National Bridge Inventory: Michigan

American Road & Transportation Builders Association

2021 Bridge Profile

Highlights from FHWA's 2020 National Bridge Inventory Data

- Of the 11,271 bridges in the state, 1,219, or 10.8 percent, are classified as structurally deficient. This means one of the key elements is in poor or worse condition.
- This is up from 1,202 bridges classified as structurally deficient in 2016.
- The deck area of structurally deficient bridges accounts for 7.5 percent of total deck area on all structures.
- 72 of the structurally deficient bridges are on the Interstate Highway System. A total of 83.9 percent of the structurally deficient bridges are not on the National Highway System, which includes the Interstate and other key roads linking major airports, ports, rail and truck terminals.
- 1,213 bridges are posted for load, which may restrict the size and weight of vehicles crossing the structure.
- The state has identified needed repairs on 2,667 bridges at an estimated cost of $2.5 billion.

Bridge Inventory

Type of Bridge[4]	All Bridges			Structurally Deficient Bridges		
	Total Number	Area (sq. meters)	Daily Crossings	Total Number	Area (sq. meters)	Daily Crossings
Rural Bridges						
Interstate	403	368,427	7,934,575	16	9,922	297,194
Other principal arterial	641	412,793	5,703,469	33	15,501	273,395
Minor arterial	623	294,861	3,159,599	49	22,451	194,352
Major collector	2,096	690,117	4,418,165	248	60,344	524,402
Minor collector	541	138,556	1,082,073	57	9,738	31,376
Local	3,173	563,924	1,551,224	460	51,751	124,372
Urban Bridges						
Interstate	837	1,407,949	30,280,644	56	87,965	2,007,386
Freeway/expressway	320	337,818	8,377,680	16	14,217	364,691
Other principal arterial	711	883,186	15,557,213	67	80,270	1,295,587
Minor arterial	825	753,292	9,607,549	106	81,161	1,171,845
Collector	485	292,606	3,256,738	45	28,601	227,619
Local	616	330,287	2,943,800	66	23,632	187,973
Total	**11,271**	**6,473,817**	**93,872,728**	**1,219**	**485,554**	**6,700,192**

Proposed Bridge Work

Type of Work	Number	Cost (millions)	Daily Crossings	Area (sq. meters)
Bridge replacement	665	$362,403.7	1,983,113	147,677
Widening & rehabilitation	77	$73,161.2	1,306,372	44,445
Rehabilitation	989	$678,255.9	5,543,623	407,953
Deck rehabilitation/replacement	767	$1,238,004.3	9,508,007	749,615
Other work	169	$142,840.7	651,633	85,795
Total	**2,667**	**$2,494,665.7**	**18,992,748**	**1,435,485**

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Top Most Traveled Structurally Deficient Bridges in Michigan

County	Year Built	Daily Crossings	Type of Bridge	Location
Wayne	1967	103,925	Urban Interstate	I-75 over Fort St
Wayne	1971	98,506	Urban Interstate	I-94 over Ent to Ford Plant
Macomb	1955	82,735	Urban other principal arterial	Mound Rd over Sharkey Drain
Wayne	1970	78,863	Urban Interstate	I-96 WB Main Rdwy over M-39 (Southfield Expr)
Wayne	1962	74,175	Urban Interstate	I-94 WB over Ecorse Rd
Genesee	1957	70,414	Urban Interstate	I-75 over Court St
Kalamazoo	1956	69,260	Urban Interstate	I-94 over Portage Road
Oakland	1964	65,985	Urban Interstate	I-75 SB over M-150 (Rochester Rd.)
Wayne	1971	65,653	Urban Interstate	I-275 SB over Schoolcraft Rd
Wayne	1953	64,700	Urban freeway/expressway	M-10 EB over I-94 Ramp

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About the data: Data is from the Federal Highway Administration (FHWA) National Bridge Inventory (NBI), downloaded on March 11, 2021. Note that specific conditions on bridges may have changed as a result of recent work or updated inspections.

Effective January 1, 2018, FHWA changed the definition of structurally deficient as part of the final rule on highway and bridge performance measures, published May 20, 2017 pursuant to the 2012 federal aid highway bill Moving Ahead for Progress in the 21st Century Act (MAP-21). Two measures that were previously used to classify bridges as structurally deficient are no longer used. This includes bridges where the overall structural evaluation was rated in poor or worse condition, or where the adequacy of waterway openings was insufficient.

The new definition limits the classification to bridges where one of the key structural elements—the deck, superstructure, substructure or culverts, are rated in poor or worse condition. During inspection, the conditions of a variety of bridge elements are rated on a scale of 0 (failed condition) to 9 (excellent condition). A rating of 4 is considered "poor" condition.

Cost estimates have been derived by ARTBA, based on 2019 average bridge replacement costs for structures on and off the National Highway System, published by FHWA. Bridge rehabilitation costs are estimated to be 68 percent of replacement costs. A bridge is considered to need repair if the structure has identified repairs as part of the NBI, a repair cost estimate is supplied by the bridge owner or the bridge is classified as structurally deficient. Please note that for a few states, the number of bridges needing to be repaired can vary significantly from year to year, and reflects the data entered by the state.

Bridges are classified by FHWA into types based on the functional classification of the roadway on the bridge. Interstates comprise routes officially designated by the Secretary of Transportation. Other principal arterials serve major centers of urban areas or provide mobility through rural areas. Freeways and expressways have directional lanes generally separated by a physical barrier, and access/egress points generally limited to on- and off-ramps. Minor arterials serve smaller areas and are used for trips of moderate length. Collectors funnel traffic from local roads to the arterial network; major collectors have higher speed limits and traffic volumes and are longer in length and spaced at greater intervals, while minor collectors are shorter and provide service to smaller communities. Local roads do not carry through traffic and are intended for short distance travel.