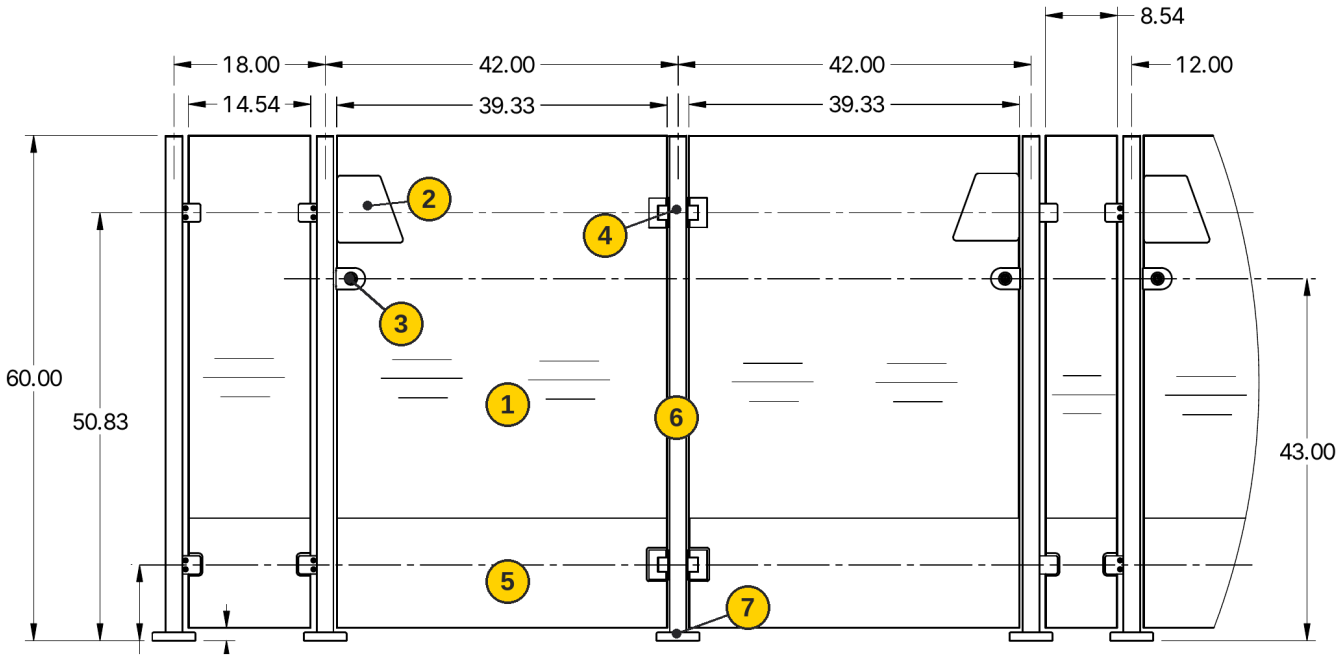
A Glass Checkpoint Wall, Engineered and Installed

Seattle-Tacoma International Airport, Checkpoint 1

Every project is custom, so the engineering is too. At Seattle-Tacoma International Airport, Lavi built and installed a 77-foot run of 60-inch glass walls with 18 lockable doors at Checkpoint 1. AHZ Consulting Engineers, an independent structural engineering firm, then analyzed the installed design under seven load cases, seismic included.

The Door Module



1. 3/8 in tempered glass, polished edges
2. Brushed stainless push plate, both sides
3. Key lock
4. Hinge built into the post
5. Brushed stainless kick plate, both sides
6. 316 stainless steel post
7. Floor flange, anchored to the slab

A Checkpoint 1 door module, from the project shop drawings (full sheets on pages 4 and 5).

The Installed System

Run length	77 ft 6 in	**Glass**	3/8 in tempered, polished chamfered edges
Height	60 in clear	**Posts**	2 x 2 in 316 stainless steel, brushed
Doors	18 lockable, common-keyed	**Plates**	Brushed stainless kick and push plates, both sides
Fixed panels	11	**Mounting**	Floor flanges anchored to the concrete slab
Installation	Turnkey, by Lavi		

Design Criteria

Criterion	Value used in the analysis
Risk category	II
Concentrated load	250 lbf, applied in any direction
Uniform load	50 lbf/ft, applied in any direction
Glass infill load	50 lbf on a 1 sq ft area
Seismic load	50 lbf per post in both horizontal directions (Site Class D, Seismic Design Category D)
Allowable stress, 316 stainless	25,260 psi (60% of 42,100 psi yield)
Allowable stress, glass	1,000 psi (rupture strength 4,350 psi)

