



Existing



Roof Area



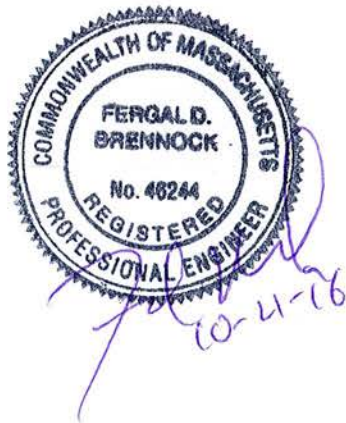
Drywells



Driveway



Drywells



Routing Diagram for 235 Woodcliff Road Newton 102116  
Prepared by Fergal Brennock PE, Printed 10/21/2016  
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**Summary for Subcatchment E1: Existing**

Existing Conditions

Runoff = 0.53 cfs @ 12.06 hrs, Volume= 1,566 cf, Depth= 2.51"

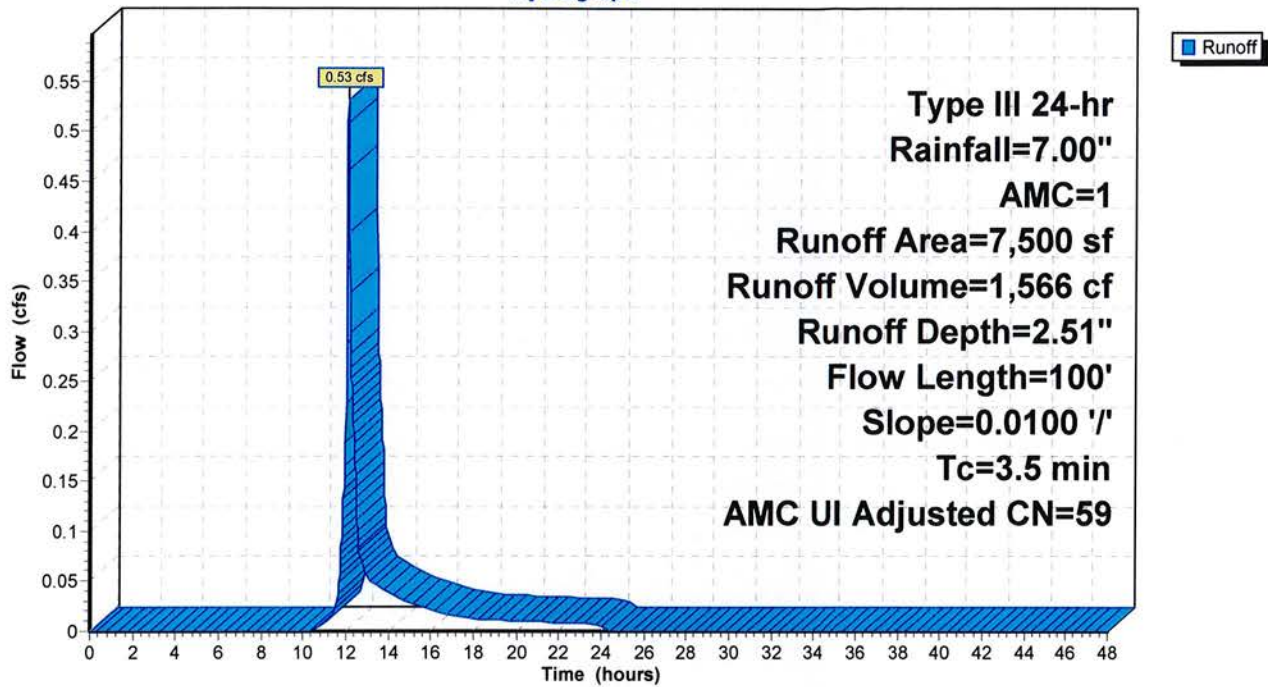
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
 Type III 24-hr Rainfall=7.00", AMC=1

Area (sf)	CN	Adj	Description
313	98		Paved parking, HSG C
1,243	98		Unconnected roofs, HSG C
5,944	74		>75% Grass cover, Good, HSG C
7,500	79	59	Weighted Average, AMC UI Adjusted
5,944			79.25% Pervious Area
1,556			20.75% Impervious Area
1,243			79.88% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0100	1.17		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 7.00"
2.6	25	0.0100	0.16		<b>Sheet Flow,</b> Range n= 0.130 P2= 7.00"
0.5	50	0.0100	1.61		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
3.5	100	Total			

