Appendix A

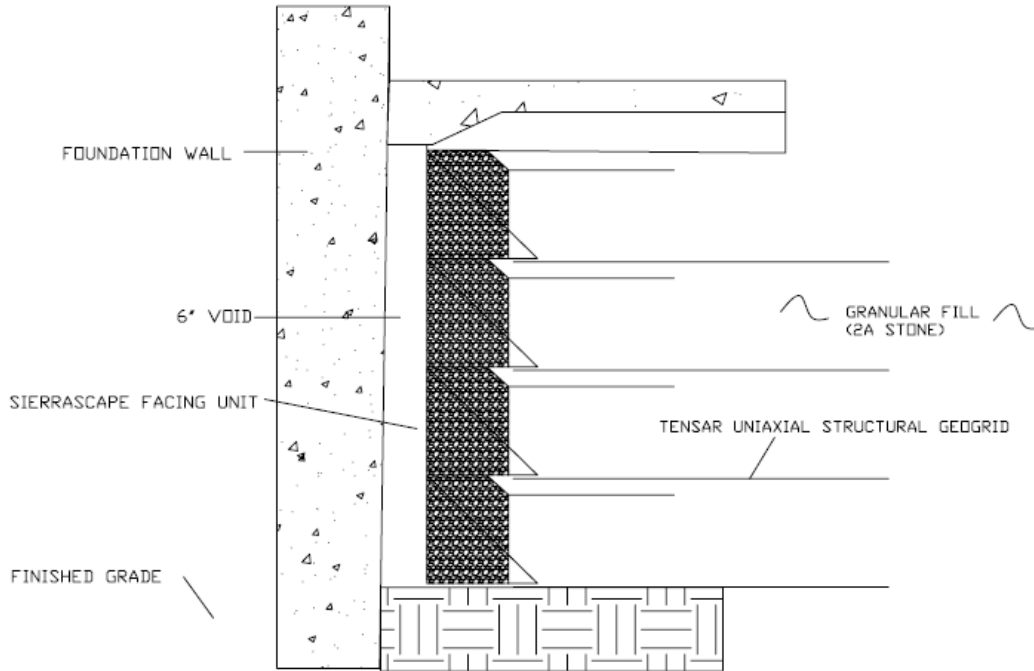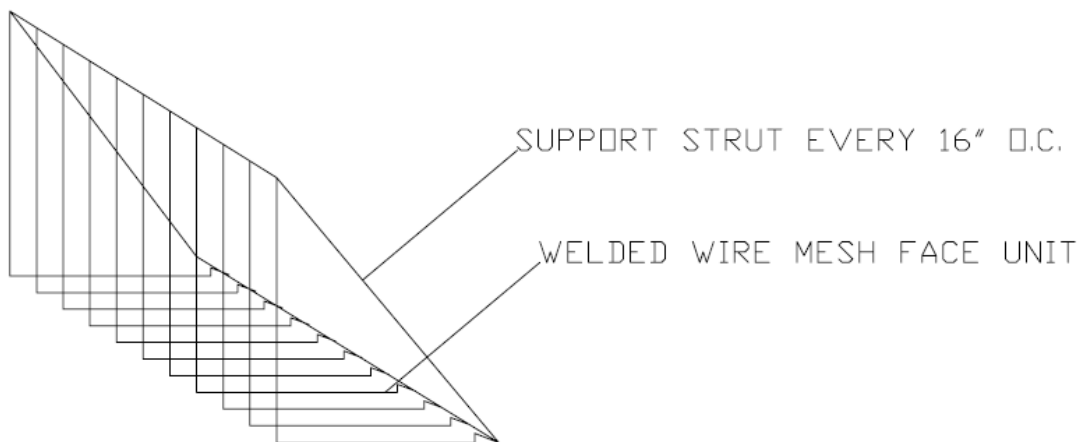### *Tensar Earth Technologies' SierraScape System Detail*

