



TOWN OF LEESBURG  
Memorandum

To: Town Manager

From: Renée LaFollette, P.E., Director of Capital Projects  
William Ackman, P.E., Director of Plan Review

Date: February 23, 2015

RE: Tuscarora Creek Flood Mitigation

**Project Background**

The Tuscarora Creek Flood Mitigation project was added to the Capital Improvements Program in 2005 as a result of petitioners that experienced flooded basements due to the post Hurricane Isabel rain storms in 2003. The design of the project was delayed to allow for the Crescent District Master Plan to be completed and adopted in 2006. The project is intended to provide some flood protection to the residents along Shenandoah Street that back to Tuscarora Creek, and to provide stream restoration to increase the stability of Tuscarora Creek.

**Project Status:**

Since our last update in June of 2014, staff has continued our outreach efforts with the Virginia Knolls Community Association (VKCA) board president. Staff had many issues to resolve with the board, including a better understanding and buy-in for the project being proposed. We took the concerns related to the trees and green space that we heard from both the residents of VKCA and their board, along with the results of the formal tree survey performed by Davey Resource Group and the most recent topographic information received from Loudoun County to work on three options for the project.

Staff and our consultant met with the president and treasurer of the VKCA board in late September 2014 to go over the formal tree survey that was completed and to show them three options, all of which were at a preliminary concept level, and discussed each option in detail. At the conclusion of that meeting, staff came away with direction to work on a fourth option that combined the best aspects of each of the three presented. Once this fourth option was prepared, we met with the VKCA president in mid-November to review the option in the field so we could all get a better understanding of how this option would impact the trees and the VKCA green space. At this meeting, we also shared chronologic pictures of the how the stream has degraded over the last several years. Attachment 'A' to this memo shows examples of the stream degradation over the last several years.

The fourth option shared with the VKCA president addresses a majority of their concerns and was taken back to their full board by the president for further feedback. Staff met recently with the VKCA president and treasurer to review the feedback that was shared at their last board meeting.

Based on that meeting, we have reached a consensus on the last option presented (Attachment 'B'). This option includes keeping as many trees as possible that are in good to excellent condition, adding constructed wetlands, excavation downstream at the constriction point, a low wall approximately 20 feet from the back property lines, excavation that is primarily located on the opposite side of the creek, and maintaining a majority of the open green space. We have agreed that our design engineer will now begin work on the preliminary (30%) plans. The VKCA will be holding their annual meeting in March and the Town will provide the option sketch drawings, stream degradation photos, photos of potential landscape materials, and photos of potential wall types to the VKCA president for presentation at that meeting. An additional meeting is to be scheduled in April that Town staff and our design engineer will attend to answer engineering and detail related questions from the neighborhood.

The budget for this project has increased significantly to address all aspects of the project that need to be addressed, such as: excavation of the downstream constriction, overland flow issues directly related to flood protection, maintaining as much greenspace as possible for the community, working within the parameters of the tree survey and protecting the best quality trees, and including the stream restoration portion of the project that is a part of the Town's overall Total Maximum Daily Load project related to our Municipal Separate Storm Sewer System (MS4) permit, as required by the state Department of Environmental Quality (DEQ).

**Next Steps:**

1. Planning Commission Public Hearing, review and action.
2. Town Council review of CIP and action.
3. Continue outreach and communication with VKCA throughout the entire process.
4. Begin design work by early to mid-spring.
5. Determine the easement areas needed and maintenance agreements with VKCA.
6. Submit documents to FEMA for review and approval.
7. Bid project in late spring 2016 for summer construction.

**Attachments:**

1. Attachment A – example photos of the stream degradation
2. Attachment B – Sketch Option 4

Attachment 'A'



Photo 1 in 2011 and 2014



Attachment 'A'



Photo 2 in 2006 and 2014



Attachment 'A'



Photo 3 in 2011 and 2014



Attachment 'A'



Photo 4 in 2011 and 2014 (notice the large tree behind the guy with the survey rod is no longer there)

