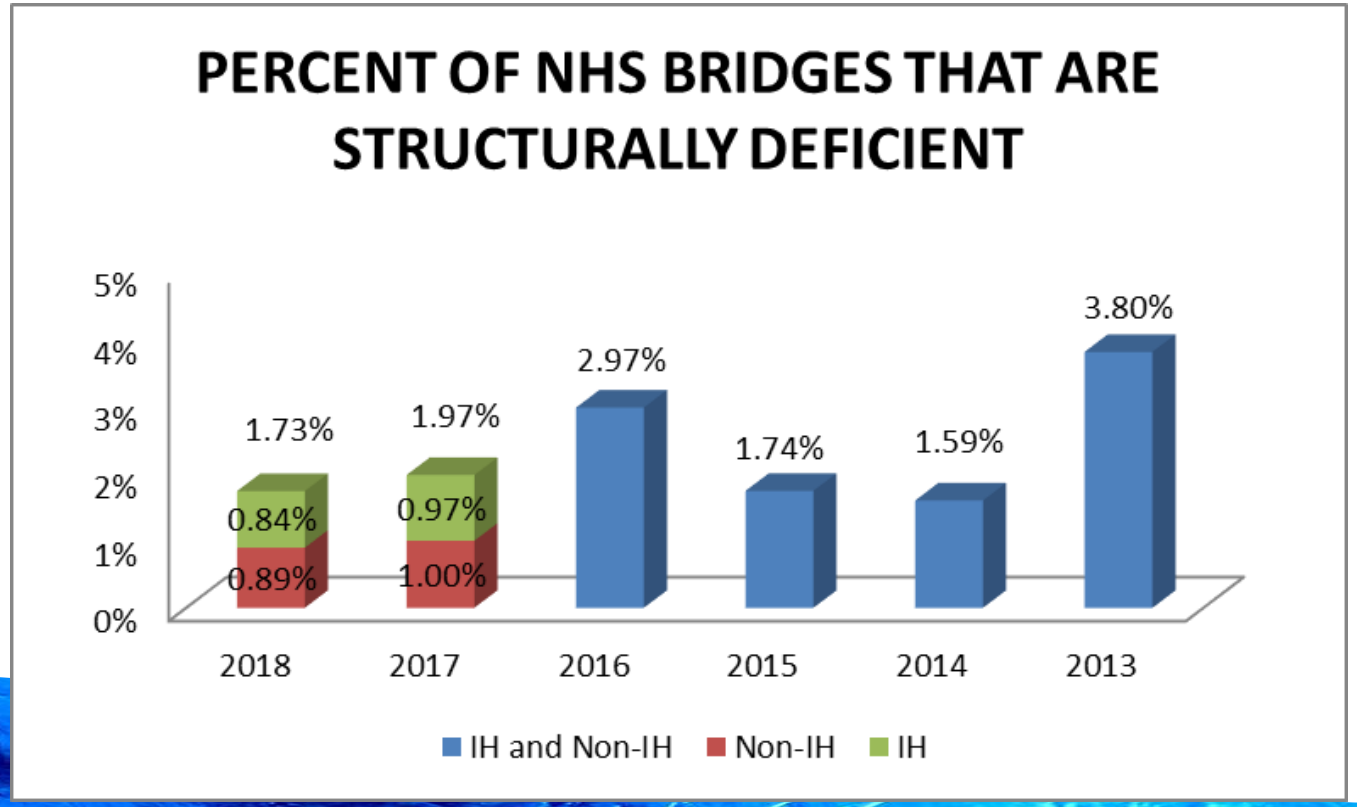


Preservation Policy Objectives and Performance Measures Progress

Objective	Target	2015-2016 Performance
Maintain Bridge Decks in Good or Fair Condition	95% by Deck Area	96.8%
Maintain coated steel surfaces in condition state 2 or better	90% of coated steel surfaces	90.4%
Maintain Expansion Joint in condition state 2 or better	90% of overall length of expansion joint	92.8%
Percentage of failed strip seal expansion joints. The entire joint is considered failed when 10% of the length is in CS3 and CS4.	No target by number of joints	14.5% (based on CS3+CS4 = 10% or more)
Maintain bearings in condition state 2 or better	95% of bearings	91.3%

MAP 21 - Performance Measure

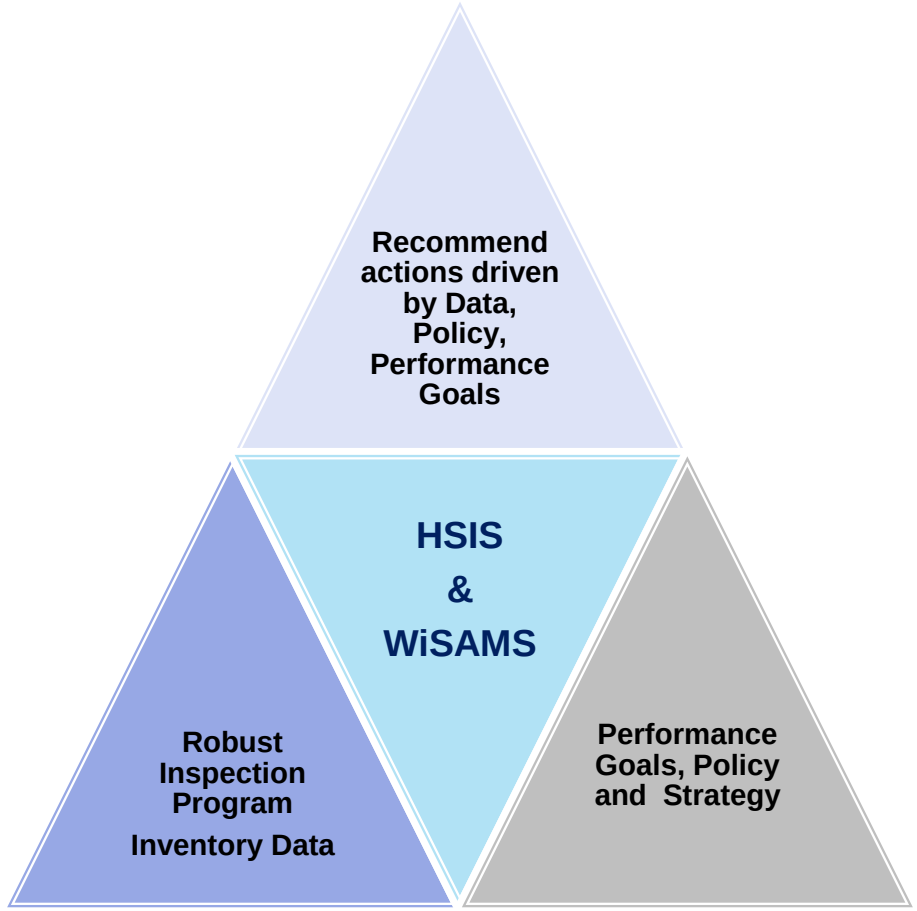
- Measure 1: Percent of Deck Area on Structurally Deficient Bridges—NHS bridge deck area on structurally deficient bridges as a percentage of total NHS bridge deck area.



Bridge/Asset Management contacts

- Philip Meinel –Asset Management Engineer
- Ryan Bowers –Asset Management Engineer
- Josh Dietsche – Supervisor, Bridge Management
- Bill Oliva – Chief of Structures Development Section

Question?


Recommend actions driven by Data, Policy, Performance Goals
HSIS
&
WiSAMS
Robust Inspection Program
Inventory Data
Performance Goals, Policy and Strategy