GFDS ENGINEERS

Structural Calculations for
Nohea Lot 22

Project No: 22056.H0
February 26, 2022

EXP: 04-30-24

THIS WORK WAS PREPARED BY ME OR UNDER
MY SUPERVISION AND CONSTRUCTION OF THIS
PROJECT WILL BE UNDER MY OBSERVATION

Structural
design for fine
architecture™

GFDS ENGINEERS

Nohea Lot 22

Contents

Based on the 2018 International Building Code

Structural
design for fine
architecture™

DESIGN CRITERIA

GFDS
ENGINEERS

GFDS ENGINEERS

DATE: Feb 22, 2022
JOB NO: 22056.H0
BY:
PAGE: D1

Nohea Lot 22

Design Criteria

Project Number: 22056.H0

Project Description: Nohea Lot 22
Nohea at Mauna Lani

Building System: Light framed walls sheathed with wood structural panels rated for shear resistance.

Governing Codes: 2018 International Building Code

Soils Report By: N/A

SEISMIC CRITERIA			
Importance Factor (I_E)	1.0	Site Class	D
Response Modification Coefficient, R	6.5	Mapped Short Period Response Acceleration, S_S	1.5
Base Shear Coefficient, Strength (C_s)	0.154	Mapped 1-Sec Period Response Acceleration, S_1	0.6g
Base Shear Coefficient, ASD	0.108	Site Coefficient, Fa	1.0
Redundancy, ρ	1.0	Site Coefficient, Fv	1.3
System Overstrength Factor, Ω_o	3	Design Short Period Response Acceleration,S_{DS}	1.0g
Deflection Amplification Factor, C_d	4	Design 1-Sec Period Response Acceleration ,S_{D1}	0.6g

GFDS ENGINEERS

DATE: Feb 22, 2022
JOB NO: 22056.H0
BY:
PAGE: D2

Nohea Lot 22

WIND CRITERIA			
Exposure	C	Gust Factor, G	0.85
Basic Wind Speed, V	130 mph	Velocity Pressure (mean roof height), q_h	23.9 psf
Exposure Coefficient (mean roof height), K_h	0.85	Internal Pressure Coefficient, GC_{pi}	0.18
Topographic Factor, K_{zt}	1.0	Importance Factor (I_W)	1.0
Directionality Factor, K_d	0.65		

DEFLECTION CRITERIA		
Roof Deflection	Live Load	L/360
	Total Load	L/240

FOUNDATION CRITERIA Based on: IBC Table 1804.2		
STRIP FOOTING, RETAINING WALL		
Bearing Capacity:	(D+L)	1500 psf (ASD)
	(D+L+E)	2000 psf (ASD)

Nohea Lot 22

CONCRETE CRITERIA	
f'c (typical)	3000 psi
Ec	3120 ksi
Fy	60 ksi

STEEL CRITERIA	
Beams and WF Columns - Fy	50 ksi
Pipe Columns – Fy	36 ksi
Tube Braces and Columns - Fy	46 ksi

LOAD CRITERIA

ROOF	PSF
Roofing	3
5/8" Plywood	2
Framing	4
Insulation	1
Ceiling	4
Misc	3
Mechanical & Plumbing	1
Slope Adjust	2
Total Dead Load	20
Live Load (Reducible)	20

EXTERIOR WALLS (Plaster)	PSF
Plaster	10
5/8" Gyp	3
2x6 @ 16"	2
Insulation	1
1/2" Plywood	1.5
Misc	2.5
Total Dead Load	20

WINDOWS	PSF
	10

FLAT ROOF	PSF
Roofing	3
5/8" Plywood	2
Framing	4
Insulation	1
Ceiling	4
Misc	5
Mechanical & Plumbing	1
Slope Adjust	0
Total Dead Load	20
Live Load (Reducible)	20

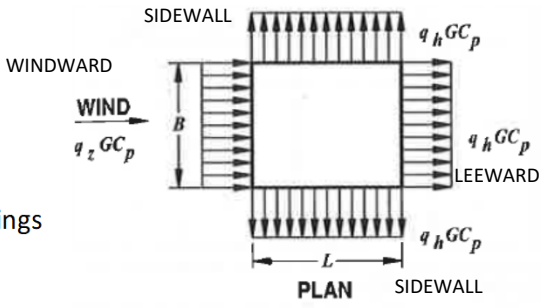
INTERIOR WALLS	PSF
5/8" Gyp	3
Framing	1.5
5/8" Gyp	3
Misc	2.5
Total Dead Load	10

WIND LOAD CALCULATION - MWFRS

Analysis is carried out per ASCE 7-10, Chapter 27, "Wind Loads on Buildings-MWFRS (Directional Procedure)"
All Heights, Enclosed, Partially Enclosed Buildings, Walls & Standard Roofs

INPUT PROPERTIES

Exposure	C		
Basic Wind Speed, V	130	mph	
Gust-Effect Factor, G	0.85		
Enclosure Classification	enclosed		
Topographic Factor, K_{zt}	1		Figure 26.8-1
Directionality Factor, K_d	0.65		Table 26.6-1, Buildings
Length Parallel to Wind, L	64	ft	
Width Perpendicular to Wind, B	75	ft	
Mean Roof Height, h	13	ft	
Roof Angle, θ	27	degrees	



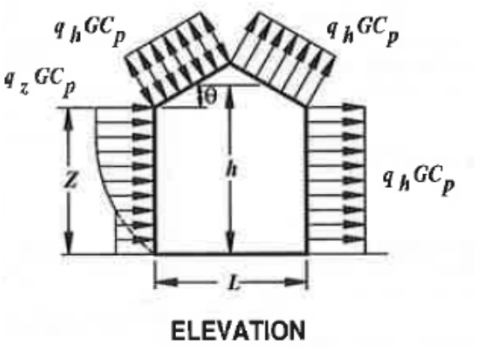
For diagramatic purpose only. Calculated Positive Pressures below signify wind acting TOWARD the surface

VELOCITY PRESSURE

$q_z = .00256\ K_z\ K_{zt}\ K_d\ V^2$

Height, z	K_z	q_z (psf)
0-15	0.85	23.9

k_h 0.85 23.9 psf (For z=h)



(See Figure 27.4-1 for other Roof Configurations)

WIND LOAD - WALL

Find External Pressure Coefficients, C_p ASCE-7-10, Figure 27.4-1

L/B = 0.853333

	L/B	Cp
Windward Wall		0.8
Leeward Wall	0 to 1	-0.5
	2 to 4	n/a
	> 4	n/a
Side Wall		-0.7

Cp Used	
Cp,WW.wall	0.8
Cp,LW.wall	-0.5
Cp,sideWall	-0.7

WIND LOAD CALCULATION - C&C

Analysis is carried out per ASCE 7-10, Chapter 30, "Wind Loads - Components and Cladding (C&C)"

h <= 60 ft, Enclosed, Partially Enclosed Buildings, Walls & Gable Roofs

INPUT PROPERTIES

Exposure Category	C	Section 62.7
Basic Wind Speed, V	130	mph
Topography Factor, K_{zt}	1.00	Section 26.8 and Fig 26.8-1
Building length parallel to wind L	64	ft
Building length normal to wind B	75	ft
Building mean roof height , h	13	ft
Roof slope Theta	27	degrees
Exposure Coeff. For Cladding at h, K_h	0.85	Table 30.3-1
Wind directionality factor, K_d	0.65	Table 26.6-1, Components and Cladding

VELOCITY PRESSURE FOR H <= 60 FT

$P = q_h * (GC_p - GC_{pi})$

Values for External Pressure Coefficients, GCp, calculated from ASCE-7-10, Figs. 30.4-1 to 30.4-7

Velocity pressure at z=h, $q_h = 0.00256\ K_z\ K_{zt}\ K_d\ V^2 =$ **23.87** psf, ASCE-7-10, Equation 30.3-1

Internal Pressure Coefficients for Buildings, +/- GCpi **0.18** ASCE-7-10, Table 26.11-1

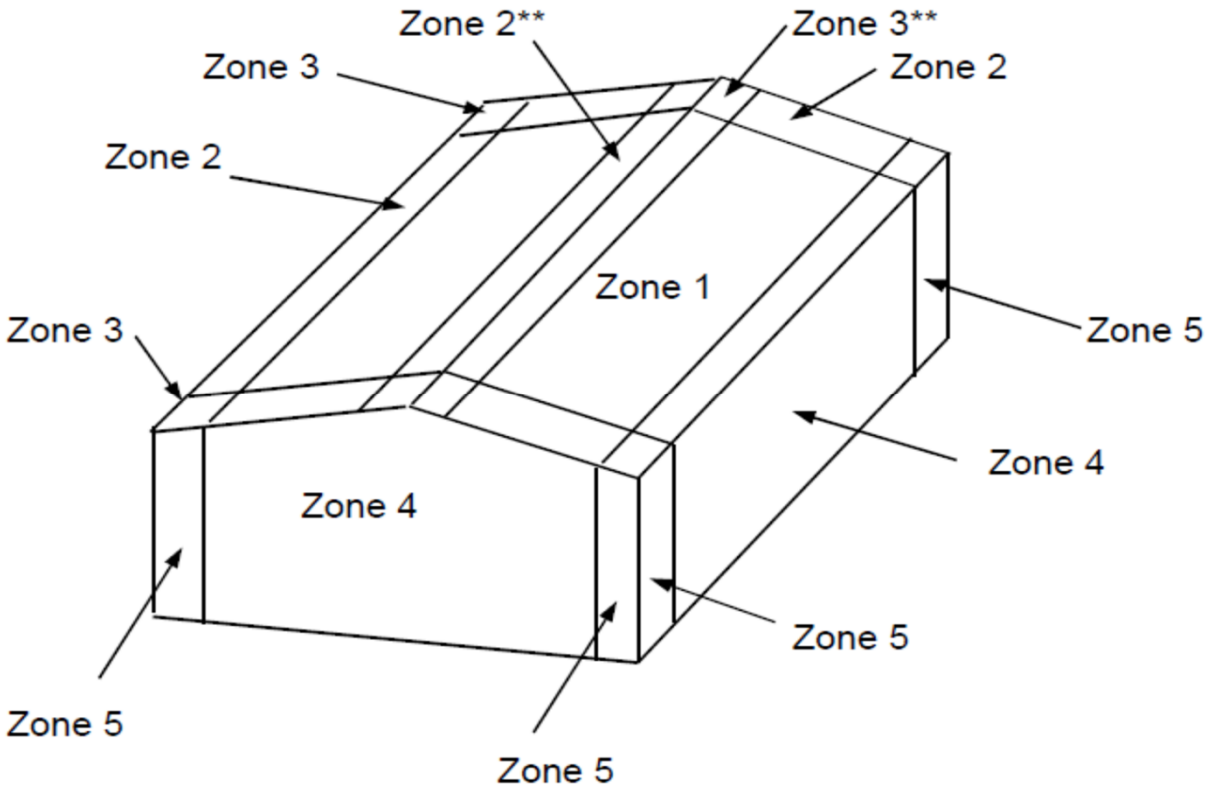
Design Wind Pressures on Component and Cladding Elements

