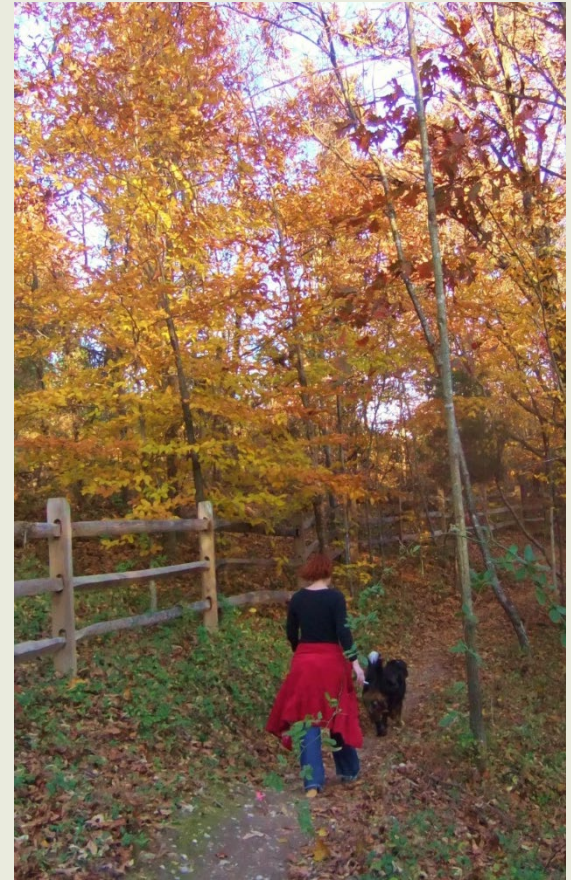


Trails in Stream Valley Parks

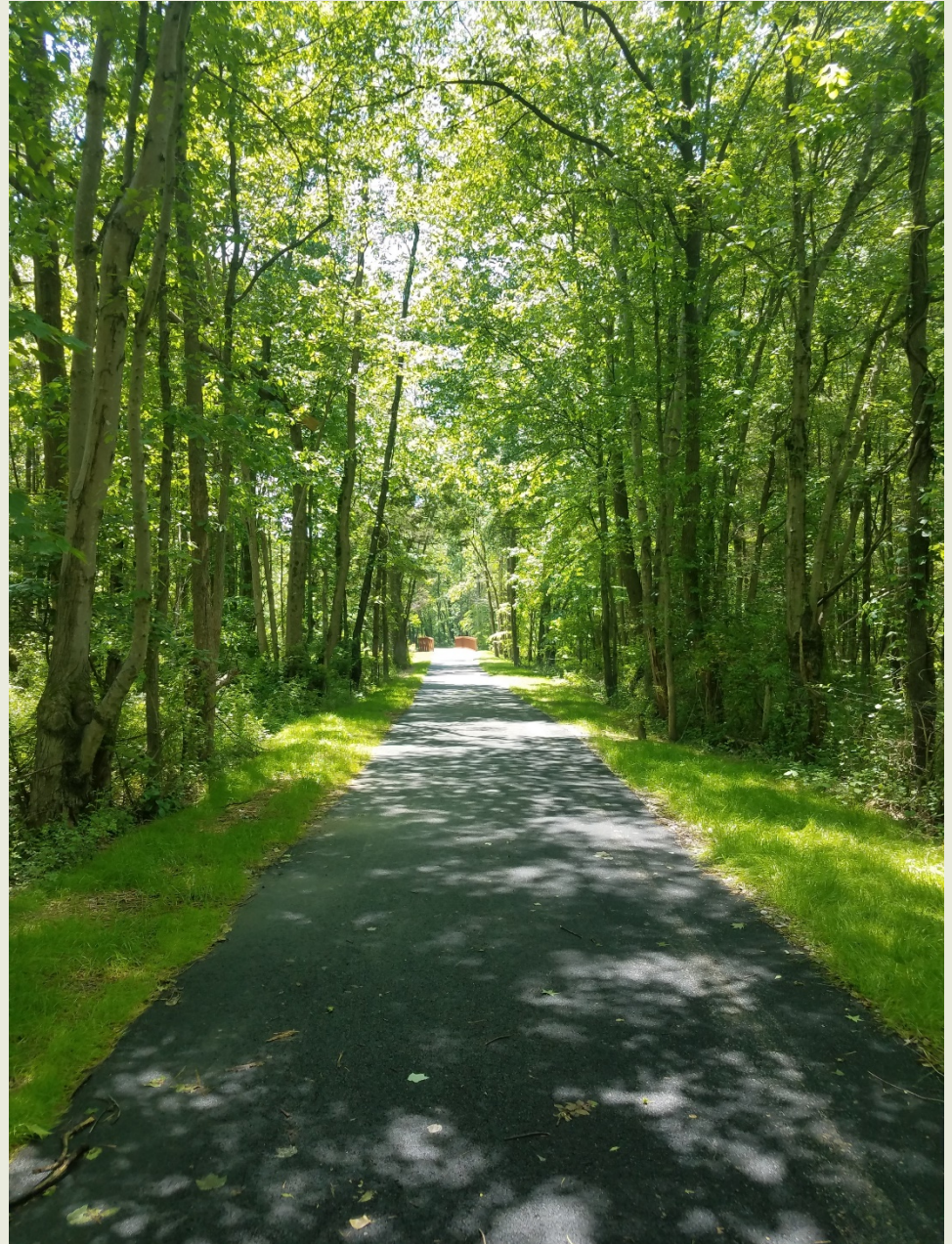
OVERVIEW AND NEED FOR
IMPROVEMENTS FOR STREAM VALLEY
TRAILS



Fairfax County Park Authority
Planning & Development Division

SOURCE OF TRAIL PROJECTS

- Community – Either requests for new connections or concerns about existing trails
- Park Operations – Mostly improvements to existing trails
