

MD 24 Slope Remediation Projects- Section A

In Harford County, MD

MD 24 Advisory Committee Meeting - April 2013



In This Presentation....

- Review the previous discussions
- Design progress and challenges
- Next steps
- Project schedule

From previous meetings:

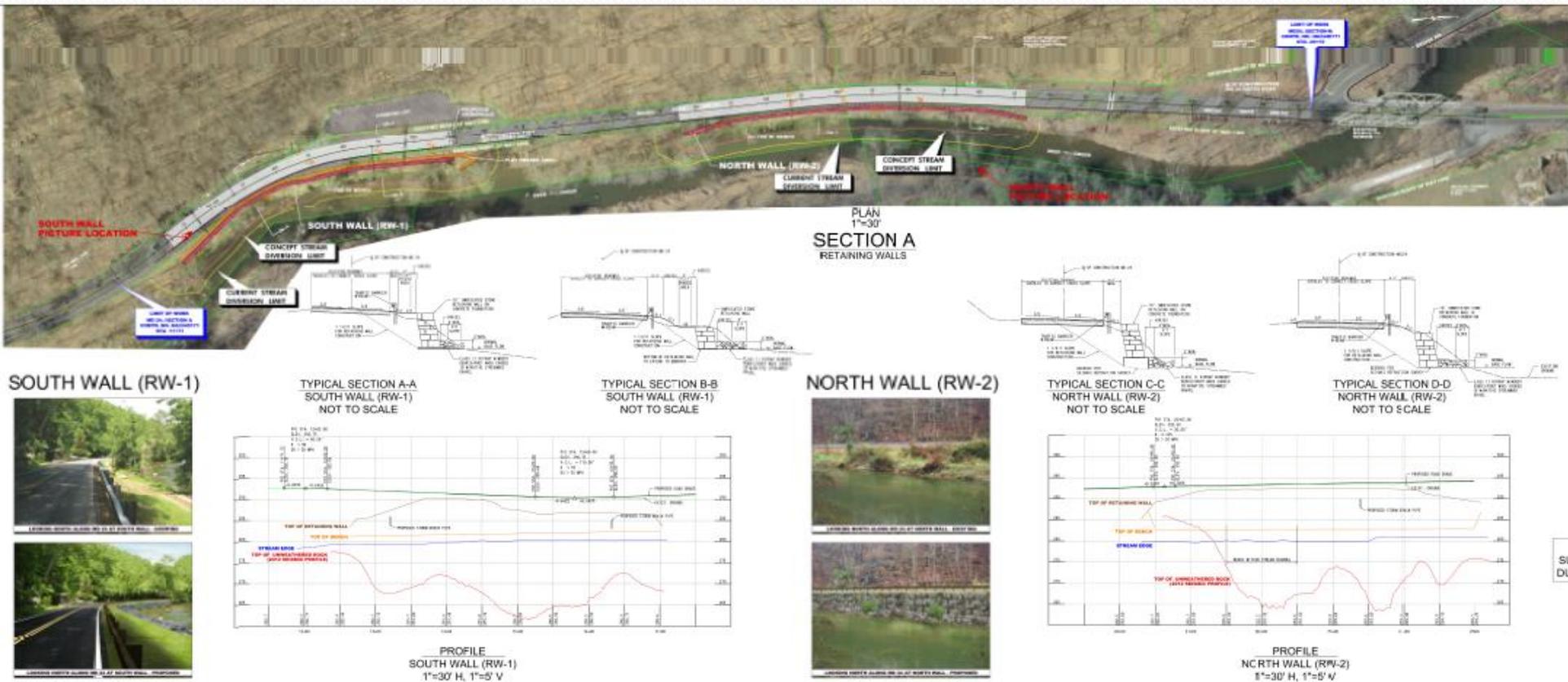
- Purpose and Need –
Improve road safety along MD 24 and address roadside safety concerns associated with the eroding supporting slopes.
- Project Objectives –
 - ✓ Avoiding or minimizing Creek impacts
 - ✓ Protecting historic, cultural and endangered species
 - ✓ Limit disturbance and/or enhancement of rock features

From previous meetings:

- Various slope stabilization methods –
 - ✓ Rock riprap slope
 - ✓ Gabions
 - ✓ Imbricated stone wall
 - ✓ Concrete/modular block wall
 - ✓ High performance turf matting system
 - ✓ Log cribbing/root wad revetment
 - ✓ Floodplain adjustments
- Selected Alternative –

Maintain the existing roadway alignments, construct two imbricated stone walls, improve the roadside drainage system wherever feasible.

