TRACHTE BUILDING SYSTEMS, INC.

PROJECT CALCULATIONS

CUSTOMER := "Dan Tosello"

LOCATION := "Mulmur, ON"

PLAN_NUMBER := "P55759"

BUILDING := "A"

CODEBODY = "2012 ONTARIO BUILDING CODE"

PREPARED_BY = "Claire Robinson"

REVIEWED BY =

BUILDING DESCRIPTION		BAY WIDTH	bay := 10ft	PURLIN BRIDGING	PBridging := "yes"
ROOF PITCH	$R_{pitch} := 0.25\frac{in}{ft}$	BUILDING HEIGHT	height := 8·ft + 4·in	ROOF MATERIAL	Roof := "SSR"
		BUILDING WIDTH	width := 40·ft	PURLIN SPACING	$P_{space} := 5 \cdot ft$
ROOF ANGLE	$\theta = 1.193 \cdot deg$	BUILDING LENGTH	length := 120ft	INT. PARTITION PANEL	Pt_{panel} := "yes"
ROOF TYPE	Type := "Gable"	HEIGHT TO FLOOR	lower := 0ft	INT. LATERAL BRIDGING	Bridge := "no"
IMPORTANCE CATEGORY	I_C := "Low"	TERRAIN := "Open"		FOUNDATION SLOPE	$Fnd_{slope} := 0\%$

SNOW LOAD

SNOW SURCHARGE	$S_s := 3.1 \cdot KPA$
RAIN SURCHARGE	$S_r := 0.4 \cdot KPA$
ROOF LIVE LOAD	$L_r := 1KPA$

SEISMIC LOAD

SEISMIC DATA $S_{0.2} := 0.140$ $S_{0.5} := 0.094$ $S_{1.0} := 0.059$ $S_{2.0} := 0.020$

SITE CLASS $Site_{class}$:= "D"

SFRS := "Shear Wall" Shear Wall or Braced Frame

BASIC ROOF FACTOR	$C_b = 0.8$	$F_a = 1.3$	$F_v = 1.4$	Period	$T = 0.102$
WIND EXPOSURE FACTOR	$C_w = 1$	Conventional construction of braced frames or shell walls			
ROOF SLOPE FACTOR	$C_s = 1$	$R_d = 1.5$	$R_o = 1.3$	Importance Factor	$I_E = 0.8$
ACCUMULATION FACTOR	$C_a = 1$	Seismic Base Shear Coefficient	$V_{seismic} = 0.038$		
SPECIFIED SNOW $S_f := I_S \cdot \left[S_s \cdot \left(C_b \cdot C_w \cdot C_s \cdot C_a\right) + S_r\right]$	$S_f = 2.304 \cdot KPA$	If Sa(0.2) is less than or equal to 0.12 seismic loads need not be considered			
LIVE LOAD USED IN DESIGN	$P_S = 2.304 \cdot KPA$				

DEAD LOAD

ROOF DEAD LOAD	$D_R = 3 \cdot psf$
PARTITION DEAD LOAD	$D_P := 3 \cdot psf$
ADDITIONAL LONGITUDINAL DEAD LOAD	$D_L := 0 \cdot psf$
ADDITIONAL TRANSVERSE DEAD LOAD	$D_T := 0psf$

WIND LOAD

WIND PRESSURE (1/50)	$qw := 0.4KPA$
INTERNAL PRESSURE COEFFICIENT	$CgC_{pi} := 0.6$
END ZONE WIDTH	$a = 3.333ft$

PRIMARY STRUCTURAL ACTION		BASE SHEAR	LONGITUDINAL	TRANSVERSE
WALL (Suction and Pressure)	$F_{WALL} = 0.374 \cdot KPA$	WIND	$V_{WL} = 2672\,lb$	$V_{WT} = 668\,lb$
ROOF	$F_{ROOF} = -0.374 \cdot KPA$	SEISMIC	$V_{EL} = 3314\,lb$	$V_{ET} = 276\,lb$
COMPONENTS AND CLADDING				
ENDWALL GIRT	$F_{EG} = 0.751 \cdot KPA$			
SIDEWALL GIRT	$F_{SG} = 0.732 \cdot KPA$			
PURLIN	$F_{PURLIN} = 0.64 \cdot KPA$			

