

Masonry Wall 7.2 - MASONRY WALL ANALYSIS AND DESIGN

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 Job ID :
 Job Description : Designed By :
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 S U M M A R Y O F R E S U L T S
 F O R M A I N W A L L

DESIGN LOADS:

 Moment, Ms = -536.0 ft-lb / 12.00 in.
 Axial Load, Ps = 850.0 Lb / 12.00 in.
 Load Combination = 1*DL+0.6*WL
 Eccentricity at Moment, $e = M/P = 7.57$ in.

NOTE: Max. moment is located in Zone C, ($e > 2d/3$)
 Wall is cracked, steel is stressed in tension.

Max. Shear, Vs = 113.6 Lb / 12.00 in.
 Load Combination = 1*DL+0.6*WL

ANALYSIS RESULTS:

 Design Strip Width = 12.00 in.
 Actual Wall Thickness, $t = 7.63$ in.
 Effective Height, $h' = 18.00$ ft.
 Seismic Force, (ASCE 7-10 12.11.1) $F_p = 5.00$ plf. / 12.00 in.
 Minimum Area of Steel, Vertical Reinf. = 0.06405 in.² / 12.00 in.
 Minimum Area of Steel, Horiz. Reinf. = Not Required

Ref. ACI 530-11 1.11

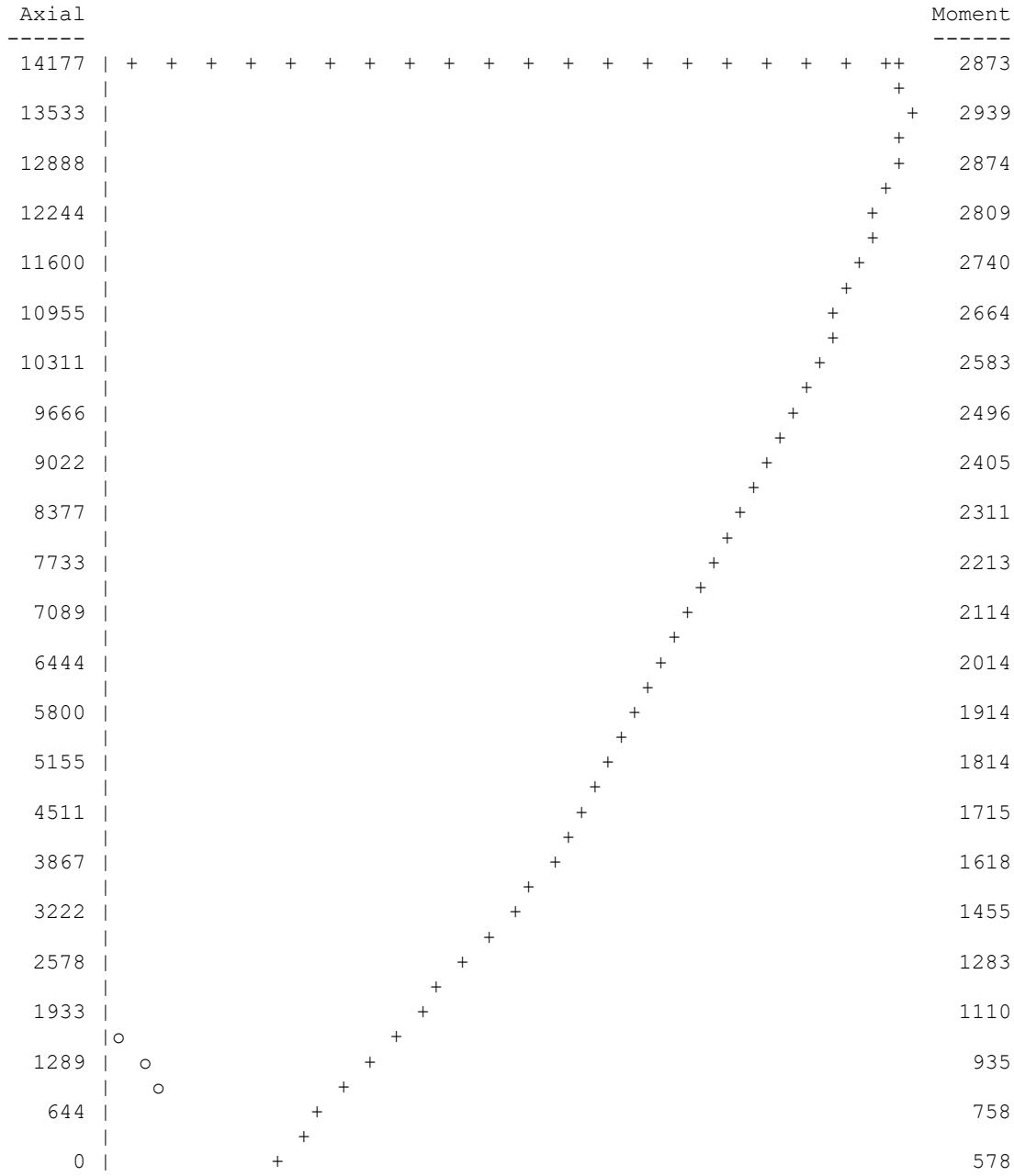
DESIGN RESULTS:

Bar Size	Fa, psi (1.0*.25*f'm*R)	fv, psi (V/b'd)	All. Moment @ Axial Load (P= 850.0 lb)	Bar Spa. (in. o.c.)
#3	229.02	4.78	814.7	16.00
#4	255.63	9.57	765.0	32.00
#5	265.74	16.74	703.4	56.00
#6	265.74	21.53	740.2	72.00
#7	265.74	21.53	912.3	72.00
#8	265.74	21.53	1,083.6	72.00
#9	265.74	21.53	1,149.4	72.00

Max. vertical bar spacing is 72 inch per ACI 530-11 1.9.6 (commentary)

MASONRY WALL INTERACTION DIAGRAM: (DEAD + LIVE LOAD ONLY)

Effective Wall Height = 18.00 ft. Solid Masonry Area, $A_e = 61.90 \text{ in}^2$
 Actual Wall Thickness = 7.63 in. All. Axial Stress, $F_a = 229.02 \text{ psi}$.
 Depth to c.g. Steel = 3.81 in. All. Bending Stress, $F_b = 675.00 \text{ psi}$.
 Design Width = 12.00 in. All. Steel Stress, $F_s = 24.00 \text{ ksi}$.
 Reinforcing Design = #3 @16 in. o.c.