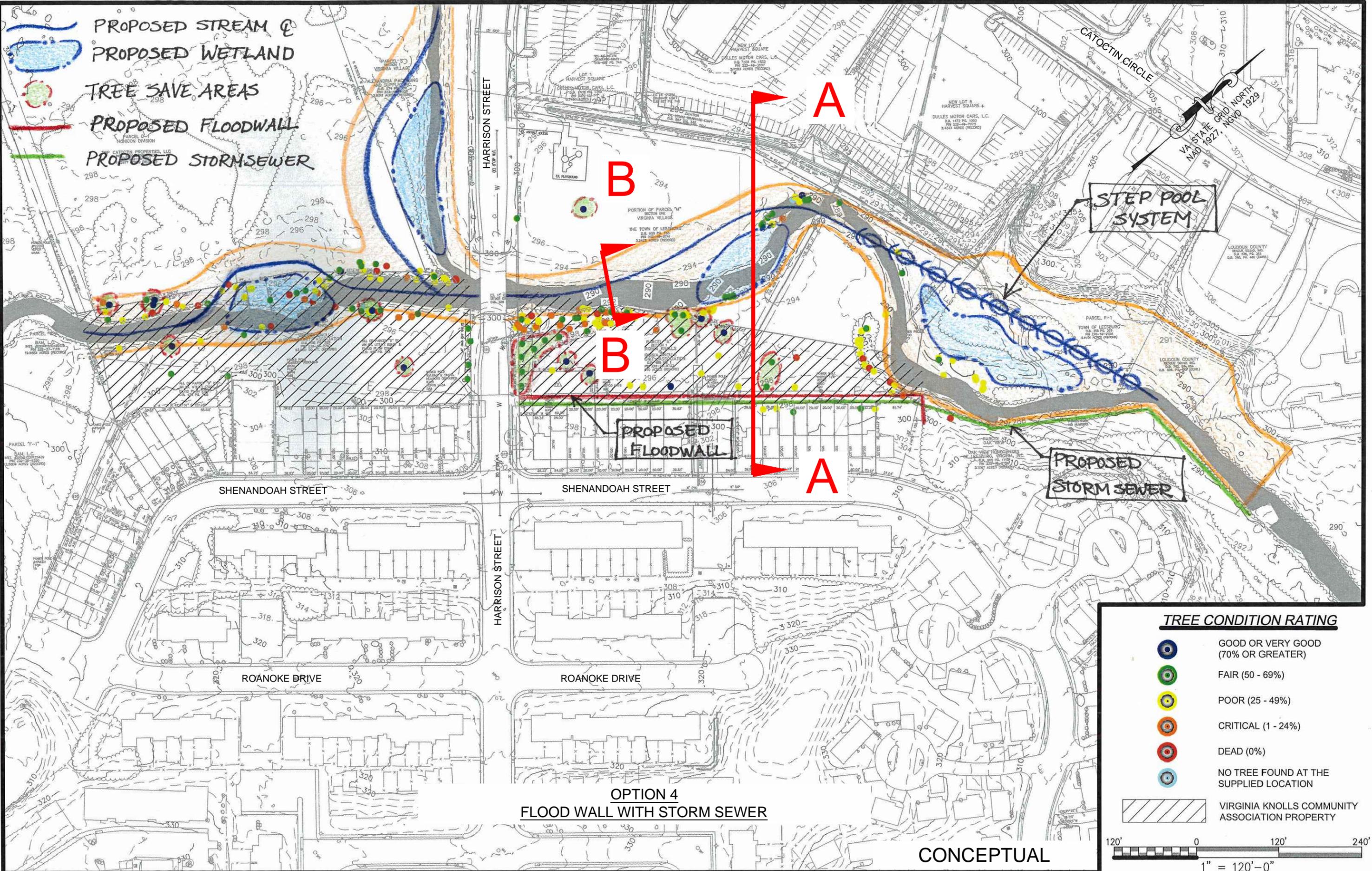


Attachment 'A'



