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RECEIVED

February 27, 2012

Acton Planning Board  
Attn: Roland Bartl  
Acton Town Hall  
472 Main Street  
Acton, MA 01720

MAR - 1 2012

Town of Acton  
Planning Department

Re: Central Street P.C.R.C.  
Site Description and  
Drainage Calculations

Dear Members of the Board:

I have enclosed drainage calculations along with this site description for the proposed Central Street P.C.R.C. application.

Existing Conditions

The existing parcel, consisting of approximately 11.9 acres, is comprised of mostly wetlands. It contains a raised, level knoll towards the rear of the property approximately 18 feet above the wetlands in elevation. The knoll is underlain with good soils, consisting of sand and gravel, with a percolation rate of less than 2 minutes per inch and groundwater at a depth of over 10 feet.

Proposed Site Improvements

We are proposing three new single family homes to be accessed off of Central Street (adjacent to the cemetery entrance) via a 1,400 foot shared driveway. A stone trench is proposed along the entire length of the driveway to treat the storm water runoff. The driveway will also be pitched away from the wetlands (superelevated). Each home will have a Cultec chamber drywell to treat the roof runoff.

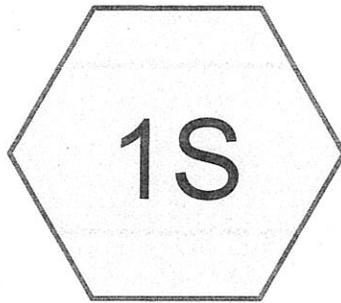
The attached drainage calculations provide the post construction peak flow runoff for the 10 year storm event. Calculations were performed using HydroCAD software, utilizing U.S. Soil Conservation Service hydrology method TR-55. All runoff from the proposed improvements (driveways and roofs) will be fully contained and treated for the 10 year storm event. The proposed dwellings and drainage components will not have any negative impacts on the wetlands or abutting properties.

Please call me with any questions you may have regarding these calculations for this application.

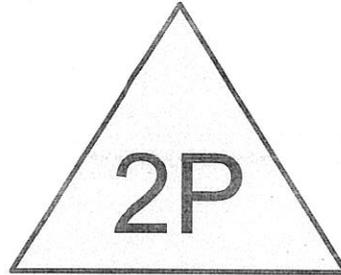
Sincerely,



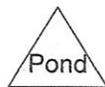
Drew Garvin  
R. Wilson & Associates, Inc.



proposed driveway



stone trench



**1851post**

Type II 24-hr 10 yr Rainfall=4.80"

Prepared by {enter your company name here}

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2/27/2012

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: proposed driveway**

Runoff Area=16,920 sf Runoff Depth=4.19"  
Tc=5.0 min CN=98 Runoff=2.68 cfs 0.136 af

**Pond 2P: stone trench**

Peak Elev=188.15' Storage=40 cf Inflow=2.68 cfs 0.136 af  
Outflow=2.66 cfs 0.136 af

**Total Runoff Area = 0.388 ac Runoff Volume = 0.136 af Average Runoff Depth = 4.19"**

**Subcatchment 1S: proposed driveway**

Runoff = 2.68 cfs @ 11.95 hrs, Volume= 0.136 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
16,920	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, driveway

**Pond 2P: stone trench**

Inflow Area = 0.388 ac, Inflow Depth = 4.19" for 10 yr event  
 Inflow = 2.68 cfs @ 11.95 hrs, Volume= 0.136 af  
 Outflow = 2.66 cfs @ 11.95 hrs, Volume= 0.136 af, Atten= 1%, Lag= 0.2 min  
 Discarded = 2.66 cfs @ 11.95 hrs, Volume= 0.136 af