Eff. Wind Area (FT^2)	Zone 1 +	Zone 1 -	Zone 2 +	Zone 2 -	Zone 3 +	Zone 3 -	Zone 4 +	Zone 4 -	Zone 5 +	Zone 5 -
0	16.23	-25.78	16.23	-44.88	16.23	-66.36	28.17	-30.56	28.17	-37.72
10	16.23	-25.78	16.23	-44.88	16.23	-66.36	28.17	-30.56	28.17	-37.72
20	15.71	-25.52	15.71	-43.54	15.71	-64.76	28.02	-30.41	28.02	-37.42
50	14.11	-24.73	14.11	-39.58	14.11	-59.99	27.58	-29.97	27.58	-36.55
100	11.46	-23.39	11.46	-32.94	11.46	-52.04	26.85	-29.24	26.85	-35.09
200	11.46	-23.39	11.46	-32.94	11.46	-52.04	25.39	-27.78	25.39	-32.16
500	11.46	-23.39	11.46	-32.94	11.46	-52.04	21.01	-23.39	21.01	-23.39
1000	11.46	-23.39	11.46	-32.94	11.46	-52.04	21.01	-23.39	21.01	-23.39

Notes:

1) Where roof slope is < or = to 7 degrees, for Zones 4 and 5, GCp values are reduced by 10% per ASCE-7-05, Fig. 6-11A, note 5.

2) Width of Zones 2, 3 and 5 are 10% least horizontal dimension, or 0.4h, whichever is smaller, but not less than either 4% least horizontal dimension or 3ft. This dimension is "a".



a = 5.2 feet

*All Zones are symmetrical about building

**Ridge Zones are NOT Applicable for Theta < or = 7 degrees

MAIN HOUSE

GFDS
ENGINEERS

GFDS ENGINEERS SAN FRANCISCO • HAWAII

PROJECT: _____

DATE: _____
JOB NO: _____
BY: _____
PAGE: M1

Building Parameters:

Occupancy Category: II

Site Class: D

Structure Type: All other structural systems

R Value Determination:

Lateral System Category: A. BEARING WALL SYSTEMS

Lateral System Type: 15. Light-framed (wood) walls sheathed with wood structural panels rate for shear resistance.

R^a =	6.5	ASCE Table 12.2-1
W_O =	3	ASCE Table 12.2-1
C_d^b =	4	ASCE Table 12.2-1

Spectral Accelerations:

S_S* =	1.5 g	ASCE Figure 22-1
S_1 =	0.6 g	ASCE Figure 22-2
T_L =	12 sec	ASCE Fig. 22-15

*(Sec. 12.8.1.3: For regular structures five stories or less above the base as defined in Section 11.2 and with a period, T, of 0.5s or less, C_s is permitted to be calculated using a value of 1.5 for S_s)

Building Period:

T_1 = _____ sec — From Analysis Model (leave blank if not used)

Results:

I =	1	ASCE Table 11.5-1	h_n =	10 ft	ASCE Section 11.3
F_a =	1.00	ASCE Table 11.4-1	T_s =	0.600 sec	ASCE Section 11.4-5
F_v =	1.50	ASCE Table 11.4-2	T_o =	0.120 sec	ASCE Section 11.4-5
S_{MS} =	1.500	ASCE Eq. 11.4-1	C_u =	1.4	ASCE Table 12.8-1
S_{M1} =	0.900	ASCE Eq. 11.4-2	C_t =	0.02	
S_{DS} =	1.000	ASCE Eq. 11.4-3,Table 11.6.1	x =	0.75	
S_{D1} =	0.600	ASCE Eq. 11.4-4,Table 11.6-2	T_a =	0.112 sec	ASCE 12.8.2.1
Seismic Design Cat.:	D		T =	0.112 sec	ASCE 12.8.2
k =	1.000	ASCE Section 12.8.3	W =	125.4 k	ASCE Section 11.3, 12.7.2
C_S =	**0.154**	ASCE Section 12.8.1.1	**V =**	**19.3 k**	ASCE Section 11.3

Seismic Weights: This sheet is active.

		Weight (PSF)	Area (ft^2)	Total (k)
Roof Level				
	ROOF	20	3956	79.1
	INTERIOR WALLS	10	925	9.3
	EXTERIOR WALLS (Plaster)	20	1850	37.0
			Total Roof Level	125.4

Total Seismic Weight of Building: 125.4

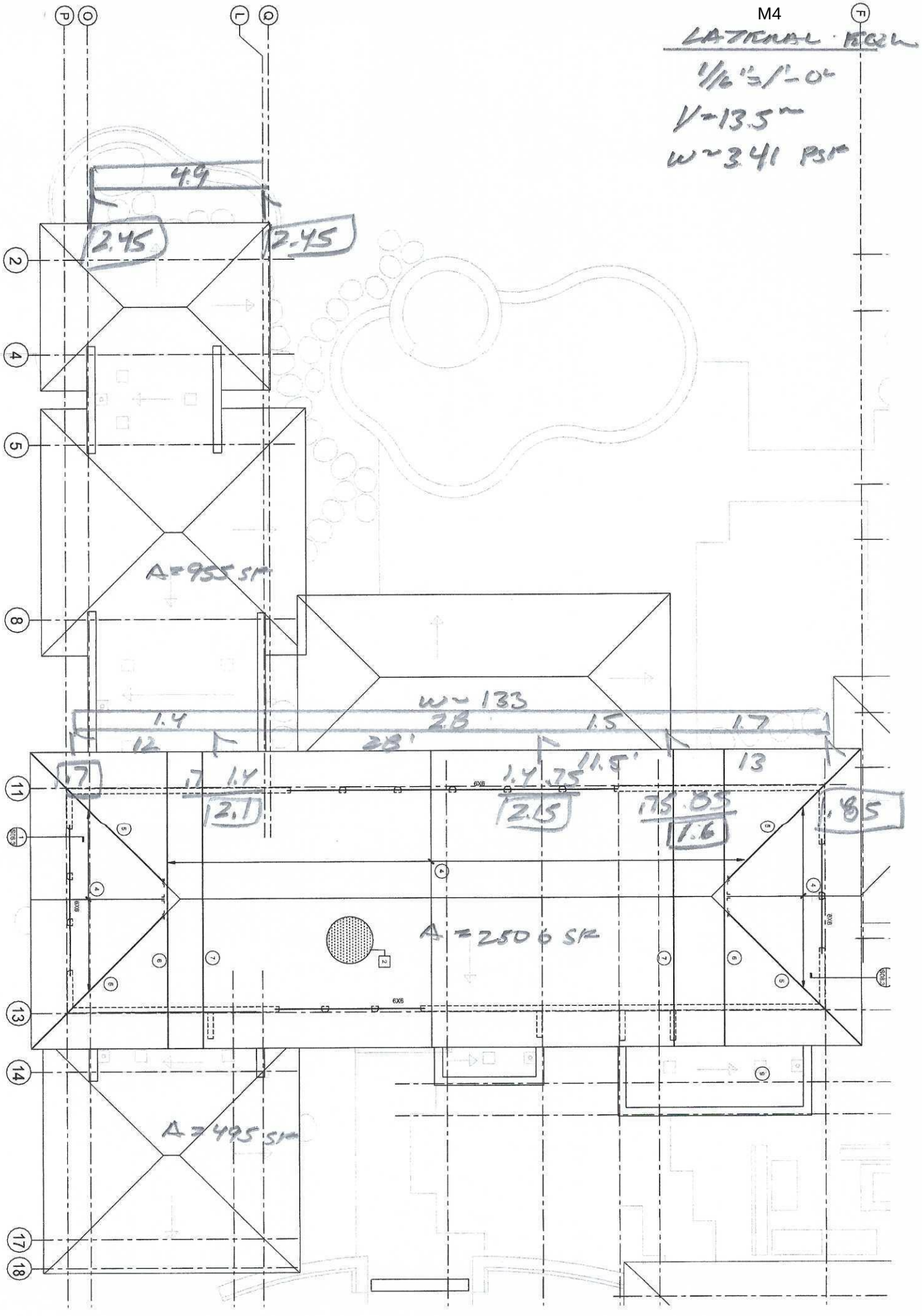
Diaphragm Shear (enter stories, wpx, heights on Vertical Shear Distribution tab)

