Development Services

From Concept to Construction

Phone: 503-823-7300 Email: bds@portlandoregon.gov 1900 SW 4th Ave, Portland, OR 97201
More Contact Info (http://www.portlandoregon.gov//bds/article/519984)

APPEAL SUMMARY

Status: Decision Rendered - Held over from ID 14636 (2/22/17) for additional information

Appeal ID: 14722	**Project Address:** 2031 N Watts St
Hearing Date: 3/8/17	**Appellant Name:** Jamie Whitaker
Case No.: B-002	**Appellant Phone:** 503-245-3087
Appeal Type: Building	**Plans Examiner/Inspector:** Natalie Davis
Project Type: commercial	**Stories:** 2 **Occupancy:** R-2 **Construction Type:** V-B
Building/Business Name:	**Fire Sprinklers:** No
Appeal Involves: other: reconstructing stair to repair rotten wood	**LUR or Permit Application No.:** 17-108423-CO
Plan Submitted Option: pdf [File 1] [File 2] [File 3]	**Proposed use:** multi-family housing units

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	2014 OSSC Section 420.5
Requires	2014 OSSC Section 420.5 and additional sections that are referred to. Section 420.5: this section requires that fire sprinklers be installed in all R-2 construction.
Proposed Design	The proposed design solution for this requirement is to permit an existing set of unpermitted stairs, or to remove them without having to install a Fire Sprinkler system in the Second Floor Apartments. Please refer to attached narrative memo and supporting documents for full explanation of Code Review and proposed alternates.
Reason for alternative	Please refer to attached narrative memo and supporting documents for full explanation of Code Review and proposed alternates.

APPEAL DECISION

Removal of existing stairs in unsprinklered building: Denied. Proposal does not provide equivalent egress.

West Stair: 7 1/2" riser height granted as proposed.
Note: other deficiencies, including non-compliant guardrail height and handrail configuration are not approved.

East Stair: noncompliant elements, including obstructed bottom landing, tread depth, riser height, guardrail and handrails: Denied. Proposal does not provide equivalent safety.

Appellant may contact Natalie Davis (503-823-7274) with questions.

For the item granted, the Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

SOLARC
ARCHITECTURE, INC

80 SE Madison Street, Suite 120,
Portland, Oregon 97214
: 503.223.5253

MEMORANDUM

DATE:	28 February 2017
TO:	Appeals Department
COMPANY:	City of Portland, Building Development Services
FROM:	Michael Wireman-Nothwang, AIA, NCARB
CC:	Jamie Whitaker, Palisades Property Management, Scot Abplanalp, Palisades Property Management
RE:	Non Complaint Exterior stairs (2031 N Watts St, Portland, OR, Permit #17-108423 CO, APPEAL ID# 14636, B-001)

Good Afternoon,
This memo is in regards to a building violation received by the property owner after maintaining (2) exterior staircases at the property at the above address. The Owner, Palisades Property Management, reconstructed the existing exterior stairs after finding them in disrepair. The stairs were built back in the same configuration as the previous stairs. Since these repairs consisted of more work than OSSC Section 105.2.1 allows, the Building Inspector cited the Owner for not permitting the work.

There are several factors in this scenario that require some review.

1. In order to permit or remove these stairs, OSSC Section 420.5 has to be addressed. This section requires that fire sprinklers be installed in all R-2 construction.
2. The building was built in 1927 and has never had fire sprinklers.
3. The stairs that were being repaired, have been in existence since before 2004, as we have permit drawings for exterior improvements (windows and roof) dated 2004 that clearly show the stairs. The signing architect of those plans was contacted and he said that he measured the existing stairs himself so they could be drawn accurately on his plans. However, there is no record within the City of Portland's archives dated prior to 2004, that provides any information describing when these stairs were constructed. Therefore, the Owner has been asked to Permit the stairs.
4. The location of the stairs, specifically the NE stair, have site constraints that do not allow the stair to be Code Compliant. There is an exhaust chimney protruding from the wall of the building at the bottom of the stair as well as a gas meter adjacent to it. From site verification, the rise and run of the stair cannot be made compliant within that space without major reconstruction of the sidewalk and parking lot next to the stairway.
5. Per Table 1015.1, the max occupant load of each of the Second Floor Apartments is 10 occupants before needing a second means of egress. The actual occupant load is 4 based on the ratio of 1 occ per 200sf (the units are approximately 700sf each) as shown in table 1004.1.2. Therefore, there is only 1 means of egress necessary for those units.
6. The units also have windows sized for egress from the bedrooms and other locations in the apartments. The sizes have been confirmed at 35" wide by 52" tall. These are in pairs in each bedroom of the complex. The windows are single hung windows and this allows for an area of 5.8sf when fully opened. The required amount if 5.7sf.
    a. There are also several other windows in the units of the same size.
7. The Units each have a main staircase that occupants can use for egress that will direct the occupants to the front (south side) of the building. It is possible that the secondary staircases (on the north side) might have been added for access purposes to the parking lot on the north side of the building.

We believe that the units comply with all the requirements set forth in Section 1021.2 (1) for access to one means of egress.

This brings up the discussion of how to permit the stairs in their existing location, without triggering the requirements to Fire Sprinkler the units per OSSC Section 420.5.

1. The stairs are not required as a Means of Egress, they can remain as they are and be permitted.
2. If the stairs are deemed as not a required Means of Egress, OSSC Section 105.2.1 allows for the repair and maintenance without permitting.

We would like to have the northern stairs permitted as they are.

Included for your use are the drawings from 2004 that we have (these show the locations of the egress windows and the sizes, and the location of the stairs that are in question), and a copy of the drawings that show the existing stair configurations.

Thank you for your time and consideration of this appeal.

Michael Wireman-Nothwang, AIA, NCARB
Associate Architect
SOALRC Architecture, LLC

-End of memorandum -

5816 SW Gillcrest ct
Portland, OR 97221
Ph: 503.896.7712

Submittal Documents

STAIR STRUCTURAL CALCULATIONS

Project

Watts Stair

Location

2031 N Watts st

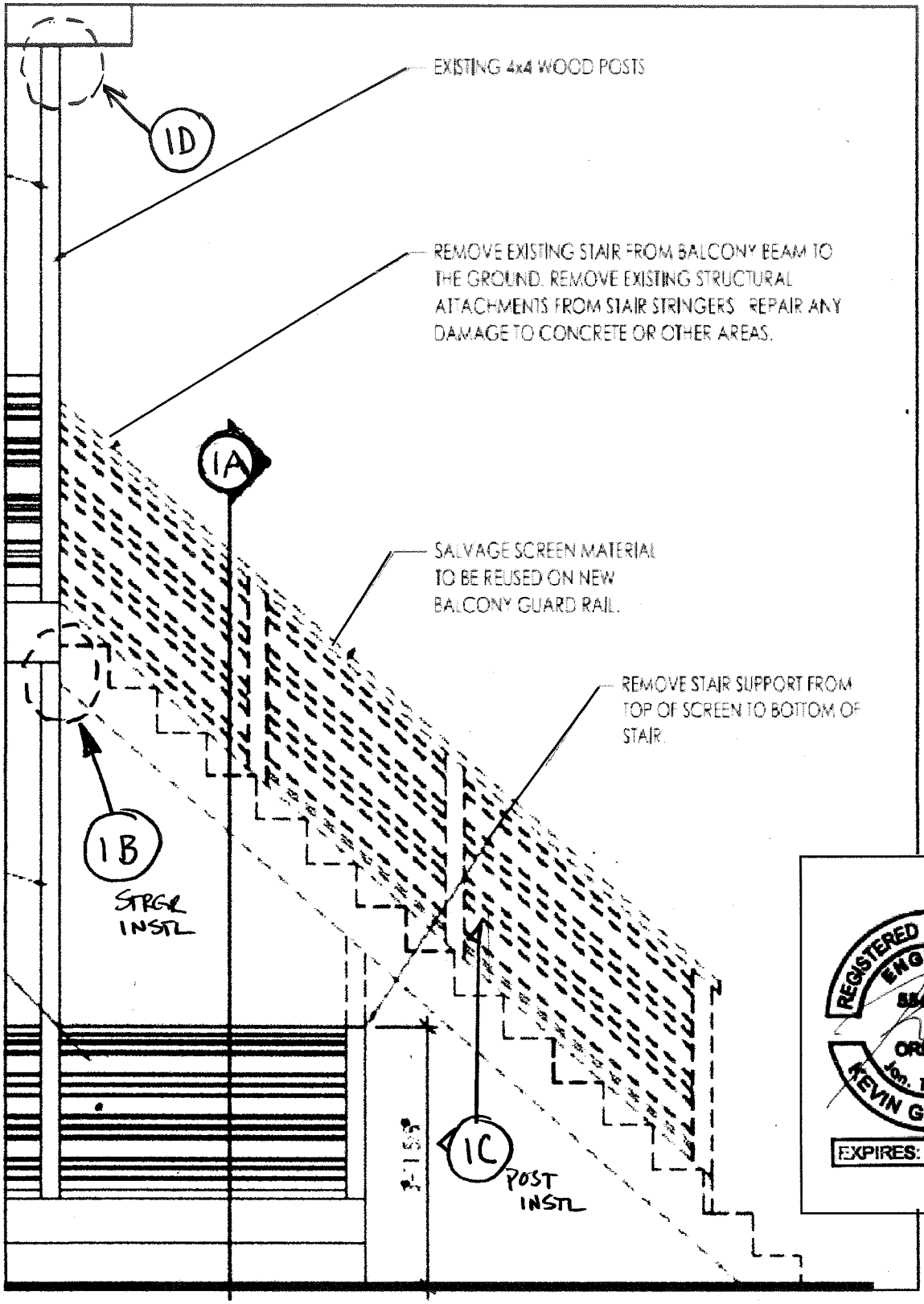
CLIENT

Palisades Properties

1/9/2017

KG Residential
5816 SW Gillcrest Ct.
Portland, OR 97221
Tel: 503.896.7712

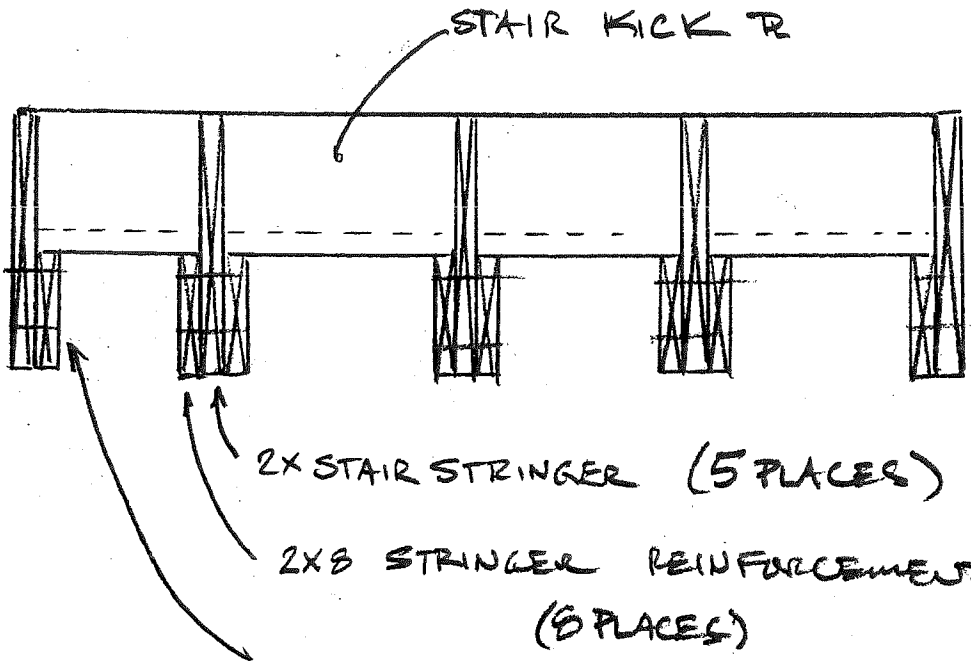
Project:	Sheet # SK1
Location:	
Client:	Job #
Date: By:	



REGISTERED PROFESSIONAL ENGINEER
55424PE
OREGON
Jan. 14, 2005
KEVIN GOLDSMITH
EXPIRES: 6/30/17

KG
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet # SK2
Location:	
Client:	Job #
Date: By:	



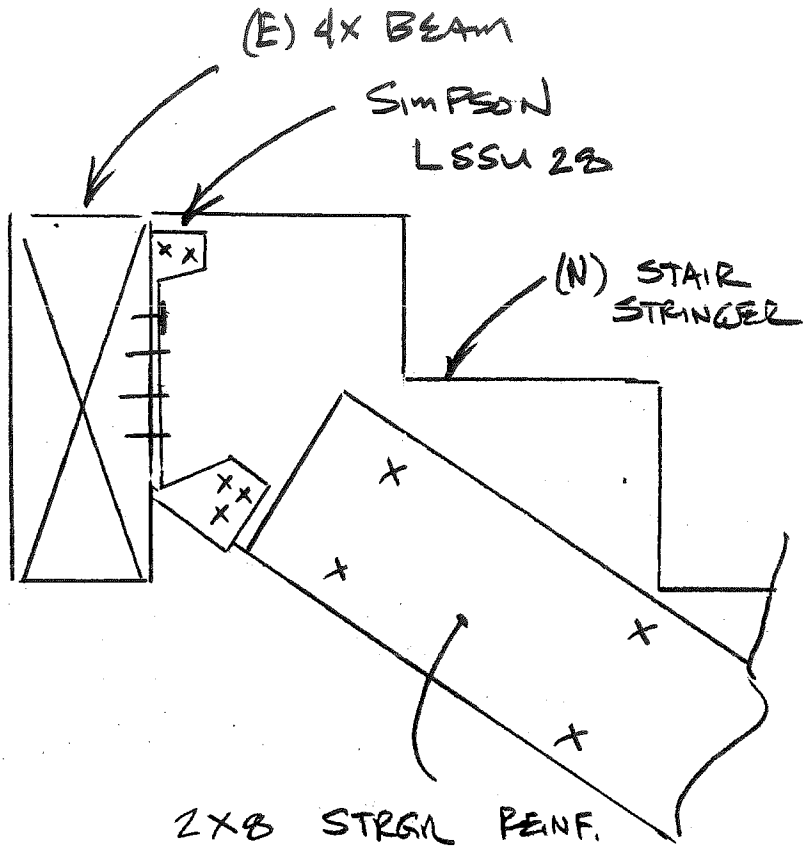
STAIR STRINGERS

1A

NTS

KG Engineering Associates
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet # SK3
Location:	
Client:	Job #
Date: By:	