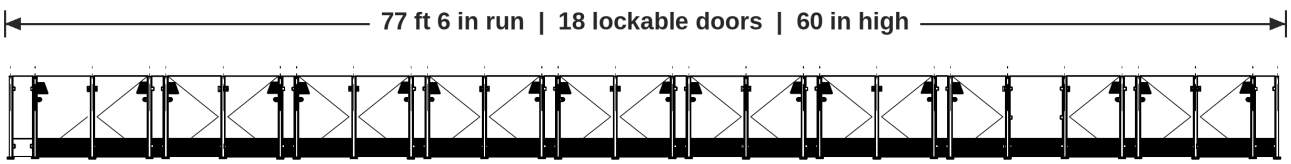
Standards referenced: International Building Code (2015, 2018, 2021), ASCE 7 (2010, 2016), AISC 360, AISI S100, and ACI 318.

Seven Load Cases, All Within Allowable Limits

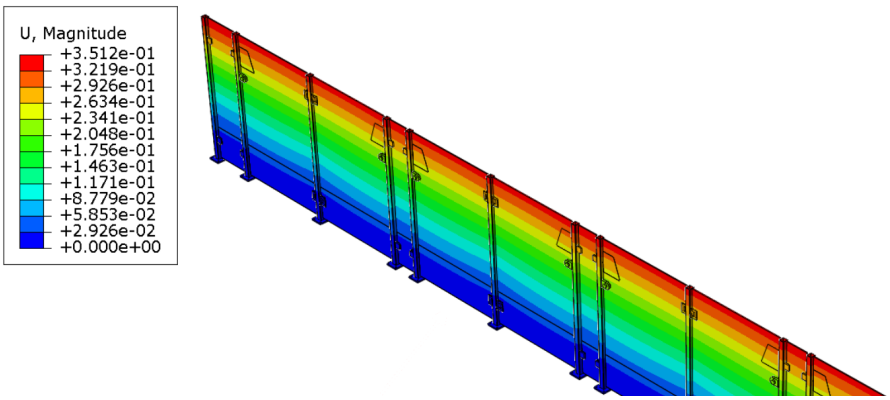
Step	Load case	Result
1	50 lbf/ft uniform load, perpendicular to the wall	Within allowable limits
2	50 lbf/ft uniform load, along the wall	Within allowable limits
3	250 lbf concentrated load, perpendicular to the wall	Within allowable limits
4	250 lbf concentrated load, along the wall	Within allowable limits
5	50 lbf area load on the glass panels	Within allowable limits
6	Seismic load, perpendicular to the wall	Within allowable limits
7	Seismic load, along the wall	Within allowable limits

In the engineer's conclusion, stress in the stainless steel stayed within 25,260 psi and stress in the glass within 1,000 psi in every case.

