

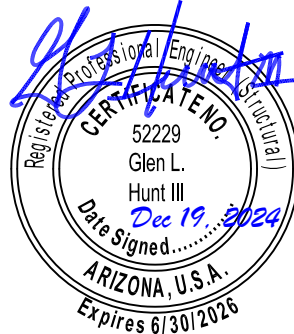


**BB/CA ENGINEERING**

HOME & BUILDING INSPECTION SPECIALISTS

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DURASKIRT  
 PO Box 97  
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Subject: Duraskirt™ Panel Calculations

**LATERAL LOAD CALCULATION for DURASKIRT PANEL**

Panel Geometry: 3/4" Thick x 36" H x Various W

Panel Reinforcing Wire: 1"x1"x36" 16-Ga (0.0508" Diameter) Wire Mesh @ d=1/2"

$$A_s = \pi(0.0508)^2/4 = 0.002027 \text{ in}^2/\text{in of mesh}$$

$$\rho = 12" \times 0.002027 \text{ in}^2/\text{in} = 0.0243 \text{ in}^2/\text{ft}$$

**Soil Properties**

Medium Sand Deck Fill Test

Measured Density: 110 pcf

Friction Angle:  $\phi = 30^\circ$ , Active Lateral Coefficient  $\Rightarrow 0.33$

Equivalent Fluid Pressure  $\Rightarrow 110\text{psf}(0.33) = 36.3 \text{ pcf}$

Assuming Maximum Backfill on Panel at 30".

$$P = 2.5'(36.3\text{pcf}) = 90.75\#$$

$$M_{\text{max}} = 43 \text{ ft-}\# = 516 \text{ in-}\#$$

**Concrete Panel Capacity**

$F'_c = 6000 \text{ psi}$ ,  $F_y = 60 \text{ ksi}$

$$M_u = 1.7M_{\text{max}} = 1.7(516 \text{ in-}\#) = 877 \text{ in-}\#$$

$$M_n = \phi \rho b d^2 f_y [1 - 0.59 \rho (f_y / F'_c)]$$

$$M_n = 0.9(0.0243)(12)(0.50)^2(60,000)[1 - 0.59(0.0243)(60/6)]$$

$$M_n = 3372 \text{ in-}\# > M_u$$

$$\text{Safety Factor} = 3372/877 = 3.8$$