### Subcatchment E1: Existing

Hydrograph



**Summary for Subcatchment P2: Roof Area**

Proposed Roof Area  
with Front Yard

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,178 cf, Depth= 3.41"

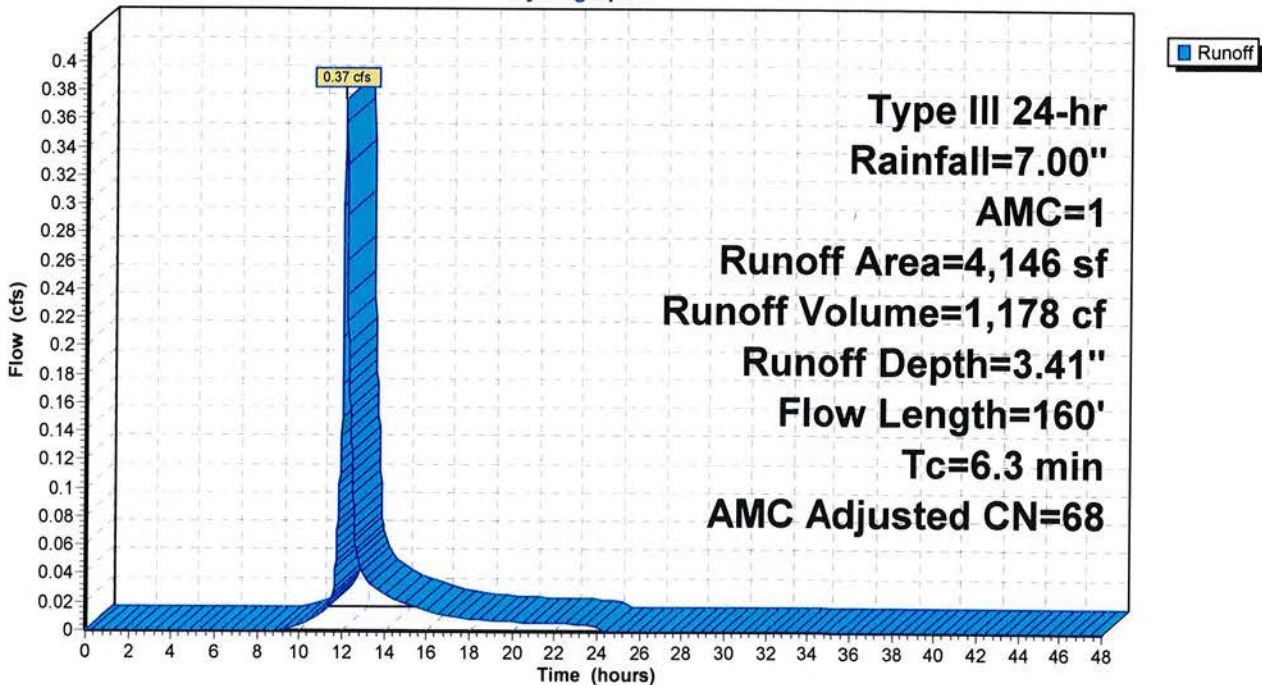
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
Type III 24-hr Rainfall=7.00", AMC=1

Area (sf)	CN	Adj	Description
1,804	98		Roofs, HSG A
2,342	74		>75% Grass cover, Good, HSG C
4,146	84	68	Weighted Average, AMC Adjusted
2,342			56.49% Pervious Area
1,804			43.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	80	0.0200	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 7.00"
0.8	80	0.0100	1.61		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.3	160	Total			

**Subcatchment P2: Roof Area**

Hydrograph



**Summary for Subcatchment P3: Driveway**

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 1,073 cf, Depth= 3.83"