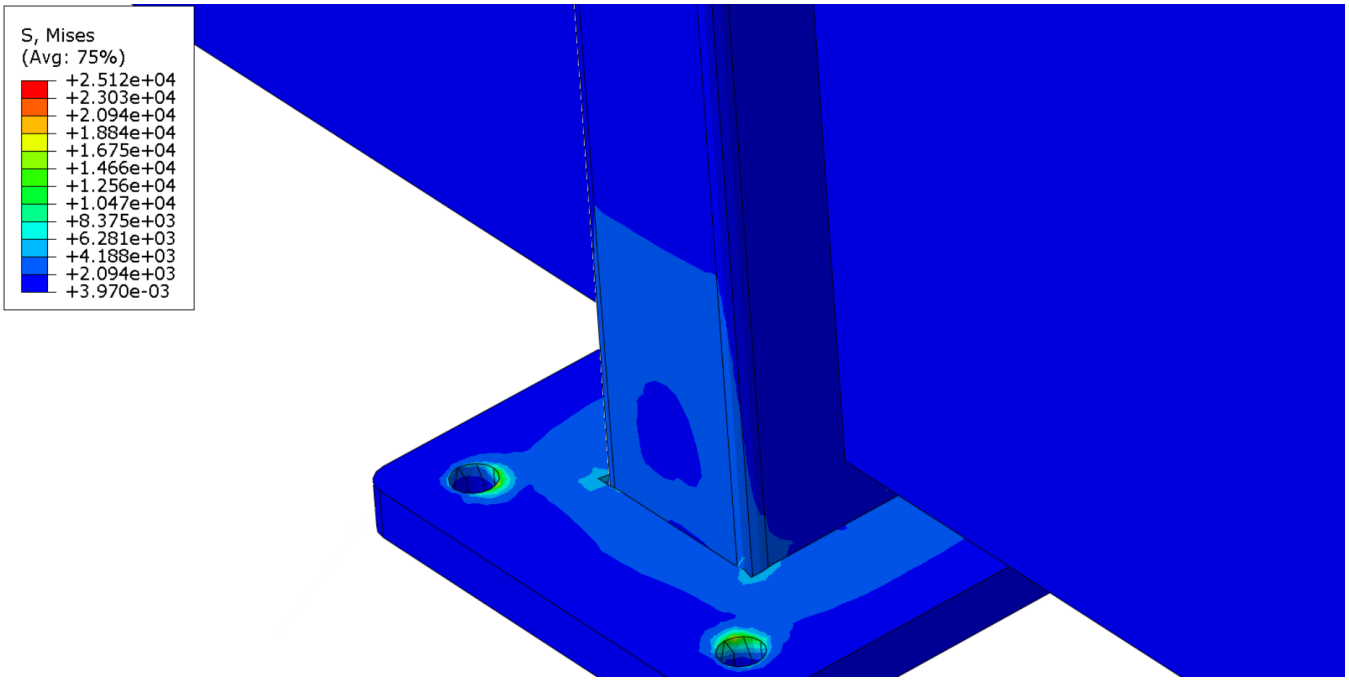
The Analyzed Run



Checkpoint 1 elevation, from the project shop drawings.



Full run, 50 lbf/ft uniform load. AHZ finite element model. Color shows how far the wall flexes, with the most movement along the top edge.



Post base, seismic load. AHZ finite element model. The color scale tops out at the allowable stress for 316 stainless steel.

About This Analysis

The results come from a finite element analysis (computer modeling) of the Checkpoint 1 design, completed in June 2024 by AHZ Consulting Engineers, Inc. The analysis and the project drawings carry the stamp of a Washington-licensed professional engineer. No physical load test was part of this project. The results apply to the Checkpoint 1 layout only.

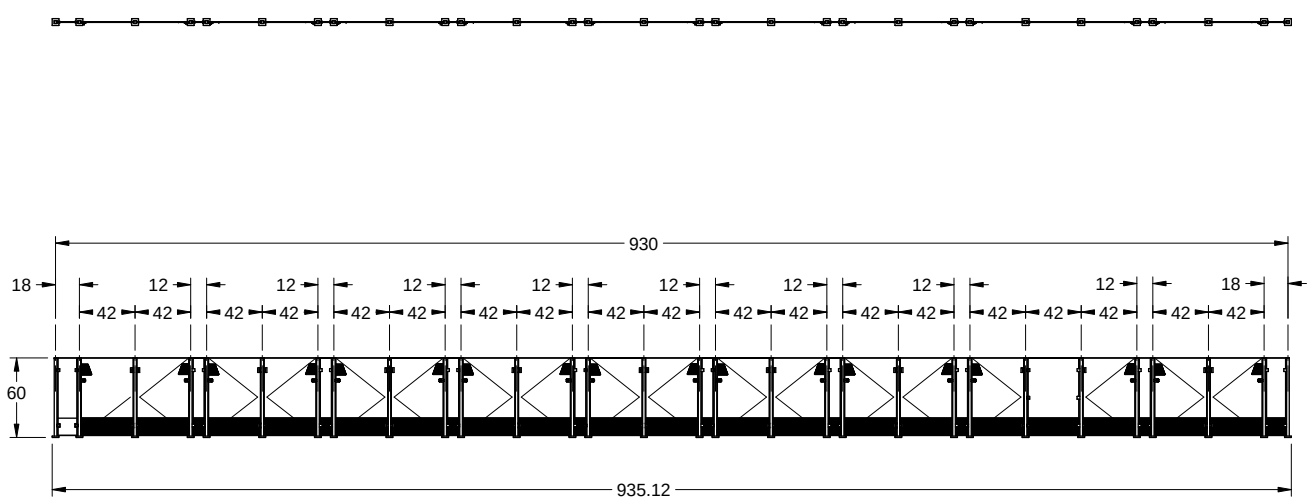
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Shop Drawing: Checkpoint 1 Wall Layout

REV.	DESCRIPTION	DATE
01	RELEASE FOR CUSTOMER REVIEW	5/14/2024



ALI HAJIHASHEMI
STATE OF WASHINGTON
57333
REGISTERED
PROFESSIONAL ENGINEER

1. FINISHED ITEM TO BE FREE FROM FLASH, DISTORTION, SINK MARKS OR SHARP EDGES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH 3D CAD DATA FILE.
3. TOOL GATES AND EJECTION POINTS TO BE AGREED WITH DESIGNER PRIOR TO TOOLING.
4. PLEASE SEE PO FOR APPROPRIATE FINISH (REQUEST FINISH LEDGER IF NOT INCLUDED)

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FINISH NOTES:

COMMENTS: **INTERPRET THE DRAWING PER 3D MODEL**

LAVI INDUSTRIES
TOLL FREE: (800) 624-6225 WWW.LAVI.COM

DRAWN: Yuriy I
DATE: 12/28/2023

TOLERANCES: FRACS. ±1/32" ANG. ±1° .X ±.03 .XX ±.01 .XXX ±.005
Primary dimensions are in INCHES
Secondary dims (if present) are in mm