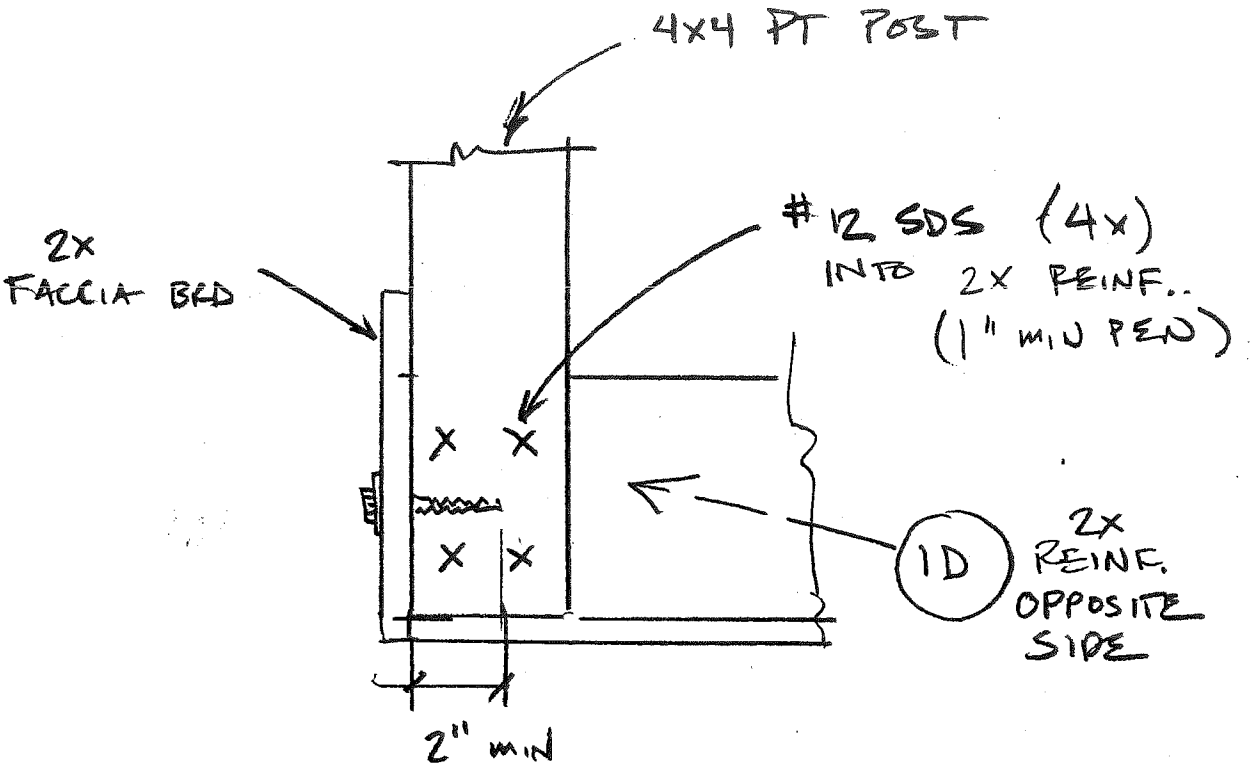
STAIR STRINGER ATTACHMENT

1B

NTS

KG
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet # SK3
Location:	
Client:	Job #
Date: By:	

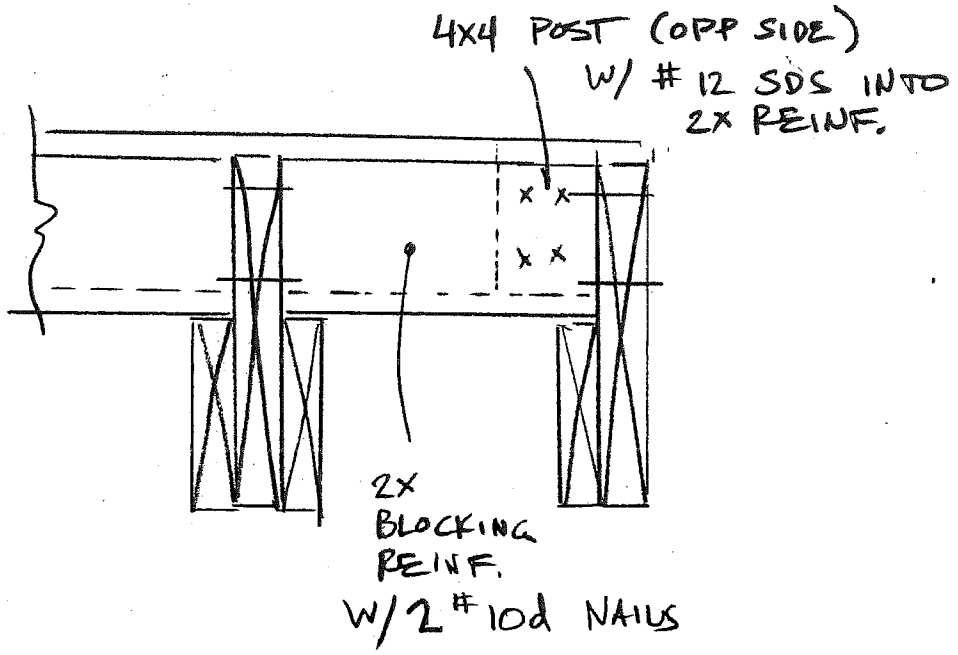


POST INSTALLATION @ STAIR

1C

5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet # SK4
Location:	
Client:	Job #
Date: By:	

