CLIENT HARBRO SHT 1 OF 12

PROJECT GABRIEL PARK APTS FIRE RESTORATION REVIEWED BY JA 8-1-17

PROJECT # 17-1985-10

JAS ENGINEERING

Submittal Review

- [x] Approved as Submitted
- [ ] Approved as Noted
- [ ] Revise and Resubmit

REVIEW is only for the limited purpose of checking for general conformance with the design concept of the project and general conformance with information given in the contract documents.

APPROVAL of the data and drawings submitted will not relieve the contractor of responsibility for any deviation from the contract documents, unless the contractor has provided written notification that identifies and explains such deviations within the submittal.

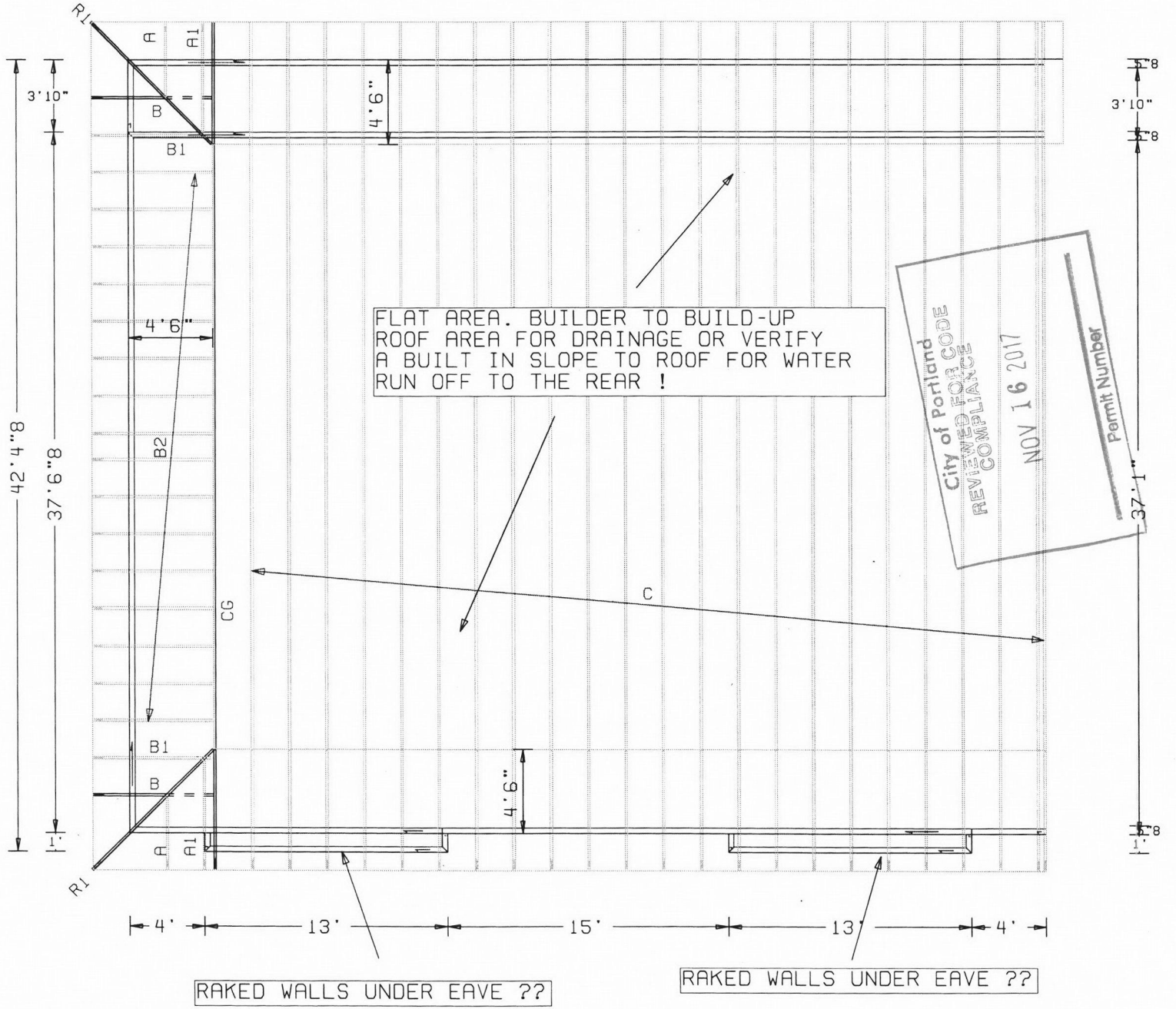
Contractor is responsible for the following: quantities; confirming and correlating dimensions at the job site; means, methods, sequences and procedures of construction; and the coordination of work with all trades.

JAS Engineering, Inc.

Date: 8-1-17

By: JA

17-1985-10



TRUSS COMPONENTS

Customer: PARR RALEIGH HILLS
Desc.: Harboro Gabriel Park fire
ADDRESS: 6387 verify
Designed by: BILLY BREESE

JOB NO:
0617202

PAGE NO:
1 OF 1

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - C)

Top chord 2x4 HF #2 :T2, T3 2x4 DF-L 2400f-2.0E:
Bot chord 2x4 HF #1&Bet. :B3 2x4 HF #2:
Webs 2x4 HF Std/Stud :W3, W11 2x4 HF #2:

Right cantilever is exposed to wind

In lieu of structural panels use purlins to brace all flat TC @ 24" OC.

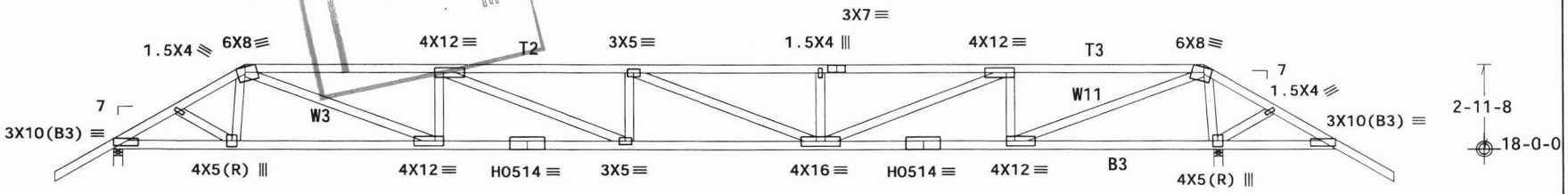
Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 1.50.

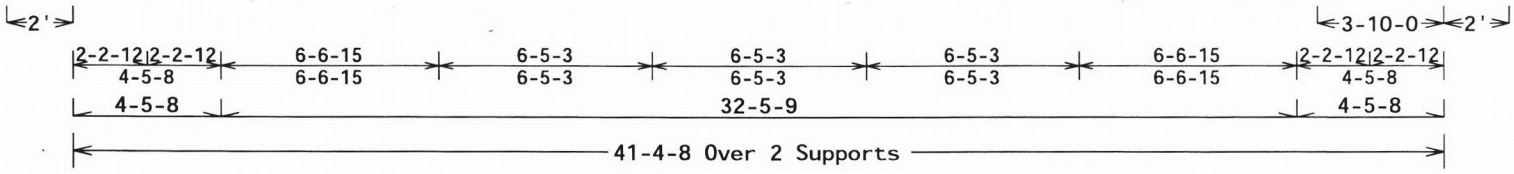
120 mph wind, 19.08 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Wind loads and reactions based on MWFRS with additional C&C member design.

Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-12 section 1607.

City of Portland REVIEWED FOR CODE COMPLIANCE NOV 16 2017 PERMIT NUMBER





R=1798 U=103 W=3.5"
RL=79/-79

R=2214 U=109 W=3.5"

PLT TYP. 20 Gauge HS,Wave

Design Crit: IBC2012/TPI-2007(STD)
FT/RT=2%(0%)/4(0)

16.01.00.03 7/16

OR/-/1/-/-/R/-

Scale =.1875"/Ft.

Truss Components of Oregon (503)357-2118
825 N 4th Ave, Cornelius OR 97113

ALPINE AN ITW COMPANY

8351 Rovana Circle
Sacramento, CA 95828

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For more information see this job's general notes page and these web sites:
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REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF R7175- 89790
TC DL	10.0 PSF	DATE 07/20/17
BC DL	7.0 PSF	DRW CAUSR7175 1720104
BC LL	0.0 PSF	CA-ENG PBC/RTT
TOT.LD.	42.0 PSF	SEQN- 121510
DUR.FAC.	1.15	
SPACING	24.0"	JREF- 1W2N7175Z10

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - CG)

Top chord 2x4 HF #2 :T2, T3 2x4 DF-L 2400f-2.0E:
Bot chord 2x6 HF SS
Webs 2x4 HF Std/Stud :W2, W8 2x4 HF #2:
:W10 2x4 DF-L #2:

Brg blocks:0.120"x3", min. nails

brg	x-loc	#blocks	length/blk	#nails/blk	wall plate
1	0.000'	1	12"	4	Rigid Surface
2	37.250'	1	12"	8	Rigid Surface

Brg block to be same size and species as chord.
Refer to drawing CNNAILSP1014 for more information.

120 mph wind, 19.08 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Right cantilever is exposed to wind

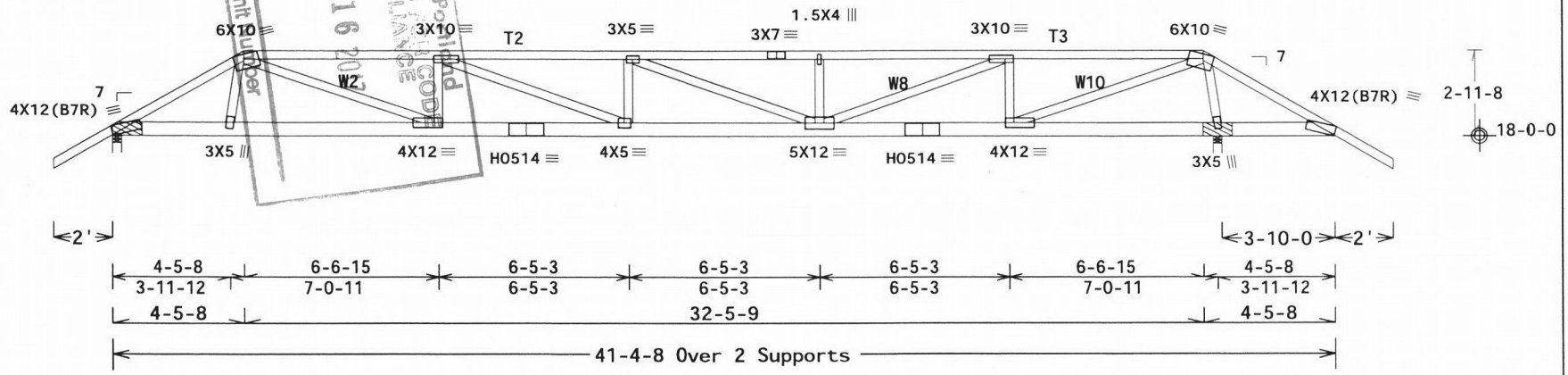
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-12 section 1607.

Special loads
------(Lumber Dur.Fac.=1.15 / Plate Dur.Fac.=1.15)
TC- From 73 plf at -2.00 to 73 plf at 4.46
TC- From 37 plf at 4.46 to 37 plf at 36.92
TC- From 73 plf at 36.92 to 73 plf at 43.38
BC- From 5 plf at -2.00 to 5 plf at 0.00
BC- From 7 plf at 0.00 to 7 plf at 41.38
BC- From 5 plf at 41.38 to 5 plf at 43.38
TC- 179.08 lb Conc. Load at 4.46,36.92
BC- 60.18 lb Conc. Load at 2.00,39.38
BC- 63.72 lb Conc. Load at 4.00
BC- 148.59 lb Conc. Load at 6.00, 8.00,10.00,12.00 14.00,16.00,18.00,20.00,21.38,23.38,25.38,27.38,29.38 31.38,33.38,35.38

Wind loads and reactions based on MWFRS.

In lieu of structural panels use purlins to brace all flat TC @ 24" OC.

Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 1.50.



Design Crit: IBC2012/TPI-2007(STD)

PLT TYP. 20 Gauge HS,Wave FT/RT=2%(0%)/4(0) 16.01.00.5032.66 OR/-/1/-/-/R/- Scale =.1875"/Ft.

Truss Components of Oregon (503)357-2118
825 N 4th Ave, Cornelius OR 97113

ALPINE AN ITW COMPANY

8351 Rovana Circle
Sacramento, CA 95828

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REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF R7175- 89791
TC DL	10.0 PSF	DATE 07/20/17
BC DL	7.0 PSF	DRW CAUSR7175 17201042
BC LL	0.0 PSF	CA-ENG PBC/RTT
TOT.LD.	42.0 PSF	SEQN- 121517
DUR.FAC.	1.15	
SPACING	24.0"	JREF- 1W2N7175Z10

Alpine, an ITW Company

8351 Rovana Circle Sacramento, CA 95828 (916) 387-0116
 Document ID:1W2N7175Z1020133924

Truss Fabricator: **Truss Components of Oregon**
Job Identification: **0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND,**
Model Code: **IBC**
Truss Criteria: **IBC2015/TPI-2014(STD);IBC2012/TPI-2007(STD)**
Engineering Software: **Alpine proprietary truss analysis software. Version 16.01.**
Truss Design Loads: **Roof - 42 PSF @ 1.15 Duration**
Floor - N/A
Wind - 120 MPH (ASCE 7-10-Closed)

Russell Tangren
Renewal 6/30/2018
07/20/2017

Notes:

1. **Determination as to the suitability of these truss components for the structure is the responsibility of the building designer/engineer of record, as defined in ANSI/TPI 1.**
2. **As shown on attached drawings; the drawing number is preceded by: CAUSR7175**

Details: CNBRGBLK-
Submitted by RTT 13:39:13 07-20-2017 Reviewer: PBC
$ $

#	Ref	Description	Drawing#	Date
1	89784--A		17201035	07/20/17
2	89785--A1		17201036	07/20/17
3	89786--B		17201037	07/20/17
4	89787--B1		17201038	07/20/17
5	89788--B2		17201039	07/20/17
6	89789--R1		17201040	07/20/17
7	89790--C		17201041	07/20/17
8	89791--CG		17201042	07/20/17

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - A)

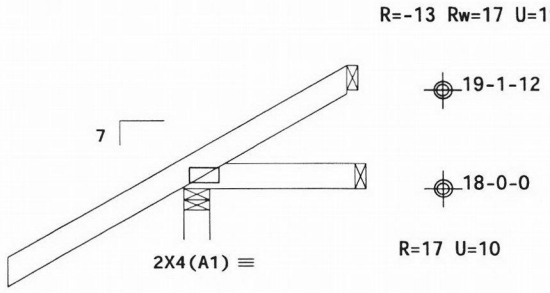
Top chord 2x4 HF #2
Bot chord 2x4 HF #2

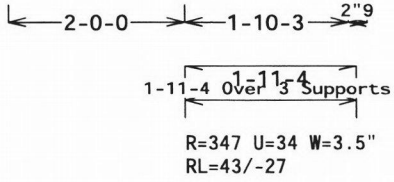
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-15 section 1607.

Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 2.00.

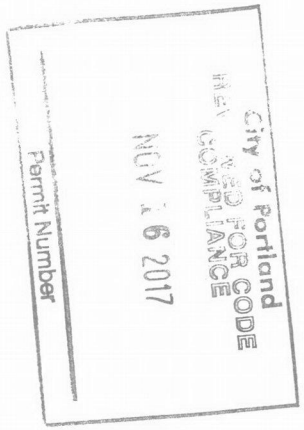
120 mph wind, 18.31 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

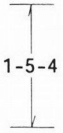
Wind loads and reactions based on MWFRS with additional C&C member design.





R=347 U=34 W=3.5"
RL=43/-27





Design Crit: IBC2015/TPI-2014(STD)

PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0[illegible]327.16 OR/-/1/-/-/R/- Scale =.5"/Ft.

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Sacramento, CA 95828

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83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF	R7175- 89784
TC DL	10.0 PSF	DATE	07/20/17
BC DL	7.0 PSF	DRW	CAUSR7175 17201035
BC LL	0.0 PSF	CA-ENG	PBC/RTT
TOT.LD.	42.0 PSF	SEQN-	121475
DUR.FAC.	1.15		
SPACING	24.0"	JREF-	1W2N7175Z10

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - A1)

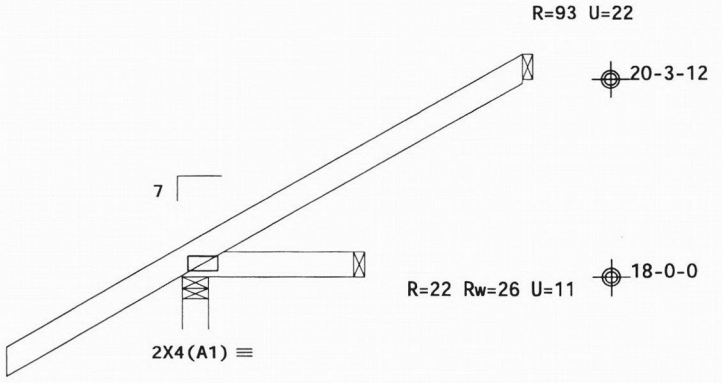
Top chord 2x4 HF #2
Bot chord 2x4 HF #2

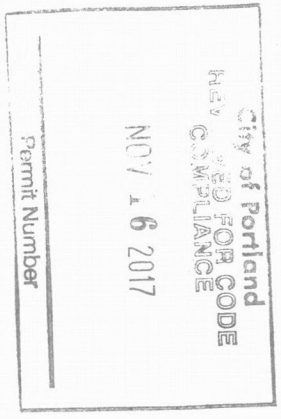
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-15 section 1607.

Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 2.00.

120 mph wind, 18.90 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Wind loads and reactions based on MWFRS with additional C&C member design.





2-7-4

2-0-0 | 1-11-4 | 2-0-7

1-11-4
3-10-3 Over 3 Supports

R=371 U=29 W=3.5"
RL=67/-32

Design Crit: IBC2015/TPI-2014(STD)

PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0[illegible]16 OR/-/1/-/-/R/- Scale =.5"/Ft.

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REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF	R7175- 89785
TC DL	10.0 PSF	DATE	07/20/17
BC DL	7.0 PSF	DRW	CAUSR7175 17201036
BC LL	0.0 PSF	CA-ENG	PBC/RTT
TOT.LD.	42.0 PSF	SEQN-	121477
DUR.FAC.	1.15		
SPACING	24.0"	JREF-	1W2N7175Z10

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(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - B)

Top chord 2x4 HF #2
Bot chord 2x4 HF #2

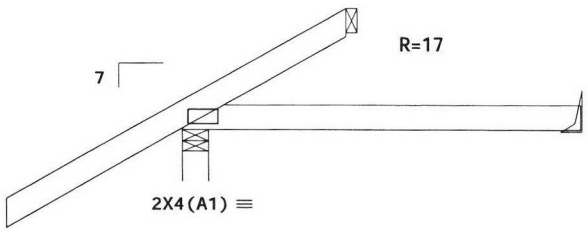
120 mph wind, 18.31 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Wind loads and reactions based on MWFRS.

Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 2.00.

Special loads
------(Lumber Dur.Fac.=1.15 / Plate Dur.Fac.=1.15)
TC- From 73 plf at -2.00 to 73 plf at 1.85
BC- From 5 plf at -2.00 to 5 plf at 0.00
BC- From 7 plf at 0.00 to 7 plf at 4.50
BC- 16.87 lb Conc. Load at 2.00
BC- 22.14 lb Conc. Load at 4.00

Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-15 section 1607.



19-1-12

18-0-0

1-5-4

2-0-0 | 1-10-3 | 2-7-13

4-6-0
4-6-0 Over 3 Supports

R=343 U=60 W=3.5" R=60 U=3

City of Portland
REVIEWED FOR CODE COMPLIANCE
NOV 16 2017
Permit Number

Design Crit: IBC2015/TPI-2014(STD)
PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0[illegible]/19

OR/-/1/-/-/R/- Scale =.5"/Ft.

TC LL	25.0 PSF	REF	R7175- 89786
TC DL	10.0 PSF	DATE	07/20/17
BC DL	7.0 PSF	DRW	CAUSR7175 17201037
BC LL	0.0 PSF	CA-ENG	PBC/RTT
TOT.LD.	42.0 PSF	SEQN-	121479
DUR.FAC.	1.15		
SPACING	24.0"	JREF-	1W2N7175Z10

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07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

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(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - B1)

Top chord 2x4 HF #2
Bot chord 2x4 HF #2

Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-15 section 1607.

Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 2.00.

120 mph wind, 18.90 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

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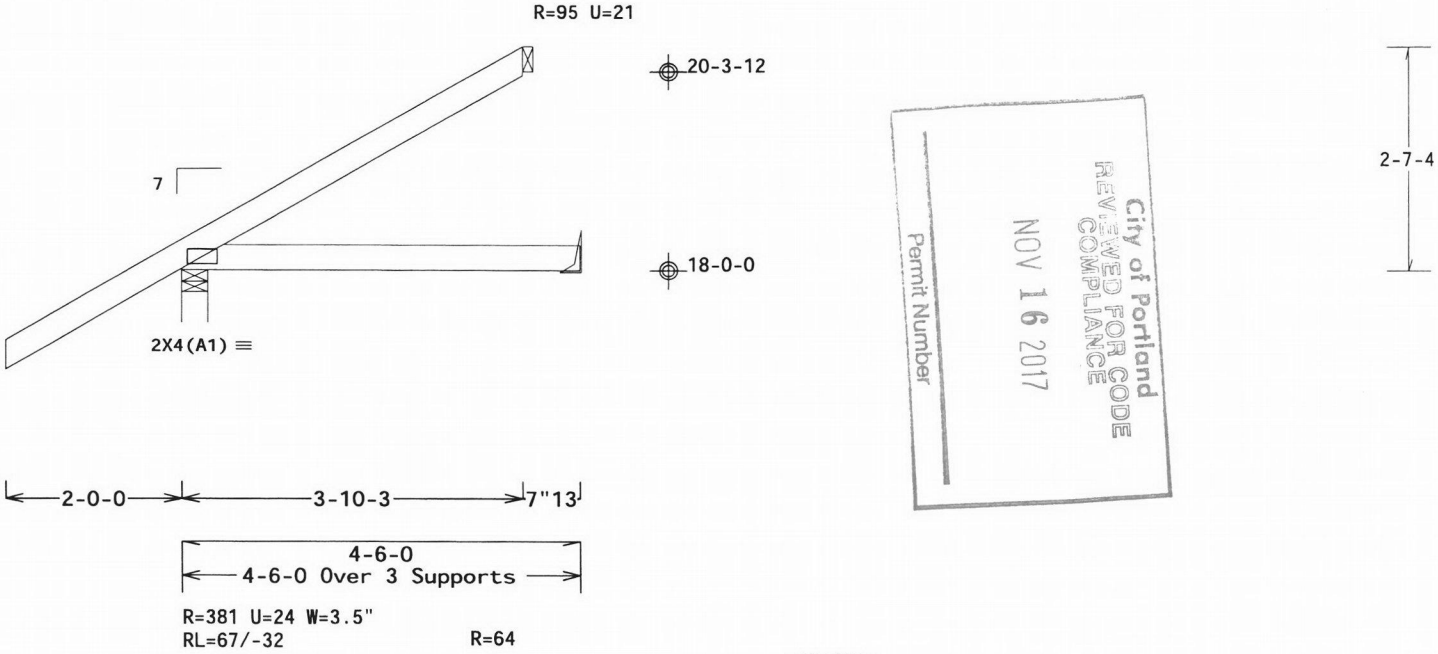

Design Crit: IBC2015/TPI-2014(STD)

PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0[illegible]/16 OR/-/1/-/-/R/- Scale =.5"/Ft.

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83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF R7175- 89787
TC DL	10.0 PSF	DATE 07/20/17
BC DL	7.0 PSF	DRW CAUSR7175 17201038
BC LL	0.0 PSF	CA-ENG PBC/RTT
TOT.LD.	42.0 PSF	SEQN- 121481
DUR.FAC.	1.15	
SPACING	24.0"	JREF- 1W2N7175Z10

9

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - B2)

Top chord 2x4 HF #2
Bot chord 2x4 HF #2
Webs 2x4 HF Std/Stud

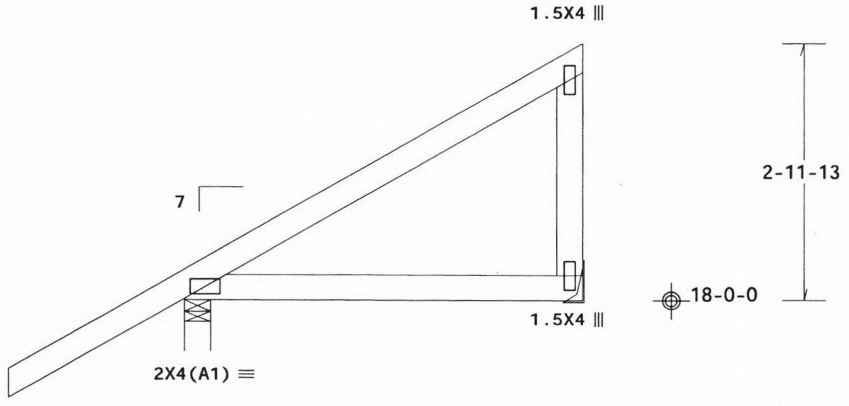
Bottom chord checked for 10.00 psf non-concurrent bottom chord live load applied per IBC-15 section 1607.

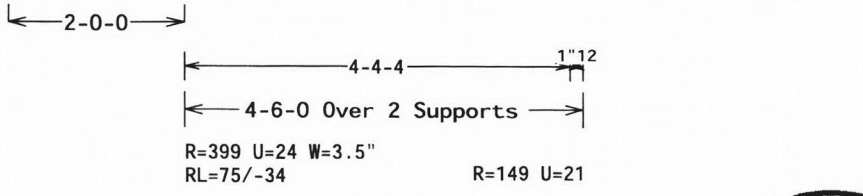
Deflection meets L/360 live and L/240 total load. Creep increase factor for dead load is 2.00.

120 mph wind, 19.09 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Wind loads and reactions based on MWFRS with additional C&C member design.

Right end vertical not exposed to wind pressure.





R=399 U=24 W=3.5"
RL=75/-34 R=149 U=21

Design Crit: IBC2015/TPI-2014(STD)

PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0503.2 OR/-/1/-/-/R/- Scale =.5"/Ft.

Truss Components of Oregon (503)357-2118
825 N 4th Ave, Cornelius OR 97113

ALPINE™ AN ITW COMPANY

8351 Rovana Circle
Sacramento, CA 95828

WARNING! READ AND FOLLOW ALL NOTES ON THIS DRAWING!
IMPORTANT FURNISH THIS DRAWING TO ALL CONTRACTORS INCLUDING THE INSTALLERS.

Trusses require extreme care in fabricating, handling, shipping, installing and bracing. Refer to and follow the latest edition of BCSI (Building Component Safety Information, by TPI and WTCA) for safety practices prior to performing these functions. Installers shall provide temporary bracing per BCSI. Unless noted otherwise, top chord shall have properly attached structural sheathing and bottom chord shall have a properly attached rigid ceiling. Locations shown for permanent lateral restraint of webs shall have bracing installed per BCSI sections B3, B7 or B10, as applicable. Apply plates to each face of truss and position as shown above and on the Joint Details, unless noted otherwise. Refer to drawings 160A-Z for standard plate positions.

Alpine, a division of ITW Building Components Group Inc. shall not be responsible for any deviation from this drawing, any failure to build the truss in conformance with ANSI/TPI 1, or for handling, shipping, installation & bracing of trusses.

A seal on this drawing or cover page listing this drawing, indicates acceptance of professional engineering responsibility solely for the design shown. The suitability and use of this drawing for any structure is the responsibility of the Building Designer per ANSI/TPI 1 Sec.2.