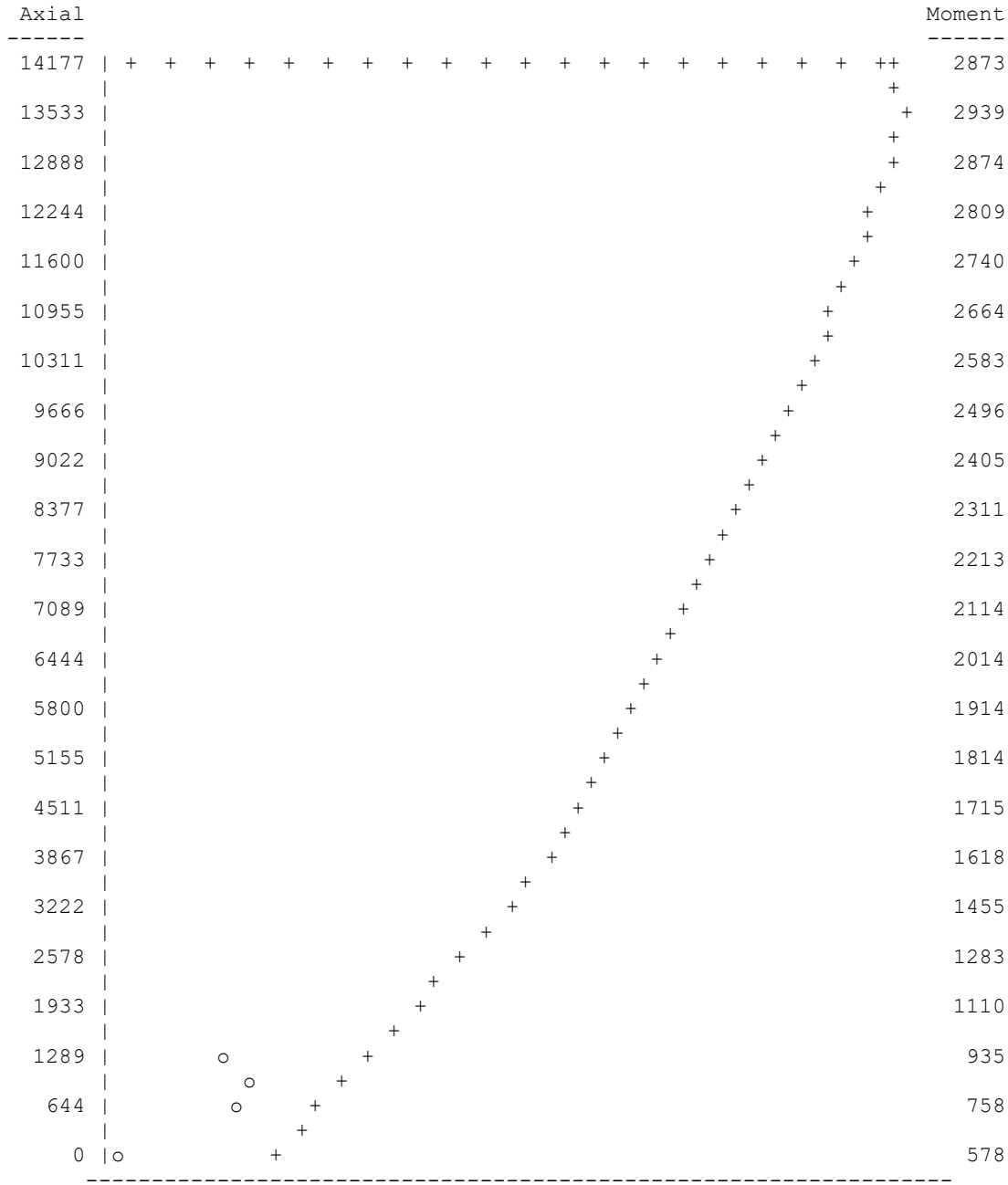


NOTES: Axial Load = Lb, Moment = ft-lb
 + = Moment Capacity
 o = Applied Moment

Positive moment is defined as moment which causes compression on the outside face of wall.

MASONRY WALL INTERACTION DIAGRAM: (WIND / SEISMIC LOADS)

Effective Wall Height = 18.00 ft. Solid Masonry Area, $A_e = 61.90 \text{ in}^2$
 Actual Wall Thickness = 7.63 in. All. Axial Stress, $F_a = 229.02 \text{ psi}$.
 Depth to c.g. Steel = 3.81 in. All. Bending Stress, $F_b = 675.00 \text{ psi}$.
 Design Width = 12.00 in. All. Steel Stress, $F_s = 24.00 \text{ ksi}$.
 Reinforcing Design = #3 @16 in. o.c.



NOTES: Axial Load = Lb, Moment = ft-lb
 + = Moment Capacity
 o = Applied Moment

Positive moment is defined as moment which causes compression on the outside face of wall.