- Countywide Trails Plan – New Trails (i.e. – Pohick)
- These projects are then scored utilizing our Trail Development Strategy Plan. Factors include: Connectivity, Community, Service Area, Technical/Environmental Issues



Pohick Stream Valley

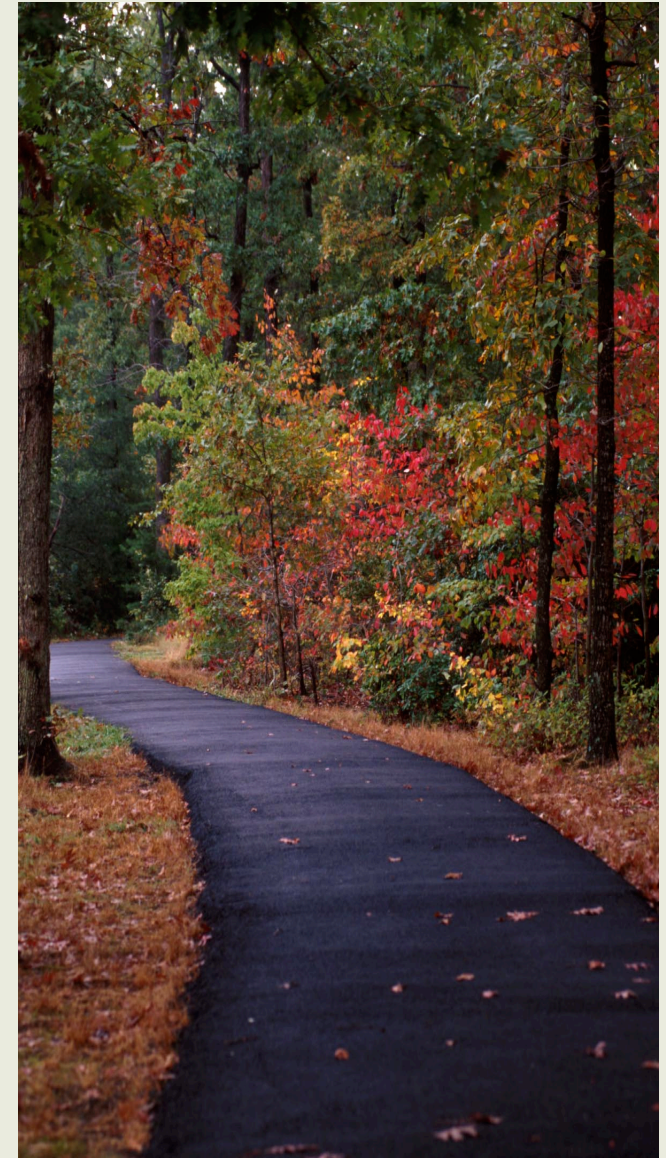
DIFFERENT TYPES OF TRAILS

- FCPA maintains approximately 330 miles of trail throughout the county
- 40% Hard Paved Surface