For more information see this job's general notes page and these web sites:
ALPINE: www.alpineitw.com; TPI: www.tpinst.org; WTCA: www.sbcindustry.com; ICC: www.iccsafe.org

REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF	R7175- 89788
TC DL	10.0 PSF	DATE	07/20/17
BC DL	7.0 PSF	DRW	CAUSR7175 17201039
BC LL	0.0 PSF	CA-ENG	PBC/RTT
TOT.LD.	42.0 PSF	SEQN-	121483
DUR.FAC.	1.15		
SPACING	24.0"	JREF-	1W2N7175Z10

10

THIS DWG PREPARED FROM COMPUTER INPUT (LOADS & DIMENSIONS) SUBMITTED BY TRUSS MFR.

(0617202--PARR RALEIGH HILLS -Harboro Gabriel Park fire -- 6387 verify PORTLAND, - R1)

Top chord 2x4 DF-L 2400f-2.0E :T2 2x4 HF #2:
Bot chord

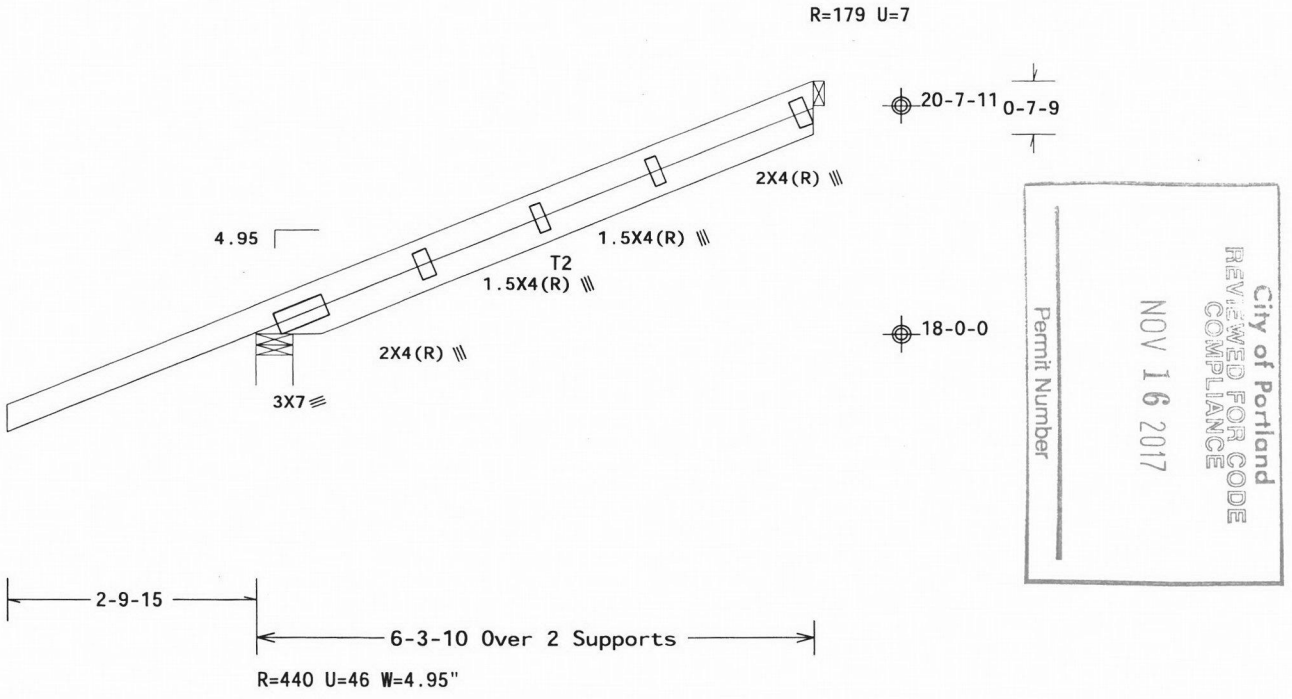
Wind loads and reactions based on MWFRS.

Hipjack supports 4-5-8 setback jacks with no webs.

Shim all supports to solid bearing.

120 mph wind, 19.05 ft mean hgt, ASCE 7-10, CLOSED bldg, Located anywhere in roof, RISK CAT II, EXP B, wind TC DL=4.2 psf, wind BC DL=4.2 psf.

Deflection meets L/180 live and L/120 total load. Creep increase factor for dead load is 2.00.



City of Portland
REVIEWED FOR CODE COMPLIANCE
NOV 16 2017
Permit Number

Design Crit: IBC2015/TPI-2014(STD)

PLT TYP. Wave FT/RT=2%(0%)/4(0) 16.01.0[illegible]/16 OR/-/1/-/-/R/- Scale =.5"/Ft.

Truss Components of Oregon (503)357-2118
825 N 4th Ave, Cornelius OR 97113

ALPINE AN ITW COMPANY

8351 Rovana Circle
Sacramento, CA 95828

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For more information see this job's general notes page and these web sites:
ALPINE: www.alpineitw.com; TPI: www.tpinst.org; WTCA: www.sbcindustry.com; ICC: www.iccsafe.org

REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

TC LL	25.0 PSF	REF	R7175- 89789
TC DL	10.0 PSF	DATE	07/20/17
BC DL	7.0 PSF	DRW	CAUSR7175 17201040
BC LL	0.0 PSF	CA-ENG	PBC/RTT
TOT.LD.	42.0 PSF	SEQN-	121485
DUR.FAC.	1.15		
LOADING	SEE ABOVE	JREF-	1W2N7175Z10

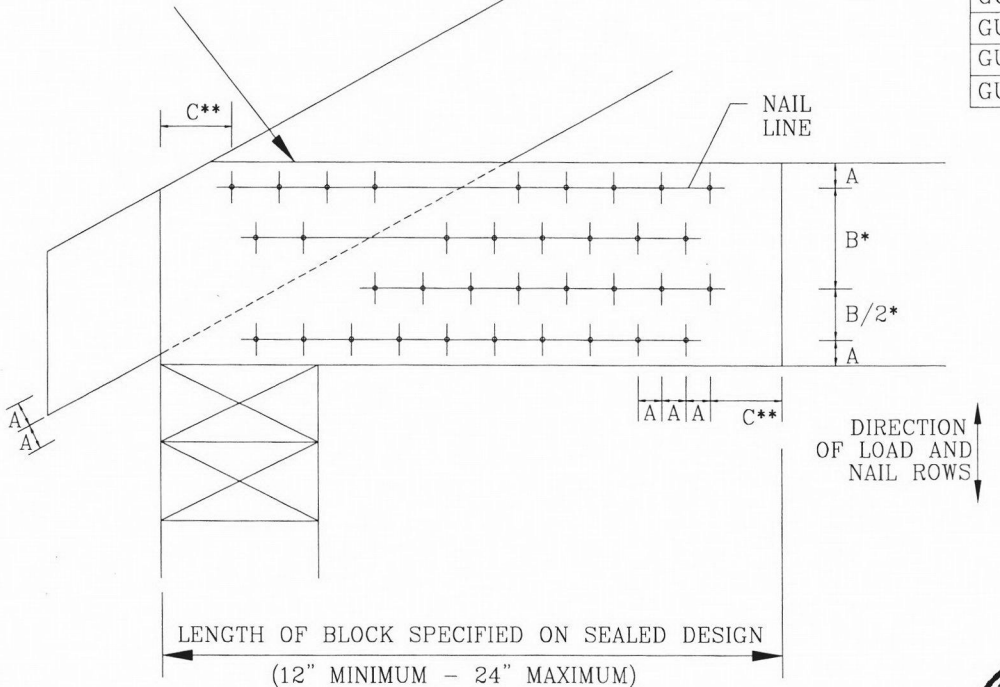
BEARING BLOCK NAIL SPACING DETAIL

MINIMUM SPACING FOR SINGLE BEARING BLOCK IS SHOWN. DOUBLE NAIL SPACINGS AND STAGGER NAILING FOR TWO BLOCKS. GREATER SPACING MAY BE REQUIRED TO AVOID SPLITTING.

A – EDGE DISTANCE AND SPACING BETWEEN STAGGERED ROWS OF NAILS (6 NAIL DIAMETERS)
B – SPACING OF NAILS IN A ROW (12 NAIL DIAMETERS)
C – END DISTANCE (15 NAIL DIAMETERS)

IF NAIL HOLES ARE PREBORED, SOME SPACING MAY BE REDUCED BY THE AMOUNTS GIVEN BELOW:
- * SPACING MAY BE REDUCED BY 50%
- ** SPACING MAY BE REDUCED BY 33%

BEARING BLOCK TO BE SAME SIZE AND SPECIES AS BOTTOM CHORD. BLOCKS MAY BE ANY GRADE WITHIN THE SPECIES, PROVIDED THE COMPRESSION PERPENDICULAR TO GRAIN VALUE (Fc-perp) IS AT LEAST THAT OF THE CHORD.



MAXIMUM NUMBER OF NAIL LINES PARALLEL TO GRAIN

NAIL TYPE	CHORD SIZE 2X4	2X6	2X8	2X10	2X12
8d BOX (0.113"X 2.5",MIN)	3	6	9	12	15
10d BOX (0.128"X 3.",MIN)	3	5	7	10	12
12d BOX (0.128"X 3.25",MIN)	3	5	7	10	12
16d BOX (0.135"X 3.5",MIN)	3	5	7	10	12
20d BOX (0.148"X 4.",MIN)	2	4	5	6	8
8d COMMON (0.131"X 2.5",MIN)	3	5	7	10	12
10d COMMON (0.148"X 3.",MIN)	2	4	6	8	10
12d COMMON (0.148"X 3.25",MIN)	2	4	6	8	10
16d COMMON (0.162"X 3.5",MIN)	2	4	6	8	10
GUN (0.120"X 2.5",MIN)	3	6	8	11	14
GUN (0.131"X 2.5",MIN)	3	5	7	10	12
GUN (0.120"X 3.",MIN)	3	6	8	11	14
GUN (0.131"X 3.",MIN)	3	5	7	10	12

MINIMUM NAIL SPACING DISTANCES

NAIL TYPE	DISTANCES A	B*	C**
8d BOX (0.113"X 2.5",MIN)	3/4"	1 3/8"	1 3/4"
10d BOX (0.128"X 3.",MIN)	7/8"	1 5/8"	2"
12d BOX (0.128"X 3.25",MIN)	7/8"	1 5/8"	2"
16d BOX (0.135"X 3.5",MIN)	7/8"	1 5/8"	2 1/8"
20d BOX (0.148"X 4.",MIN)	1"	1 7/8"	2 1/4"
8d COMMON (0.131"X 2.5",MIN)	7/8"	1 5/8"	2"
10d COMMON (0.148"X 3.",MIN)	1"	1 7/8"	2 1/4"
12d COMMON (0.148"X 3.25",MIN)	1"	1 7/8"	2 1/4"
16d COMMON (0.162"X 3.5",MIN)	1'	2"	2 1/2"
GUN (0.120"X 2.5",MIN)	3/4"	1 1/2"	1 7/8"
GUN (0.131"X 2.5",MIN)	7/8"	1 5/8"	2"
GUN (0.120"X 3.",MIN)	3/4"	1 1/2"	1 7/8"
GUN (0.131"X 3.",MIN)	7/8"	1 5/8"	2"

THIS DRAWING REPLACES DRAWING B139 AND CNBRGBLK0699

ALPINE
ITW BUILDING COMPONENTS GROUP, INC.
POMPANO BEACH, FLORIDA

WARNING TRUSSES REQUIRE EXTREME CARE IN FABRICATING, HANDLING, SHIPPING, INSTALLING AND BRACING. REFER TO BCSI (BUILDING COMPONENT SAFETY INFORMATION), PUBLISHED BY TPI (TRUSS PLATE INSTITUTE, 218 NORTH LEE STR., SUITE 312 ALEXANDRIA, VA. 22314) AND WTCA (WOOD TRUSS COUNCIL OF AMERICA, 6300 ENTERPRISE LN, MADISON, WI 53719) FOR SAFETY PRACTICES PRIOR TO PERFORMING THESE FUNCTIONS. UNLESS OTHERWISE INDICATED, TOP CHORD SHALL HAVE PROPERLY ATTACHED STRUCTURAL PANELS AND BOTTOM CHORD SHALL HAVE A PROPERLY ATTACHED RIGID CEILING.

IMPORTANT FURNISH COPY OF THIS DESIGN TO INSTALLATION CONTRACTOR. ITW BCG, INC., SHALL NOT BE RESPONSIBLE FOR ANY DEVIATION FROM THIS DESIGN; ANY FAILURE TO BUILD THE TRUSS IN CONFORMANCE WITH TPI; OR FABRICATING, HANDLING, SHIPPING, INSTALLING & BRACING OF TRUSSES. DESIGN CONFORMS WITH APPLICABLE PROVISIONS OF NDS (NATIONAL DESIGN SPEC, BY AF&PA) AND TPI. ITW, BCG CONNECTOR PLATES ARE MADE OF 20/18/16GA (W,H/SS/K) ASTM A653 GRADE 40/60 (W,K/H,SS) GALV. STEEL. APPLY PLATES TO EACH FACE OF TRUSS AND, UNLESS OTHERWISE LOCATED ON THIS DESIGN, POSITION PER DRAWINGS 160A-Z. ANY INSPECTION OF PLATES FOLLOWED BY (I) SHALL BE PER ANNEX A3 OF TPI 1-2002 SEC. 3. A SEAL ON THIS DRAWING INDICATES ACCEPTANCE OF PROFESSIONAL ENGINEERING RESPONSIBILITY SOLELY FOR THE TRUSS COMPONENT DESIGN SHOWN. THE SUITABILITY AND USE OF THIS COMPONENT FOR ANY BUILDING IS THE RESPONSIBILITY OF THE BUILDING DESIGNER, PER ANSI/TPI 1 SEC. 2.

