



September 23, 2005

Ronald Wetmore  
247 Acton Road  
P.O. Box 4006  
Chelmsford, MA 01824

RE: **BOMAN-KEMP ~ WINDOW UNIT**  
(DEI Project No. D1454-002)

Dear Ron:

The purpose of this report is to document the strength of the metal cover used on the Boman Kemp window unit.

Our office has conducted a structural analysis of the metal cover as shown on the detail below for support of a uniformly applied live load of 40 psf (pounds per square foot). Our calculations have found that this cover can safely support this load

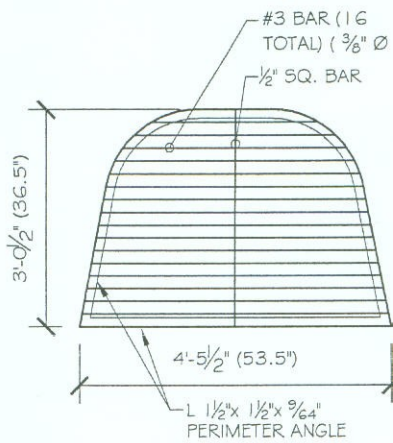
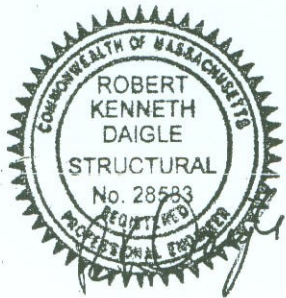
If we can be of any further assistance please feel free to call.

Very truly,  
DAIGLE ENGINEERS INC.

Robert K. Daigle, P.E. (ext. 115)  
Principal/President  
[rdaiGLE@daigleengineers.com](mailto:rdaiGLE@daigleengineers.com)

Encl. Calculation sheet  
Cc: Ryan Thornock

RKD/cim





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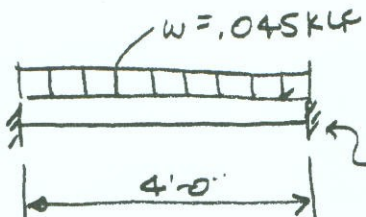
www.daigleengineers.com

PROJECT #: D1454-002 SHEET INDEX #: 1  
PROJECT NAME: ROMAN KEMP WINDOW UNIT  
SUBJECT: COVER CAPACITY SHEET #: 1 of 1  
DESIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
REVISED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: RKD DATE: 9-23-05

CALCULATIONS:

RESULTS:

LOADING  
40 PSF LIVE  
5 DEAD  
45 PSF



$$M = WL^2/12 = .045 \times 4^2 / 12 = 0.001 \text{ k/ft.}$$

CHECK # OF BARS EFFECTIVE

$$\text{BAR SPACING} = (36.5 - 2 - 2) / 15 \text{ spaces} = 2.17"$$

$$\text{WITHIN 12" WIDTH \# OF BARS} = 12 / 2.17 = 5.53$$

$$S_x \text{ per } 3/8" \phi \text{ ROD } (0.375" \phi) = .0982 d^3 = .0982 (.375)^3 = .00518 \text{ in}^3$$

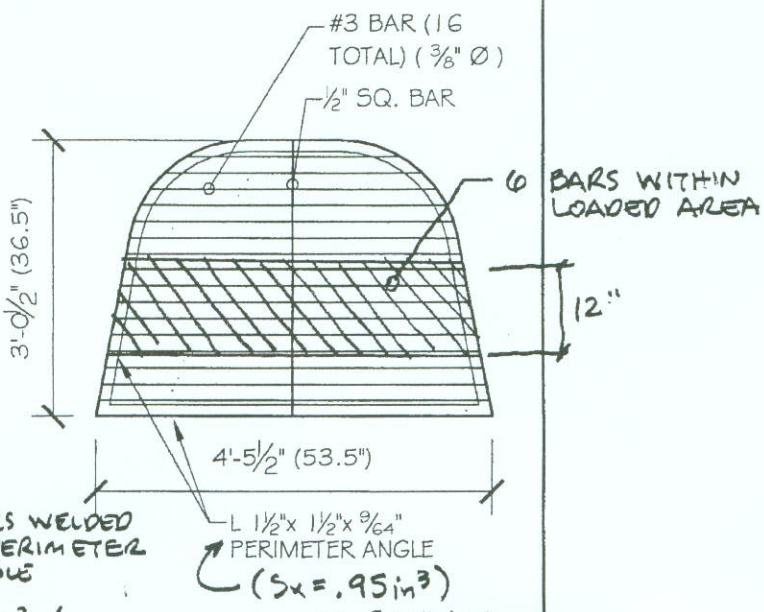
→ 6 BARS

$$f_b = M/S = \frac{0.001 \times 12}{0.00518 \times 6} = 23.2 \text{ ksi}$$

$F_y = 71,900 \text{ ksi}$  PER MIL CERT.

USING  $F_y = 60 \text{ ksi}$  (i.e. for A615-60 REBAR)

$$F_b = .6 \times 60 = 36 \text{ ksi} > 23.2 \text{ ksi}$$



$$\gg 3/8" \text{ ROD} = .0052 \text{ in}^3$$

NOTE: AT SIMPLE SPAN ( $WL^2/8$ )  $f_b = 34.8 < 36 \text{ ksi}$  STILL OK

END