

CHAPTER 5

PARK STRUCTURES

Bridges

Decks and Boardwalks

Intentionally Blank

PURPOSE

Bridges shall facilitate safe access across bodies of water, unstable ground conditions, elevation changes, or other site conditions.

GENERAL INFORMATION

Bridges and abutments shall be designed per industry standard engineering practices and principles. Bridges and abutments shall be certified by a structural engineer licensed to practice in the Commonwealth of Virginia.

Bridges traversing water courses or deep culverts subject to periodic flooding shall be designed to accommodate wet weather events.

Bridges located within the 100-year FEMA/FIRM floodplain shall comply with design and/or performance requirements required for floodplains.

Subsurface and hydrologic investigation shall be required.

Bridges shall be ADA compliant and subject to local building codes and ordinances.

Handrails and/or railings shall be ADA compliant and meet minimum loads per state building codes.

Bridges shall meet the static and dynamic design loads specified for each project. Loads include but are not limited to dead load, live load, concentrated load, vehicle load, wind load and snow load.

Bridges shall be designed to accommodate lightweight construction equipment and vehicles.

Bridges shall have 6 feet minimum clear horizontal width. For remote trails, 4 feet minimum clear width shall be provided for pedestrian only use.

Bridges located on designated multi-modal trail routes shall comply with the most current Alexandria Bicycle Transportation and Multi-Use Trail Master Plan, AASHTO and VDOT trail specifications.

The standard shall be a pre-fabricated weathering steel truss bridge.

MATERIALS AND FINISH

Structural members shall be marine grade weathering steel.

Decking shall be concrete or composite resin or silicate-impregnated wood.

Wood materials shall be used on a limited basis. Wood materials shall be installed crown side up. Exterior high grade hardwoods shall be used as decking material with approval by the Department of Recreation, Parks and Cultural Activities.

Paint shall be industrial grade and epoxy based.

Paint finishes and coatings shall be approved by the Director of Recreation, Parks and Cultural Activities.

Bridge deck surface shall be of a material and/or finish which inhibits slipping.

Bridge surfaces shall be sloped to shed water.

FEATURES

In remote, difficult to reach locations, bridges shall be assembled on-site.

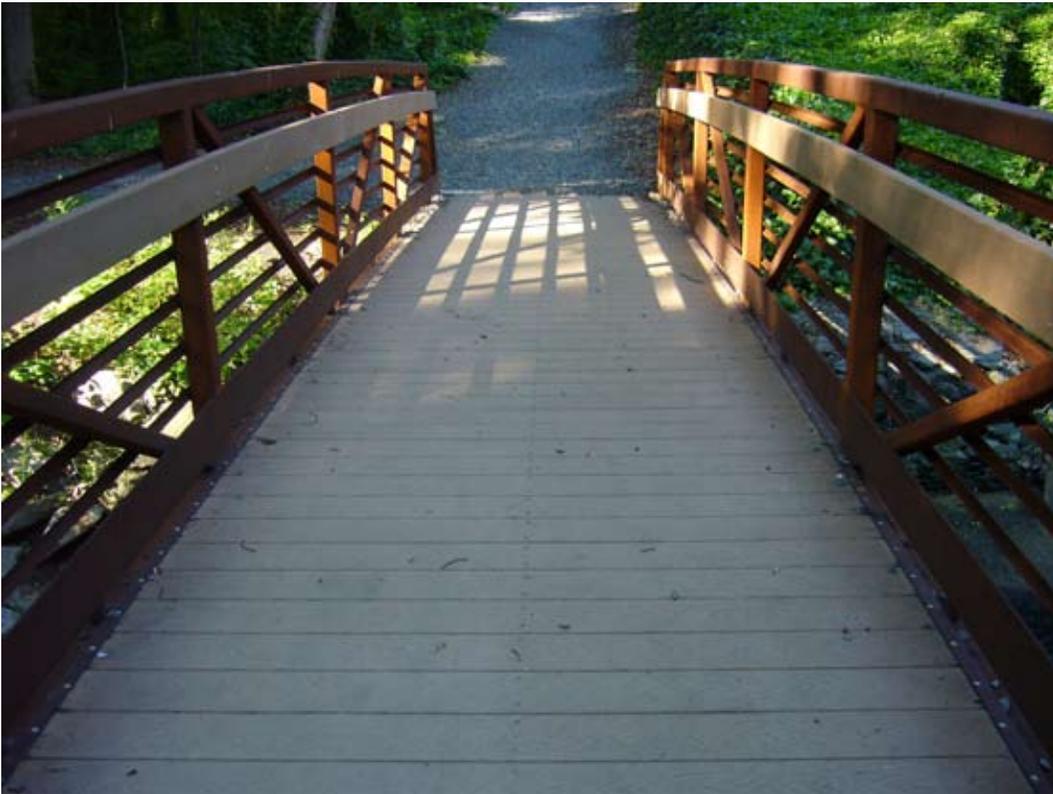
Utility conduits shall be located within the bridge structure and be hidden from view.