REGISTERED PROFESSIONAL ENGINEER
83294PE
07/20/2017
OREGON
07/20/17
JULY 14, 2009
Russell Tangren
Renewal 6/30/2018

REF	BEARING BLOCK
DATE	2/23/07
DRWG	CNBRGBLK0207
-ENG	SJP/KAR

1

Gabriel Park Apartments
Fire Restoration
7730 SW 45th Ave
Portland, Oregon 97219
June 13, 2017

STRUCTURAL
REGISTERED PROFESSIONAL
ENGINEER
18858SE
OREGON
NOVEMBER 12, 1996
JOHN ANDREW STEMEER
EXPIRES: 6-30-2018
6-13-17

For:
Tim Young
Harbro

The JAS Engineering design team has received the request from you to provide fire and life safety and structural analysis, engineering design, construction drawings and structural calculations for the project referenced above. We have visited the property and assessed the requirements with you. We can prepare plans and calculations for submittal to City of Portland, for permitting.

OBJECTIVES

The JAS team understands that you need engineering services to repair the fire damage to the four (2) Level Units located at the address noted above. The structural damage from the fire appears to be the entire manufactured truss roof structure, the rear decking, portions of the upper level rear wall mostly behind two units and a few interior walls. The ceilings of the lower two units have been removed due to water damage from the fire fighting efforts. The project will require manufactured truss replacement of the damaged roof members which appears to be the entire roof over these four units. There is an existing CMU fire wall separating these units from the adjacent four units of the 8-plex which kept the fire from causing damage there. The rear of the building decking will be replaced for an entire two units and the deck framing will be checked, but appears to be not damaged in these units. The JAS team will address the structural damage of the Apartment complex units noted above due to the fire and will be preparing plans, engineering design and calculations to attach to the non-structural drawings for a complete permitting packet. We have also provided estimated fees to provide the permitting service at the City if you would like us to do this (see the "compensation" section of the contract). We understand you would like us to provide structural calculations and drawings for the design of the replacement deck and roof structure and upper rear wall. The existing roof framing consists of manufactured trusses. Demolition of the finishes has been completed, so we are able to see all the existing damaged roof trusses and the damaged rear wall and decking. The ceiling of the lower level units has been removed, so we were able to see the floor framing in that area. It appears there is no damage in the floor framing in that area. Scraping and smoke sealing will be required for any of the deck joists and wall headers if some of them have minor smoke damage and they are to remain. Any minor charred or smoke damaged framing for the walls that remain

17-18858-DC

in this area will need scraping and to be smoke sealed as well. We will check existing window and door headers to support the code required roof and deck loads.

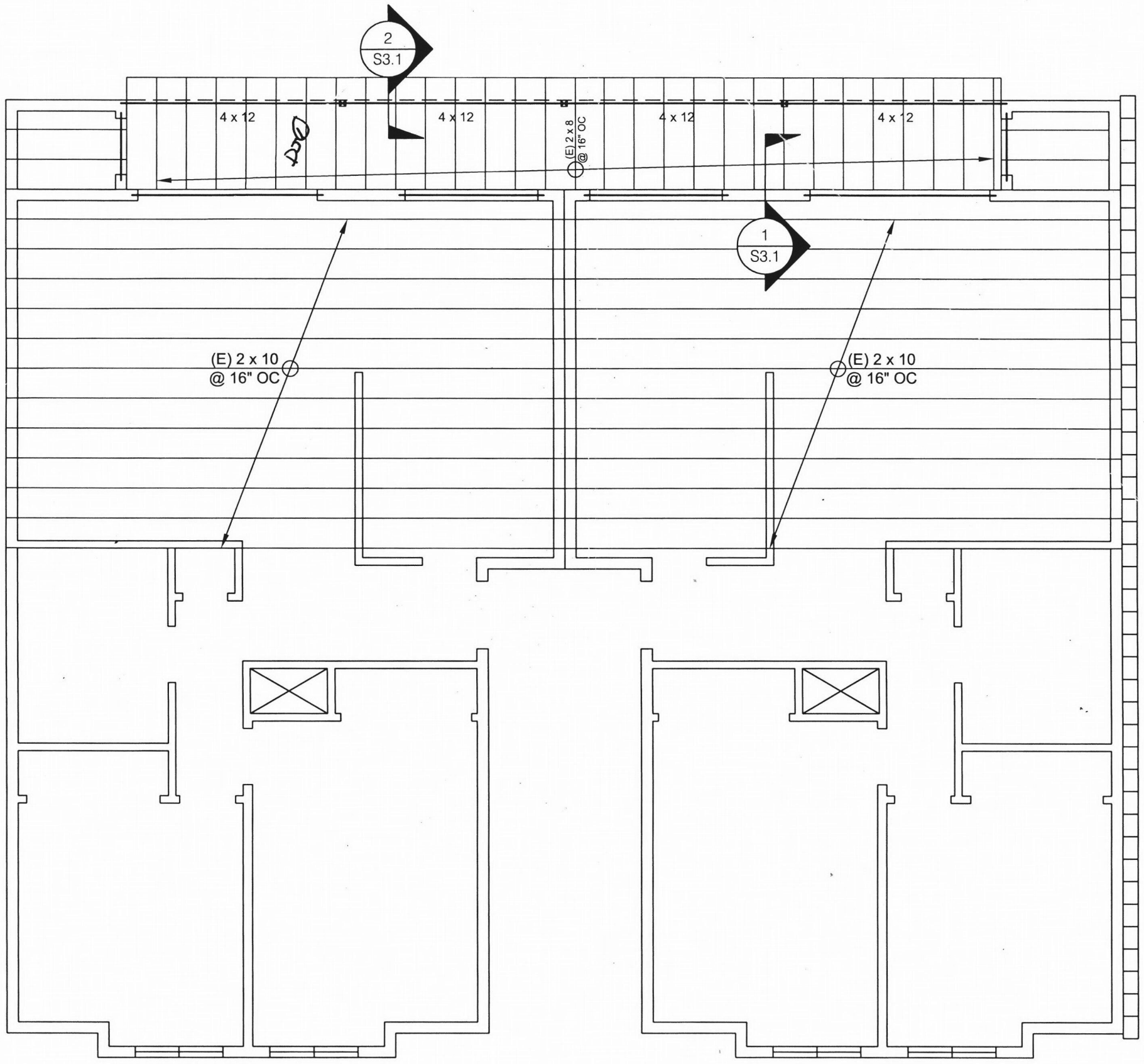
We understand the project construction is to be built based on the drawings prepared by us. The scope of the project is to provide plans showing the location and extent of the replacement roof truss framing along with the upper level deck framing. We will also provide shear wall plans showing shear nailing and new hold down locations to resist the code required wind and seismic forces for the rear wall of the upper level apartments. New T1-11 can be added to the outside of the existing walls and nailing increased where it remains where the lateral force resisting system is strengthened in the building. The uplift and shear forces at the upper level will then be transferred through lower level shear walls and hold downs added to the foundation below. JAS Engineering will provide the design to meet the code required roof and floor snow, live load and dead load forces. Structural details will be provided to show the construction requirements for the roof to wall connections, and bracing at the gable end walls.

The JAS Engineering team understands you would like us to provide the non-structural design elements for this project. We will provide the design for the non-structural elements such as egress window required locations, replacement insulation requirements, roof ventilation locations, and ventilation fan locations in the bathrooms, laundry room and kitchen hood and new smoke/carbon monoxide detector locations in addition to the separation required between the units at the walls and floor/ceiling, rated chases for the ventilation fans and at the draft stop/rated wall locations in the attic.

The elements to be include the 1-hr fire wall and floor/ceiling and STC-50 sound transmission separations required between units. Special consideration will be required for the kitchen and bath fans near these walls (soffit below the floor) and any other penetrations. Sprinklers will be required for any units where the damage repairs is more than 25% of the assessed value and the entire building sprinklered when 50% or more of the units are damaged. This means the upper two units will require sprinklers and possibly the lower two units.

Design Criteria:

IBC 2012:	With 2014 OSSC Amendments
Snow Load:	25 PSF
Roof Dead Load:	15 PSF
Floor Live Load:	40 PSF
Floor Dead Load:	15 PSF
Wind Load:	120 psf, Exposure B (Ultimate Wind Speed)
Seismic:	Ss=0.994, S1=0.428



UPPER FLOOR FRAMING PLAN
3/16" = 1'-0"

CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS

SCALES NOTED ON DRAWINGS ARE FOR 11"X17" SHEET. SCALE ACCORDINGLY FOR DIFFERENT SIZE SHEET.

1419 Washington St,
Suite 100
Oregon City, Oregon 97045
Work: 503-657-9800
Cell: 503-449-3080
Andy@jasenginc.com

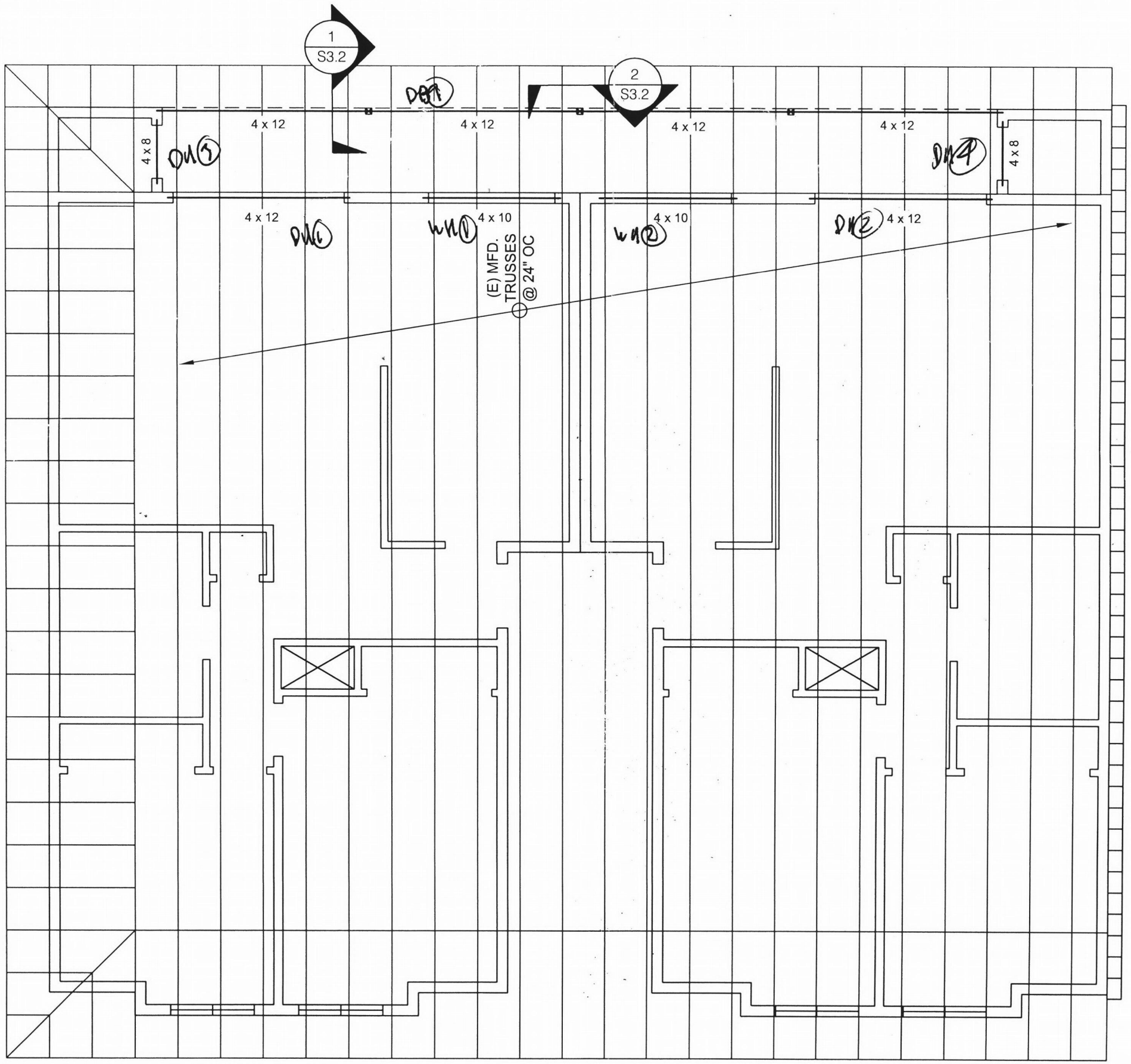
JAS ENGINEERING

GABRIEL PARK APART. FIRE RESTORATION
HARBRO
7740 SW 45TH AVE,
PORTLAND, OR 97219

DESIGN BY:	JAS
DRAWN BY:	DAS
JAS PROJ. NO:	17-024
ISSUE DATE:	5/8/2017

SHEET TITLE:
UPPER FLOOR FRAMING PLAN

SHEET NO:
S-2.1



ROOF FRAMING PLAN

3/16" = 1'-0"

CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS

SCALES NOTED ON DRAWINGS ARE FOR 11"X17" SHEET. SCALE ACCORDINGLY FOR DIFFERENT SIZE SHEET.