Accotink Stream Valley Park

Concrete



Holmes Run Stream Valley

Asphalt

20% Gravel/Stone Dust Surface



Laurel Hill Park

40% Natural Surface



Laurel Hill Park

Stream Valley Trail Challenges

Common Problems with Stream Valley Trails include:

- Low spots that pond water
- Sections frequently flooded causing wet areas
- Widened or braided areas – users form adjacent trails
- Erosion of trail surface material
- Erosion of base material

Long Branch Stream Valley



Widened Area



Long Branch Stream Valley

Causes

- Trail users avoiding obstacles & wet areas, walk around the edges of the trail, trampling vegetation along the edge of the trail

Impacts

- Loss of habitat & erosion

Braiding



Long Branch Stream Valley

Causes

- Trail users avoiding obstacles/wet areas create entirely new trails parallel to existing trail

Impacts

- Encroachment into natural areas causes loss of habitat and erosion



Frequently Flooded Sections

Causes

- Compacted earth and gravel is impervious like asphalt. Water will not percolate or drain through the surface
- Constant loss of trail material and natural sedimentation of the vegetated areas lowers the trail relative to the surrounding area, causing large low sections

Impacts

- Flooding creates mud, which causes soil erosion and loss of gravel as it mixes and is transported with the mud. Loss of habitat from widening and braiding of trail by users. Loss of use by user groups unable to navigate flooding



Long Branch Stream Valley

Loss of Surface Material



Long Branch Stream Valley

Causes

- Compacted gravel is a highly erodible mix of fine stone dust and small stones.

Impacts

- Stonedust and stones are deposited into the creek during flooding events, which causes poor water quality in the streams. This material is then transported to the Potomac River and Chesapeake Bay. This adds to the Total Maximum Daily Load (TMDL) of Total Suspended Solids (TSS) for these creeks.
- Significant cost of maintenance to replace stone material after flooding events.



Rocky Run Stream Valley

Erosion of Base Material

Causes

- Once the gravel surface is removed, erosion removes the native soil of most stream valleys

Impacts

- Sediment from soil erosion is deposited into the creek during flooding events, which results in poor water quality in the streams. This material is then transported downstream to the Potomac River and Chesapeake Bay. In addition to the gravel material, this also adds to the Total Suspended Solids (TSS) impairment for these creeks
- Repairs require hauling in new fill material with construction equipment
- Sediment deposits require dredging of local lakes



Difficult Run Stream Valley

Larger Storms Create Significant Damage



Heavily Damaged Gravel Section

Impacts

- Complete loss of gravel and underlying material resulting in significant addition to sediment loading in local waterways
- Significant cost to rebuild
- Asphalt trails will not erode when the flow of water is parallel to the trail. Concrete trails will not erode regardless of water flow direction

Causes

- Stream Valley trails are, by nature, within the 100-year floodplain of the associated stream. They also typically run parallel to the flow of the creek. In these storms, the entire floodplain is inundated with fast moving water. Water flows down the trail, quickly removing the gravel and severely eroding the underlying soil

Pohick Stream Valley



Undamaged Asphalt Section
Of Same Trail

Larger Storms Create Significant Damage



Pohick Stream Valley

Causes

- Large storms remove gravel and base material from trails

Impacts

- Erosion/sedimentation
- Significant cost to repair
- Loss of use of trail for park patrons

Larger Storms Create Significant Damage

Causes

- Large storms remove gravel and base material from trails

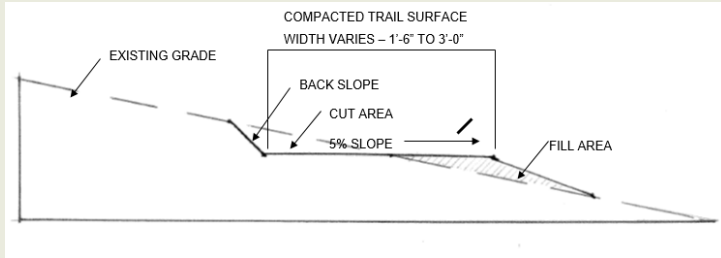
Impacts

- Erosion/sedimentation
- Significant cost to repair
- Loss of use of trail for park patrons