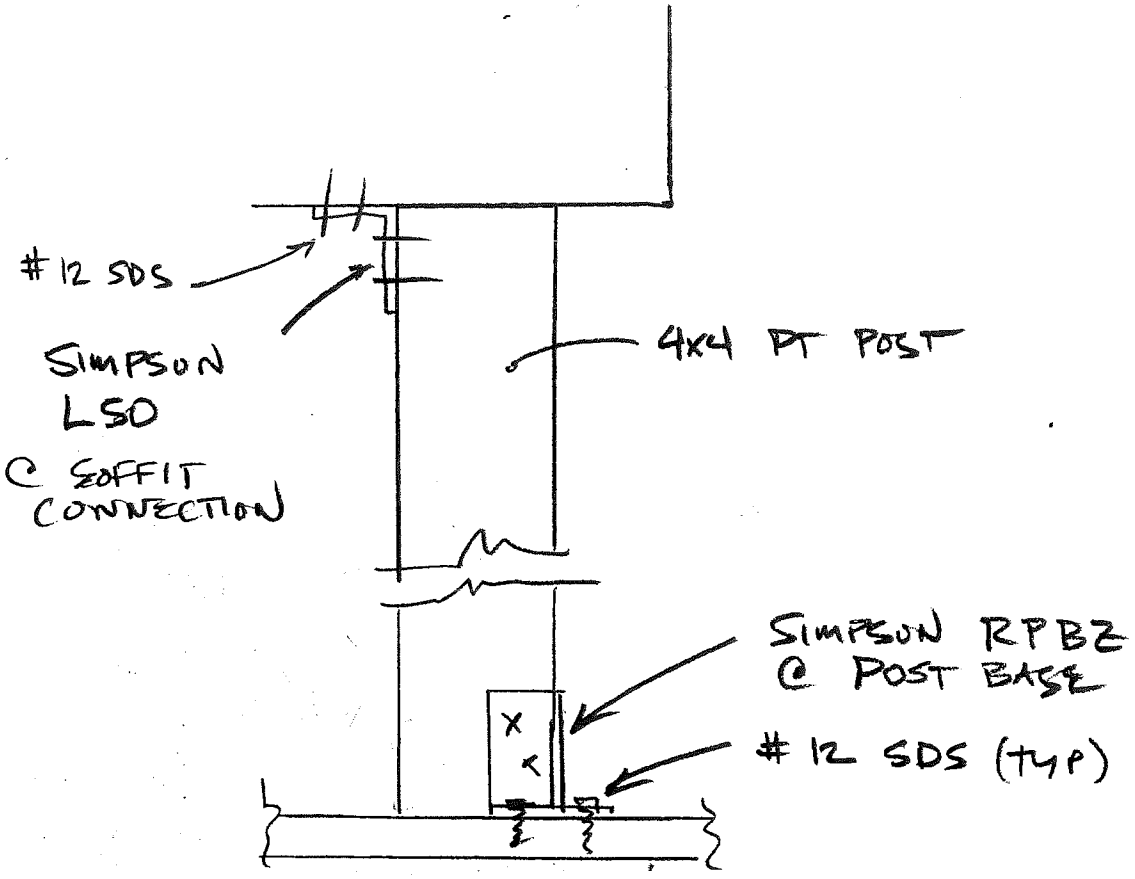


TREAD KICKER REINF @ POST

1D

5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	



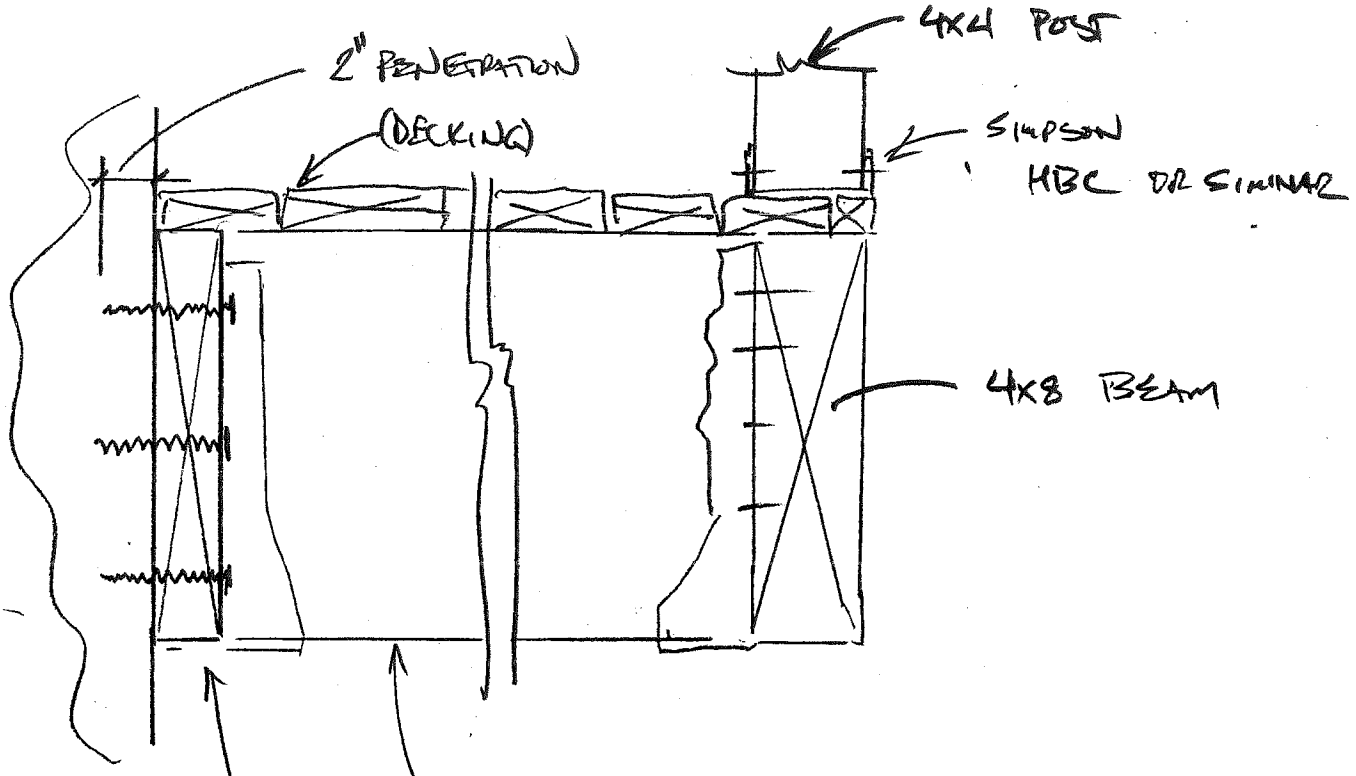
(1D) LANDING RAIL/POST CONNECTION

NTS

* GENERIC DETAIL FOR A-SET

5816 SW Gillcrest Ct.
Portland, OR 97221
Tel: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

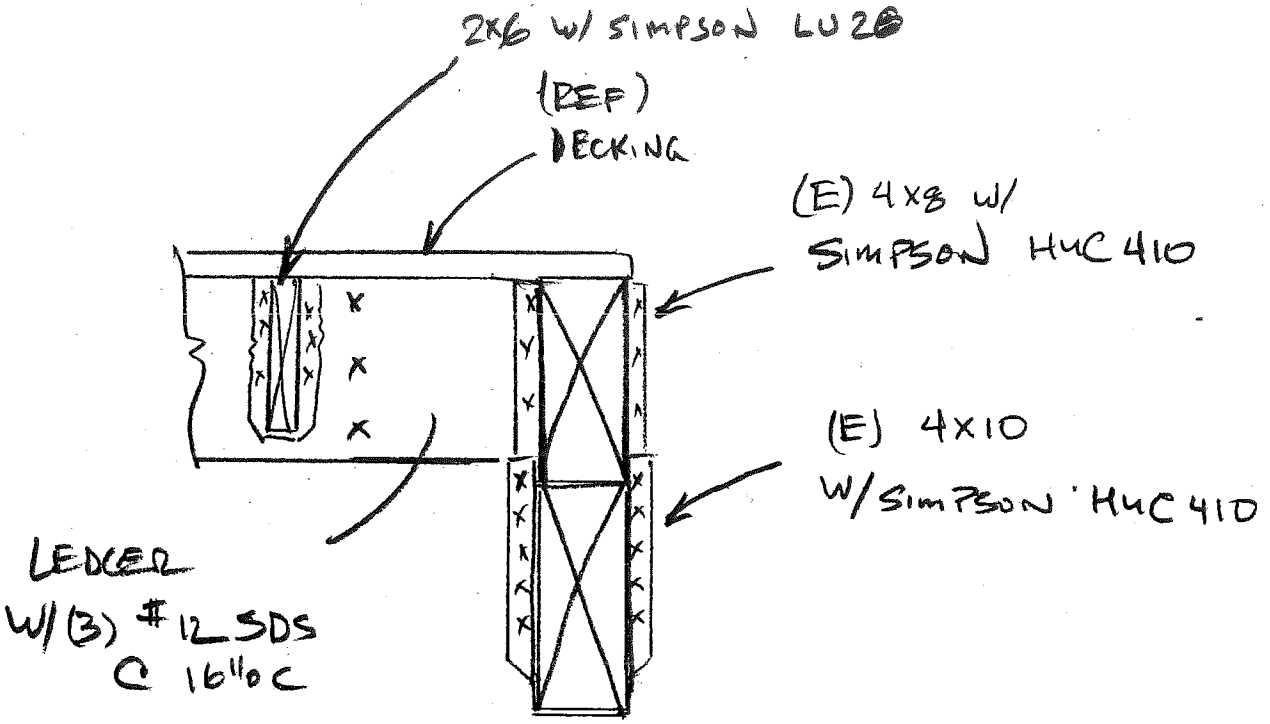


TYPICAL JOIST

NTS

* GENERIC DETAIL FOR A-SET

KG	Project:	Sheet #
5816 SW GILLCREST CT. PORTLAND, OR 97221 TEL: 503.896.7712	Location:	
	Client:	Job #
	Date: By:	



PLATFORM BEAM
@ STAIR

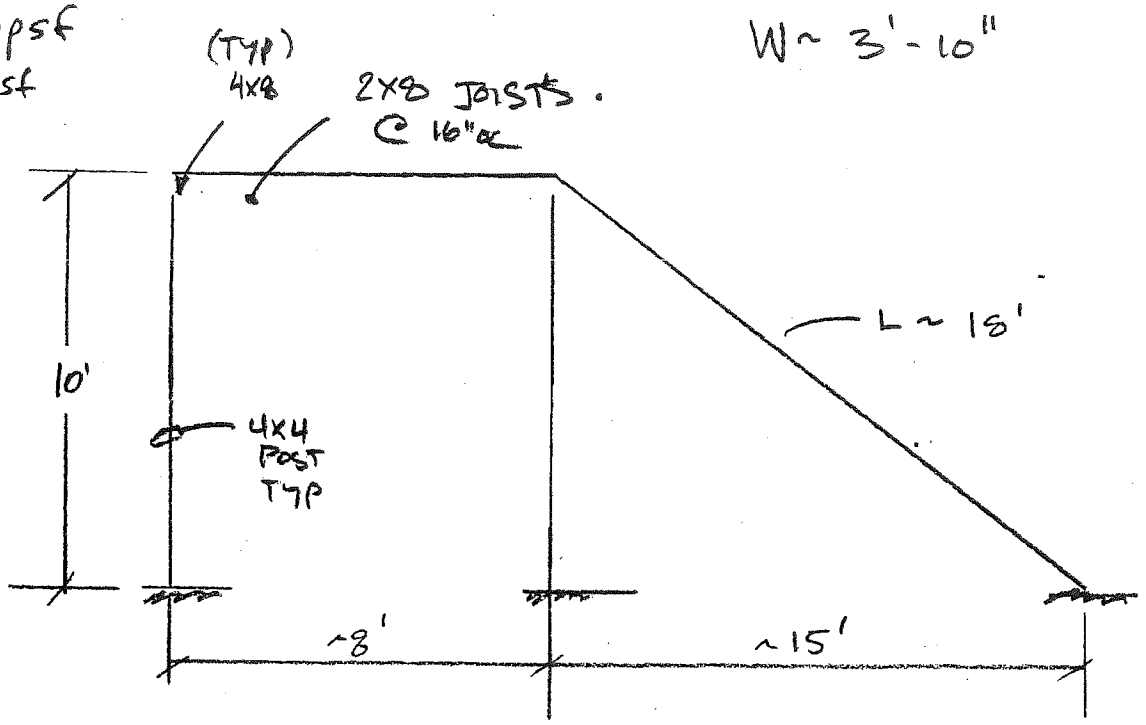
KG consultants
5816 SW Gillcrest ct
Portland, OR 97221
Ph: 503.896.7712

Calculations

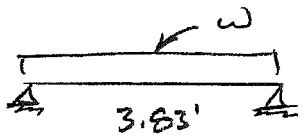
KG
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

DL ~ 10psf
LL ~ 100psf
S ~ 25 psf

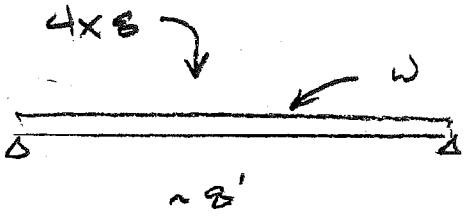


▷ @ 16" oc 2x JOISTS W = 1.33' x LOADS

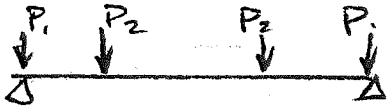


▷ LANDING BEAM

W = $\frac{3.83'}{2}$ x LOAD



▷ STAIR/LANDING BEAM 4X8 + 4X10

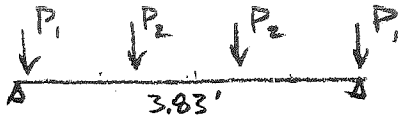


— W =

KG Consultants
5816 SW Gillcrest Ct.
Portland, OR 97221
Tel: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

N. WATTS STAIRS



STAIR LOAD – 100 psf LL, 25 psf SNOW

$P_1 = \frac{18'}{2} \times \frac{3.83'}{3} \times \text{LOAD}$

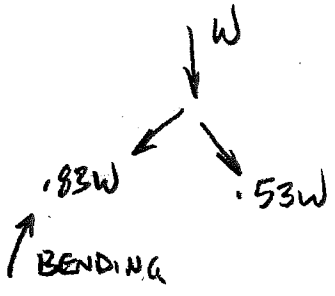
$P_{DL} = 172^{\#}$
$P_{LL} = 1723^{\#}$
$P_S = 430.8^{\#}$

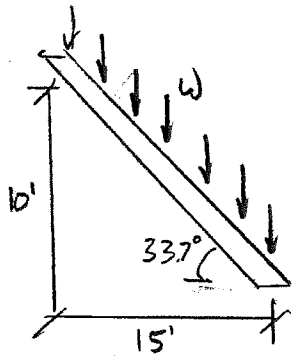
SEE FORECALC

STAIR STRINGER

$W = 3.83'/3 = 1.27'$

$w = 1.27' \times \text{LOAD}$





$\therefore\ w_{DL} = 1.27' \times 10\text{psf} \times .83 = 10.54^{\#}/\text{FT}$
$w_{LL} = 1.27' \times 100\text{psf} \times .83 = 105.4^{\#}/\text{FT}$
$w_S = 1.27' \times 25\text{psf} \times .83 = 26.35^{\#}/\text{FT}$

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5816 SW Gillcrest Ct.
Portland, OR 97221
Tel: 503.896.7712

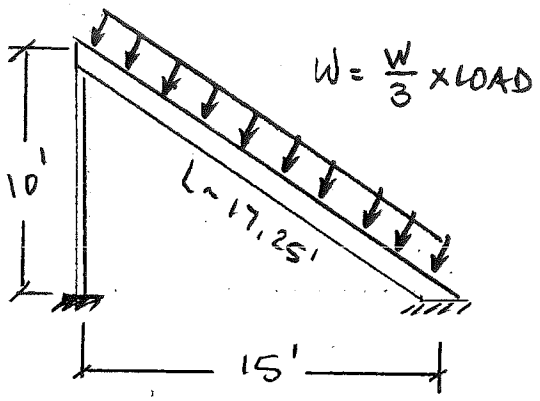
Project: | Sheet #
Location:
Client: | Job #
Date: By:

STAIR STRINGER

$W_{DL} = 10.54\ ^{\#}/_{FT}$

$W_{LL} = 105.4\ ^{\#}/_{FT}$

$W_S = 26.35\ ^{\#}/_{FT}$



STRINGER (E)

2x4 + 2x12 STAIR CUT

∴ 2x4 + 2x6 CAFTER CUT

$$\Sigma S_x = \frac{(1.5)(3.5)^2}{6} + \frac{(1.5)(6.5)^2}{6}$$

$$= 13.62_{IN^3}$$

∴ $f_b = \frac{M_x}{S_x}$ $M = \frac{wl^2}{8}$, ASD D+L (max)

∴ $\left(\frac{(10.54 + 105.4)(17.25)^2}{8}\right)\left(\frac{1}{13.62_{IN^3}}\right) \times 12''/_1$

$= 3800$ psi $\times$ NG

S_x REQ'D ASSUME # 1 + BETTER $F_b = 1150$

∴ $S_x = \frac{4312 \times 12}{1150\ psi} \simeq 45\ IN^3$

KG consultants
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

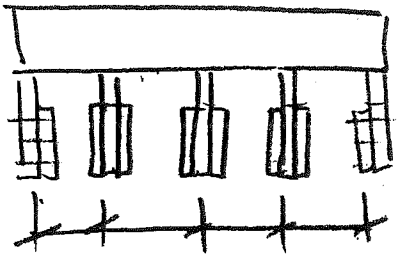
STAIR STRINGER

S_x (REQ'D) $\hat{=}$ 4 SIN^3

TRY (3) 2x8 STRINGS

W/ 1- ADDITIONAL

∴ 3 - STRGS



W = 0.95' x LOAD

∴ W_{DL} = 7.88 #/FT

W_{LL} = 78.95 #/FT

SEE EXCEL CALC FOR CHEC

END STRINGERS

W = 0.95'/2 x LOAD

W_{DL} = 3.94 #/FT

W_{LL} = 39.4 #/FT

TRY (2) 2x8 OK

SEE EXCEL CALC

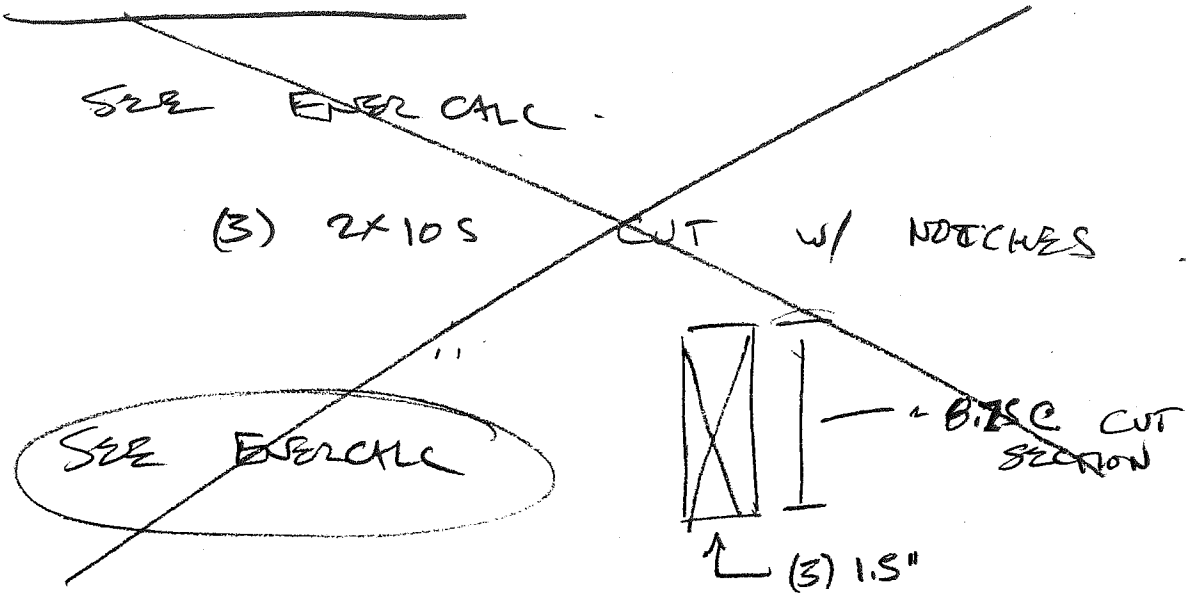
KG Consulting
5816 SW Gillcrest Ct.
Portland, OR 97221
Tel: 503.896.7712

Project: N. WATTS STAIR | Sheet #
Location: | Job #
Client:
Date: By:

STAIR STRINGERS

SEE ENERCALC.

