PROJECT NO. [redacted]
PLANCHECK ROUND 2

STRUCTURAL CALCULATIONS

For

Auburn Grove
Livermore, CA

Prepared For

Lennar Homes
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By

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REVIEWED
CITY OF LIVERMORE
BUILDING DIVISION
AUG 17 2018
BY: BLAKE WARMERDAM

[redacted]

Revisions	Date	Reason
1	11-29-17	Soils Review

OFFICE COPY
PROJECT # [redacted]

Material Specifications

Concrete: Slab on Grade and Footings
F'c = 3000 psi @ 28 Days (Special Inspection Required)

Rebar: Fy = 60,000 psi for # 5 Bar and Larger
Fy = 40,000 psi for # 4 Bar and Smaller

Lumber:

Engineered Lumber

	PSL	LSL	LVL	GLB (24FV4)	GLB (24FV8)
Fb	2900 psi	1700 psi	2600 psi	2400 psi	2400 psi
Fv	290 psi	400 psi	285 psi	240 psi	240 psi
E	2.0 x 10^6 psi	1.55 x 10^6 psi	1.9 x 10^6 psi	1.8z10^6 psi	same

Solid Sawn Lumber (All shall be DF Larch)

2x4,2x6 studs shall be DF STD & Better for up to 10', or DF #1 for 10' to 20' in height
2x top plates shall be DF#2
4x posts and beams shall be DF #2
6x posts and beams shall be DF #1

Soils Criteria

Soils Report is from Engeo, Inc. Report 14097 Dated September 29, 2017.

PT SLABS - The following are the design criteria for the PT slabs.

	Em	ym
Center Lift	9.0'	0.6"
Edge Lift	4.6'	1.6"

Bearing = 1500 PSF

DESIGN LOAD TABLE

DEAD LOADS

Roof: Tile

Roof Tile	10.0 PSF
3/4 " CDX	2.2
Truss @ 24"	3.0
Insulation (R30)	1.0
Drywall (5/8")	2.8
Misc.	2.0
TOTAL	**21.0 PSF**

Exterior 2x6 Wall:

3-coat Stucco	9.0 PSF
2x6 @ 16" o.c.	1.7
Insulation (R19)	1.5
3/8" CDX	1.1
Drywall (1/2")	2.2
Misc.	1.5
TOTAL	**17.0 PSF**

Floor:

Flooring	1.5 PSF
3/4 " CDX	2.2
I-Joist @ 16" o.c.	2.5
Drywall (5/8")	2.8
Partitions	7.0
Misc.	1.0
TOTAL	**17.0 PSF**

Exterior 2x4 Wall:

3-coat Stucco	9.0 PSF
2x4 @ 16" o.c.	1.2
Insulation (R13)	1.0
3/8" CDX	1.1
Drywall (1/2")	2.2
Misc.	1.5
TOTAL	**15.0 PSF**

Interior 2x4 Wall:

2x4 @ 16" o.c.	1.2
3/8" CDX	1.1
(2)Drywall (1/2")	4.4
Misc.	1.3
TOTAL	**8.0 PSF**

LIVE LOADS

ROOF: 20 PSF

FLOOR: 40 PSF

ALL POST CAPACITIES ARE FOR POSTS IN A WALL

2x Studs are STD grade, other posts are #2. (100%)

2x4 WALL

HEIGHT	2x4	(2)2x4	(3)2x4	4x4	4x6	4x8	4x10
PERP. TO GRAIN	3280	6565	9845	7655	12030	15860	20235
8'	2851	5702	8553	7551	11866	15641	19956
9'	2306	4612	6918	6102	9589	12640	16127
10'	1890	3780	5670	5005	7866	10368	13229
11'	1573	3146	4719	4167	6548	8632	11031
12'	1327	2654	3981	3517	5526	7285	9294

2x Studs are STD grade, other posts are #2, except 6x is #1. (100%,

2x6 WALL

HEIGHT	2x6	(2)2x6	(3)2x6	4x6	6x6	6x8
PERP. TO GRAIN	5155	10313	15470	12030	18905	24922
8'	5155	10313	15470	12030	18905	24922
9'	5155	10313	15470	12030	18905	24922
10'	5155	10313	15470	12030	18905	24922
11	5155	10313	15470	12030	18905	24922
12'	4795	9446	14385	12030	18905	24922
13'	4155	8310	12465	9960	15651	20631
14'	3624	7248	10872	8870	13983	18373
14.5'	3394	6788	10182	8374	13159	17346

SHADING IS GOVERNED BY PERP. TO GRAIN

SHEAR WALL SCHEDULE

S6 (allowable loads – 260 plf seismic, 364 plf wind)
Shear Material = 3/8" CDX or OSB.
Framing shall be 2x4 DF at 16" on center.
Edge Nailing = 8d @ 6" on center.
Field Nailing = 8d @ 12" on center.
Sill Nailing = 16d @ 4" on center from sill to rim,
I-joist, I-joist block or beam below
OR A35 or LTP4 at 16" on center from sill to rim/beam.
Block Nailing: A35 at 16" o.c. at timberstrand rim or
(4) 16d at 16" o.c. at TJI rim.

S4 (allowable loads – 350 plf seismic, 490 plf wind)
Shear Material = 3/8" CDX or OSB.
Framing shall be 2x4 DF at 16" on center.
Edge Nailing = 8d @ 4" on center.
Field Nailing = 8d @ 12" on center.
Sill Nailing = 16d @ 3" on center from sill to rim,
I-joist, I-joist block or beam below
OR A35 @ 12" on center or LTP4 at 16" on center from sill to rim/beam.
Block Nailing: A35 at 16" o.c. at timberstrand rim or
(5) 16d at 16" o.c. at TJI rim.

S3 (allowable loads – 490 plf seismic, 686 plf wind)
Shear Material = 3/8" CDX or OSB.
Framing shall be 2x4 DF at 16" on center – 3x members required at abutting panel edges.
Sill plate on concrete shall be 3x member.
Edge Nailing = 8d @ 3" on center.
Field Nailing = 8d @ 12" on center.
Sill Nailing = 16d @ 3" on center from sill to rim,
I-joist, I-joist block or beam below
OR A35 @ 10" on center or LTP4 at 12" on center from sill to rim/beam.
Block Nailing: A35 at 16" o.c. at timberstrand rim or
(8) 16d in (2) rows at 16" o.c. at TJI rim.

S2 (allowable loads – 640 plf seismic, 896 plf wind)
Shear Material = 3/8" CDX or OSB.
Framing shall be 2x4 DF at 16" on center – 3x members required at abutting panel edges.
Sill plate on concrete shall be 3x member.
Edge Nailing = 8d @ 2" on center –
Nails shall be staggered. See sheet SD1.
Field Nailing = 8d @ 12" on center.
Sill Nailing = Two rows of 16d @ 4" on center in each row from sill to double rim, double I-joist or double I-joist block or 3.5" wide (min.) beam be or A35 @ 6" on center or LTP4 at 8" on center from sill to rim/beam.
Block Nailing: (2) A35 at 16" o.c. at timberstrand rim or
(10) 16d in (2) rows at 16" o.c. at TJI rim.

SS2 (allowable loads – 870 plf seismic, 1218 plf wind)
Shear Material = 1/2" Struc I CDX or 15/32 Struc I OSB.
Framing shall be 2x4 DF at 16" on center – 3x members required at abutting panel edges. Sill plate on concrete shall be 3x member.
Edge Nailing = 10d @ 2" on center – Nails shall be staggered. See sheet S
Field Nailing = 10d @ 12" on center.
Sill Nailing = Two rows of 16d @ 3" on center in each row from sill to double rim, double I-joist or double I-joist block or 3.5" wide (min.) beam below OR LTP4 at 6" on center from sill to rim/beam.
Block Nailing: (2) A35 or (2) LS70 at 16" o.c. at timberstrand rim.

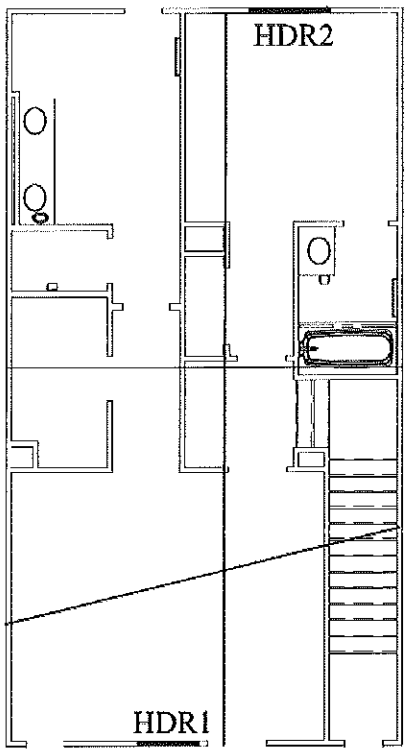
NOTES:

1. All nails listed above are COMMON nails or galvanized nails. Galvanized nails may be hot dipped or tumbled only. 8d nails shall have a minimum diameter 0.131" and 10d nails shall have a minimum of 0.148".
2. See sheet SD1 for shear wall details
3. A shear wall may be placed on either side of the wall (unless a double sided wall is required).
4. Sill nailing is the attachment of the shear wall sill to a member below. If the shear material can be extended to the side of the member below, and shear edge nailing may be applied to the member then the sill nailing shall be 10d at 8" on center instead of what is specified in the table.

Plan 1

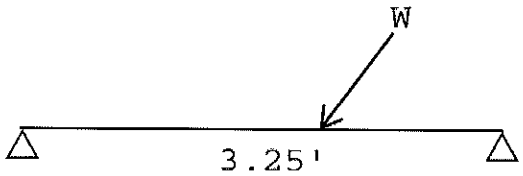
VERTICAL CALCULATIONS

ROOF



ROOF FRAMING

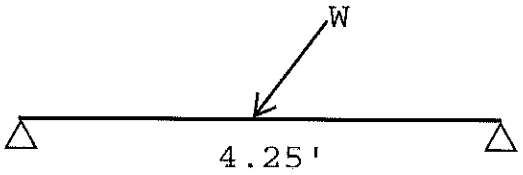
HDR1



W=(41/2)*(20+21)= 841 PLF

USE 4x6 DF#2

HDR2



W=(41/2)*(20+21)= 841 PLF

USE 4x6 DF#2

USE

USE

USE

General Beam
HDR1

INPUT

Span (ft) =	3.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	840.5	0	3.25	840.5

OUTPUT

Shear (lb)	1,366
fv (psi)	85
Moment (ft-lb)	1,110
fb (psi)	604
Deflection (in)	0.03
L/	1435
Lt Reaction =	1366
Rt Reaction =	1366

General Beam
HDR2

INPUT

Span (ft) =	4.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

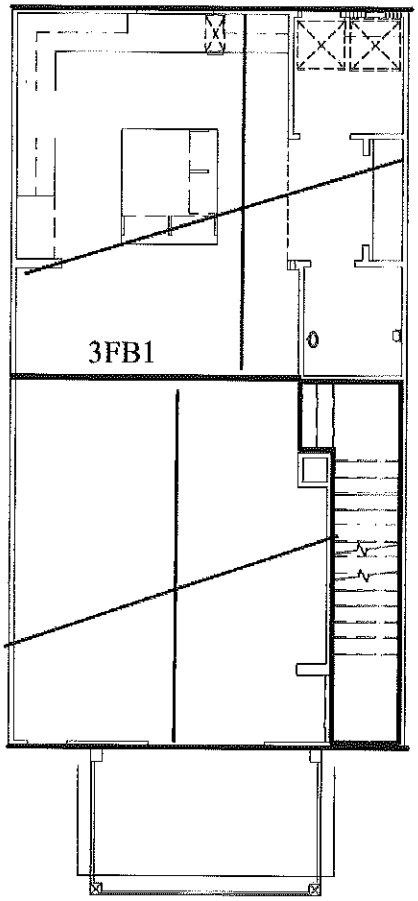
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	840.5	0	4.25	840.5

OUTPUT

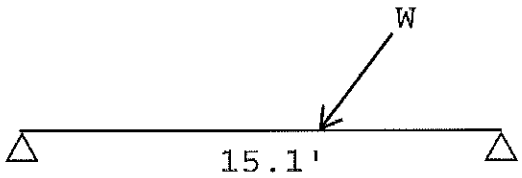
Shear (lb)	1,786
fv (psi)	111
Moment (ft-lb)	1,898
fb (psi)	1,032
Deflection (in)	0.08
L/	642
Lt Reaction =	1786
Rt Reaction =	1786

3rd FLOOR



3rd FLOOR FRAMING

3FB1



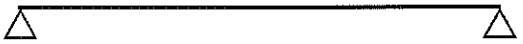
W=38/2*(40+17)= 1083 PLF

USE 5 1/4 x 14 PSL

USE

USE

USE



USE

General Beam
3FB1

INPUT

Span (ft) =	15.10
LDF =	1.00
Beam =	5.25x14
Mat'l =	PSL
b =	5.25
d =	14
I =	1201
E (x10 E6)	2
Beam EI	2401000000

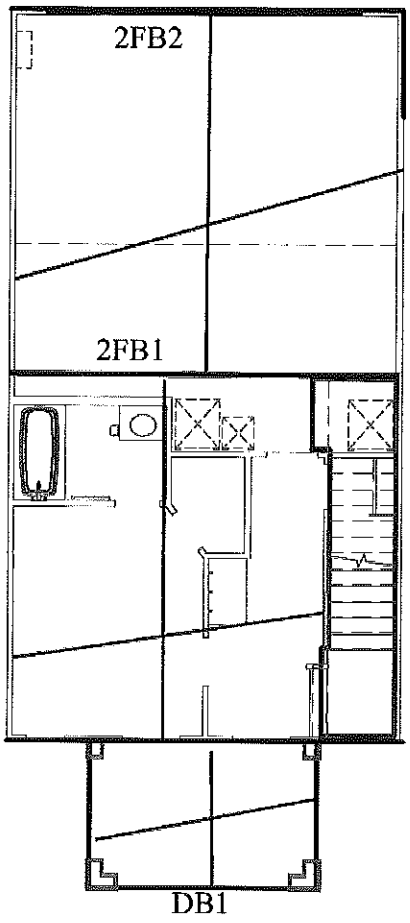
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1083	0	15.1	1083

OUTPUT

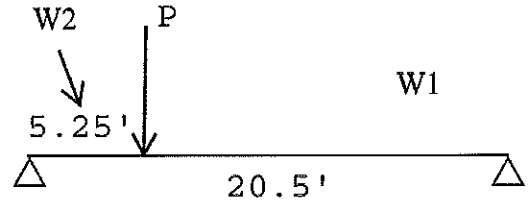
Shear (lb)	8,177
fv (psi)	167
Moment (ft-lb)	30,867
fb (psi)	2,160
Deflection (in)	0.53
L/	343
Lt Reaction =	8177
Rt Reaction =	8177

2nd FLOOR



2nd FLOOR FRAMING

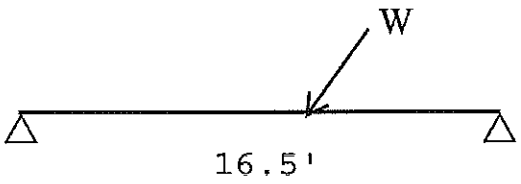
2FB1



P=8144# (3FB1)
W1=22/2*(40+17) = 627
W2=20/2*(40+17)+9*8=642 PLF

USE 7x18 PSL

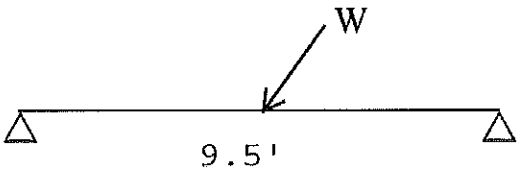
2FB2



W=40/2*(20+21)+19*15+19/2*57+19/2*57=2188 PLF

USE 5 1/4x18 PSL

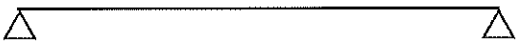
DB1



W=8/2*(60+20)= 320 PLF

USE 6x8 DF#1

2FB1
Case 2



P=8144# (3FB1) + 3*2376 =15272#
W1=22/2*(40+17) = 627
W2=20/2*(40+17)+9*8=642 PLF

USE

USE

General Beam
2FB1

INPUT

Span (ft) =	20.50
LDF =	1.00
Beam =	7x18
Mat'l =	PSL
b =	7
d =	18
I =	3402
E (x10 E6)	2
Beam EI	6804000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	627	0	20.5	627
2	Partial Uniform	642	0	5.25	642
3	Point	8177	5.25	5.25	8177

OUTPUT

Shear (lb)	15,449
fv (psi)	184
Moment (ft-lb)	63,911
fb (psi)	2,029
Deflection (in)	0.69
L/	358
Lt Reaction =	15449
Rt Reaction =	8952

General Beam
2FB2

INPUT

Span (ft) =	16.50
LDF =	1.25
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	2188	0	16.5	2188

OUTPUT

Shear (lb)	18,051
fv (psi)	229
Moment (ft-lb)	74,460
fb (psi)	2,521
Deflection (in)	0.72
L/	277
Lt Reaction =	18051
Rt Reaction =	18051

General Beam

DB1

INPUT

Span (ft) =	9.50
LDF =	1.00
Beam =	6x8
Mat'l =	DF#1
b =	5.5
d =	7.25
I =	175
E (x10 E6)	1.6
Beam EI	279457291.7

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	320	0	9.5	320

OUTPUT

Shear (lb)	1,520
fv (psi)	57
Moment (ft-lb)	3,610
fb (psi)	899
Deflection (in)	0.21
L/	543
Lt Reaction =	1520
Rt Reaction =	1520

General Beam
2FB1
Case 2

INPUT

Span (ft) =	20.50
LDF =	1.92
Beam =	7x18
Mat'l =	PSL
b =	7
d =	18
I =	3402
E (x10 E6)	2
Beam EI	6804000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	627	0	20.5	627
2	Partial Uniform	642	0	5.25	642
3	Point	15272	5.25	5.25	15272

OUTPUT

Shear (lb)	20,727
fv (psi)	129
Moment (ft-lb)	91,227
fb (psi)	1,508
Deflection (in)	0.92
L/	268
Lt Reaction =	20727
Rt Reaction =	10769

LATERAL CALCULATIONS

Auburn Grove Plan 1

Updated 10/28/17

Building Dead Loads

Roof =	**25**	**psf**
Floor =	**17**	**psf**
Ext. 2x6 Wall =	**17**	**psf**
Ext. 2x4 Wall =	**15**	**psf**
Int. Wall =	**8**	**psf**

Wind Loads (Directional Procedure from ASCE-7 '10 - Chapter 27)

Part 2 ? =	**Yes**	
Wind Speed (MPH) =	**110**	
Exposure Cat. =	**B**	
Mean Rf. Ht. (ft.) =	**30**	(15,20,30,40,50,60,70,80,90,100)
Rf Slope (X:12) =	**5**	
Building Category	**II**	
Adjustment Factor	**0.713**	
ROOF ANGLE	**22.61986**	

ROOF ZONE PRESSURES		x ADJ. FACTOR FOR EXPOSURE
1 - Case 1	10.2	7.3
1 - Case 2	-17.7	-12.6
2 - Case 1	-8.5	-6.1
2 - Case 2	-17.8	-12.7
3	-27.4	-19.5
4	-24.4	-17.4
5	-20.0	-14.3

LATERAL LOADS

WALLS

WALL LOAD	19.60 psf	
ASD WALL LOAD	**11.76 psf**	<== Use this for all wall wind loads

ROOFS

Zone 1 - case 1	2.80	
Zone 2 - case 1	-4.85	
TOTAL case 1	7.65	
Zone 1 - case 2	-4.85	
Zone 2 - case 2	-4.88	
TOTAL case 1	0.03	
MAXIMUM ROOF	7.65 psf	
ASD MAX. ROOF	**4.59 psf**	<== Use this for all roof wind loads

Sieismic Loads

Earthquake Data (CBC 1603.1.5)			**Irregularities**	Yes or No	
1 . I =	1		TABLE 12.3-1		
2. Ss =	1.558		1a	no	0
S1 =	0.6		1b	no	0
3. Site Class	D	<== From Soils Engr	2	No	0
4. SDs =	**1.039**	<== From Soils Engr	3	No	0
SD1 =	0.600		4	yes	1
5. Seismic Cat.	D	<== From Soils Engr	TABLE 12.3-2		0
6. Basic System =	Bearing Wall System		4	No	0
7. Design Base Shear (SEE BELOW)				Irreg. =	1.25

BASE SHEAR (ASCE-7 12.8)

V= Cs*W

R= 6.5

Cs=(SDs)/(R/I)= 0.159795

Rho = 1.3

Eh =Rho*V= 0.207733 x W <== Seismic Base Acceleration

Period (ASCE-7 12.8.2.1)

Hn (ft)	=	30	
Ct	=	0.02	<== From Table 12.8-2
x	=	0.75	<== From Table 12.8-2
Ta= Ct*Hn^x =		**0.256372**	

Therefore k=1 in Equation 12.8-12

BASIC LOAD COMBINATIONS(ASD)

			Acceleration
Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Qe	**0.7*QE =**	**0.145413333**	**= For ASD**
Eq. 6: (1.0+0.105*SDS)D +H + F + 0.525*Qe + 0.75*L			
Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Qe + H			

BASIC LOAD COMBINATIONS With Overstrength Factor (ASD) Omega = 3.0

Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Omega*Qe

Eq. 6: (1.0+0.105*SDS)D + H + F + 0.525*Omega*Qe + 0.75*L

Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Omega*Qe + H

Eq. 5: (1.14)D + H + F + (3.0*0.7)Qe

Eq. 6: (1.105)D + H + F + (2.25*0.7)Qe + (0.75)L

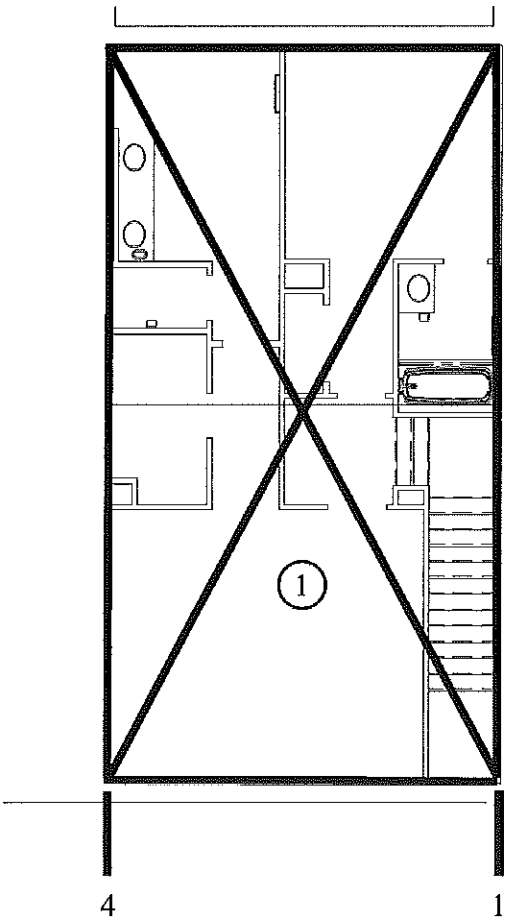
Eq. 8: (0.46)D + (2.1)Qe + H

Vertical Distribution of Shear (ASCE-7 12.8.3)

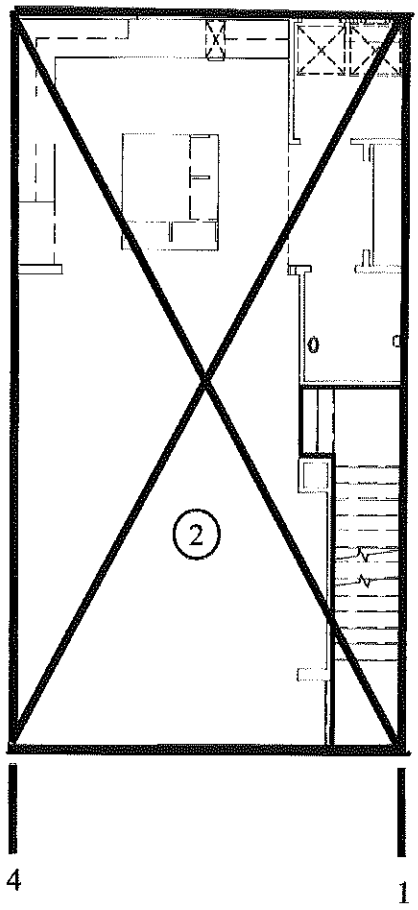
ROOF Weights	
Roof Diaphragm Weight	22575
Roof Trib. Weight	2835
Roof Line Weight	2808
TOTAL WT. at Roof	**28218**
Height Applied	31
2nd Floor Weights	
2nd Floor Dia Weight	16779
2nd Floor Trib. Weight	6400.8
2nd Floor Line Weight	5616
TOTAL WT. at 2nd Floor	**28795.8**
Height Applied	20
1st Floor Weights	
1st Floor Dia Weight	18275
1st Floor Trib. Weight	6407.1
1st Floor Line Weight	5976
TOTAL WT. at 1st Floor	**30658.1**
Height Applied	10

			Seis. Accel.		Total Base Shear
TOTAL WEIGHT	**87671.9**	x	0.145413333	=	**12749**
Roof Cvx =	0.497798	x	87671.9	=	43643
2nd Flr Cvx =	0.327736	x	87671.9	=	28733
1st Flr Cvx =	0.174466	x	87671.9	=	15296
Acceleration at Roof =	**0.224901**	x	28218	=	6346
Acceleration at 2nd Flr =	**0.145097**	x	28795.8	=	4178
Acceleration at 1st Flr =	**0.072549**	x	30658.1	=	2224
			TOTAL BASE SHEAR =		**12749**

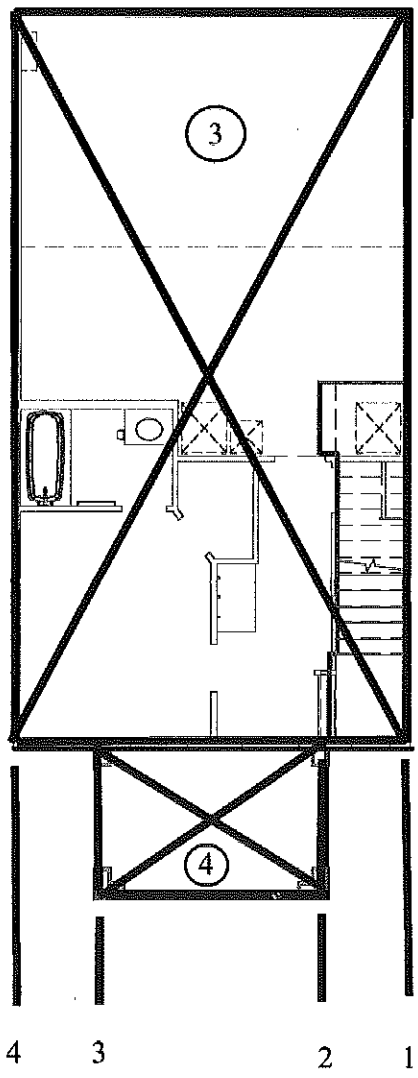
NORTH-SOUTH



ROOF DIAPHRAGMS N-S



3rd FLOOR DIAPHRAGMS N-S



2nd FLOOR DIAPHRAGMS N-S

Auburn Grove Plan 1
NORTH-SOUTH

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	39	9	8	DF SW	stack		2808
4	21	39	9	8	DF SW	stack		2808
								5616

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	18	9	0	stack																
4	13.5	9	0	stack																

Grid Lines - 2nd Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	39	9	8	DF SW	stack		2808
4	21	39	9	8	DF SW	stack		2808
								5616

Shear Walls - 2nd Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	18	9	0	stack																
4	12	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
1	0	39	9	8	DF SW	ftg	2808
2	4.5	6	4	15	strap	3	360
3	15.5	6	4	15	strap	3	360
4	21	39	9	8	DF SW	ftg	2808
							6336

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	22	9	0	ftg																
2	0	0	0	strap	3															
3	0	0	0	strap	3															
4	20	9	0	ftg																

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	1	4	24.83	29.33	15	35	15.18	78.95	318.80	1658	10.5	10.5	1418
									319	1658			1418

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
2	1	4	24.83	29.33	15	35	15.18	78.95	318.80	1658	10.5	10.5	1418
									319	1658			1418