LIFE CYCLE EXPECTATIONS

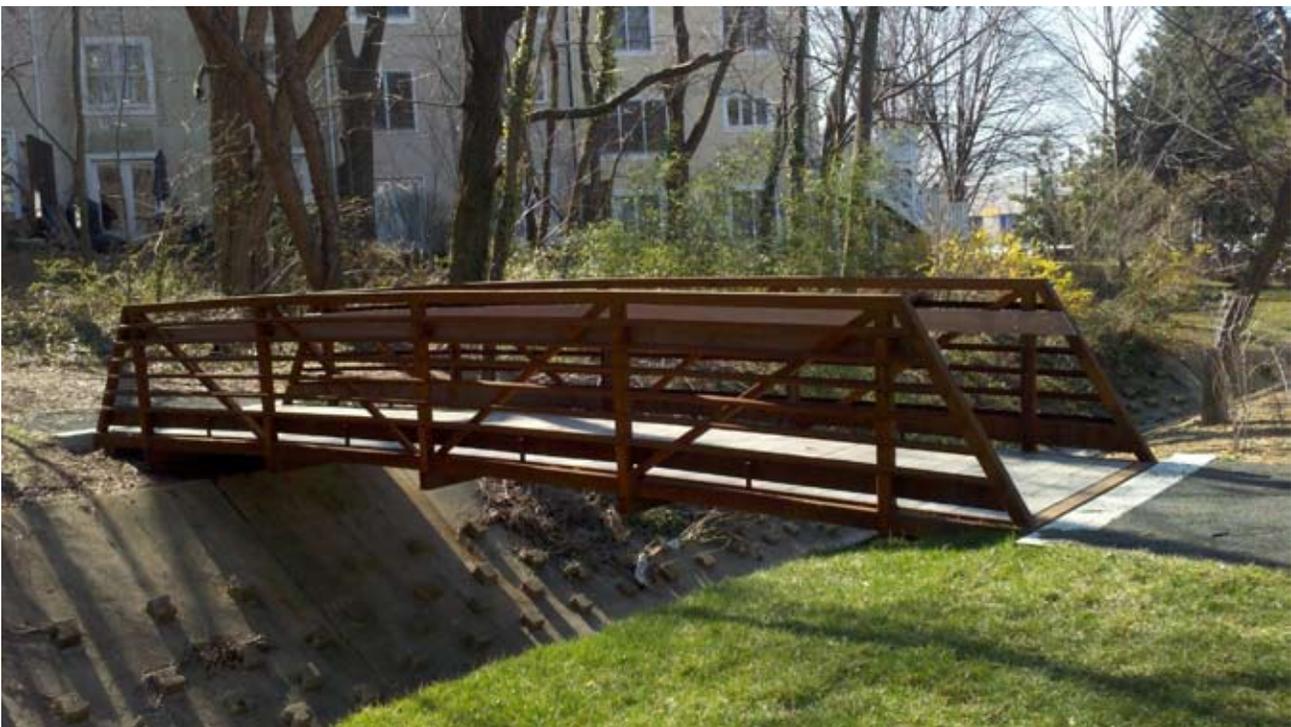
A 10 year minimum warranty for structural components and systems is required.

Bridges are anticipated to require replacement after 30 years based on normal and ordinary use.

BRIDGES



Composite resin bridge decking



Pre-fabricated steel truss bridge

DECKS AND BOARDWALKS

PURPOSE

Elevated structures, such as decks and boardwalks, shall be provided where water bodies, unstable ground conditions, elevation changes, or other site conditions impede access, or for elevated pathways over protected natural scenic areas.

GENERAL INFORMATION

Structures and foundations shall be designed with industry standard engineering practices and principles. Structures shall be certified by a structural engineer registered and licensed to practice in the Commonwealth of Virginia.

Subsurface and hydrologic investigation shall be required. Engineers shall utilize these reports in design of footings and foundations.

Elevated structures shall be ADA compliant, including railings and handrails, per local building codes.

Bridges located within the 100-year FEMA/FIRM floodplain shall comply with design and/or performance requirements required for floodplains.

Elevated structures shall meet the static and dynamic design loads specified for each project. Loads include but are not limited to dead load, live load, concentrated load, vehicle load, wind load and snow load. Structures shall be designed to accommodate lightweight construction equipment and vehicles.

Structures located on designated multi-modal trail routes shall comply with the most current Alexandria Bicycle Transportation and Multi-Use Trail Master Plan and VDOT trail specifications.

FEATURES

Structures shall have 6 feet minimum horizontal clear width.

MATERIALS AND FINISH

Structural members shall be marine grade weathering steel, fiberglass, composite resin, concrete or silicate impregnated lumber.

Decking shall be concrete, silicate impregnated lumber or composite resin, and slip resistant.

Wood materials shall be used on a limited basis. Wood materials shall be installed crown side up. High exterior grade hardwoods or silicate impregnated lumber shall be approved by the Director of Recreation, Parks and Cultural Activities.

Piling foundations shall be concrete. Foundations shall slope to shed water.

Hardware shall be aluminum, stainless-steel, or hot-dipped galvanized steel.

Surfaces shall slope to shed water.

INSTALLATION

Structures shall be located along existing trails and paths when possible.

Approaches shall have a smooth transition and comply with current ADA standards.

Transitions shall not exceed ½ inch vertical dimension without a ramp.

LIFE CYCLE EXPECTATIONS

A 10 year minimum warranty is required.

Decking is anticipated to require replacement after 8 years based on normal and ordinary use.

DECKS AND BOARDWALKS



Observation deck



Composite boardwalk