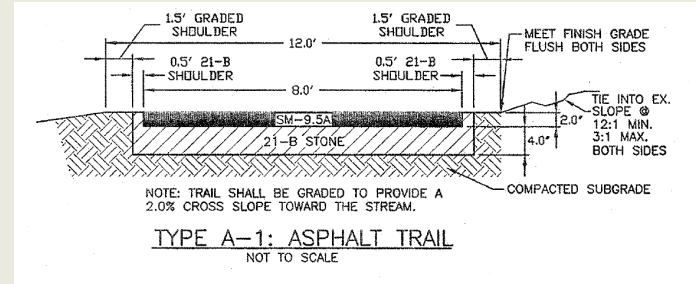
Long Branch Stream Valley

POSSIBLE SOLUTIONS



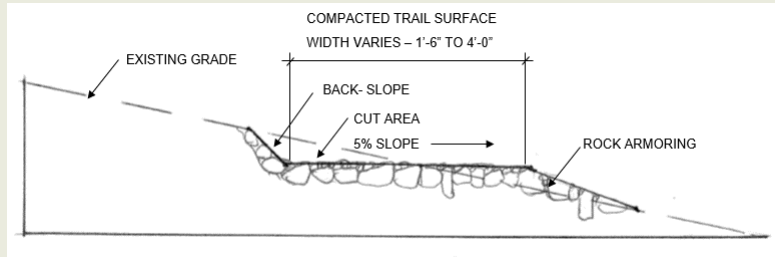
NATURAL SURFACE TRAIL

- Sustainable natural surface and gravel trails for areas with good soils and no heavy runoff

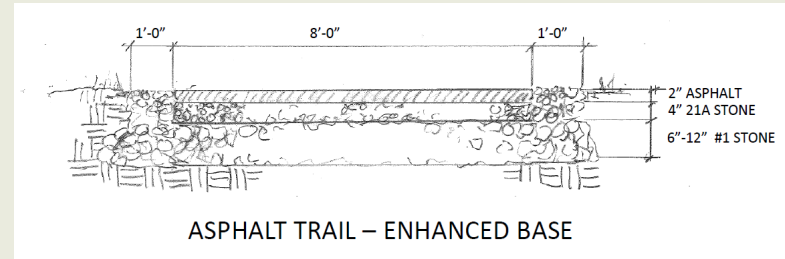


TYPE A-1: ASPHALT TRAIL
NOT TO SCALE

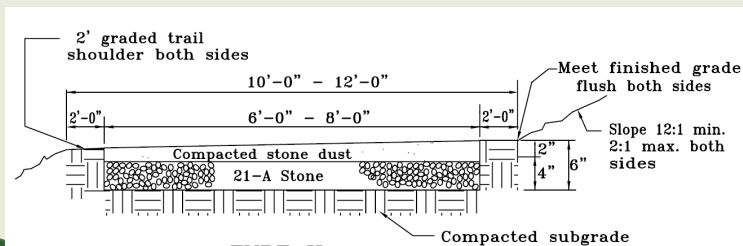
- Asphalt Trails of varying thickness for different soil conditions. Good for areas with moderate flooding



NATURAL SURFACE TRAIL WITH ARMORING

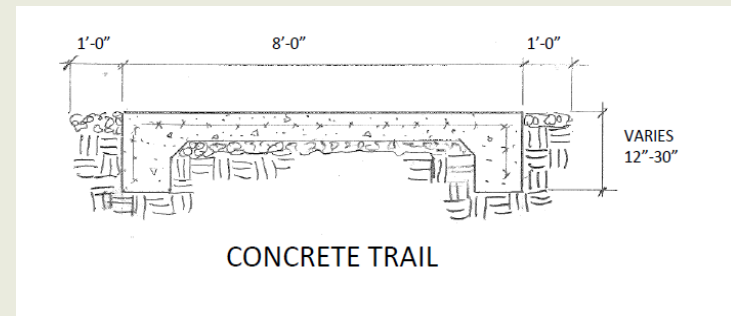


ASPHALT TRAIL – ENHANCED BASE



STONE DUST TRAIL

- Concrete Trails with turndowns for maximum durability. Will resist significant flooding