Tributaries - 2nd Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	1	4	14.67	24.83	15	24.83	22.11	119.48	464.37	2509	10.5	10.5	3200
									464	2509			3200

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
4	1	4	14.67	24.83	15	24.83	22.11	119.48	464.37	2509	10.5	10.5	3200
									464	2509			3200

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	1	4	4.5	14.67	15	14.67	11.07	119.60	232.41	2512	10.5	10.5	3204
									232	2512			3204

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	
6	1	4	4.5	14.67	15	14.67	11.07	119.60	232.41	2512	10.5	10.5	3204
									232	2512			3204

Diaphragms - Roof

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia Wt. Lb.	Estimated Deflect. In.
1	1	4	43	25	1		2		2698	2698	829	829	829	829	22575	0.2360
									2698	2698	829	829	829	829		
										5396		1658		1658	22575	

Diaphragms - 2nd Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia Wt. Lb.	Estimated Deflect. In.
2	1	4	47	17	3		4		1449	1449	1255	1255	1255	1255	16779	0.2051
									1449	1449	1255	1255	1255	1255		
										2899		2509		2509	16779	

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia. Wt. Lb.	Estimated Deflect. In.
3	1	4	47	17	5		6		725	725	1256	1256	1256	1256	16779	0.2016
4	2	3	8	17					54	54	0	0	0	0	1496	0.0980
									779	779	1256	1256	1256	1256		
										1558		2512		2512	18275	

Total Weight N-S = 90840

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	3329	829	829	3329	185	S6	1393	0.1658												
4	3329	829	829	3329	247	S6	2043	0.1808												
	3329	829	829	<==== TOTAL LOADS AT ROOF																

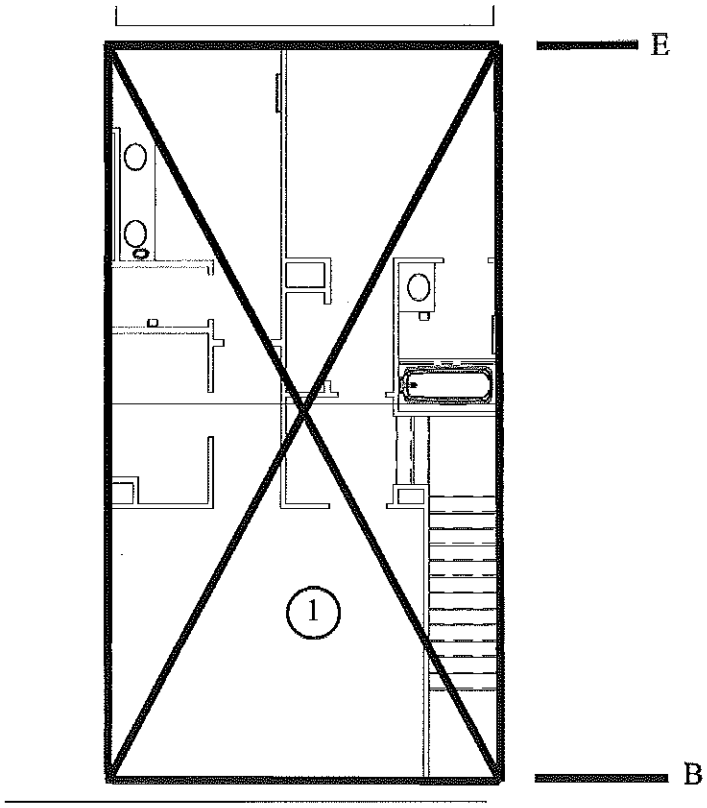
2nd Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	5186	2084	2084	5186	288	S4	2336	0.1874												
4	5186	2084	2084	5186	432	S3	3785	0.223												
	10373	4167	4167	<==== TOTAL LOADS AT 2nd Floor																

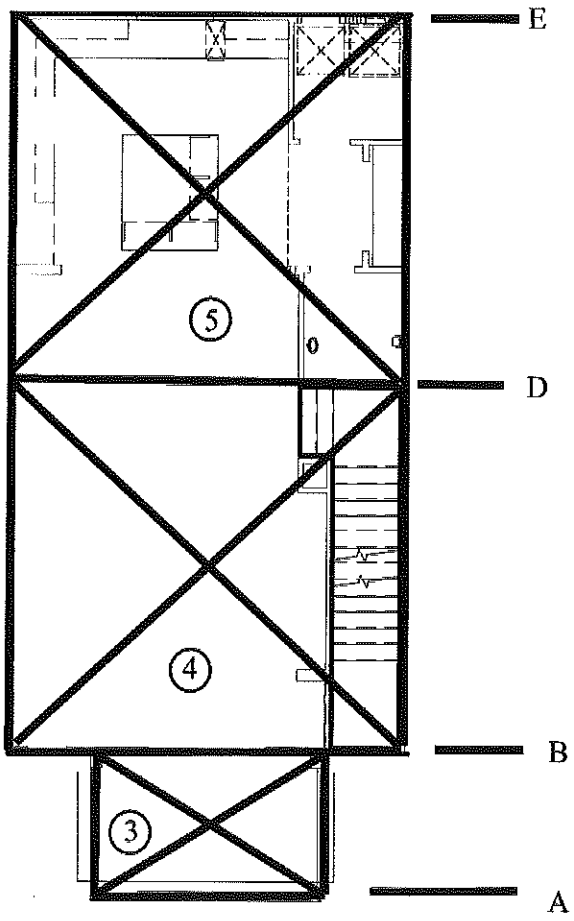
1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	6129	3339	3339	6129	279	S4	2231	0.184												
2	80	0	0	80		strap														
3	80	0	0	80		strap														
4	6155	3339	3339	6155	308	S4	2528	0.1906												
	12284	6679	6679	<==== TOTAL LOADS AT 1st Floor																

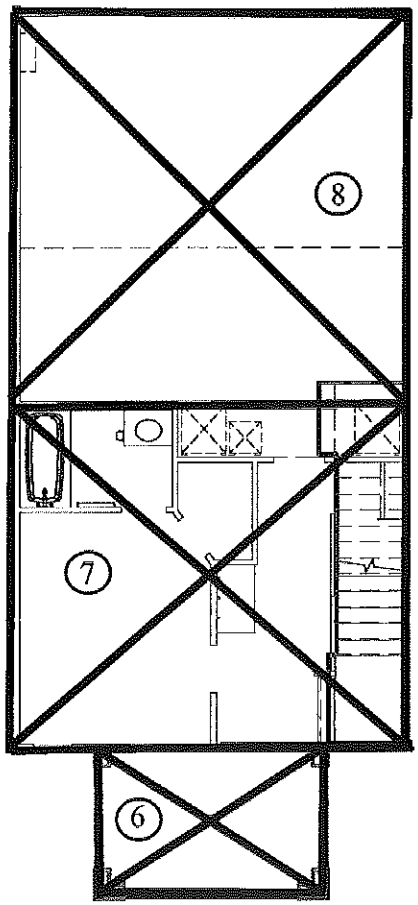
EAST-WEST



ROOF DIAPHRAGMS E-W



3rd FLOOR DIAPHRAGMS E-W



2nd FLOOR DIAPHRAGMS E-W

Auburn Grove Plan 1

EAST-WEST

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	7.67	21	9	15	DF SW	stack		2835
E	46	21	9	15	DF SW	stack		2835
								5670

Shear Walls - Roof

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	20.67	9	380	stack																
E	20.67	9	380	stack																

Grid Lines - 2nd

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
A	0	12	4	15	rotate	B		720
B	7.67	21	9	15	DF SW	stack		2835
D	26.67	6	9	8	DF SW	dia	8	432
E	46	21	9	15	DF SW	stack		2835
								6822

Shear Walls - 2nd

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
A	0	0	0	rotate	B															
B	7	9	0	stack		7	9	0	stack											
D	5	9	0	dia	8															
E	20.67	9	150	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
A	0	12	4	15	rotate	B	720
B	7.67	21	9	15	DF SW	ftg	2835
C	25.5	21	9	8	DF SW	ftg	1512
E	46	21	9	15	SP	ftg	2835
							7902

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	8.5	9	0	ftg																
C	8	9	0	ftg																
E	1.5	7	0	ftg		1.5	7	0	ftg											

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	B	E	24.83	33	8	33	14.70	0.00	563.43	0	26.835	26.835	2505.25
									563	0			2505

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	B	E	24.83	33	8	35	14.70	0.00	563.43	0	26.835	26.835	2505.25
									563	0			2505

Tributaries - 2nd Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	A	B	14.67	24.83	8	24.83	11.79	0.00	90.46	0	3.835	3.835	623.42
6	B	D	14.67	24.83	8	24.83	11.79	0.00	224.08	0	17.17	17.17	1544.32
7	D	E	14.67	24.83	8	24.83	11.79	0.00	227.97	0	36.335	36.335	1571.14
									543	0			3739

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
8	A	B	14.67	24.83	8	24.83	11.79	0.00	90.46	0	3.835	3.835	623.42
9	B	D	14.67	24.83	8	24.83	11.79	0.00	224.08	0	17.17	17.17	1544.32
10	D	E	14.67	24.83	8	24.83	11.79	0.00	227.97	0	36.335	36.335	1571.14
									543	0			3739

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
11	A	B	4.5	14.67	8	14.67	5.90	0.00	45.27	0	3.835	3.835	624.03
12	B	C	4.5	14.67	8	14.67	5.90	0.00	105.24	0	16.585	16.585	1450.65
13	C	E	4.5	14.67	8	14.67	5.90	0.00	121.00	0	35.75	35.75	1667.88
									272	0			3743

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
14	A	B	4.5	14.67	8	14.67	5.90	0.00	45.27	0	3.835	3.835	624.03
15	B	C	4.5	14.67	8	14.67	5.90	0.00	105.24	0	16.585	16.585	1450.65
16	C	E	4.5	14.67	8	14.67	5.90	0.00	121.00	0	35.75	35.75	1667.88
									272	0			3743

Diaphragms - Roof

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
1	B	E	21	25	1		3		2545	2545	0	0	0	0	20123	1.3998
									2545	2545	0	0	0	0		
										5089		0		0	20123	

Diaphragms - 2nd Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
3	A	B	21	17	5		8		244	244	0	0	0	0	2738	0.0670
4	B	D	21	17	6		9		604	604	0	0	0	0	6783	0.1974
5	D	E	21	17	7		10		615	615	0	0	0	0	6901	0.2025
									1463	1463	0	0	0	0		
										2925		0		0	16422	

Diaphragms - 1st Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia. Wt. Lb.	Estimated Deflect. in.
6	A	B	21	17	11		14		122	122	0	0	0	0	2738	0.0662
7	B	C	21	17	12		15		284	284	0	0	0	0	6365	0.1659
8	C	E	21	17	13		16		326	326	0	0	0	0	7319	0.1980
									731	731	0	0	0	0	16422	
										1463		0		0		

RESULTS

Total Weight E-W = 93335

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	3182	0	0	3182	154	S6	-681	0.1589												
E	3182	0	0	3182	154	S6	-681	0.1589												
	3182	0	0	<==== Total Load at Roof																

2nd Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	348	0	0	348		rotate														
B	4790	0	0	4790	342	S4	3023	0.2126	342	S4	3023	0.2126								
D	1281	0	0	1281	256	S6	2376	0.198												
E	4208	0	0	4208	204	S6	704	0.169												
	10628	0	0	<==== Total Load at 3rd floor																

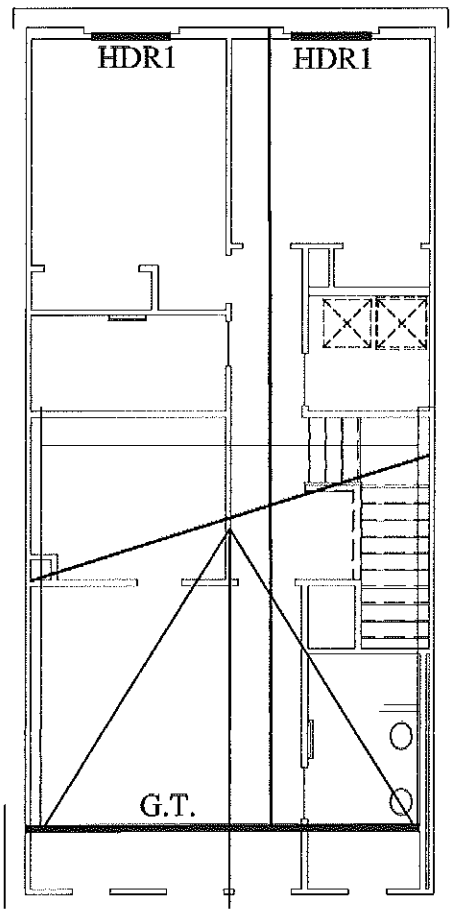
1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	174	0	0	174		rotate														
B	5575	0	0	5575	656	SS2	5883	0.2831												
C	1927	0	0	1927	241	S6	2135	0.1853												
E	4813	0	0	4813	1604	SP	13903	0.5620	1604	SP	13897	0.562								
	12316	0	0	<==== Total Load at 2nd Floor																

Plan 2

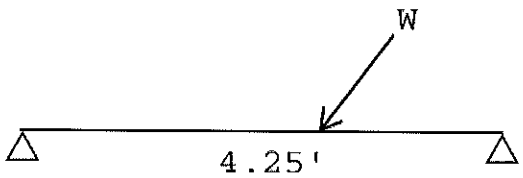
VERTICAL CALCULATIONS

ROOF



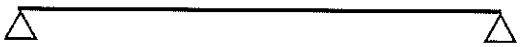
ROOF FRAMING

HDR1



W=40/2*(20+21)= 840 PLF

USE 4x6 DF#2



USE

USE

USE

USE

General Beam
HDR1

INPUT

Span (ft) =	4.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

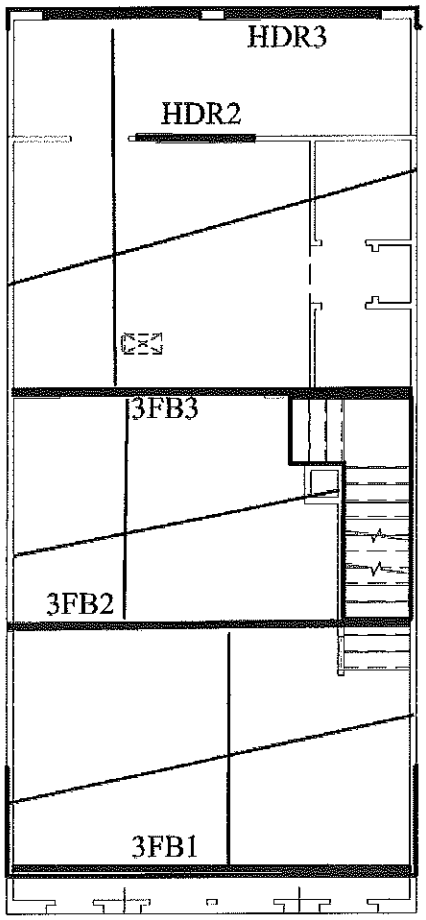
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	820	0	4.25	820

OUTPUT

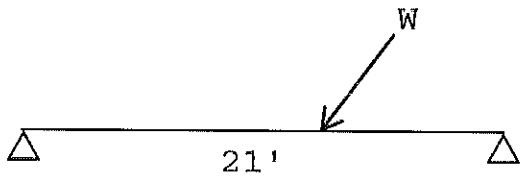
Shear (lb)	1,743
fv (psi)	109
Moment (ft-lb)	1,851
fb (psi)	1,007
Deflection (in)	0.08
L/	658
Lt Reaction =	1743
Rt Reaction =	1743

3rd FLOOR



3rd FLOOR FRAMING

3FB1

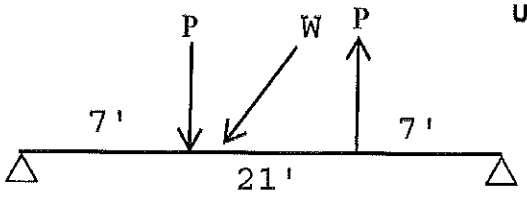


W=14/2*(40+17)+9*15=534 PLF

USE 7x14 PSL

3FB1

CASE 2

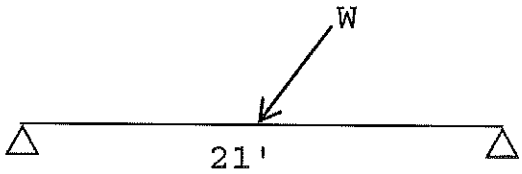


W=14/2*(40+17)+9*15=534 PLF

P=3.0 * 1323 = 3969#

USE 7x14 PSL

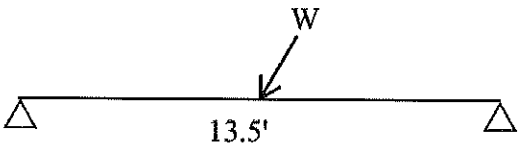
3FB2



W=24/2*(40+17)=684 PLF

USE 7x14 PSL

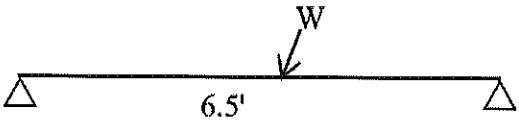
3FB3



W=26/2*(40+17)= 741 PLF

USE 3.5x14 PSL

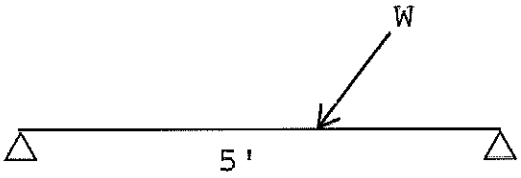
HDR2



W=20/2*(40+17)= 570 PLF

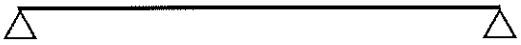
USE 4x10 D#2

HDR3

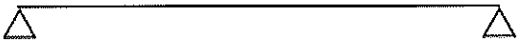


W=40/2*(20+21)+9*15+7/2*(40+17)= 1155 PLF

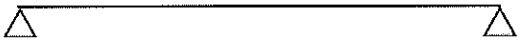
USE 6x10 DF#1



USE



USE



USE

USE

General Beam
3FB1

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	7x14
Mat'l =	PSL
b =	7
d =	14
I =	1601
E (x10 E6)	2
Beam EI	3201333333

LOADS

Load Number	Type	135	Start	End	Tot
1	Uniform	534	0	21	534

OUTPUT

Shear (lb)	5,607
fv (psi)	86
Moment (ft-lb)	29,437
fb (psi)	1,545
Deflection (in)	0.73
L/	345
Lt Reaction =	5607
Rt Reaction =	5607

General Beam
3FB1
Case 2

INPUT

Span (ft) =	21.00
LDF =	1.92
Beam =	7x14
Mat'l =	PSL
b =	7
d =	14
I =	1601
E (x10 E6)	2
Beam EI	3201333333

LOADS

Load Number	Type	Load	Start	End	Tot
1	Uniform	534	0	21	534
2	Point	3969	7	7	3969
3	Point	-3969	14	14	-3969

OUTPUT

Shear (lb)	6,930
fv (psi)	55
Moment (ft-lb)	35,313
fb (psi)	965
Deflection (in)	0.74
L/	342
Lt Reaction =	6930
Rt Reaction =	4284

General Beam
3FB2

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	7x14
Mat'l =	PSL
b =	7
d =	14
I =	1601
E (x10 E6)	2
Beam EI	3201333333

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	684	0	21.75	684

OUTPUT

Shear (lb)	7,182
fv (psi)	110
Moment (ft-lb)	37,706
fb (psi)	1,979
Deflection (in)	0.93
L/	270
Lt Reaction =	7182
Rt Reaction =	7182

General Beam
3FB3

INPUT

Span (ft) =	13.50
LDF =	1.00
Beam =	3.5x14
Mat'l =	PSL
b =	3.5
d =	14
I =	800
E (x10 E6)	2
Beam EI	1600666667

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	741	0	13.5	741

OUTPUT

Shear (lb)	5,002
fv (psi)	153
Moment (ft-lb)	16,881
fb (psi)	1,772
Deflection (in)	0.35
L/	468
Lt Reaction =	5002
Rt Reaction =	5002

General Beam
HDR2

INPUT

Span (ft) =	6.50
LDF =	1.00
Beam =	4x10
Mat'l =	DF#2
b =	3.5
d =	9.25
I =	231
E (x10 E6)	1.6
Beam EI	369344791.7

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	570	0	65	570

OUTPUT

Shear (lb)	1,853
fv (psi)	86
Moment (ft-lb)	3,010
fb (psi)	724
Deflection (in)	0.06
L/	1258
Lt Reaction =	1853
Rt Reaction =	1853

General Beam
HDR3

INPUT

Span (ft) =	7.50
LDF =	1.25
Beam =	6x10
Mat'l =	DF#1
b =	5.5
d =	9.25
I =	363
E (x10 E6)	1.6
Beam EI	580398958.3

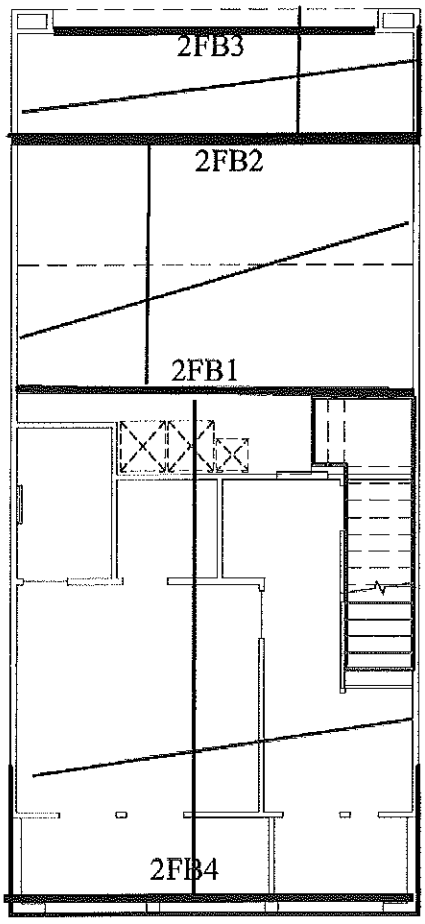
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1154.5	0	7.5	1154.5

OUTPUT

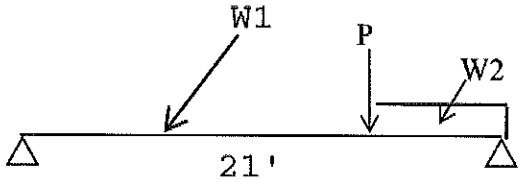
Shear (lb)	4,329
fv (psi)	102
Moment (ft-lb)	8,118
fb (psi)	994
Deflection (in)	0.14
L/	636
Lt Reaction =	4329
Rt Reaction =	4329

2nd FLOOR



2nd FLOOR FRAMING

2FB1

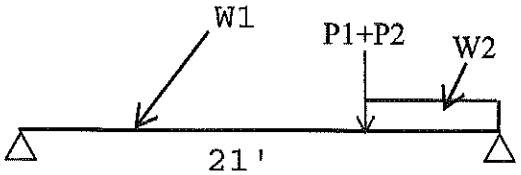


W1=16/2*(40+17)= 456 PLF
W2=741 PLF
P=5002# (3FB2)

USE 7x18 PSL

2FB1

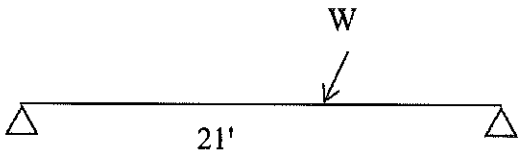
CASE 2



W1=16/2*(40+17)= 456 PLF
W2=741 PLF
P1=5002# (3FB2),P2=3.0*8677=31033#

USE 7x18 PSL

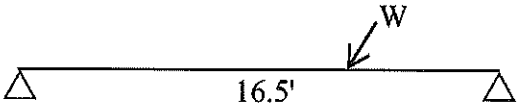
2FB2



W=19/2*(40+17)+19/2*(40+17)=1083 PLF

USE 5 1/4x18 PSL

2FB3

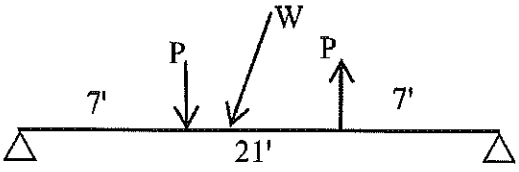


W=40/2*(20+21)+19*15+7/2*57+7/2*57 = 1504 PLF

USE 5 1/4x18 PSL

2FB4

CASE 2



P= 3.0 x 2119 = 6357
W= 200 PLF

USE

General Beam
2FB1

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	5.25x24
Mat'l =	PSL
b =	5.25
d =	24
I =	6048
E (x10 E6)	2
Beam EI	12096000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	456	0	21	456
2	Point	5002	13.5	13.5	5002
3	Partial Uniform	741	13.5	21	741

OUTPUT

Shear (lb)	12,569
fv (psi)	150
Moment (ft-lb)	60,514
fb (psi)	1,441
Deflection (in)	0.32
L/	777
Lt Reaction =	7567
Rt Reaction =	12569

General Beam
2FB1
Case 2

INPUT

Span (ft) =	21.00
LDF =	1.92
Beam =	5.25x24
Mat'l =	PSL
b =	3.25
d =	24
I =	3744
E (x10 E6)	2
Beam EI	7488000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	456	0	21	456
2	Point	31033	13.5	13.5	31033
3	Partial Uniform	741	13.5	21	741

OUTPUT

Shear (lb)	29,303
fv (psi)	293
Moment (ft-lb)	185,463
fb (psi)	3,715
Deflection (in)	1.56
L/	162
Lt Reaction =	16864
Rt Reaction =	29303

General Beam
2FB2

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1083	0	21	1083

OUTPUT

Shear (lb)	11,372
fv (psi)	181
Moment (ft-lb)	59,700
fb (psi)	2,527
Deflection (in)	0.93
L/	271
Lt Reaction =	11372
Rt Reaction =	11372

General Beam
2FB3

INPUT

Span (ft) =	16.50
LDF =	1.00
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1504	0	16.5	1504

OUTPUT

Shear (lb)	12,408
fv (psi)	197
Moment (ft-lb)	51,183
fb (psi)	2,166
Deflection (in)	0.49
L/	403
Lt Reaction =	12408
Rt Reaction =	12408

General Beam

2FB4

Case 2

INPUT

Span (ft) =	21.00
LDF =	1.92
Beam =	3.5x14
Mat'l =	PSL
b =	3.5
d =	14
I =	800
E (x10 E6)	2
Beam EI	1600666667

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	200	0	21	200
2	Point	6357	7	7	6357
3	Point	-6357	14	14	-6357

OUTPUT

Shear (lb)	4,910
fv (psi)	78
Moment (ft-lb)	24,435
fb (psi)	1,336
Deflection (in)	0.61
L/	410
Lt Reaction =	4219
Rt Reaction =	-19

LATERAL CALCULATIONS

Auburn Grove Plan 2

Updated 11/10/17

Building Dead Loads

Roof =	25	psf
Floor =	17	psf
Ext. 2x6 Wall =	17	psf
Ext. 2x4 Wall =	15	psf
Int. Wall =	8	psf

Wind Loads (Directional Procedure from ASCE-7 '10 - Chapter 27)

Part 2 ? =	Yes	
Wind Speed (MPH) =	110	
Exposure Cat. =	B	
Mean Rf. Ht. (ft.) =	30	(15,20,30,40,50,60,70,80,90,100)
Rf Slope (X:12) =	5	
Building Category	II	
Adjustment Factor	0.713	
ROOF ANGLE	22.61986	

ROOF ZONE PRESSURES		x ADJ. FACTOR FOR EXPOSURE
1 - Case 1	10.2	7.3
1 - Case 2	-17.7	-12.6
2 - Case 1	-8.5	-6.1
2 - Case 2	-17.8	-12.7
3	-27.4	-19.5
4	-24.4	-17.4
5	-20.0	-14.3

LATERAL LOADS

WALLS

WALL LOAD	19.60 psf	
ASD WALL LOAD	**11.76 psf**	<== Use this for all wall wind loads

