Arlington County Watershed Retrofits
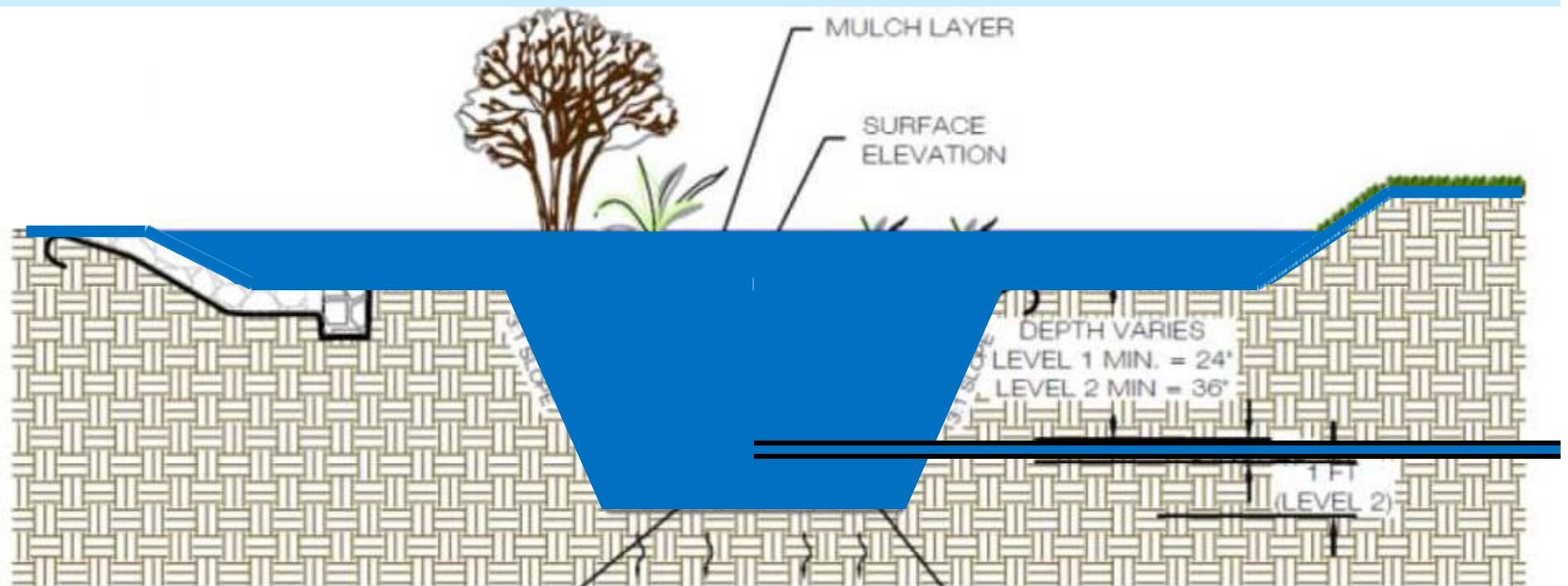
Greg Hoffmann
Center for Watershed Protection

May 2, 2012
Arlington County, Virginia

Bioretention in Action

Port Tobacco, MD

Patrick Henry Drive

Marymount University

Step 1: Retrofit Scoping

- Purpose
  - Define a retrofit strategy to meet local restoration objectives
- Key tasks
  - Review local stormwater management infrastructure and practices
  - Define restoration objectives
  - Define preferred retrofit locations and practices

Arlington County Retrofit Objectives

Primary Objectives

1. Treat stormwater runoff to eliminate pollutants.

2. Promote runoff reduction to the extent achievable.

3. Address pollution hotspots where appropriate.

Secondary Objectives

4. Alleviate existing drainage problems when feasible.

5. Implement safe, aesthetically beneficial retrofits.

6. Provide outdoor learning and outreach opportunities.

7. Create desirable wildlife habitat areas.

8. Support existing recreational uses and naturalization efforts.

Retrofitting Philosophy

Retrofitting urban watersheds is involves the Art of Opportunity

Retrofitting Philosophy

Retrofitting urban watersheds is <u>not</u> about drastic changes to the surface and subsurface landscape.