Importance factor = 1.00

	sum F_i[1]	w_{px}	sum w_i	F_{px}	Not To Exceed[2]	Not Less Than[3]	Design F_{px}
Roof	19.3	125.4	125.4	19.3	50.1	25.1	25.1

1. F_i from Lateral Distribution Table (Next Sheet)
2. $0.4S_{DS}$ I w_{px}
3. $0.2S_{DS}$ I w_{px}

F_{px} = the diaphragm design force
F_i = the design force applied to Level i
w_i = the weight tributary to Level i
w_{px} = the weight tributary to the diaphragm at Level x

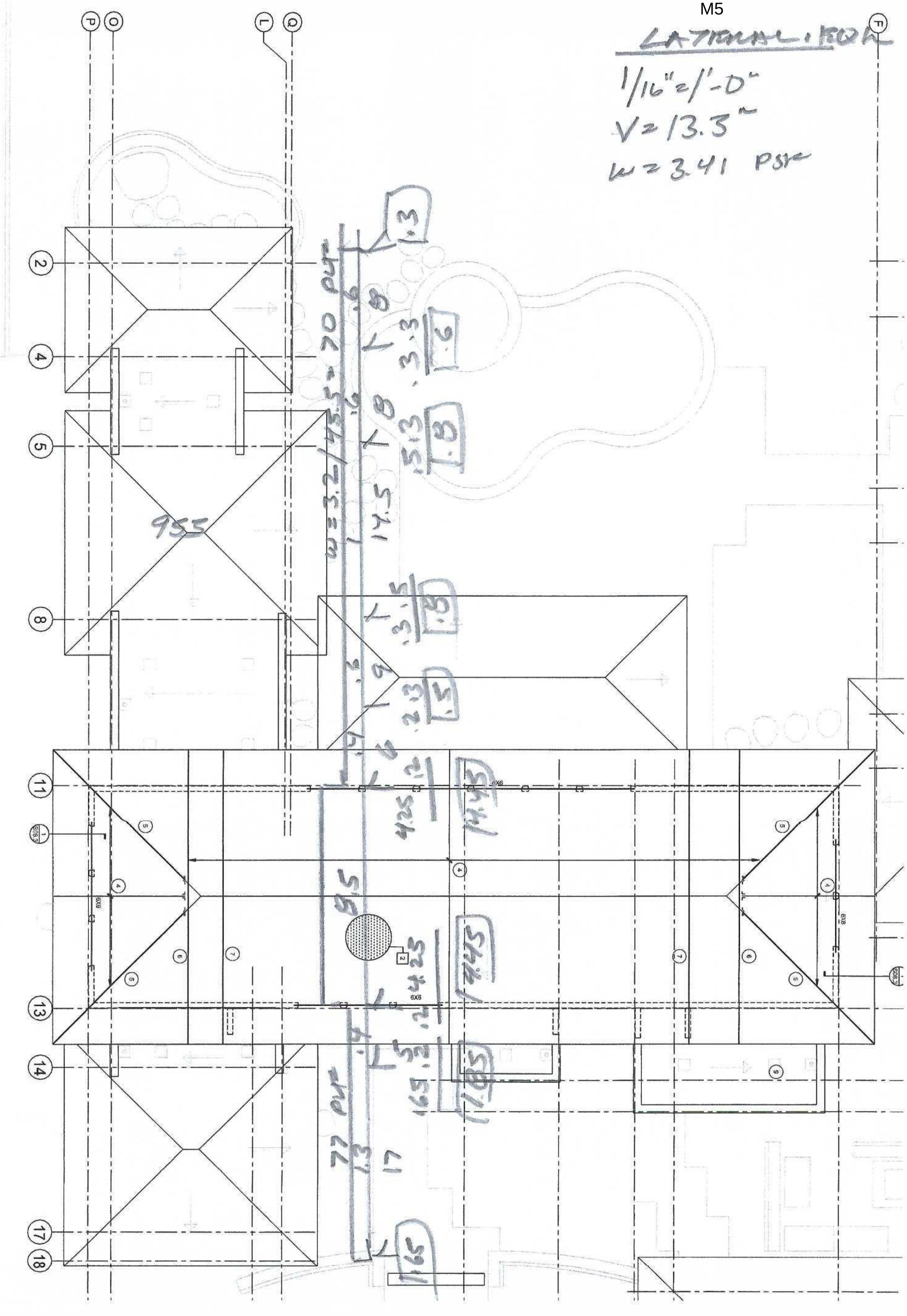

LATERAL EQ'N
1/16"=1'-0"
V=13.5^k
w=3.41 PSF
4.9
2.45
2.45
A=955 SF
w=133
1.4
28'
1.5
1.7
12
28'
11.5'
13
1.7
1.7
1.4
2.1
1.4
.75
2.15
.75
.85
1.6
.85
A=2506 SF
A=495 SF
P
O
L
Q
F
2
4
5
8
11
13
14
17
18