ROOFS

Zone 1 - case 1	2.80	
Zone 2 - case 1	-4.85	
TOTAL case 1	7.65	
Zone 1 - case 2	-4.85	
Zone 2 - case 2	-4.88	
TOTAL case 1	0.03	
MAXIMUM ROOF	7.65 psf	
ASD MAX. ROOF	**4.59 psf**	<== Use this for all roof wind loads

Sieismic Loads

Earthquake Data (CBC 1603.1.5)			**Irregularities**	Yes or No	
1 . I =	1		TABLE 12.3-1		
2. Ss =	1.558		1a	no	0
S1 =	0.6		1b	no	0
3. Site Class	D	<== From Soils Engr	2	No	0
4. SDs =	**1.039**	<== From Soils Engr	3	No	0
SD1 =	0.600		4	yes	1
5. Seismic Cat.	D	<== From Soils Engr	TABLE 12.3-2		0
6. Basic System =	Bearing Wall System		4	No	0
7. Design Base Shear (SEE BELOW)				Irreg. =	1.25

BASE SHEAR (ASCE-7 12.8)

V= Cs*W

R=	6.5	
Cs=(SDs)/(R/I)=	0.159795	
Rho =	1.3	
Eh =Rho*V=	**0.207733 x W**	<== Seismic Base Acceleration

Period (ASCE-7 12.8.2.1)

Hn (ft)	=	30	
Ct	=	0.02	<== From Table 12.8-2
x	=	0.75	<== From Table 12.8-2
Ta= Ct*Hn^x =		**0.256372**	

Therefore k=1 in Equation 12.8-12

BASIC LOAD COMBINATIONS(ASD)

			Acceleration
Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Qe	**0.7*QE =**	**0.145413333**	**= For ASD**
Eq. 6: (1.0+0.105*SDS)D +H + F + 0.525*Qe + 0.75*L			
Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Qe + H			

BASIC LOAD COMBINATIONS With Overstrength Factor (ASD) Omega = 3.0

Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Omega*Qe
Eq. 6: (1.0+0.105*SDS)D + H + F + 0.525*Omega*Qe + 0.75*L
Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Omega*Qe + H

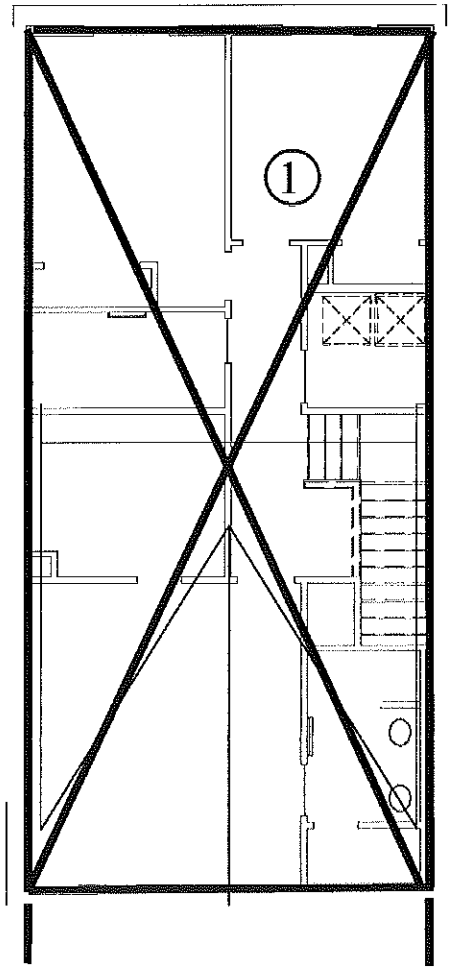
Eq. 5: (1.14)D + H + F + (3.0*0.7)Qe
Eq. 6: (1.105)D + H + F + (2.25*0.7)Qe + (0.75)L
Eq. 8: (0.46)D + (2.1)Qe + H

Vertical Distribution of Shear (ASCE-7 12.8.3)

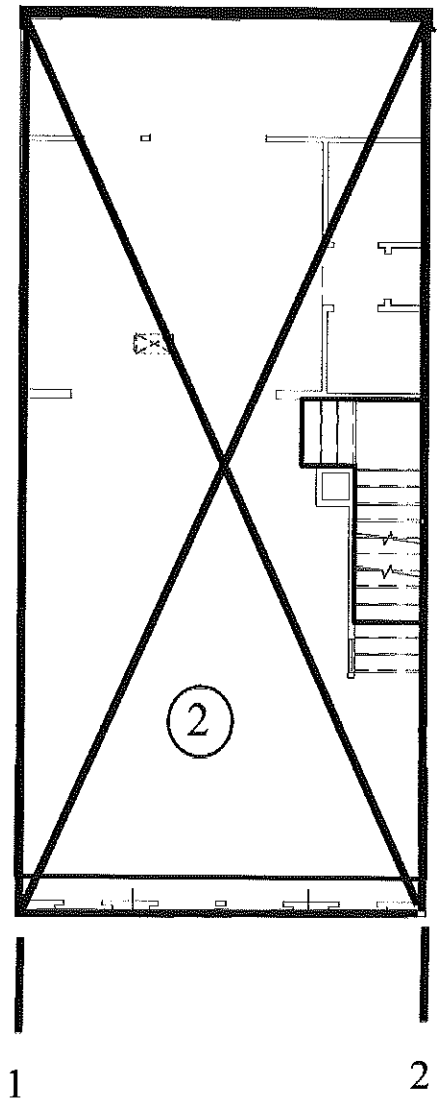
ROOF Weights	
Roof Diaphragm Weight	25062.75
Roof Trib. Weight	2879.55
Roof Line Weight	2808
TOTAL WT. at Roof	**30750.3**
Height Applied	31
2nd Floor Weights	
2nd Floor Dia Weight	17042.67
2nd Floor Trib. Weight	6501.384
2nd Floor Line Weight	6192
TOTAL WT. at 2nd Floor	**29736.05**
Height Applied	20
1st Floor Weights	
1st Floor Dia Weight	17042.67
1st Floor Trib. Weight	6507.783
1st Floor Line Weight	6192
TOTAL WT. at 1st Floor	**29742.45**
Height Applied	10

			Seis. Accel.		**Total Base Shear**
TOTAL WEIGHT	**90228.81**	x	0.145413333	=	**13120**
Roof Cvx =	0.516558	x	90228.807	=	46608
2nd Flr Cvx =	0.322271	x	90228.807	=	29078
1st Flr Cvx =	0.16117	x	90228.807	=	14542
Acceleration at Roof =	**0.220404**	x	30750.3	=	6777
Acceleration at 2nd Flr =	**0.142196**	x	29736.054	=	4228
Acceleration at 1st Flr =	**0.071098**	x	29742.453	=	2115
			TOTAL BASE SHEAR =		**13120**

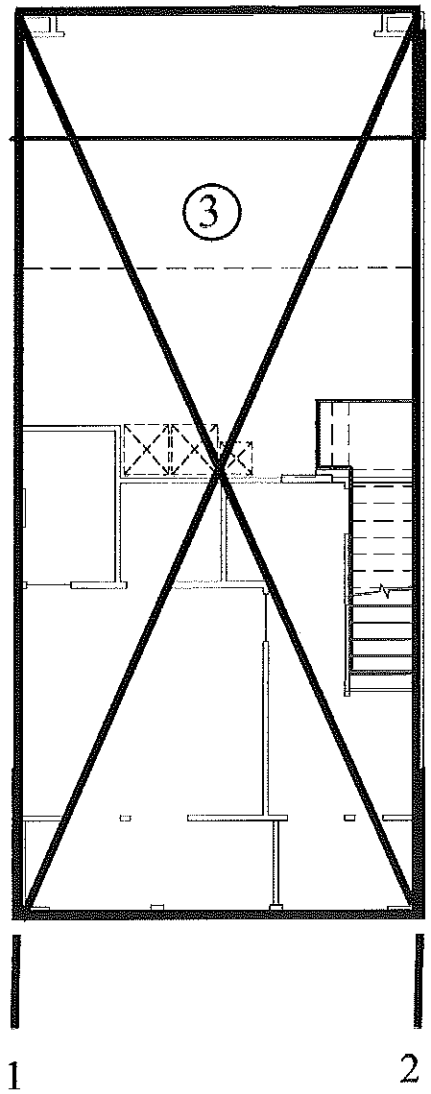
NORTH-SOUTH



ROOF DIAPHRAGMS N-S



3rd FLOOR DIAPHRAGMS N-S



2nd FLOOR DIAPHRAGMS N-S

Auburn Grove Plan 2
NORTH-SOUTH

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	39	9	8	DF SW	stack		2808
2	21.33	39	9	8	DF SW	stack		2808

5616

Shear Walls - Roof

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	11	9	0	stack																
2	11	9	0	stack																

Grid Lines - 2nd Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	47	9	8	DF SW	stack		3384
2	21.33	47	9	8	DF SW	stack		3384

6768

Shear Walls - 2nd Floor

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	12	9	0	stack																
2	12	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
1	0	39	9	8	DF SW	flg	2808
2	21.33	39	9	8	DF SW	flg	2808

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	20	9	0	ftg																
2	22	9	0	ftg																

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	1	2	24.83	29.33	15	35	14.88	78.95	317.33	1684	10.665	10.665	1440
									317	1684			1440

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
2	1	2	24.83	29.33	15	35	14.88	78.95	317.33	1684	10.665	10.665	1440
									317	1684			1440

Tributaries - 2nd Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	1	2	14.67	24.83	15	24.83	21.67	119.48	462.24	2549	10.665	10.665	3251
									462	2549			3251

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
4	1	2	14.67	24.83	15	24.83	21.67	119.48	462.24	2549	10.665	10.665	3251

3251

2549

462

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	1	2	4.5	14.67	15	14.67	10.85	119.60	231.35	2551	10.665	10.665	3254
									231	2551			3254

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	
6	1	2	4.5	14.67	15	14.67	10.85	119.60	231.35	2551	10.665	10.665	3254
									231	2551			3254

Diaphragms - Roof

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
1	1	2	47	25	1		2		2921	2921	842	842	842	842	25063	0.2368
									2921	2921	842	842	842	842		
										5841		1684		1684	25063	

Diaphragms - 2nd Floor

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
2	1	2	47	17	3		4		1443	1443	1274	1274	1274	1274	17043	0.2088
									1443	1443	1274	1274	1274	1274		
										2886		2549		2549	17043	

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia. Wt. Lb.	Estimated Deflect. In.
3	1	2	47	17	5		6		722	722	1276	1276	1276	1276	17043	0.2056
									722	722	1276	1276	1276	1276		
										1443		2551		2551	17043	
												Total Weight N-S =			93037	

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	3540	842	842	3540	322	S4	2790	0.1997												
2	3540	842	842	3540	322	S4	2790	0.1997												
	3540	842	842	<==== TOTAL LOADS AT ROOF																

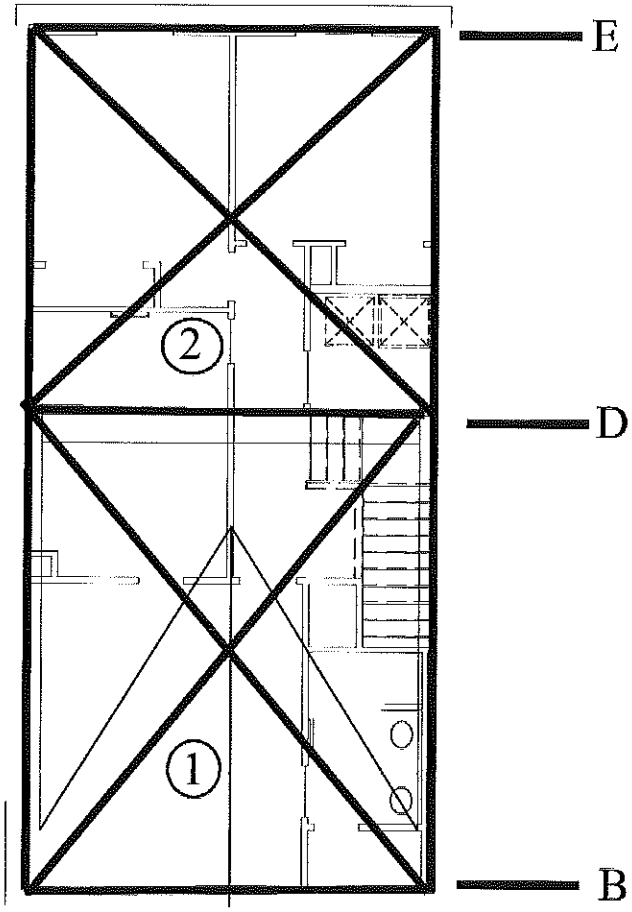
2nd Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	5464	2116	2116	5464	455	S3	3998	0.2281												
2	5464	2116	2116	5464	455	S3	3998	0.2281												
	10927	4233	4233	<==== TOTAL LOADS AT 2nd Floor																

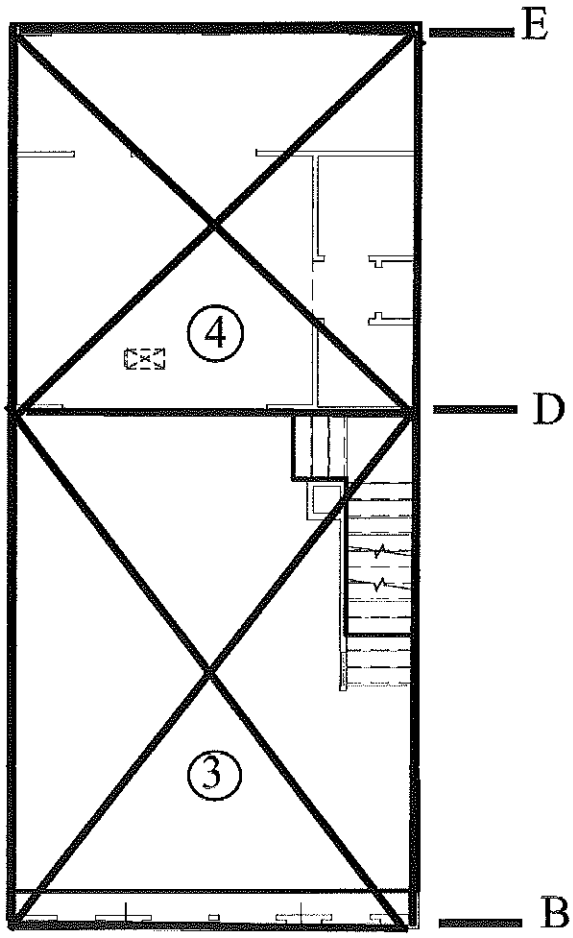
1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	6385	3392	3392	6385	319	S4	2633	0.193												
2	6385	3392	3392	6385	290	S4	2337	0.1864												
	12769	6784	6784	<==== TOTAL LOADS AT 1st Floor																

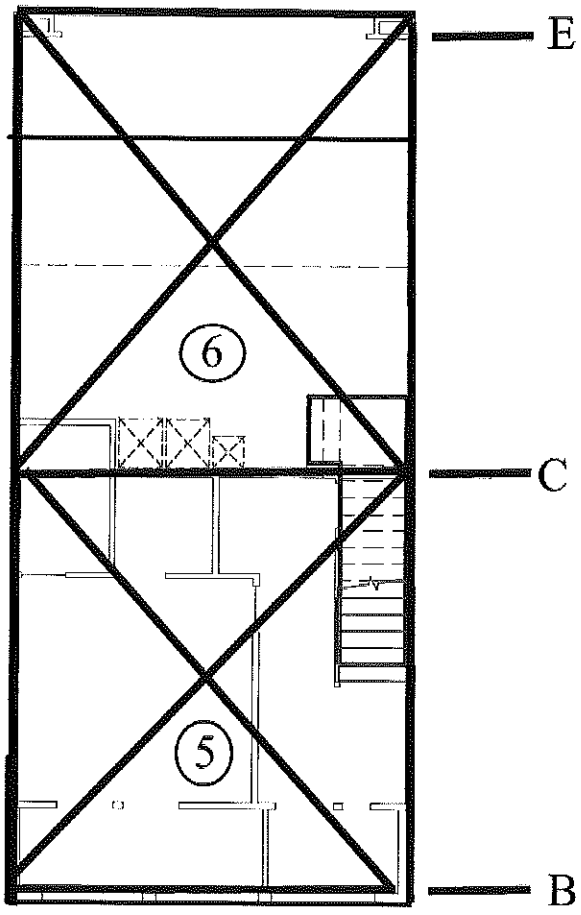
EAST-WEST



ROOF DIAPHRAGMS E-W



3rd FLOOR DIAPHRAGMS E-W



2nd FLOOR DIAPHRAGMS E-W

Auburn Grove Plan 2

EAST-WEST

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	0	21	9	15	DF SW	stack		2835
D	27	10	9	8	DF SW	stack		720
E	47	21	9	15	DF SW	stack		2835
								6390

Shear Walls - Roof

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	7.33	9	0	stack		7.33	9	0	stack											
D	10	9	0	stack																
E	21.33	9	0	stack																

Grid Lines - 2nd

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	0	21	9	15	DF SW	stack		2835
D	27	8	9	8	DF SW	dia	6	576
E	47	21	9	15	DF SW	stack		2835
								6246

Shear Walls - 2nd

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	7.33	9	0	stack		7.33	9	0	stack											
D	7.5	9	0	dia	6															
E	8	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
B	0	21	9	15	DF SW	ftg	2835
C	22.75	21	9	8	DF SW	ftg	1512
E	47	21	9	15	SP	ftg	2835
							7182

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
B	5	9	0	ftg																
C	8	9	0	ftg																
E	1.5	7	0	ftg		1.5	7	0	ftg											

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	B	D	24.83	33	8	33	14.41	0.00	388.95	0	13.5	13.5	1764.72
2	D	E	24.83	33	8	33	14.41	0.00	288.11	0	37	37	1307.20
									677	0			3072

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	B	D	24.83	33	8	35	14.41	0.00	388.95	0	13.5	13.5	1764.72
4	D	E	24.83	33	8	35	14.41	0.00	288.11	0	37	37	1307.20
									677	0			3072

Tributaries - 2nd Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	B	D	14.67	24.83	8	24.83	11.56	0.00	312.06	0	13.5	13.5	2194.56
6	D	E	14.67	24.83	8	24.83	11.56	0.00	231.15	0	37	37	1625.60
									543	0			3820

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
7	B	D	14.67	24.83	8	24.83	11.56	0.00	312.06	0	13.5	13.5	2194.56
8	D	E	14.67	24.83	8	24.83	11.56	0.00	231.15	0	37	37	1625.60
									543	0			3820

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
9	B	C	4.5	14.67	8	14.67	5.78	0.00	131.60	0	11.375	11.375	1850.94
10	C	E	4.5	14.67	8	14.67	5.78	0.00	140.28	0	34.875	34.875	1972.98
									272	0			3824

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
11	B	C	4.5	14.67	8	14.67	5.78	0.00	131.60	0	11.375	11.375	1850.94
12	C	E	4.5	14.67	8	14.67	5.78	0.00	140.28	0	34.875	34.875	1972.98
									272	0			3824

Diaphragms - Roof

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
1	B	D	21	25	1		3		1757	1757	0	0	0	0	14175	0.5016
2	D	E	21	25	2		4		1301	1301	0	0	0	0	10500	0.2583
									3058	3058	0	0	0	0		
										6116		0		0	24675	

Diaphragms - 2nd Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
3	B	D	21	17	5		7		841	841	0	0	0	0	9639	0.3600
4	D	E	21	17	6		8		623	623	0	0	0	0	7140	0.2124
									1465	1465	0	0	0	0		
										2929		0		0	16779	

Diaphragms - 1st Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia. Wt. Lb.	Estimated Deflect. in.
5	B	C	21	17	9		11		355	355	0	0	0	0	8122	0.2277
6	C	E	21	17	10		12		378	378	0	0	0	0	8657	0.2497
									732	732	0	0	0	0	16779	
										1465		0		0		

RESULTS

Total Weight E-W = 99483

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	2381	0	0	2381	162	S6	1323	0.1673	162	S6	1323	0.1673								
D	3216	0	0	3216	322	S4	2838	0.201												
E	1926	0	0	1926	90	S6	260	0.1457												
	5142	0	0	<==== Total Load at Roof																

2nd Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	3626	0	0	3626	247	S6	2119	0.1882	247	S6	2119	0.1882								
D	4763	0	0	4763	635	S2	5838	0.2828												
E	2952	0	0	2952	369	S3	3231	0.2162												
	11341	0	0	<==== Total Load at 3rd floor																

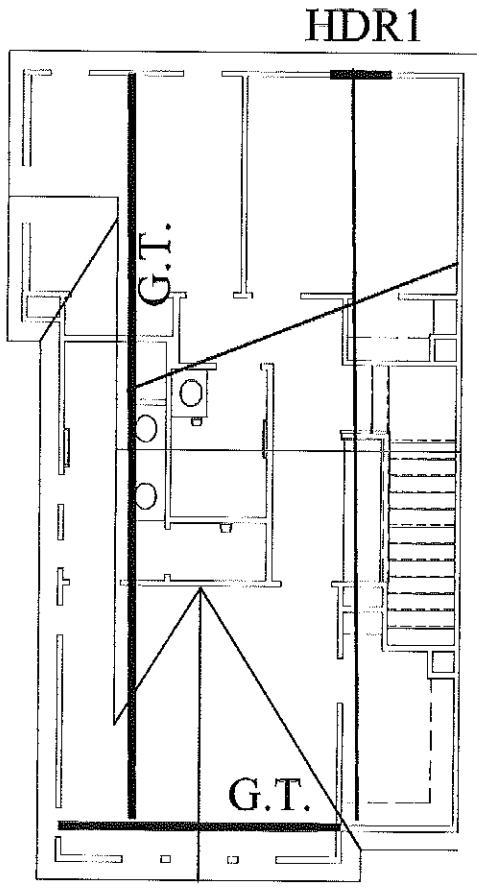
1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	4182	0	0	4182	836	SS2	7855	0.3581												
C	4768	0	0	4768	596	S2	5452	0.2709												
E	4367	0	0	4367	1456	SP	12610	0.5191	1456	SP	12604	0.5191								
	13317	0	0	<==== Total Load at 2nd Floor																

Plan 3

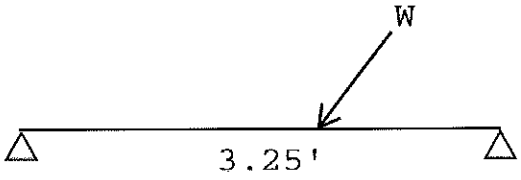
VERTICAL CALCULATIONS

ROOF



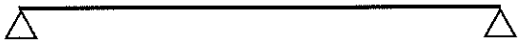
ROOF FRAMING

HDR1



W=42/2*(20+21)= 861 PLF

USE 4x6 DF#2



USE

USE

USE

USE

General Beam
HDR1

INPUT

Span (ft) =	3.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

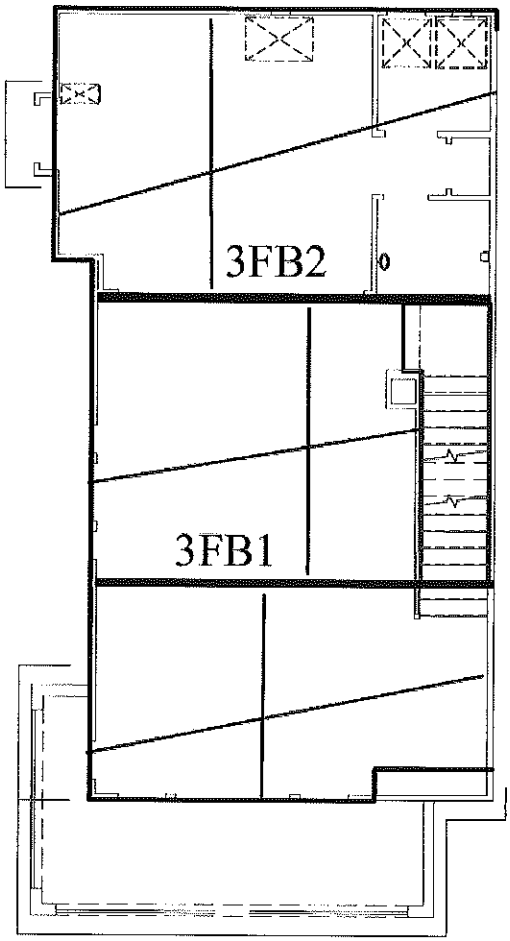
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	861	0	3.25	861

OUTPUT

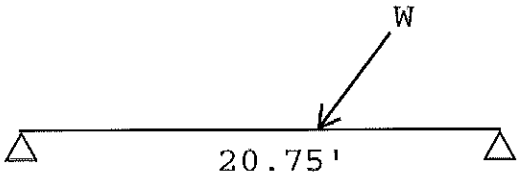
Shear (lb)	1,399
fv (psi)	87
Moment (ft-lb)	1,137
fb (psi)	618
Deflection (in)	0.03
L/	1401
Lt Reaction =	1399
Rt Reaction =	1399

3rd FLOOR



3rd FLOOR FRAMING

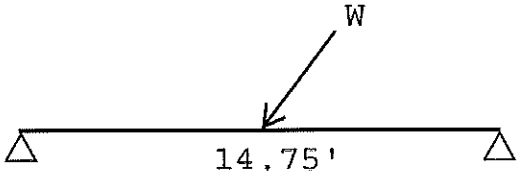
3FB1



W=26/2*(40+17)=741 PLF

USE 7x14 LSL

3FB2



W=30/2*(40+17)=855 PLF

USE 3 1/2x14 PSL

USE

USE

USE

General Beam
3FB1

INPUT

Span (ft) =	20.75
LDF =	1.00
Beam =	7x14
Mat'l =	PSL
b =	7
d =	14
I =	1601
E (x10 E6)	2
Beam EI	3201333333

LOADS

Load Number	Type	Load	Start	End	Tot
1	Uniform	741	0	20.75	741

OUTPUT

Shear (lb)	7,688
fv (psi)	118
Moment (ft-lb)	39,881
fb (psi)	2,093
Deflection (in)	0.97
L/	258
Lt Reaction =	7688
Rt Reaction =	7688

General Beam
3FB2

INPUT

Span (ft) =	14.75
LDF =	1.00
Beam =	3.5x14
Mat'l =	PSL
b =	3.5
d =	14
I =	800
E (x10 E6)	2
Beam EI	1600666667

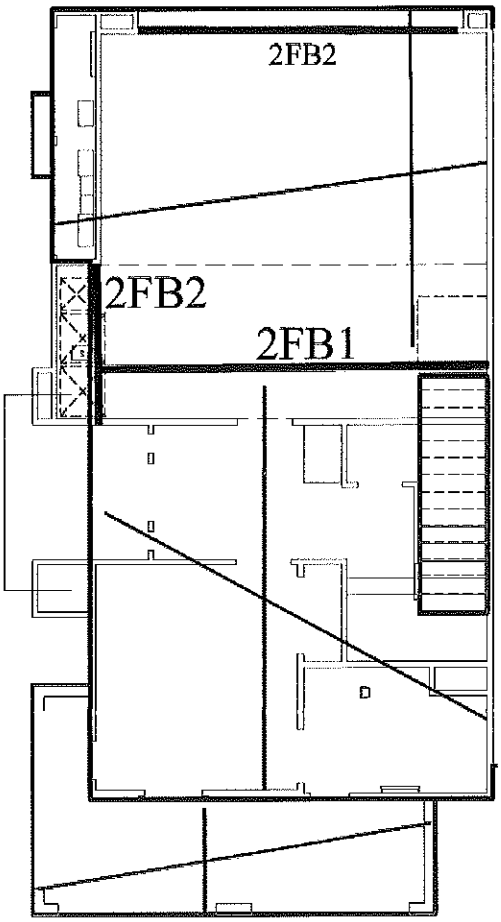
LOADS

Load Number	Type	Load	Start	End	Tot
1	Uniform	855	0	14.75	855

OUTPUT

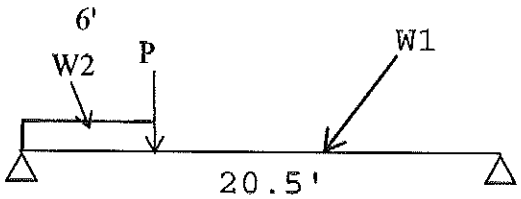
Shear (lb)	6,306
fv (psi)	193
Moment (ft-lb)	23,252
fb (psi)	2,440
Deflection (in)	0.57
L/	311
Lt Reaction =	6306
Rt Reaction =	6306