CONCRETE TRAIL

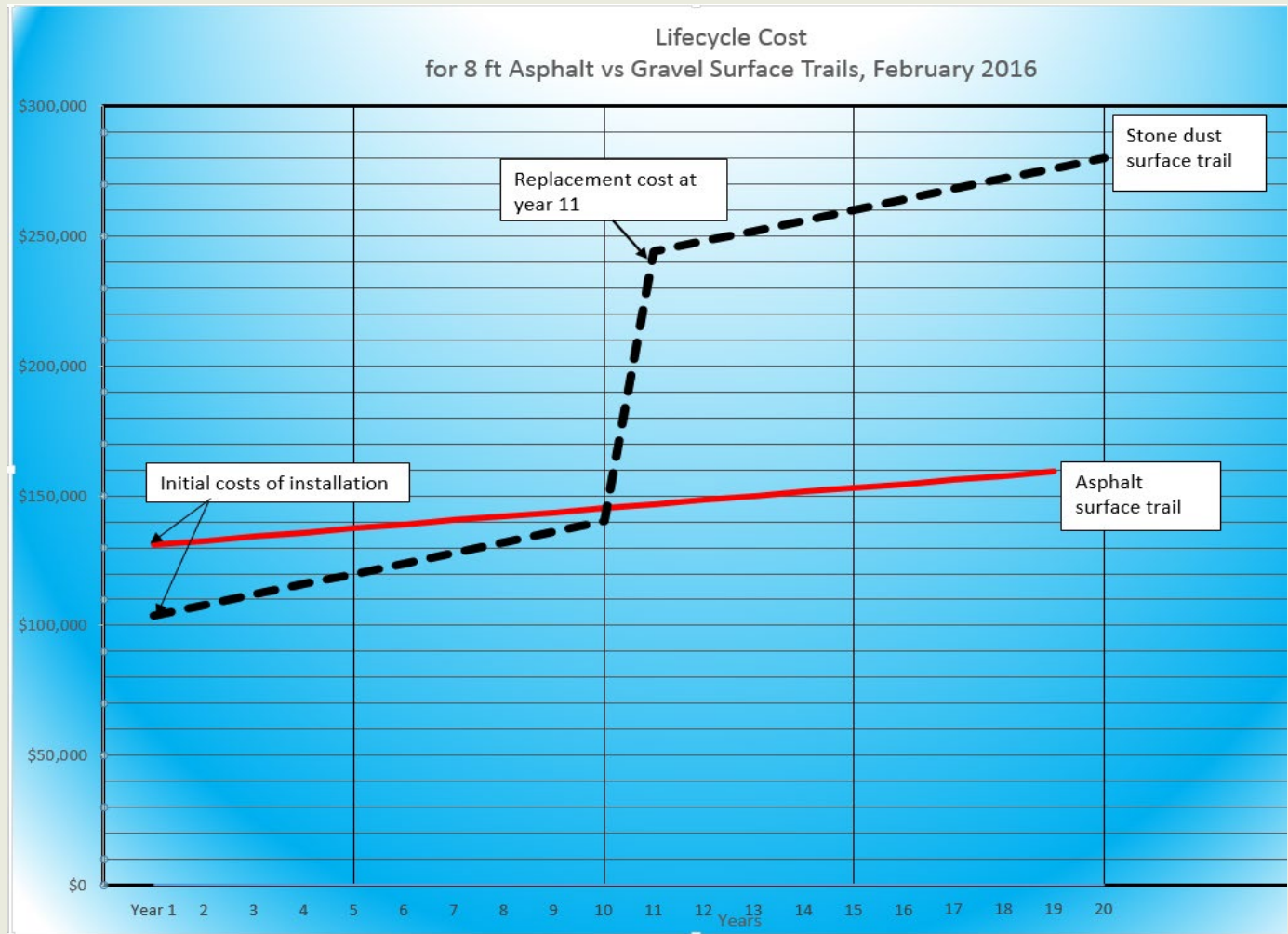
POSSIBLE SOLUTIONS

- Concrete and asphalt trails can also improve accessibility for users of all abilities.
- Some stream valley trails can be designed to meet ADA guidelines for a Trail set by the United States Access Board.
- ADA guidelines require a trail to have a firm and stable surface while maintaining a running slope of 5% and a cross slope of no more than 2%. Steeper running slopes are allowed for short distances.
- Providing trails that meet ADA guidelines where possible ensures access to a trail experience for all park patrons



Asphalt/Gravel Lifecycle Cost Comparison

- Initial cost of construction for asphalt trails is slightly higher than gravel
- Anticipated lifecycle of a gravel trail is 10 years. Anticipated lifecycle of an asphalt trail is 20 years
- Gravel trails cost more per year to maintain than asphalt trails. After 10 years, the cost difference in the initial construction is lost.
- Gravel trails will need to be rebuilt/replaced at the end of 10 years at slightly less than the cost of original construction
- Asphalt trails will require an overlay of new asphalt in 20 years



Case Study: Americana Park

BEFORE



- Trail is part of the Gerry Connolly Cross County Trail
- Staff received numerous complaints regarding persistent flooding of this section of trail
- All weather asphalt surface replaced frequently flooded natural surface trail

AFTER



Case Study: Pohick Stream Valley Park

- Popular trail in narrow part of stream valley prone to flooding. Trail required frequent heavy maintenance with construction equipment
- Asphalt surface eliminated loss of gravel material and frequent need for heavy maintenance resulting in cost savings



BEFORE



AFTER

Case Study: Lake Accotink Park



BEFORE

- Concrete approach ramps created a permanently level transition to the bridge that requires no maintenance.
- Improved accessibility of trail for users of all abilities.