(3) 2X10S CUT W/ NOTCHES



POSTS

4X4 x 10' (STAIR @ + LANDING)

P_{DL} ~ 240# + 94# = 334#

P_{LL} ~ 2300# + 736# = 3036#

P_S ~ 572# + 1841# = 2413#

SEE ENERCALC

4X4 OK

SEE FOOTING ENERCALC

MIN 18"X18"X8"

W/ (3) #3 EA WAY

KG Engineering
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

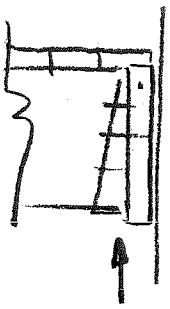
Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

CONNECTIONS

LEDGER

(2) # 12 SDS SCREWS @ 16" OC

V_{ALL} 250#/SDS OK ←

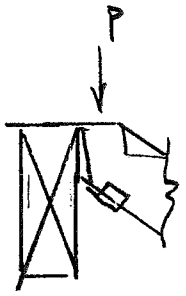


DL = 30#
LL = 255#
S = 63.6#
Σ ~ 350#

JOIST HANGER - SIMPSON LU28

SEE DETAILS

STRINGER CONNECTION -



P = 127# + 673# (DL+LL)
= 800#

SLOPED HANGER
1½" DF
LSSU 28 P_{ALL} = 1110# ←

Wood Beam

Description : Landing Joist

CODE REFERENCES

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-10

Wood Species :
Wood Grade :

Beam Bracing : Completely Unbraced

Fb - Tension	1,000.0 psi
Fb - Compr	1,000.0 psi
Fc - Prll	1,000.0 psi
Fc - Perp	1,000.0 psi
Fv	65.0 psi
Ft	65.0 psi

E : Modulus of Elasticity

Ebend- xx	1,300.0 ksi
Eminbend - xx	1,300.0 ksi
Density	34.0 pcf

Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loads
Uniform Load : D = 0.010, L = 0.10, S = 0.0250 ksf, Tributary Width = 1.330 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.251 : 1	Maximum Shear Stress Ratio	=	0.415 : 1
Section used for this span		2x8	Section used for this span		2x8
fb : Actual	=	249.27 psi	fv : Actual	=	26.98 psi
FB : Allowable	=	994.81 psi	Fv : Allowable	=	65.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	1.915 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.010 in	Ratio =	4394
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.012 in	Ratio =	3925
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.030	0.049	0.90	1.000	1.00	1.00	1.00	1.00	1.00	0.03	26.57	895.84	0.02	2.88	58.50
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.251	0.415	1.00	1.000	1.00	1.00	1.00	1.00	0.99	0.27	249.27	994.81	0.20	26.98	65.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.021	0.035	1.25	1.000	1.00	1.00	1.00	1.00	0.99	0.03	26.57	1241.70	0.02	2.88	81.25
+D+S+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.072	0.119	1.15	1.000	1.00	1.00	1.00	1.00	0.99	0.09	82.25	1143.04	0.06	8.90	74.75
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.156	0.258	1.25	1.000	1.00	1.00	1.00	1.00	0.99	0.21	193.60	1241.70	0.15	20.95	81.25
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00

Wood Beam

File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30

Lic. # : KW-06009328
Licensee : AZH Consulting Engineers

Description : Landing Joist

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 3.830 ft	1	0.206	0.341	1.15	1.000	1.00	1.00	1.00	1.00	0.99	0.26	235.35	1143.04	0.18	25.47	74.75
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.017	0.028	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.03	26.57	1585.95	0.02	2.88	104.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.017	0.028	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.03	26.57	1585.95	0.02	2.88	104.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.122	0.201	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.21	193.60	1585.95	0.15	20.95	104.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.148	0.245	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.26	235.35	1585.95	0.18	25.47	104.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.148	0.245	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.26	235.35	1585.95	0.18	25.47	104.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.010	0.017	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.02	15.94	1585.95	0.01	1.73	104.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.010	0.017	1.60	1.000	1.00	1.00	1.00	1.00	0.99	0.02	15.94	1585.95	0.01	1.73	104.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0117	1.929		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.285	0.285
Overall MINimum	0.018	0.018
+D+H	0.030	0.030
+D+L+H	0.285	0.285
+D+Lr+H	0.030	0.030
+D+S+H	0.094	0.094
+D+0.750Lr+0.750L+H	0.221	0.221
+D+0.750L+0.750S+H	0.269	0.269
+D+0.60W+H	0.030	0.030
+D+0.70E+H	0.030	0.030
+D+0.750Lr+0.750L+0.450W+H	0.221	0.221
+D+0.750L+0.750S+0.450W+H	0.269	0.269
+D+0.750L+0.750S+0.5250E+H	0.269	0.269
+0.60D+0.60W+0.60H	0.018	0.018
+0.60D+0.70E+0.60H	0.018	0.018
D Only	0.030	0.030
Lr Only		
L Only	0.255	0.255
S Only	0.064	0.064
W Only		
E Only		
H Only		

Wood Beam

Lic. # : KW-06009328 — Licensee : AZH Consulting Engineers

Description : Landing Beam

CODE REFERENCES

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-10

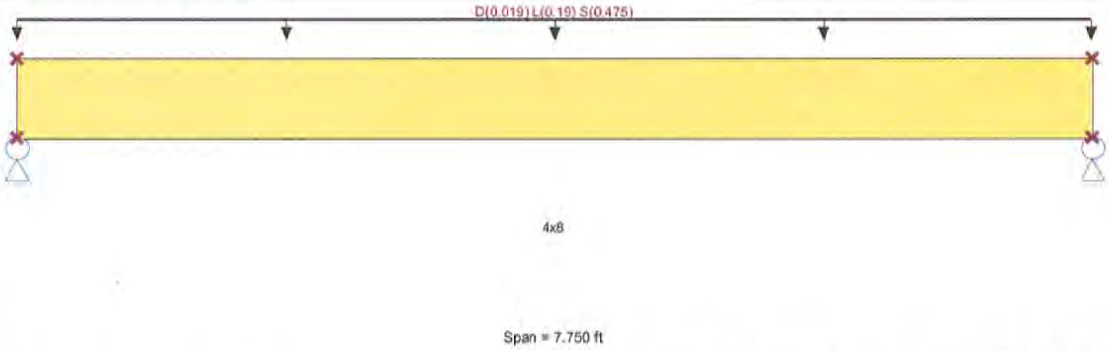
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1 & Btr

Beam Bracing : Completely Unbraced

Fb - Tension	1150 psi
Fb - Compr	1150 psi
Fc - Prll	1800 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	750 psi

E : Modulus of Elasticity

Ebend- xx	1800 ksi
Eminbend - xx	660 ksi
Density	30.58 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loads
Uniform Load : D = 0.010, L = 0.10, S = 0.250 ksf, Tributary Width = 1.90 ft, (landing)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.900 : 1	Maximum Shear Stress Ratio	=	0.490 : 1
Section used for this span		4x8	Section used for this span		4x8
fb : Actual	=	1,537.16 psi	fv : Actual	=	101.46 psi
FB : Allowable	=	1,707.75 psi	Fv : Allowable	=	207.00 psi
Load Combination		+D+0.750L+0.750S+H	Load Combination		+D+0.750L+0.750S+H
Location of maximum on span	=	3.875 ft	Location of maximum on span	=	7.156 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.194 in	Ratio =	479
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.213 in	Ratio =	435
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.054	0.029	0.90							0.18	71.66	1338.63	0.08	4.73	162.00
+D+L+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.424	0.231	1.00							1.61	629.95	1486.44	0.70	41.58	180.00
+D+Lr+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.039	0.021	1.25							0.18	71.66	1855.02	0.08	4.73	225.00
+D+S+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.859	0.468	1.15							3.75	1,467.37	1707.75	1.64	96.86	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.264	0.144	1.25							1.25	490.38	1855.02	0.55	32.37	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00

Wood Beam

File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30

Lic. # : KW-06009328
Licensee : AZH Consulting Engineers

Description : Landing Beam

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 7.750 ft	1	0.900	0.490	1.15	1.300	1.00	1.00	1.00	1.00	0.99	3.93	1,537.16	1707.75	1.72	101.46	207.00
+D+0.60W+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.030	0.016	1.60	1.300	1.00	1.00	1.00	1.00	0.99	0.18	71.66	2368.66	0.08	4.73	288.00
+D+0.70E+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.030	0.016	1.60	1.300	1.00	1.00	1.00	1.00	0.99	0.18	71.66	2368.66	0.08	4.73	288.00
+D+0.750Lr+0.750L+0.450W+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.207	0.112	1.60	1.300	1.00	1.00	1.00	1.00	0.99	1.25	490.38	2368.66	0.55	32.37	288.00
+D+0.750L+0.750S+0.450W+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.649	0.352	1.60	1.300	1.00	1.00	1.00	1.00	0.99	3.93	1,537.16	2368.66	1.72	101.46	288.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.649	0.352	1.60	1.300	1.00	1.00	1.00	1.00	0.99	3.93	1,537.16	2368.66	1.72	101.46	288.00
+0.60D+0.60W+0.60H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.018	0.010	1.60	1.300	1.00	1.00	1.00	1.00	0.99	0.11	43.00	2368.66	0.05	2.84	288.00
+0.60D+0.70E+0.60H					1.300	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 7.750 ft	1	0.018	0.010	1.60	1.300	1.00	1.00	1.00	1.00	0.99	0.11	43.00	2368.66	0.05	2.84	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.2135	3.903		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.027	2.027
Overall MINimum	0.057	0.057
+D+H	0.095	0.095
+D+L+H	0.831	0.831
+D+Lr+H	0.095	0.095
+D+S+H	1.935	1.935
+D+0.750Lr+0.750L+H	0.647	0.647
+D+0.750L+0.750S+H	2.027	2.027
+D+0.60W+H	0.095	0.095
+D+0.70E+H	0.095	0.095
+D+0.750Lr+0.750L+0.450W+H	0.647	0.647
+D+0.750L+0.750S+0.450W+H	2.027	2.027
+D+0.750L+0.750S+0.5250E+H	2.027	2.027
+0.60D+0.60W+0.60H	0.057	0.057
+0.60D+0.70E+0.60H	0.057	0.057
D Only	0.095	0.095
Lr Only		
L Only	0.736	0.736
S Only	1.841	1.841
W Only		
E Only		
H Only		

Wood Beam

Lic. # : KW-06009328 — Licensee : AZH Consulting Engineers

Description : Stair/Landing Beam

CODE REFERENCES

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : ASCE 7-10

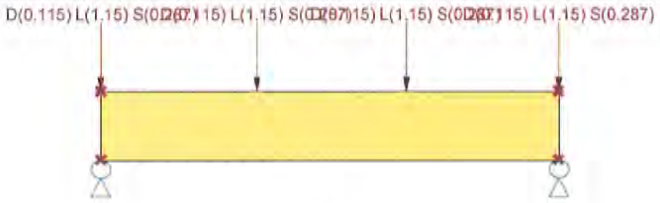
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1 & Btr

Beam Bracing : Completely Unbraced

Fb - Tension	1,150.0 psi
Fb - Compr	1,150.0 psi
Fc - Prll	1,800.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	750.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	660.0 ksi
Density	30.580 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loads
Point Load : D = 0.1150, L = 1.150, S = 0.2870 k @ 0.0 ft, (landing)
Point Load : D = 0.1150, L = 1.150, S = 0.2870 k @ 1.30 ft, (landing)
Point Load : D = 0.1150, L = 1.150, S = 0.2870 k @ 2.550 ft, (landing)
Point Load : D = 0.1150, L = 1.150, S = 0.2870 k @ 3.830 ft, (landing)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.432 : 1	Maximum Shear Stress Ratio	=	0.420 : 1
Section used for this span		4x8	Section used for this span		4x8
fb : Actual	=	643.70 psi	fv : Actual	=	75.59 psi
FB : Allowable	=	1,490.98 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	1.300 ft	Location of maximum on span	=	3.229 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.020 in	Ratio =	2291
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.022 in	Ratio =	2071
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.046	0.045	0.90	1.300	1.00	1.00	1.00	1.00	1.00	0.16	61.94	1342.26	0.12	7.25	162.00
+D+L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.432	0.420	1.00	1.300	1.00	1.00	1.00	1.00	1.00	1.64	643.70	1490.98	1.28	75.59	180.00
+D+Lr+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.033	0.032	1.25	1.300	1.00	1.00	1.00	1.00	1.00	0.16	61.94	1862.39	0.12	7.25	225.00
+D+S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.121	0.117	1.15	1.300	1.00	1.00	1.00	1.00	1.00	0.53	206.98	1713.89	0.41	24.31	207.00