Photo 5 in 2011 and 2014





PROPOSED STREAM &  
 PROPOSED WETLAND  
 TREE SAVE AREAS  
 PROPOSED FLOODWALL  
 PROPOSED STORMSEWER

B

A

B

PROPOSED FLOODWALL

A

STEP POOL SYSTEM

PROPOSED STORM SEWER

SHENANDOAH STREET

SHENANDOAH STREET

ROANOKE DRIVE

ROANOKE DRIVE

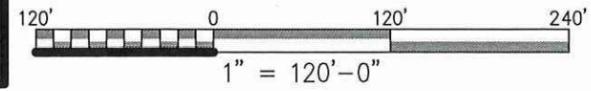
OPTION 4  
FLOOD WALL WITH STORM SEWER

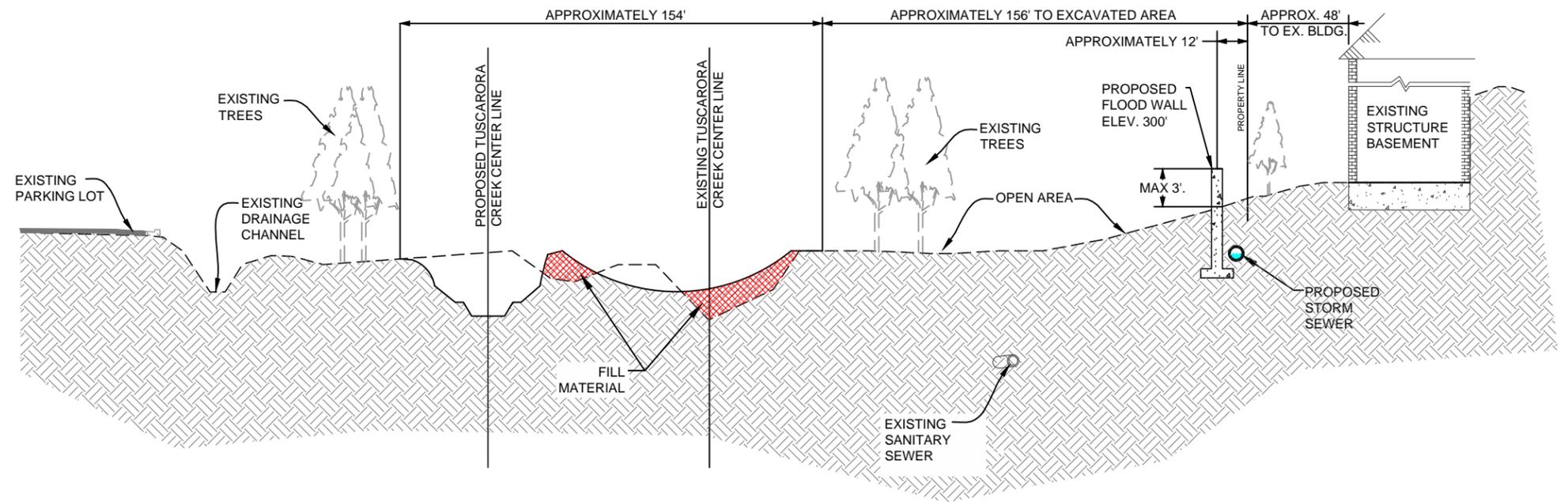
CONCEPTUAL

**TREE CONDITION RATING**

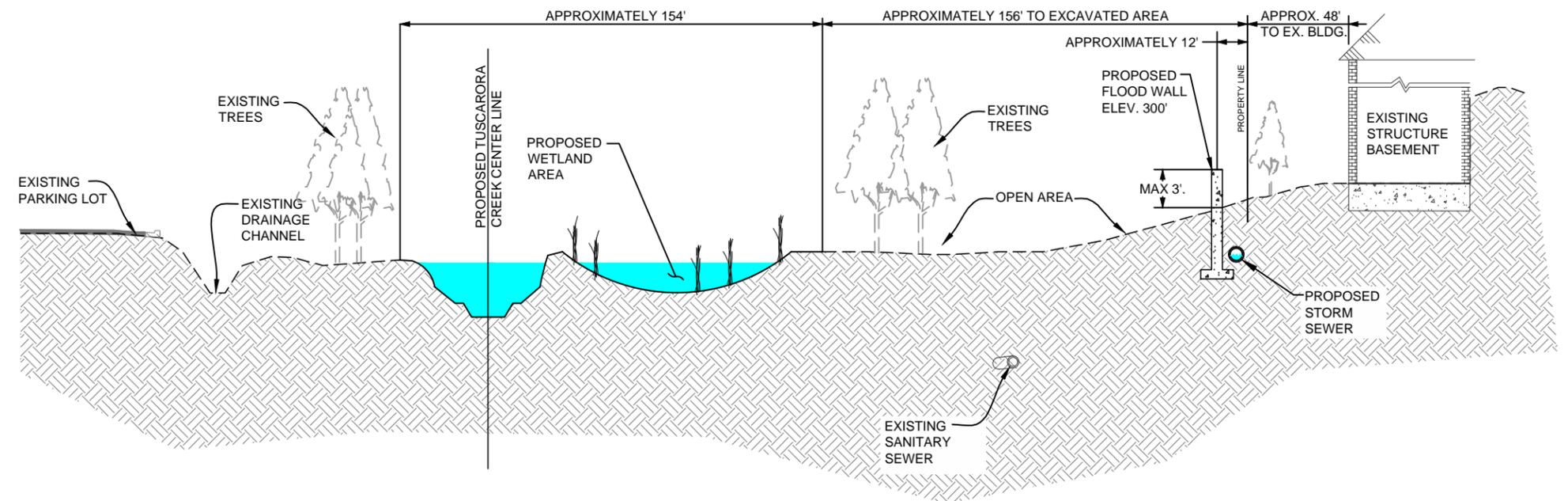
-  GOOD OR VERY GOOD (70% OR GREATER)
-  FAIR (50 - 69%)
-  POOR (25 - 49%)
-  CRITICAL (1 - 24%)
-  DEAD (0%)
-  NO TREE FOUND AT THE SUPPLIED LOCATION