2nd FLOOR



2nd FLOOR FRAMING

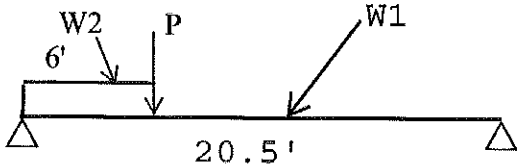
2FB1



W1=20/2*(40+17)= 570 PLF
W2=741 PLF
P=7688# (3FB2)

USE 5 1/4x24 PSL

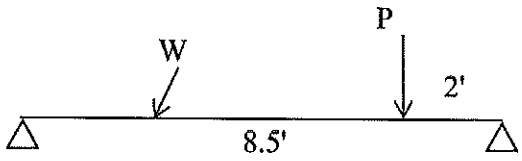
2FB1
CASE 2



W1=20/2*(40+17)= 570 PLF
W2=741 PLF
P=7688# + 3.0 x (3881+6097)=37622#

USE 5 1/4x24 PSL

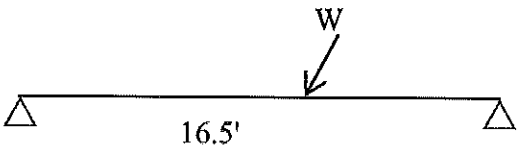
2FB2



W= 200 PLF
P=8788# (2FB1)

USE 3 1/2x14 PSL

2FB3



W=40/2*(20+21)+19*15+16/2*57+14/2*57 = 1960 PLF

USE 5 1/4x18 PSL

USE

General Beam
2FB1

INPUT

Span (ft) =	20.75
LDF =	1.00
Beam =	5.25x24
Mat'l =	PSL
b =	5.25
d =	24
I =	6048
E (x10 E6)	2
Beam EI	12096000000

LOADS

Load Number	Type	135	Start	End	Tot
1	Uniform	570	0	20.75	570
2	Point	7688	6	6	7688
3	Partial Uniform	741	0	6	741

OUTPUT

Shear (lb)	15,182
fv (psi)	181
Moment (ft-lb)	67,487
fb (psi)	1,607
Deflection (in)	0.41
L/	614
Lt Reaction =	15182
Rt Reaction =	8780

General Beam
2FB1
Case 2

INPUT

Span (ft) =	20.75
LDF =	1.92
Beam =	5.25x24
Mat'l =	PSL
b =	5.25
d =	24
I =	6048
E (x10 E6)	2
Beam EI	12096000000

LOADS

Load Number	Type	135	Start	End	Tot
1	Uniform	570	0	20.75	570
2	Point	37622	6	6	37622
3	Partial Uniform	741	0	6	741

OUTPUT

Shear (lb)	36,460
fv (psi)	226
Moment (ft-lb)	195,006
fb (psi)	2,418
Deflection (in)	1.03
L/	243
Lt Reaction =	36460
Rt Reaction =	17435

General Beam
2FB2

INPUT

Span (ft) =	8.50
LDF =	1.00
Beam =	3.5x14
Mat'l =	PSL
b =	3.5
d =	14
I =	800
E (x10 E6)	2
Beam EI	1600666667

LOADS

Load Number	Type	Tot Load	Start	End	Tot
1	Point	8788	6.5	6.5	8788
2	Uniform	200	0	8.5	200

OUTPUT

Shear (lb)	7,570
fv (psi)	232
Moment (ft-lb)	14,676
fb (psi)	1,540
Deflection (in)	0.10
L/	1072
Lt Reaction =	2918
Rt Reaction =	7570

General Beam
2FB3

INPUT

Span (ft) =	16.50
LDF =	1.25
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot Load	Start	End	Tot
1	Uniform	1960	0	17.5	1960

OUTPUT

Shear (lb)	16,170
fv (psi)	205
Moment (ft-lb)	66,701
fb (psi)	2,259
Deflection (in)	0.64
L/	309
Lt Reaction =	16170
Rt Reaction =	16170

LATERAL CALCULATIONS

Auburn Grove Plan 3

Updated 11/10/17

Building Dead Loads

Roof =	25	psf
Floor =	17	psf
Ext. 2x6 Wall =	17	psf
Ext. 2x4 Wall =	15	psf
Int. Wall =	8	psf

Wind Loads (Directional Procedure from ASCE-7 '10 - Chapter 27)

Part 2 ? =	Yes	
Wind Speed (MPH) =	110	
Exposure Cat. =	B	
Mean Rf. Ht. (ft.) =	30	(15,20,30,40,50,60,70,80,90,100)
Rf Slope (X:12) =	5	
Building Category	II	
Adjustment Factor	0.713	
ROOF ANGLE	22.61986	

ROOF ZONE PRESSURES		x ADJ. FACTOR FOR EXPOSURE
1 - Case 1	10.2	7.3
1 - Case 2	-17.7	-12.6
2 - Case 1	-8.5	-6.1
2 - Case 2	-17.8	-12.7
3	-27.4	-19.5
4	-24.4	-17.4
5	-20.0	-14.3

LATERAL LOADS

WALLS

WALL LOAD	19.60 psf	
ASD WALL LOAD	**11.76 psf**	<== Use this for all wall wind loads

ROOFS

Zone 1 - case 1	2.80	
Zone 2 - case 1	-4.85	
TOTAL case 1	7.65	
Zone 1 - case 2	-4.85	
Zone 2 - case 2	-4.88	
TOTAL case 1	0.03	
MAXIMUM ROOF	7.65 psf	
ASD MAX. ROOF	**4.59 psf**	<== Use this for all roof wind loads

Sieismic Loads

Earthquake Data (CBC 1603.1.5)			**Irregularities**	Yes or No	
1 . I =	1		TABLE 12.3-1		
2. Ss =	1.558		1a	no	0
S1 =	0.6		1b	no	0
3. Site Class	D	<== From Soils Engr	2	No	0
4. SDs =	**1.039**	<== From Soils Engr	3	No	0
SD1 =	0.600		4	yes	1
5. Seismic Cat.	D	<== From Soils Engr	TABLE 12.3-2		0
6. Basic System =	Bearing Wall System		4	No	0
7. Design Base Shear (SEE BELOW)				Irreg. =	1.25

BASE SHEAR (ASCE-7 12.8)

V= Cs*W

R=	6.5	
Cs=(SDs)/(R/I)=	0.159795	
Rho =	1.3	
Eh =Rho*V=	**0.207733 x W**	<== Seismic Base Acceleration

Period (ASCE-7 12.8.2.1)

Hn (ft)	=	30	
Ct	=	0.02	<== From Table 12.8-2
x	=	0.75	<== From Table 12.8-2
Ta= Ct*Hn^x =		**0.256372**	

Therefore k=1 in Equation 12.8-12

BASIC LOAD COMBINATIONS(ASD) **Acceleration**

Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Qe **0.7*QE = 0.145413333 = For ASD**

Eq. 6: (1.0+0.105*SDS)D +H + F + 0.525*Qe + 0.75*L

Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Qe + H

BASIC LOAD COMBINATIONS With Overstrength Factor (ASD) Omega = 3.0

Eq. 5: (1.0+0.14*SDS)D + H + F + 0.7*Omega*Qe

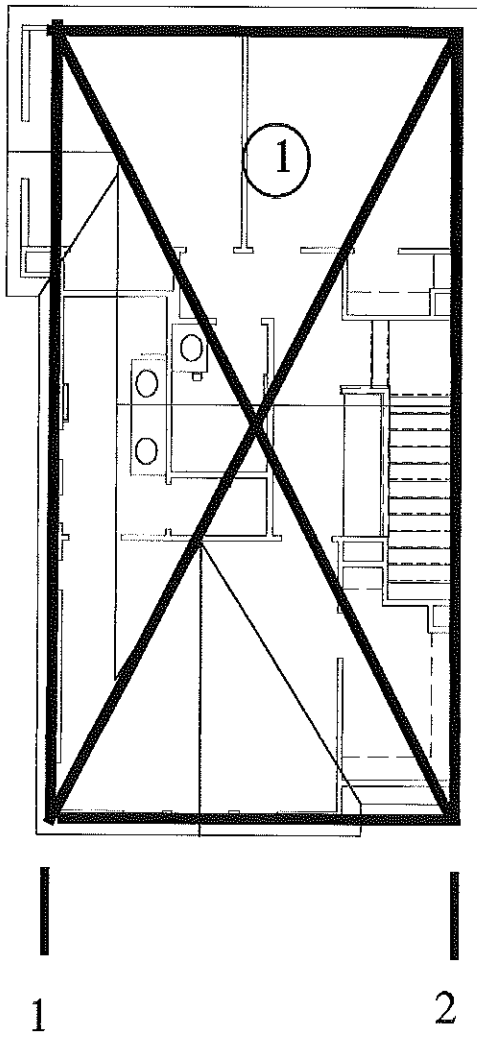
Eq. 6: (1.0+0.105*SDS)D + H + F + 0.525*Omega*Qe + 0.75*L

Eq. 8: (0.6-0.14SDS)D + 0.7*Rho*Omega*Qe + H

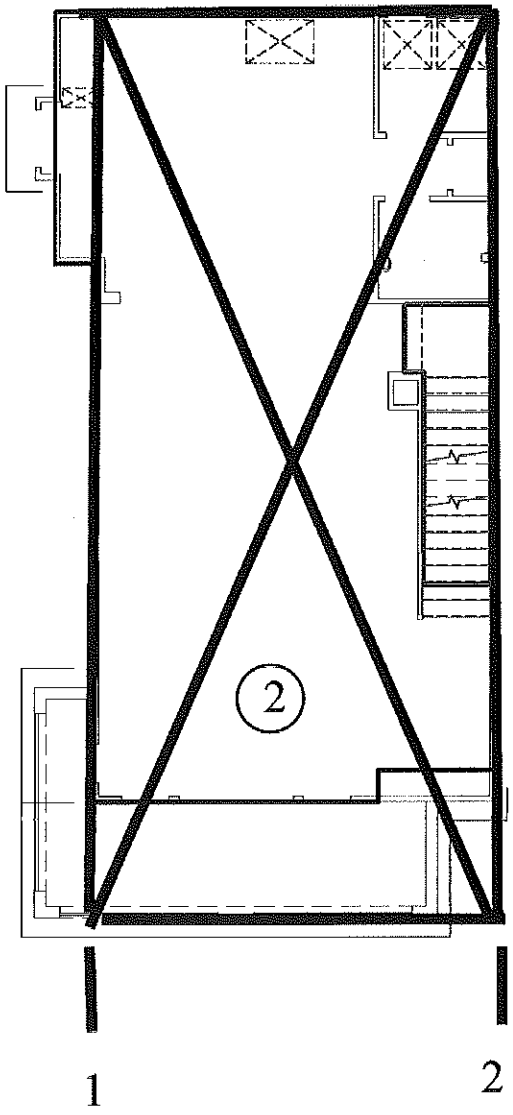
Eq. 5: (1.14)D + H + F + (3.0*0.7)Qe

Eq. 6: (1.105)D + H + F + (2.25*0.7)Qe + (0.75)L

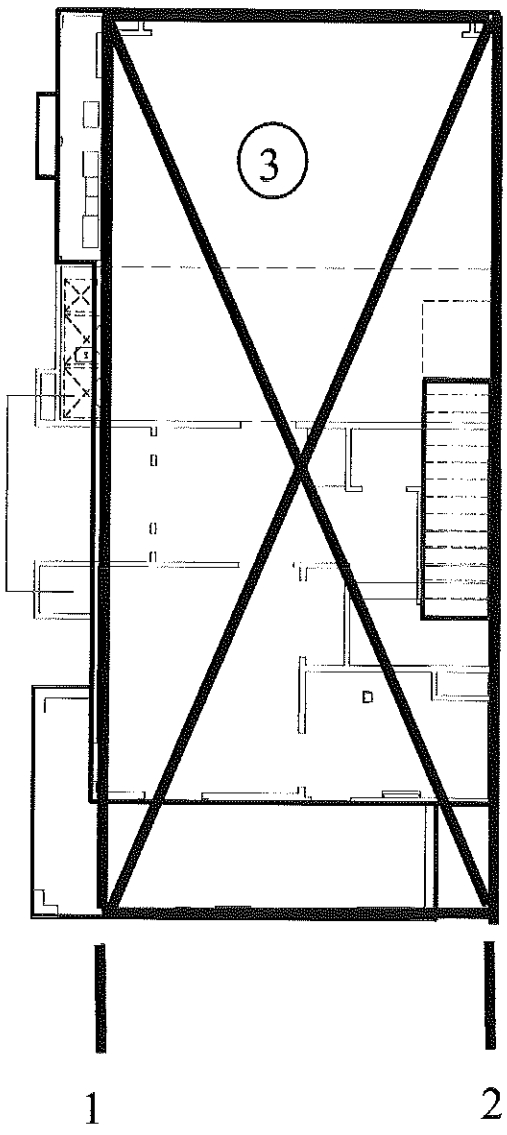
Eq. 8: (0.46)D + (2.1)Qe + H



ROOF DIAPHRAGMS N-S



3rd FLOOR DIAPHRAGMS N-S



2nd FLOOR DIAPHRAGMS N-S

Auburn Grove Plan 3
NORTH-SOUTH

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	42	9	8	DF SW	stack		3024
2	24	42	9	15	DF SW	stack		5670

8694

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	11	9	0	stack																
2	9	9	0	stack																

Grid Lines - 2nd Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	47	9	8	DF SW	stack		3384
2	24	47	9	8	DF SW	stack		3384

6768

Shear Walls - 2nd Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	11	9	0	stack																
2	9	9	0	stack		8.5	9	0	stack											

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
1	0	47	9	8	DF SW	ftg	3384
2	24	47	9	8	DF SW	ftg	3384

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	20	9	0	ftg																
2	9	9	0	ftg		12	9	0	ftg											

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	1	2	24.83	29.33	15	35	14.96	78.95	358.98	1895	12	12	1620
									359	1895			1620

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
2	1	2	24.83	29.33	15	35	14.96	78.95	358.98	1895	12	12	1620
									359	1895			1620

Tributaries - 2nd Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	1	2	14.67	24.83	15	24.83	21.79	119.48	522.90	2868	12	12	3658
									523	2868			3658

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
4	1	2	14.67	24.83	15	24.83	21.79	119.48	522.90	2868	12	12	3658

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	1	2	4.5	14.67	15	14.67	10.90	119.60	261.71	2870	12	12	3661
									262	2870			3661

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	
6	1	2	4.5	14.67	15	14.67	10.90	119.60	261.71	2870	12	12	3661
									262	2870			3661

Diaphragms - Roof

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
1	1	2	43	25	1		2		3038	3038	947	947	947	947	25800	0.2947
									3038	3038	947	947	947	947		
										6076		1895		1895	25800	

Diaphragms - 2nd Floor

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
2	1	2	47	17	3		4		1632	1632	1434	1434	1434	1434	19176	0.2457
									1632	1632	1434	1434	1434	1434		
										3264		2868		2868	19176	

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia. Wt. Lb.	Estimated Deflect. In.
3	1	2	47	17	5		6		816	816	1435	1435	1435	1435	19176	0.2407
									816	816	1435	1435	1435	1435		
										1632		2870		2870	19176	

Total Weight N-S = 104260

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	3708	947	947	3708	337	S4	2932	0.2031												
2	4294	947	947	4294	477	S3	4153	0.2392												
	3708	947	947	<==== TOTAL LOADS AT ROOF																

2nd Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	5824	2381	2381	5824	529	S2	4710	0.2464												
2	6410	2381	2381	6410	366	S3	3255	0.2132	366	S3	3270	0.2143								
	12234	4762	4762	<==== TOTAL LOADS AT 2nd Floor																

1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	6882	3816	3816	6882	344	S4	2860	0.1981												
2	7468	3816	3816	7468	356	S3	3179	0.2107	356	S3	3109	0.206								
	14351	7633	7633	<==== TOTAL LOADS AT 1st Floor																

Auburn Grove Plan 3X
NORTH-SOUTH

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	42	9	8	DF SW	stack		3024
2	23	42	9	15	DF SW	stack		5670
								8694

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	10	9	0	stack																
2	14	9	0	stack																

Grid Lines - 2nd Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	47	9	8	DF SW	stack		3384
2	23	47	9	8	DF SW	stack		3384
								6768

Shear Walls - 2nd Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	13.5	9	0	stack																
2	14	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
1	0	47	9	8	DF SW	ftg	3384
2	23	47	9	8	DF SW	ftg	3384

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	20	9	0	ftg																
2	9	9	0	ftg		12	9	0	ftg											

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	1	2	24.83	29.33	15	35	14.97	78.95	344.21	1816	11.5	11.5	1553
									344	1816			1553

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
2	1	2	24.83	29.33	15	35	14.97	78.95	344.21	1816	11.5	11.5	1553
									344	1816			1553

Tributaries - 2nd Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	1	2	14.67	24.83	15	24.83	21.80	119.48	501.39	2748	11.5	11.5	3505
									501	2748			3505

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
4	1	2	14.67	24.83	15	24.83	21.80	119.48	501.39	2748	11.5	11.5	3505

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	1	2	4.5	14.67	15	14.67	10.91	119.60	250.94	2751	11.5	11.5	3509
									251	2751			3509

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	
6	1	2	4.5	14.67	15	14.67	10.91	119.60	250.94	2751	11.5	11.5	3509
									251	2751			3509

Diaphragms - Roof

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
1	1	2	43	25	1		2		2913	2913	908	908	908	908	24725	0.2735
									2913	2913	908	908	908	908		
										5826		1816		1816	24725	

Diaphragms - 2nd Floor

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		Dia Wt.	Estimated Deflect.
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Lb.	In.
2	1	2	47	17	3		4		1565	1565	1374	1374	1374	1374	18377	0.2314
									1565	1565	1374	1374	1374	1374		
										3130		2748		2748	18377	

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia. Wt. Lb.	Estimated Deflect. In.
3	1	2	47	17	5		6		783	783	1375	1375	1375	1375	18377	0.2271
									783	783	1375	1375	1375	1375		
										1565		2751		2751	18377	

Total Weight N-S = 100842

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	3584	908	908	3584	358	S3	3153	0.2094												
2	4170	908	908	4170	298	S4	2299	0.1916												
	3584	908	908	<==== TOTAL LOADS AT ROOF																

2nd Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	5633	2282	2282	5633	417	S3	3612	0.2179												
2	6219	2282	2282	6219	444	S3	3849	0.2232												
	11852	4564	4564	<==== TOTAL LOADS AT 2nd Floor																

1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	6657	3657	3657	6657	333	S4	2758	0.1958												
2	7244	3657	3657	7244	345	S4	3079	0.2082	345	S4	3011	0.2037								
	13901	7315	7315	<==== TOTAL LOADS AT 1st Floor																

Auburn Grove Plan 3Y
NORTH-SOUTH

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	42	9	8	DF SW	stack		3024
2	21	42	9	8	DF SW	stack		3024

6048

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	13.5	9	0	stack																
2	13.5	9	0	stack																

Grid Lines - 2nd Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
1	0	47	9	8	DF SW	stack		3384
2	21	47	9	8	DF SW	stack		3384

6768

Shear Walls - 2nd Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	16	9	0	stack																
2	16	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
1	0	47	9	8	DF SW	ftg	3384
2	21	47	9	8	DF SW	ftg	3384

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	16	9	0	ftg																
2	16	9	0	ftg																

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	1	2	24.83	29.33	15	35	15.10	78.95	317.11	1658	10.5	10.5	1418
									317	1658			1418

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
2	1	2	24.83	29.33	15	35	15.10	78.95	317.11	1658	10.5	10.5	1418
									317	1658			1418

Tributaries - 2nd Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	1	2	14.67	24.83	15	24.83	22.00	119.48	461.91	2509	10.5	10.5	3200
									462	2509			3200

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
4	1	2	14.67	24.83	15	24.83	22.00	119.48	461.91	2509	10.5	10.5	3200

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	1	2	4.5	14.67	15	14.67	11.01	119.60	231.18	2512	10.5	10.5	3204
									231	2512			3204

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	
6	1	2	4.5	14.67	15	14.67	11.01	119.60	231.18	2512	10.5	10.5	3204
									231	2512			3204

Diaphragms - Roof

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia Wt. Lb.	Estimated Deflect. In.
1	1	2	43	25	1		2		2684	2684	829	829	829	829	22575	0.2357
									2684	2684	829	829	829	829		
										5367		1658		1658	22575	

Diaphragms - 2nd Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia Wt. Lb.	Estimated Deflect. In.
2	1	2	47	17	3		4		1442	1442	1255	1255	1255	1255	16779	0.2049
									1442	1442	1255	1255	1255	1255		
										2884		2509		2509	16779	

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	Dia. Wt. Lb.	Estimated Deflect. In.
3	1	2	47	17	5		6		721	721	1256	1256	1256	1256	16779	0.2016
									721	721	1256	1256	1256	1256		
										1442		2512		2512	16779	

Total Weight N-S = 91360

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	3360	829	829	3360	249	S6	2064	0.1813												
2	3360	829	829	3360	249	S6	2064	0.1813												
	3360	829	829	<==== TOTAL LOADS AT ROOF																

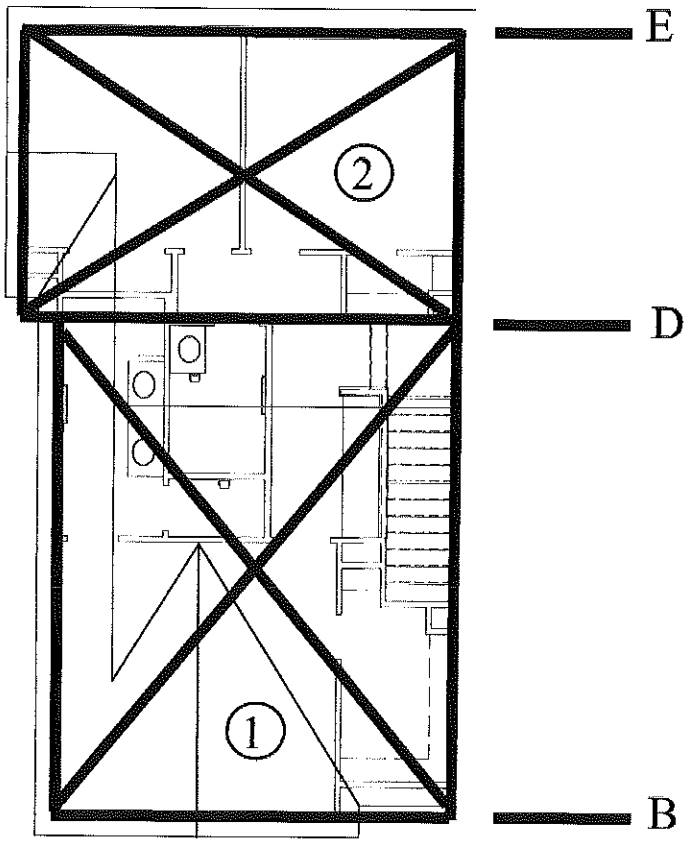
2nd Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	5290	2084	2084	5290	331	S4	2764	0.1973												
2	5290	2084	2084	5290	331	S4	2764	0.1973												
	10581	4167	4167	<==== TOTAL LOADS AT 2nd Floor																

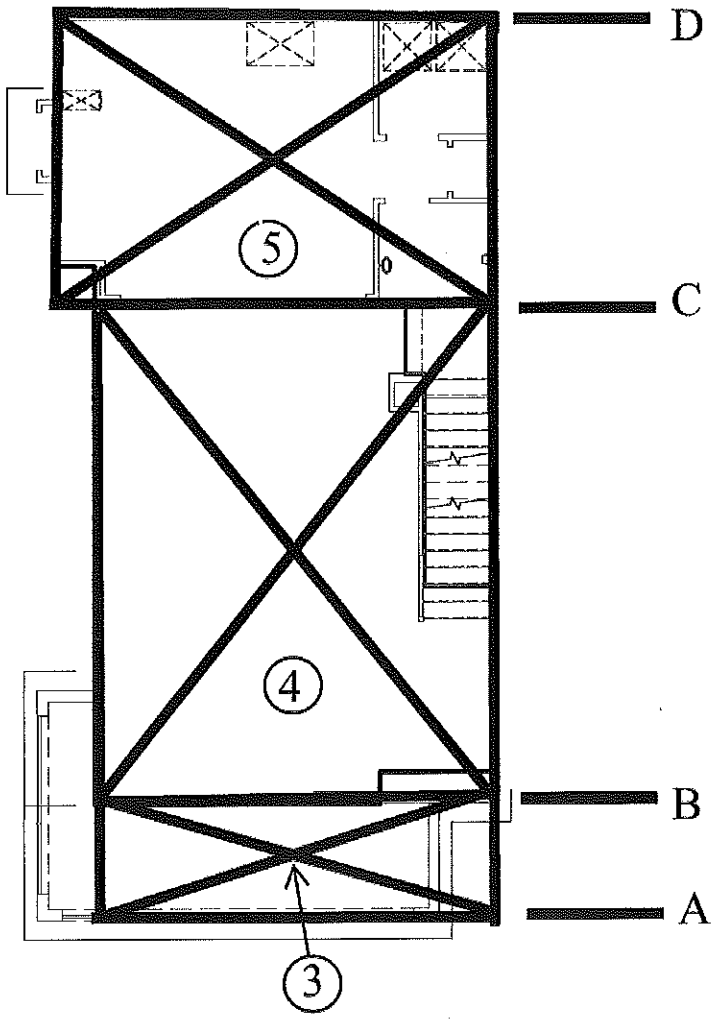
1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
1	6256	3339	3339	6256	391	S3	3357	0.2101												
2	6256	3339	3339	6256	391	S3	3357	0.2101												
	12511	6679	6679	<==== TOTAL LOADS AT 1st Floor																

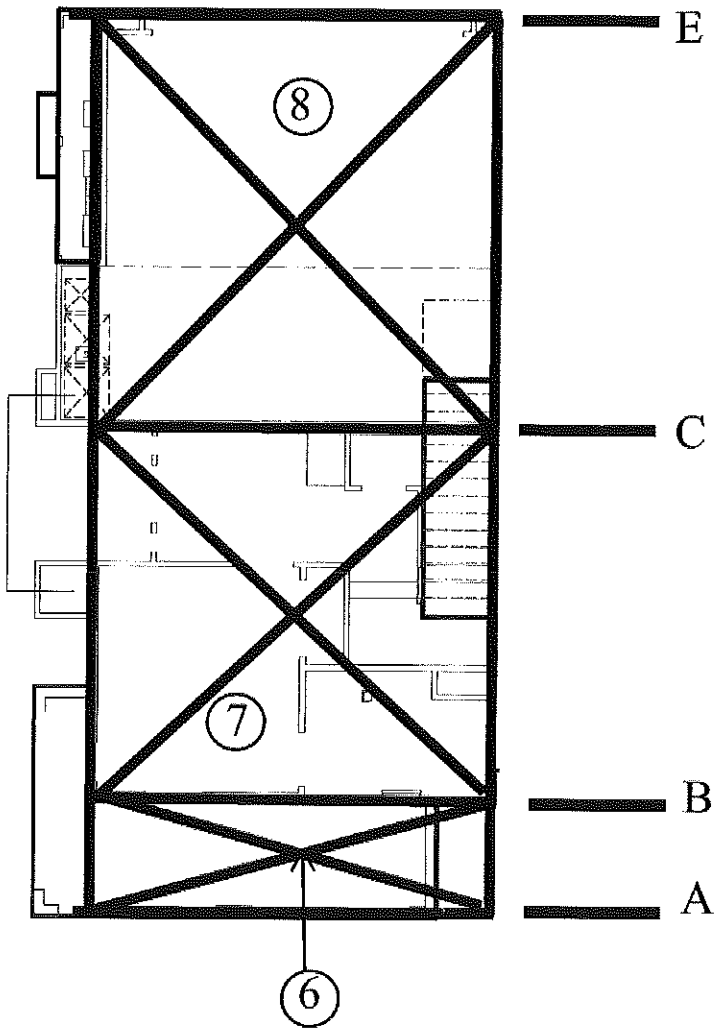
EAST-WEST



ROOF DIAPHRAGMS E-W



3rd FLOOR DIAPHRAGMS E-W



2nd FLOOR DIAPHRAGMS E-W

Auburn Grove Plan 3

EAST-WEST

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	stack		504
E	47	21	9	15	DF SW	stack		2835
								6174