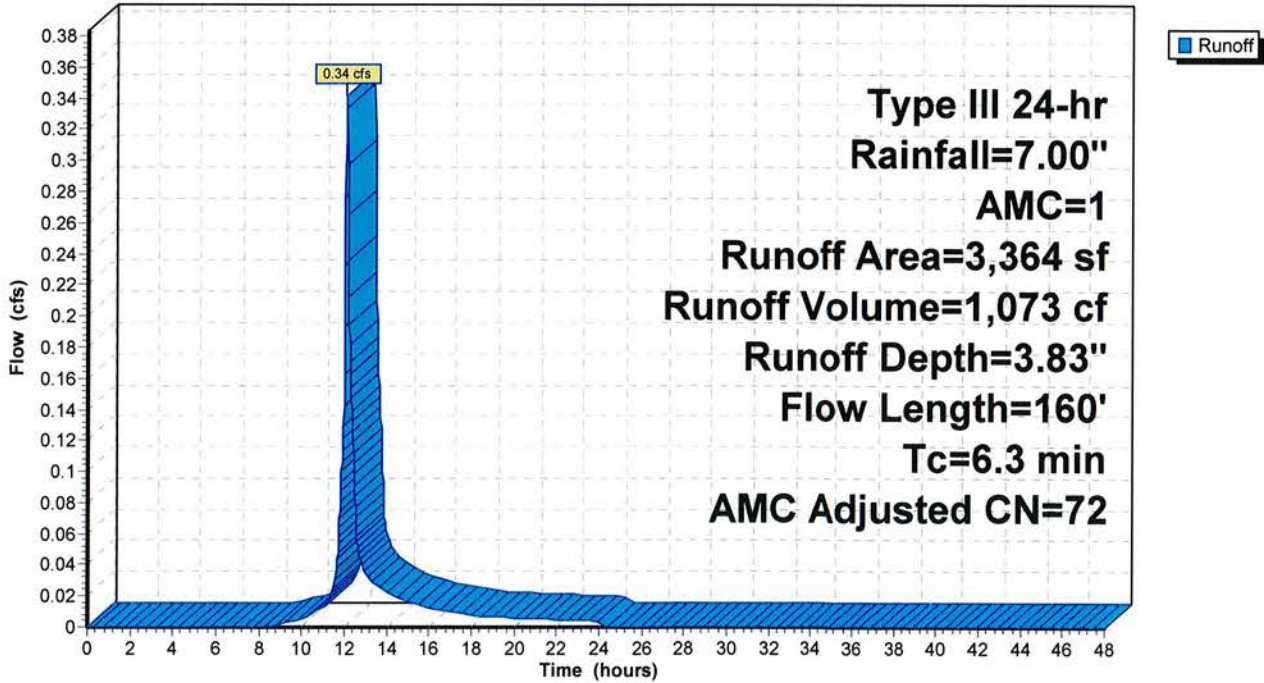
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
 Type III 24-hr Rainfall=7.00", AMC=1

Area (sf)	CN	Adj	Description
1,734	98		Paved parking, HSG A
1,630	74		>75% Grass cover, Good, HSG C
3,364	86	72	Weighted Average, AMC Adjusted
1,630			48.45% Pervious Area
1,734			51.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	80	0.0200	0.24		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 7.00"
0.8	80	0.0100	1.61		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
6.3	160	Total			

**Subcatchment P3: Driveway**

Hydrograph



**Summary for Pond RF2: Drywells**

Inflow Area = 4,146 sf, 43.51% Impervious, Inflow Depth = 3.41"  
 Inflow = 0.37 cfs @ 12.09 hrs, Volume= 1,178 cf  
 Outflow = 0.37 cfs @ 12.09 hrs, Volume= 1,178 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 12.09 hrs, Volume= 5 cf  
 Secondary = 0.37 cfs @ 12.09 hrs, Volume= 1,173 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
 Peak Elev= 115.50' @ 12.09 hrs Surf.Area= 263 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 1,178 cf (100% of inflow)  
 Center-of-Mass det. time= 0.0 min ( 835.6 - 835.6 )

Volume	Invert	Avail.Storage	Storage Description
#1A	115.50'	348 cf	<b>15.75'W x 16.68'L x 5.50'H Field A</b> 1,445 cf Overall - 284 cf Embedded = 1,161 cf x 30.0% Voids
#2A	116.50'	284 cf	<b>ADS StormTech SC-740</b> x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 3 rows
		632 cf	Total Available Storage

