EBA Engineering Inc.
1625 Union Avenue
Baltimore, MD 21211

o 410.662.8088
f 410.662.8111
w www.ebaengineering.com

1. Check capacity of glass

Maximum glass span is across a diameter of 1-1/8". Minimum glass thickness is approximately 3/4". Glass is acceptable by inspection.

2. Panel A

Material Properties:

Grey cast iron, ASTM A40

FY = 18 ksi E = 18,000 ksi FV = 0.4* FY = 7.2 ksi FB = 0.65 * FY = 11.7 ksi

100 PSF Live Load **38 PSF Dead Load (self weight)**

Typical cast iron panel measuring 31" by 54".
Assume the panel acts as a one-way slab for analysis.
Assume simplified section for iron rib: 0.41" x 1.31" rectangle spaced at 2-1/8" on centers.

Section Properties:

$A = bd = 0.54\ in^2$ $S_x = b\,d^2 / 6 = 0.117\ in^3$ $I_x = b\,d^3 / 12 = 0.077\ in^3$

Loading:

L = 2.58'

W = (100+38) x 2.125" / 12" = 24.4 PLF

A. Check Bending

$M = w\,L^2 / 8 = 0.25$ k-in

$f_B = M / S_X = 2.14$ KSI < 11.7 KSI allowable

OK

B. Check Shear

V = w x L / 2 = 31.9 # **Design Reaction = 180 PLF**

$F_V = V / A = 59$ PSI < $F_{allowable\text{-}shear} = 7.2$ ksi

OK

C. Check Deflection under Live Load

$\Delta = 5WL^3 / 384EI = 0.017"$

$\Delta < L / 360 = 0.086"$ **OK**