Design Progress:



Design Progress:

Construction will consist of the following major elements:

- Two imbricated stone walls
- Vegetated benches at the toe of the walls
- Roadway reconstruction at locations of wall construction
- Landscaping
- Brown traffic barrier
- Re-graded existing parking lot
- Improved the roadside drainage facilities wherever feasible
- Relocated utility poles on northbound MD 24

Design Progress:

- Size of the imbricated walls:

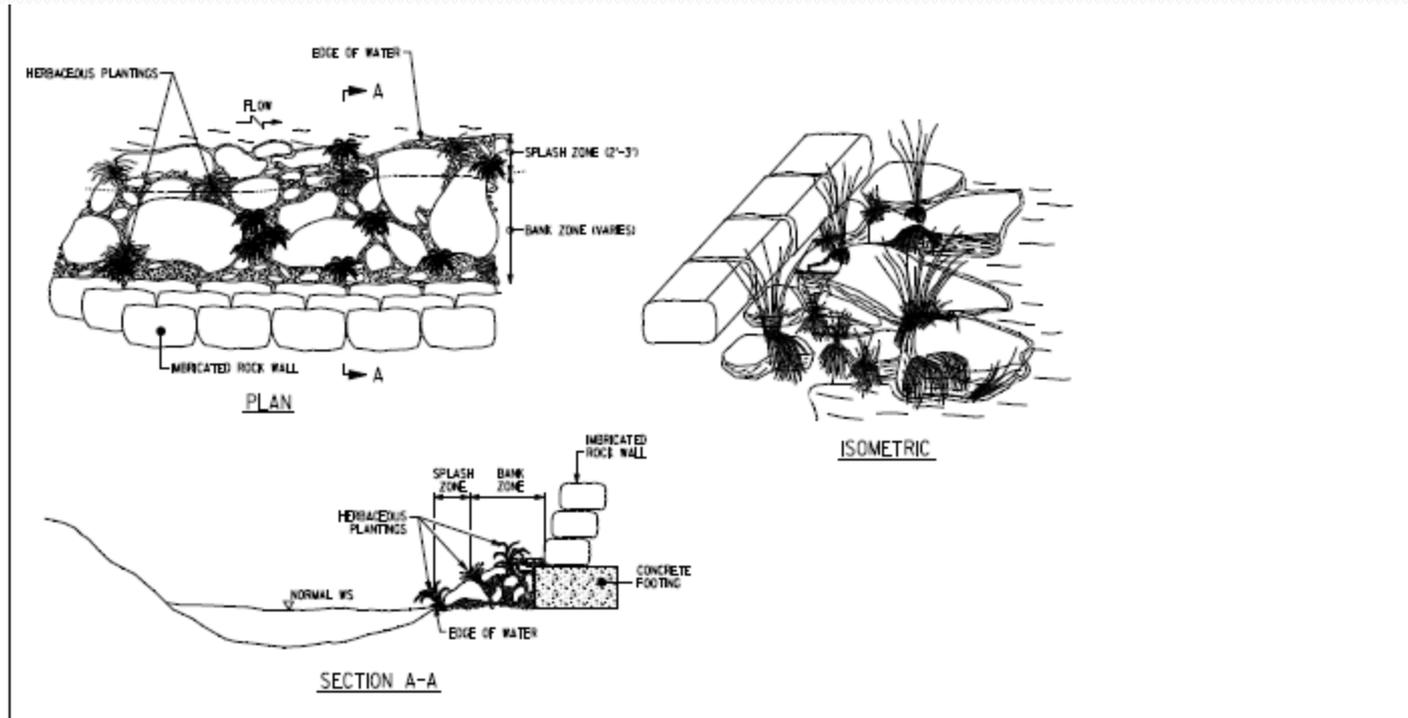
	Length (feet)	Height (feet)
Northern Wall	500	6-9
Southern Wall	430	3-9

- The southern wall was shortened by 70 feet
- The northern wall moved closer to the roadway



