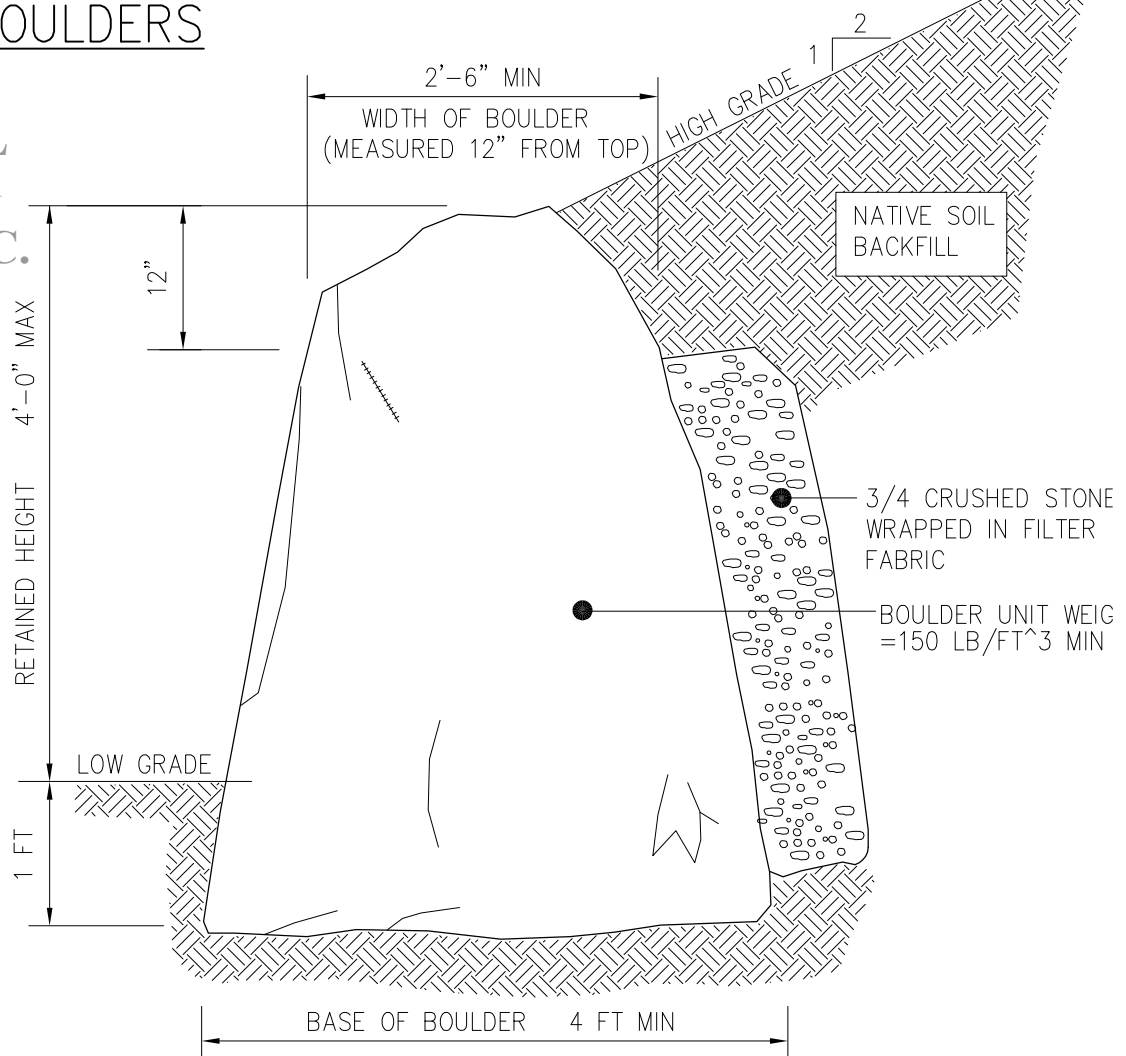


SITE RETAINING BOULDERS

53 SUGARLOAF DRIVE WILTON CT

STRUCTURAL CONSULTING SERVICES, P.C.

67 FEDERAL ROAD, BROOKFIELD, CT 06804
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CROSS SECTION

SCALE: 3/4"=1'-0"

CALCULATIONS

$\alpha = 26.5^\circ$
 $\gamma = 115 \text{ H/ft}^3$
 $\phi = 30^\circ$
 $\text{UNIT WT BOULDER} = 150 \text{ H/ft}^3$
 $K_A = \cos \alpha \frac{\cos \alpha - \sqrt{\cos^2 \alpha - \cos^2 \phi}}{\cos \alpha + \sqrt{\cos^2 \alpha - \cos^2 \phi}}$
 $P_h = 772 \times \cos 26.5 = 691 \text{ H}$
 $P_v = 772 \times \sin 26.5 = 344 \text{ H}$
 $P_A = \frac{1}{2} \gamma H^2 K_A = 0.537$
 $= \frac{1}{2} \times 115 \times 5^2 \times 0.537$
 $= 772 \text{ H}$
 $M = 0.15 \text{ SUDING (SILTY SAND)}$
 $W = \text{AREA} \times 150 \text{ H/ft}^3$
 $= 19.5 \text{ SF} \times 150 \text{ H/ft}^3$
 $= 2925 \text{ H/ft}$
 $W \times Z' = 1350 \text{ H-ft}$
 $P_v \times 4' = 344 \times 4' = 1376 \text{ H-ft}$
 $F_s = M_R / M_O = \frac{5726}{1152} = 4.9 > 1.5 \text{ OK}$
 $F_{\text{causing}} = 691 \text{ H}$
 $F_{\text{resis}} = 0.5 \times (1350 + 344) = 2397 \text{ H}$
 $F_s = 2397 / 691 = 3.4 > 1.5 \text{ OK}$
 $P/A + M/S = \frac{(1350 + 344)}{4 \times 1} + \frac{691 \times 1.67 - 344 \times 4'}{2.66 \text{ ft}^3} = 1173 + 83 \text{ psf}$
 $= 1090 < 3000 \text{ OK}$

3.20.24
3.13.24
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