1419 Washington St,
Suite 100
Oregon City, Oregon 97045
Work: 503-657-9800
Cell: 503-449-3080
Andy@jasenginc.com

JAS ENGINEERING

GABRIEL PARK APART. FIRE RESTORATION
HARBRO
7740 SW 45TH AVE,
PORTLAND, OR 97219

DESIGN BY:	JAS
DRAWN BY:	DAS
JAS PROJ. NO:	17-024
ISSUE DATE:	5/8/2017

SHEET TITLE:
ROOF FRAMING PLAN

SHEET NO:
S-2.2

JAS ENGINEERING
1419 Washington Street, Suite 100
Oregon City, OR 97045
Work: 503-657-9800 Fax: 503-656-0186

Client HARBRO
Project GABRIEL PARK APTS. FIRE RESTO.
Project No. 17-024

Sheet IR of
Design by DAS
Date 7/17/17
Checked by
Date

DESIGN FOR OUT-OF-PLANE WALL ANCHORAGE

$F_p = 0.4 S_{DS} K_a I_e W_p$ (12.11-1)

$S_{DS} = 0.731$, $I_e = 1.0$

$K_a = 1.0 + \frac{L_f}{100} = 1.0 + \frac{41.5'}{100} = 1.415 < 2.0$ (OK)

$W_p = W_{WALL} (h_w/2 + h_p)$ (Anchor spacing), $W_{WALL} = 84$ PSF

$= 84 PSF (20'/2 + 2.5') (4')$

AVG FOR 8" NORMAL WEIGHT SOLID GROUTED WALL

$= 4200^*$

$F_p = 0.4 (0.731) (1.415) (1.0) (4200)$

$= 1737.7^*$

$F_{p_{MIN}} = 0.2 K_a I_e W_p$

$= 0.2 (1.415) (1.0) (4200^*)$

$= 1188.6^* < 1737.7^*$ (OK)

$F_p = 1737.7^*$ Anchor @ 4'OC

∴ USE HTT4 @ 4'0"OC

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 168588PE OREGON NOVEMBER 12, 1982 JOHN ANDREW STEVENS
EXPIRES 6-30-2018
8-7-17

TABLE 2—EDGE, END AND SPACING DISTANCE REQUIREMENTS AND ALLOWABLE LOAD REDUCTION FACTORS FOR THREADED ROD AND REBAR WITH SET-XP® EPOXY ADHESIVE IN THE FACE OF FULLY GROUTED CMU WALL CONSTRUCTION[7]

Rod Dia. (inch) or Rebar Size No.	Min. Embed. Depth (inches)	Edge or End Distance[1,8]						Spacing[2,9]				
		Critical (Full Anchor Capacity)[3]		Minimum (Reduced Anchor Capacity)[4]				Critical (Full Anchor Capacity)[5]		Minimum (Reduced Anchor Capacity)[6]		
		Critical Edge or End Distance, c_{cr} (inches)	Allowable Load Reduction Factor	Minimum Edge or End Distance, c_{min} (inches)	Allowable Load Reduction Factor			Critical Spacing, s_{cr} (inches)	Allowable Load Reduction Factor	Minimum Spacing, s_{min} (inches)	Allowable Load Reduction Factor	
		Load Direction		Load Direction				Load Direction		Load Direction		
		Tension or Shear	Tension or Shear	Tension or Shear	Tension	Shear[10]		Tension or Shear	Tension or Shear	Tension or Shear	Tension	Shear
						Perp.	Para.					
3/8	3-3/8	12	1.00	4	0.91	0.72	0.94	8	1.00	4	1.00	1.00
1/2	4-1/2	12	1.00	4	1.00	0.58	0.87	8	1.00	4	0.82	1.00
5/8	5-5/8	12	1.00	4	1.00	0.48	0.87	8	1.00	4	0.82	1.00
3/4	6-1/2	12	1.00	4	1.00	0.44	0.85	8	1.00	4	0.82	1.00
#3	3-3/8	12	1.00	4	0.96	0.62	0.84	8	1.00	4	0.87	0.91
#4	4-1/2	12	1.00	4	0.88	0.54	0.82	8	1.00	4	0.87	0.91
#5	5-5/8	12	1.00	4	0.88	0.43	0.82	8	1.00	4	0.87	1.00

For SI: 1 inch = 25.4 mm.

1. Edge distance (c_{cr} or c_{min}) is the distance measured from anchor centerline to edge or end of CMU masonry wall. Figure 2 shows critical and minimum edge and end distances.
2. Anchor spacing (s_{cr} or s_{min}) is the distance measured from centerline to centerline of two anchors.
3. Critical edge distance, c_{cr}, is the least edge distance at which tabulated allowable load of an anchor is achieved where a load reduction factor equals 1.0 (no load reduction).
4. Minimum edge distance, c_{min}, is the least edge distance where an anchor has an allowable load capacity, which shall be determined by multiplying the allowable loads assigned to anchors installed at critical edge distance, c_{cr}, in Table 3 by the load reduction factors shown above.
5. Critical spacing, s_{cr}, is the least anchor spacing at which tabulated allowable load of an anchor is achieved such that anchor performance is not influenced by adjacent anchors.
6. Minimum spacing, s_{min}, is the least spacing where an anchor has an allowable load capacity, which shall be determined by multiplying the allowable loads assigned to anchors installed at critical spacing distance, s_{cr}, in Table 3 by the load reduction factors shown above.
7. Reduction factors are cumulative. Multiple reduction factors for more than one spacing or edge or end distance shall be calculated separately and multiplied.
8. Load reduction factor for anchors loaded in tension or shear with edge distances between critical and minimum shall be obtained by linear interpolation.
9. Load reduction factor for anchors loaded in tension with spacing between critical and minimum shall be obtained by linear interpolation.
10. Perpendicular shear loads act towards the edge or end. Parallel shear loads act parallel to the edge or end (shown in Figure 5). Perpendicular and parallel shear load reduction factors are cumulative when the anchor is located between the critical and minimum edge and end distance.

3R

TABLE 3—ALLOWABLE TENSION AND SHEAR VALUES FOR THREADED ROD AND REBAR WITH SET-XP® EPOXY ADHESIVE IN THE FACE OF FULLY GROUTED CMU WALL CONSTRUCTION[1,3,4,5,6,8,9,10,11]

Diameter (inch) or Rebar Size No.	Drill Bit Diameter (inch)	Minimum Embedment[2] (inches)	Allowable Load based on Bond Strength[7] (pounds)	
			Tension	Shear
Threaded Rod Installed in the Face of CMU Wall				
3/8	1/2	3-3/8	1,490	1,145
1/2	5/8	4-1/2	1,825	1,350
5/8	3/4	5-5/8	1,895	1,350
3/4	7/8	6-1/2	1,895	1,350
Rebar Installed in the Face of CMU Wall				
#3	1/2	3-3/8	1,395	1,460
#4	5/8	4-1/2	1,835	1,505
#5	3/4	5-5/8	2,185	1,505

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lbf = 4.48 N.

1. Allowable load shall be the lesser of bond values given in Table 3 and steel values given in Tables 9 or 10 of this report as applicable.
2. Embedment depth is measured from the outside face of masonry wall.
3. Critical and minimum edge distance and spacing shall comply with Table 2. Figure 2 shows critical and minimum edge and end distances.
4. Minimum allowable nominal width of CMU wall shall be 8 inches (203 mm). Anchors are limited to one per masonry cell.
5. Anchors are permitted to be installed at any location in the face of the fully grouted masonry wall construction (cell, web, bed joint), except anchors are not permitted to be installed within 1 ½" of the head joint as shown in Figure 2.
6. Tabulated load values are for anchors installed in fully grouted masonry walls constructed from materials per Section 3.2.6 of this report.
7. Tabulated allowable loads are based on a safety factor of 5.0 for installations under the IBC and the IRC.
8. Tabulated allowable load values shall be adjusted for increased base material temperatures in accordance with Figure 1, as applicable.
9. Threaded rod and rebar installed in fully grouted masonry walls with SET-XP adhesive are permitted to resist dead, live, seismic and wind loads. Refer to Section 4.1 of this report for design requirement details.
10. Threaded rods shall meet or exceed the tensile strength of ASTM F1554, Grade 36 steel, which is 58,000 psi.
11. For installations exposed to severe, moderate or negligible exterior weathering conditions, as defined in Figure 1 of ASTM C62 (IBC or IRC), allowable tension loads shall be multiplied by 0.80 and stainless steel or zinc coated anchors per section 5.9 of this report shall be used.

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Client HARBRO
Project GABRIEL PARK APTS
FIRE RESTORATION
Project No. 17-024

Sheet 4R of
Design by JAS
Date 8-1-17
Checked by
Date

CHORD FORCE

$$1740\#/4'oc = 435\#/ft$$

$$M = \frac{435\#/ft\ (37.58')^2}{8} = 76,791.4\#$$

$$\frac{76,791.4\#}{10'} = 7,679\#/2 = 3839\#$$

$$\frac{7679\#}{3"(3.5")} = 853\#/in^2$$

ADD 2x4 EA SIDE
USE MST148 STRAPS AT SPLICE EA SIDE 5065# (2) = 10,130#

DRAG STRUT

$$\frac{3674.2\#}{50'} = 73.5\#/ft$$

$$73.5\#/ft\ (13') = 955.3\#$$

USE SIMPSON LSTA36
1640# ALL

CHORD FORCE

$$\frac{147.9\#/ft\ (50)^2}{8} = 46,218.8\#\cdot ft$$

$$\frac{46,218.8\#}{37.5'} = 1,232.5\#$$

USE SIMPSON LSTA36

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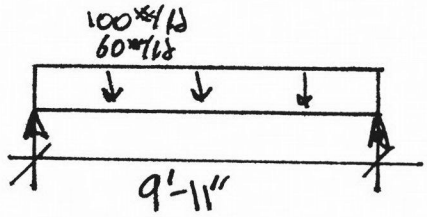
Client HARBRO
Project GABRIEL PARK APART. FIRE RESTORATION
Project No. 17-024

Sheet 1 of
Design by DAS
Date 5/11/17
Checked by
Date

DECK BEAM (1)

9'-11" SPAN ROOF: 2' + 4'/2 = 4' TRIB (25PSF) = 100#/ft
(15PSF) = 60#/ft



$V_{SL} = \frac{100\#/ft\,(9'-11")}{2} = 495.8\#$

$V_{DL} = \frac{60\#/ft\,(9'-11")}{2} = 297.5\#$

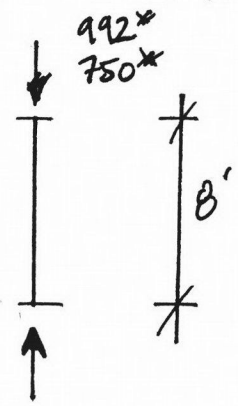
∴ USE 4x12 DF-L (PT)

ASSUMING THIRD POINT TRUSS BEARING POINT

POST FOR DB(1)

8' UNBRACED LENGTH

DB(1): $V_{SL} = 2 \times 496\# = 992\#$
$V_{DL} = 2 \times 375\# = 750\#$



∴ USE 4x4 DF-L (PT)

Project: 17-024 Gabriel Park Apartment Fire Restoration

Location: Deck Beam 1
Roof Beam
[2015 International Building Code(2015 NDS)]
3.5 IN x 11.25 IN x 9.92 FT Pressure Treated
#1 - Douglas-Fir-Larch - Wet Use
Section Adequate By: 187.5%
Controlling Factor: Moment

Dustin Selby

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DEFLECTIONS Center

Live Load	0.04	IN L/3298
Dead Load	0.03	in
Total Load	0.06	IN L/1878

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A	B
Live Load	496 lb	496 lb
Dead Load	375 lb	375 lb
Total Load	871 lb	871 lb
Bearing Length	0.59 in	0.59 in

BEAM DATA

Span Length	9.9 ft
Unbraced Length-Top	1.3 ft
Unbraced Length-Bottom	0 ft
Roof Pitch	6 :12
Roof Duration Factor	1.15

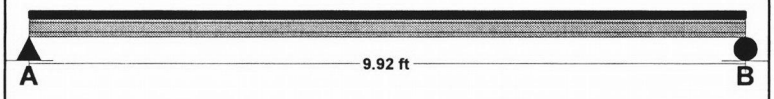
MATERIAL PROPERTIES
#1 - Douglas-Fir-Larch

	Base Values	Adjusted
Bending Stress:	Fb = 1000 psi	Fb' = 1009 psi
	Cd=1.15 Cl=1.00 CF=1.10 Ci=0.80	
Shear Stress:	Fv = 180 psi	Fv' = 161 psi
	Cd=1.15 Cm=0.97 Ci=0.80	
Modulus of Elasticity:	E = 1700 ksi	E' = 1454 ksi
	Cm=0.90 Ci=0.95	
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi	Fc - ⊥' = 419 psi
	Cm=0.67	

Controlling Moment: 2160 ft-lb
4.96 ft from left support
Created by combining all dead and live loads.
Controlling Shear: -871 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	25.68 in3	73.83 in3
Area (Shear):	8.13 in2	39.38 in2
Moment of Inertia (deflection):	39.8 in4	415.28 in4
Moment:	2160 ft-lb	6211 ft-lb
Shear:	-871 lb	4217 lb

LOADING DIAGRAM



ROOF LOADING

Side One:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Side Two:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	9.92	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	100	plf
Beam Uniform Dead Load:	wD_adj =	76	plf
Total Uniform Load:	wT =	176	plf

NOTES

Project: 17-024 Gabriel Park Apartment Fire Restoration

Location: Post For DB1
Column
[2015 International Building Code(2015 NDS)]
3.5 IN x 3.5 IN x 8.0 FT
#1 - Douglas-Fir-Larch - Wet Use
Section Adequate By: 71.1%

Dustin Selby

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VERTICAL REACTIONS

Live Load:	Vert-LL-Rxn =	992	lb
Dead Load:	Vert-DL-Rxn =	771	lb
Total Load:	Vert-TL-Rxn =	1763	lb

COLUMN DATA

Total Column Length:	8	ft
Unbraced Length (X-Axis) Lx:	8	ft
Unbraced Length (Y-Axis) Ly:	8	ft
Column End Condition-K (e):	1	
Axial Load Duration Factor	1.00	

COLUMN PROPERTIES

#1 - Douglas-Fir-Larch

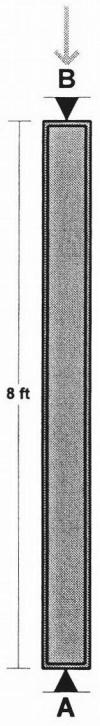
	Base Values	Adjusted
Compressive Stress:	Fc = 1500 psi	Fc' = 498 psi
	Cm=0.80 Cf=1.15 Cp=0.45 Ci=0.80	
Bending Stress (X-X Axis):	Fbx = 1000 psi	Fbx' = 1020 psi
	Cm=0.85 CF=1.50 Ci=0.80	
Bending Stress (Y-Y Axis):	Fby = 1000 psi	Fby' = 1020 psi
	Cm=0.85 CF=1.50 Ci=0.80	
Modulus of Elasticity:	E = 1700 ksi	E' = 1454 ksi

Column Section (X-X Axis):	dx =	3.5	in
Column Section (Y-Y Axis):	dy =	3.5	in
Area:	A =	12.25	in2
Section Modulus (X-X Axis):	Sx =	7.15	in3
Section Modulus (Y-Y Axis):	Sy =	7.15	in3
Slenderness Ratio:	Lex/dx =	27.43	
	Ley/dy =	27.43	

Column Calculations (Controlling Case Only):
Controlling Load Case: Axial Total Load Only (L + D)

Actual Compressive Stress:	Fc =	144	psi
Allowable Compressive Stress:	Fc' =	498	psi
Eccentricity Moment (X-X Axis):	Mx-ex =	0	ft-lb
Eccentricity Moment (Y-Y Axis):	My-ey =	0	ft-lb
Moment Due to Lateral Loads (X-X Axis):	Mx =	0	ft-lb
Moment Due to Lateral Loads (Y-Y Axis):	My =	0	ft-lb
Bending Stress Lateral Loads Only (X-X Axis):	Fbx =	0	psi
Allowable Bending Stress (X-X Axis):	Fbx' =	1020	psi
Bending Stress Lateral Loads Only (Y-Y Axis):	Fby =	0	psi
Allowable Bending Stress (Y-Y Axis):	Fby' =	1020	psi
Combined Stress Factor:	**CSF =**	**0.29**	

LOADING DIAGRAM



AXIAL LOADING

Live Load:	PL =	992	lb *
Dead Load:	PD =	750	lb *
Column Self Weight:	CSW =	21	lb
Total Axial Load:	PT =	1763	lb

* Load obtained from Load Tracker. See Summary Report for details.