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	14.833	9	120	stack																
D	6.5	9	150	stack																
E	23	9	120	stack																

Grid Lines - 2nd

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
A	0	21	4	15	rotate	B		1260
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	dia	8	504
E	47	21	9	15	DF SW	stack		2835
								7434

Shear Walls - 2nd

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
A	0	0	0	rotate	B															
B	6.5	9	0	stack																
D	6.5	9	0	dia	8															
E	23	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
A	0	21	9	15	rotate	B	2835
B	6	21	9	15	DF SW	ftg	2835
C	23	21	9	8	DF SW	ftg	1512
E	47	21	9	15	DF SW	ftg	2835

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	7.75	9	80	ftg		3.75	9	80	ftg											
C	12	9	80	ftg																
E	4.75	7	0	ftg																

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	B	D	24.83	33	8	33	14.48	0.00	376.56	0	19	19	1699.36
2	D	E	24.83	33	8	33	14.48	0.00	217.25	0	39.5	39.5	980.40
									594	0			2680

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	B	D	24.83	33	8	35	14.48	0.00	376.56	0	19	19	1699.36
4	D	E	24.83	33	8	35	14.48	0.00	217.25	0	39.5	39.5	980.40
									594	0			2680

Tributaries - 2nd Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	A	B	14.67	24.83	8	24.83	11.62	0.00	69.72	0	3	3	487.68
6	B	D	14.67	24.83	8	24.83	11.62	0.00	302.12	0	19	19	2113.28
7	D	E	14.67	24.83	8	24.83	11.62	0.00	174.30	0	39.5	39.5	1219.20
									546	0			3820

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
8	A	B	14.67	24.83	8	24.83	11.62	0.00	69.72	0	3	3	487.68
9	B	D	14.67	24.83	8	24.83	11.62	0.00	302.12	0	19	19	2113.28
10	D	E	14.67	24.83	8	24.83	11.62	0.00	174.30	0	39.5	39.5	1219.20

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
11	A	B	4.5	14.67	8	14.67	5.82	0.00	34.89	0	3	3	488.16
12	B	C	4.5	14.67	8	14.67	5.82	0.00	98.87	0	14.5	14.5	1383.12
13	C	E	4.5	14.67	8	14.67	5.82	0.00	139.58	0	35	35	1952.64
									273	0			3824

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
14	A	B	4.5	14.67	8	14.67	5.82	0.00	34.89	0	3	3	488.16
15	B	C	4.5	14.67	8	14.67	5.82	0.00	98.87	0	14.5	14.5	1383.12
16	C	E	4.5	14.67	8	14.67	5.82	0.00	139.58	0	35	35	1952.64
									273	0			3824

Diaphragms - Roof

								DIAPHRAGM FORCE SESMIC		WIND(West)		WIND(East)		Dia Wt.	Estimated Deflect.
DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	Left	Right	Left	Right	Left	Right	Lb.	in.
1	B	D	21	25	1		3		1701	1701	0	0	0	0	13650	0.4580
2	D	E	21	25	2		4		981	981	0	0	0	0	7875	0.1591
									2682	2682	0	0	0	0		
										5364		0		0	21525	

Diaphragms - 2nd Floor

								DIAPHRAGM FORCE SESMIC		WIND(West)		WIND(East)		Dia Wt.	Estimated Deflect.
DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	Left	Right	Left	Right	Left	Right	Lb.	in.
3	A	B	21	17	5		8		188	188	0	0	0	0	2142	0.0519
4	B	D	21	17	6		9		815	815	0	0	0	0	9282	0.3346
5	D	E	21	17	7		10		470	470	0	0	0	0	5355	0.1427
									1472	1472	0	0	0	0		
										2945		0		0	16779	

Diaphragms - 1st Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia. Wt. Lb.	Estimated Deflect. in.
6	A	B	21	17	11		14		94	94	0	0	0	0	2142	0.0515
7	B	C	21	17	12		15		266	266	0	0	0	0	6069	0.1564
8	C	E	21	17	13		16		376	376	0	0	0	0	8568	0.2461
									736	736	0	0	0	0	16779	
										1473		0		0		

RESULTS

Total Weight E-W = 99356

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	2329	0	0	2329	157	S6	696	0.1609												
D	2793	0	0	2793	430	S3	3758	0.2366												
E	1609	0	0	1609	70	S6	-510	0.1415												
	4403	0	0	<==== Total Load at Roof																

2nd Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	368	0	0	368		rotate														
B	4105	0	0	4105	632	S2	5773	0.288												
D	4150	0	0	4150	638	S2	5921	0.2897												
E	2485	0	0	2485	108	S6	377	0.1492												
	11107	0	0	<==== Total Load at 3rd floor																

1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	297	0	0	297		rotate														
B	4964	0	0	4964	432	S3	3703	0.2321	432	S3	4014	0.2599								
C	3344	0	0	3344	279	S4	2209	0.1890												
E	4619	0	0	4619	973	S2D	7150	0.2821												
	12928	0	0	<==== Total Load at 2nd Floor																

Auburn Grove Plan 3X

EAST-WEST

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	stack		504
E	47	21	9	15	DF SW	stack		2835
								6174

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	14.833	9	120	stack																
D	6.33	9	150	stack																
E	23	9	120	stack																

Grid Lines - 2nd

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
A	0	21	4	15	rotate	B		1260
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	dia	8	504
E	47	21	9	15	DF SW	stack		2835
								7434

Shear Walls - 2nd

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
A	0	0	0	rotate	B															
B	7	9	0	stack																
D	6.33	9	0	dia	8															
E	23	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
A	0	21	9	15	rotate	B	2835
B	6	21	9	15	DF SW	ftg	2835
C	23	21	9	8	DF SW	ftg	1512
E	47	21	9	15	SP	ftg	2835

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	9.75	9	80	ftg																
C	14.33	9	80	ftg																
E	1.5	7	0	ftg		1.5	7	0	ftg											

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	B	D	24.83	33	8	33	14.49	0.00	376.77	0	19	19	1699.36
2	D	E	24.83	33	8	33	14.49	0.00	217.37	0	39.5	39.5	980.40
									594	0			2680

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	B	D	24.83	33	8	35	14.49	0.00	376.77	0	19	19	1699.36
4	D	E	24.83	33	8	35	14.49	0.00	217.37	0	39.5	39.5	980.40
									594	0			2680

Tributaries - 2nd Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	A	B	14.67	24.83	8	24.83	11.63	0.00	69.76	0	3	3	487.68
6	B	D	14.67	24.83	8	24.83	11.63	0.00	302.29	0	19	19	2113.28
7	D	E	14.67	24.83	8	24.83	11.63	0.00	174.40	0	39.5	39.5	1219.20
									546	0			3820

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
8	A	B	14.67	24.83	8	24.83	11.63	0.00	69.76	0	3	3	487.68
9	B	D	14.67	24.83	8	24.83	11.63	0.00	302.29	0	19	19	2113.28
10	D	E	14.67	24.83	8	24.83	11.63	0.00	174.40	0	39.5	39.5	1219.20

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
11	A	B	4.5	14.67	8	14.67	5.82	0.00	34.91	0	3	3	488.16
12	B	C	4.5	14.67	8	14.67	5.82	0.00	98.92	0	14.5	14.5	1383.12
13	C	E	4.5	14.67	8	14.67	5.82	0.00	139.65	0	35	35	1952.64
									273	0			3824

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
14	A	B	4.5	14.67	8	14.67	5.82	0.00	34.91	0	3	3	488.16
15	B	C	4.5	14.67	8	14.67	5.82	0.00	98.92	0	14.5	14.5	1383.12
16	C	E	4.5	14.67	8	14.67	5.82	0.00	139.65	0	35	35	1952.64
									273	0			3824

Diaphragms - Roof

								DIAPHRAGM FORCE SESMIC		WIND(West)		WIND(East)		Dia Wt.	Estimated Deflect.
DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	Left	Right	Left	Right	Left	Right	Lb.	in.
1	B	D	21	25	1		3		1702	1702	0	0	0	0	13650	0.4581
2	D	E	21	25	2		4		982	982	0	0	0	0	7875	0.1592
									2683	2683	0	0	0	0		
										5367		0		0	21525	

Diaphragms - 2nd Floor

								DIAPHRAGM FORCE SESMIC		WIND(West)		WIND(East)		Dia Wt.	Estimated Deflect.
DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	Left	Right	Left	Right	Left	Right	Lb.	in.
3	A	B	21	17	5		8		188	188	0	0	0	0	2142	0.0519
4	B	D	21	17	6		9		815	815	0	0	0	0	9282	0.3347
5	D	E	21	17	7		10		470	470	0	0	0	0	5355	0.1427
									1473	1473	0	0	0	0		
										2947		0		0	16779	

Diaphragms - 1st Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia. Wt. Lb.	Estimated Deflect. in.
6	A	B	21	17	11		14		94	94	0	0	0	0	2142	0.0515
7	B	C	21	17	12		15		266	266	0	0	0	0	6069	0.1564
8	C	E	21	17	13		16		376	376	0	0	0	0	8568	0.2461
									737	737	0	0	0	0	16779	
										1474		0		0		

RESULTS

Roof Shear Walls

Total Weight E-W = 99356

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	2330	0	0	2330	157	S6	697	0.1609												
D	2795	0	0	2795	442	S3	3881	0.2405												
E	1610	0	0	1610	70	S6	-509	0.1415												
	4405	0	0	<==== Total Load at Roof																

2nd Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	368	0	0	368		rotate														
B	4107	0	0	4107	587	S2	5320	0.2735												
D	4152	0	0	4152	656	SS2	6097	0.2954												
E	2486	0	0	2486	108	S6	378	0.1492												
	11114	0	0	<==== Total Load at 3rd floor																

1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	297	0	0	297		rotate														
B	4967	0	0	4967	509	S2	4309	0.2447												
C	3346	0	0	3346	233	S6	1716	0.1775												
E	4622	0	0	4622	1541	SP	13350	0.5436	1541	SP	13344	0.5436								
	12935	0	0	<==== Total Load at 2nd Floor																

Auburn Grove Plan 3Y
EAST-WEST

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	stack		504
E	47	21	9	15	DF SW	stack		2835
								6174

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	14.833	9	120	stack																
D	6.33	9	150	stack																
E	21	9	120	stack																

Grid Lines - 2nd

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Line Wt.
A	0	21	4	15	rotate	B		1260
B	6	21	9	15	DF SW	stack		2835
D	32	7	9	8	DF SW	dia	8	504
E	47	21	9	15	DF SW	stack		2835
								7434

Shear Walls - 2nd

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
A	0	0	0	rotate	B															
B	9.5	9	0	stack																
D	6.5	9	0	dia	8															
E	21	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Line Wt. Lb.
A	0	21	9	15	rotate	B	2835
B	6	21	9	15	DF SW	ftg	2835
C	23	21	9	8	DF SW	ftg	1512
E	47	21	9	15	SP	ftg	2835

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	3	9	80	ftg		3.5	9	80	ftg		2.5	9	80	ftg						
C	9.5	9	80	ftg																
E	1.5	7	0	ftg		1.5	7	0	ftg											

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
1	B	D	24.83	33	8	33	14.62	0.00	380.16	0	19	19	1699.36
2	D	E	24.83	33	8	33	14.62	0.00	219.32	0	39.5	39.5	980.40
									599	0			2680

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
3	B	D	24.83	33	8	35	14.62	0.00	380.16	0	19	19	1699.36
4	D	E	24.83	33	8	35	14.62	0.00	219.32	0	39.5	39.5	980.40
									599	0			2680

Tributaries - 2nd Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
5	A	B	14.67	24.83	8	24.83	11.73	0.00	70.39	0	3	3	487.68
6	B	D	14.67	24.83	8	24.83	11.73	0.00	305.01	0	19	19	2113.28
7	D	E	14.67	24.83	8	24.83	11.73	0.00	175.96	0	39.5	39.5	1219.20
									551	0			3820

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
8	A	B	14.67	24.83	8	24.83	11.73	0.00	70.39	0	3	3	487.68
9	B	D	14.67	24.83	8	24.83	11.73	0.00	305.01	0	19	19	2113.28
10	D	E	14.67	24.83	8	24.83	11.73	0.00	175.96	0	39.5	39.5	1219.20

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
11	A	B	4.5	14.67	8	14.67	5.87	0.00	35.23	0	3	3	488.16
12	B	C	4.5	14.67	8	14.67	5.87	0.00	99.81	0	14.5	14.5	1383.12
13	C	E	4.5	14.67	8	14.67	5.87	0.00	140.91	0	35	35	1952.64
									276	0			3824

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight Lb.
14	A	B	4.5	14.67	8	14.67	5.87	0.00	35.23	0	3	3	488.16
15	B	C	4.5	14.67	8	14.67	5.87	0.00	99.81	0	14.5	14.5	1383.12
16	C	E	4.5	14.67	8	14.67	5.87	0.00	140.91	0	35	35	1952.64
									276	0			3824

Diaphragms - Roof

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
1	B	D	21	25	1		3		1717	1717	0	0	0	0	13650	0.4603
2	D	E	21	25	2		4		991	991	0	0	0	0	7875	0.1594
									2707	2707	0	0	0	0		
										5415		0		0	21525	

Diaphragms - 2nd Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SESMIC Left	SESMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia Wt. Lb.	Estimated Deflect. in.
3	A	B	21	17	5		8		190	190	0	0	0	0	2142	0.0520
4	B	D	21	17	6		9		822	822	0	0	0	0	9282	0.3357
5	D	E	21	17	7		10		474	474	0	0	0	0	5355	0.1429
									1487	1487	0	0	0	0		
										2973		0		0	16779	

Diaphragms - 1st Floor

DIA #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E)	Trib (E)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(West) Left	WIND(West) Right	WIND(East) Left	WIND(East) Right	Dia. Wt. Lb.	Estimated Deflect. in.
6	A	B	21	17	11		14		95	95	0	0	0	0	2142	0.0515
7	B	C	21	17	12		15		269	269	0	0	0	0	6069	0.1565
8	C	E	21	17	13		16		380	380	0	0	0	0	8568	0.2465
									743	743	0	0	0	0	16779	
										1487		0		0		

RESULTS

Total Weight E-W = 99356

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
B	2351	0	0	2351	159	S6	710	0.1612												
D	2820	0	0	2820	446	S3	3919	0.2415												
E	1625	0	0	1625	77	S6	-343	0.1431												
	4445	0	0	<==== Total Load at Roof																

2nd Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	372	0	0	372		rotate														
B	4144	0	0	4144	436	S3	3795	0.2284												
D	4190	0	0	4190	645	SS2	5979	0.2913												
E	2508	0	0	2508	119	S6	535	0.1517												
	11214	0	0	<==== Total Load at 3rd floor																

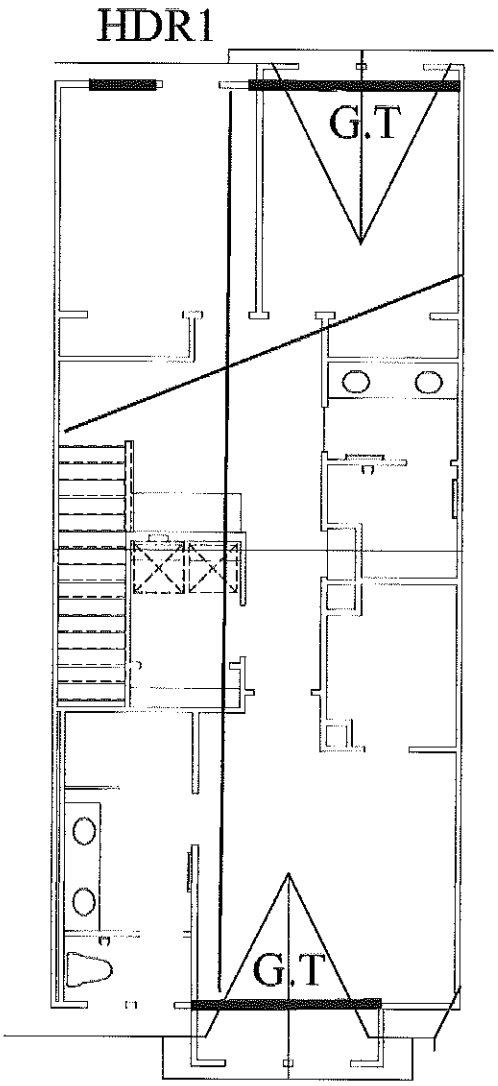
1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Estimated Deflect.	Shear 2	Type	Uplift	Estimated Deflect.	Shear 3	Type	Uplift	Estimated Deflect.	Shear 4	Type	Uplift	Est. Def.
A	299	0	0	299		rotate														
B	5012	0	0	5012	557	S2	5414	0.3157	557	S2	5281	0.3033	557	S2	5535	0.3331				
C	3376	0	0	3376	355	S3	3012	0.2096												
E	4664	0	0	4664	1555	SP	13471	0.5476	1555	SP	13464	0.5476								
	13052	0	0	<==== Total Load at 2nd Floor																

Plan 4

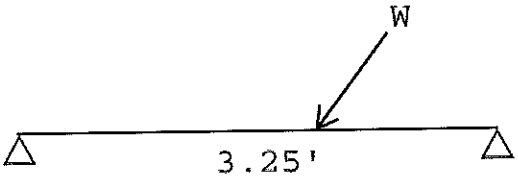
VERTICAL CALCULATIONS

ROOF



ROOF FRAMING

HDR1



W=50/2*(20+21)= 1025 PLF

USE 4x6 DF#2

USE

USE

USE

USE

General Beam
HDR1

INPUT

Span (ft) =	3.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

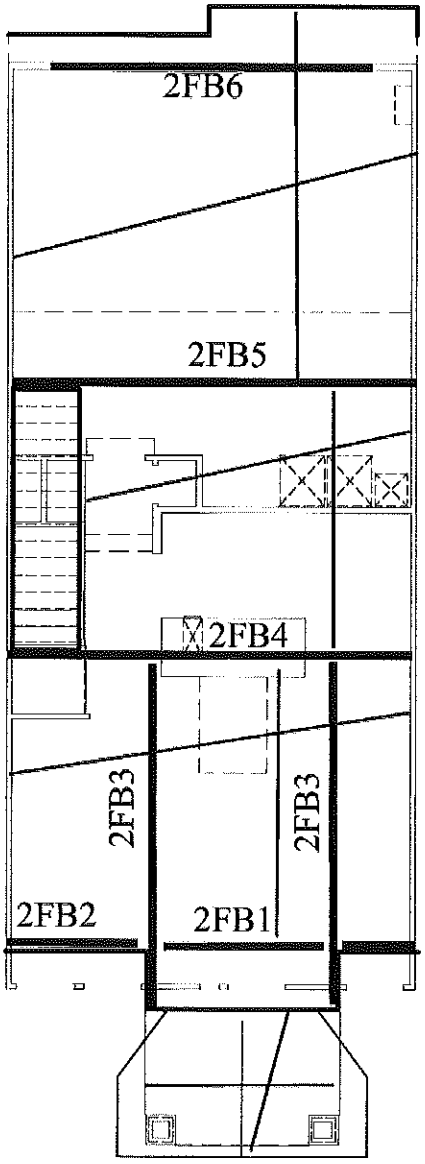
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1025	0	3.25	1025

OUTPUT

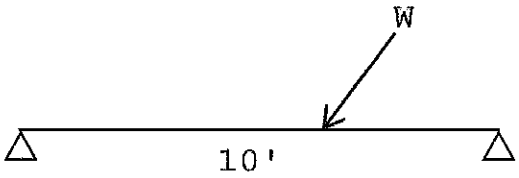
Shear (lb)	1,666
fv (psi)	104
Moment (ft-lb)	1,353
fb (psi)	736
Deflection (in)	0.03
L/	1177
Lt Reaction =	1666
Rt Reaction =	1666

2nd FLOOR



FLOOR FRAMING

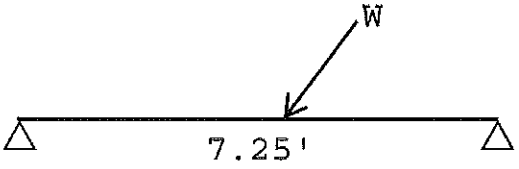
2FB1



W=17/2*(40+17)=458PLF

USE 3 1/2x14 LSL

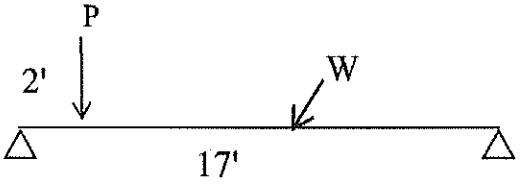
2FB2



W=17/2*(40+17)=458PLF

USE 3 1/2x14 LSL

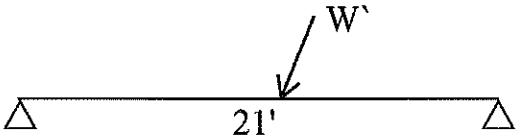
2FB3



P=51/2*(20+21)*17/2+ 6063+2423 = 17373#
W=76 PLF

USE 5 1/4x14 PSL

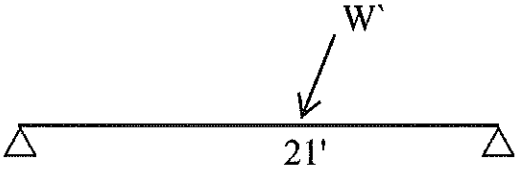
2FB4



W=24/2*(20+21)= 492 PLF

USE 5 1/4x14 PSL

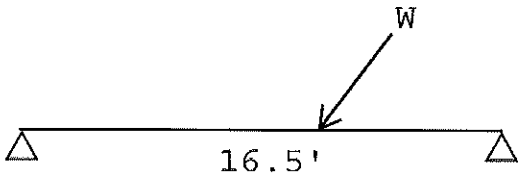
2FB5



W=22/2*(20+21)= 451 PLF

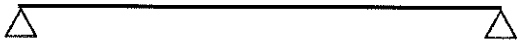
USE 5 1/4x14 PSL

2FB6



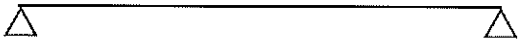
W=(22/2+2)*(40+17)+(9*15)+(47/2)*(20+21)=1840 PLF

USE 5 1/4x14 PSL

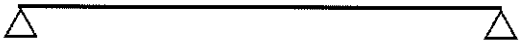


USE

USE



USE



USE

General Beam
2FB1

INPUT

Span (ft) =	10.00
LDF =	1.25
Beam =	3.5x14
Mat'l =	LSL
b =	3.5
d =	14
I =	800
E (x10 E6)	1.55
Beam EI	1240516667

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	484.5	0	10	484.5

OUTPUT

Shear (lb)	2,423
fv (psi)	59
Moment (ft-lb)	6,056
fb (psi)	509
Deflection (in)	0.09
L/	1366
Lt Reaction =	2423
Rt Reaction =	2423

General Beam
2FB2

INPUT

Span (ft) =	7.25
LDF =	1.25
Beam =	3.5x14
Mat'l =	LSL
b =	3.5
d =	14
I =	800
E (x10 E6)	1.55
Beam EI	1240516667

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1665	0	7.25	1665

OUTPUT

Shear (lb)	6,036
fv (psi)	148
Moment (ft-lb)	10,940
fb (psi)	919
Deflection (in)	0.08
L/	1043
Lt Reaction =	6036
Rt Reaction =	6036

General Beam
2FB3

INPUT

Span (ft) =	17.00
LDF =	1.25
Beam =	5.25x14
Mat'l =	PSL
b =	5.25
d =	14
I =	1201
E (x10 E6)	2
Beam EI	2401000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	76	0	17	76
2	Point	17372.75	2	2	17372.75

OUTPUT

Shear (lb)	15,975
fv (psi)	261
Moment (ft-lb)	31,736
fb (psi)	1,776
Deflection (in)	0.51
L/	398
Lt Reaction =	15975
Rt Reaction =	2690

General Beam
2FB4

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	5.25x14
Mat'l =	PSL
b =	5.25
d =	14
I =	1201
E (x10 E6)	2
Beam EI	2401000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	492	0	21	492

OUTPUT

Shear (lb)	5,166
fv (psi)	105
Moment (ft-lb)	27,122
fb (psi)	1,898
Deflection (in)	0.90
L/	281
Lt Reaction =	5166
Rt Reaction =	5166

General Beam
2FB5

INPUT

Span (ft) =	21.00
LDF =	1.00
Beam =	5.25x14
Mat'l =	PSL
b =	5.25
d =	14
I =	1201
E (x10 E6)	2
Beam EI	2401000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	451	0	21	451

OUTPUT

Shear (lb)	4,736
fv (psi)	97
Moment (ft-lb)	24,861
fb (psi)	1,740
Deflection (in)	0.82
L/	307
Lt Reaction =	4736
Rt Reaction =	4736

General Beam
2FB6

INPUT

Span (ft) =	16.50
LDF =	1.25
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1840	0	16.5	1839.5

OUTPUT

Shear (lb)	15,176
fv (psi)	193
Moment (ft-lb)	62,600
fb (psi)	2,120
Deflection (in)	0.60
L/	329
Lt Reaction =	15176
Rt Reaction =	15176

LATERAL CALCULATIONS

Auburn Grove Plan 4

Updated 11/10/17

Building Dead Loads

Roof =	**25**	**psf**
Floor =	**17**	**psf**
Ext. 2x6 Wall =	**17**	**psf**
Ext. 2x4 Wall =	**15**	**psf**
Int. Wall =	**8**	**psf**

Wind Loads (Directional Procedure from ASCE-7 '10 - Chapter 27)

Part 2 ? =	**Yes**	
Wind Speed (MPH) =	**110**	
Exposure Cat. =	**B**	
Mean Rf. Ht. (ft.) =	**20**	(15,20,30,40,50,60,70,80,90,100)
Rf Slope (X:12) =	**5**	
Building Category	**II**	
Adjustment Factor	**0.692**	
ROOF ANGLE	**22.61986**	

ROOF ZONE PRESSURES		x ADJ. FACTOR FOR EXPOSURE
1 - Case 1	9.4	6.5
1 - Case 2	-16.3	-11.3
2 - Case 1	-7.8	-5.4
2 - Case 2	-16.4	-11.3
3	-25.2	-17.4
4	-22.4	-15.5
5	-18.4	-12.7

LATERAL LOADS

WALLS

WALL LOAD	17.50 psf	
ASD WALL LOAD	**10.5 psf**	<== Use this for all wall wind loads

ROOFS

Zone 1 - case 1	2.50
Zone 2 - case 1	-4.34
TOTAL case 1	6.84
Zone 1 - case 2	-4.34
Zone 2 - case 2	-4.36
TOTAL case 1	0.03
MAXIMUM ROOF	6.84 psf
ASD MAX. ROOF	**4.10 psf** <== Use this for all roof wind loads

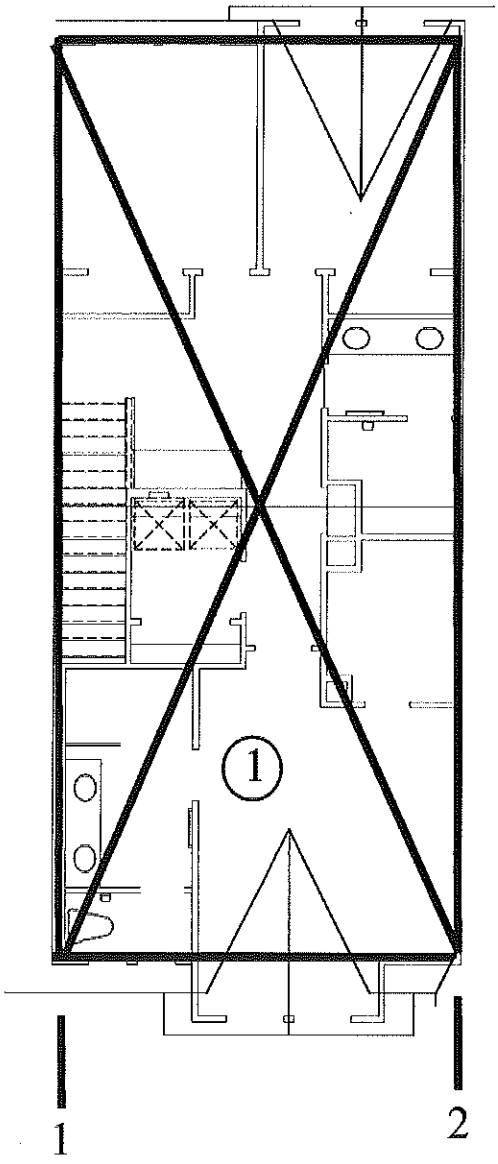
Seismic Loads

Earthquake Data (CBC 1603.1.5)

