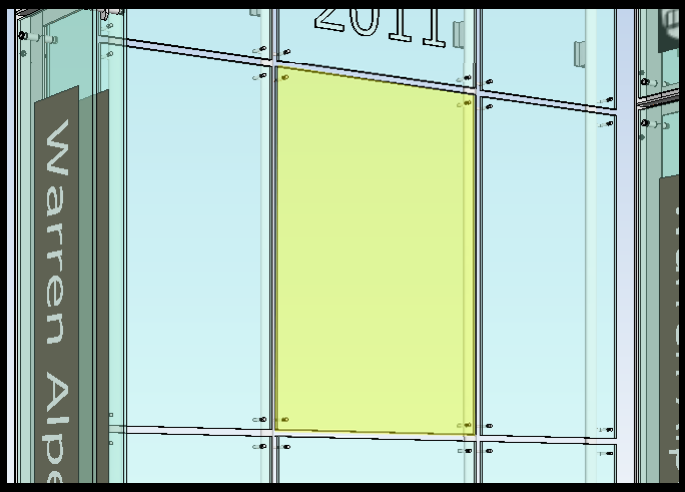

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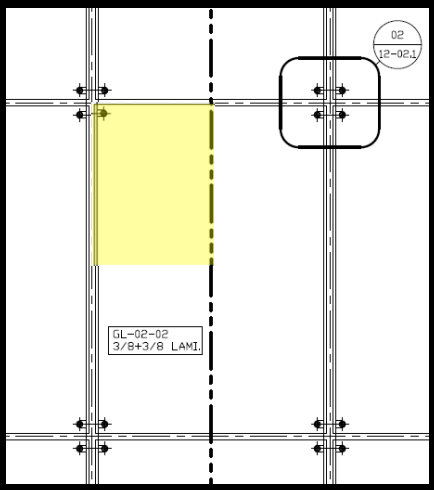

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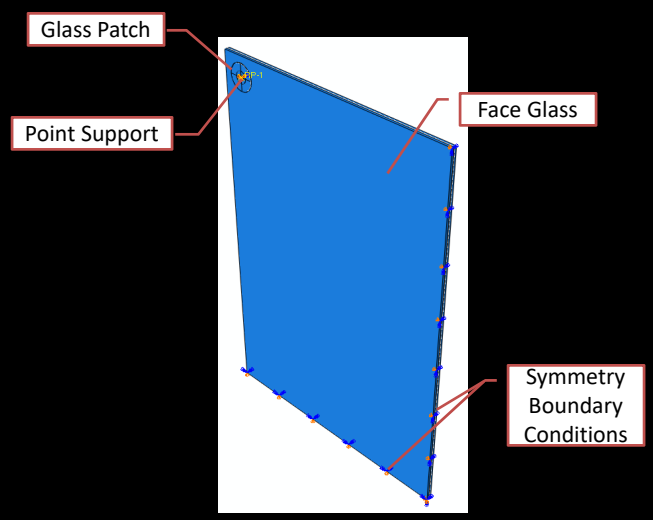
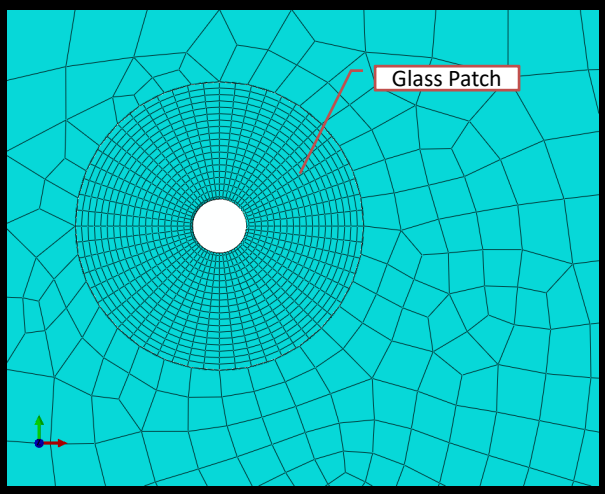
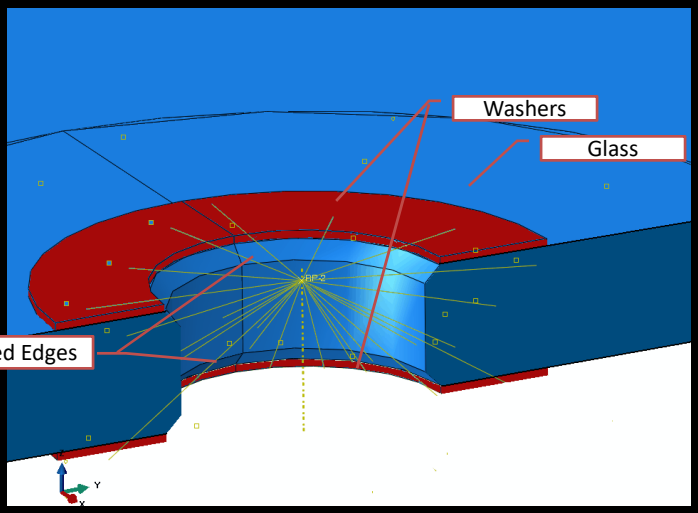