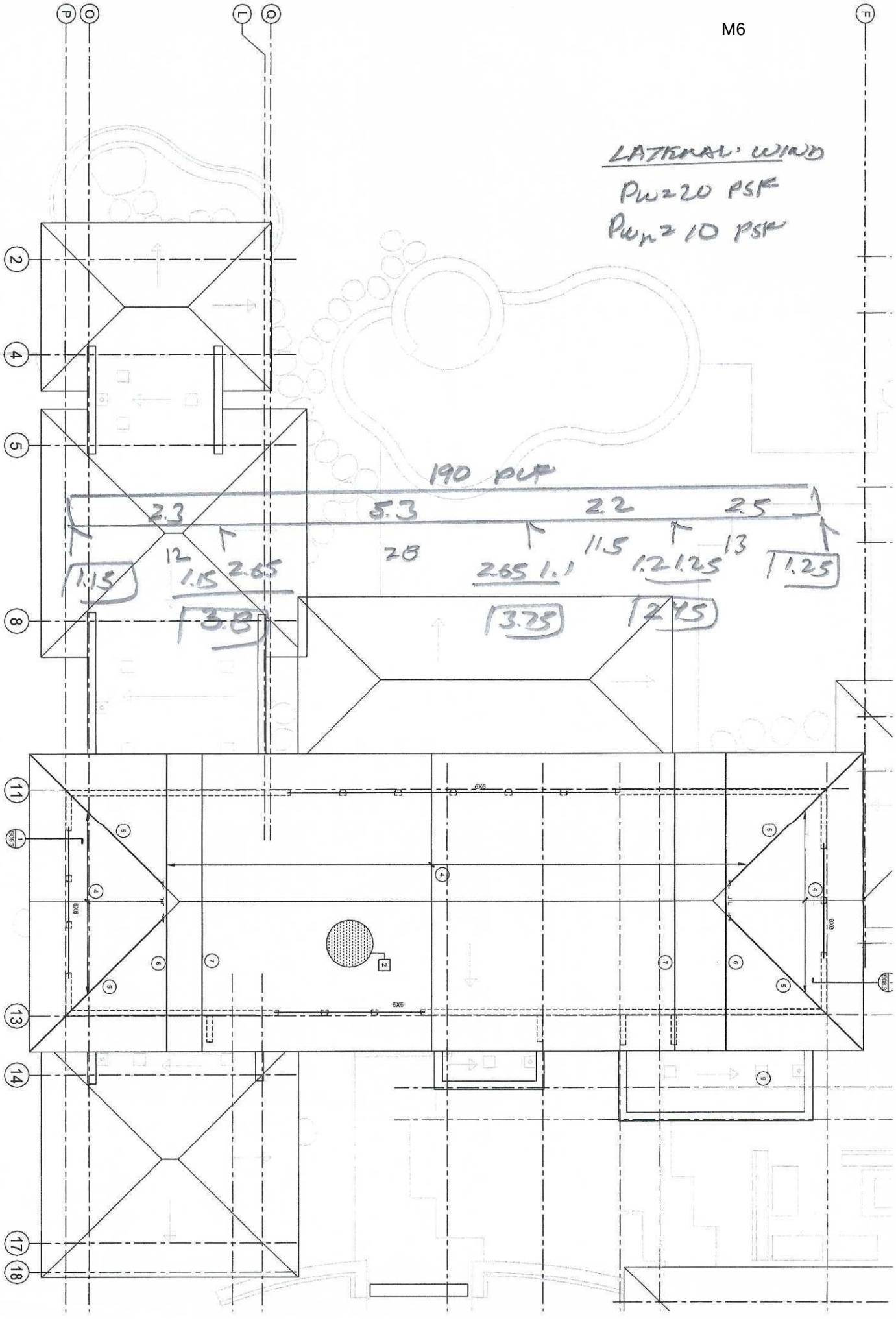
LATERAL: EQK

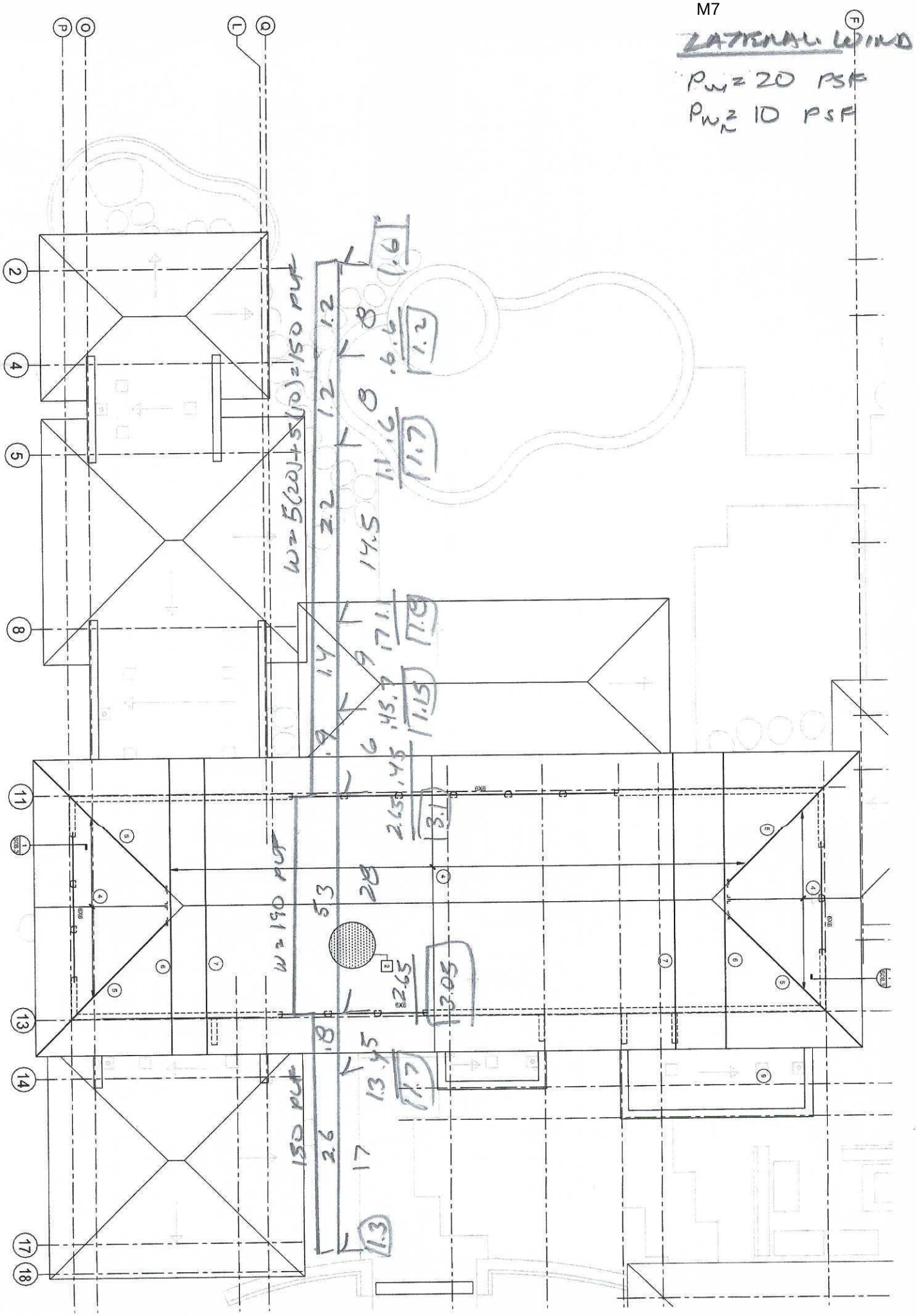
1/16" = 1'-0"

V = 13.3%

w = 3.41 PSF




LATERAL: WIND
PW=20 PSF
PWR=10 PSF
190 PLF
2.3
5.3
22
2.5
28
11.5
13
1.15
1.2
1.25
1.25
1.15
2.65
3.8
2.65
1.1
3.25
2.45
P
O
L
Q
F
2
4
5
8
11
13
14
17
18
6X6
6X8
6X8


EXTERNAL WIND
P_W = 20 PSF
$P_{W,R}$ = 10 PSF
W = 5(20)+5(10) = 150 PLF
W = 190 PLF
150 PLF
P
O
L
Q
F
2
4
5
8
11
13
14
17
18

GFDS ENGINEERS

Structural design for fine architecture™

DATE 6/5/22
PROJECT NO 22056
PROJECT N22
BY CJW
PAGE M8

MAIN LATERAL

LINE 3 P W = 1.15" E = 3.15" ΣLw = 70'
(6) w/ HDU5

LINE 4 L E = 4.55" W = 3.8" ΣLw = 47'
(6) w/ HDU5 OK

LINE J & J E = 2.15" W = 3.75" ΣLw = 12.7'
V = 300 PLF (4) LREQ = 12.6'
UPLIFT W = 3.9" HDU5 OK

LINE G E = 0.85" W = 1.25" Lw = 19.4'
(6) w/ HDU5 OK

MAIN LATERAL (CONT'D)

LINE 2 E=0.3" W=0.6" ΣLw=5.2'
(6) w/ HDU5 OK

LINE 4 E=0.6" W=1.2" ΣLw=8.7'
(6) w/ HDU5 OK

LINE 5 E=0.8" W=1.7" ΣLw=8.2'
(6) w/ HDU5 OK

LINE 8 E=0.8" W=1.8" Lw=3.7' Leff=3.2'
V=562 PLF $V_{REQ'D} = 562\left(\frac{8.5}{2(3.7)}\right) = 646$ PLF
(3) OK

UPLIFT W=5.5" HDU5 OK

LINE 9 E=0.5" W=1.15" Lw=9.6'
(6) w/ HDU5 OK

LINE 11 E=4.45" W=3.1" ΣLw=30'
(6) w/ HDU5 OK

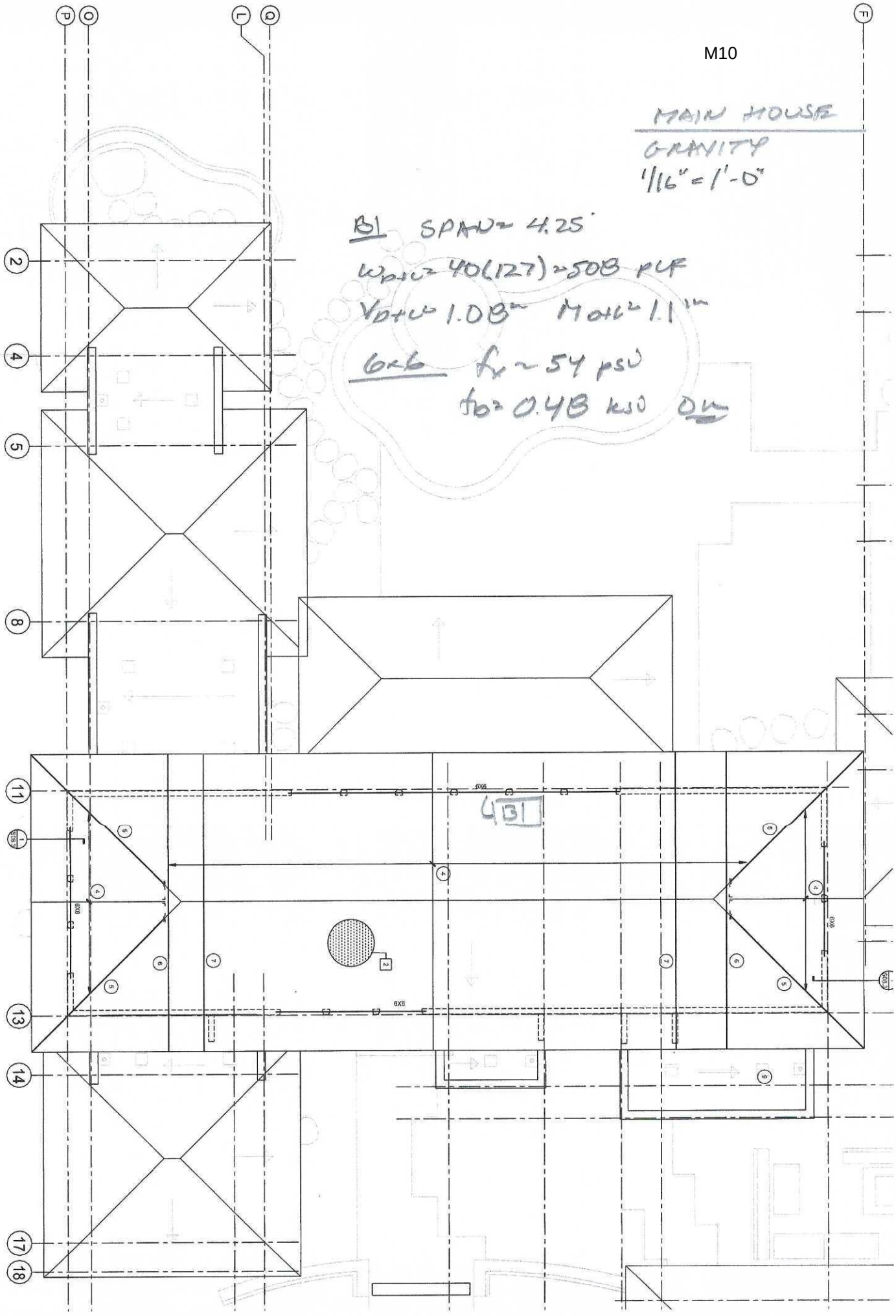
LINE 13 E=4.45" W=3.05" ΣLw=30'
(6) w/ HDU5 OK

LINE 14 E=1.85" W=1.7" Lw=6.75' Leff=6.25'
V=297 PLF (6) OK

UPLIFT E=3" HDU5 OK

LINE 17 & 18 E=1.65" W=1.3" Lw=12.7'
(6) w/ HDU5 OK

MAIN HOUSE
GRAVITY
1/16" = 1'-0"

