

# CITY OWNED AND MAINTAINED BRIDGES

PUBLIC WORKS COMMITTEE

OCTOBER 13, 2020



# Outline

- **Overview of bridges in the city**
- **Inspection of bridges**
- **Types of issues found during inspection**
- **Current bridge closures**
- **Known replacement/maintenance costs**

# City Owned Bridges

- ▶ City currently has 54 bridges on our road network that we have maintenance responsibility (doesn't include culvert/pipe crossings or NCDOT maintained bridges).
- ▶ Age of our bridges vary dramatically (several bridges were constructed in the 1920's and are still in service).
- ▶ Size of the bridge, type of construction and materials vary greatly (i.e. wood timbers, concrete, steel).



# Inspection of Bridges

- ▶ Every two years bridges are inspected and given a condition rating from 0 to 100 (with 100 being the best possible condition).
- ▶ Inspections are conducted by a contracted bridge inspector under the purview of NCDOT.
- ▶ Inspection reports can yield findings that require priority maintenance or critical repairs.
- ▶ These findings could require the local government to post weight restrictions or close the bridge until repairs are made.





# Typical Issues Found During Inspection

- Corrosion of steel support beams.
- Spalling of concrete support structures that exposed reinforcing steel.
- Spalling of concrete bridge decking.
- Rot of timber decking or wooden abutments.
- Drift and debris built up on the upstream side of the bridge causing undermining.
- Wingwall failures.



# Maintenance Costs for 15 Selected Bridges

BRIDGE NUMBER	ROUTE/STREET CARRIED	WARD	LOCATION	MAINTENANCE TYPES	ESTIMATED BRIDGE REPLACEMENT COSTS**
330009	E. Fifth St. (WBL)	E	0.01 mile E. of Jct. Old Greensboro Rd.	Latex deck overlay, Piling, Scour, Conc. Spalls	\$386,300
330083	Swaim Rd.	S	50 feet S. of Jct. High Point Rd.	Stone repl., Tuckpointing, Abutment scour	\$42,600
330209	Valley Rd.	NW	0.45 mile N. of Jct. Reynolda Rd.	Concrete spalls-deck, girders, and substructure	\$37,100
330280	High Cliffs Rd.	N	0.1 mile W. of Jct. SR 1797	Wingwall rebuild and Channel scour	\$63,800
330296	W. First St.	NW	0.05 mile W. of Northwest Blvd.	Concrete spalls-girders, columns, and substructure	\$50,900
330330	Old Greensboro Rd.	E	0.1 mile W. of Jct. E. Fifth St.	Steel beams repairs and concrete spalls	\$79,900
330331	E. Fifth St. (EBL)	E	0.01 mile E. of Jct. Old Greensboro Rd.	Rebuild approach slabs, Drift, Conc. Spalls-sub and superstructure	\$51,800
330373	Cameron Ave.	E	0.02 mile N. of Jct. US Rte. 311	Concrete spalls-substructure & abutments	\$63,000
330376	Ninth St.	E	0.01 mile E. of Jct. Main St.	Concrete spalls - deck, railing, girders, abutments	\$45,700
330380	Link Rd.	SW	0.01 mile W. of Jct. Peters Creek Pkwy.	Steel piles, Painting, Bulkhead, Spalls, Erosion	\$59,400
330386	Vine St.	E	0.06 mile E. of Jct. 4th St.	Concrete spalls-deck, girders, Decorative painting	\$28,600
330387	Glade St.	NW	200 feet E. of Jct. Hawthorne Rd.	Clean-up, Conc. Spalls-everywhere, steel beams	\$191,500
330390	16th St.	NE	0.01 mile W. of Jct. US Rte. 52	Concrete spalls-substructure, rails, underside deck	\$70,400
330527	Northwest Blvd.	N	100 feet W. of Jct. Rundell St.	Debris, Concrete spalls-underside deck & girders	\$80,400
330592	South Main St.	SE	0.04 mile N. of Jct. US Rte. 52	Steel piles, clean-up, Conc. Spalls- deck, girders	\$32,500
<b>TOTAL =</b>					<b>\$1,283,900</b>



# Current Bridge Closures

- Bridge: **West Lakeview Drive**
- Ward: North
- Damages: timber decking, steel beams, concrete abutments failing
- Owner: COWS
- Closure Date: 5/19/2020
- Year Built: 1964
- Rating: 22.74
- Approximate Replacement Cost: \$1,861,000
- No funding source identified





# Current Bridge Closures

- Bridge: **Old Greensboro Road**
- Ward: East
- Damages: beam failure, concrete deck
- Owner: COWS
- Closure Date: 6/1/2020
- Year Built: 1950
- Rating: 21.00
- Approximate Replacement Cost: \$2,712,000
- Note: Currently undergoing emergency repair to replace beams on eastern travel lane at a cost of \$85,000.





# Current Bridge Closures

- Bridge: **Novack Street**
- Ward: Northeast
- Damages: timber flooring and abutments failing
- Owner: COWS
- Closure Date: 5/20/2018
- Year Built: 1965
- Rating: 38.49
- Approximate Replacement Cost: \$2,426,000
- Currently in design phase



# Top Ten List of Bridge Replacements

BRIDGE NUMBER	ROUTE/STREET CARRIED	WARD	LOCATION	RANKING OF REPLACEMENTS*	ESTIMATED BRIDGE REPLACEMENT COSTS**
330285	Novack St.	NE	0.09 mile S. of Kivett Ct.	1	\$2,426,000
330236	W. Lakeview Dr.	N	10 feet N. of Jct. Broadview Rd.	2	\$1,861,000
330387	Glade St.	NW	200 feet E. of Jct. Hawthorne Rd.	3	\$4,641,000
330330	Old Greensboro Rd.	E	0.1 mile W. of Jct. E. Fifth St.	4	\$2,712,000
330209	Valley Rd.	NW	0.45 mile N. of Jct. Reynolda Rd.	5	\$2,307,000
330134	Sprague St.	SE	0.01 mile E. of Jct. US Rte. 52	6	\$4,179,000
330527	Northwest Blvd.	N	100 feet W. of Jct. Rundell St.	7	\$1,971,000
330296	W. First St.	NW	0.05 mile W. of Northwest Blvd.	8	\$4,289,000
330083	Swaim Rd.	S	50 feet S. of Jct. High Point Rd.	9	\$1,396,000
330381	Crafton St.	SW	50' W. of Jct. Seneca St.	10	\$2,149,000

**Total Costs = \$27,931,000**

**NOTES:**

\* Ranking of replacements was developed by using the various bridge conditions (i.e. Sufficiency Rating) ranking using a 50% weight, by using the various traffic levels (i.e. Average Daily number of vehicles) ranking using a 25% weight, and by using the various consequences of a bridge closure (i.e. loss of service, effect on schools, ease of detour, etc.) ranking using a 25% weight.

\*\* Total Bridge Replacement Costs include construction costs, design costs, and construction inspection costs.



**Questions?**