Glass Patch
Point Support
Face Glass
Symmetry Boundary Conditions

13


Glass Patch

14



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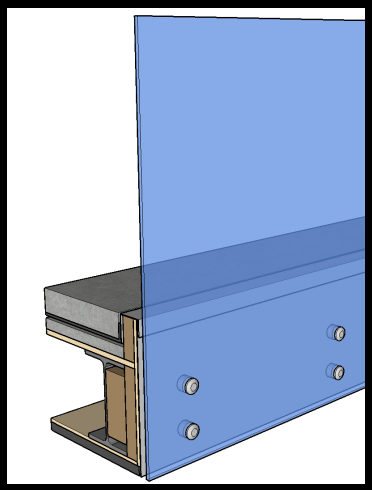
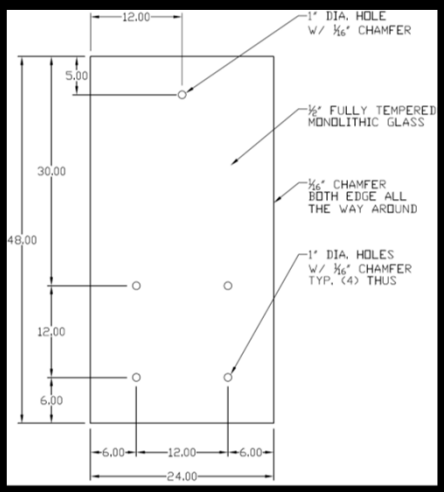
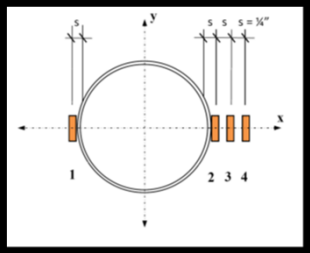
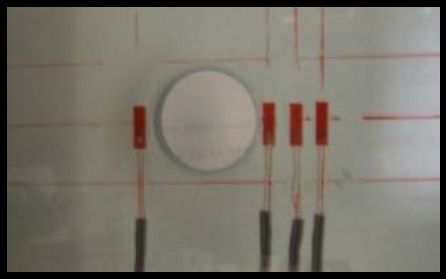


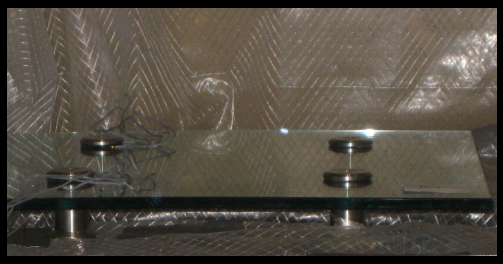
16


12.00
1" DIA. HOLE
W/ 1/16" CHAMFER
5.00
1/2" FULLY TEMPERED
MONOLITHIC GLASS
30.00
1/16" CHAMFER
BOTH EDGE ALL
THE WAY AROUND
48.00
1" DIA. HOLES
W/ 1/16" CHAMFER
TYP. (4) THUS
12.00
6.00
6.00
12.00
6.00
24.00

