

Requirements for a city bridge built by a Developer

(Updated 5/24/2017 Draft, requirements subject to change)

The major consideration for structure type selection by developers is initial cost. Future maintenance costs are born by the City. Selecting an appropriate superstructure type that meets both parties' objectives and the geometric and capacity needs of the crossing can be complex. The following data was developed as a guide in structure selection, design review, construction inspection and acceptance for maintenance by the City. The preapproved structure types listed below will not require a preliminary submittal to approve these bridge types (there will be a required submittal of the design itself). Bridge lighting requirements will be determined on a case by case situation. All bridges will include two, 2"- conduits stubbed up in a pull-box at each side of the bridge for future use by CDOT (potential signalization or ITS) in addition to any conduits installed relating to the lighting of the bridge.

Roadway Structures

Bridges-Superstructures

The following table lists preapproved structure types and design considerations:

21" Cored Slab

24" Cored Slab

Box Beam

Pre-stress Girders

If the approach geometry requires the bridge to be horizontally curved, consideration should be given to widening the bridge and striping the deck as needed or splaying prestress girders. Only when no other option is available should weathering steel girders be selected for the superstructure. Unless preapproved by the City, painted steel or truss type structures will not be taken over and maintained by the City.

Bridges concepts fewer than 25 feet of length along the center line of the structure will require discussion/preapproval to explore the viability of utilizing a reinforced concrete box or 3 side culvert.

Bridge-Substructure

Substructure containing timber will not be taken over and maintained by the City.

Culverts

Cast in place or precast reinforced concrete culverts are preapproved. Bottomless concrete culverts and concrete Conspan type structures are preapproved when the foundation is on rock. Corrugated metal pipes will not be taken over and maintained by the City.

Pedestrian Structures

Bridge-Superstructure

All bridge types and materials listed above for roadway structures are preapproved for pedestrian structures, in addition truss type structures are preapproved for pedestrian structures. Painted steel superstructures will not be taken over and maintained by the City. Pedestrian bridges can also be structural steel (50 ksi weathering or galvanized) with a minimum of 5 inch concrete deck. Deck and rail could be composite plastic material. Prefabricated truss spans such as [Continental Bridges \(in service in the US for at least the last thirty years\)](#) are also acceptable using 50 ksi weathering steel or galvanized steel. Deck should be concrete or composite plastic materials.

Bridge-Substructure

Substructures with exposed timber will not be taken over and maintained by the City.

Culverts and Tunnels

Cast in place or precast reinforced concrete culverts, and galvanized corrugated metal pipes are preapproved. Bottomless concrete culverts and concrete Conspan type structures are preapproved when the foundation is on rock.

Review and Permit Process by CDOT

Plan Review Submittal

The following is a list of engineering documents that must be submitted for review and approval as part of the commercial/residential plan review process with bridge/culvert structures.

- a. Bridge plans, details, and specifications
- b. **Load and Resistance Factor Design (LRFD)** Design calculations and load ratings based on NCDOT Permit Vehicles
- c. Geotechnical report with foundation recommendations
- d. Bridge hydraulics/survey report (for water crossings)

Predesign or Preconstruction Permits Required by Other Regulating Governmental Agencies

It is up to the engineer of record to determine what permits are needed. At a minimum the following permits should be acquired or a written report explaining why a particular permit is not needed.

- ✓ **PreConstruction Notification (PCN)** Is required if the structure is crossing a jurisdictional **Department of Water Quality (DWQ)** Stream. This notification is submitted to **NC Department of Environment and Natural Resources (NCDENR)**.
- ✓ If the structure is part of a development **DWQ** may require a Storm Water Management Plan, even if no **PCN** is needed. Contact **DWQ** and notify them of the project.

- ✓ A “No Rise” or LOMR/CLOMR will be required if bridge is in a **Federal Emergency Management Agency (FEMA)** Floodway.
- ✓ If the bridge is not crossing a **FEMA** Floodway then a **Floodplain Development Permit (FDP)** is required.
- ✓ If a CLOMR is required then an endangered species survey will be required (**NCDENR**)
- ✓ Grading Permit (City)
- ✓ Driveway permits (City)
- ✓ Buffer Approval (State/City)
- ✓ Erosion control permit (City)

Construction and Post Construction Requirements

- a. Inspection of construction work and materials testing performed privately by an independent NCDOT Prequalified inspection Firm (not the same firm as the designer firm).
- b. Engineer’s certification that the construction has been completed in substantial compliance with the approved plans and specifications with supporting record drawings, and construction inspection documentation is complete and NCDOT standards haven been met.

Post Construction Requirements

- a. Post construction verification of buffer and floodway disturbance.
- b. Inspection by City or City’s authorized representative
- c. Developer Issues City 12 month Warranty
- d. City authorization to open bridge
- e. Initial inspection by city representative within 10 months of bridge opening, 24 month inspection cycle thereafter (**\$2000**)
- f. Developer to address any deficiencies identified during inspection

Additional Fees

- a. Review fee
- b. City inspection fee

Construction traffic on completed bridge/culvert prior to City acceptance (check list below)

Bridge/Culvert Check List for Required Documentation for Structure Acceptance

- Preapproved structure or documentation of discussion and approval from CDOT
- Bridge plans, details, and specifications
- Design calculations and load ratings based on NCDOT Permit Vehicles
- Geotechnical report with foundation recommendations
- Bridge hydraulics/survey report
- Required floodway permits
- Required buffer permits
- Endangered species permit if **CLOMR** required
- Grading permit
- Erosion control permit
- Driveway permit
- Construction inspection forms/notes and diaries per NCDOT
- Engineers certification of construction
- Post construction verification of buffer and floodway disturbance
- 12 month developer warranty