ANCHOR INFORMATION

STRAP BRACING INFORMATION (IF REQUIRED)

EDGE DISTANCE EdgeDistance := 3

GAGE OF STRAP Gage := 16

CONCRETE STRENGTH Concrete := 2500

WIDTH OF STRAP $w_s := 2in$

$\phi N := 0.65$ Table 3 - ESR-3889

$\phi V_s := 0.60$ Table 4 - ESR-3889

$\phi V_c := 0.70$ Table 4 - ESR-3889

$d_{o\_.375} := 0.375in$ $d_{o\_.5} := 0.5in$ nominal anchor diameter (table 1 ESR 3889)

$h_{ef\_.375} := 1.33in$ $h_{ef\_.375\_3} := 1.75in$ $h_{ef\_.5\_2.5} := 1.75in$ $h_{ef\_.5\_3.5} := 2.17in$ effective embedment (table 1 ESR 3889)

$c_{ac\_.375} := 5.0in$ $c_{ac\_.375\_3} := 6.3in$ $c_{ac\_.5\_2.5} := 3.3in$ $c_{ac\_.5\_3.5} := 5.9in$ critical edge distance (table 1 ESR 3889)

$\psi_{cn} := 1.0$ modification factor for cracked and uncraked concrete (tabel 4 ESR 38

$k_c := 17$ effectiveness factor for cracked concrete (table 4 ESR 3889)

$N_p := 0kip$ characteristic pulout strength, cracked concrete (table 4 ESR 3889)

$l_{e\_.375} := 1.33in$ $l_{e\_.375\_3} := 1.75in$ $l_{e\_.5\_2.5} := 1.75in$ $l_{e\_.5\_3.5} := 2.17in$ load bearing length of anchor (table 4 ESR 3889)

$N_{sa\_.375} := 8.730kip$ $N_{sa\_.5} := 20.475kip$ steel strength in tension (table 3 ESR 3889)

$V_{sa\_.375} := 3.465kip$ $V_{sa\_.5} := 8.860kip$ steel strength in shear (table 4 ESR 3889)

Corner Anchor

$n_c := 1$ number of bolts at column

$c_{a1\_c} := 2.75in$ distance between bolts from edge 2

$s_{1\_c} := 0in$ distance between bolts along edge 1

$c_{a2\_c} := 2.75in$ distance of bolts from edge 1

$s_{2\_c} := 0in$ distance between bolts along edge 2

$e_{N\_c} := 0in$ distance from resultant tension load to centroid of anchors in tension

$e_{v\_c} := 0in$ distance from sultant shear load to centroid of anchors in shear

Exterior Anchor

$n_e := 2$ number of bolts at column

$c_{a1\_e} := 2.75in$ distance between bolts from edge 2

$s_{1\_e} := 0in$ distance between bolts along edge 1

$c_{a2\_e} := 100in$ distance of bolts from edge 1

$s_{2\_e} := 5in$ distance between bolts along edge 2

$e_{N\_e} := 0in$ distance from resultant tension load to centroid of anchors in tension

$e_{v\_e} := 0in$ distance from sultant shear load to centroid of anchors in shear

