

ROOF & DRIVEWAY DRAINAGE INFILTRATION STUDY
Vlad and Allison Hancu, Williams Drive, Putnam Valley (T)
TM # 54.-2-43

25 Year Design Storm 6.0 in.
25 year Impervious C Factor CN 98 = 5.7
25 Year Existing C Factor (fair woods) CN 74 = 3.3
Soil Type; CrC Charlton Chatfield Complex
 Hydrologic Group B
Rock Depth > 5.5 feet
Water Depth > 7 feet
Soil Percolation Rate 3 Minutes per Inch

PROPOSED IMPERVIOUS AREA:

House (roof) 3,600 SF
Driveway 5,774 SF

Total proposed impervious 9,374 SF

IMPERVIOUS C FACTOR LESS EXISTING C FACTOR

$$CN_A = CN_{98} - CN_{74} = 5.7 - 3.3 = 2.4$$

INCREASED RUNOFF FROM PROPOSED IMPERVIOUS

$$R_I = CN_A (A_I) = CF$$
$$\text{HOUSE} = 2.4(3,600 \text{ SF}) / 12 = 720 \text{ CF}$$
$$\text{DRIVEWAY} = 2.4(5,774 \text{ SF}) / 12 = 1,155 \text{ CF}$$
$$\text{TOTAL} = 2.4(8,330 \text{ SF}) / 12 = 1,875 \text{ CF}$$

THIS IS THE REQUIRED TREATMENT VOLUME

**STORMTECH 740 INFILTRATION SYSTEM
DESIGN**

PERC VOLUME FOR 24 HR PER STORMTECH CHAMBER

$$VS = SCR \times AS = 5.70 \text{ CF/SF/DAY} \times 30.26 \text{ SF} = 172.5 \text{ CF/SF/DAY}$$

STORMTECH CHAMBER DESIGN VOLUME

$$VD = VS + VC = 172 \text{ CF/DAY} + 88 \text{ CF} = 260 \text{ CF/DAY}$$

It is proposed to utilize Storm Tech 740 units with a capacity of 260 CF each.

**THEREFORE IT IS PROPOSED COLLECT WATER FROM THE
ROOF AND TO INSTALL 3 STORMTECH 740 CHAMBERS AND FROM THE DRIVEWAY AND
INSTALL 5 STORMTECH 740 CHAMBERS, TOTAL CAPACITY 2,080 CF/DAY. IT IS NOTED THAT
THE CAPACITY REQUIRED IS 1,875 CF/DAY.**



PERCOLATION ANALYSIS

3 minute percolation

PERC AREA AT TEST HOLE BOTTOM (4" RADIUS)

$$AB = 3.14 \times R^2 = 3.14 (4\text{IN}/12)^2 = 0.349 \text{ SF}$$

PERC AREA AT TEST HOLE SIDE (AVE. HT. 8.5)

$$AC = 3.14 \times D \times H = 3.14 \times 8 / 12 \times 8.5 \text{ IN}/12 = 1.48 \text{ SF}$$

TOTAL PERC AREA

$$AP = AB + AC = 0.349 \text{ SF} + 1.48 \text{ SF} = 1.83 \text{ SF}$$

PERC VOLUME

$$VP = AB + \text{PERC HT.} = 0.349 \text{ SF} + 3 \text{ IN}/12 = .087 \text{ CF}$$

SOIL PERC RATE (T = 3 MIN/IN x 3 IN = 9 MIN)

$$SR = VP/AP/T \times 1440 \text{ MIN}/24 \text{ HOUR} = .087\text{CF}/1.83\text{SF}/9 \times 1440 = 7.60 \text{ CF/SF/DAY}$$

SOIL PERC RATE REDUCTION FOR CLOGGING

$$SCR = SR \times 75\% = 7.6 \text{ CF/SF/DAY} \times 0.75 = 5.70 \text{ CF/SF/DAY}$$