Step 2: Desktop Analysis

- Purpose
  - Rapidly search for and identify potential retrofit sites across the subwatershed and save time in the field

- Result

<u>**384** potential locations identified</u>

Arlington Forest Branch	5
Bailey's Branch	19
Fairlington/Bradlee	41
Four Mile Run, Middle Mainstem	109
Four Mile Run, Upper Mainstem 1	104
Four Mile Run, Upper Mainstem 2	74
Lucky Run	19
Pimmit Run Tributary	0
Upper Long Branch	13
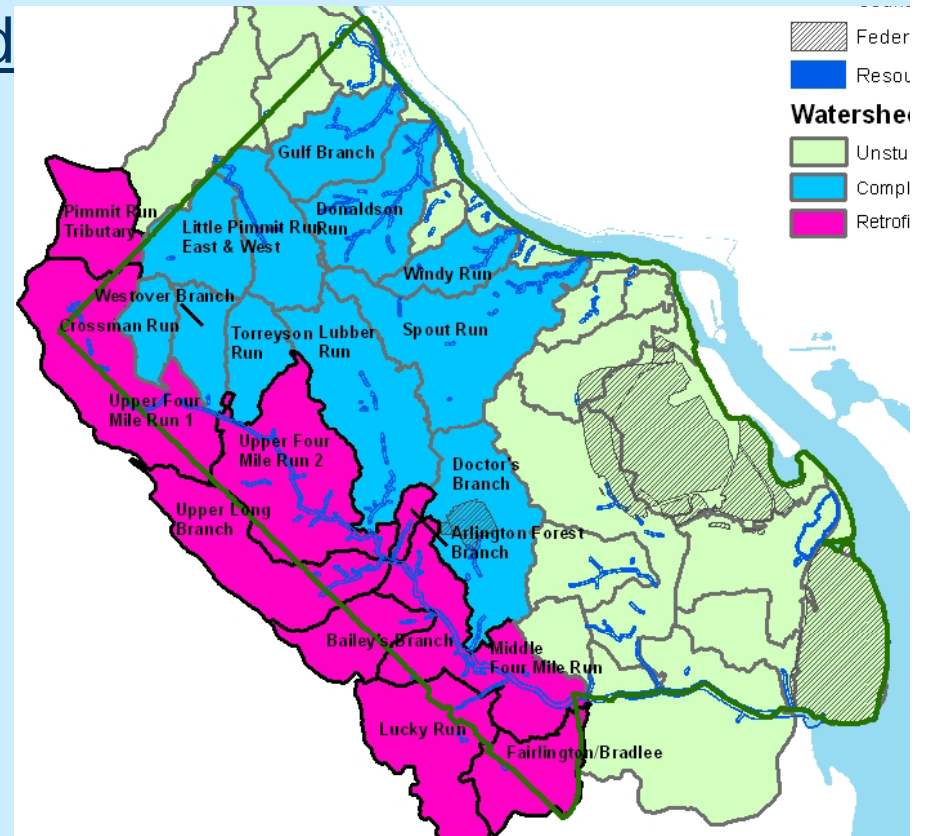
Step 3: Retrofit Reconnaissance Inventory (RRI)

- Purpose
 - Verify feasibility of candidate retrofit sites
  - Collect Information

- Results
  - 327 sites selected as potential retrofits

Arlington Forest Branch	11
Bailey's Branch	16
Fairlington/Bradlee	32
Four Mile Run, Middle Mainstem	68
Four Mile Run, Upper Mainstem 1	88
Four Mile Run, Upper Mainstem 2	86
Lucky Run	15
Pimmit Run Tributary	0
Upper Long Branch	11