Interior Anchor

$n_i := 1$ number of bolts at column

$c_{a1\_i} := 100in$ distance between bolts from edge 2

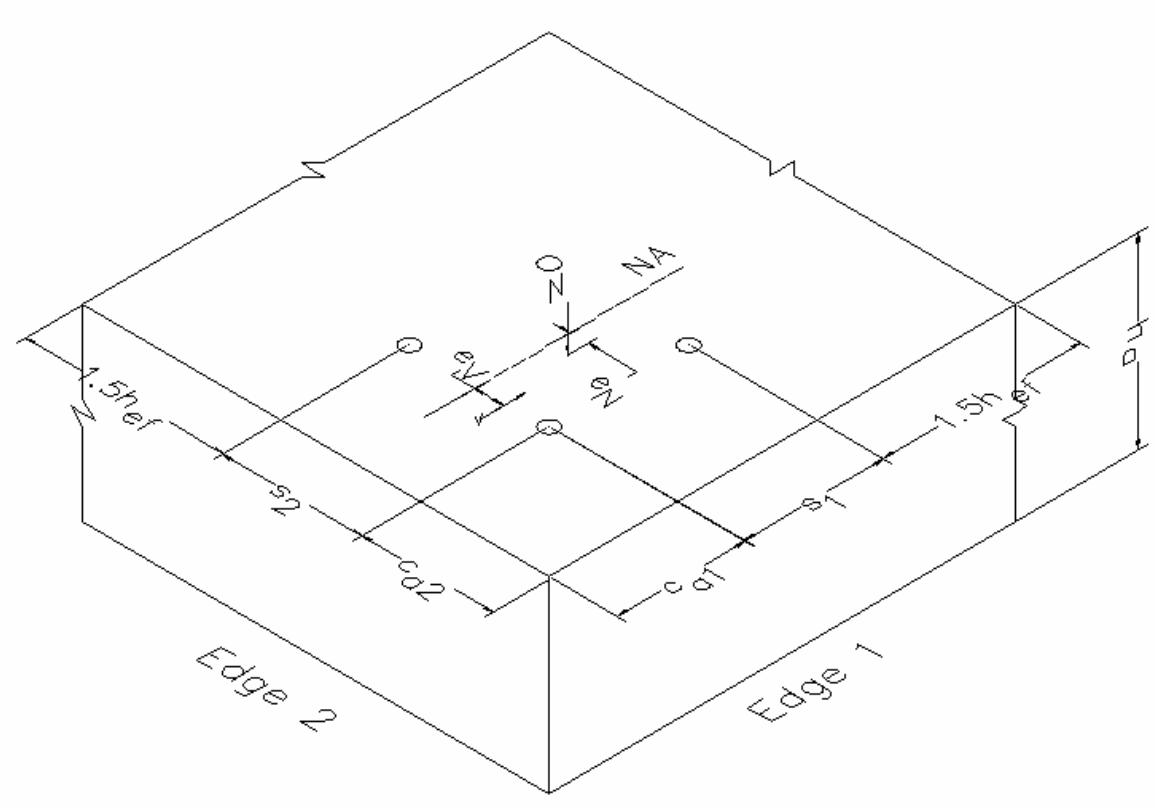
$s_{1\_i} := 0in$ distance between bolts along edge 1

$c_{a2\_i} := 100in$ distance of bolts from edge 1

$s_{2\_i} := 0in$ distance between bolts along edge 2

$e_{N\_i} := 0in$ distance from resultant tension load to centroid of anchors in tension

$e_{v\_i} := 0in$ distance from sultant shear load to centroid of anchors in shear

