



BRIDGE AND DRAINAGE INFRASTRUCTURE UPDATE

PUBLIC WORKS COMMITTEE

MARCH 16, 2021

Outline

- Overview of bridges in the city
- Inspection of bridges
- Known maintenance costs
- Overview of drainage maintenance
- Types of programs/responsibilities
- Priority drainage project 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
TOTAL =					\$1,283,900

What is Drainage Maintenance?

- COWS owns, operates and maintains all of the pipes, catch-basins and structures within the public R/W and on City owned property (over 22,000 inventoried structures and conveyances).
- Repairs/Upgrades to the public drainage system and City owned stormwater controls (i.e. retention ponds, sand filters and other treatment devices).
- Private property owner drainage assistance under the 70/30 policy.
- Street sweeping.



RIGHT-OF WAY DRAINAGE ISSUES

- As storm events grow in number and intensity, it stresses the City's aging drainage systems.
- Many of our drainage systems were installed decades ago (i.e. in the 1940's, 1950's and have exceeded their hydraulic lifetime).
- Over 30 major repair projects throughout the city and new projects are added regularly.
- Priority capital projects list over \$25,000,000 and growing.
- Over 15 years to complete.



RIGHT-OF WAY DRAINAGE ISSUES

- Staff respond to over 500 drainage calls per year in the public right-of-way.
- Issues can vary widely: from blocked catch basin causing road flooding to a multi-block drainage system failure.
- Smaller repairs are completed by in-house drainage crews and larger projects are completed by contracted forces through the capital improvements process.



CITY OWNED STORMWATER CONTROLS

- ▶ COWS owns stormwater retention devices on city property (i.e. Blum Park, Washington Park, Fire Stations, Lowery Street Facility etc.).
- ▶ Infrastructure failures on city owned properties can result in significant capital expenses (in the last seven years Lockland Park, Spring Park and Washington Park cost over 3 million dollars).
- ▶ Maintenance of stormwater control measures is a National Pollutant Discharge Elimination System (NPDES) Permit requirement.



PRIVATE PROPERTY DRAINAGE ASSISTANCE

- Staff respond to over 350 private property drainage calls per year.
- For single family and multi-family residential properties, if conditions exist such as flooding of a dwelling, severe erosion of a drainage way or a situation that threatens the structural integrity of a dwelling then cost share options exist through the City's 70/30 cost share.
- Design and construction of City Council approved cost share's are completed by in-house staff.



CAPITAL DRAINAGE PROJECTS

RANK	PROJECT	WARD	JUSTIFICATION	PROJECT COST
1	Old Salem Drainage Project	S	Undersized/Failing Infrastructure within ROW	\$4,511,840
2	Long Drive Infrastructure Project	N	Emergency Repair	\$870,000
3	Violet Street Infrastructure Repair	S	Emergency Repair	\$300,000
4	Patterson Ave Infrastructure Repair	E	Emergency Repair	\$1,500,000
5	Robbins/Gyro Drive Culvert Replacements	SW	Failing Infrastructure within ROW	\$380,000
6	Bennett Drive Infrastructure	W	Failing Infrastructure within ROW	\$744,000
7	261 Commonwealth Drive	W	Failing Infrastructure within ROW	\$251,500
8	27 th Street Infrastructure Repair	NE	Failing Infrastructure within ROW	\$130,000
9	Runnymede Stream Infrastructure replacement	NW	Failing Infrastructure	\$2,250,000
10	Stormwater Infrastructure Improvements	ALL	ROW Drainage Repairs	\$1,000,000
11	Drainage Improvements on Private Property	ALL	Private Property Assistance	\$250,000
12	7 th Street Drainage Project	E	Public/Private Drainage Repair	\$1,750,000
13	City Yard Remediation Project (Phase I)	S	Regulatory Compliance	\$3,566,017
14	City Yard Remediation Project (Phase II)	S	Regulatory Compliance	\$7,122,099
15	City Yard 48" CMP (bore/jack replacement)	S	Failing Infrastructure within ROW	\$410,000
16	Piping Enhancement Project (Central District)	E	Water Quality Enhancement	<u>\$300,000</u>
				\$25,335,456
	NOTE: Drainage CIP projects submitted for review/approval. Does not include right-of-way drainage projects to be installed by in-house crews or maintenance and upkeep of existing projects.			



Questions?