Carroll County ESD to MEP Design Procedure

Overall Site PE and ESD_v Required

Site:

1. Delineate site per "Definition of the site."
2. Measure all existing impervious area within the site boundary.

Is the existing $\frac{IA}{Site\ Area} > 40\%$

If yes, continue to Redevelopment

If no, continue to New Development

Redevelopment:

1. Delineate the ESD Tract per "Definition of the ESD Tract"
2. Measure all existing impervious (IA) within the ESD tract.
3. Measure all impervious (IA) in proposed conditions within the ESD tract. Calculate R_v = .009 x IA% + 0.05.
4. Existing IA x 50% = Existing IA requiring treatment.
5. Subtract any existing IA being returned to pervious (vegetated) conditions. This is the net existing IA.
6. Existing ESD_v required = Net existing IA x 0.95 x $\frac{1"}{12}$ x 43560
7. Net new impervious = proposed IA – existing IA.
8. Proposed ESD_v required. = Net New IA x 0.95 x $\frac{PE}{12}$ (from Table 1) x 43560

Table 1

A soil = 2.5"

B soil = 2.5"

C soil = 2.2"

D soil = 2.0"

9. Total ESD_v required = existing ESD_v + proposed ESD_v

10. $PE_{required} = \frac{Total\ ESDv\ (12)}{Rv\ x\ ESDTract\ x\ 43560}$

11. 9 and 10 are the ESD to the MEP targets.

New Development:

1. Delineate the ESD tract per "Definition of ESD Tract".
2. Measure all proposed condition impervious (IA) within the ESD tract.
3. Calculate % IA and Rv.

$\%\ IA = \frac{IA}{DA} \times 100$ $\qquad\qquad$ $R_v = 0.009 \times \%IA + .05$

4. Determine PE required from charts in Maryland Stormwater Management Manual per soil type.
5. Calculate a composite PE required based on percentage of each soil type in the ESD Tract.

Composite PE required = (PE_A x Area A soil +PE_B x Area B soil + PE_C x Area C soil + PE_D x Area D soil) / Area ESD Tract

6. Calculate ESD_v required.

$ESD_{v\ required} = \frac{Composite\ PE}{12} \times R_v \times$ ESD Tract Area x 43560

7. $PE_{required} = \frac{ESDv\ total\ (12)}{Rv\ x\ ESD\ Tract\ Area\ x\ 43560}$

8. 6 & 7 are the ESD to MEP targets.

			ESD Provided Summary Chart								
		DA	IA	%IA	R_v	Maximum		Actual Provided		Credit Claimed	
		(ac)	(ac)			PE	ESD_v	PE	ESD_v	PE	ESD_v
ESD Number + Type						(in)	(ft^3)	(in)	(ft^3)	(in)	(ft^3)
*						**		***	***	****	****
Totals											**A**

*- one line per practice (Chapter 5 practices)

**- maximum PE = 2.5" or 1" depending on practice

***- calculate PE and ESD_v provided on individual pages for each practice. Values calculated must match the values in the chart.

****- Credit claimed cannot exceed maximum allowed.

$\% \text{ IA} = \frac{IA}{DA} \times 100$

$R_v = 0.009 \times \% \text{ IA} + 0.5$

$ESD_v = \frac{PE}{12} \times R_v \times DA\ (43{,}560)$

$PE_{achieved} = \underline{\mathbf{A}} \times 12 / R_{vESDTract} \times \text{ESD Tract Area} \times 43{,}560$

PE achieved and Total ESD_v are the ESD provided. To provide ESD to the MEP, they must match or exceed the targets. Any ESD_v deficit must be made up by water quality volume (WQ_v) in a Chapter 3 facility that provides channel protection (CP_v).

Martin B. Covington, III, PE, CFM, B.C., WRE.
Carroll County Stormwater Management Program Engineer
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Revised to match current practice and include
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