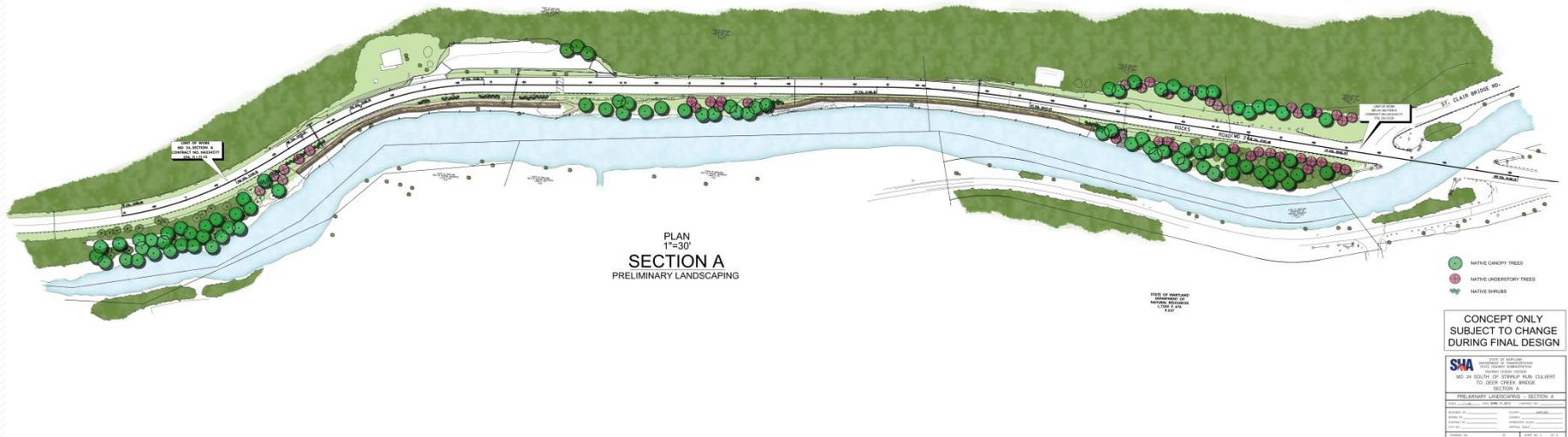
Design Progress:

Ecological bench at the toe of the walls



Design Progress:

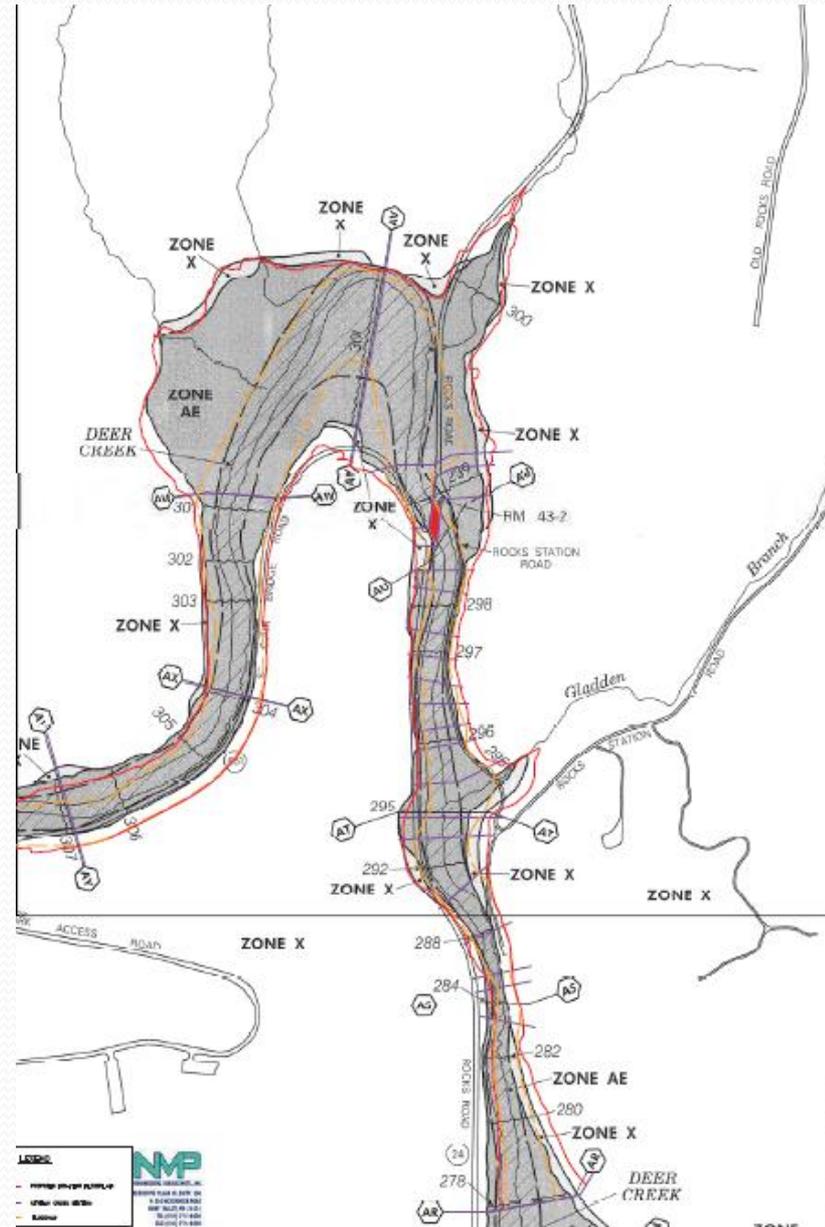
Preliminary Landscaping



Design Progress:

Hydraulic Analysis for FEMA

- Revised floodplain boundary based on our Re-Study of Existing Conditions
- No “mappable” difference between our existing floodplain and the proposed floodplain - the increase in base flow elevation (100-year water surface elevation) is 0.36 inch (<3/8”) for the FEMA model



Design Progress:

- Preliminary engineering is approximate 70% complete
- Coordinating with utility owner for utility relocation design
- Soil borings completed in June, 2012
- Supplementary phase I-II archeology survey completed early 2013



Design Challenges -

Stream Diversion and Constructability

Design Challenges:

- Dewatering and diverting flow from the Creek for construction area
- Temporary stream diversion general requirements:
 - should have sufficient capacity to convey 2-year flows
- Typical Temporary diversion methods:
 - Fabric-based diversion
 - Sandbag and stone diversion
 - Flow barriers such as coffer dam, interlock dam, sheet piling, and etc.

Design Challenges:



Sandbag and Stone Diversion



NOV 20 2002

Design Challenges:



↑ 42 -inch Concrete Traffic Barrier

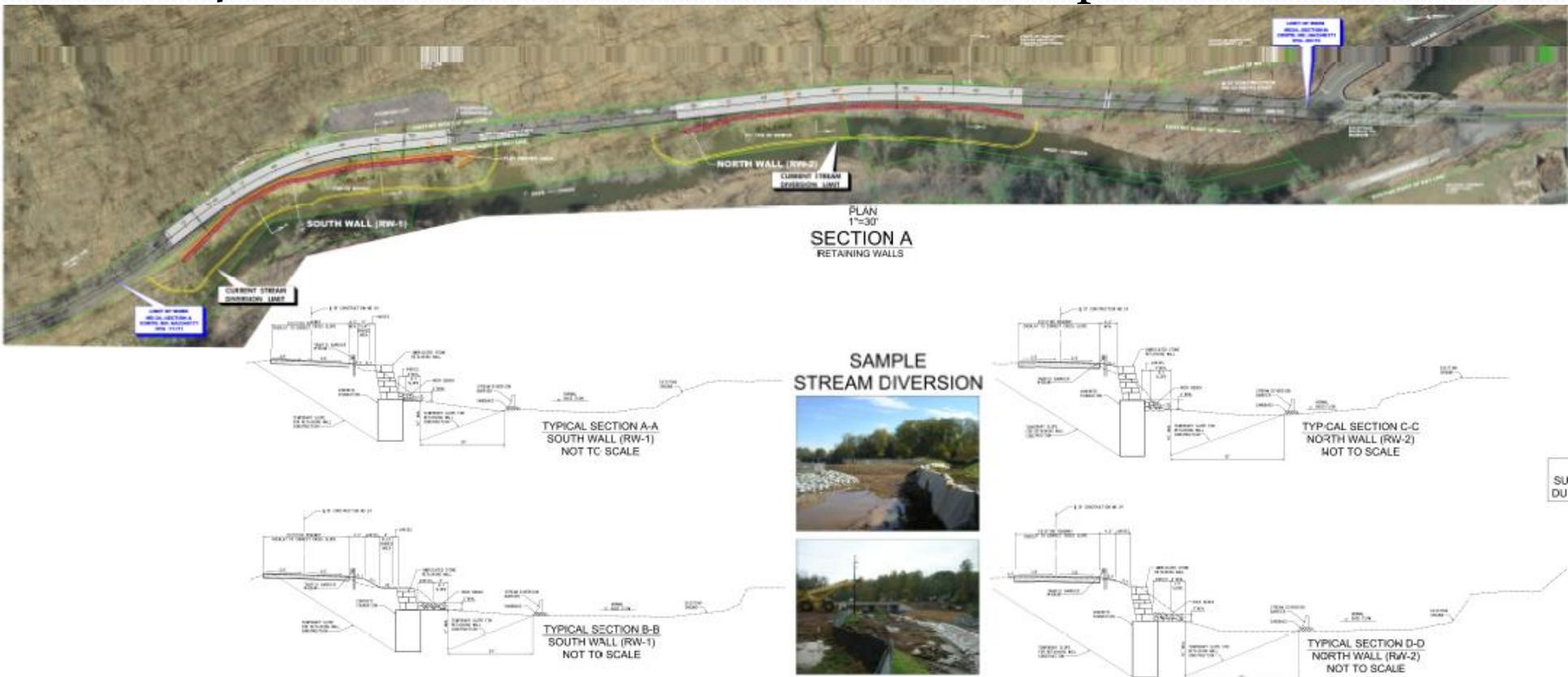
← Interlock Blocking System

Design Challenges:



Design Challenges:

MD 24 Section A Stream Diversion Concept



Design Challenges:

Temporary Diversion System Design/ Selection Criteria:

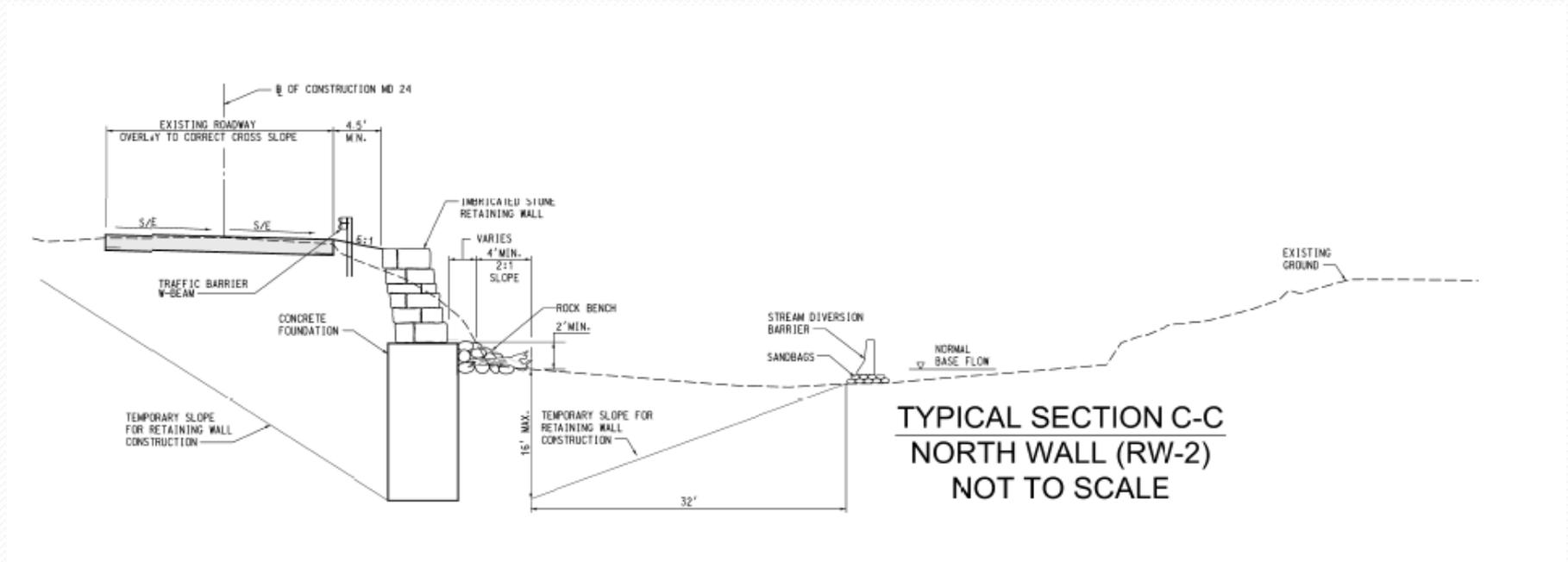
- Shortest construction duration
- Height of flow barrier system
- Stability
- Erosion and sediment control during Construction

The height of the temporary diversion barriers

- 2-year storm, stream flow depth can be 12-13 feet;
- 1-year storm, stream flow depth is approximate 10 feet;
- Base flow, flow depth is around 30 inch typically.

Design Challenges:

Stream Diversion Typical Section



Next Steps

- SHA is in the process of procuring a construction manager to assist the design process to provide constructability input.
- The contractor will assist in design to minimize risks for the stream impacts and develop realistic construction phasing and schedule.

Project Schedule

- Selection of Construction Manager and initiating services : Spring/Summer 2013
- Finalizing Design : Spring 2014
- Construction start: Spring/Summer2014
- Open to Traffic*: Late 2014
(* Depending upon the final construction plan)



Questions?