- Approaches to bridge frequently washed out, leaving an unsafe drop at the ends of the bridge. Drop was a potential danger for bicyclist and persons with mobility issues and required regular maintenance.



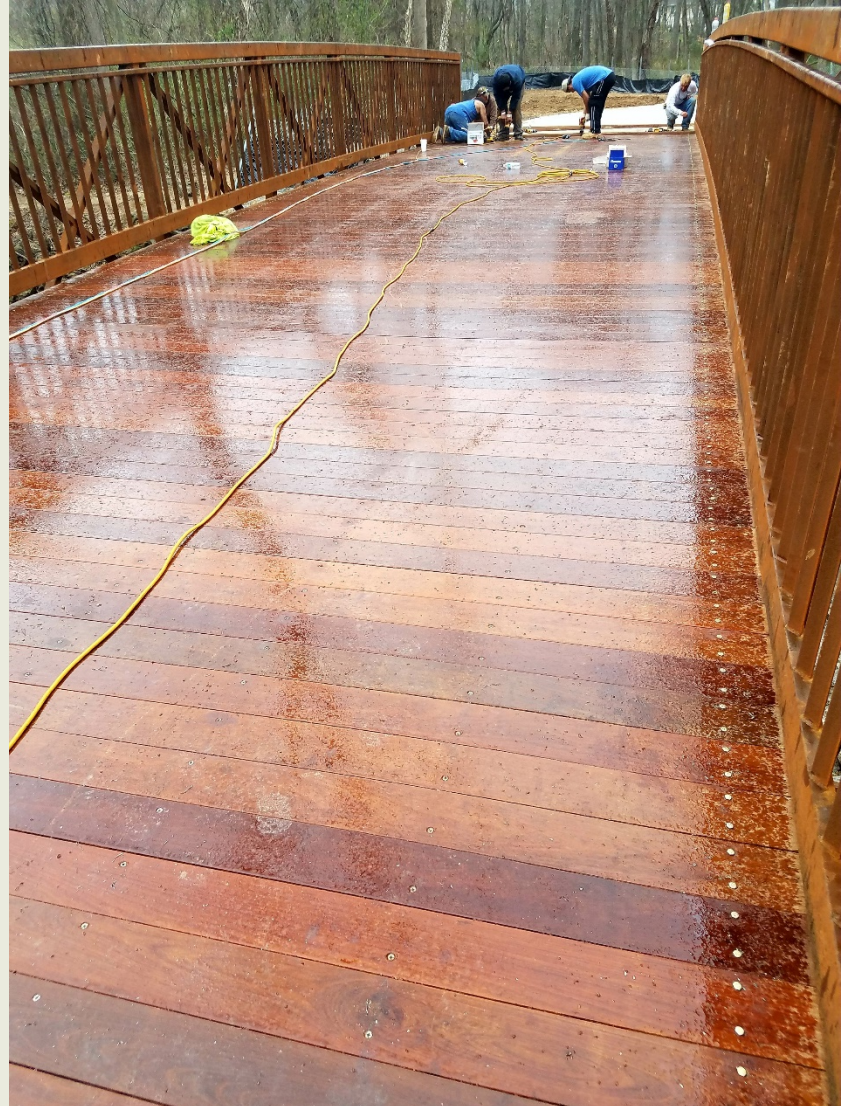
AFTER



Trails in Stream Valley Parks

MAIN CHALLENGES OF STREAM VALLEY TRAILS

- **Construction Cost** – There is limited bond funding for trail projects. Typically around 5% of any proposed bond are trail projects. Stream crossings, when needed, are expensive.
- **Environmental** – Eliminating impacts to natural and cultural resources as much as possible by utilizing existing utility right of ways for new trails and reducing erosion of existing trails.
- **Long Term Maintenance** – Must consider cost and feasibility of trails in active floodplains.
- **Making Connections** – Making desired connections and creating a cohesive trail network in Fairfax County.



Trails in Stream Valley Parks



Questions/Comments:

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