NOTES

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Client HARBRO
Project GABRIEL PARK APART. FIRE RESTORATION
Project No. 17-024

Sheet 4 of
Design by DAS
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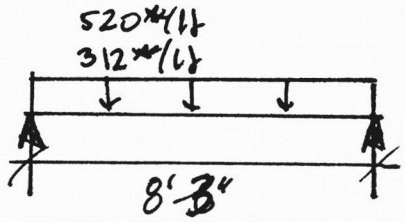
DOOR HEADER ① & ②

8'-8" SPAN ROOF: $4'/2 + 37'-7"/2 = 20.8'$ TRIB (25PSF) = 520#/lf (15PSF) = 312#/lf



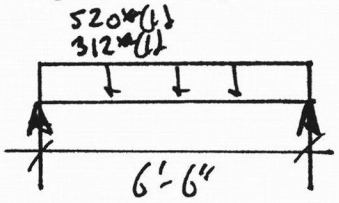
$V_{SL} = \frac{520\#/lf\ (8'8")}{2} = 2145\#$

$V_{DL} = \frac{312\#/lf\ (8'8")}{2} = 1287\#$

∴ USE 4x12 DF-L

WINDOW HEADER ① & ②

6'-6" SPAN ROOF: $4'/2 + 37'-7"/2 = 20.8'$ TRIB (25PSF) = 520#/lf (15PSF) = 312#/lf



$V_{SL} = \frac{520\#/lf\ (6'-6")}{2} = 1690\#$

$V_{DL} = \frac{312\#/lf\ (6'-6")}{2} = 1014\#$

∴ USE 4x10 DF-L

Project: 17-024 Gabriel Park Apartment Fire Restoration

Dustin Selby

Location: Door Header 1 & 2
Roof Beam
[2015 International Building Code(2015 NDS)]
3.5 IN x 11.25 IN x 8.25 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 4.0%
Controlling Factor: Moment

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DEFLECTIONS Center

Live Load	0.08	IN L/1290
Dead Load	0.05	in
Total Load	0.13	IN L/764

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

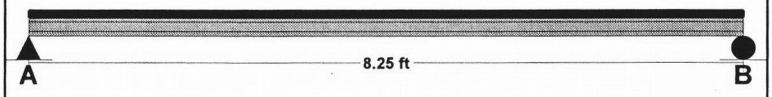
REACTIONS

	A	B
Live Load	2145 lb	2145 lb
Dead Load	1474 lb	1474 lb
Total Load	3619 lb	3619 lb
Bearing Length	1.65 in	1.65 in

BEAM DATA

Span Length	8.3	ft
Unbraced Length-Top	1.3	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	6	:12
Roof Duration Factor	1.15	

LOADING DIAGRAM



MATERIAL PROPERTIES

#1 - Douglas-Fir-Larch

	Base Values		Adjusted	
Bending Stress:	Fb = 1000 psi		Fb' = 1262 psi	
	Cd=1.15 Cl=1.00 CF=1.10			
Shear Stress:	Fv = 180 psi		Fv' = 207 psi	
	Cd=1.15			
Modulus of Elasticity:	E = 1700 ksi		E' = 1700 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi		Fc - ⊥' = 625 psi	

Controlling Moment: 7464 ft-lb
4.125 ft from left support
Created by combining all dead and live loads.

Controlling Shear: 3619 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:

	Req'd	Provided
Section Modulus:	71 in3	73.83 in3
Area (Shear):	26.23 in2	39.38 in2
Moment of Inertia (deflection):	97.79 in4	415.28 in4
Moment:	7464 ft-lb	7762 ft-lb
Shear:	3619 lb	5434 lb

ROOF LOADING

Side One:

Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft

Side Two:

Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	18.8	ft

Wall Load: WALL = 0 plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	8.25	ft
Beam Self Weight:	BSW =	9	plf
Beam Uniform Live Load:	wL =	520	plf
Beam Uniform Dead Load:	wD_adj =	357	plf
Total Uniform Load:	wT =	877	plf

NOTES

Project: 17-024 Gabriel Park Apartment Fire Restoration

Dustin Selby

Location: Window Header 1 & 2
Roof Beam
[2015 International Building Code(2015 NDS)]
3.5 IN x 9.25 IN x 6.5 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 23.8%
Controlling Factor: Moment

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DEFLECTIONS Center

Live Load	0.05	IN L/1466
Dead Load	0.04	in
Total Load	0.09	IN L/870

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A	B
Live Load	1690 lb	1690 lb
Dead Load	1156 lb	1156 lb
Total Load	2846 lb	2846 lb
Bearing Length	1.30 in	1.30 in

BEAM DATA

Span Length	6.5	ft
Unbraced Length-Top	1.3	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	6	:12
Roof Duration Factor	1.15	

MATERIAL PROPERTIES

#1 - Douglas-Fir-Larch

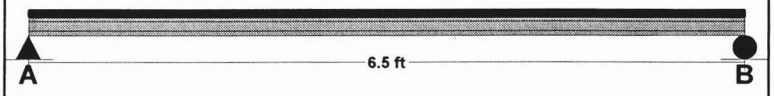
	Base Values		Adjusted	
Bending Stress:	Fb = 1000 psi		Fb' = 1377 psi	
	Cd=1.15 Cl=1.00 CF=1.20			
Shear Stress:	Fv = 180 psi		Fv' = 207 psi	
	Cd=1.15			
Modulus of Elasticity:	E = 1700 ksi		E' = 1700 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi		Fc - ⊥' = 625 psi	

Controlling Moment: 4626 ft-lb
3.25 ft from left support
Created by combining all dead and live loads.

Controlling Shear: -2846 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	40.32 in3	49.91 in3
Area (Shear):	20.63 in2	32.38 in2
Moment of Inertia (deflection):	47.74 in4	230.84 in4
Moment:	4626 ft-lb	5726 ft-lb
Shear:	-2846 lb	4468 lb

LOADING DIAGRAM



ROOF LOADING

Side One:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Side Two:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	18.8	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	6.5	ft
Beam Self Weight:	BSW =	7	plf
Beam Uniform Live Load:	wL =	520	plf
Beam Uniform Dead Load:	wD_adj =	356	plf
Total Uniform Load:	wT =	876	plf

NOTES

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Client HARBRO
Project GABRIEL PARK APART. FIRE RESTORATION
Project No. 17-024

Sheet 7 of
Design by DAS
Date 5/12/17
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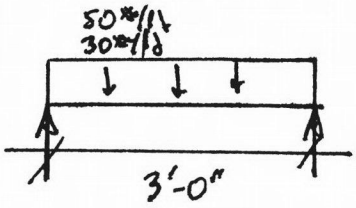
Date

DOOR HEADER ③ & ④

3'-0" SPAN 2' TRIB (25PSF) = 50#/lf
(15PSF) = 30#/lf



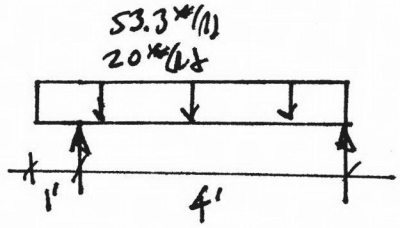
$V_{SL} = \frac{50\#/lf\ (3'-0")}{2} = 75\#$

$V_{DL} = \frac{30\#/lf\ (3'-0")}{2} = 45\#$

∴ USE 4x8 DF-L

DECK JOIST ①

4'-0" SPAN 1' CANT 16"OC (40PSF) = 53.3#/lf
(15PSF) = 20#/lf



∴ USE (E) 2x8 DF-L ⓟ @ 16"OC

Project: 17-024 Gabriel Park Apartment Fire Restoration

Dustin Selby

Location: Door Header 3 & 4
Roof Beam
[2015 International Building Code(2015 NDS)]
3.5 IN x 7.25 IN x 3.0 FT
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 2630.4%
Controlling Factor: Shear

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DEFLECTIONS Center

Live Load	0.00	IN L/MAX
Dead Load	0.00	in
Total Load	0.00	IN L/MAX

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180

REACTIONS

	A	B
Live Load	75 lb	75 lb
Dead Load	53 lb	53 lb
Total Load	128 lb	128 lb
Bearing Length	0.06 in	0.06 in

BEAM DATA

Span Length	3	ft
Unbraced Length-Top	1.3	ft
Unbraced Length-Bottom	0	ft
Roof Pitch	0	:12
Roof Duration Factor	1.15	

MATERIAL PROPERTIES

#1 - Douglas-Fir-Larch

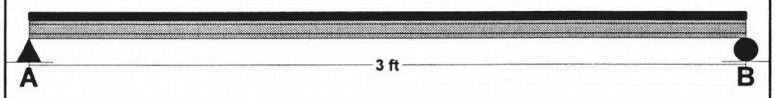
	Base Values		Adjusted	
Bending Stress:	Fb = 1000 psi		Fb' = 1492 psi	
	Cd=1.15 Cl=1.00 CF=1.30			
Shear Stress:	Fv = 180 psi		Fv' = 207 psi	
	Cd=1.15			
Modulus of Elasticity:	E = 1700 ksi		E' = 1700 ksi	
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi		Fc - ⊥' = 625 psi	

Controlling Moment: 96 ft-lb
1.5 ft from left support
Created by combining all dead and live loads.

Controlling Shear: -128 lb
At support.
Created by combining all dead and live loads.

Comparisons with required sections:	Req'd	Provided
Section Modulus:	0.77 in3	30.66 in3
Area (Shear):	0.93 in2	25.38 in2
Moment of Inertia (deflection):	0.46 in4	111.15 in4
Moment:	96 ft-lb	3812 ft-lb
Shear:	-128 lb	3502 lb

LOADING DIAGRAM



ROOF LOADING

Side One:			
Roof Live Load:	LL =	25	psf
Roof Dead Load:	DL =	15	psf
Tributary Width:	TW =	2	ft
Side Two:			
Roof Live Load:	LL =	0	psf
Roof Dead Load:	DL =	0	psf
Tributary Width:	TW =	0	ft
Wall Load:	WALL =	0	plf

SLOPE/PITCH ADJUSTED LENGTHS AND LOADS

Adjusted Beam Length:	Ladj =	3	ft
Beam Self Weight:	BSW =	6	plf
Beam Uniform Live Load:	wL =	50	plf
Beam Uniform Dead Load:	wD_adj =	36	plf
Total Uniform Load:	wT =	86	plf

NOTES

Project: 17-024 Gabriel Park Apartment Fire Restoration

Dustin Selby

Location: Deck Joist 1
Floor Joist
[2015 International Building Code(2015 NDS)]
1.5 IN x 7.25 IN x 5.0 FT Pressure Treated (1 + 4) @ 16 O.C.
#1 - Douglas-Fir-Larch - Dry Use
Section Adequate By: 569.9%
Controlling Factor: Shear

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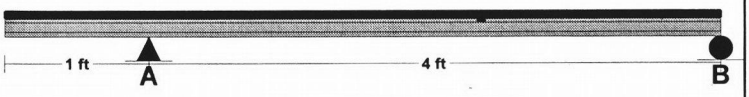
DEFLECTIONS	Left		Center	
Live Load	0.00	IN 2L/7514	0.00	IN L/MAX
Dead Load	0.00	in	0.00	in
Total Load	0.00	IN 2L/5946	0.01	IN L/9116

Live Load Deflection Criteria: L/480 Total Load Deflection Criteria: L/360

REACTIONS	A	B
Live Load	167 lb	107 lb
Dead Load	63 lb	38 lb
Total Load	230 lb	145 lb
Bearing Length	0.24 in	0.15 in

SUPPORT LOADS	A	B
Live Load	125 plf	80 plf
Dead Load	47 plf	29 plf
Total Load	173 plf	109 plf

LOADING DIAGRAM



MATERIAL PROPERTIES

#1 - Douglas-Fir-Larch

	Base Values	Adjusted
Bending Stress:	Fb = 1000 psi	Fb' = 1104 psi
	Cd=1.00 CF=1.20 Cr=1.15 Ci=0.80	
Shear Stress:	Fv = 180 psi	Fv' = 144 psi
	Cd=1.00 Ci=0.80	
Modulus of Elasticity:	E = 1700 ksi	E' = 1615 ksi
	Ci=0.95	
Comp. ⊥ to Grain:	Fc - ⊥ = 625 psi	Fc - ⊥' = 625 psi

Controlling Moment: 142 ft-lb
2.04 Ft from left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: 156 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections:	Req'd	Provided
Section Modulus:	1.54 in3	13.14 in3
Area (Shear):	1.62 in2	10.88 in2
Moment of Inertia (deflection):	3.04 in4	47.63 in4
Moment:	142 ft-lb	1209 ft-lb
Shear:	156 lb	1044 lb