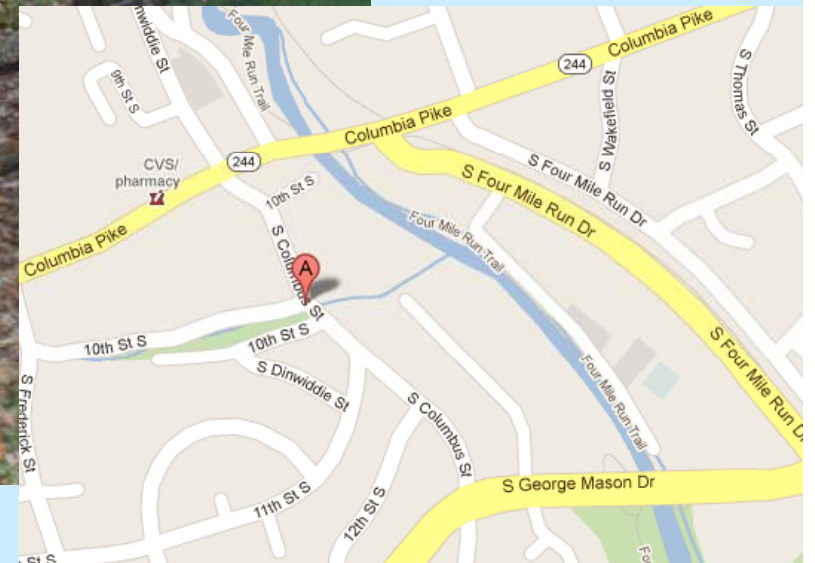# FAIRLINGTON-BRADLEE
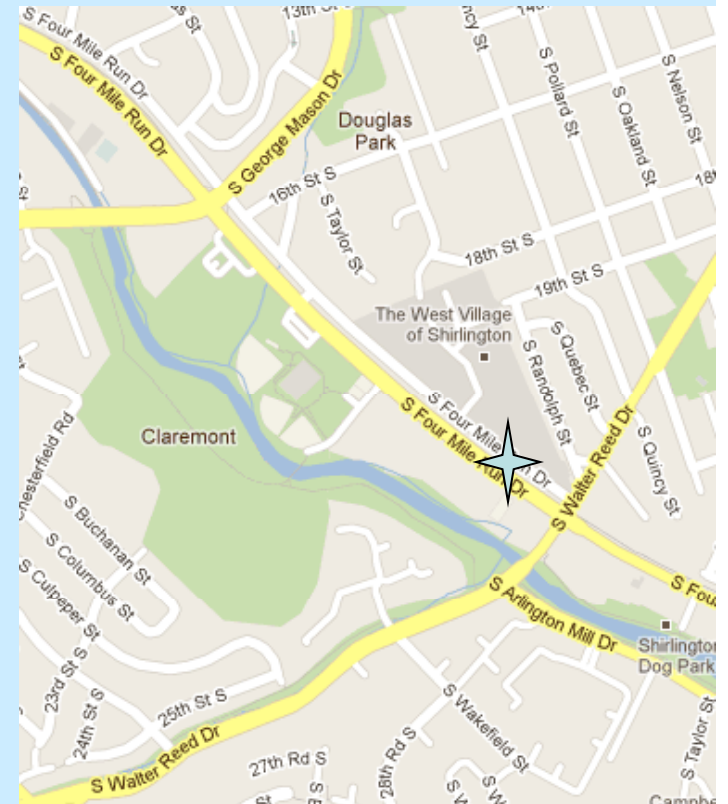## Site FB-668A&B: 4236 32ND STREET SOUTH
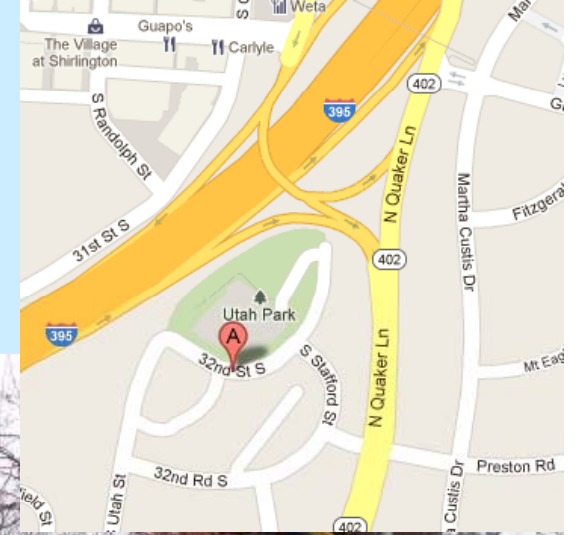
BAILEY'S BRANCH
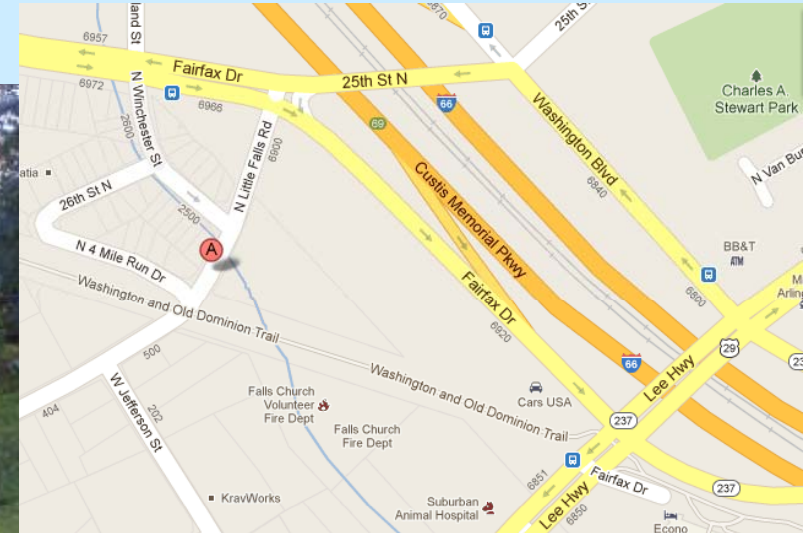## Site BB-223: Bailey's Branch Park