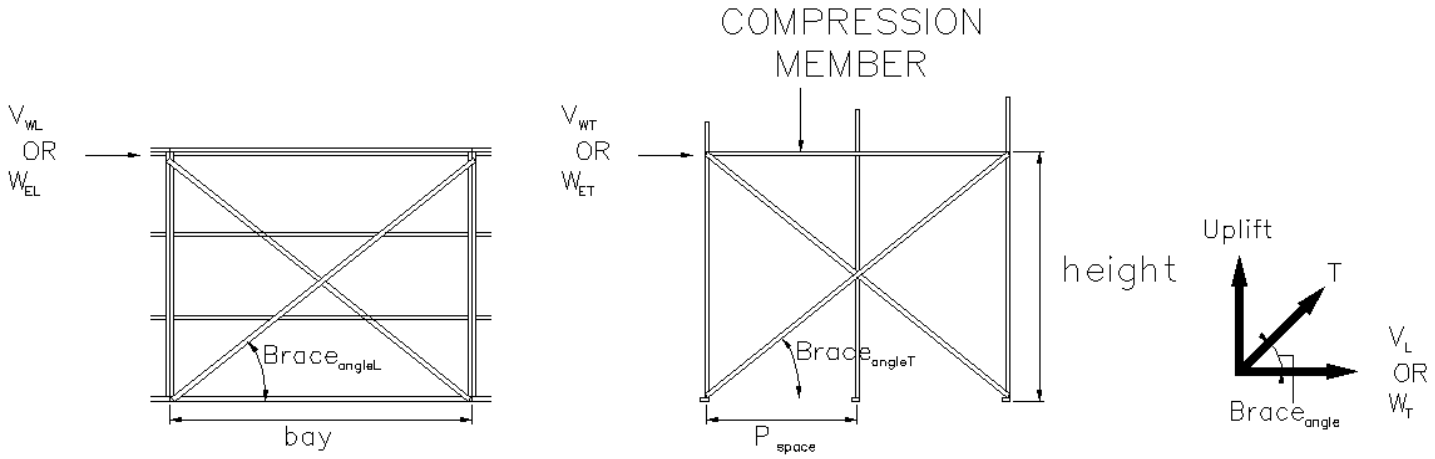


PANEL CHECK

PANEL CAPACITY	$V_{all} = 60 \cdot plf$	
LONGITUDINAL SHEAR PANEL REQUIRED	$PanelLength_L = 55.23\,ft$	
LONGITUDINAL SHEAR PANEL	$Panel_L = 160\,ft$	
TRANSVERSE SHEAR PANEL REQUIRED	$PanelLength_T = 7.425\,ft$	
TRANSVERSE SHEAR PANEL	$Panel_T = 40\,ft$	
LONGITUDINAL SHEAR WALL	$PanelCheck_L$ = "ok"	(IF PANEL CHECK IS "OK" NO STRAP BRACES REQUIRED FOR LATERAL FORCE RESISTING SYSTEM BUT STRAPS MAY BE REQUIRED FOR ANCHORING)
TRANSVERSE SHEAR WALL	$PanelCheck_T$ = "ok"	
LOCAL FAILURE	PanelCheck = "ok"	

STRAP BRACES (IF REQUIRED)

LONGITUDINAL	$Straps_L = 0$	
TRANSVERSE	$Straps_T = 0$	
ALLOWABLE TENSION IN STRAP	$T_a = 3712.5\,lb$	
LONGITUDINAL STRAP ANGLE	$Brace_{angleL} = 39.806 \cdot deg$	
TRANSVERSE STRAP ANGLE	$Brace_{angleT} = 39.806 \cdot deg$	
LONGITUDINAL TENSION ON STRAP	$T_L := if\left(PanelCheck_L = "ok", 0, \frac{\max(V_{WL}, V_{EL})}{\cos(Brace_{angleL})}\right)$	$T_L = 0\,lb$
TRANSVERSE TENSION ON STRAP	$T_T := if\left(PanelCheck_T = "ok", 0, \frac{\max(V_{WT}, V_{ET})}{\cos(Brace_{angleT})}\right)$	$T_T = 0\,lb$



(Note: Compression member to be designed seperately, see additional calculations. Compression memeber needed only when $Straps_T > 0$)

