

Panel Discussion on Stormwater Operation and Maintenance

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Moderated by:

Nathaniel Krause, P.E.
Acting Section Chief



CATHERINE S. PEUGH
MAYOR



RUDOLPH S. CHOW, P. E.
DIRECTOR

Baltimore City
Department of Public Works
Plans Review and Inspection Section

3001 Druid Park Drive
Baltimore, Maryland 21215
410-396-0732
nathaniel.krause@baltimorecity.gov

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Our Panel



- Heather Ambrose, Fairfax County Maintenance and Stormwater Management Division
- Blaine Linkous, WBCM and EWRI Stormwater Maintenance Committee
- Jim Markle, Baltimore County Stormwater Management Section
- Ted Scott, Stormwater Maintenance & Consulting

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Our Discussion Topics

- **Why Maintain?**
- **How Do We Plan for Maintenance?**
- **How Do We Design and Construct for Maintenance?**
- **How Do We Manage, Track and Ensure Compliance?**
- **How Do We Train People to Maintain?**



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Why Maintain? - Rehabilitation

UMBC Campus

Aesthetics/Nuisance Concerns

Can Impact Existing Infrastructure,
Public Safety, Water Quality, Etc.

Costly in Terms of Time, Resources

Maintenance Costs vs. Reconstruction
Costs



502	ADD PAVING REPAIR - 10,400 SF - EXCAV TO 0	400,000	CY	32.28	12,912.00
503	ADD PAVING REPAIR - 10,400 SF - 11" CR6	200,000	TNS	22.80	4,560.00
504	ADD PAVING REPAIR - 10,400 SF - 3" RMA	200,000	TNS	86.25	17,250.00
SUBTOTAL 31					\$41,000.00
601	MUCK OUT BOTTOM AND SLOPE	110,000	CY	26.80	2,948.00
602	REPLACE STONE @ DEWATERING DEVICE (457	20,000	TNS	58.80	1,176.00
603	REPLACE CL 1 1 RSP R/40' WALL	25,000	SY	66.50	1,662.50
604	REPLACE CR6 ACCESS RD	225,000	SY	18.75	4,218.75
605	FO/TOPSOIL SLOPES AS NECESSARY	600,000	SY	7.50	4,500.00
606	PERM SIED	13,000,000	SF	0.96	124.80
SUBTOTAL 4					\$15,181.35
708	BOND	1,800	LS	3,210.00	3,270.00
SUBTOTAL 5					\$3,270.00
Bid Total					\$106,703.00

Why Maintain? - Rehabilitation

Judicial Center

Surprise source of constant water which clogged filter.

Aesthetics/Nuisance Concerns

Public Safety



Importance of Stormwater Maintenance

Prevention vs. Cure

- Can be multiple times as costly to rehab vs. maintain
- Maintenance tiers
 - Routine
 - Preventative
 - Rehabilitative
- Performance impacts?



Planning for Stormwater Maintenance

- Frequency
- Cost/Budgeting
- Maintenance Responsibility
 - Public? Private? Shared?
 - Ownership of Facilities / Land Instruments and Dedications



Planning for Stormwater Maintenance

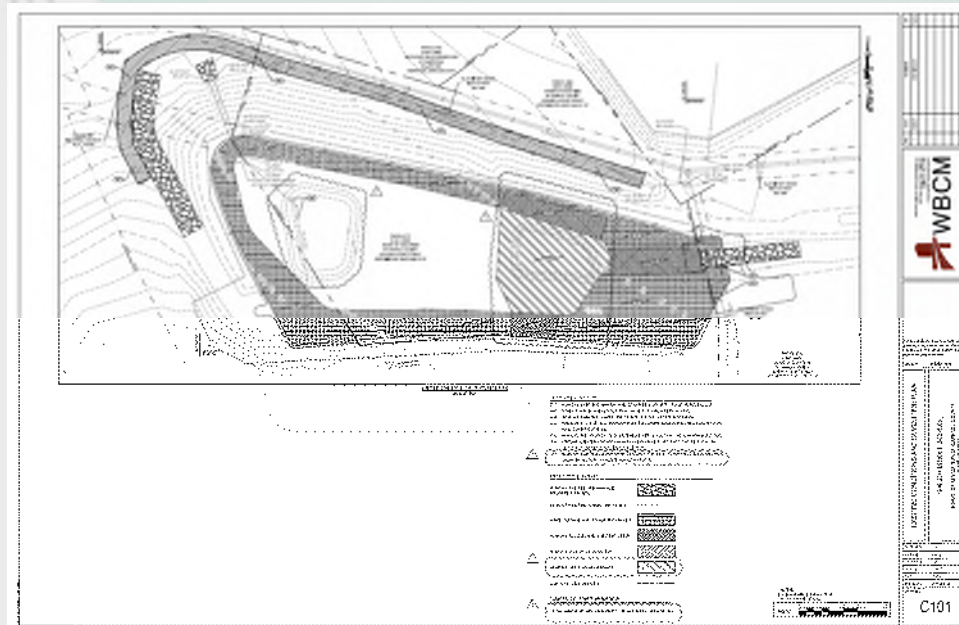
Cost:

- Highly dependent on the aesthetic expectations of the public
- Functionality can be a secondary factor driving maintenance frequency
- Effectively free in some situations:
 - Assumed by the homeowner
 - Equivalent to that which would be required for conventional landscaping



Design and Construction with Maintenance in Mind

- Access/Site Selection
- ESC and Protection during Construction
- Contract Documents of Maintenance?
- Permitting for Maintenance?



Design and Construction with Maintenance in Mind

- Vactor Truck Access



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Asset Management, Tracking, and Compliance

- GIS/technology/tablet devices/remote sensing
- Inspection programs
- Work order generation
- MS4 Permitting requirements



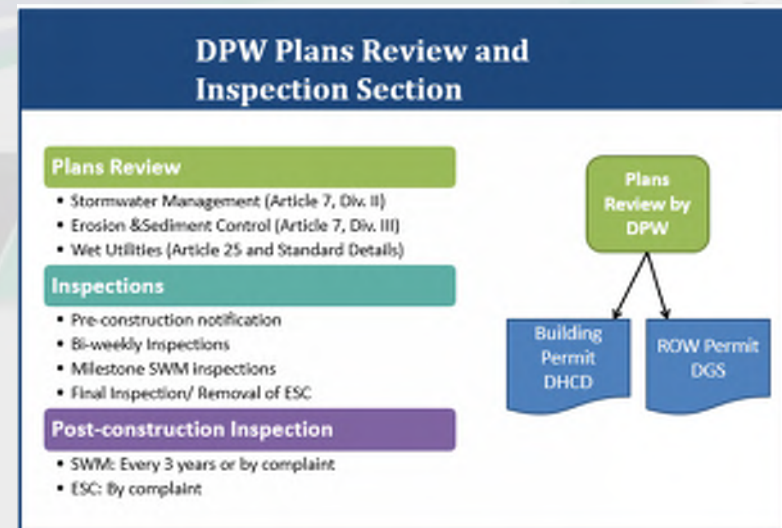
Inspections

Frequency

Agreements

Who is involved?

What happens when property is sold?



Training and Workforce Development

- Nuts and bolts of BMP maintenance
- Skills, certifications and equipment needed
- Snapshot of a maintenance professional
- Competition in a growing industry, are there enough people trained?
- Forecasting for the future – new equipment developments?
- Emerging trends? Adopt-a BMP?



Questions for the Panel

- Thank You to All