JOIST DATA	Left	Center
Span Length	1 ft	4 ft
Unbraced Length-Top	0 ft	0 ft
Unbraced Length-Bottom	0 ft	0 ft

Floor sheathing applied to top of joists-top of joists fully braced.
Floor Duration Factor 1.00

JOIST LOADING		Left	Center
Uniform Floor Loading			
Live Load	LL =	40 psf	40 psf
Dead Load	DL =	15 psf	15 psf
Total Load	TL =	55 psf	55 psf
TL Adj. For Joist Spacing	wT =	73.3 plf	73.3 plf

NOTES

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SEISMIC DESIGN

$V = C_S W$

$C_S = \frac{S_{DS}}{R/I}$

$S_{DS} = 2/3\ S_{MS}$

$S_{MS} = F_a S_S$

$S_S = 0.994g$

$F_a = 1.1 + (1.2-1.1)\left(\frac{0.994-1}{0.75-1}\right) = 1.102$

$S_{MS} = (1.102)(0.994) = 1.096g$

$S_{DS} = 2/3\ (1.096) = 0.731g$

$C_S = \frac{0.731}{6.5/1} = 0.113$

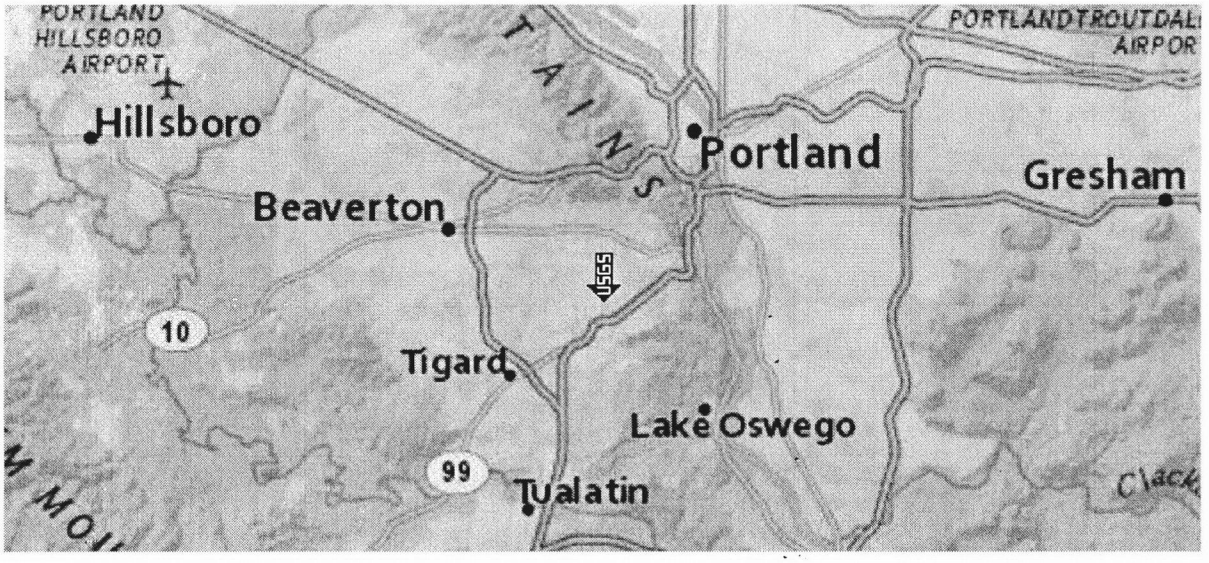
$V = 0.113\ W$

2L

USGS Design Maps Summary Report

User–Specified Input

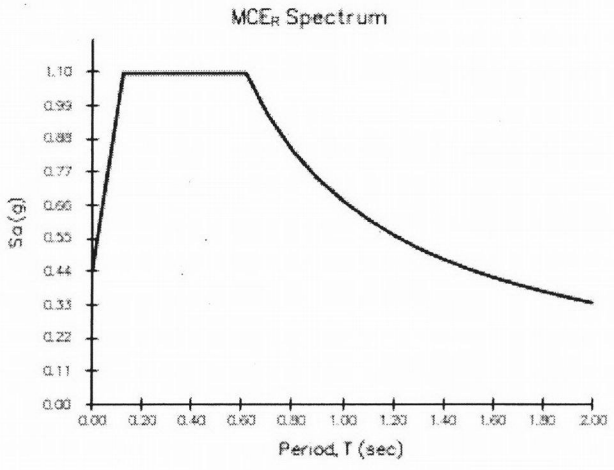
Report Title	Gabriel Park Apartments Fire Restoration Fri May 5, 2017 20:59:24 UTC
Building Code Reference Document	2009 NEHRP Recommended Seismic Provisions (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.46875°N, 122.7231°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

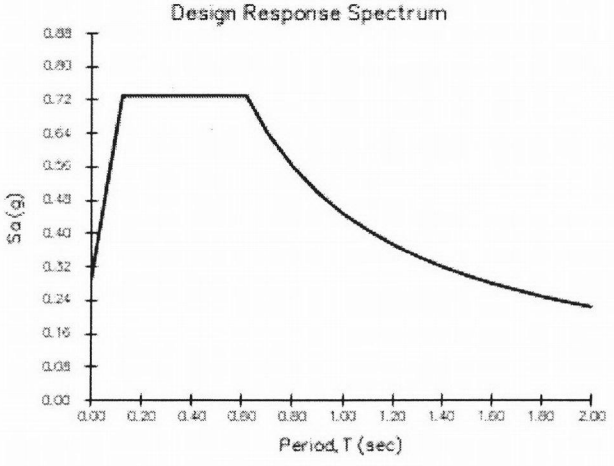


USGS–Provided Output

S_S =	0.994 g	S_{MS} =	1.096 g	S_{DS} =	0.731 g
S_1 =	0.428 g	S_{M1} =	0.673 g	S_{D1} =	0.448 g

For information on how the S_S and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please view the detailed report.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

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$W_R = [46'-8" \times 51'-8"]\ 15\#/SF = 36,166.7\#$

$W_{WALL\ UP} = [42'-8" \times 49'-8"]\ 5\#/SF = 10,595.6\#$

$\leq 46,762.3\#$

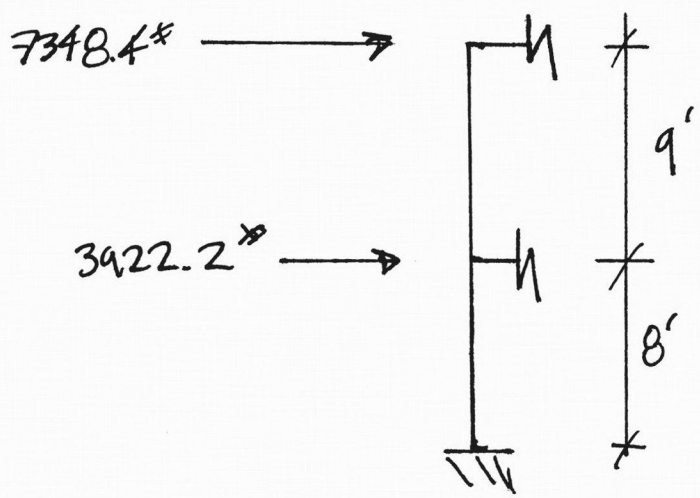
$W_F = [42'-8" \times 44'-9"]\ 15\#/SF = 31,786.2\#$

$W_{WALL} = [42'-8" \times 44'-8"]\ 10\#/SF = 21,191.1\#$

$\leq 52,977.8\#$

SEISMIC BASE SHEAR $V = 0.113\ (46,762.3\# + 52,977.8\#) = 11,270.6\#$

	W_x (lbs)	h_x (ft)	$w_x h_x$ (lbs·ft)	$\frac{w_x h_x}{\Sigma w_x h_y}$	F_v (lbs)
ROOF	46,762.3#	17'	794,959.1	0.652	7348.4
2ND	52,977.8	8'	423,822.4	0.348	3922.2
Σ			1,218,781.5	1 OK	11270.6 OK



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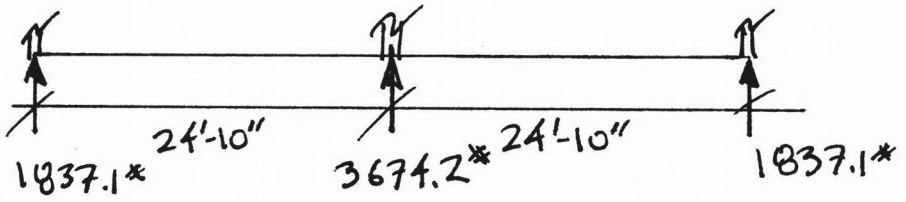
SEISMIC TRANSVERSE

-ROOF-

$$V = \frac{7348.4^{\#}}{49'-8''} = 147.9^{\#}/ft$$

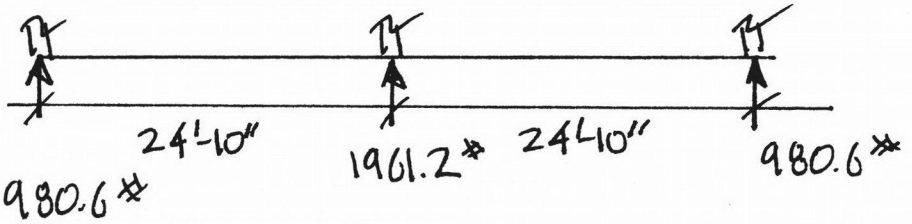
$$V = \frac{147.9^{\#}/ft\ (24'-10'')}{2} = 1837.1^{\#}$$



-2ND-

$$V = \frac{3922.2^{\#}}{49'-8''} = 78.9^{\#}/ft$$

$$V = \frac{78.9^{\#}/ft\ (24'-10'')}{2} = 980.6^{\#}$$



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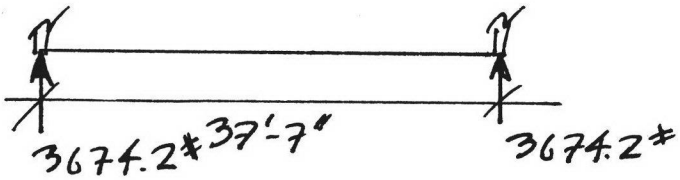
SEISMIC LONGITUDINAL

-ROOF-

$$v = \frac{7348.4^{\#}}{37'-7''} = 195.5^{\#}/lf$$

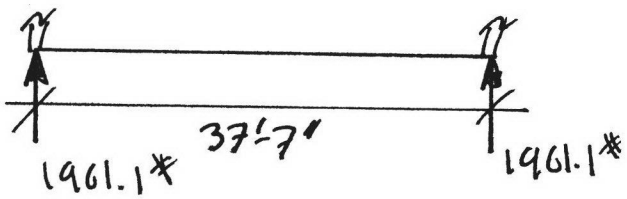
$$V = \frac{195.5^{\#}/lf\ (37'-7'')}{2} = 3674.2^{\#}$$



-2ND-

$$v = \frac{3922.2^{\#}}{37'-7''} = 104.4^{\#}/lf$$

$$V = \frac{104.4^{\#}/lf\ (37'-7'')}{2} = 1961.1^{\#}$$



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WIND DESIGN

120 MPH EXPOSURE B

ARCTAN (6 / 12) = 26.6°

NOTE: $\frac{\text{WIND ULT. SPEED}}{1.66}$ = ALLOWABLE DESIGN WIND

HORIZONTAL PRESSURES

ZONE A — END ZONE OF WALL
17.2 PSF

ZONE C — INTERIOR ZONE OF WALL
12.4 PSF

ZONE B — END ZONE OF ROOF
2.8 PSF

ZONE D — INTERIOR ZONE OF ROOF
2.8 PSF

VERTICAL PRESSURES

ZONE E — END ZONE OF ROOF WINDWARD
-16.5 PSF

ZONE G — INTERIOR ZONE OF ROOF WINDWARD
-11.5 PSF

ZONE F — END ZONE OF ROOF LEEWARD
-10.4 PSF

ZONE H — INTERIOR ZONE OF ROOF LEEWARD
-8.4 PSF

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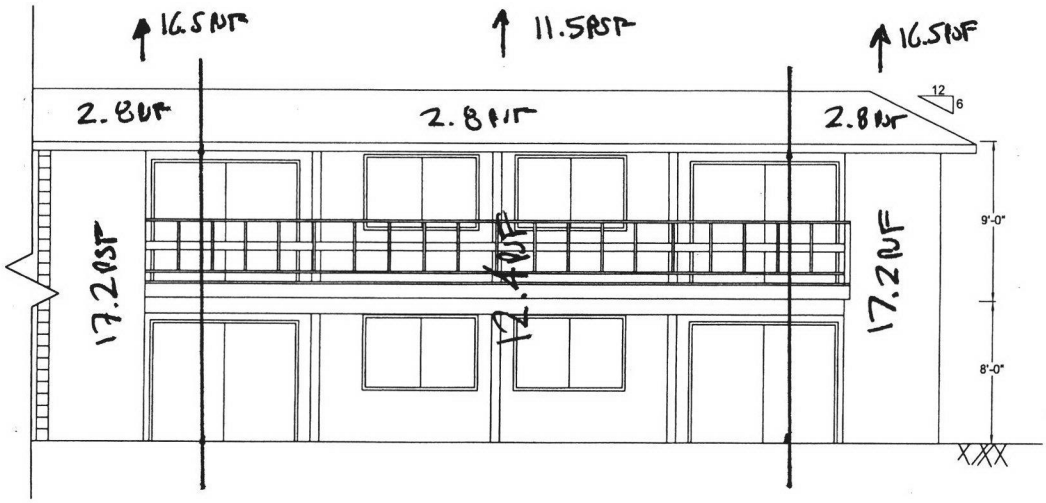

$a = 0.1(41'-7") = 4.2'$

$0.4(19'-10") = 8.0'$

3' MW

$\therefore a = 4.2'$

$2a = 8.4'$

WIND TRANSVERSE

$W_R = (2)(9'/2)(8.4')\,17.2\,PSF + (9'/2)(32'-11")\,12.4\,PSF$

$+\left[\left(\frac{6' \times 3'-6"}{2}\right) + (4'-5" \times 3'-6")\right] 2.8\,PSF + \left[(32'-11" \times 3'-6") + (9' \times 3'-6")\right] 2.8\,PSF = 3620.5^{\#}$