ANCHOR SUMMARY	SHEAR	UPLIFT
WIND / LONGITUDINAL / INTERIOR	$V_{wil} = 19$ lb	$N_{wil} = 345$ lb
WIND / LONGITUDINAL / EXTERIOR	$V_{wel} = 99$ lb	$N_{wel} = 207$ lb
WIND / TRANSVERSE / INTERIOR	$V_{wit} = 32$ lb	$N_{wit} = 277$ lb
WIND / TRANSVERSE / EXTERIOR	$V_{wet} = 223$ lb	$N_{wet} = 208$ lb
SEISMIC / LONGITUDINAL / INTERIOR	$V_{sil} = 46$ lb	$N_{sil} = -101$ lb
SEISMIC / LONGITUDINAL / EXTERIOR	$V_{sel} = 46$ lb	$N_{sel} = 34$ lb
SEISMIC / TRANSVERSE / INTERIOR	$V_{sit} = 9$ lb	$N_{sit} = -270$ lb
SEISMIC / TRANSVERSE / EXTERIOR	$V_{set} = 61$ lb	$N_{set} = -77$ lb

LOADS FOR ANCHORS

Tension (Interior)	Tension (Exterior)	Shear (Interior)	Shear (Exterior)
$Tension_I = 847.442$ lb	$Tension_X = 932.186$ lb	$Shear_I = 912.629$ lb	$Shear_X = 1003.892$ lb

Bolt Check Applied Uplift / Tension + Applied Shear / Shear < 1.2

		Longitudinal		Transverse	
Interior Anchors	Wind	$Anchor_{i\_wl} = 0.428$		Wind	$Anchor_{i\_wt} = 0.362$
	Siesmic	$Anchor_{i\_sl} = 0.05$		Siesmic	$Anchor_{i\_st} = 0.01$
Exterior Anchors	Wind	$Anchor_{e\_wl} = 0.32$		Wind	$Anchor_{e\_wt} = 0.445$
	Siesmic	$Anchor_{e\_sl} = 0.082$		Siesmic	$Anchor_{e\_st} = 0.061$
Corner Anchors	Wind	$Anchor_{c\_wl} = 0.335$		Wind	$Anchor_{c\_wt} = 0.335$
	Siesmic	$Anchor_{c\_sl} = 0$		Siesmic	$Anchor_{c\_st} = 0$
ANCHOR	Interior	$Anchor_i =$ "3/8" x 2.5""			
	Interior	$Anchor_e =$ "3/8" x 2.5""			

INPUT VALUES

PURLIN BRIDGING SPACING	PurlinBridgeSpace = 60		JAMB SUPPORT	$web_J := 2$	StubPostJ := "no"
DEPTH OF PURLIN	$web_P := 7$	7, 9, 11 or 12	SP HEADER (L)	$web_H := 9$	5.5", 9", 10" or 12" $Members_{HL} := 1$
HEIGHT OF HORIZONTAL BRACING	BridgeHeight = 4.375 ft		SP HEADER (S)	$web_{HS} := 5.5$	5.5", 9", 10" or 12" $Members_{HS} := 1$
WIDTH OF INTERIOR COLUMN	$web_I := 3.5$		CORNER COLUMN UNBRACED LENGTH (y & t)		$C_{brace} = 2.778$ ft
SIDE WALL COLUMN	$web_S := 3.5$	$ColumnNumber_{SW} := 2$	SW GIRT	$web_G := web_S$	GirtNumber := 1 eGirtNumber := GirtNumber
END WALL COLUMN	$web_E := 3.5$	$ColumnNumber_{EW} := 2$	EW GIRT	$web_{GE} := web_E$	EGirtNumber := 1
EC COLUMN (JAMB)	$web_{EWC} := 3.5$	$ColumnNumber_{EWC} := 1$	(Use either 3.5 or 5.5 for the width of Side Wall, End Wall or End Closet Columns)		
EC COLUMN (HDR)	$web_{EC} := 3.5$	$ColumnNumber_{EC} := 2$			

LOAD COMBINATIONS Table 4.1.3.2

LC1 = 1.4 * DL

LC3 = 1.25 * DL +1.5 * max(SL,RLL) + .4 * WL

LC4a = .9 * DL + 1.4 * WL

LC4b = 1.25 * DL + 1.4 * WL + .5 * max(SL,RLL)