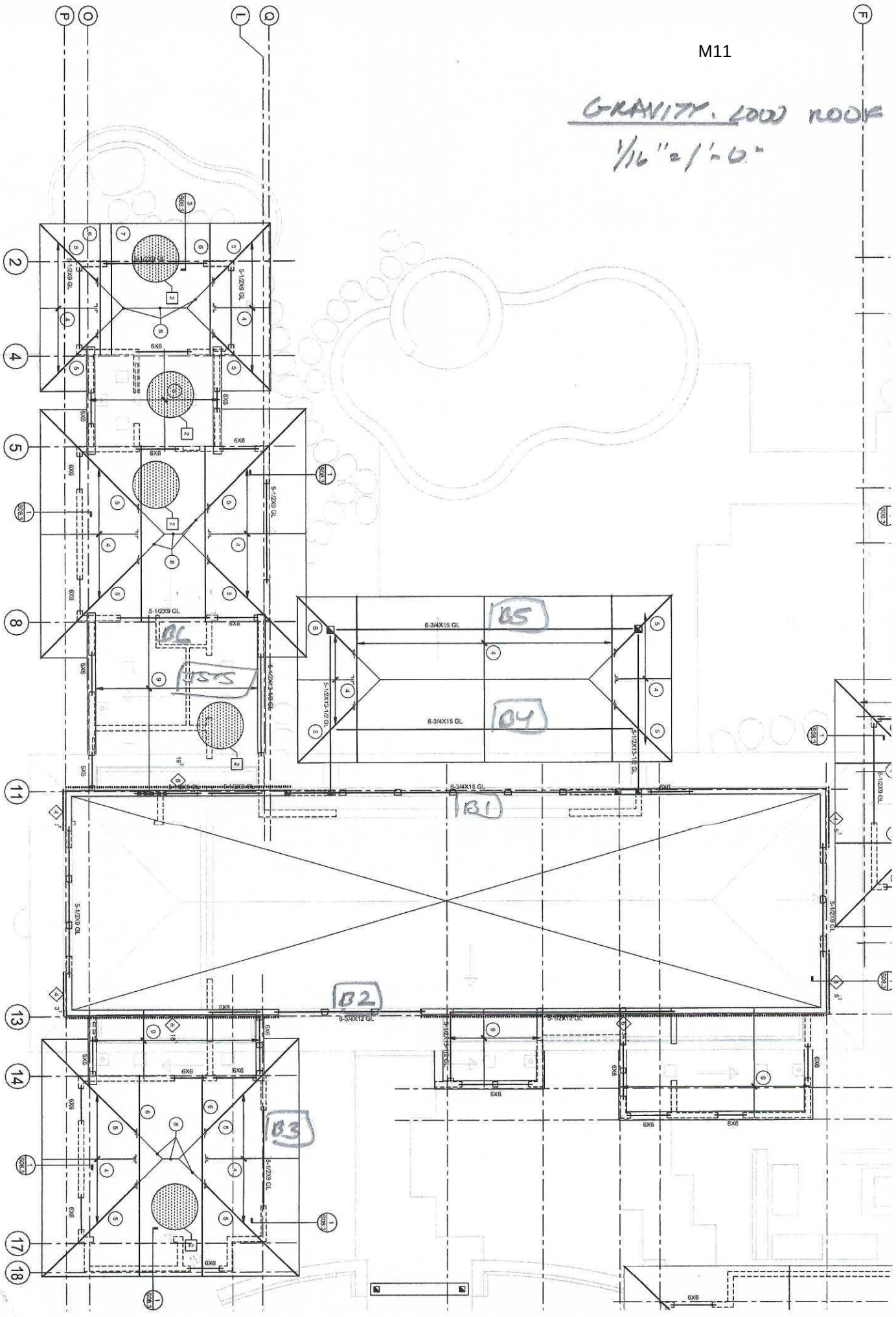


B1 SPAN = 4.25'
W_{D+L} = 40(127) = 508 PLF
V_{D+L} = 1.08" M_{D+L} = 1.1"
6x6 f_v ~ 54 psi
f_b = 0.48 ksi OK

M11

GRAVITY. LOAD ROOF

1/16"=1'-0"



GFDS ENGINEERS

Structural design for fine architecture™

DATE 6/6/22
PROJECT NO 22054
PROJECT N22
BY LTW
PAGE M12

GRAVITY: LOW ROOF

B1 SPAN = 20' $w_{D+L} = 40(12.7) = 508$ PLF
$V_{D+L} = 5.1^k$ $M_{D+L} = 25.4^{in}$
5 1/2 x 18 GL $f_b = 1.0$ ksi OK
$\Delta_{D+L} = 0.38$ in OK

OUT-OF-PLANE $w_{WW} = 20(6.5) = 130$ PLF
SPAN = 24' $M_{D+L} = 9.4^{in}$
$f_b = 1.24$ ksi OK $\Delta_W = 2.2$ in (L/132)
OK

B2 SPAN = 12' $M_{D+L} = 9.1^{in}$
5 1/2 x 12 GL $f_b = 0.83$ ksi OK
$\Delta_{D+L} = 0.17$ in OK

B3 SPAN = 8'-0" $w_{D+L} = 40(6) = 240$ PLF
5 1/2 x 9 GL OK BY INSPECTION

B4 SPAN = 26.25' $w_{D+L} = 7.1(40) = 284$ PLF
$V_{D+L} = 3.7^k$ $M_{D+L} = 24.5^{in}$
6 3/4 x 16 1/2 GL $f_b = 1.0$ ksi OK
$\Delta_{D+L} = 0.67$ in (L/472)

B5 SPAN = 26.25 $w_{D+L} = 284$ PLF
6 3/4 x 16 1/2 w/ HSS 12 x 8 x 3/8 OK

TJ'S SPAN = 14.5' $w_{D+L} = 40(2) = 80$ PLF
2 x 12 @ 24 $f_b = 0.8$ ksi OK
$\Delta_{D+L} = 0.28$ in OK (11 7/8 TJI PRO 250 OK BY INSPECTION)

GUEST

GFDS
ENGINEERS

GFDS ENGINEERS SAN FRANCISCO • HAWAII

PROJECT: _____

DATE: _____
JOB NO: _____
BY: _____
PAGE: H1

Building Parameters:

Occupancy Category: II

Site Class: D

Structure Type: All other structural systems

R Value Determination:

Lateral System Category: A. BEARING WALL SYSTEMS

Lateral System Type: 15. Light-framed (wood) walls sheathed with wood structural panels rate for shear resistance.

R^a =	6.5	ASCE Table 12.2-1
W_O =	3	ASCE Table 12.2-1
C_d^b =	4	ASCE Table 12.2-1

Spectral Accelerations:

S_S* =	1.5 g	ASCE Figure 22-1
S_1 =	0.6 g	ASCE Figure 22-2
T_L =	12 sec	ASCE Fig. 22-15

*(Sec. 12.8.1.3: For regular structures five stories or less above the base as defined in Section 11.2 and with a period, T, of 0.5s or less, C_s is permitted to be calculated using a value of 1.5 for S_s)

Building Period:

T_1 = _____ sec — From Analysis Model (leave blank if not used)

Results:

I =	1	ASCE Table 11.5-1	h_n =	10 ft	ASCE Section 11.3
F_a =	1.00	ASCE Table 11.4-1	T_s =	0.600 sec	ASCE Section 11.4-5
F_v =	1.50	ASCE Table 11.4-2	T_o =	0.120 sec	ASCE Section 11.4-5
S_{MS} =	1.500	ASCE Eq. 11.4-1	C_u =	1.4	ASCE Table 12.8-1
S_{M1} =	0.900	ASCE Eq. 11.4-2	C_t =	0.02	
S_{DS} =	1.000	ASCE Eq. 11.4-3,Table 11.6.1	x =	0.75	
S_{D1} =	0.600	ASCE Eq. 11.4-4,Table 11.6-2	T_a =	0.112 sec	ASCE 12.8.2.1
Seismic Design Cat.:	D		T =	0.112 sec	ASCE 12.8.2
k =	1.000	ASCE Section 12.8.3	W =	54.1 k	ASCE Section 11.3, 12.7.2
C_S =	**0.154**	ASCE Section 12.8.1.1	**V =**	**8.3 k**	ASCE Section 11.3

Seismic Weights: This sheet is active.

		Weight (PSF)	Area (ft^2)	Total (k)
Roof Level				
	ROOF	20	1300	26.0
	INTERIOR WALLS	10	563	5.6
	EXTERIOR WALLS (Plaster)	20	1125	22.5
			Total Roof Level	54.1