FOUR MILE RUN – MAIN STEM
## Site FMRM-635 Four Mile Run Drive

FOUR MILE RUN – UPPER MAIN STEM
## Site FMR1-105A Falls Station Townhomes

Results

Watershed	Viable Sites	Acres Treated	% Watershed Treated	lbs P per year	lbs N per year
Arlington Forest Branch	11	16.2	19%	4.7	38.2
Bailey's Branch	16	14.8	10%	8.1	67.2
Fairlington/Bradlee	32	32.6	12%	16.6	137.4
Four Mile Run, Middle Mainstem	68	67.1	7%	29.2	238.9
Four Mile Run, Upper Mainstem 1	88	107.0	19%	37.7	292.3
Four Mile Run, Upper Mainstem 2	86	161.6	15%	49.4	393.2
Lucky Run	15	24.9	18%	9.0	75.1
Pimmit Run Tributary	0	0	0%	0	0
Upper Long Branch	11	24.6	15%	6.6	53.0
Totals	**327**	**448.8**	**14%**	**161.3**	**1,295.3**
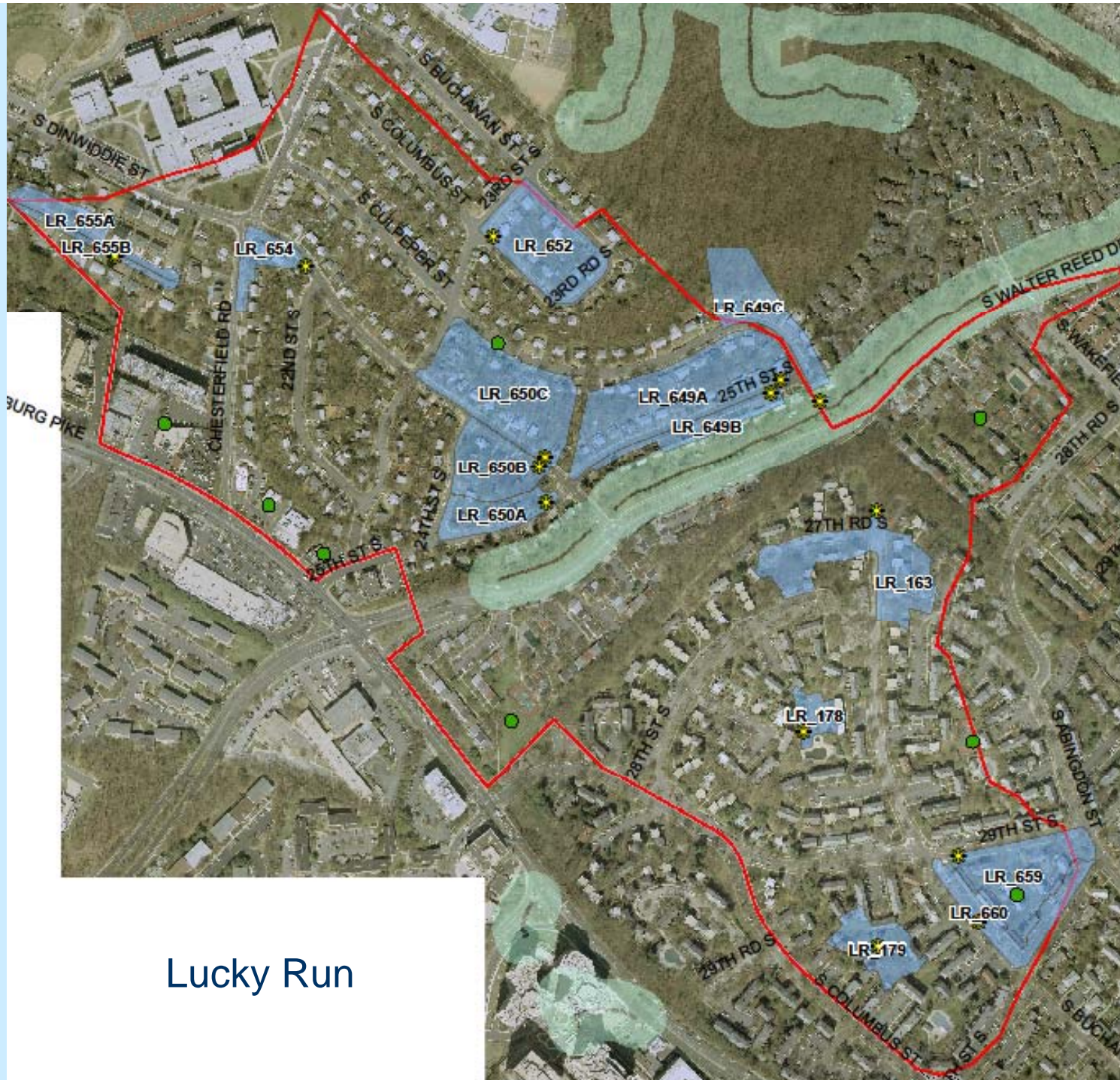
Lucky Run