 VIRGINIA KNOLLS COMMUNITY ASSOCIATION PROPERTY





**EXCAVATED AREAS**  
NOT TO SCALE



**POST ECAVATION**  
NOT TO SCALE

**TYPICAL SECTION LEGEND**

- EXISTING GROUND
- CHANNEL FILL MATERIAL
- WATER

**TUSCARORA CREEK FLOOD MITIGATION TYPICAL SECTIONS**

Environment & Infrastructure

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**OPTION 4 TYPICAL SECTION A-A FLOOD WALL WITH STORM SEWER**  
NOT TO SCALE

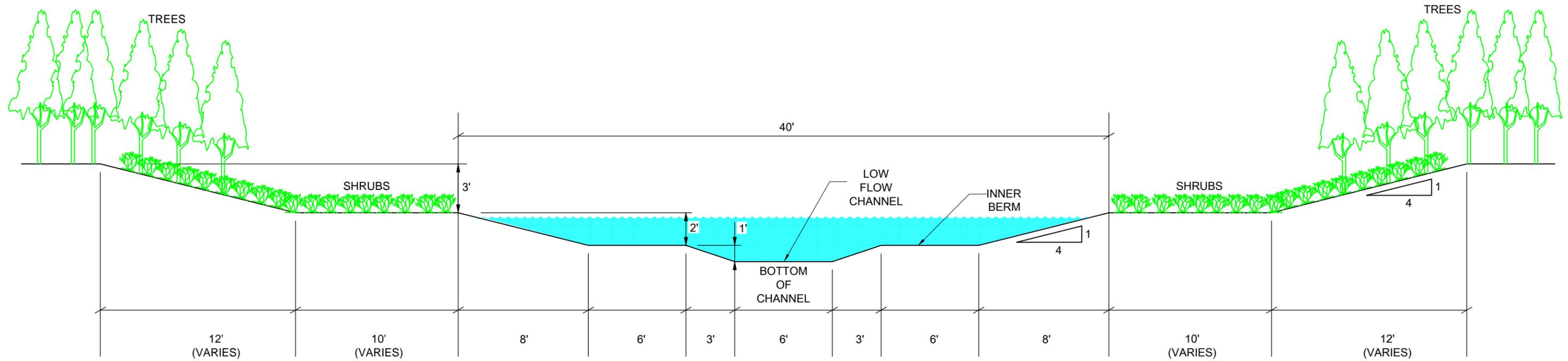
**CONCEPTUAL**

**SHRUBS**

- OAK LEAF HYDRANGEA
- AMERICAN BEAUTYBUSH
- VIRGINIA SWEETSPIRE

**TREES**

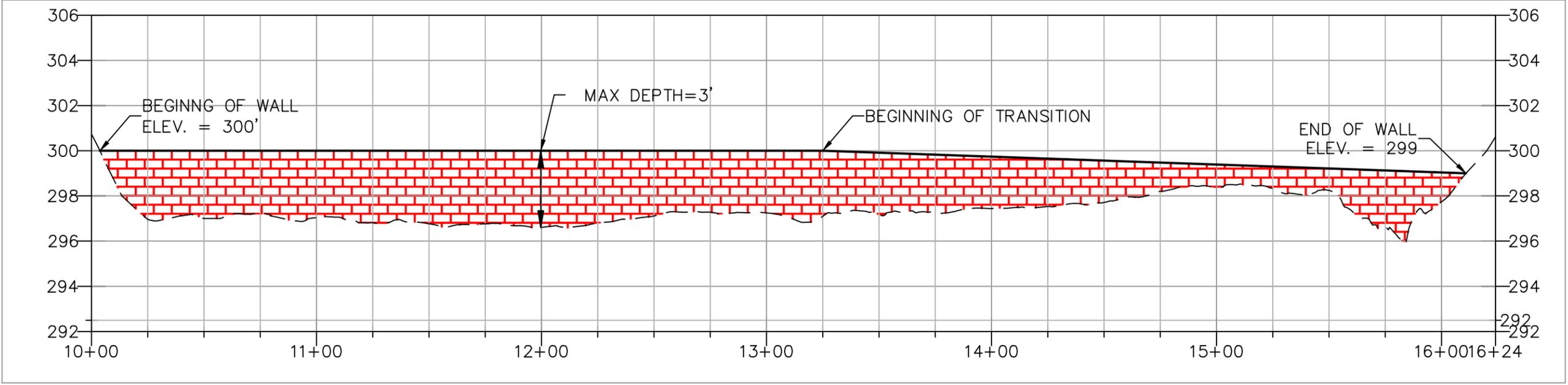
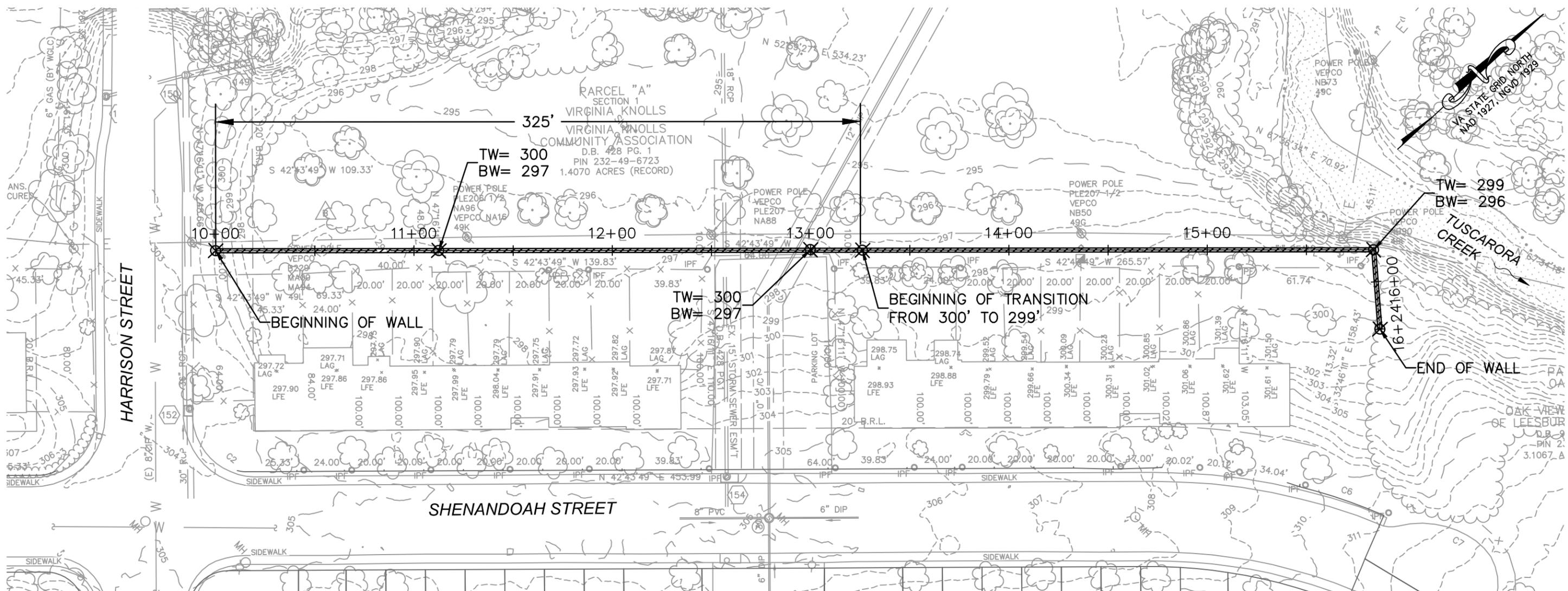
- RIVER BIRCH
- RED MAPLE
- NUTTALL OAKS



TYPICAL CHANNEL SECTION B - B

NOT TO SCALE

CONCEPTUAL



**FLOOD WALL CONCEPT**  
**TUSCARORA CREEK STREAM CORRIDOR**  
 HORIZONTAL SCALE = 25' VERTICAL SCALE = 2.5'