Wood Beam

File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30

Lic. # : KW-06009328 — **Licensee : AZH Consulting Engineers**

Description : Stair/Landing Beam

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.750Lr+0.750L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.268	0.260	1.25	1.300	1.00	1.00	1.00	1.00	1.00	1.27	498.20	1862.39	0.99	58.50	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.354	0.344	1.15	1.300	1.00	1.00	1.00	1.00	1.00	1.55	607.13	1713.89	1.21	71.29	207.00
+D+0.60W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.026	0.025	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.16	61.94	2381.39	0.12	7.25	288.00
+D+0.70E+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.026	0.025	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.16	61.94	2381.39	0.12	7.25	288.00
+D+0.750Lr+0.750L+0.450W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.209	0.203	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.27	498.20	2381.39	0.99	58.50	288.00
+D+0.750L+0.750S+0.450W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.255	0.248	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.55	607.13	2381.39	1.21	71.29	288.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.255	0.248	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.55	607.13	2381.39	1.21	71.29	288.00
+0.60D+0.60W+0.60H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.016	0.015	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.09	37.16	2381.39	0.07	4.35	288.00
+0.60D+0.70E+0.60H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.830 ft	1	0.016	0.015	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.09	37.16	2381.39	0.07	4.35	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0222	1.929		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.534	2.547
Overall MINimum	0.144	0.145
+D+H	0.240	0.241
+D+L+H	2.534	2.547
+D+Lr+H	0.240	0.241
+D+S+H	0.812	0.816
+D+0.750Lr+0.750L+H	1.960	1.970
+D+0.750L+0.750S+H	2.390	2.402
+D+0.60W+H	0.240	0.241
+D+0.70E+H	0.240	0.241
+D+0.750Lr+0.750L+0.450W+H	1.960	1.970
+D+0.750L+0.750S+0.450W+H	2.390	2.402
+D+0.750L+0.750S+0.5250E+H	2.390	2.402
+0.60D+0.60W+0.60H	0.144	0.145
+0.60D+0.70E+0.60H	0.144	0.145
D Only	0.240	0.241
Lr Only		
L Only	2.294	2.306
S Only	0.573	0.575
W Only		
E Only		
H Only		

Wood Column

Lic. # : KW-06009328 — Licensee : AZH Consulting Engineers

Description : 4x4 Post

Code References

Calculations per 2005 NDS, IBC 2009, CBC 2010, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Analysis Method :	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	10.0 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir - Larch (North)		
Wood Grade	No. 1 & Btr		
Fb - Tension	1150 psi	Fv	180 psi
Fb - Compr	1150 psi	Ft	750 psi
Fc - Prll	1800 psi	Density	30.58 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1800	1800	1800 ksi
Minimum	660	660	

Wood Section Name	4x4
Wood Grading/Manuf.	Graded Lumber
Wood Member Type	Sawn
Exact Width	3.50 in
Exact Depth	3.50 in
Area	12.250 in^2
Ix	12.505 in^4
Iy	12.505 in^4

Allow Stress Modification Factors

Cf or Cv for Bending	1.50
Cf or Cv for Compression	1.150
Cf or Cv for Tension	1.50
Cm : Wet Use Factor	1.0
Ct : Temperature Factor	1.0
Cfu : Flat Use Factor	1.0
Kf : Built-up columns	1.0 NDS 15.3.2
Use Cr : Repetitive ?	No (non-glb only)

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Unbraced Length for X-X Axis buckling = 10 ft, K = 1.0
Y-Y (depth) axis : Unbraced Length for X-X Axis buckling = 10 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculation

Column self weight included : 26.014 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 10.0 ft, D = 0.3340, L = 3.036, S = 2.413 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.8288 : 1**

Load Combination	+D+0.750L+0.750S+H
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are . . .	
Applied Axial	4.447 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	438.008 psi

PASS Maximum Shear Stress Ratio = **0.0 : 1**

Load Combination	+0.60D+0.70E+0.60H
Location of max.above base	10.0 ft
Applied Design Shear	0.0 psi
Allowable Shear	180.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.0 in at 0.0 ft above base
for load combination : n/a

Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	1.000	0.212	0.06710	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+L+H	1.000	0.212	0.6329	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+Lr+H	1.000	0.212	0.06710	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+S+H	1.000	0.212	0.5168	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.750Lr+0.750L+H	1.000	0.212	0.4915	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.750L+0.750S+H	1.000	0.212	0.8288	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.60W+H	1.000	0.212	0.06710	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.70E+H	1.000	0.212	0.06710	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.750Lr+0.750L+0.450W+H	1.000	0.212	0.4915	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.750L+0.750S+0.450W+H	1.000	0.212	0.8288	PASS	0.0 ft	0.0	PASS	10.0 ft
+D+0.750L+0.750S+0.5250E+H	1.000	0.212	0.8288	PASS	0.0 ft	0.0	PASS	10.0 ft
+0.60D+0.60W+0.60H	1.000	0.212	0.04026	PASS	0.0 ft	0.0	PASS	10.0 ft

Wood Column

Description : 4x4 Post

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+0.60D+0.70E+0.60H	1.000	0.212	0.04026	PASS	0.0 ft	0.0	PASS	10.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed

Load Combination	X-X Axis Reaction @ Base	X-X Axis Reaction @ Top	Y-Y Axis Reaction @ Base	Y-Y Axis Reaction @ Top	Axial Reaction @ Base
+D+H		k		k	0.360 k
+D+L+H		k		k	3.396 k
+D+Lr+H		k		k	0.360 k
+D+S+H		k		k	2.773 k
+D+0.750Lr+0.750L+H		k		k	2.637 k
+D+0.750L+0.750S+H		k		k	4.447 k
+D+0.60W+H		k		k	0.360 k
+D+0.70E+H		k		k	0.360 k
+D+0.750Lr+0.750L+0.450W+H		k		k	2.637 k
+D+0.750L+0.750S+0.450W+H		k		k	4.447 k
+D+0.750L+0.750S+0.5250E+H		k		k	4.447 k
+0.60D+0.60W+0.60H		k		k	0.216 k
+0.60D+0.70E+0.60H		k		k	0.216 k
D Only		k		k	0.360 k
Lr Only		k		k	k
L Only		k		k	3.036 k
S Only		k		k	2.413 k
W Only		k		k	k
E Only		k		k	k
H Only		k		k	k

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Wood Column

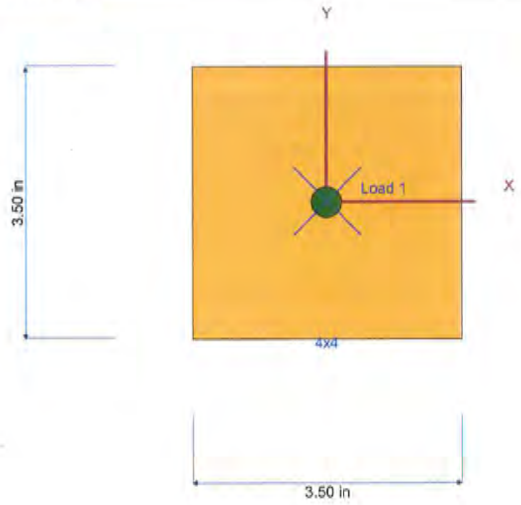
File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30

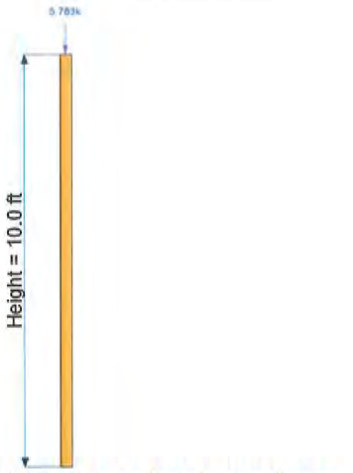
Lic. # : KW-06009328

Licensee : AZH Consulting Engineers

Description : 4x4 Post

Sketches





Loads are total entered value. Arrows do not reflect absolute direction.

Wood Beam

Description : Stair Stringer

CODE REFERENCES

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-10

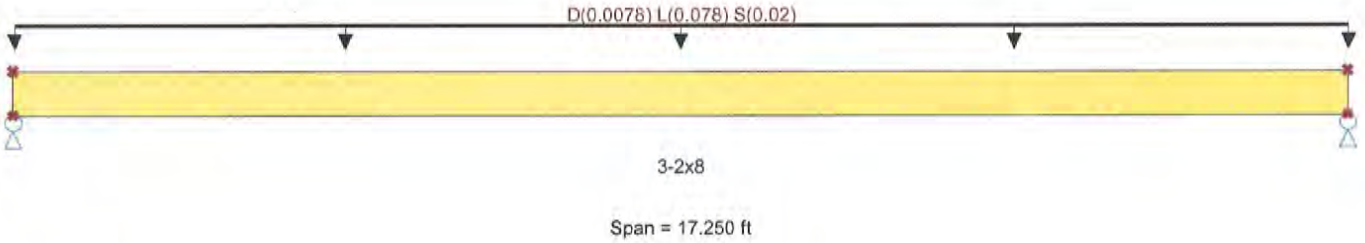
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1 & Btr

Beam Bracing : Completely Unbraced

Fb - Tension	1150 psi
Fb - Compr	1150 psi
Fc - Prll	1800 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	750 psi

E : Modulus of Elasticity

Ebend- xx	1800 ksi
Eminbend - xx	660 ksi
Density	30.58 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loads
Uniform Load : D = 0.00780, L = 0.0780, S = 0.020 , Tributary Width = 1.0 ft, (Stair)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.766 : 1	Maximum Shear Stress Ratio	=	0.191 : 1
Section used for this span		3-2x8	Section used for this span		3-2x8
fb : Actual	=	1,049.89 psi	fv : Actual	=	34.36 psi
FB : Allowable	=	1,369.93 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	8.625 ft	Location of maximum on span	=	16.683 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.608 in	Ratio =	340
Max Upward Transient Deflection	0.000 in	Ratio =	0 <270
Max Downward Total Deflection	0.722 in	Ratio =	286
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.135	0.034	0.90	1.200	1.00	1.00	1.00	1.00	0.99	0.55	166.76	1233.95	0.12	5.46	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.766	0.191	1.00	1.200	1.00	1.00	1.00	1.00	0.99	3.45	1,049.89	1369.93	0.75	34.36	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.098	0.024	1.25	1.200	1.00	1.00	1.00	1.00	0.99	0.55	166.76	1708.74	0.12	5.46	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.250	0.062	1.15	1.200	1.00	1.00	1.00	1.00	0.99	1.29	393.20	1573.42	0.28	12.87	207.00
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.485	0.121	1.25	1.200	1.00	1.00	1.00	1.00	0.99	2.72	829.11	1708.74	0.59	27.13	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00

Wood Beam

File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30
Lic. # : KW-06009328
Licensee : AZH Consulting Engineers

Description : Stair Stringer

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 17.250 ft	1	0.635	0.158	1.15	1.200	1.00	1.00	1.00	1.00	0.99	3.28	998.94	1573.42	0.71	32.69	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.076	0.019	1.60	1.200	1.00	1.00	1.00	1.00	0.99	0.55	166.76	2180.06	0.12	5.46	288.00
+D+0.70E+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.076	0.019	1.60	1.200	1.00	1.00	1.00	1.00	0.99	0.55	166.76	2180.06	0.12	5.46	288.00
+D+0.750Lr+0.750L+0.450W+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.380	0.094	1.60	1.200	1.00	1.00	1.00	1.00	0.99	2.72	829.11	2180.06	0.59	27.13	288.00
+D+0.750L+0.750S+0.450W+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.458	0.114	1.60	1.200	1.00	1.00	1.00	1.00	0.99	3.28	998.94	2180.06	0.71	32.69	288.00
+D+0.750L+0.750S+0.5250E+H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.458	0.114	1.60	1.200	1.00	1.00	1.00	1.00	0.99	3.28	998.94	2180.06	0.71	32.69	288.00
+0.60D+0.60W+0.60H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.046	0.011	1.60	1.200	1.00	1.00	1.00	1.00	0.99	0.33	100.05	2180.06	0.07	3.27	288.00
+0.60D+0.70E+0.60H					1.200	1.00	1.00	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.046	0.011	1.60	1.200	1.00	1.00	1.00	1.00	0.99	0.33	100.05	2180.06	0.07	3.27	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.7224	8.688		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.800	0.800
Overall MINimum	0.076	0.076
+D+H	0.127	0.127
+D+L+H	0.800	0.800
+D+Lr+H	0.127	0.127
+D+S+H	0.300	0.300
+D+0.750Lr+0.750L+H	0.632	0.632
+D+0.750L+0.750S+H	0.761	0.761
+D+0.60W+H	0.127	0.127
+D+0.70E+H	0.127	0.127
+D+0.750Lr+0.750L+0.450W+H	0.632	0.632
+D+0.750L+0.750S+0.450W+H	0.761	0.761
+D+0.750L+0.750S+0.5250E+H	0.761	0.761
+0.60D+0.60W+0.60H	0.076	0.076
+0.60D+0.70E+0.60H	0.076	0.076
D Only	0.127	0.127
Lr Only		
L Only	0.673	0.673
S Only	0.173	0.173
W Only		
E Only		
H Only		

Wood Beam

Description : End Stair Stringer

CODE REFERENCES

Calculations per NDS 2005, IBC 2009, CBC 2010, ASCE 7-10
Load Combination Set : ASCE 7-10

Material Properties

Analysis Method : Allowable Stress Design
Load Combination ASCE 7-10

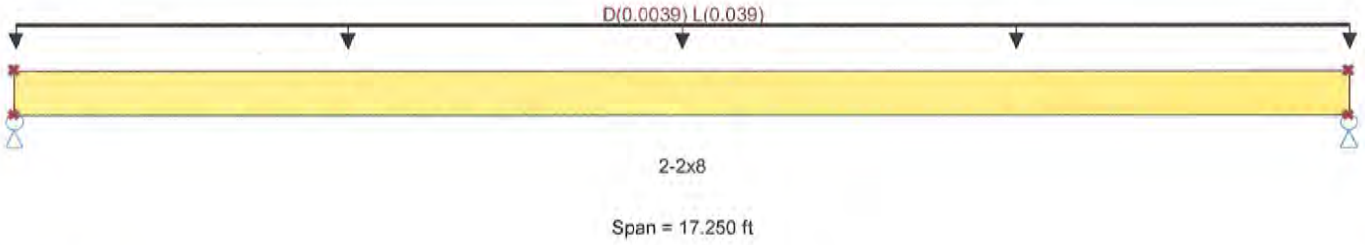
Wood Species : Douglas Fir - Larch (North)
Wood Grade : No. 1 & Btr