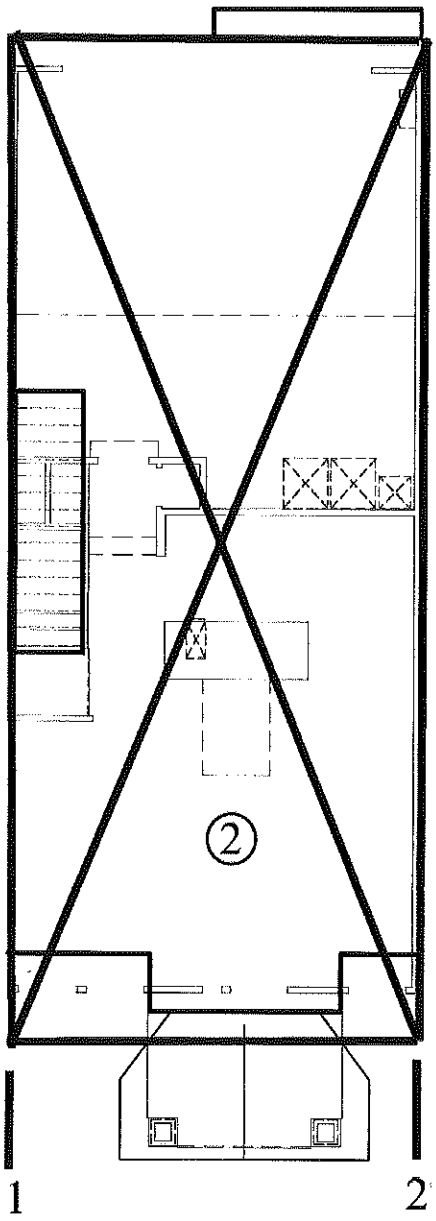
1 .	I =	1	
2.	Ss =	**1.558**	
	S1 =	**0.6**	
	Fa =	**1.0**	
	Fv =	**1.5**	
3.	Site Class	**D**	
4.	SDs =	**1.039**	
	SD1 =	**0.6**	
5.	Seismic Cat.	**D**	
6.	Basic System =	Bearing Wall System	
7.	Design Base Shear (SEE BELOW)		
	BASE SHEAR		
	Simplifed Method		
	V= (F*SDS/R)*W		
	F=	**1.1**	<== 2-story
	SDS =	**1.038667**	
	R=	**6.5**	
	V =	**0.175774**	
	Acceleration =0.7xV	**0.123042**	**=Qe**
8.	Cs =	0.123042	
9.	R =	6.5	

Eq. 5: (1.0+0.14*SDS)D + 0.7*Qe
Eq. 6: (1.0+0.105*SDS)D + 0.525*Qe + 0.75*L
Eq. 8: (0.6-0.14SDS)D + 0.7Qe

NORTH-SOUTH



ROOF DIAPHRAGMS N-S



FLOOR DIAPHRAGMS N-S

Auburn Grove Plan 4
NORTH-SOUTH

Updated 11/10/17

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Weight
1	0	52	9	8	DF SW	stack		3744
2	21.33	52	9	8	DF SW	stack		3744

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	11	9	0	stack																
2	12	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Weight
1	0	48	9	8	DF SW	ftg	3456
2	21.33	48	9	8	DF SW	ftg	3456

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	20	9	0	ftg																
2	22	9	0	ftg																

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
1	1	2	14.67	23	15	23	15.37	87.47	327.93	1866	10.665	10.665	2665.18
									328	1866			

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
2	1	2	14.67	23	15	23	15.37	87.47	327.93	1866	10.665	10.665	2665.18
									328	1866			

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
3	1	2	4.5	14.67	15	14.67	18.77	106.79	400.37	2278	10.665	10.665	3253.89
									400	2278			

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
4	1	2	4.5	14.67	15	14.67	18.77	106.79	400.37	2278	10.665	10.665	3253.89
									400	2278			

Diaphragms - Roof

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Weight	FORCE
1	1	2	54	25	1		2		2099	2099	933	933	933	933	28796	191
									2099	2099	933	933	933	933		
										4199		1866		1866		

TOTAL WEIGHT AT ROOF = 41614

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	DIA Weight	CHORD FORCE
2	1	2	48	17	3		4		1471	1471	1139	1139	1139	1139	17405	141
									1471	1471	1139	1139	1139	1139		
										2942		2278		2278		

TOTAL WEIGHT AT FLOOR = 30825

TOTAL WEIGHT NS = 72439

RESULTS

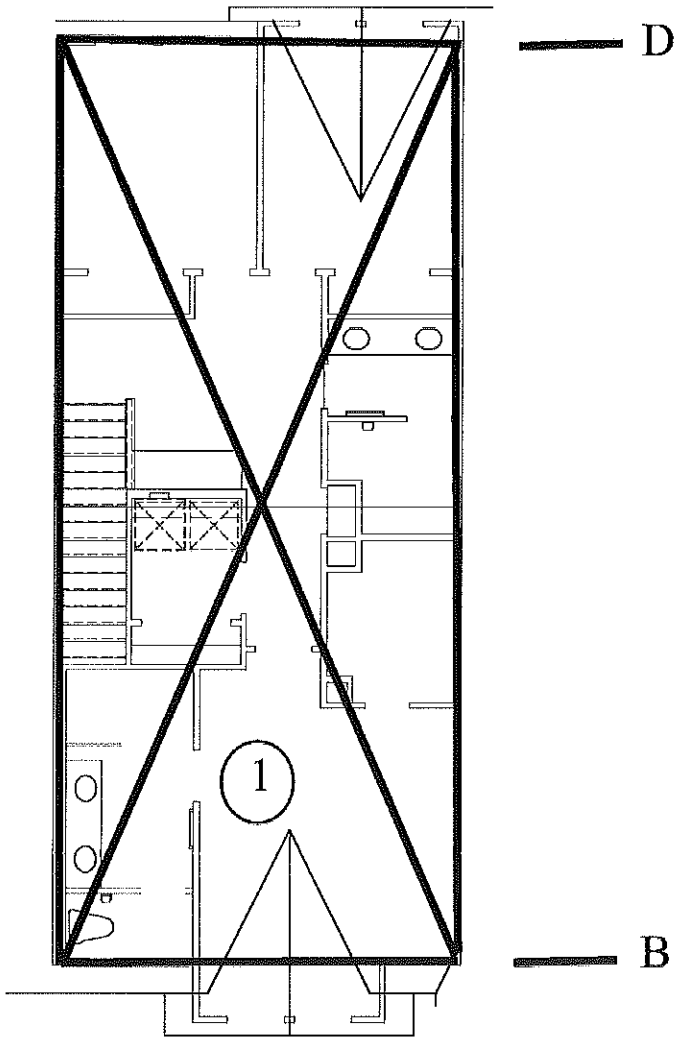
Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
1	2560	933	933	2560	233	S6	1967									
2	2560	933	933	2560	213	S6	1767									
	5120	1866	1866	<==== TOTAL LOADS AT Roof												

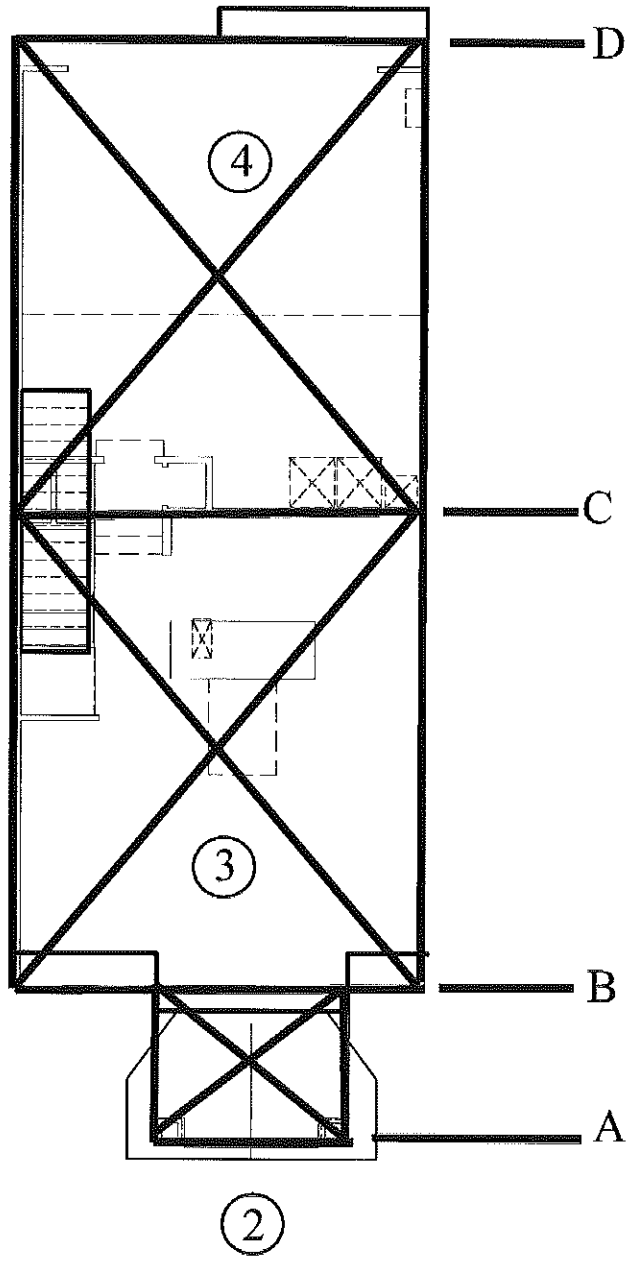
1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
1	4457	2072	2072	4457	223	S6	1703									
2	4457	2072	2072	4457	203	S6	1483									
	8913	4143	4143	<==== TOTAL LOADS AT 2nd Floor												

EAST-WEST



ROOF DIAPHRAGMS E-W



FLOOR DIAPHRAGMS E-W

Auburn Grove Plan 4
EAST-WEST

Updated 11/10/17

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Weight
B	8	22	9	15	DF SW	stack		2970
D	53	22	9	15	DF SW	stack		2970

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	4	9	0	stack																
D	10.833	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Weight
A	0	10	2	15	rotate	B	300
B	8	22	9	15	DF SW	ftg	2970
C	32.5	22	9	8	DF SW	ftg	1584
D	53	22	9	15	DF SW	ftg	2970

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	3	9	0	ftg		3	9	0	ftg											
C	11	9	0	ftg																
D	2.5	8	0	ftg		2.5	8	0	ftg											

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
1	B	D	14.67	19.17	8	23	4.43	62.97	199.33	2834	30.5	30.5	1620.00
									199	2834			

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
2	B	D	14.67	19.17	8	23	4.43	62.97	199.33	2834	30.5	30.5	1620.00
									199	2834			

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
3	A	B	4.5	14.14	8	14.17	9.49	101.34	75.91	811	4	4	616.96
4	B	C	4.5	14.14	8	14.17	9.49	101.34	232.48	2483	20.25	20.25	1889.44
5	C	D	4.5	14.17	8	14.17	9.52	101.54	195.13	2081	42.75	42.75	1585.88
									504	5375			

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
6	A	B	4.5	14.14	8	14.17	9.49	101.34	75.91	811	4	4	616.96
7	B	C	4.5	14.14	8	14.17	9.49	101.34	232.48	2483	20.25	20.25	1889.44
8	C	D	4.5	14.17	8	14.17	9.52	101.54	195.13	2081	42.75	42.75	1585.88
									504	5375			

Diaphragms - Roof

								DIAPHRAGM FORCE							
								SESMIC		WIND(West)		WIND(East)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E) Trib (E)	Left	Right	Left	Right	Left	Right	Weight	FORCE
1	B	D	22	25	1		2	1722	1722	1417	1417	1417	1417	24750	830
								1722	1722	1417	1417	1417	1417		
									3444		2834		2834		

TOTAL WEIGHT AT ROOF = 33930

Diaphragms - 1st Floor

								DIAPHRAGM FORCE							
								SEISMIC		WIND(West)		WIND(East)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E) Trib (E)	Left	Right	Left	Right	Left	Right	Weight	FORCE
2	A	B	10	25	3		6	161	161	405	405	405	405	2000	81
3	B	C	21	17	4		7	654	654	1241	1241	1241	1241	8747	362
4	C	D	21	17	5		8	548	548	1041	1041	1041	1041	7319	254
								1363	1363	2688	2688	2688	2688		
									2726		5375		5375		

TOTAL WEIGHT AT FLOOR = 34074

TOTAL WEIGHT EW = 68004

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
B	2087	1417	1417	2087	522	S2	4934									
D	2087	1417	1417	2087	193	S6	1441									
	2087	1417	1417	<==== Total Loads at Roof												

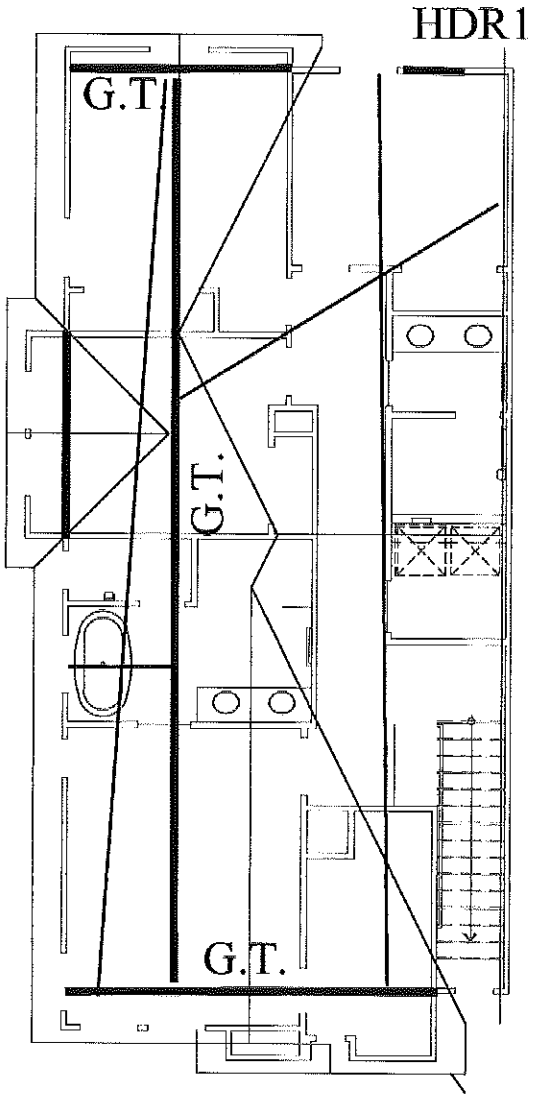
1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
A	198	405	405	405		rotate										
B	3466	3469	3469	3469	578	S2	5662	578	S2	5662						
C	1397	2282	2282	2282	207	S6	1733									
D	3001	2458	2458	3001	600	S2	5358	600	S2	5358						
	7864	8209	8209	<==== Total Loads at 2nd Floor												

Plan 5

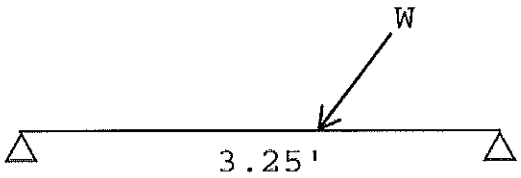
VERTICAL CALCULATIONS

ROOF



ROOF FRAMING

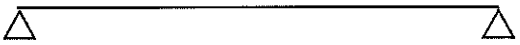
HDR1



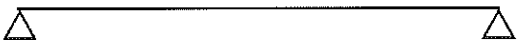
W=50/2*(20+21)= 1025 PLF

USE 4x6 DF#2

USE



USE



USE

USE

General Beam
HDR1

INPUT

Span (ft) =	3.25
LDF =	1.25
Beam =	4x6
Mat'l =	DF#2
b =	3.5
d =	5.5
I =	49
E (x10 E6)	1.6
Beam EI	77641666.67

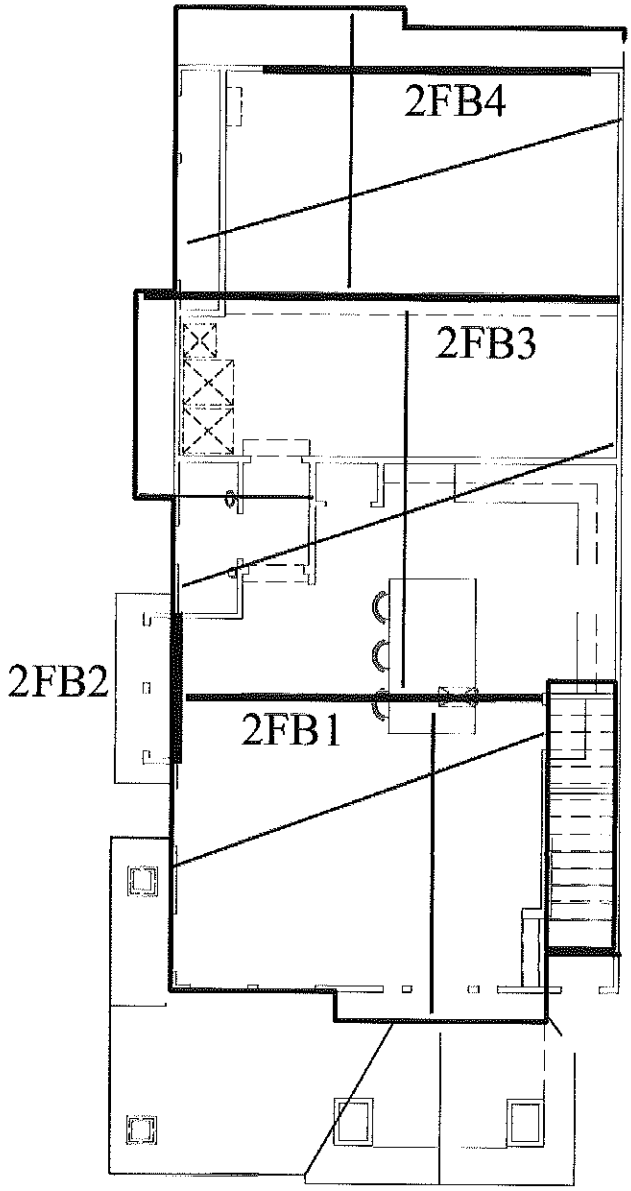
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1025	0	3.25	1025

OUTPUT

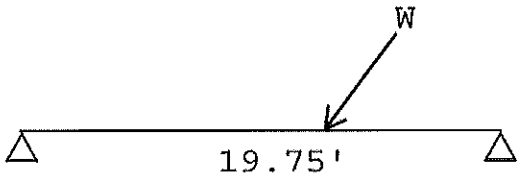
Shear (lb)	1,666
fv (psi)	104
Moment (ft-lb)	1,353
fb (psi)	736
Deflection (in)	0.03
L/	1177
Lt Reaction =	1666
Rt Reaction =	1666

2nd FLOOR



FLOOR FRAMING

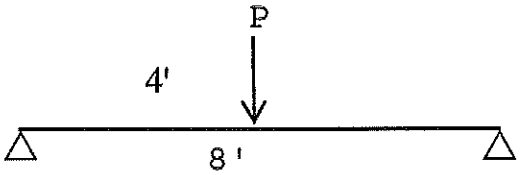
2FB1



W=28/2*(40+17)=798 PLF

USE 7x14 PSL

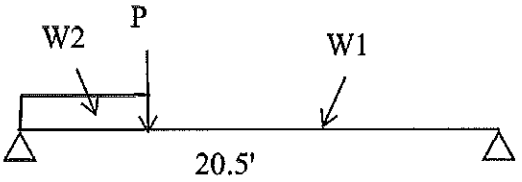
2FB2



W=5*(20+21)+9*15=340PLF
P= 7681# (2FB1)

USE 3 1/2 x 14 PSL

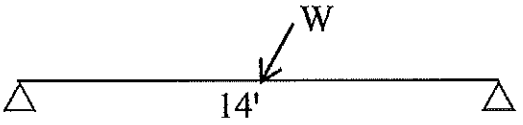
2FB3



W1=23/2*(40+17)= 656 PLF

USE 3 1/2x14 PSL

2FB4



W=(22/2+2)*(40+17)+9*15+51/2*(20+21)=1922 PLF

USE 5 1/4 x 18 PSL

USE

General Beam
2FB1

INPUT

Span (ft) =	19.25
LDF =	1.25
Beam =	7x14
Mat'l =	PSL
b =	7
d =	14
I =	1601
E (x10 E6)	2
Beam EI	3201333333

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	798	0	19.25	798

OUTPUT

Shear (lb)	7,681
fv (psi)	94
Moment (ft-lb)	36,964
fb (psi)	1,552
Deflection (in)	0.77
L/	300
Lt Reaction =	7681
Rt Reaction =	7681

General Beam
2FB2

INPUT

Span (ft) =	8.00
LDF =	1.25
Beam =	3.5x14
Mat'l =	PSL
b =	3.5
d =	14
I =	800
E (x10 E6)	2
Beam EI	1600666667

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Point	7681	4	4	7681
2	Uniform	340	0	8	340

OUTPUT

Shear (lb)	5,201
fv (psi)	127
Moment (ft-lb)	18,082
fb (psi)	1,518
Deflection (in)	0.11
L/	889
Lt Reaction =	5201
Rt Reaction =	5201

General Beam
2FB3

INPUT

Span (ft) =	20.25
LDF =	1.25
Beam =	5.25x14
Mat'l =	PSL
b =	5.25
d =	14
I =	1201
E (x10 E6)	2
Beam EI	2401000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	570	0	20.25	570

OUTPUT

Shear (lb)	5,771
fv (psi)	94
Moment (ft-lb)	29,217
fb (psi)	1,635
Deflection (in)	0.90
L/	271
Lt Reaction =	5771
Rt Reaction =	5771

General Beam
2FB4

INPUT

Span (ft) =	16.50
LDF =	1.25
Beam =	5.25x18
Mat'l =	PSL
b =	5.25
d =	18
I =	2552
E (x10 E6)	2
Beam EI	5103000000

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	1922	0	16.5	1921.5

OUTPUT

Shear (lb)	15,852
fv (psi)	201
Moment (ft-lb)	65,391
fb (psi)	2,214
Deflection (in)	0.63
L/	315
Lt Reaction =	15852
Rt Reaction =	15852

LATERAL CALCULATIONS

Auburn Grove Plan 5

Updated 11/10/17

Building Dead Loads

Roof =	**25**	**psf**
Floor =	**17**	**psf**
Ext. 2x6 Wall =	**17**	**psf**
Ext. 2x4 Wall =	**15**	**psf**
Int. Wall =	**8**	**psf**

Wind Loads (Directional Procedure from ASCE-7 '10 - Chapter 27)

Part 2 ? =	**Yes**	
Wind Speed (MPH) =	**110**	
Exposure Cat. =	**B**	
Mean Rf. Ht. (ft.) =	**20**	(15,20,30,40,50,60,70,80,90,100)
Rf Slope (X:12) =	**5**	
Building Category	**II**	
Adjustment Factor	**0.692**	
ROOF ANGLE	**22.61986**	

ROOF ZONE PRESSURES		x ADJ. FACTOR FOR EXPOSURE
1 - Case 1	9.4	6.5
1 - Case 2	-16.3	-11.3
2 - Case 1	-7.8	-5.4
2 - Case 2	-16.4	-11.3
3	-25.2	-17.4
4	-22.4	-15.5
5	-18.4	-12.7

LATERAL LOADS

WALLS

WALL LOAD	17.50 psf	
ASD WALL LOAD	**10.5 psf**	<== Use this for all wall wind loads

ROOFS

Zone 1 - case 1	2.50	
Zone 2 - case 1	-4.34	
TOTAL case 1	6.84	
Zone 1 - case 2	-4.34	
Zone 2 - case 2	-4.36	
TOTAL case 1	0.03	
MAXIMUM ROOF	6.84 psf	
ASD MAX. ROOF	**4.10 psf**	<== Use this for all roof wind loads

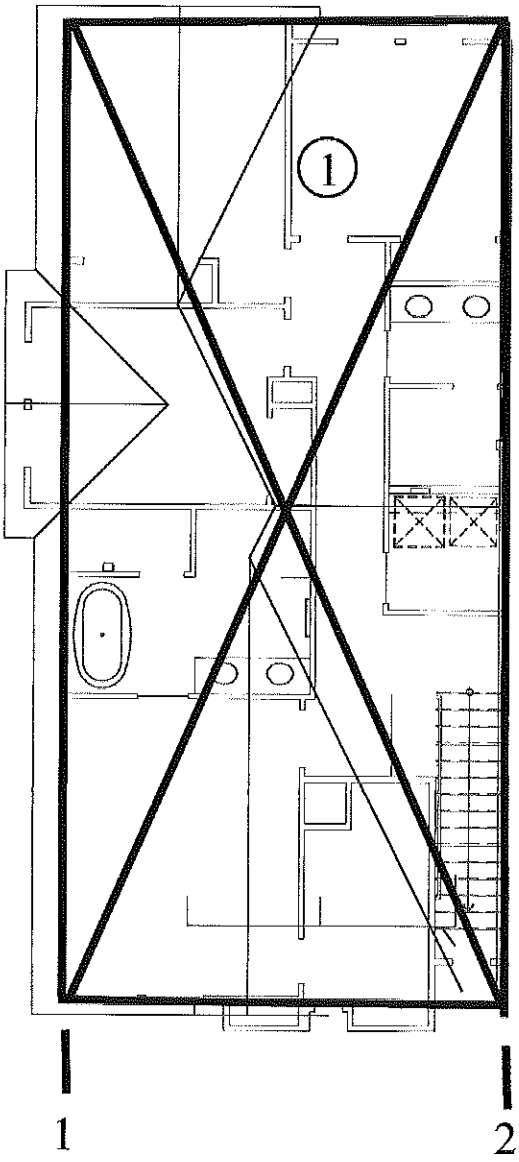
Seismic Loads

Earthquake Data (CBC 1603.1.5)

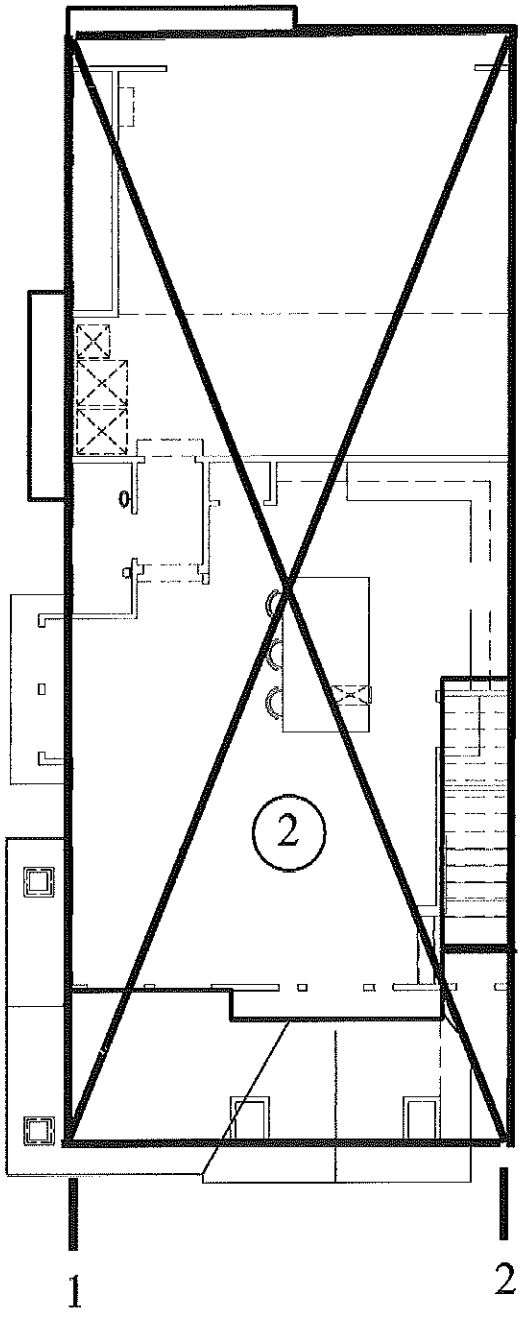
1 . I =	1	
2. Ss =	**1.558**	
S1 =	**0.6**	
Fa =	**1.0**	
Fv =	**1.5**	
3. Site Class	**D**	
4. SDs =	**1.039**	
SD1 =	**0.6**	
5. Seismic Cat.	**D**	
6. Basic System =	Bearing Wall System	
7. Design Base Shear (SEE BELOW)		
BASE SHEAR		
Simplifed Method		
V= (F*SDS/R)*W		
F=	**1.1**	<== 2-story
SDS =	**1.038667**	
R=	**6.5**	
V =	**0.175774**	
Acceleration =0.7xV	**0.123042**	**=Qe**
8. Cs =	0.123042	
9. R =	6.5	