LC5 = DL + EL + .25 * max(SL,RLL)

PURLIN INFORMATION

PURLIN LOADS

	UNIFORM LOAD	END REACTION	MOMENT
LC 1	$w_{Purlin1} = 21$·plf	$R_{Purlin1} = 105$ lb	$M_{Purlin1} = 262$ ft·lb
LC3	$w_{Purlin3} = 395$·plf	$R_{Purlin3} = 1975$ lb	$M_{Purlin3} = 4937$ ft·lb
LC4a	$w_{Purlin4A} = -80$·plf	$R_{Purlin4A} = -400$ lb	$M_{Purlin4A} = -1000$ ft·lb
LC4a	$w_{Purlin4Ae} = -117$·plf	$R_{Purlin4Aea} = -503$ lb	$M_{Purlin4Ae} = -1463$ ft·lb
		$R_{Purlin4Aeb} = -421$ lb	
LC4b	$w_{Purlin4B} = 193$·plf	$R_{Purlin4B} = 963$ lb	$M_{Purlin4B} = 2408$ ft·lb
LC5	$w_{Purlin5} = 75$·plf	$R_{Purlin5} = 376$ lb	$M_{Purlin5} = 939$ ft·lb

PURLIN $Member_{PR}$ = "7 x 16ga, 50ksi Cee Purlin" $Int_{PR} = 0.494$

$L_{xPR} = 118.5$·in $L_{yPR} = 60$·in $L_{tPR} = 60$·in $L_{yPR\_neg} = 60$·in $L_{tPR\_neg} = 60$·in

STUB POST HEADERS

STUB POST HEADER LOADS

	REACTION	MOMENT
LC1	$R_{H1} = 105$ lb	$M_{H1} = 525$ ft·lb
LC3	$R_{H3} = 1975$ lb	$M_{H3} = 9874$ ft·lb
LC4a	$R_{H4A} = -400$ lb	$M_{H4A} = -2000$ ft·lb
LC4a	$R_{H4Aea} = -503$ lb	$M_{H4Aea} = -2514$ ft·lb
	$R_{H4Aeb} = -421$ lb	$M_{H4Aeb} = -2103$ ft·lb
LC4b	$R_{H4B} = 963$ lb	$M_{H4B} = 4817$ ft·lb
LC5	$R_{H5} = 376$ lb	$M_{H5} = 1879$ ft·lb

MEMBER SIZES		INTERACTION	LENGTH
STUB POST HEADERS	$Member_H$ = "9 x 3.2 x 12ga 50 ksi Stub Header"	Int_H = 0.742	HeaderLength = 10 ft
STUB POST HEADER BRACING	Lx_H = 120·in Ly_H = 120·in Lt_H = 120·in		
SMALL STUB POST HEADERS	$Member_{HS}$ = "5.5 x 3.2 x 16ga 50 ksi Stub Header"	Int_{HS} = 0.623	SHLength = 5 ft
SMALL STUB POST HEADER BRACING	Lx_{HS} = 60·in Ly_{HS} = 60·in Lt_{HS} = 60·in		

INTERIOR COLUMNS

INTERIOR COLUMN LOADS	AXIAL LOAD
LC1	P_{l1} = 210 lb
LC3	P_{l3} = 3813 lb
LC4b	P_{l4B} = 1447 lb
LC5	P_{l5} = 872 lb

MEMBER SIZES		INTERACTION
INTERIOR COLUMN	$Member_l$ = "3.63 x 2 x 16ga, 50 ksi Interior Column"	Int_l = 0.902
INTERIOR COLUMN BRACING	Lx_l = 98·in Ly_l = 12·in Lt_l = 98·in	