Beam Bracing : Completely Unbraced

Fb - Tension	1,150.0 psi
Fb - Compr	1,150.0 psi
Fc - Prll	1,800.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	750.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	660.0 ksi
Density	30.580 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculation

Beam self weight calculated and added to loads
Uniform Load : D = 0.00390, L = 0.0390 , Tributary Width = 1.0 ft, (Stair)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.596: 1	Maximum Shear Stress Ratio	=	0.147 : 1
Section used for this span		2-2x8	Section used for this span		2-2x8
fb : Actual	=	807.03 psi	fv : Actual	=	26.41 psi
FB : Allowable	=	1,353.05 psi	Fv : Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	8.625 ft	Location of maximum on span	=	16.683 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.456 in	Ratio =	454
Max Upward Transient Deflection	0.000 in	Ratio =	0 <270
Max Downward Total Deflection	0.555 in	Ratio =	372
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.119	0.029	0.90	1.200	1.00	1.00	1.00	1.00	0.98	0.32	144.68	1220.88	0.07	4.73	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	0.98			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.596	0.147	1.00	1.200	1.00	1.00	1.00	1.00	0.98	1.77	807.03	1353.05	0.38	26.41	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	0.98			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.086	0.021	1.25	1.200	1.00	1.00	1.00	1.00	0.97	0.32	144.68	1679.09	0.07	4.73	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	0.97			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.093	0.023	1.15	1.200	1.00	1.00	1.00	1.00	0.98	0.32	144.68	1549.49	0.07	4.73	207.00
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	0.98			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.382	0.093	1.25	1.200	1.00	1.00	1.00	1.00	0.97	1.40	641.44	1679.09	0.30	20.99	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	0.97			0.00	0.00	0.00	0.00

Wood Beam

File = c:\Users\KEVING~1\DOCUME~1\ENERCA~1\WATTSS~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.12.9, Ver:6.12.9.30

Lic. # : KW-06009328
Licensee : AZH Consulting Engineers

Description : End Stair Stringer

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 17.250 ft	1	0.414	0.101	1.15	1.200	1.00	1.00	1.00	1.00	0.98	1.40	641.44	1549.49	0.30	20.99	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	0.98			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.068	0.016	1.60	1.200	1.00	1.00	1.00	1.00	0.96	0.32	144.68	2122.28	0.07	4.73	288.00
+D+0.70E+H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.068	0.016	1.60	1.200	1.00	1.00	1.00	1.00	0.96	0.32	144.68	2122.28	0.07	4.73	288.00
+D+0.750Lr+0.750L+0.450W+H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.302	0.073	1.60	1.200	1.00	1.00	1.00	1.00	0.96	1.40	641.44	2122.28	0.30	20.99	288.00
+D+0.750L+0.750S+0.450W+H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.302	0.073	1.60	1.200	1.00	1.00	1.00	1.00	0.96	1.40	641.44	2122.28	0.30	20.99	288.00
+D+0.750L+0.750S+0.5250E+H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.302	0.073	1.60	1.200	1.00	1.00	1.00	1.00	0.96	1.40	641.44	2122.28	0.30	20.99	288.00
+0.60D+0.60W+0.60H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.041	0.010	1.60	1.200	1.00	1.00	1.00	1.00	0.96	0.19	86.81	2122.28	0.04	2.84	288.00
+0.60D+0.70E+0.60H					1.200	1.00	1.00	1.00	1.00	0.96			0.00	0.00	0.00	0.00
Length = 17.250 ft	1	0.041	0.010	1.60	1.200	1.00	1.00	1.00	1.00	0.96	0.19	86.81	2122.28	0.04	2.84	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5553	8.688		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.410	0.410
Overall MINimum	0.044	0.044
+D+H	0.073	0.073
+D+L+H	0.410	0.410
+D+Lr+H	0.073	0.073
+D+S+H	0.073	0.073
+D+0.750Lr+0.750L+H	0.326	0.326
+D+0.750L+0.750S+H	0.326	0.326
+D+0.60W+H	0.073	0.073
+D+0.70E+H	0.073	0.073
+D+0.750Lr+0.750L+0.450W+H	0.326	0.326
+D+0.750L+0.750S+0.450W+H	0.326	0.326
+D+0.750L+0.750S+0.5250E+H	0.326	0.326
+0.60D+0.60W+0.60H	0.044	0.044
+0.60D+0.70E+0.60H	0.044	0.044
D Only	0.073	0.073
Lr Only		
L Only	0.336	0.336
S Only		
W Only		
E Only		
H Only		

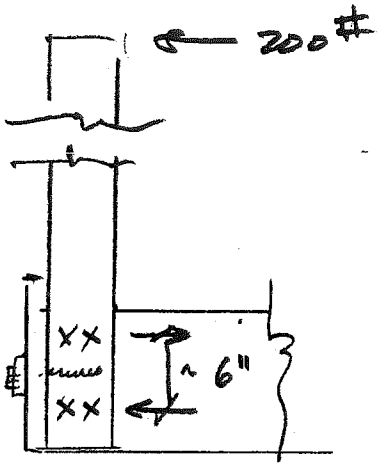
KG
5816 SW GILLCREST CT.
PORTLAND, OR 97221
TEL: 503.896.7712

Project:	Sheet #
Location:	
Client:	Job #
Date: By:	

▷ RAILING ATTACHMENT (POST)

$M = 200^{\#} \times 36'' = 7200''lbs$

$7200''lbs / 6'' = 1200^{\#}$



(2) SDS SCREWS
∴ 600#/SDS

VERIFY Z_{11} =

IMPACT / 10 MIN. DURATION

∴ $C_D = 1.6$ (PT WOOD)

#12 SDS $Z_n \sim 159^{\#}$ ∴ $254^{\#}$/SDS X

ADD ½" ϕ LAG BOLTS THRU FACCIA (2x)

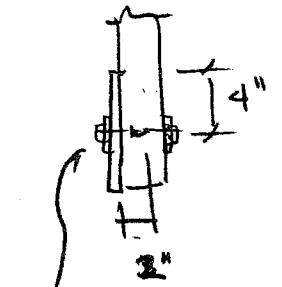
$W = 367^{\#}/IN$ $G \leq 0.49$

ASSUME 2" PEN ∴ $734^{\#}$

$M_{ALL} = 254^{\#} \times 6'' \times 2 SDS$

$+ 734^{\#} \times 4'' \times 1.6 = 7745''lb$

OK



∃ ADD LAG BOLT

2031 N. WATTS STREET

PROJECT INFORMATION:

OWNER

PALISADES PROPERTY MANAGEMENT
CONTACT: JAMIE WHITAKER
1100 NE 28TH AVE, SUITE 100
PORTLAND, OR 97232
TEL: 503-245-3087
EMAIL: portlandrent@gmail.com

CONTRACTOR

PRO DESIGN
VIKTOR KOVALEV
16208 NE 9th Street
Vancouver, WA, 98684

Tel:(503) 547-4495
Email: pdesignllc@yahoo.com
CCB# 209343

ARCHITECT

SOLARC ARCHITECTUE, LLC
PRINCIPAL-IN-CHARGE: GALEN OHMART, AIA
PROJECT ARCHITECT: MICHAEL WIREMAN-NOTHWANG, AIA, NCARB
80 SE MADISON STREET, SUITE 120
PORTLAND, OR 97214
TEL: 503-223-5253
FAX: 503-223-5263
EMAIL: miken@solarc-ae.net

STRUCTURAL ENGINEER

KG CONSULTANTS
CONTACT: Kevin Goldsmith, P.E.
5816 SW Gillcrest ct.
PORTLAND, OR 97221
TEL: 503.896.7712
EMAIL: KGCONSULTANTSLLC@GMAIL.COM

ELECTRICAL

TBD

HVAC & PLUMBING

TBD

SHEET INDEX

GENERAL LEGEND

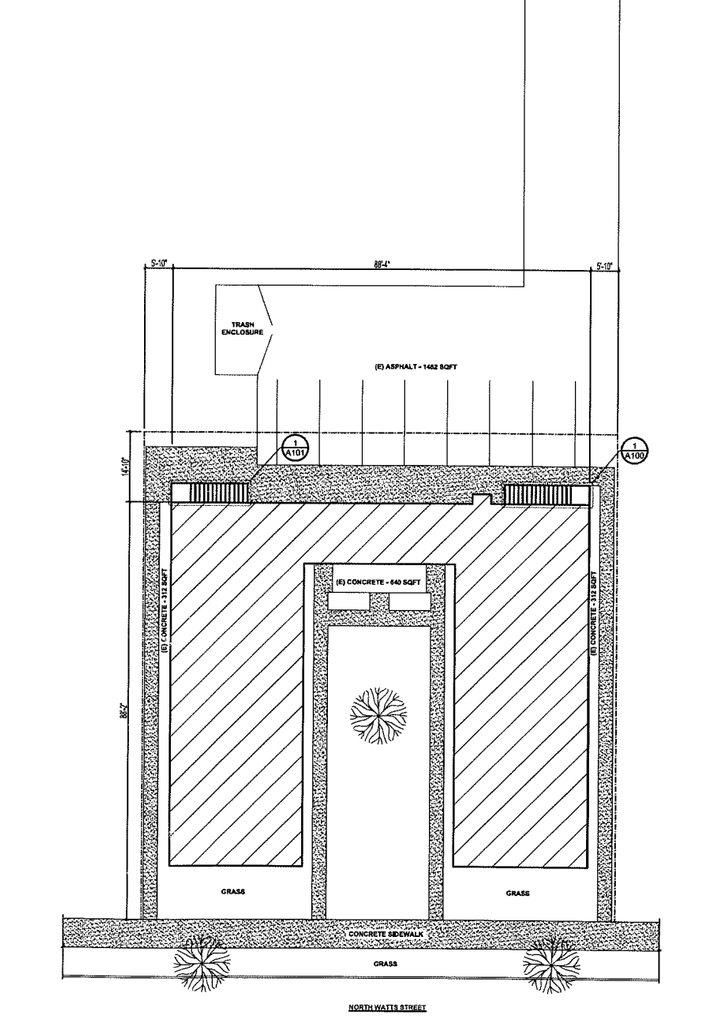
XXX (E) — (E) FOLLOWING CALLOUT = EXISTING

XXX (N) — (N) FOLLOWING CALLOUT = NEW

NOTE: IF NO (E) OR (N) IN CALLOUT ASSUME WORK IS NEW.

SYMBOLS LEGEND

1 View Name 1/8" = 1'-0"	VIEW TITLE	NORTH ARROW	SPOT ELEVATION
Name / Elevation	LEVEL HEAD	ELEVATION CALLOUT	HOSE BIB
0	GRID	DISCONNECT SWITCH	WALL TYPE TAG
1 A101 SIM	CALLOUT HEAD	ELECTRICAL PANEL	DS DOWNSPROUT
1 A101 SIM	SECTION CUT	TRANSFORMER	
1	KEYED NOTE	101 DOOR TAG	
℄	CENTERLINE	BREAK LINE	
		(E) EXISTING	
		(N) NEW	
		11 WINDOW TAG	
		EMERGENCY FIXTURE	



3 SITE PLAN

CODE INFORMATION

PROJECT SUMMARY

REMOVAL OF NON-COMPLIANT STAIRS AND RE-CONFIGURATION OF EXISTING BALCONIES.

APPLICABLE CODES

2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

2014 OREGON ELECTRICAL SPECIALTY CODE (IEC)

2014 OREGON ENERGY EFFICIENCY SPECIALTY CODE

2014 OREGON MECANICAL SPECIALTY CODE (IMC)

2014 OREGON PLUMBING SPECIALTY CODE (UBC)

2010 OREGON SOLAR INSTALLATION SPECIALTY CODE

2014 OREGON FIRE CODE (IFC)

CONSTRUCTION TYPE

TYPE VB, NON SPRINKLERED

USE AND OCCUPANCY CLASSIFICATION

IS: [illegible] OVERALL USE AND OCCUPANCY TYPE FOR THE BUILDING IS NOT CHANGED. THE EXISTING BUILDING [illegible]

OCCUPANCY TYPE: R-2

AREA

THE OVERALL AREA OF THE EXISTING BUILDING IS NOT BEING INCREASED.