17


s
y
s s s = 1/4"
x
1
2 3 4

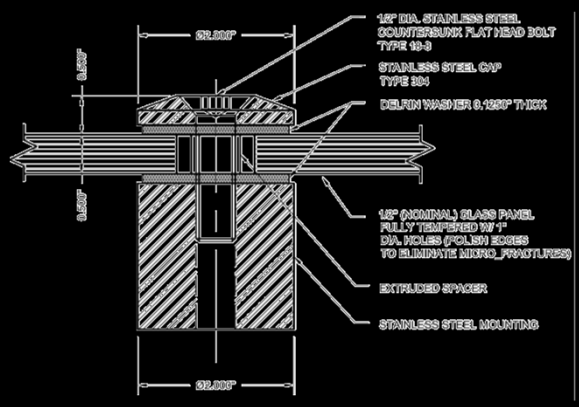




18

19

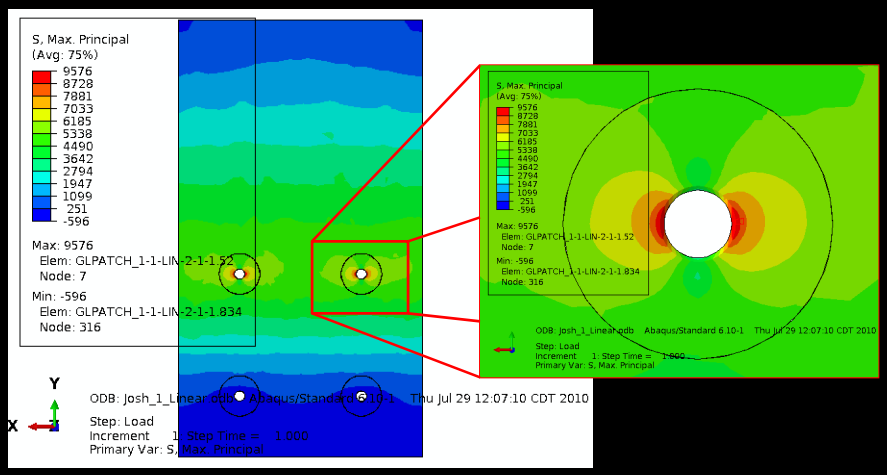
20



21

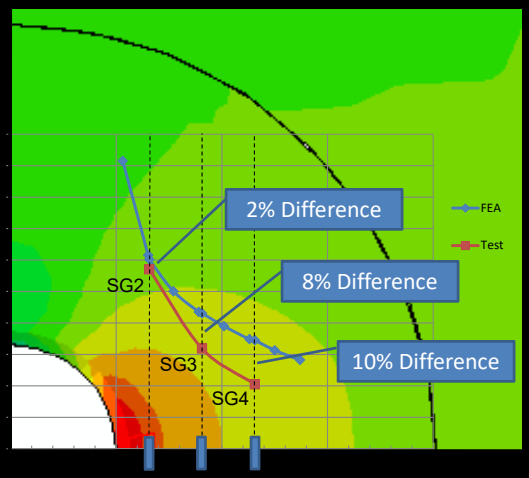
	σ_{avg} @ P = 200 lbs				$\sigma_{ultimate}$				
Specimen	SG 1	SG 2	SG 3	SG 4	P	SG 1	SG 2	SG 3	SG 4
1	7,641	8,236	6,677	6,026	551.8	21,752	22,595	18,420	16,695
2	7,501	7,967	6,661	6,110	551.8	21,300	21,840	18,334	16,909
3	7,816	8,361	6,558	5,959	598.1	24,099	25,631	19,954	18,167
4	7,565	7,833	6,598	6,008	598.1	23,883	23,431	19,832	18,188
5	8,139	8,223	6,750	6,101	498.2	19,876	20,237	16,586	15,072
6	7,867	8,072	7,206	6,233	498.2	19,365	19,736	17,642	15,310
7	7,246	7,261	6,116	6,317	610.2	23,784	23,681	19,943	20,529
8	7,276	7,496	6,841	6,149	610.2	23,965	24,337	22,051	20,009
9	7,529	7,435	6,212	5,665	515.5	19,853	19,488	16,317	14,936
10	7,651	7,945	6,600	6,046	515.5	20,529	20,833	17,336	15,995
11	7,530	7,768	6,503	5,819	606.6	23,773	23,645	19,872	18,017
12	7,102	7,624	6,390	5,838	606.6	23,192	23,871	20,058	18,385
Average	**7,572**	**7,852**	**6,593**	**6,023**	**563**	**22,114**	**22,444**	**18,862**	**17,351**
Maximum	*8,139*	*8,361*	*7,206*	*6,317*	*610*	*24,099*	*25,631*	*22,051*	*20,529*
Minimum	*7,102*	*7,261*	*6,116*	*5,665*	*498*	*19,365*	*19,488*	*16,317*	*14,936*

22



Summary of Finite Element Analysis

Case	δ_{max} (in)	δ @ Load Application (in)	Field Stress (psi)	Max Stress (psi)	Stress Increase	Global Mesh (in)	Mesh Over Thickness	Element Type	Geometric Order	Method
1	0.93	0.72	2,930.0	7,641.0	2.6	1.0	2	Solid	Linear	a
2	0.72	0.56	3,528.0	7,854.0	2.2	1.0	4	Solid	Linear	a
3	0.81	0.63	3,755.7	10,523.9	2.8	1.0	2	Solid	Quadratic	a
4	0.92	0.73	3,849.7	8,059.3	2.1	1.0	4	Solid	Linear	b
5	0.93	0.71	4,231.8	10,927.8	2.6	1.0	2	Solid	Quadratic	b
6	0.93	0.71	4,200.1	10,877.1	2.6	0.5	2	Solid	Quadratic	b
7	0.88	0.73	4,641.3	10,442.1	2.2	0.5	2	Solid	Quadratic	d
8	0.88	0.70	4,324.0	10,472.6	2.4	0.5	1	Shell	Quadratic	c
9	0.8	0.63	4,226.8	11,283.6	2.7	1.0	2	Solid	Quadratic	a
10	0.92	0.72	4,135.6	10,946.3	2.6	0.5	3	Solid	Quadratic	a
AVG	**0.87**	**3,982.31**	**3,982.31**	**9,902.77**	**2.49**					
MAX	**0.93**	**4,641.33**	**4,641.33**	**11,283.63**	**2.80**					
MIN	**0.72**	**2,930.00**	**2,930.00**	**7,641.00**	**2.09**					


2% Difference
8% Difference
10% Difference
FEA
Test
SG2
SG3
SG4