

National Bridge Inventory: North Carolina



2021 Bridge Profile

Highlights from FHWA's 2020 National Bridge Inventory Data

- Of the 18,749 bridges in the state, 1,460, or 7.8 percent, are classified as structurally deficient. This means one of the key elements is in poor or worse condition.
- This is down from 1,764 bridges classified as structurally deficient in 2016.
- The deck area of structurally deficient bridges accounts for 6.6 percent of total deck area on all structures.
- 37 of the structurally deficient bridges are on the Interstate Highway System. A total of 90.3 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.
- 2,551 bridges are posted for load, which may restrict the size and weight of vehicles crossing the structure.
- The state has identified needed repairs on 5,680 bridges at an estimated cost of \$3.7 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	337	300,672	6,820,425	13	12,615	343,500
Other principal arterial	931	1,090,505	8,507,056	30	63,581	342,100
Minor arterial	697	495,554	3,899,656	49	117,734	256,950
Major collector	1,771	940,723	4,891,652	139	117,575	384,421
Minor collector	1,406	470,941	1,971,464	127	30,652	130,070
Local	7,103	1,456,388	3,810,850	731	101,378	298,190
Urban Bridges						
Interstate	949	1,461,133	36,487,046	24	21,944	1,128,750
Freeway/expressway	703	1,101,726	15,361,667	33	26,085	933,750
Other principal arterial	894	961,928	16,007,354	46	43,209	852,000
Minor arterial	1,066	968,628	12,777,968	55	79,320	630,380
Collector	1,047	615,923	6,213,237	69	33,667	382,610
Local	1,845	648,641	5,709,296	144	37,725	363,693
Total	18,749	10,512,761	122,457,672	1,460	685,485	6,046,414

Proposed Bridge Work

Type of Work	Number	Cost (millions)	Daily Crossings	Area (sq. meters)
Bridge replacement	840	\$679,989.2	2,484,694	423,115
Widening & rehabilitation	.	\$.	.	.
Rehabilitation	4,630	\$2,917,947.8	32,078,061	2,669,320
Deck rehabilitation/replacement				
Other work	210	\$53,717.4	287,838	49,273
Total	5,680	\$3,651,654.3	34,850,593	3,141,708

Top Most Traveled Structurally Deficient Bridges in North Carolina

County	Year Built	Daily Crossings	Type of Bridge	Location
Wake	1982	118,000	Urban Interstate	I40 over Walnut Creek
Wake	1986	115,000	Urban Interstate	I40 over Big Branch Creek
Mecklenburg	1971	110,000	Urban Interstate	I277 & NC16 over US29/Nc49 (Graham St.)
Mecklenburg	1967	86,000	Urban Interstate	I277 & NC16 over Brevard Street
Mecklenburg	1967	86,000	Urban Interstate	I277 & NC16 over North College Street
Wake	1960	86,000	Urban Interstate	I-440 over Sr37 & Southern RR
Forsyth	1964	74,000	Urban freeway/expressway	US52 over 28th Street
Forsyth	1964	74,000	Urban freeway/expressway	US52 over 25th Street
Forsyth	1958	73,000	Urban freeway/expressway	I40 Bus over Brushy Fork Creek
Gaston	1962	70,000	Rural Interstate	I85 over Abernathy Creek

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.

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