$W_F = (2)(8'/2 + 9'/2)(8.4')\,17.2\,PSF + (8'/2 + 9'/2)(32'-11")\,12.4\,PSF = 5925.6^{\#}$

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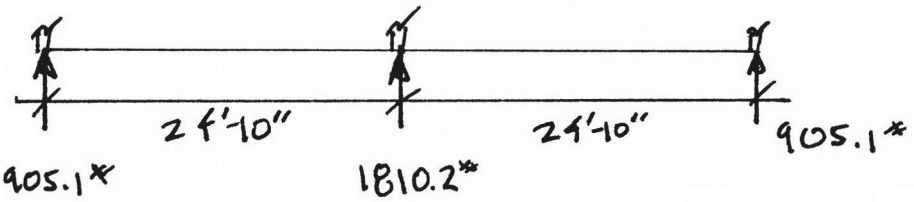
-ROOF-

$V = \frac{3620.5^{\#}}{49'-8''} = 72.9^{\#}/ft$

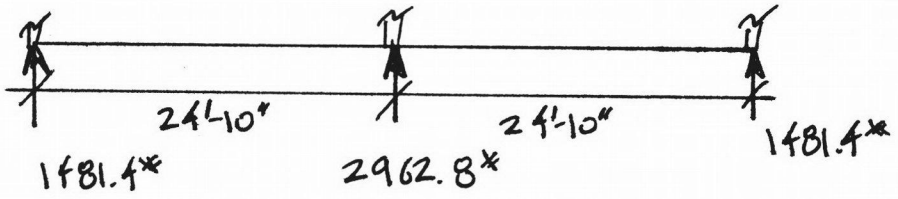
$V = \frac{72.9^{\#}/ft\ (24'-10'')}{2} = 905.1^{\#}$



-2ND-

$V = \frac{5925.6^{\#}}{49'-8''} = 119.3^{\#}/ft$

$V = \frac{119.3^{\#}/ft\ (24'-10'')}{2} = 1481.4^{\#}$



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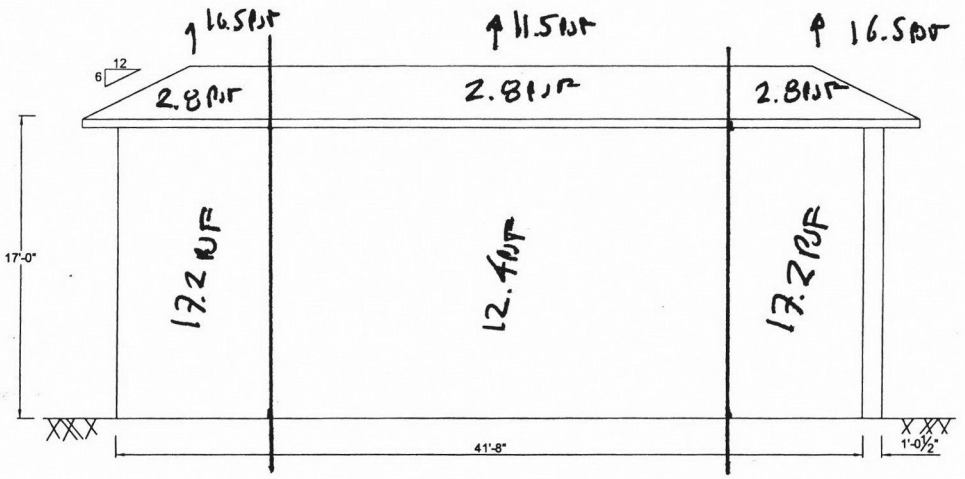


WIND LONGITUDINAL

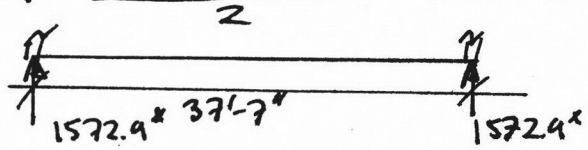
$W_R = (2)(9'/2)(8.4')17.2PLF + (9'/2)(25'-11")12.4PLF$
$+ (2)\left[\left(\frac{6' \times 3'-6"}{2}\right) + (4'-5" \times 3'6")\right]2.8PLF + (3'6" \times 25'-11")2.8PLF = 3145.8^{\#}$

$W_F = (2)(8'/2 + 9'/2)(8.4')17.2PLF + (8'/2 + 9'/2)(25'-11")12.4PLF = 5187.8^{\#}$

-ROOF-

$V = \frac{3145.8^{\#}}{37'-7"} = 83.7^{\#}/lf$

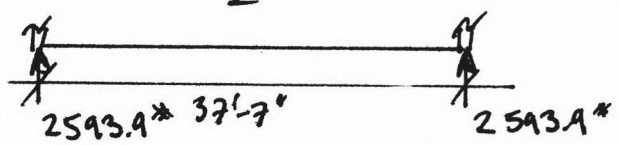
$V = \frac{83.7^{\#}/lf\,(37'-7")}{2} = 1572.9^{\#}$



-2ND-

$V = \frac{5187.8^{\#}}{37'-7"} = 138.0^{\#}/lf$

$V = \frac{138.0^{\#}/(1)\,(37'-7")}{2} = 2593.9^{\#}$



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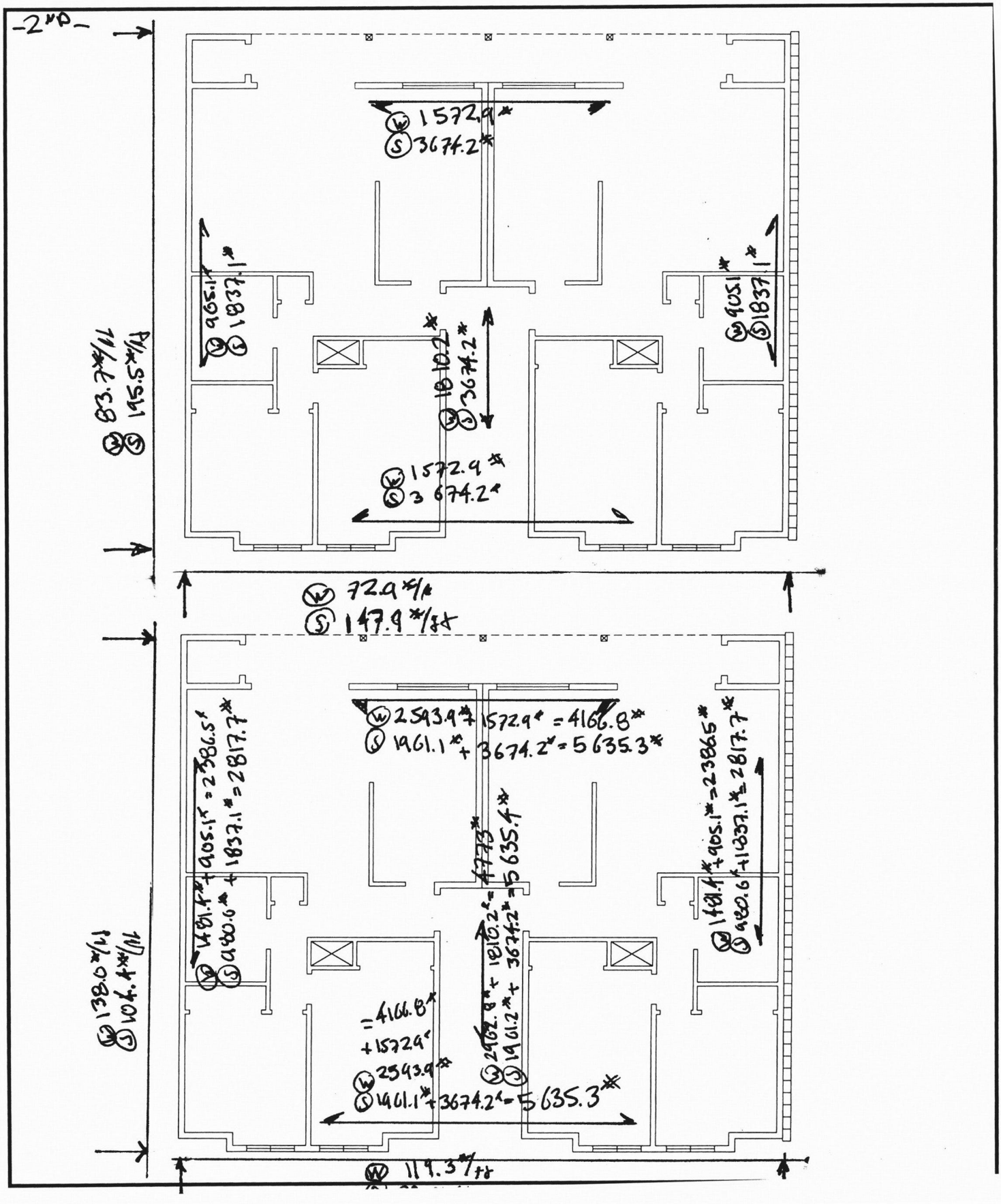

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SHEAR WALLS

UPPER REAR WALL

$$V = \frac{1572.9^{\#}\,(W) \quad 3674.2^{\#}\,(S)}{2(3'-11'') + 2(4'-4'')} \qquad 95.3^{\#/ft}\,(W) \quad = 222.7^{\#/ft}\,(S)$$

SW A

ASPECT RATIO: $\frac{3.5(3'-11'')}{8'} = 1.7$ (OK)

$\frac{2(3'-11'')}{8'} = 0.979\,(260^{\#/ft}) = 254.5^{\#/ft}$ (OK)

LOWER REAR WALL

$$V = \frac{4166.8^{\#}\,(W) \quad 5635.3^{\#}\,(S)}{2(3'-11'') + 2(4'-4'')} \qquad 252.5^{\#/ft}\,(W) \quad = 341.5^{\#/ft}\,(S)$$

SW B

ASPECT RATIO: $\frac{2(3'-11'')}{8'} = 0.979\,(380^{\#/ft}) = 372^{\#/ft}$

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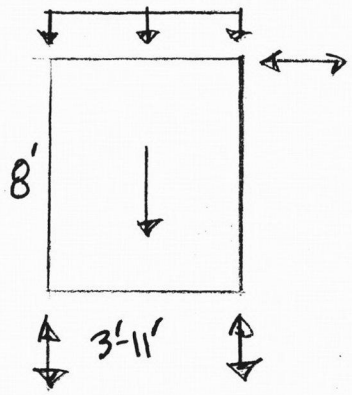
UPPER REAR WALL



$W_R = (4'/2 + 37'-7''/2)\,15\text{PSF} = 311.9^{\#}/\text{lf}$

95.3 #/lf (W) 373.3# (W)

$F = 222.7^{\#}/\text{lf}\,(S)\,(3'-11'') = 872.2^{\#}\,(S)$

373.3# 2986.4 #·lf (W)

$M_{OT} = 872.2^{\#}(8') = 6977.6^{\#\cdot lf}\,(S)$

$W_W = (3'-11'')(8')\,10\text{PSF} = 313.3^{\#}$

$M_R = 311.9^{\#}/\text{lf}\,(3'-11'')\frac{3'-11''}{2} + 313.3^{\#}(3'11''/2) = 3005.9^{\#\cdot lf}$

2986.4 #·lf (W)

$T = C = M/b = \dfrac{6977.6^{\#\cdot lf}\,(S) - (0.9)\,3005.9^{\#\cdot lf}\,(2/3)}{3'-11''} = 1090.8^{\#}\,(S)$ (250.8# (W))

WIND UPLIFT

$(20.8')(18.8')(16.5 - 2/3(15\text{PSF}))$

$+ (20.8')(33')(11.5 - 2/3(15\text{PSF}))$

$= \dfrac{3571.4^{\#}}{8\text{LBS}} = 446.4^{\#} + 250.8^{\#} = 697.2^{\#}$

1,725# ALLOWABLE

∴ USE MST 37

HD1

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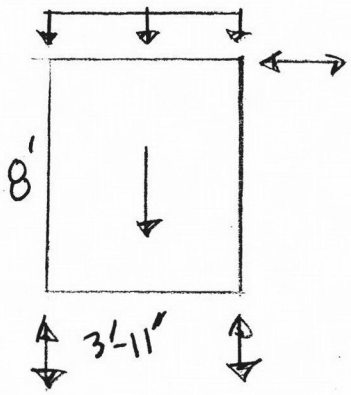
LOWER REAR WALL



$W_R = (16/12)\,15\text{PSF} = 20^{\#}/\text{lf}$

$252.5^{\#}/\text{lf}$ (E) $988.9^{\#}$ (W)

$F = 341.5^{\#}/\text{lf}\,(3'\text{-}11'') = 1337.5^{\#}$ (S)

$988.9^{\#}$ (W) $7{,}911.2^{\#\cdot\text{lf}}$ (W)

$M_{OT} = 1337.5^{\#}$ (S) $(8') = 10{,}700^{\#\cdot\text{lf}}$ (S)

$W_W = (3'\text{-}11'')(8')\,10\text{PSF} = 313.3^{\#}$

$M_R = 20^{\#}/\text{lf}\,(3'\text{-}11'')\frac{3'\text{-}11''}{2} + 313.3^{\#}\left(\frac{3'\text{-}11''}{2}\right) = 766.9^{\#\cdot\text{lf}}$

$7{,}911.2^{\#\cdot\text{lf}}$ $2/3$

$$T = C = M/b = \frac{10{,}700^{\#\cdot\text{lf}} - 0.9\,(766.9^{\#\cdot\text{lf}})}{3'\text{-}11''} = 2555.7^{\#}$$ (S)

$1889.3^{\#}$ (W)

WIND UPLIFT

(W) $1889.3^{\#} + 697.2^{\#} = 2586.5^{\#}$

(S) $2555.7^{\#} + 1090.8^{\#} = 3646.5^{\#}$

$4{,}565^{\#}$ ALLOWABLE

∴ USE HDU4-SDS2.5

HD4