DESCRIPTION: SEATEC WALL LAYOUT

MATERIAL: N/A
WEIGHT: 2124.407(LB)

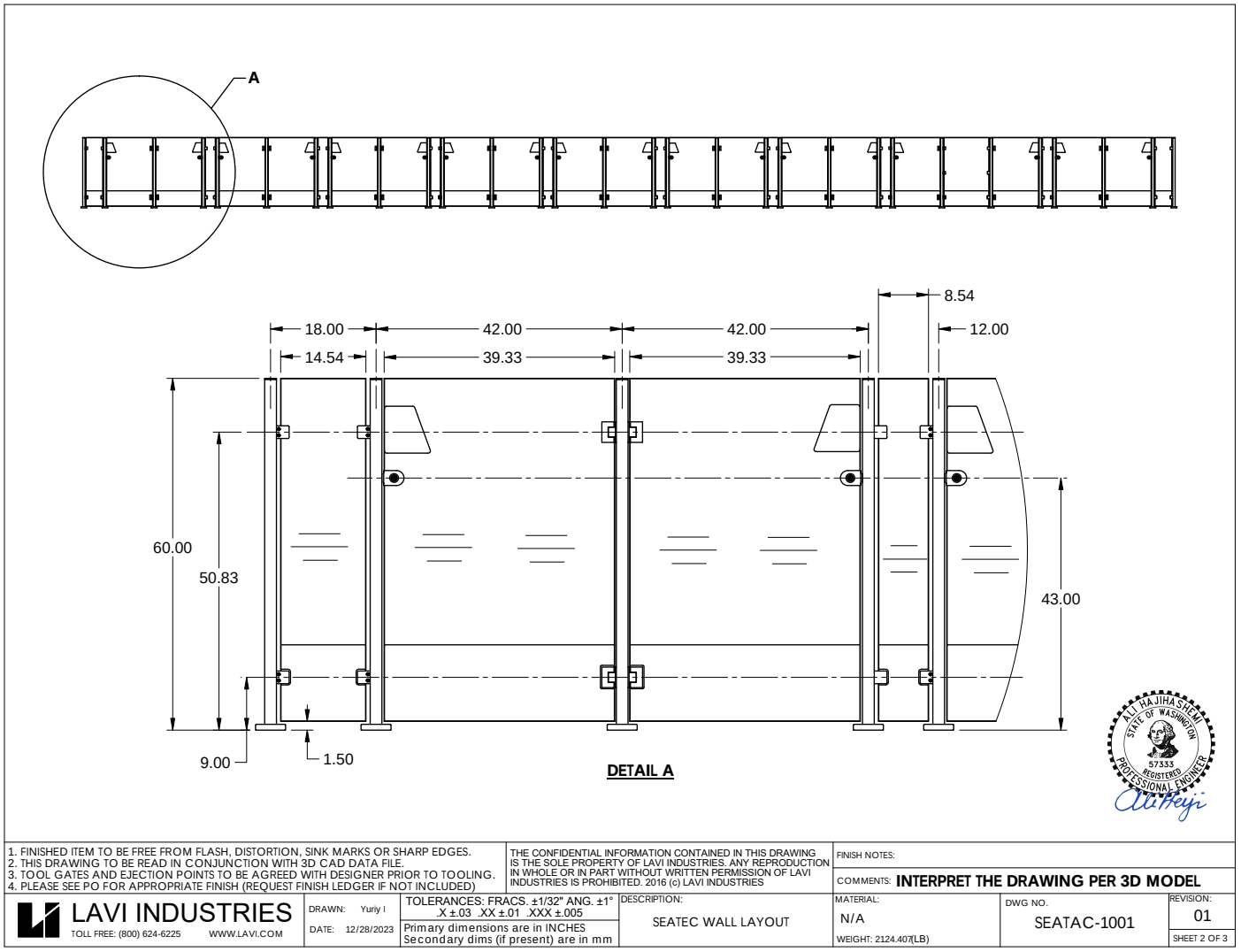
DWG NO. SEATAC-1001

REVISION: 01

SHEET 1 OF 3

Drawing SEATAC-1001, sheet 1: plan and elevation of the 77 ft 6 in run, shown as stamped for the project.
Stamped by a Washington-licensed professional engineer of AHZ Consulting Engineers, Inc.

Shop Drawing: Door Module Detail



Drawing SEATAC-1001, sheet 2: Detail A, door and panel dimensions, shown as stamped for the project.
Stamped by a Washington-licensed professional engineer of AHZ Consulting Engineers, Inc.