Total Seismic Weight of Building: 54.1

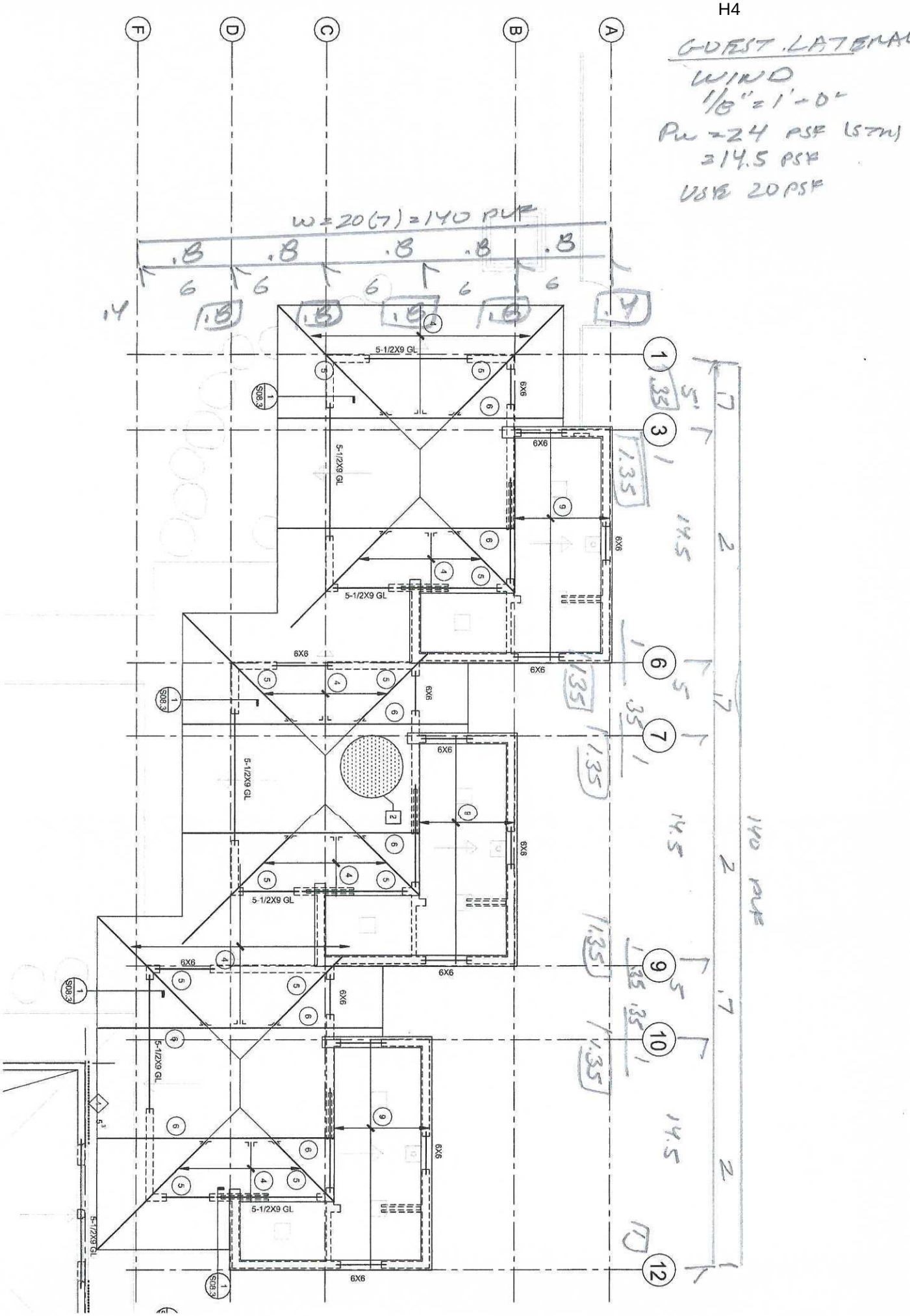
Diaphragm Shear (enter stories, wpx, heights on Vertical Shear Distribution tab)

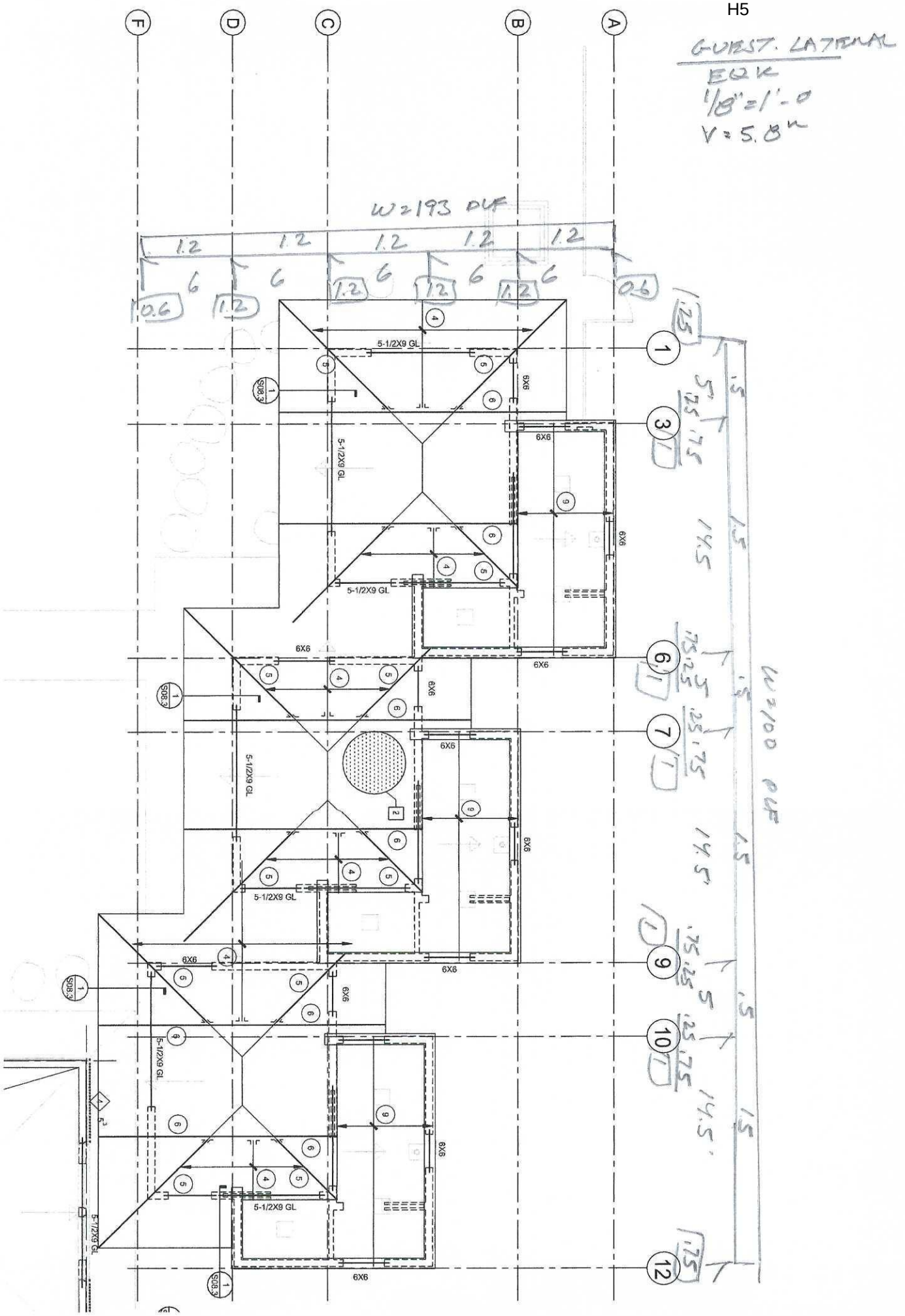
Importance factor = 1.00

	sum F_i[1]	w_{px}	sum w_i	F_{px}	Not To Exceed[2]	Not Less Than[3]	Design F_{px}
Roof	8.3	54.1	54.1	8.3	21.7	10.8	10.8

1. F_i from Lateral Distribution Table (Next Sheet)
2. $0.4S_{DS}$ I w_{px}
3. $0.2S_{DS}$ I w_{px}

F_{px} = the diaphragm design force
F_i = the design force applied to Level i
w_i = the weight tributary to Level i
w_{px} = the weight tributary to the diaphragm at Level x


F
D
C
B
A
GUEST. LATERAL
WIND
1/8"=1'-0"
Pw=24 PSF (STN)
=14.5 PSF
USE 20 PSF
w=20(7)=140 PLF
.8
.8
.8
.8
.8
.4
.4
6
6
6
6
6
5-1/2X9 GL
6X6
S08.3
1
3
6
7
9
10
12
1.35
14.5
140 PLF