JAMBS

JAMB LOADS	AXIAL LOAD	MOMENT
LC1	P_{Jamb1} = 105 lb	NA
LC3	P_{Jamb3} = 1917 lb	M_{Jamb3} = 45 ft·lb
LC4a	P_{Jamb4A} = 158 lb	M_{Jamb4A} = 157 ft·lb
LC4b	P_{Jamb4B} = 759 lb	M_{Jamb4B} = 157 ft·lb
LC5	P_{Jamb5} = 497 lb	NA
JAMB UNIFORM LOAD	w_{Jamb} = 145·plf	
JAMB APPLIED MOMENT	JambMoment = 111.938 ft·lb	EWJambMoment = 152.757 ft·lb
JAMB AXIAL LOAD	P_{Jamb} = 1917 lb	
JAMB MOMENT CAPACITY	$M_{jambcap}$ = 1584 ft·lb	
JAMB AXIAL CAPACITY	$P_{jambcap}$ = 7032 lb	
JAMB CHECK	JambCheck = "ok"	EWJambCheck = "ok"
END WALL HEADER MOMENT CAPACTIY	$EWheader_{momentallt}$ = 2922 ft·lb	
END WALL HEADER APPLIED MOMENT	$EWheader_{momentapp}$ = 4937.135 ft·lb	
LARGE END WALL HEADER CHECK	EWheader_check16 = "Split End Closet into (2) Bays"	
	EWheader_check22 = "22in_EW Header O.K."	

SIDE WALL COLUMNS

SIDE WALL LOADS	AXIAL	SIDE WALL MOMENT
LC1	P_{SW1} = 105 lb	
LC3	P_{SW3} = 1917 lb	M_{SW3} = 0 ft·lb
LC4b	P_{SW4B} = 759.125 lb	M_{SW4B} = 0 ft·lb
LC5	P_{SW5} = 496.567 lb	

MEMBER SIZES		INTERACTION
SIDE WALL COLUMN	$Member_{SW}$ = "3.63 x 1.5 x 18ga 33 ksi Column"	Int_{SW} = 0.442
SIDE WALL COLUMN BRACING	Lx_S = 100·in Ly_S = 33·in Lt_S = 33·in	

END WALL COLUMNS

END WALL LOADS	AXIAL LOAD	UNIFORM LOAD	MOMENT	
LC1	$P_{EW1} = 105\,lb$	NA	NA	
LC3	NA	$w_{EW3} = 17\cdot plf$	$M_{EW3} = 63\,ft\cdot lb$	MID
LC3	NA	$w_{EW3e} = 24\cdot plf$	$M_{EW3e} = 84\,ft\cdot lb$	END
LC4a	NA	$w_{EW4A} = 17\cdot plf$	$M_{EW4A} = 222\,ft\cdot lb$	MID
LC4a	NA	$w_{EW4Ae} = 24\cdot plf$	$M_{EW4Ae} = 292\,ft\cdot lb$	END
LC4b	NA	$w_{EW4B} = 17\cdot plf$	$M_{EW4B} = 222\,ft\cdot lb$	MID
LC4b	NA	$w_{EW4Be} = 24\cdot plf$	$M_{EW4Be} = 292\,ft\cdot lb$	END
LC5	$P_{EW5} = 497\,lb$	NA	NA	

MEMBER SIZES — INTERACTION

END WALL COLUMN — $Member_{EW}$ = "3.63 x 1.5 x 18ga 33 ksi Column" — $Int_{EW} = 0.517$

END WALL COLUMN BRACING — $Lx_E = 98\cdot in$ $Ly_E = 38\cdot in$ $Lt_E = 38\cdot in$

GIRTS

GIRT LOADS	UNIFORM LOAD	END REACTION	MOMENT
SIDE WALL GIRT IN MID ZONE	$w_{GS} = 54\cdot plf$	$R_{GS} = 271\,lb$	$M_{GS} = 679\,ft\cdot lb$
SIDE WALL GIRT IN END ZONE	$w_{GSe} = 57\cdot plf$	$R_{GSe} = 287\,lb$	$M_{GSe} = 718\,ft\cdot lb$
GIRT IN MID ZONE	$w_{GE} = 64\cdot plf$	$R_{GE} = 318\,lb$	$M_{GE} = 199\,ft\cdot lb$
GIRT IN END ZONE	$w_{GEe} = 69\cdot plf$	$R_{GEe} = 344\,lb$	$M_{GEe} = 215\,ft\cdot lb$