Eq. 5: (1.0+0.14*SDS)D + 0.7*Qe
Eq. 6: (1.0+0.105*SDS)D + 0.525*Qe + 0.75*L
Eq. 8: (0.6-0.14SDS)D + 0.7Qe

NORTH-SOUTH



ROOF DIAPHRAGMS N-S



FLOOR DIAPHRAGMS N-S

Auburn Grove Plan 5
NORTH-SOUTH

Updated 11/10/17

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Weight
1	0	52	9	8	DF SW	stack		3744
2	23.33	52	9	15	DF SW	stack		7020

Shear Walls - Roof

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
1	11	9	0	stack																
2	9	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Weight
1	0	48	9	8	DF SW	ftg	3456
2	23.33	48	9	15	DF SW	ftg	6480

Shear Walls - 1st Floor

Grid #	ELEMENT 1 Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	ELEMENT 2 Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	ELEMENT 3 Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	ELEMENT 4 Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
1	20	9	0	ftg																
2	12	9	0	ftg																

Tributaries - Roof

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
1	1	2	14.67	23	15	23	15.37	87.47	358.68	2041	11.665	11.665	2915.08
									359	2041			

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
2	1	2	14.67	23	15	23	15.37	87.47	358.68	2041	11.665	11.665	2915.08
									359	2041			

Tributaries - 1st Floor

SOUTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
3	1	2	4.5	14.67	15	14.67	18.77	106.79	437.91	2491	11.665	11.665	3558.99
									438	2491			

NORTH

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
4	1	2	4.5	14.67	15	14.67	18.77	106.79	437.91	2491	11.665	11.665	3558.99
									438	2491			

Diaphragms - Roof

									DIAPHRAGM FORCE SESMIC		WIND(South)		WIND(north)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	Left	Right	Left	Right	Left	Right	Weight	FORCE
1	1	2	54	25	1		2		2296	2296	1020	1020	1020	1020	31496	229
									2296	2296	1020	1020	1020	1020		
										4593		2041		2041		

TOTAL WEIGHT AT ROOF = 48090

Diaphragms - 1st Floor

Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (S)	Trib (S)	Trib (N)	Trib (N)	DIAPHRAGM FORCE SEISMIC Left	SEISMIC Right	WIND(South) Left	WIND(South) Right	WIND(north) Left	WIND(north) Right	DIA Weight	CHORD FORCE
2	1	2	48	17	3		4		1609	1609	1246	1246	1246	1246	19037	169
									1609	1609	1246	1246	1246	1246		
										3218		2491		2491		
								TOTAL WEIGHT AT FLOOR =		36091						
								TOTAL WEIGHT NS =		84181						

RESULTS

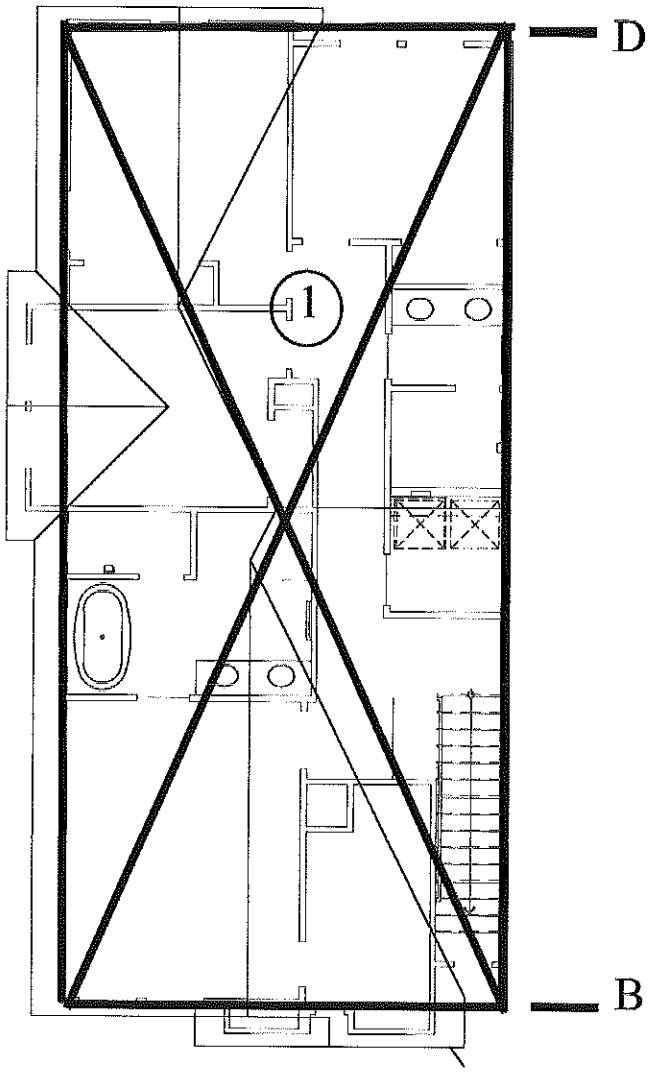
Roof Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
1	2757	1020	1020	2757	251	S6	2132									
2	3160	1020	1020	3160	351	S4	2980									
	5917	2041	2041	<==== TOTAL LOADS AT Roof												

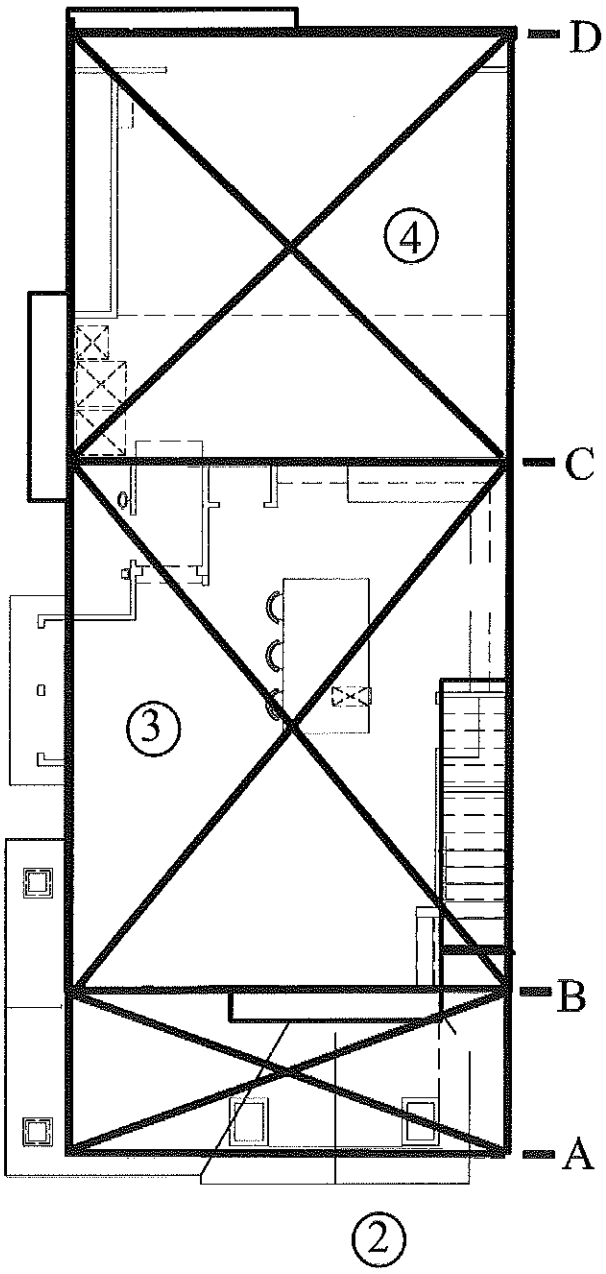
1st Floor Shear Walls

GRID #	Seismic	Wind(S)	Wind(N)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
1	4791	2266	2266	4791	240	S6	1856									
2	5566	2266	2266	5566	464	S3	3901									
	10358	4532	4532	<==== TOTAL LOADS AT 2nd Floor												

EAST-WEST



ROOF DIAPHRAGMS E-W



FLOOR DIAPHRAGMS E-W

Auburn Grove Plan 5
EAST-WEST

Updated 11/10/17

Grid Lines - Roof

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	Info1	Info2	Weight
B	8	24	9	15	DF SW	stack		3240
D	53	24	9	15	DF SW	stack		3240

Shear Walls - Roof

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info	Len. (ft)	Ht. (ft)	DL(plf)	Sits On	Info
B	4.5	9	0	stack																
D	11.833	9	0	stack																

Grid Lines - 1st Floor

Grid #	Dist. From Ref. (ft)	Len. (ft)	Ht. (ft)	Wt.(psf)	Shear Type	INFO	Weight
A	0	25	2	15	rotate	B	750
B	8	24	9	15	DF SW	ftg	3240
C	35.5	24	9	8	DF SW	ftg	1728
D	53	24	9	15	DF SW	ftg	3240

Shear Walls - 1st Floor

	ELEMENT 1					ELEMENT 2					ELEMENT 3					ELEMENT 4				
Grid #	Len. (ft)	Ht. (ft)	DL(Plf)	Sits on	Info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info	Len. (ft)	Ht. (ft)	DL(plf)	sits on	info
A	0	0	0	rotate	B															
B	3.33	9	0	ftg		3.5	9	0	ftg											
C	16	9	150	ftg																
D	5	9	0	ftg																

Tributaries - Roof

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
1	B	D	14.67	19.17	8	23	4.43	62.97	199.33	2834	30.5	30.5	1620.00
									199	2834			

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
2	B	D	14.67	19.17	8	23	4.43	62.97	199.33	2834	30.5	30.5	1620.00
									199	2834			

Tributaries - 1st Floor

WEST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
3	A	B	4.5	14.14	8	14.17	9.49	101.34	75.91	811	4	4	616.96
4	B	C	4.5	14.14	8	14.17	9.49	101.34	260.95	2787	21.75	21.75	2120.80
5	C	D	4.5	14.17	8	14.17	9.52	101.54	166.57	1777	44.25	44.25	1353.80
									503	5375			

EAST

Trib #	From	To	Start	End	Wt.(psf)	Wind Top	Seis Plf	Wind Plf	Seis Total	Wind Total	Center of Trib	Center of Trib	Weight
6	A	B	4.5	14.14	8	14.17	9.49	101.34	75.91	811	4	4	616.96
7	B	C	4.5	14.14	8	14.17	9.49	101.34	260.95	2787	21.75	21.75	2120.80
8	C	D	4.5	14.17	8	14.17	9.52	101.54	166.57	1777	44.25	44.25	1353.80
									503	5375			

Diaphragms - Roof

								DIAPHRAGM FORCE							
								SESMIC		WIND(West)		WIND(East)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E) Trib (E)	Left	Right	Left	Right	Left	Right	Weight	FORCE
1	B	D	22	25	1		2	1722	1722	1417	1417	1417	1417	24750	830
								1722	1722	1417	1417	1417	1417		
									3444		2834		2834		
							TOTAL WEIGHT AT ROOF =		34470						

Diaphragms - 1st Floor

								DIAPHRAGM FORCE							
								SEISMIC		WIND(West)		WIND(East)		DIA	CHORD
Dia #	From	To	Depth(ft)	Wt.(psf)	Trib (W)	Trib (W)	Trib (E) Trib (E)	Left	Right	Left	Right	Left	Right	Weight	FORCE
2	A	B	10	25	3		6	161	161	405	405	405	405	2000	81
3	B	C	21	17	4		7	734	734	1393	1393	1393	1393	9818	456
4	C	D	21	17	5		8	468	468	888	888	888	888	6248	185
								1363	1363	2687	2687	2687	2687		
									2726		5375		5375		
							TOTAL WEIGHT AT FLOOR =		35206						
							TOTAL WEIGHT EW =		69676						

RESULTS

Roof Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
B	2121	1417	1417	2121	471	S3	4388									
D	2121	1417	1417	2121	179	S6	1281									
	2121	1417	1417	<==== Total Loads at Roof												

1st Floor Shear Walls

GRID #	Seismic	Wind(W)	Wind(E)	Max Load	Shear 1	Type	Uplift	Shear 2	Type	Uplift	Shear 3	Type	Uplift	Shear 4	Type	Uplift
A	253	405	405	405		rotate										
B	3668	3621	3621	3668	537	S2	5185	537	S2	5156						
C	1415	2282	2282	2282	143	S6	485									
D	2987	2305	2305	2987	597	S2	5547									
	8070	8208	8208	<==== Total Loads at 2nd Floor												

FOUNDATION CALCULATIONS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017

Geotechnical Report : Engeo

Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN SUMMARY

Slab Dimensions : 41.00 FT x 90.00 FT x 4.00 Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	86.5 Cubic Yards
Prestressing Tendon :	2,044 Linear Feet
Number of End Anchorages :	70

In the LONG direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	8	0
Depth of Beams :	15.5 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches
Beam Spacing :		6.00 Feet O.C.
Number of Slab Tendons :		4
Slab Tendon Spacing :		12.33 Feet O.C.
Slab Tendon Centroid :		2.00 Inches from top of slab

In the SHORT direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	16	0
Depth of Beams :	15.5 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches
Beam Spacing :		6.00 Feet O.C.
Number of Slab Tendons :		11
Slab Tendon Spacing :		8.60 Feet O.C.
Slab Tendon Centroid :		2.00 Inches from top of slab

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

SOIL BEARING :

ALL VALUES WITHIN ALLOWABLE LIMITS.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS

Soil Bearing Analysis

Total Applied Load	892,177 LB
Bearing Area	3,689 FT^2
Applied Pressure on Soil	242 PSF
Soil Pressure Safety Factor	6.20

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Slab Tendons	11	4
Number of Beam Tendons	13	7
Spacing of Slab Tendons (Feet)	8.60	12.33
Center of Gravity of Concrete (from top of slab) (Inch)	4.47	4.63
Center of Gravity of Tendons (from top of slab) (Inch)	7.65	8.75
Eccentricity of Prestressing (Inch)	-3.17	-4.12
Minimum Effective Prestress Force (K)	511.9	165.8
Beta Distance Effective Prestress Force (K)	580.3	270.5
Minimum Effective Prestress (PSI)	81	56
Beta Distance Effective Prestress (PSI)	91	91

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (controlled by Em=5.0 per PTI 4.3.2)	5.12 FT-K/FT
Maximum Moment, Long Dir. (controlled by Em=5.0 per PTI 4.3.2)	4.87 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.208	-0.209	Actual Stress	0.792	0.676

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	110,848	53,919
Required Moment of Inertia ($Inch^4$)	54,367	27,279
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction.	2.21 K/FT
Maximum Shear, Long Direction	1.44 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	73	43

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
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Report Number : 14097

RIBBED FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	321.5	117.7
0.5 Moment (FT-K)	230.2	99.9

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.10 FT-K/FT
Maximum Moment, Long Direction	4.79 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.306	-0.281	Actual Stress	0.238	0.199

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	110,848	53,919
Required Moment of Inertia ($Inch^4$)	108,486	53,590
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.65 K/FT
Maximum Shear, Long Direction	2.80 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	88	84

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	353.2	198.4
0.5 Moment (FT-K)	229.7	98.1

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - SELECTED VARIABLES

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	6,344	2,980
Moment of Inertia ($Inch^4$) :	110,848	53,919
Section Modulus, Top ($Inch^3$) :	24,784	11,641
Section Modulus, Bottom ($Inch^3$) :	10,052	4,961
Center of Gravity of Concrete - from top (Inch) :	4.47	4.63
Center of Gravity of Prestressing Tendons - from top (Inch) :	7.65	8.75
Eccentricity of Prestress (Inch) :	-3.17	-4.12
Beta Distance (Feet) :	9.46	7.90

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	41.00 FT x 90.00 FT x 11.00 Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	11.00 (10.96) Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	125.3 Cubic Yards
Prestressing Tendon :	3,597.0 Linear Feet
Number of End Anchorages :	124

In the LONG direction ...

Number of Slab Tendons :	19
Slab Tendon Spacing :	2.17 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	43
Slab Tendon Spacing :	2.10 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	11,880	5,412
Moment of Inertia ($Inch^4$) :	119,790	54,571
Section Modulus, Top and Bottom ($Inch^3$) :	21,780	9,922
Beta Distance (Feet) :	9.65	7.93

Jacking Force : 33.05 KIPS

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **11.00 (10.96) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	43	19
Spacing of Tendons (FT)	2.10	2.17
Center of Gravity of Concrete (from top of slab) (Inch)	5.50	5.50
Center of Gravity of Tendons (from top of slab) (Inch)	5.50	5.50
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	960.8	321.9
Beta Distance Effective Prestress Force (K)	1,058.2	473.4
Minimum Effective Prestress (PSI)	81	59
Beta Distance Effective Prestress (PSI)	89	87

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (calculated with Em=5.0 per PTI 4.3.2) 5.12 FT-K/FT
Maximum Moment, Long Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.87 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.173	-0.182	Actual Stress	0.335	0.301

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia (Inch^4)	119,790	54,571
Required Moment of Inertia (Inch^4)	54,367	27,361
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.21 K/FT
Maximum Shear, Long Direction 1.44 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	17	11

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	504.8	223.3
0.5 Moment (FT-K)	230.2	99.9

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.10 FT-K/FT
Maximum Moment, Long Direction	4.79 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.172	-0.178	Actual Stress	0.334	0.297

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	119,790	54,571
Required Moment of Inertia ($Inch^4$)	108,486	53,751
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.65 K/FT
Maximum Shear, Long Direction	2.80 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	20	21

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	504.8	223.3
0.5 Moment (FT-K)	229.7	98.1

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : 42x90

Rectangle Geometry : 41.00 FT x 90.00 FT x 4.00 Inches

	Short Direction	Long Direction
Number of Slab Tendons :	11	4

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	16	0	8	0	
Depth :	15.5	0.0	15.5	0.0	Inches
Width :	11.0	0.0	11.0	0.0	Inches
Tendons :	1	0	1	0	
Cover :	2.75	0.00	2.75	0.00	Inches

Average beam spacing used in analysis

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,500.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	9.00 Feet	4.60 Feet
Differential Soil Movement, y_m :	0.600 Inches	1.600 Inches

Soil Modulus of Elasticity, E_s : 1,000.0 PSI

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 150.00 PSF
Total Perimeter Load : 1,200.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 360
Edge Lift : 720

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN SUMMARY

Slab Dimensions : 48.00 FT x 90.00 FT x 4.00 Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	109.3 Cubic Yards
Prestressing Tendon :	2,588 Linear Feet
Number of End Anchorages :	80

In the LONG direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	9	0
Depth of Beams :	14.7 Inches	0.0 Inches
Width of Beams :	14.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches
Beam Spacing :		6.00 Feet O.C.
Number of Slab Tendons :		6
Slab Tendon Spacing :		8.80 Feet O.C.
Slab Tendon Centroid :		2.00 Inches from top of slab

In the SHORT direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	17	0
Depth of Beams :	14.8 Inches	0.0 Inches
Width of Beams :	14.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches
Beam Spacing :		6.00 Feet O.C.
Number of Slab Tendons :		12
Slab Tendon Spacing :		7.82 Feet O.C.
Slab Tendon Centroid :		2.00 Inches from top of slab

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

SOIL BEARING :

ALL VALUES WITHIN ALLOWABLE LIMITS.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS

Soil Bearing Analysis

Total Applied Load	1,292,040	LB
Bearing Area	4,320	FT^2
Applied Pressure on Soil	299	PSF
Soil Pressure Safety Factor	5.02	

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Slab Tendons	12	6
Number of Beam Tendons	14	8
Spacing of Slab Tendons (Feet)	7.82	8.80
Center of Gravity of Concrete (from top of slab) (Inch)	4.76	4.71
Center of Gravity of Tendons (from top of slab) (Inch)	7.21	7.57
Eccentricity of Prestressing (Inch)	-2.45	-2.86
Minimum Effective Prestress Force (K)	531.7	212.2
Beta Distance Effective Prestress Force (K)	627.8	343.5
Minimum Effective Prestress (PSI)	77	58
Beta Distance Effective Prestress (PSI)	91	94

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (controlled by Em=5.0 per PTI 4.3.2) 4.93 FT-K/FT
Maximum Moment, Long Dir. (controlled by Em=5.0 per PTI 4.3.2) 4.70 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.188	-0.194	Actual Stress	0.636	0.593

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	118,992	61,882
Required Moment of Inertia ($Inch^4$)	61,370	31,872
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction. 2.25 K/FT
Maximum Shear, Long Direction 1.41 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	58	37

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	333.8	165.7
0.5 Moment (FT-K)	222.0	112.7

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	4.75 FT-K/FT
Maximum Moment, Long Direction	4.53 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.246	-0.265	Actual Stress	0.231	0.211

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	118,992	61,882
Required Moment of Inertia ($Inch^4$)	118,307	61,475
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.66 K/FT
Maximum Shear, Long Direction	2.77 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	68	72

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	354.0	208.9
0.5 Moment (FT-K)	214.0	108.7

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - SELECTED VARIABLES

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	6,890	3,652
Moment of Inertia ($Inch^4$) :	118,992	61,882
Section Modulus, Top ($Inch^3$) :	24,996	13,129
Section Modulus, Bottom ($Inch^3$) :	11,852	6,196
Center of Gravity of Concrete - from top (Inch) :	4.76	4.71
Center of Gravity of Prestressing Tendons - from top (Inch) :	7.21	7.57
Eccentricity of Prestress (Inch) :	-2.45	-2.86
Beta Distance (Feet) :	9.63	8.18

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017

Geotechnical Report : Engeo

Report Date : 9-29-17
Report Number : 14097

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	48.00 FT x 90.00 FT x 11.00 Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	11.00 (10.98) Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	146.7 Cubic Yards
Prestressing Tendon :	4,174.0 Linear Feet
Number of End Anchorages :	130

In the LONG direction ...

Number of Slab Tendons :	22
Slab Tendon Spacing :	2.19 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	43
Slab Tendon Spacing :	2.10 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	11,880	6,336
Moment of Inertia ($Inch^4$) :	119,790	63,888
Section Modulus, Top and Bottom ($Inch^3$) :	21,780	11,616
Beta Distance (Feet) :	9.65	8.25

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **11.00 (10.98) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	43	22
Spacing of Tendons (FT)	2.10	2.19
Center of Gravity of Concrete (from top of slab) (Inch)	5.50	5.50
Center of Gravity of Tendons (from top of slab) (Inch)	5.50	5.50
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	929.4	370.4
Beta Distance Effective Prestress Force (K)	1,058.2	546.2
Minimum Effective Prestress (PSI)	78	58
Beta Distance Effective Prestress (PSI)	89	86

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.93 FT-K/FT
Maximum Moment, Long Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.70 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.166	-0.174	Actual Stress	0.323	0.291

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	119,790	63,888
Required Moment of Inertia ($Inch^4$)	61,370	32,127
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.25 K/FT
Maximum Shear, Long Direction 1.41 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	17	11

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	504.8	258.7
0.5 Moment (FT-K)	222.0	112.7

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	4.75 FT-K/FT
Maximum Moment, Long Direction	4.53 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Long Direction		Compression in Top Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.158	-0.166	Actual Stress	0.314	0.283

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	119,790	63,888
Required Moment of Inertia ($Inch^4$)	118,307	61,968
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.66 K/FT
Maximum Shear, Long Direction	2.77 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	20	21

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	504.8	258.7
0.5 Moment (FT-K)	214.0	108.7

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 100,200
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : 48x90

Rectangle Geometry : 48.00 FT x 90.00 FT x 4.00 Inches

	Short Direction	Long Direction
Number of Slab Tendons :	12	6

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	17	0	9	0	
Depth :	14.8	0.0	14.7	0.0	Inches
Width :	14.0	0.0	14.0	0.0	Inches
Tendons :	1	0	1	0	
Cover :	2.75	0.00	2.75	0.00	Inches

Average beam spacing used in analysis

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,500.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	9.00 Feet	4.60 Feet
Differential Soil Movement, y_m :	0.600 Inches	1.600 Inches

Soil Modulus of Elasticity, E_s : 1,000.0 PSI

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 200.00 PSF
Total Perimeter Load : 1,200.00 PLF
Smallest Load Intensity : 700.00 PLF

Stiffness Coefficients

Center Lift : 360
Edge Lift : 720

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.1

Geostructural Tool Kit, Inc.

Registered To : Anthem Engineering

Serial Number : 100-310-173

Project Title : Auburn Grove Building 100,200
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017

Geotechnical Report : Engeo

Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN SUMMARY

Slab Dimensions : 41.00 FT x 104.00 FT x 4.00 Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	100.9 Cubic Yards
Prestressing Tendon :	2,433 Linear Feet
Number of End Anchorages :	78

In the LONG direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	8	0
Depth of Beams :	15.5 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons : 5
Slab Tendon Spacing : 9.25 Feet O.C.
Slab Tendon Centroid : 2.00 Inches from top of slab

In the SHORT direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	19	0
Depth of Beams :	15.7 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons : 12
Slab Tendon Spacing : 9.09 Feet O.C.
Slab Tendon Centroid : 2.00 Inches from top of slab

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

SOIL BEARING :

ALL VALUES WITHIN ALLOWABLE LIMITS.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - RESULTS OF ANALYSIS

Soil Bearing Analysis

Total Applied Load	1,034,569 LB
Bearing Area	4,263 FT^2
Applied Pressure on Soil	243 PSF
Soil Pressure Safety Factor	6.18

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Slab Tendons	12	5
Number of Beam Tendons	15	7
Spacing of Slab Tendons (Feet)	9.09	9.25
Center of Gravity of Concrete (from top of slab) (Inch)	4.58	4.63
Center of Gravity of Tendons (from top of slab) (Inch)	7.98	8.20
Eccentricity of Prestressing (Inch)	-3.40	-3.56
Minimum Effective Prestress Force (K)	570.7	171.4
Beta Distance Effective Prestress Force (K)	646.9	297.0
Minimum Effective Prestress (PSI)	77	58
Beta Distance Effective Prestress (PSI)	87	100

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (controlled by Em=5.0 per PTI 4.3.2) 5.13 FT-K/FT
Maximum Moment, Long Dir. (controlled by Em=5.0 per PTI 4.3.2) 4.88 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.205	-0.201	Actual Stress	0.760	0.665

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	135,693	53,919
Required Moment of Inertia ($Inch^4$)	62,942	27,330
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction. 2.21 K/FT
Maximum Shear, Long Direction 1.46 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	70	44

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	356.7	146.5
0.5 Moment (FT-K)	266.5	100.1

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.12 FT-K/FT
Maximum Moment, Long Direction	4.78 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.288	-0.294	Actual Stress	0.227	0.207

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	135,693	53,919
Required Moment of Inertia ($Inch^4$)	125,808	53,540
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.67 K/FT
Maximum Shear, Long Direction	2.83 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	85	85

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	426.1	198.4
0.5 Moment (FT-K)	266.4	98.0

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - SELECTED VARIABLES

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	7,437	2,980
Moment of Inertia ($Inch^4$) :	135,693	53,919
Section Modulus, Top ($Inch^3$) :	29,621	11,641
Section Modulus, Bottom ($Inch^3$) :	12,204	4,961
Center of Gravity of Concrete - from top (Inch) :	4.58	4.63
Center of Gravity of Prestressing Tendons - from top (Inch) :	7.98	8.20
Eccentricity of Prestress (Inch) :	-3.40	-3.56
Beta Distance (Feet) :	9.95	7.90

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	41.00 FT x 104.00 FT x 11.00 Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	11.00 (10.96) Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	144.8 Cubic Yards
Prestressing Tendon :	4,184.0 Linear Feet
Number of End Anchorages :	136

In the LONG direction ...