GUEST. LATERAL
EQK
1/8"=1'-0
V=5.8K
W=193 PLF
W=100 PLF
F
D
C
B
A
1
3
6.1
7
9
10
12
5-1/2X9 GL
6X6
S08.3

GUEST LATERAL

LINK A E=0.6 W=0.4" Lw=14.0'
TYP R (6) w/ HDU2 OK

LINK B E=1.2" W=0.8" Lw=14.0'
(6) w/ HDU2 OK

LINK C SAME AS LINK B

LINK D E=1.2" W=0.8" ΣLw=11.7' LEFF=10.2'
(6) w/ HDU2 OK

LINK E SAME LINK D

LINK F E=0.6" W=0.4" Lw=5.9'
(6) w/ HDU2 OK

LINK 1 & 3 E=1.25" W=1.7" ΣLw=11.75'
(6) w/ HDU2 OK

LINK 6 & 7 E=2" W=2.7" ΣLw=23.8'
(6) w/ HDU2 OK

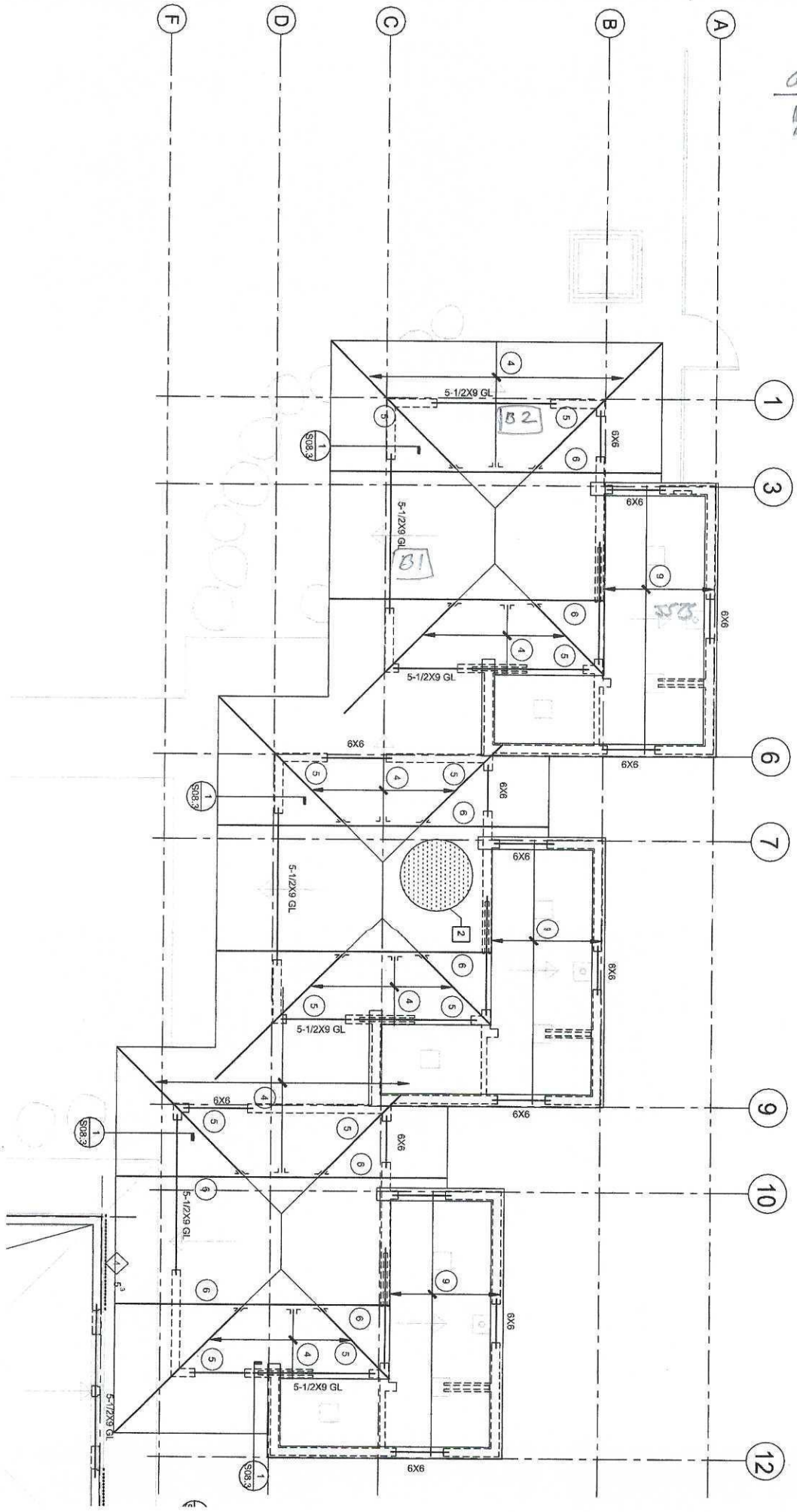
LINK 9 & 10 E=2" W=2.7" ΣLw=18.4'
(6) w/ HDU2 OK

LINK 12 E=.75" W=1" Lw=12.6'
(6) w/ HDU2 OK

H7

GUEST - GRANITE

1/8"=1'-0"



GFDS ENGINEERS

Structural design for fine architecture™

DATE 6/6/22
PROJECT NO 22056
PROJECT N22
BY CTW
PAGE H8

GUEST GRAVITY

JSTS SOR MAIN HOUSE

B1 SPAN = 8.25' $w_{D+L} = 9(40) = 360$ PLF

$V_{D+L} = 1.5^{k}$ $M_{D+L} = 3.1^{in}$

5'hx9 GL $f_b = 0.5$ ksi OK

GARAGE

GFDS
ENGINEERS

GFDS ENGINEERS SAN FRANCISCO • HAWAII

DATE: _____
JOB NO: _____
BY: _____
PAGE: G1

PROJECT: _____

Building Parameters:

Occupancy Category: II

Site Class: D

Structure Type: All other structural systems

R Value Determination:

Lateral System Category: A. BEARING WALL SYSTEMS

Lateral System Type: 15. Light-framed (wood) walls sheathed with wood structural panels rate for shear resistance.

R^a =	6.5	ASCE Table 12.2-1
W_O =	3	ASCE Table 12.2-1
C_d^b =	4	ASCE Table 12.2-1

Spectral Accelerations:

S_S* =	1.5 g	ASCE Figure 22-1
S_1 =	0.6 g	ASCE Figure 22-2
T_L =	12 sec	ASCE Fig. 22-15

*(Sec. 12.8.1.3: For regular structures five stories or less above the base as defined in Section 11.2 and with a period, T, of 0.5s or less, C_s is permitted to be calculated using a value of 1.5 for S_s)

Building Period:

T_1 = _____ sec — From Analysis Model (leave blank if not used)

Results:

I =	1	ASCE Table 11.5-1	h_n =	10 ft	ASCE Section 11.3
F_a =	1.00	ASCE Table 11.4-1	T_s =	0.600 sec	ASCE Section 11.4-5
F_v =	1.50	ASCE Table 11.4-2	T_o =	0.120 sec	ASCE Section 11.4-5
S_{MS} =	1.500	ASCE Eq. 11.4-1	C_u =	1.4	ASCE Table 12.8-1
S_{M1} =	0.900	ASCE Eq. 11.4-2	C_t =	0.02	
S_{DS} =	1.000	ASCE Eq. 11.4-3,Table 11.6.1	x =	0.75	
S_{D1} =	0.600	ASCE Eq. 11.4-4,Table 11.6-2	T_a =	0.112 sec	ASCE 12.8.2.1
Seismic Design Cat.:	D		T =	0.112 sec	ASCE 12.8.2
k =	1.000	ASCE Section 12.8.3	W =	25.3 k	ASCE Section 11.3, 12.7.2
C_S =	**0.154**	ASCE Section 12.8.1.1	**V =**	**3.9 k**	ASCE Section 11.3

Seismic Weights: This sheet is active.

		Weight (PSF)	Area (ft^2)	Total (k)
Roof Level				
	ROOF	20	800	16.0
	EXTERIOR WALLS (Plaster)	20	465	9.3
			Total Roof Level	25.3
			Total Seismic Weight of Building:	25.3

Diaphragm Shear (enter stories, wpx, heights on Vertical Shear Distribution tab)

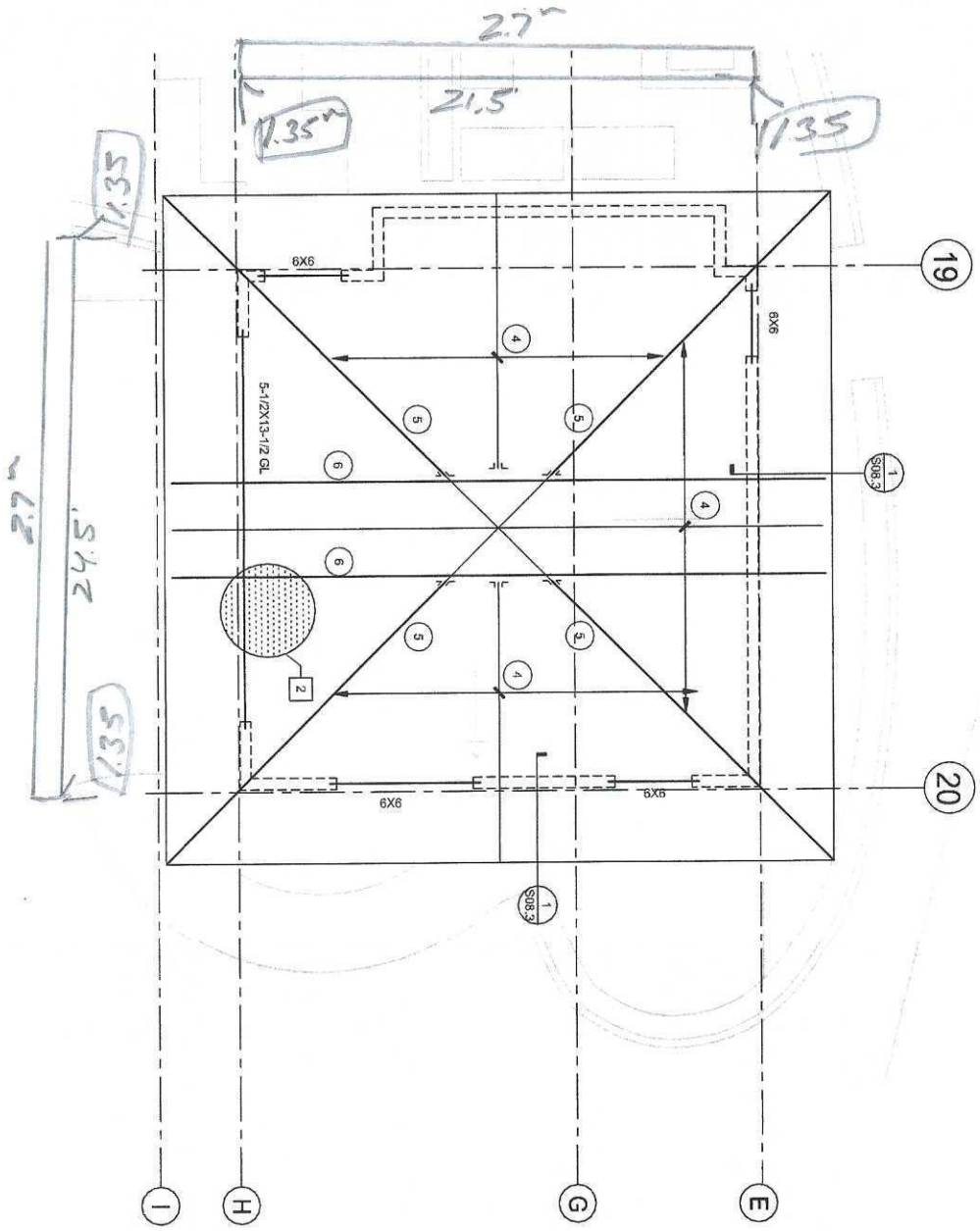
Importance factor = 1.00

	sum F_i[1]	w_{px}	sum w_i	F_{px}	Not To Exceed[2]	Not Less Than[3]	Design F_{px}
Roof	3.9	25.3	25.3	3.9	10.1	5.1	5.1