O.S.S.C. TABLE 503

ALLOWABLE AREA - TYPE VB CONSTRUCTION
7,000 PER STORY / 2 STORIES

EXISTING AREA - 4,750 sf EACH STORY

PROPERTY INFORMATION

PROPERTY ID: R196514
STATE ID: I N I E 0 9 D B
MAP: 2228 OLD
KENTON LOT 24 - 27
LOT SIZE: .23 ACRES
10,000 SF BLOCK 24

SOLARC ARCHITECTURE

PALISADES PROPERTY MANAGEMENT
WATTS STAIR / BALCONIES
2031 N WATTS ST

REGISTERED ARCHITECT
GALEN B. OHMART
EUGENE, OREGON
3176
STATE OF OREGON

PROJECT NO:
ISSUE DATE:
DRAFT DATE:
DRAWN BY:
CHECKED BY:

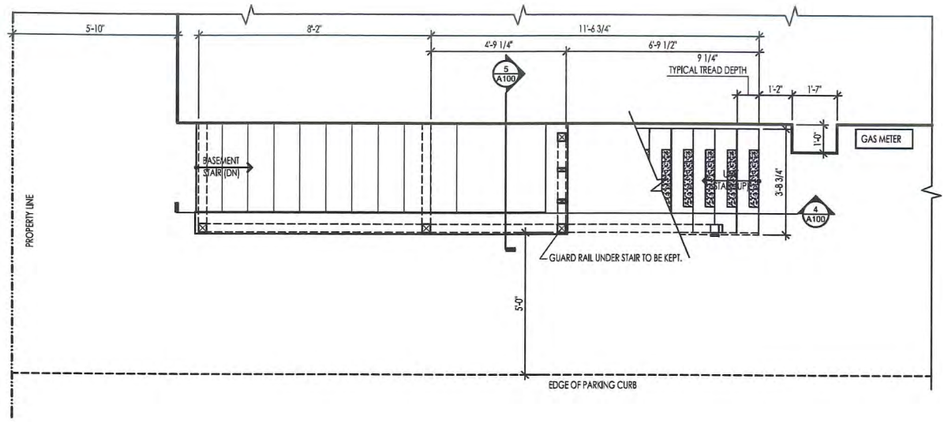
REVISED:
REVISION NO:

PROJECT INFORMATION

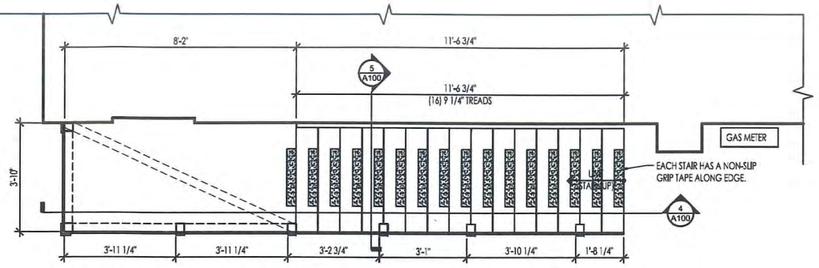
G001

SHEET 1

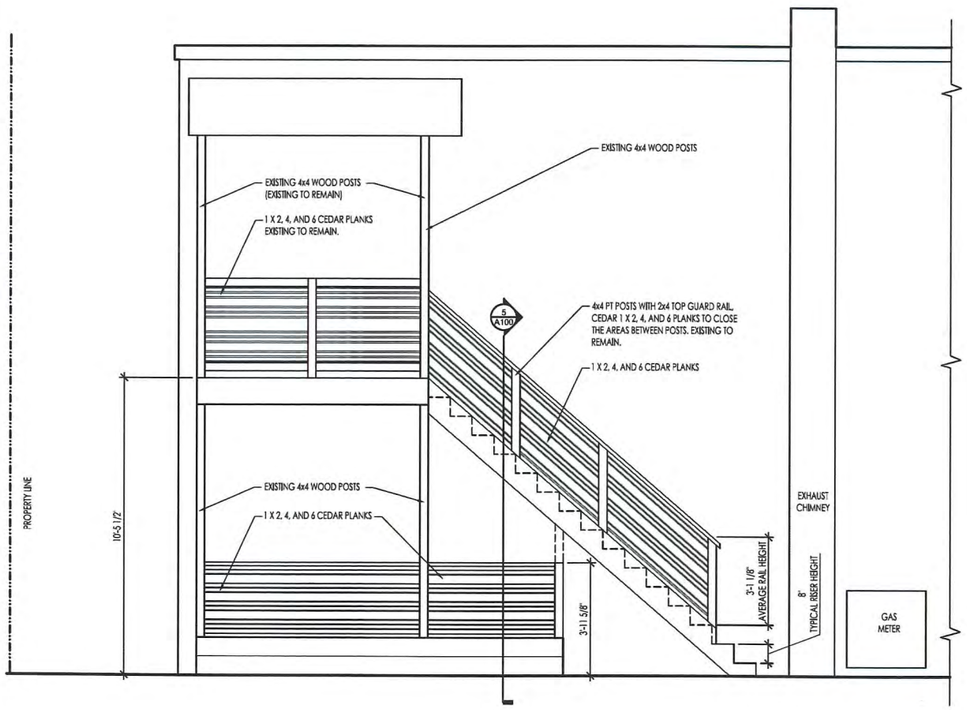
Drawing name: X:\PDX-2016 Projects\16-051 PPM Projects\16-051 North Watts\Project Record\16-051 Watts Stair Details.dwg Plotted on: Feb 28, 2017 - 9:39am



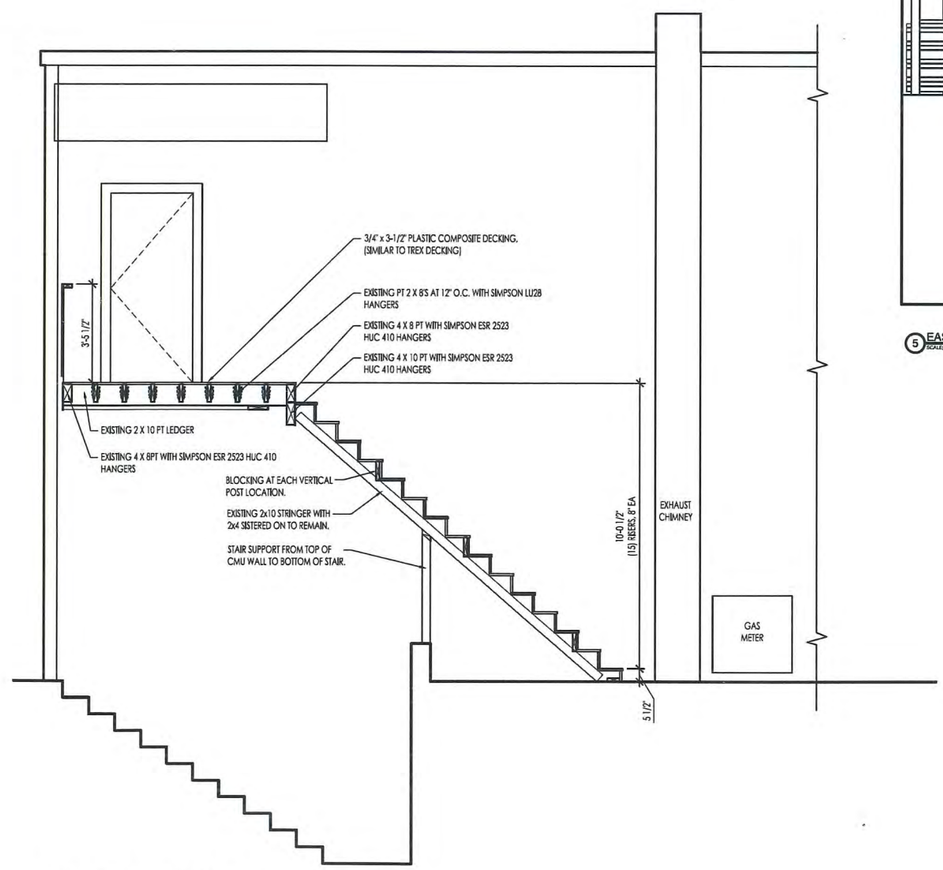
1 EAST STAIR - EXISTING PLAN AT GRADE
SCALE: 3/8" = 1'-0"



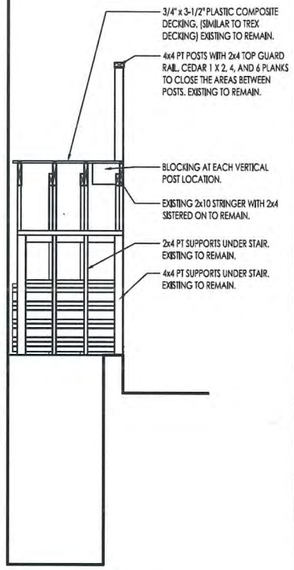
2 EAST STAIR - EXISTING PLAN AT SECOND FLOOR LANDING
SCALE: 3/8" = 1'-0"



3 EAST STAIR - EXISTING ELEVATION
SCALE: 3/8" = 1'-0"



4 EAST STAIR - EXISTING SECTION
SCALE: 3/8" = 1'-0"



5 EAST STAIR - DEMO SECTION
SCALE: 3/8" = 1'-0"

SOLARC ARCHITECTURE, INC
80 SE MADISON ST, STE 120, PORTLAND, OR 97214
503.223.5253 Phone | www.Solarc-A.com

PALISADES PROPERTY MANAGEMENT
WATTS STAIR / BALCONIES
2031 N WATTS ST
PORTLAND, OREGON

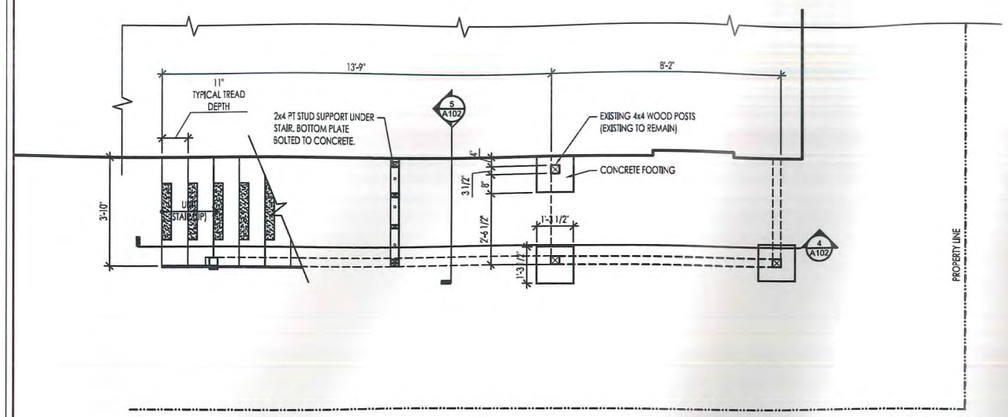
REGISTERED ARCHITECT
GALEN B. OHMART
EUGENE, OREGON
3176
STATE OF OREGON

PROJECT NO: 16-051
ISSUE DATE: 02/28/17
DRAFT DATE: 02/28/17
DRAWN BY: MWN
CHECKED BY: MWN

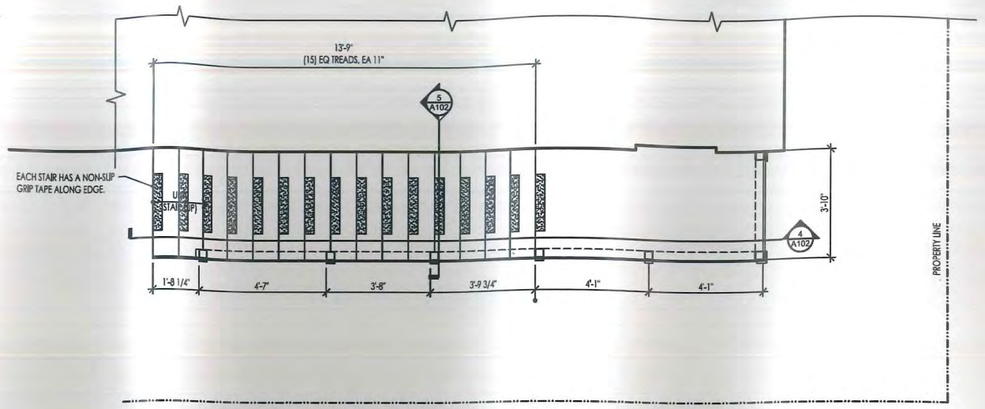
REVISED: XXXXX
REVISION NO:

EAST STAIRS EXISTING / DEMO

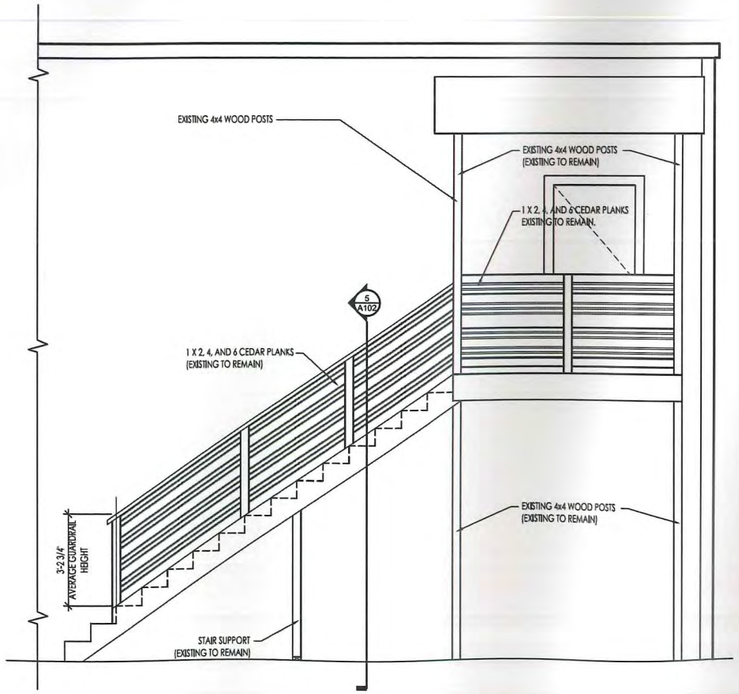
02/28 - PERMIT DOCUMENTS



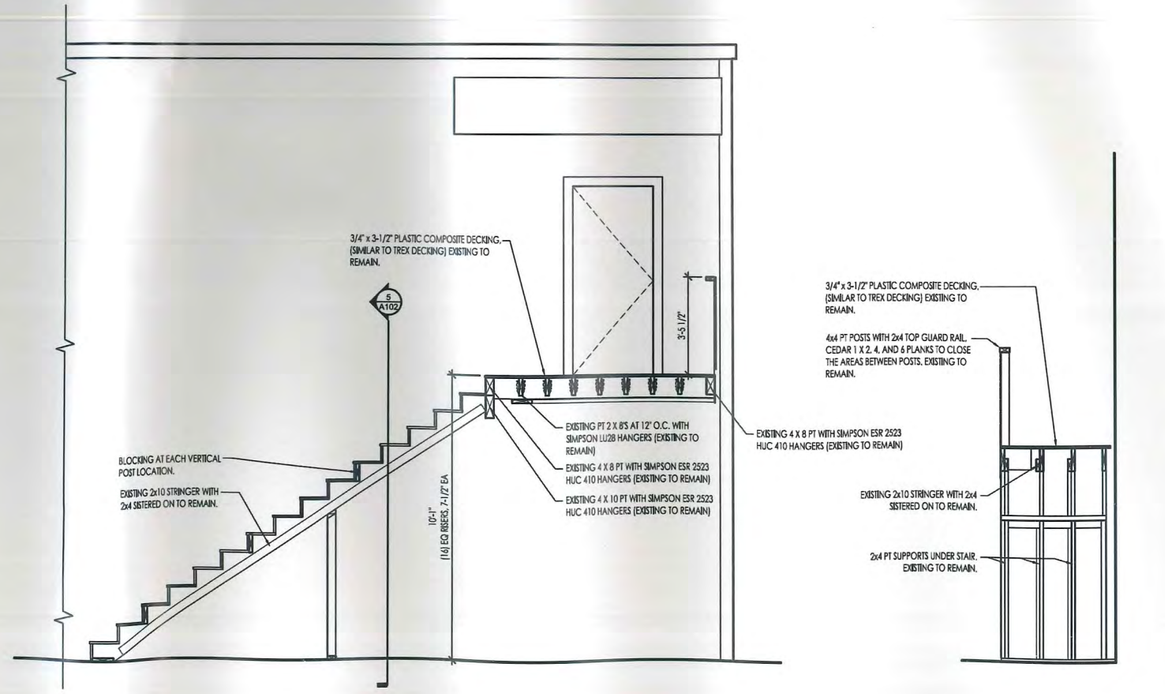
1 WEST STAIR - EXISTING GROUND FLOOR PLAN



2 WEST STAIR - EXISTING SECOND FLOOR BALCONY



3 WEST STAIR - EXISTING ELEVATION



4 WEST STAIR - EXISTING SECTION

5 WEST STAIR - DEMO SECTION

SOLARC
ARCHITECTURE, INC
80 SE MADISON ST, STE 120, PORTLAND, OR 97214
503.223.5253 Phone | www.Solarc-A.com

PALISADES PROPERTY MANAGEMENT
WATTS STAIR / BALCONIES
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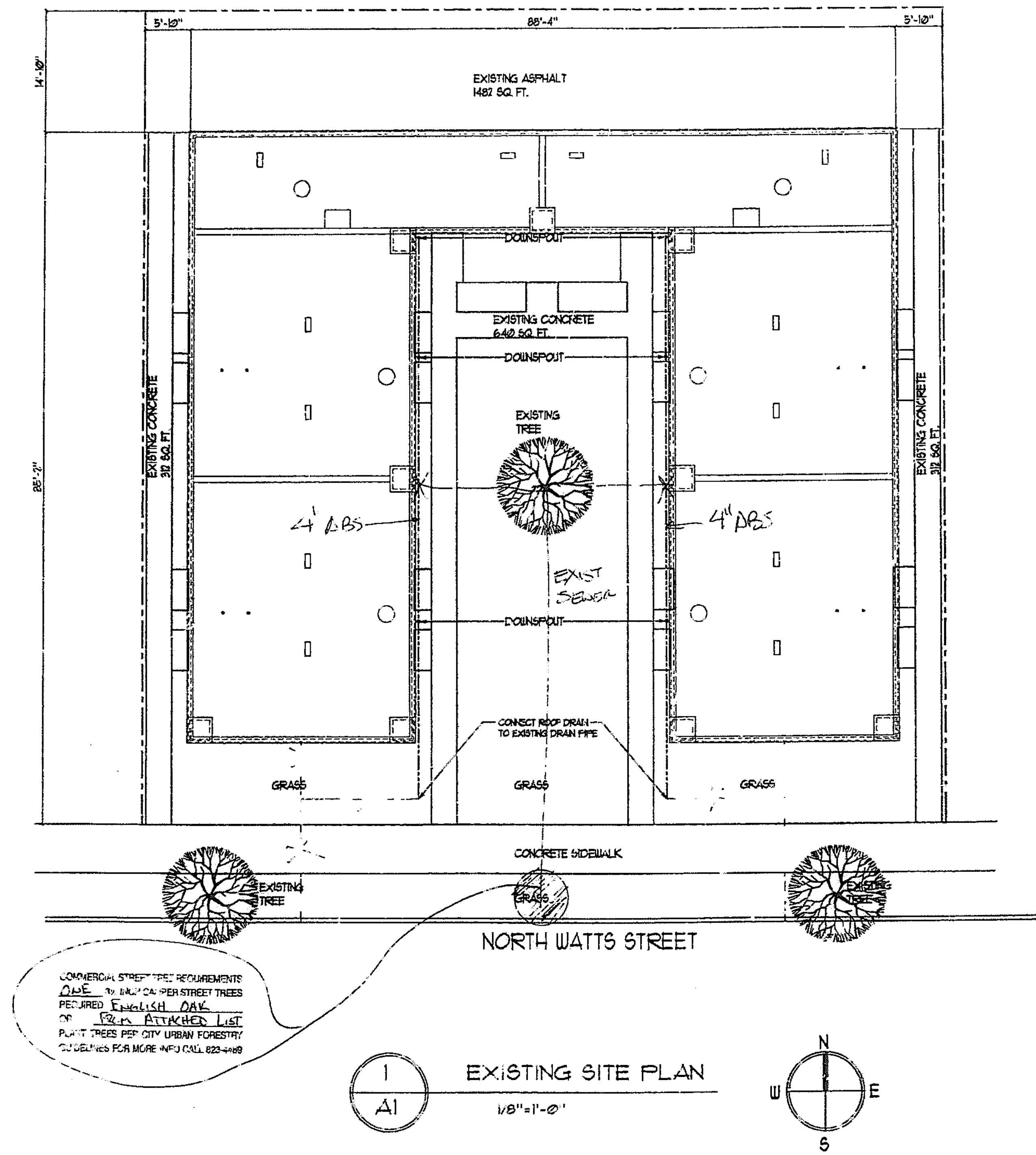
REVISION NO:

WEST STAIR EXISTING

02/28 - PERMIT DOCUMENTS



1
A1
EXISTING SITE PLAN
1/8"=1'-0"

SITE INFORMATION

PROPERTY ID R196514
STATE ID 1N1E09DB
MAP 2228 OLD
KENTON LOT 24-27
LOT SIZE .23 ACRES
10,000 SQFT. BLOCK 24

BUILDING COVERAGE	4,648 SQ. FT.
NONPERMABLE AREA	2,746 SQ. FT.
TOTAL	7,394 SQFT.

LIST OF DRAWINGS
SITE EXISTING AND NEW SITE PLAN
A1 SECOND FLOOR PLAN
A2 EXISTING ROOF PLAN
A3 NEW ROOF PLAN
A4 EXISTING SOUTH AND EAST/WEST ELEVATION
A5 NEW SOUTH AND EAST/WEST ELEVATION
A6 EXISTING NORTH AND EAST WEST COURTYARD ELEVATION
A7 NEW NORTH AND EAST / WEST COURTYARD ELEVATION
A8 EXISTING SECTIONS
A9 NEW SECTION
A10 DETAILS
A11 FRAMING PLANS

City of Portland Bureau of Development Services
By MAL Date 12/21/04
Approved by Planning & Zoning Review

City of Portland
04-097176 CO

04-097176-CO

WATTS APARTMENTS
SARAH MAHLER
2031 N. WATTS STREET
PORTLAND, OREGON

#6

REGISTERED ARCHITECT
BAS
STATE OF OREGON

BRIAN A. SYMES ARCHITECT
9833 NW SKYLINE BLVD.
PORTLAND, OREGON
97229

04-097176

DESCRIPTION:

DATE: 12-29-2004
SCALE: 1/8"=1'-0"
DRAWN: BAS
JOB NO: MAHLER
REVISIONS:

SITE
76

NOTES

DEMISING WALL
INSTALL A DRAFTSTOP
PARTITION ABOVE

1/A1 SECOND FLOOR PLAN
3/8"=1'-0"

N E S W

WATTS APARTMENTS
SARAH MAHLER
2031 N. WATTS STREET
PORTLAND, OREGON

REGISTERED ARCHITECT
STATE OF OREGON

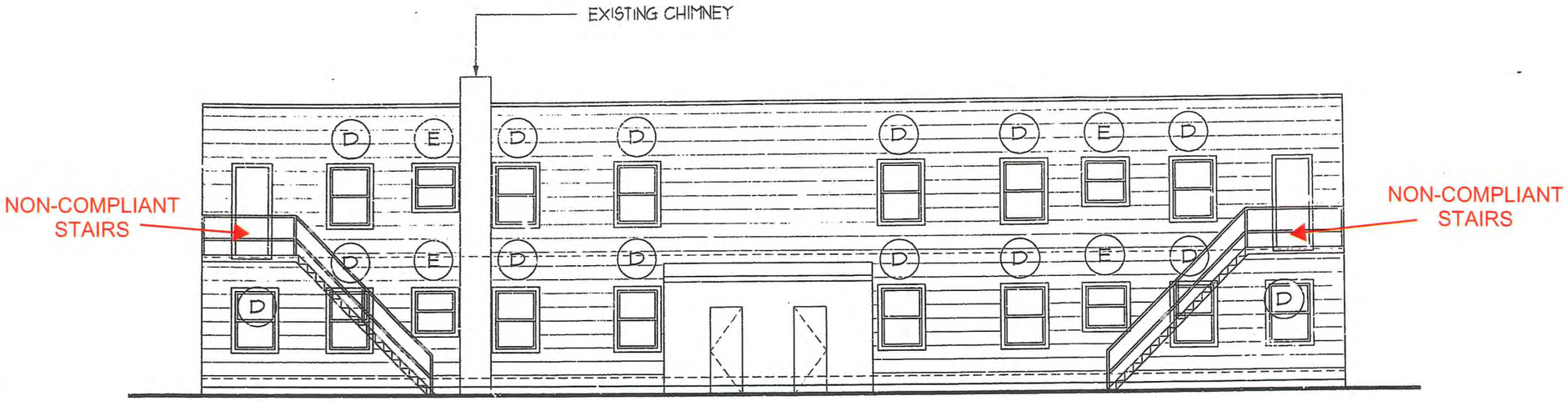
BRIAN A. SYMES ARCHITECT
9833 NW SKYLINE BLVD.
PORTLAND, OREGON
97231 503-289-3375

DESCRIPTION

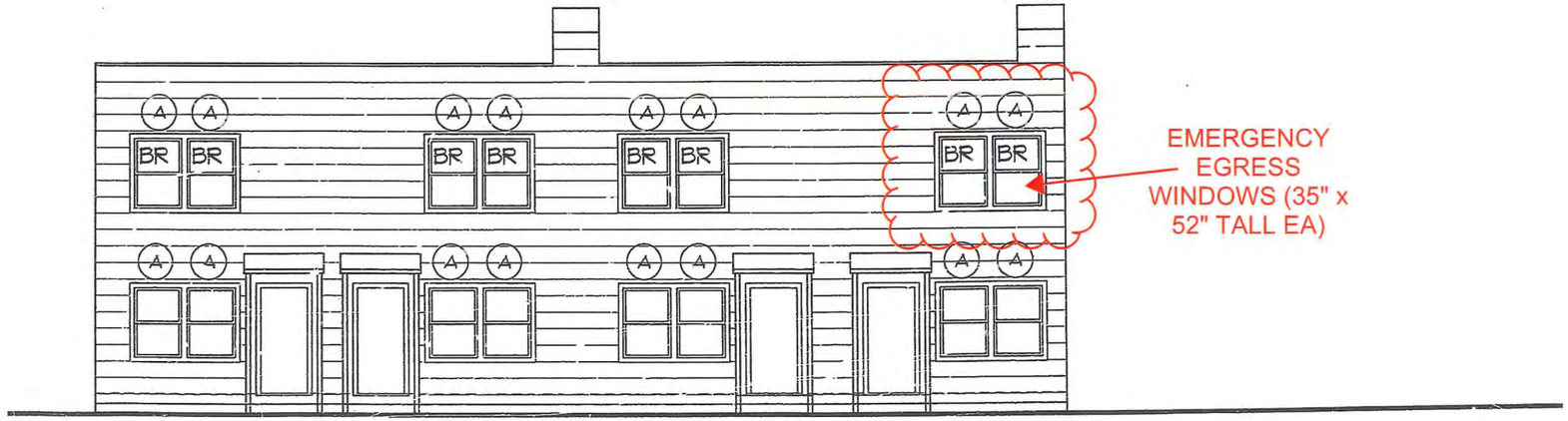
DATE 12-13-2004
SCALE 1/4"=1'-0"
DRAWN BAS
JOB NO. MAHLER
REVISIONS

City of Portland

A-1



1/A6 NORTH ELEVATION
1/4"=1'-0"



2/A6 EAST / WEST ELEVATION
1/4"=1'-0" AT COURT YARD

WATTS APARTMENTS
SARAH MAHLER
2031 N. WATTS STREET
PORTLAND, OREGON

REGISTERED ARCHITECT
BRIAN A. SYMES
STATE OF OREGON

BRIAN A. SYMES ARCHITECT
9833 NW SKYLINE BLVD.
PORTLAND, OREGON
97231 503-289-3375

City of Portland

DESCRIPTION:

DATE: 12-28-2004
SCALE: 1/4"=1'-0"
DRAWN: BAS
JOB NO.: MAHLER
REVISIONS:

A-6