Number of Slab Tendons :	20
Slab Tendon Spacing :	2.05 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	48
Slab Tendon Spacing :	2.17 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	13,728	5,412
Moment of Inertia ($Inch^4$) :	138,424	54,571
Section Modulus, Top and Bottom ($Inch^3$) :	25,168	9,922
Beta Distance (Feet) :	10.00	7.93

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **11.00 (10.96) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	48	20
Spacing of Tendons (FT)	2.17	2.05
Center of Gravity of Concrete (from top of slab) (Inch)	5.50	5.50
Center of Gravity of Tendons (from top of slab) (Inch)	5.50	5.50
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	1,065.3	319.9
Beta Distance Effective Prestress Force (K)	1,174.1	500.0
Minimum Effective Prestress (PSI)	78	59
Beta Distance Effective Prestress (PSI)	86	92

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (calculated with Em=5.0 per PTI 4.3.2) 5.13 FT-K/FT
Maximum Moment, Long Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.88 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.177	-0.183	Actual Stress	0.332	0.301

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	138,424	54,571
Required Moment of Inertia ($Inch^4$)	62,942	27,413
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.21 K/FT
Maximum Shear, Long Direction 1.46 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	17	11

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	564.3	234.6
0.5 Moment (FT-K)	266.5	100.1

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.12 FT-K/FT
Maximum Moment, Long Direction	4.78 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.176	-0.178	Actual Stress	0.332	0.296

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	138,424	54,571
Required Moment of Inertia ($Inch^4$)	125,808	53,701
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.67 K/FT
Maximum Shear, Long Direction	2.83 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	143
Actual Shear Stress (PSI)	20	21

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	564.3	234.6
0.5 Moment (FT-K)	266.4	98.0

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : 42x104

Rectangle Geometry : 41.00 FT x 104.00 FT x 4.00 Inches

	Short Direction	Long Direction
Number of Slab Tendons :	12	5

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	19	0	8	0	
Depth :	15.7	0.0	15.5	0.0	Inches
Width :	11.0	0.0	11.0	0.0	Inches
Tendons :	1	0	1	0	
Cover :	2.75	0.00	2.75	0.00	Inches

Average beam spacing used in analysis

Project Title : Auburn Grove Building 300
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,500.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	9.00 Feet	4.60 Feet
Differential Soil Movement, y_m :	0.600 Inches	1.600 Inches

Soil Modulus of Elasticity, E_s : 1,000.0 PSI

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 150.00 PSF
Total Perimeter Load : 1,200.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 360
Edge Lift : 720

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 300
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - DESIGN SUMMARY

Slab Dimensions : 41.00 FT x 126.00 FT x 4.00 Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	121.1 Cubic Yards
Prestressing Tendon :	2,954 Linear Feet
Number of End Anchorages :	86

In the LONG direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	8	0
Depth of Beams :	15.5 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons : 6
Slab Tendon Spacing : 7.40 Feet O.C.
Slab Tendon Centroid : 2.00 Inches from top of slab

In the SHORT direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	22	0
Depth of Beams :	15.7 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons : 12
Slab Tendon Spacing : 11.09 Feet O.C.
Slab Tendon Centroid : 2.00 Inches from top of slab

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

SOIL BEARING :

ALL VALUES WITHIN ALLOWABLE LIMITS.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Registered To : Anthem Engineering

Serial Number : 100-310-173

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS

Soil Bearing Analysis

Total Applied Load	1,248,973 LB
Bearing Area	5,165 FT^2
Applied Pressure on Soil	242 PSF
Soil Pressure Safety Factor	6.20

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Slab Tendons	12	6
Number of Beam Tendons	18	7
Spacing of Slab Tendons (Feet)	11.09	7.40
Center of Gravity of Concrete (from top of slab) (Inch)	4.50	4.63
Center of Gravity of Tendons (from top of slab) (Inch)	8.36	7.73
Eccentricity of Prestressing (Inch)	-3.86	-3.10
Minimum Effective Prestress Force (K)	620.9	168.3
Beta Distance Effective Prestress Force (K)	708.8	323.8
Minimum Effective Prestress (PSI)	70	56
Beta Distance Effective Prestress (PSI)	80	109

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (controlled by Em=5.0 per PTI 4.3.2) 5.14 FT-K/FT
Maximum Moment, Long Dir. (controlled by Em=5.0 per PTI 4.3.2) 4.89 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.218	-0.195	Actual Stress	0.785	0.647

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	159,205	53,919
Required Moment of Inertia ($Inch^4$)	76,447	27,399
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction. 2.21 K/FT
Maximum Shear, Long Direction 1.49 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	145	143
Actual Shear Stress (PSI)	73	45

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	357.8	175.0
0.5 Moment (FT-K)	323.7	100.3

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.12 FT-K/FT
Maximum Moment, Long Direction	4.78 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.306	-0.312	Actual Stress	0.221	0.214

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	159,205	53,919
Required Moment of Inertia ($Inch^4$)	152,231	53,473
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.67 K/FT
Maximum Shear, Long Direction	2.87 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	145	143
Actual Shear Stress (PSI)	88	86

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	493.5	198.4
0.5 Moment (FT-K)	322.3	97.9

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - SELECTED VARIABLES

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	8,879	2,980
Moment of Inertia ($Inch^4$) :	159,205	53,919
Section Modulus, Top ($Inch^3$) :	35,354	11,641
Section Modulus, Bottom ($Inch^3$) :	14,219	4,961
Center of Gravity of Concrete - from top (Inch) :	4.50	4.63
Center of Gravity of Prestressing Tendons - from top (Inch) :	8.36	7.73
Eccentricity of Prestress (Inch) :	-3.86	-3.10
Beta Distance (Feet) :	10.36	7.90

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	41.00 FT x 126.00 FT x 11.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	11.00 (10.96)	Inches

Material Properties

Concrete Strength, f'_c :	3,000	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	175.4	Cubic Yards
Prestressing Tendon :	5,138.0	Linear Feet
Number of End Anchorages :	152	

In the LONG direction ...

Number of Slab Tendons :	22	
Slab Tendon Spacing :	1.86	Feet O.C.
Slab Tendon Centroid :	5.50	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	54	
Slab Tendon Spacing :	2.34	Feet O.C.
Slab Tendon Centroid :	5.50	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	16,632	5,412
Moment of Inertia ($Inch^4$) :	167,706	54,571
Section Modulus, Top and Bottom ($Inch^3$) :	30,492	9,922
Beta Distance (Feet) :	10.49	7.93

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **11.00 (10.96) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	54	22
Spacing of Tendons (FT)	2.34	1.86
Center of Gravity of Concrete (from top of slab) (Inch)	5.50	5.50
Center of Gravity of Tendons (from top of slab) (Inch)	5.50	5.50
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	1,180.1	328.2
Beta Distance Effective Prestress Force (K)	1,305.8	553.3
Minimum Effective Prestress (PSI)	71	61
Beta Distance Effective Prestress (PSI)	79	102

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (calculated with Em=5.0 per PTI 4.3.2) 5.14 FT-K/FT
Maximum Moment, Long Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.89 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.184	-0.182	Actual Stress	0.326	0.303

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	167,706	54,571
Required Moment of Inertia ($Inch^4$)	76,447	27,481
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.21 K/FT
Maximum Shear, Long Direction 1.49 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	146	144
Actual Shear Stress (PSI)	17	11

Project Title : Auburn Grove Building 400
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	636.6	257.0
0.5 Moment (FT-K)	323.7	100.3

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.12 FT-K/FT
Maximum Moment, Long Direction	4.78 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.183	-0.176	Actual Stress	0.325	0.297

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	167,706	54,571
Required Moment of Inertia ($Inch^4$)	152,231	53,634
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.67 K/FT
Maximum Shear, Long Direction	2.87 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	146	144
Actual Shear Stress (PSI)	20	22

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	636.6	257.0
0.5 Moment (FT-K)	322.3	97.9

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : 42x126

Rectangle Geometry : 41.00 FT x 126.00 FT x 4.00 Inches

	Short Direction	Long Direction
Number of Slab Tendons :	12	6

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	22	0	8	0	
Depth :	15.7	0.0	15.5	0.0	Inches
Width :	11.0	0.0	11.0	0.0	Inches
Tendons :	1	0	1	0	
Cover :	2.75	0.00	2.75	0.00	Inches

Average beam spacing used in analysis

Project Title : Auburn Grove Building 400
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure :		1,500.0 PSF
	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	9.00 Feet	4.60 Feet
Differential Soil Movement, y_m :	0.600 Inches	1.600 Inches
Soil Modulus of Elasticity, E_s :		1,000.0 PSI

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	150.00 PSF
Total Perimeter Load :	1,200.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	360
Edge Lift :	720

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss :	15.0 KSI
Subgrade Friction Coefficient :	0.75

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 400
Project Engineer :

Geotechnical Report : Engeo

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

Project Number :
Project Date : November 28, 2017

Geotechnical Report : Engeo

Report Date : 9-29-17
Report Number : 14097

RIBBED FOUNDATION - DESIGN SUMMARY

Slab Dimensions : 41.00 FT x 152.00 FT x 4.00 Inches

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	145.0 Cubic Yards
Prestressing Tendon :	3,919 Linear Feet
Number of End Anchorages :	110

In the LONG direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	8	0
Depth of Beams :	15.5 Inches	0.0 Inches
Width of Beams :	11.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons :	6
Slab Tendon Spacing :	7.40 Feet O.C.
Slab Tendon Centroid :	2.00 Inches from top of slab

In the SHORT direction ...

	Type I Beam	Type II Beam
Quantity of Beams :	27	0
Depth of Beams :	16.2 Inches	0.0 Inches
Width of Beams :	10.0 Inches	0.0 Inches
Tendons per Beam :	1	0
Beam Tendon Centroid :	3.00 Inches	0.00 Inches

Beam Spacing : 6.00 Feet O.C.

Number of Slab Tendons :	19
Slab Tendon Spacing :	8.22 Feet O.C.
Slab Tendon Centroid :	2.00 Inches from top of slab

Project Title : Auburn Grove Building 500
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

SOIL BEARING :

ALL VALUES WITHIN ALLOWABLE LIMITS.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Registered To : Anthem Engineering

Serial Number : 100-310-173

Project Title : Auburn Grove Building 500
Project Engineer :

Project Number :
Project Date : November 28, 2017
Report Date : 9-29-17
Report Number : 14097

Geotechnical Report : Engeo

RIBBED FOUNDATION - RESULTS OF ANALYSIS

Soil Bearing Analysis

Total Applied Load	1,502,574 LB
Bearing Area	6,231 FT^2
Applied Pressure on Soil	241 PSF
Soil Pressure Safety Factor	6.22

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Slab Tendons	19	6
Number of Beam Tendons	22	8
Spacing of Slab Tendons (Feet)	8.22	7.40
Center of Gravity of Concrete (from top of slab) (Inch)	4.52	4.63
Center of Gravity of Tendons (from top of slab) (Inch)	7.96	8.00
Eccentricity of Prestressing (Inch)	-3.44	-3.37
Minimum Effective Prestress Force (K)	878.6	159.8
Beta Distance Effective Prestress Force (K)	977.7	350.6
Minimum Effective Prestress (PSI)	83	54
Beta Distance Effective Prestress (PSI)	92	118

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (controlled by Em=5.0 per PTI 4.3.2)	5.15 FT-K/FT
Maximum Moment, Long Dir. (controlled by Em=5.0 per PTI 4.3.2)	4.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.198	-0.200	Actual Stress	0.810	0.649

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	199,480	53,919
Required Moment of Inertia ($Inch^4$)	92,447	27,465
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction.	2.23 K/FT
Maximum Shear, Long Direction	1.51 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	142
Actual Shear Stress (PSI)	77	45

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RIBBED FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	583.1	175.0
0.5 Moment (FT-K)	391.5	100.6

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.17 FT-K/FT
Maximum Moment, Long Direction	4.77 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.292	-0.311	Actual Stress	0.228	0.209

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	199,480	53,919
Required Moment of Inertia ($Inch^4$)	185,443	53,408
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.70 K/FT
Maximum Shear, Long Direction	2.91 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	142
Actual Shear Stress (PSI)	94	87

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	629.6	220.3
0.5 Moment (FT-K)	392.6	97.8

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

Geotechnical Report : Engeo

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RIBBED FOUNDATION - SELECTED VARIABLES

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	10,590	2,980
Moment of Inertia ($Inch^4$) :	199,480	53,919
Section Modulus, Top ($Inch^3$) :	44,138	11,641
Section Modulus, Bottom ($Inch^3$) :	17,078	4,961
Center of Gravity of Concrete - from top (Inch) :	4.52	4.63
Center of Gravity of Prestressing Tendons - from top (Inch) :	7.96	8.00
Eccentricity of Prestress (Inch) :	-3.44	-3.37
Beta Distance (Feet) :	10.96	7.90

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

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Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	41.00 FT x 152.00 FT x 11.00 Inches
Uniform Thickness Slab :	11.00 (10.96) Inches
(rounded to the nearest 0.25 inch)	

Material Properties

Concrete Strength, f'_c :	3,000 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	211.6 Cubic Yards
Prestressing Tendon :	6,767.0 Linear Feet
Number of End Anchorages :	196

In the LONG direction ...

Number of Slab Tendons :	23
Slab Tendon Spacing :	1.77 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	75
Slab Tendon Spacing :	2.03 Feet O.C.
Slab Tendon Centroid :	5.50 Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	20,064	5,412
Moment of Inertia ($Inch^4$) :	202,312	54,571
Section Modulus, Top and Bottom ($Inch^3$) :	36,784	9,922
Beta Distance (Feet) :	11.00	7.93

Jacking Force : 33.05 KIPS

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

Project Number :
Project Date : November 28, 2017
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Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

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UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **11.00 (10.96) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	75	23
Spacing of Tendons (FT)	2.03	1.77
Center of Gravity of Concrete (from top of slab) (Inch)	5.50	5.50
Center of Gravity of Tendons (from top of slab) (Inch)	5.50	5.50
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	1,686.0	301.7
Beta Distance Effective Prestress Force (K)	1,830.0	579.9
Minimum Effective Prestress (PSI)	84	56
Beta Distance Effective Prestress (PSI)	91	107

Moment Analysis - Center Lift Mode

Maximum Moment, Short Dir. (calculated with Em=5.0 per PTI 4.3.2) 5.15 FT-K/FT
Maximum Moment, Long Dir. (calculated with Em=5.0 per PTI 4.3.2) 4.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.171	-0.188	Actual Stress	0.339	0.299

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 360

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	202,312	54,571
Required Moment of Inertia ($Inch^4$)	92,447	27,548
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.23 K/FT
Maximum Shear, Long Direction 1.51 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	17	11

Project Title : Auburn Grove Building 500
Project Engineer :

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Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	879.4	268.2
0.5 Moment (FT-K)	391.5	100.6

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	5.17 FT-K/FT
Maximum Moment, Long Direction	4.77 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.172	-0.181	Actual Stress	0.340	0.292

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 720

	Short Direction	Long Direction
Available Moment of Inertia (Inch^4)	202,312	54,571
Required Moment of Inertia (Inch^4)	185,443	53,569
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	2.70 K/FT
Maximum Shear, Long Direction	2.91 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	148	143
Actual Shear Stress (PSI)	20	22

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	879.4	268.2
0.5 Moment (FT-K)	392.6	97.8

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

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Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : 41x152

Rectangle Geometry : 41.00 FT x 152.00 FT x 4.00 Inches

	Short Direction	Long Direction
Number of Slab Tendons :	19	6

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	27	0	8	0	
Depth :	16.2	0.0	15.5	0.0	Inches
Width :	10.0	0.0	11.0	0.0	Inches
Tendons :	1	0	1	0	
Cover :	2.75	0.00	2.75	0.00	Inches

Average beam spacing used in analysis

Project Title : Auburn Grove Building 500
Project Engineer :

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SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,500.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	9.00 Feet	4.60 Feet
Differential Soil Movement, y_m :	0.600 Inches	1.600 Inches

Soil Modulus of Elasticity, E_s : 1,000.0 PSI

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 150.00 PSF
Total Perimeter Load : 1,200.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 360
Edge Lift : 720

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.1

Geostructural Tool Kit, Inc.

Project Title : Auburn Grove Building 500
Project Engineer :

Geotechnical Report : Engeo

Project Number :
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PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

CALCULATON OF ALLOWABLE POINT LOAD IN PT SLABS

Based on 3rd Edition of "Design of Post-Tensioned Slabs-on-Ground"

Section 6.14 $M_{MAX} = -(Pb)(ß1)/4$ **EQ. 6-38**

$f_t=P_r/A-(M_{MAX})(C)/I$ **EQ. 6-42**

Pr = Prestress Load
A =AREA
A= (8)(t)(t) = $8t^2$ Point Load Interior (ACI 8.10.2)
A= (6)(t)(t) = $6t^2$ Point Load Exterior (ACI 8.10.2)
A= 12(t) = 12t Line Load
$I/c =(B_w)t^3/12(2/t)$
$= 8t^3/6$ For Interior Load
$= 6t^3/6$ For Exterior Load
$= 12t^2/6$ For Line Load

Converts to:
$f_t=P_r/A-(4.7(P)(t^{0.75})/(8t^3/6))$ Interior
$f_t=P_r/A-(4.7(P)(t^{0.75})/(6t^3/6))$ Exterior
$f_t=P_r/A-(4.7(P)(t^{0.75})/(12t^2/6))$ Line Load

Converts to:
$f_t=P_r/A-(2.35)(P)/(4t^{2.25}/6))$ Interior
$f_t=P_r/A-(2.35)(P))/(t^{2.25}/2))$ Exterior
$f_t=P_r/A-(2.35)(P))/(6t^{1.25}/6))$ Line Load

Converts to:
$f_t=P_r/A-(C_P)(P)/(2t^{2.25}/3))$ Interior
$f_t=P_r/A-(C_P)(P))/(t^{2.25}/2))$ Exterior
$f_t=P_r/A-(C_P)(P))/(t^{1.25}))$ Line Load

Cp = 2.35 for Clay Soils, 1.34 for low plastic soils, 0.74 for sand.
P = Point Load Allowed
t = Thickness of slab.
f_t=Allowable Tensile stress of concrete = $6(f'c)^{1/2}$

Converts to:
$P = ((P_r/A-f_t)(2/3)(t^{2.25}))/C_P$ Interior
$P = ((P_r/A-f_t)(1/2)(t^{2.25}))/C_P$ Exterior
$P = ((P_r/A-f_t)(t^{1.25}))/C_P$ Line Load

ASSUME 50 psi minimum (Pr/A), t=11" SLAB

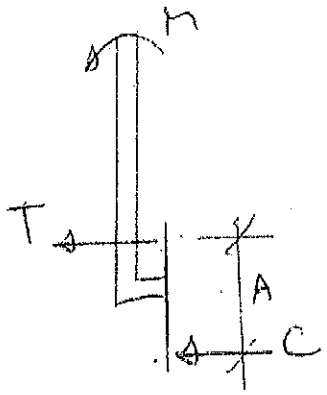
P_{ALLOW}	=	**23,670 LBS.**	Interior
P_{ALLOW}	=	**17,752 LBS.**	Exterior
W_{ALLOW}	=	**3,225 PLF**	Line Load

MISCELLANEOUS CALCULATIONS

RAILING DESIGNS

A) DESIGN RAIL ATTACHMENT - EXTERIOR
(METAL RAIL)

$M = (200^{\#})(3.5') = 700'^{\#}$ OR $8400''^{\#}$



$(T)(A) \geq 8400''^{\#}$

USE SIMPSON 1/4" X 3 1/2" SDS SCREWS

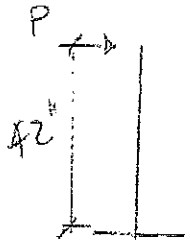
$T_{AL} = (345)(1.6) = 552^{\#}$

2 LAGS = $1104^{\#}$

$\frac{8400''^{\#}}{1104} = 7.6''$ USE 8".

B)

DESIGN RAILING POST CONNECTION (HALF WALL)
WOOD HALF WALL / OR 4x NEWEL @ DECK

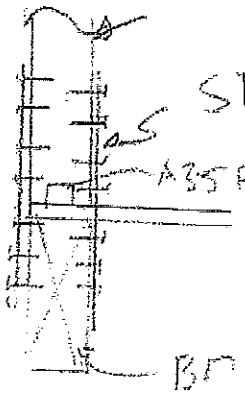


$P = 200^{\#}$

$M = (200^{\#})(42") = 8400^{"\#}$

$T = C = \frac{8400"\#}{3.5"} = 2400^{\#}$ USE ST6224

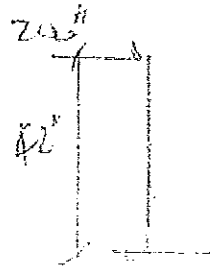
4x4 POST IN 1/2 WALL OR NEWEL



c)

DESIGN STAIR NEWEL CONNECTION

200# LOAD IS SPREAD OVER MIN. OF 2 POSTS

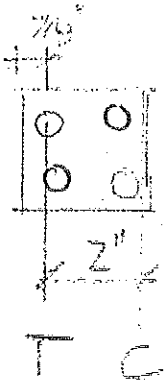


$M = 8400''\#$

$= 4200''\#$/POST

USE 3/8" LAGS (305#/in WITH OVERLAP)

$\frac{4200''\#}{2''} = 2100\#$



(1) LAG: $2105\#/(305)(2.0) = 3.44''/2$ (LOF) $= 1.72''$

USE 6"

CHECK COMBINED STRESSES

SHEAR

SPECIFIC GRAVITY = 0.5 MIN

3/8" LAG $V_{ALL} = (120\#)(2.0) = 240\#$ (LOF)

$C_D = 1.0$ FOR $D = 1.5''$

W/ 7/8", $C_D = 0.5833$

$\frac{(1.72)}{(6'')(0.5833)} + \frac{\sqrt{50\#}}{(240)(0.5833)} = 0.95 < 1.0$ OK

COLUMN CAPACITIES

Based on the AF&PA (NDS)

INPUT		
Column Size	4x4	
Column Height, le (ft.)	9	
Column Depth (in.)	3.5	<<== Use this for Weak Axis
Column Width (in.)	3.5	
Column Material	DFL	
Column Grade	#2	
Ke	1.00	<<== Per Appendix G
E_{MIN} (x 10^6 psi)	580000	
Fc =(psi)	1350	
C_F	1.15	<<== Table 4A Adjustment Factors (2x,4x only)
LDF =	1.00	
F_C* (psi)	1552.5	
Fc_{PERP} = (psi)	625	

OUTPUT		
le/d =	**29.57**	
F_{CE} =	**545.20**	
c =	**0.8**	<<== c=0.8 for sawn Lumber,c= 0.85 for round poles, c=0.9 for engineered lumber
C_P	**0.321**	<<== EQ. 3.7-1

P_{ALLOW} = (lbs.) 6102

SAMPLE POST CALCULATION (AFRPA - NDS) 3.6

4x4 D.F. #2 → 9' TALL

$l_e = (9)(12) - 4.5" = 103.50$

$d = 3.5"$

$\frac{l_e}{d} = 29.57$

$E_{MIN} = 580000$ FOR D.F. #2

$F_{cE} = \frac{(0.822)(E_{MIN})}{(l_e/d)^2} = 545.2$

$F_c^* = 1350 \cdot 1.0 \cdot 1.15 = 1552.5$

(F_c FOR D.F. #2 C_F PER 4A ADJUSTMENTS)

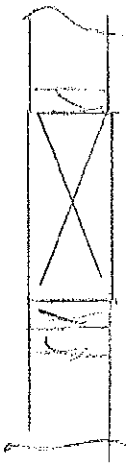
$C = 0.8$ FOR SAWN LUMBER

EQ 3.7-1 $C_p = \frac{1+(F_{cE}/F_c^*)}{2c} - \sqrt{\left(\frac{1+(F_{cE}/F_c^*)}{2c}\right)^2 - \frac{F_{cE}/F_c^*}{c}}$

$\rightarrow 0.321$

$P_{ALL} = (0.321)(3.5)(3.5)(1552.5) = 6102\#$

CHECK BEAMS FOR OUT-OF-PLANE WIND LOAD @ STAIRWELLS



W

$W = (19\,PSF)\left[\left(\frac{9\frac{1}{2}}{2}\right)(2)+1'\right]$

$= 190\,PLF$

$(190 \times 0.7) = 133$

↑

REDUCTION PER TABLE 1604.3

General Beam
Stair Beams
Out of Plane

INPUT

Span (ft) =	17.00
LDF =	1.60
Beam =	14x5.25
Mat'l =	PSL
b =	14
d =	5.25
I =	169
E (x10 E6)	2
Beam EI	337640625

UP TO 17' OK

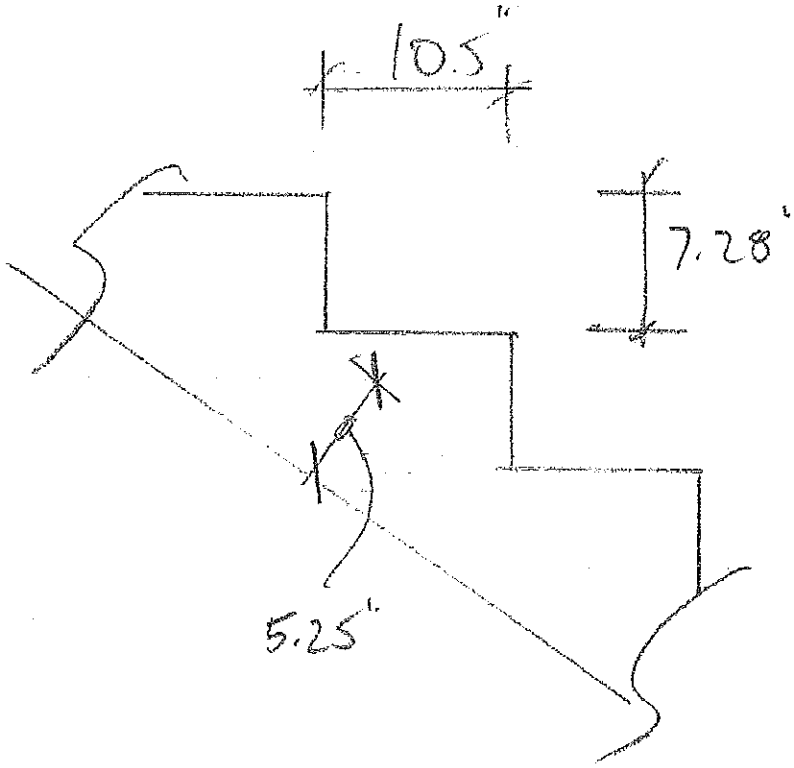
LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	133	0	17	133

OUTPUT

Shear (lb)	1,131
fv (psi)	14
Moment (ft-lb)	4,805
fb (psi)	560
Deflection (in)	0.74
L/	276
Lt Reaction =	1131
Rt Reaction =	1131

TYPICAL STAIRS



LOADING 40 PSF LL + 10 PSF DL = 50 PSF

$w = (50)(3'/2) = 75$ PLF

2x12 CAN SPAN 8'-6"
(2) 2x12 CAN SPAN 11'-0"

General Beam

Stair Stringer 1

INPUT

Span (ft) =	8.50
LDF =	1.25
Beam =	2x12 Notched
Mat'l =	DF#1
b =	1.5
d =	5.25
I =	18
E (x10 E6)	1.6
Beam EI	28940625

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	90	0	8.5	90

OUTPUT

Shear (lb)	383
fv (psi)	58
Moment (ft-lb)	813
fb (psi)	1,132
Deflection (in)	0.37
L/	279
Lt Reaction =	383
Rt Reaction =	383

(2)A35 Stringer to Beam OK

General Beam

Stair Stringer 2

INPUT

Span (ft) =	11.00
LDF =	1.25
Beam =	2-2x12 Notched
Mat'l =	DF#1
b =	3
d =	5.25
I =	36
E (x10 E6)	1.6
Beam EI	57881250

LOADS

Load Number	Type	Tot. Load	Start	End	Tot
1	Uniform	90	0	11	90

OUTPUT

Shear (lb)	495
fv (psi)	38
Moment (ft-lb)	1,361
fb (psi)	948
Deflection (in)	0.51
L/	258
Lt Reaction =	495
Rt Reaction =	495

(2)A35 Stringer to Beam OK