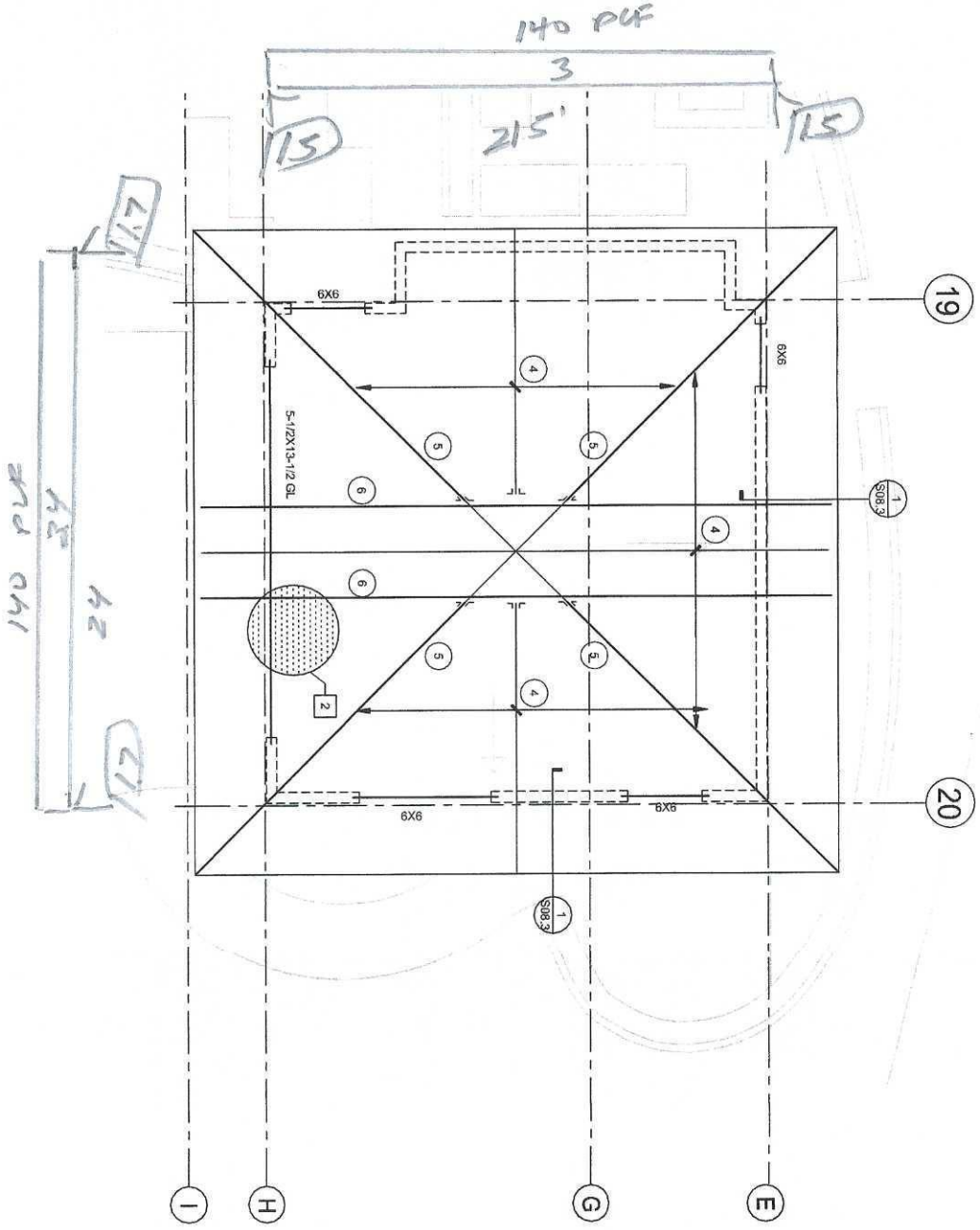
1. F_i from Lateral Distribution Table (Next Sheet)
2. $0.4S_{DS}$ I w_{px}
3. $0.2S_{DS}$ I w_{px}

F_{px} = the diaphragm design force
F_i = the design force applied to Level i
w_i = the weight tributary to Level i
w_{px} = the weight tributary to the diaphragm at Level x

GANADA
LATERAL. EQU
1/8"=1'-0"
V=2.7m



GARAGE - LATERAL
1/8"=1'-0"
P_w = 14.5 PSF (ASD)
USE 20 PSF



GFDS ENGINEERS

Structural design for fine architecture™

DATE 6/2/22
PROJECT NO 22056
PROJECT N22
BY CJW
PAGE G6

GARAGE - LATERAL

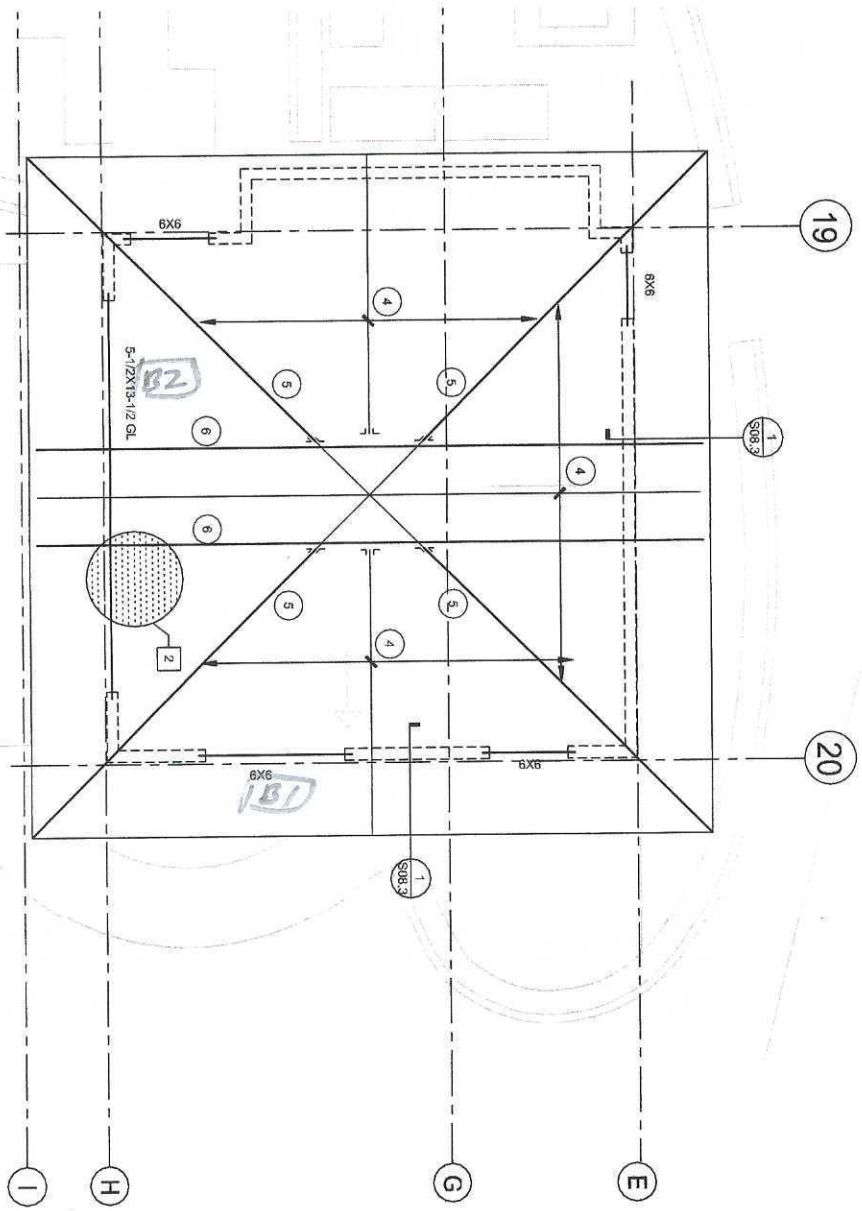
LINE 19 E=1.35~ N=1.7~ L_w=14.9' L_{REQ}=14.4'
V=118 PLF (6) OK
UPLIFT W=1.2~ HDU2 OK

LINE 20 E=1.35~ N=1.7~ L_w=15.9'
SEE LINE 19 OK

LINE E E=1.35~ N=1.5~ L_w=22'
SEE LINE 19

LINE 4 E=1.35~ N=1.5~ ΣL_w=5.7' L_{REQ}=4.7'
H=7.5'
V=319 PLF
V_{ALLOW} = 319 $\left(\frac{7.5}{2(27)}\right)$ = 443 PLF (3) OK
UPLIFT W=3.3~ HDU5 OK

ROOF
GRAVITY
1/8"=1'-0"



GARAGE - GRAVITY DL=LL=20 PSF

B1 SPAN = 6' w_{DL} = 8(40) = 320 PLF
V_{DL} = 1^k M_{DL} = 1.44'^k
6x6 f_v = 50 psi OK f_b = 0.62 ksi OK
Δ_{DL} = 0.08 in (L/942) OK

B2 SPAN = 16.25' w_{DL} = 40(14) = 560 PLF
V_{DL} = 4.55^k M_{DL} = 18.5'^k
5 1/2 x 13 1/2 GL f_b = 1.33 ksi OK
Δ_{DL} = 0.43 in (L/450) OK