Step 4: Site Prioritization

100-Point Scoring System for Donaldson Run Retrofits				Site: Example
Screening Factor	Value	Score (0-10)	Weight	Weighted Score
PRIMARY SCREENING FACTORS				
Phosphorus Removal (lbs/year) (10 pts per pound of phosphorus removed)[1]	1	10	2.5	25
Impervious Area Acreage (5 pts per impervious acre; 10 points for 2 acres)[1]	5.00	10	2.0	20
Potential Utility or Site Constraints (High = 0 pts; Med = 5 pts; Low = 10 pts)	Low	10	1.5	15
Property Ownership (Private = 0 pts; School = 4 pts; Street ROW = 7 pts; Park or gov't land = 10 pts)	Park	10	1.5	15
SECONDARY SCREENING FACTORS				
Potential for Quick Implementation or Coincides with Planned Construction (No = 0 pts; Yes = 10 pts)	Yes	10	1.0	10
Existing Drainage Problem/Hotspot (No = 0 pts; Yes = 10 pts)	Yes	10	0.5	5
County Maintenance Burden (High = 0 pts; Med = 5 pts; Low = 10 pts)	Low	10	0.5	5
Education Opportunity (for signage = 5 pts; Parks = 8 pts; Schools = 10 pts)	School	10	0.5	5
TOTAL				**100**
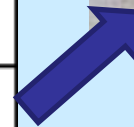
Step 5: Concept Designs
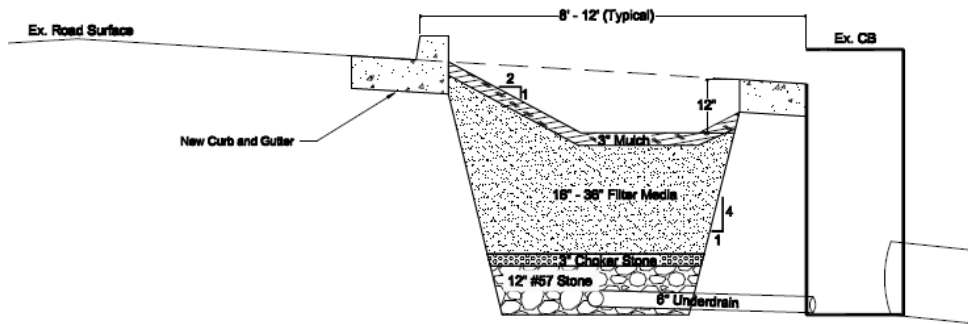
Typical Curb Extension Cross Section

ELEVATION (ft)

DISTANCE (ft)