MEMBER SIZES — INTERACTION

SIDE WALL GIRT (MID) — $Member_{GS}$ = "3.5 x 1.75 x 18ga 33 ksi Girt" — $Int_{GS} = 0.707$

END WALL GIRT (END) — $Member_{GE}$ = "3.5 x 1.75 x 18ga 33 ksi Girt" — $Int_{GE} = 0.212$

SIDE WALL GIRT BRACING — $Lx_G = 119\cdot in$ $Ly_G = 12\cdot in$ $Lt_G = 119\cdot in$

END WALL GIRT BRACING — $Lx_{GE} = 59\cdot in$ $Ly_{GE} = 12\cdot in$ $Lt_{GE} = 59\cdot in$

END CLOSET COLUMNS

END CLOSET LOADS	AXIAL LOAD	UNIFORM LOAD	MOMENT
LC1	$P_{EC1} = 105\,lb$	NA	NA
LC3	$P_{EC3} = 1917\,lb$	$w_{EC3} = 72\cdot plf$	$M_{EC3} = 5\,ft\cdot lb$
LC4b	$P_{EC4B} = 759\,lb$	$w_{EC4B} = 72\cdot plf$	$M_{EC4B} = 17\,ft\cdot lb$
LC5	$P_{EC5} = 497\,lb$	NA	NA

MEMBER SIZES — INTERACTION

END CLOSET ABOVE HEADER — $Member_{EC}$ = "3.63 x 1.5 x 18ga 33 ksi Column" — $Int_{EC} = 0.422$

END CLOSET BEHIND JAMB — $Member_{EWC}$ = "3.63 x 1.5 x 18ga 33 ksi Column" — $Int_{EWC} = 0.440$

END CLOSET ABOVE HEADER BRACING — $Lx_{EC} = 14\cdot in$ $Ly_{EC} = 14\cdot in$ $Lt_{EC} = 14\cdot in$

END CLOSET BEHIND JAMB BRACING — $Lx_E = 98\cdot in$ $Ly_E = 38\cdot in$ $Lt_E = 38\cdot in$

NUMBER OF COLUMNS USED FOR END WALL CLOSETS — $ColumnNumber_{EWC} = 1$

STUDS

STUD LOADS	UNIFORM LOAD	MOMENT
SIDE WALL STUD IN MID ZONE	$w_{Stud} = 19 \cdot plf$	$M_{Stud} = 233\,ft \cdot lb$
SIDE WALL STUD IN END ZONE	$w_{Stude} = 21 \cdot plf$	$M_{Stude} = 256\,ft \cdot lb$

MEMBER SIZES

SIDE WALL STUD $Member_{Stud}$ = "3.625 x 2 x 20ga 33 ksi Stud"

INTERACTION

$Int_{Stud} = 0.295$

SIDE WALL STUB BRACING $Lx_{Stud} = 100 \cdot in$ $Ly_{Stud} = 33 \cdot in$ $Lt_{Stud} = 33 \cdot in$

FOUNDATION INFORMATION

INTERIOR COLUMN REACTIONS	GRAVITY	$P_{down\_interior} = 2556\,lb$	UPLIFT	$P_{up\_int} = 230\,lb$
EXTERIOR COLUMN REACTIONS	GRAVITY	$P_{down\_exterior} = 1278\,lb$	UPLIFT	$P_{up\_ext} = 140\,lb$

ALLOWABLE BEARING PRESSURE BearingPressure = 1500·psf

SLAB THICKNESS $Slab = 4 \cdot in$

PAD WIDTH $Pad_W = 17 \cdot in$

PAD DEPTH $Pad_D = 6.5 \cdot in$