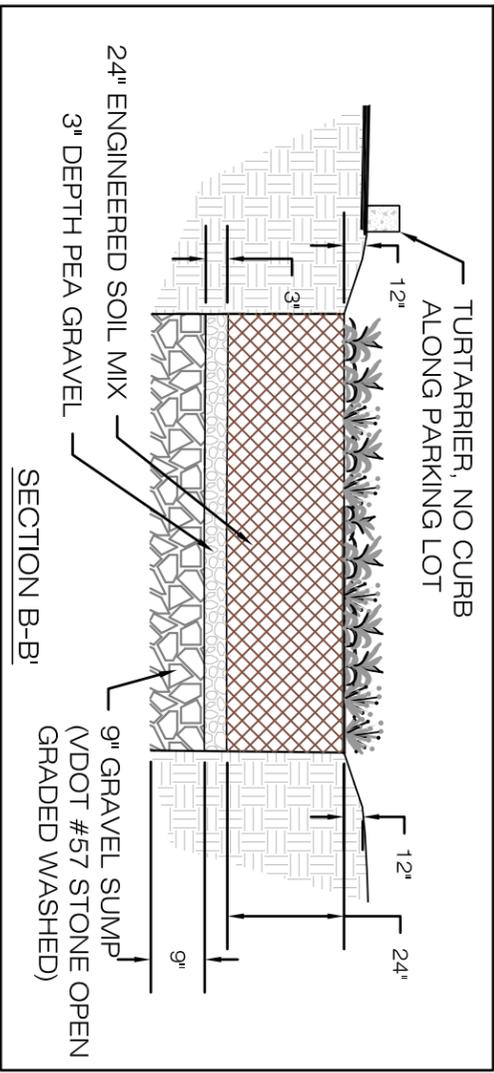
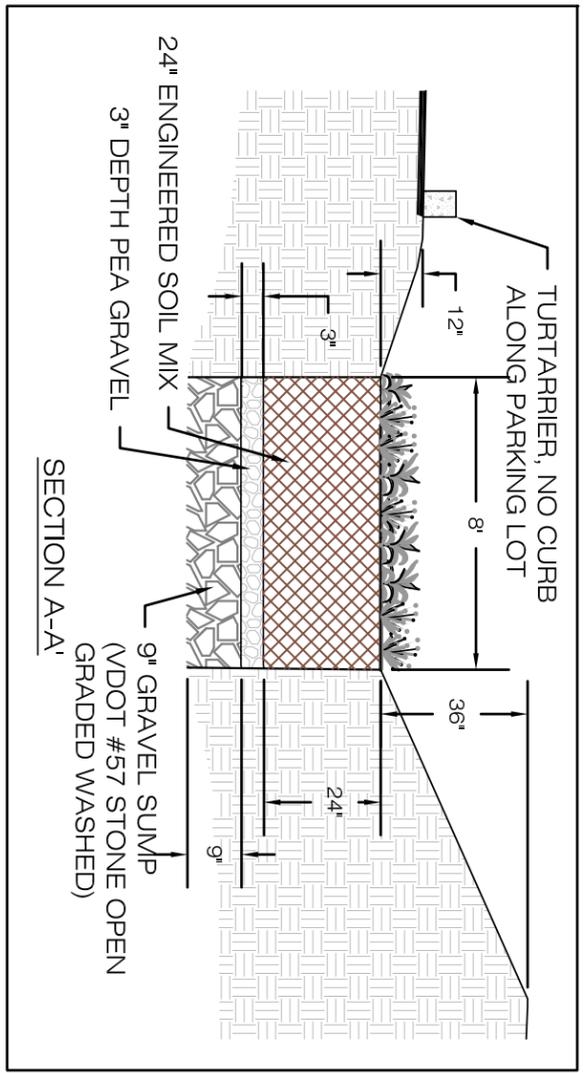


PROPOSED DRAINAGE AREA CHARACTERISTICS:
 AREA = 1.9 ACRES
 IMPERVIOUS ACREAGE = 0.65 ACRES
 OPEN SPACE/FOREST ACREAGE = 0.65 ACRES
 MANAGED TURF ACREAGE = 0.50 ACRES
 CURVE NUMBER: 81
 TIME OF CONCENTRATION: 5 MINUTES
 1 YR DISCHARGE = 2.33 CFS
 2 YR DISCHARGE = 4.43 CFS
 10 YR DISCHARGE = 9.13 CFS

PHOSPHOROUS REDUCTION CALCULATIONS:
 LOAD TO BMP = 1.66 LBS
 MASS LOADING EFFICIENCY = 76%
 VOLUME TO BMP = 2642 C.F.
 RUNOFF REDUCTION BY PRACTICE = 1,585 C.F.
 TOTAL LOAD REDUCTION BY PRACTICE = 1.26 LBYR
 TOTAL PHOSPHOROUS LOAD REMAINING = 0.40 LBS

SIZING CALCULATIONS, DRY SWALE LEVEL 2:
 POST DEVELOPMENT TREATMENT VOLUME REQUIRED
 $TV = 2,735 \text{ C.F.}$
 SOIL MEDIA DEPTH = 24 IN
 PEA GRAVEL = 3 IN
 GRAVEL SUMP = 9 IN
 STORAGE DEPTH = DEPTH x VOID RATIO
 $= (24 \times 0.25) + (12 \times 0.4) = 10.8 \text{ IN} = 0.9 \text{ FT}$
 DRY SWALE LEVEL 2 SURFACE AREA REQUIRED
 $= (1.1 \times TV) / \text{STORAGE DEPTH} = 2,735 / 0.9 = 3,342 \text{ S.F.}$
 SURFACE AREA PROVIDED = 4,782 S.F.
 TREATMENT VOLUME PROVIDED = 4,303 C.F.

VELOCITY COMPUTATIONS:
 CROSS-SECTION A-A' MODELED
 SLOPE = 1.5%
 DIMENSIONS:
 SIDE SLOPES = 3:1, BOTTOM WIDTH = 8'
 DEPTH 10 YR = 0.42 FT
 RH 10 YR = 0.37
 SHEAR STRESS 10 YR = 0.35 LB/S.F.
 VELOCITY 10 YR = 2.33 FT/S
 VELOCITY AND SHEAR STRESSES MEET TURF AND VEGETATION ALLOWABLE VALUES



APRIL 2014

SMALLTOWN, VIRGINIA DEPARTMENT OF PUBLIC WORKS				SITE PLANNING DIVISION	
EXERCISE 5 T&L COMMERCIAL DEVELOPMENT DRY SWALE DESIGN				DEQ TRAINING CASE STUDY	
REVISIONS		DESCRIPTION	BY	APPROVED	DATE
		APPROVED BY SITE PLANNING DIVISION			
SCALE		DESIGNED BY: K PROPST			
1"=40'		DRAFTED BY: K PROPST			
		CHECKED BY: J SMITH			