Storage Group A created with Chamber Wizard

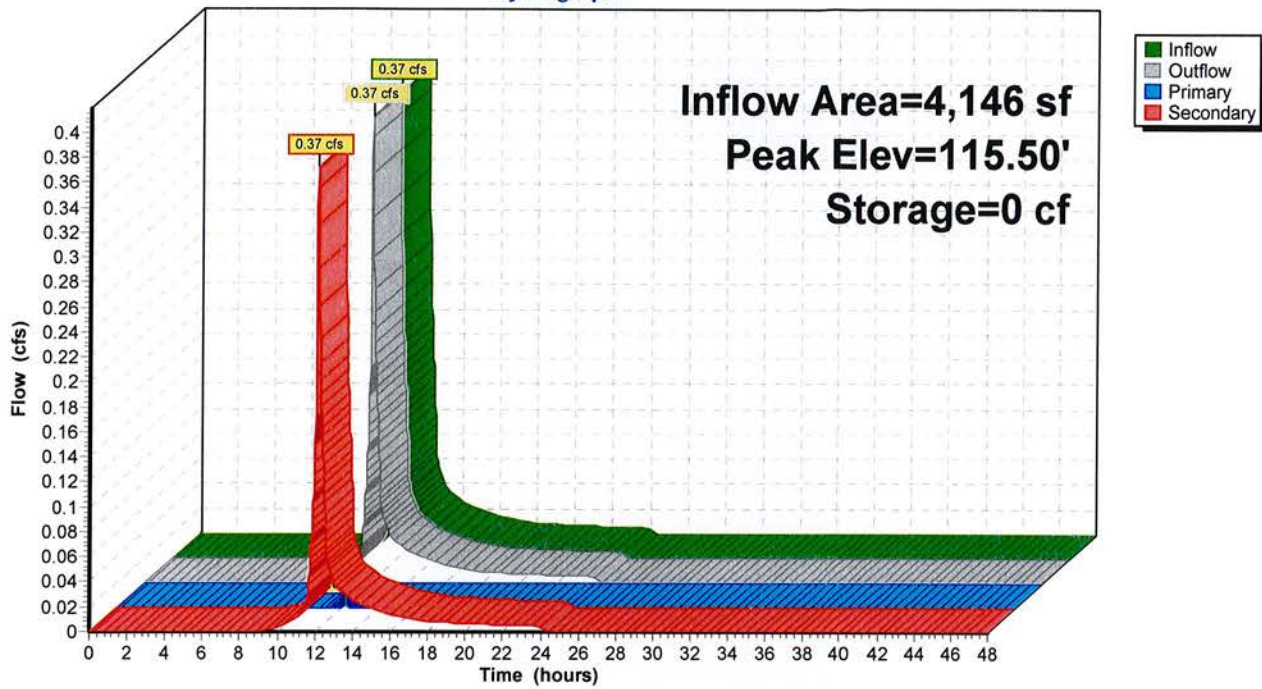
Device	Routing	Invert	Outlet Devices
#1	Primary	115.50'	<b>5.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 80.00'
#2	Secondary	96.50'	<b>6.0" Vert. Orifice/Grate</b> C= 1.000

**Primary OutFlow** Max=0.03 cfs @ 12.09 hrs HW=115.50' (Free Discharge)  
 ↳1=Exfiltration ( Controls 0.03 cfs)

**Secondary OutFlow** Max=6.82 cfs @ 12.09 hrs HW=115.50' (Free Discharge)  
 ↳2=Orifice/Grate (Orifice Controls 6.82 cfs @ 34.75 fps)

### Pond RF2: Drywells

#### Hydrograph



**Summary for Pond RF3: Drywells**

Inflow Area = 3,364 sf, 51.55% Impervious, Inflow Depth = 3.83"  
 Inflow = 0.34 cfs @ 12.09 hrs, Volume= 1,073 cf  
 Outflow = 0.34 cfs @ 12.09 hrs, Volume= 1,073 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 12.09 hrs, Volume= 3 cf  
 Secondary = 0.34 cfs @ 12.09 hrs, Volume= 1,070 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
 Peak Elev= 109.50' @ 12.09 hrs Surf.Area= 183 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 1,073 cf (100% of inflow)  
 Center-of-Mass det. time= 0.0 min ( 826.7 - 826.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	109.50'	246 cf	<b>11.00'W x 16.68'L x 5.50'H Field A</b> 1,009 cf Overall - 189 cf Embedded = 820 cf x 30.0% Voids
#2A	110.50'	189 cf	<b>ADS_StormTech SC-740</b> x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 2 rows
		435 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	109.50'	<b>5.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 80.00'
#2	Secondary	90.00'	<b>6.0" Vert. Orifice/Grate</b> C= 1.000

**Primary OutFlow** Max=0.02 cfs @ 12.09 hrs HW=109.50' (Free Discharge)  
 ↑1=Exfiltration ( Controls 0.02 cfs)

**Secondary OutFlow** Max=6.91 cfs @ 12.09 hrs HW=109.50' (Free Discharge)  
 ↑2=Orifice/Grate (Orifice Controls 6.91 cfs @ 35.21 fps)



### Pond RF3: Drywells

#### Hydrograph