Tensar Earth Technologies' SierraScape Face Unit Isometric View

Structural Calculations
Wall Type 1
Active Pressure
$k_a = \tan^2(45 - (30/2)) = .333$
$P_1 = 125(.333)(9.5)^2/2 = 1,880 \text{lb} @ 3.17\text{ft}$
$P_2 = 0$
$P_3 = 150\text{pcf}(3')(6'6") = 2,925\text{plf}$
$P4 = 150\text{pcf}(3')(3') = 1,350\text{plf}$
$k_p = \tan^2(45 + (30/2)) = 3$
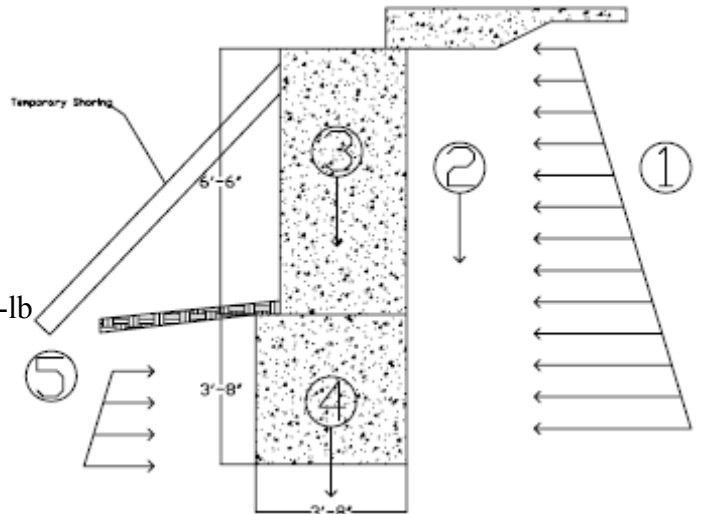$P5 = 1/2(3')(125\text{pcf})(3.5')^2 = 2,297$
$M_{overturn} = 1,880\text{lb}(3.17') = 5,960\text{ft-lb}$
$M_{resisting} = 2,925\text{lb}(1.5') + (1,350\text{lb})(1.5') = 6,413\text{ft-lb}$
$F.S. = 3 = (6,413 + M)/5,960$
$M = 11,467\text{ft-lb}$
$F_{edge\ of\ slab} = 1,207\text{plf}$

Sliding
$\sum V = 2,925\text{lb} + 1,350\text{lb} = 4,275\text{lb}$
$\S = 1/2(30) = 15°$
Base Resistance $= 4,275\text{lb}(\tan(15)) = 1,146\text{lb}$
$F.S. = (1,146+2297)/1,880 = 1.8 \geq 1.5$ Therefore wall is ok

Wall Type 1 Load Diagram

Wall Type 2
Active Pressure
$P_1 = 1,880\text{lb}$
$P_2 = 0$
$P_3 = 150\text{pcf}(1.33')(6'6") = 1,297\text{plf}$
$P4 = 150\text{pcf}(1.583')(3') = 712\text{plf}$
$P5 = 1/2(3')(125\text{pcf})(3.5')^2 = 2,297$

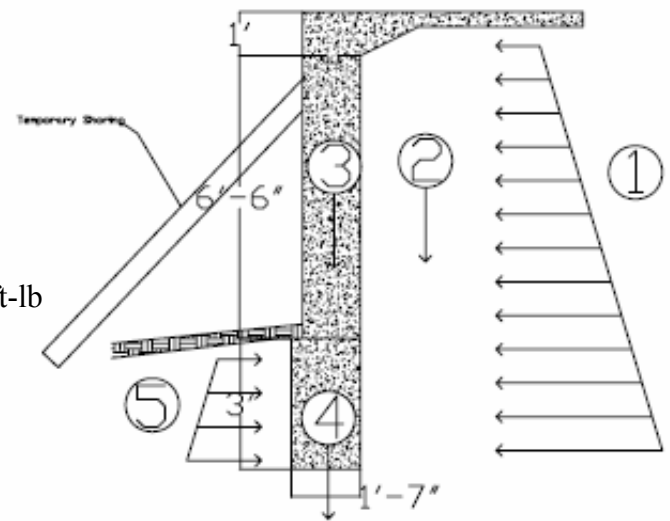$M_{overturn} = 1,880\text{lb}(3.17') = 5,960\text{ft-lb}$
$M_{resisting} = 1,297\text{lb}(8/12') + (712\text{lb})(9/12') = 1,399\text{ft-lb}$
$F.S. = 3 = (1,399 + M)/5960$
$M = 16,481$
$F_{edge\ of\ slab} = 1,735\text{plf}$

Sliding
$\sum V = 1,297\text{lb} + 712\text{lb} = 2,009\text{lb}$
Base Resistance $= 2,009\text{lb}(\tan(15)) = 538\text{lb}$
$F.S. = (538+2297)/1,880 = 1.5 \geq 1.5$ Therefore wall is ok

Wall Type 2 Load Diagram

Reinforced Fill System Material Estimate

	Tensar Systems - Sierra Scape Estimate

	Height of wall (ft)	Length of Wall (ft)	Area (ft²)	Cost Per Unit - Including M&L	Total Cost
	6'	178	1068	$25.00	$26,700.00
				Total Savings:	**$26,700.00**

Schedule Comparison of Reinforced Fill System and Compact Fill System

Fill Systems - Schedule Comparison				
System	Units	Quantity Per Day	Total Quantity	Total Days
Tensar Systems - Sierra Scape	Section	16	80	5
Compact Fill	C.Y.	800	366.2	0.5
			Schedule Reduction:	**4.5 Days**