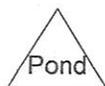
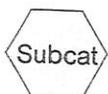
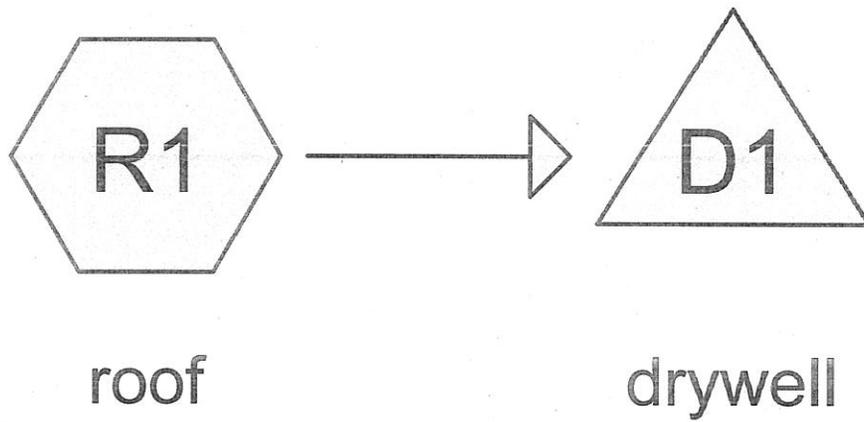
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 188.15' @ 11.95 hrs Surf.Area= 4,230 sf Storage= 40 cf  
 Plug-Flow detention time= 0.3 min calculated for 0.136 af (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 729.8 - 729.6 )

#	Invert	Avail.Storage	Storage Description
1	188.13'	4,230 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 10,575 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
188.13	4,230	0	0
190.63	4,230	10,575	10,575

#	Routing	Invert	Outlet Devices
1	Discarded	0.00'	<b>0.040000 fpm Exfiltration over entire Surface area</b>

**Discarded OutFlow** Max=2.82 cfs @ 11.95 hrs HW=188.15' (Free Discharge)  
 ↳1=Exfiltration (Exfiltration Controls 2.82 cfs)



**1851drywell**

Type II 24-hr 10 yr Rainfall=4.80"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment R1: roof**

Runoff Area=2,250 sf Runoff Depth=4.19"

Flow Length=40' Tc=5.0 min CN=98 Runoff=0.36 cfs 0.018 af

**Pond D1: drywell**

Peak Elev=206.03' Storage=0.005 af Inflow=0.36 cfs 0.018 af

Outflow=0.08 cfs 0.018 af

**Total Runoff Area = 0.052 ac Runoff Volume = 0.018 af Average Runoff Depth = 4.19"**

**1851drywell**

Type II 24-hr 10 yr Rainfall=4.80"

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2/27/2012

**Subcatchment R1: roof**

Runoff = 0.36 cfs @ 11.95 hrs, Volume= 0.018 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10 yr Rainfall=4.80"

Area (sf)	CN	Description
2,250	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	40		0.1		Direct Entry, roof

**Pond D1: drywell**

Inflow Area = 0.052 ac, Inflow Depth = 4.19" for 10 yr event  
 Inflow = 0.36 cfs @ 11.95 hrs, Volume= 0.018 af  
 Outflow = 0.08 cfs @ 11.70 hrs, Volume= 0.018 af, Atten= 78%, Lag= 0.0 min  
 Discarded = 0.08 cfs @ 11.70 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 206.03' @ 12.11 hrs Surf.Area= 0.003 ac Storage= 0.005 af  
 Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= (not calculated)

#	Invert	Avail.Storage	Storage Description
1	203.50'	0.002 af	<b>5.00'W x 23.75'L x 3.00'H Prismaoid</b> 0.008 af Overall - 0.003 af Embedded = 0.005 af x 40.0% Voids
2	204.00'	0.003 af	<b>47.8"W x 30.0"H x 6.25'L Cultec R-330 x 3 Inside #1</b>
		0.005 af	Total Available Storage

#	Routing	Invert	Outlet Devices
1	Discarded	0.00'	<b>0.040000 fpm Exfiltration over entire Surface area</b>

Discarded OutFlow Max=0.08 cfs @ 11.70 hrs HW=203.57' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.08 cfs)