City of Bellevue
115 E Pine Street
P. O. Box 825 Bellevue, ID 83313
208-788-2128 Fax 208-788-2092

Design Review Application

Applicant Information	
Business / Project Name:	600 N 6th St.
Owner / Applicant Name:	Derrick Ellis
Phone #: 208-421-5103	Fax #: email: deconstructions@gmail.com
Service Location:	600 N. 6th St.
Mailing Address:	P.O. Box 221 Jerome ID 83338
Property Physical Address:	600 N 6th St.
Property Legal Description:	Lot 1 Block 88
Business Type: ☐ Sole Proprietorship ☐ Corporation ☒ Limited Liability ☐ Partnership ☐ Other	
Current Zoning: ☐ Business ☐ Limited Business/Res ☐ Light Industrial ☒ Residential ☐ Transitional	
Project Description	
Business / Project Description:	Duplex
Structure Design: ☒ Stick Built ☐ Modular ☐ Manufactured/ Mobile (HUD) ☐ Container	
Existing Sq Ft: New Sq Ft: Total Sq. Ft: Lot Sq Ft:	
Living Quarters Included? ☐ No ☐ Yes , please describe:	
Parking Requirements: (See City Code- Zoning Regulations Title 10)	

Acknowledgement

*This application is due no less than 15 days prior to the next regularly scheduled meeting date of the Bellevue Planning & Zoning Commission with all of the required material itemized in Chapter 19, Design Review, and Bellevue City Ordinance 86-03.

***Design Review Application Fees**:

Non-Residential = Base fee $400.00 + $25.00 per each 1,000 square feet of gross floor area

Residential = $Base fee $200.00 1-6 unites. 7+ unites an additional $25.00 per unit will be charged.

ALL LEGAL, ENGINEERING AND OTHER CONSULTANT FEES SHALL BE REIMBURSED AT 100%

Applicant's Signature: _____ Date: 06/17/2025

Official Use Only

Date Received:_____ Check #:_____ CD Director Signature: _____

Updated 7/20

APPLICATION FOR BUILDING PERMIT

CITY OF BELLEVUE
COMMUNITY DEVELOPMENT DEPARTMENT – BUILDING & SAFETY
115 East Pine Street | Bellevue, Idaho 83313 | Telephone: (208) 913-0191 | Email: building@bellevueidaho.us

OWNER: Derrick Ellis
MAILING ADDRESS: P.O. Box 221
CITY: Jerome **STATE:** ID **ZIP:** 83338
PHONE: — **CELL:** 208-421-5103
EMAIL ADDRESS: deconstruction80@gmail.com
CONTRACTOR: Derrick Ellis
MAILING ADDRESS: P.O. Box 221 **REGISTRATION NO.:** _____ *Mandatory*
CITY: Jerome **STATE:** ID **ZIP:** 83338
PHONE: — **CELL:** 208-421-5103
EMAIL ADDRESS: deconstruction80@gmail.com
~~ARCHITECT~~ Engineer: EHM Engineering
EMAIL ADDRESS: Kneild@ehminc.com

Official Use Only

State of Idaho Division of Building Safety
Plan Review Permit Number:
BLD#: _____ - _____

City Permit No: _____
Date Filed: _____
Base Permit Fee: $ _____ *(Based on Construction Cost)*
Plan Review Fee: $ _____ *(65% of Base Permit Fee)*
Development Impact Fee: $ _____ **(See page 3 Exhibit "A")**
Fire Dept. Fee: $ _____
Subtotal: $ _____
Total Fees: $ _____
P&Z Approval: Yes ☐ No ☐

CLASS OF WORK:

NEW CONSTRUCTION:
☐ COMMERCIAL
☐ SINGLE FAMILY RESIDENTIAL (or)
☒ MULTI-FAMILY RESIDENTIAL: **NUMBER. OF STORIES:** 2 **NUMBER. OF UNITS:** 2

REMODEL:
☐ COMMERCIAL ☐ RESIDENTIAL

☒ GARAGE ☐ BASEMENT ☐ CARPORT ☐ FOUNDATION ☐ FIREPLACE **($75)**

OTHER ☐ _____
Please specify: (sheds, decks, pergola, porches or any accessory structure over 200 sq. ft.)

DESCRIPTION OF WORK: new construction duplex
STREET ADDRESS OF WORK: 600 N 6th St.
LEGAL DESCRIPTION OF LAND: LOT# 2 BLOCK # 88 SUBDIVISION Bellevue Town Site
LOT AREA: 6,000 SQ. FT. Water Source: public Type of Sewage Disposal: public
LOT IN FLOOD PLAIN: ☒ NO ☐ YES **(If YES provide Floodplain Development Permit application)**
ZONING: ☐ B ☒ GR ☐ LB/R ☐ LI ☐ T ☐ AVO ☐ RGB ☐ LI/B
PROPOSED SET-BACKS: Front: 18 ft. Rear: 6 ft. Right Side: 6 ft. Left Side: 6 ft.

ESTIMATED TOTAL COST OF CONSTRUCTION* (See table below): $ 558,866.00

PER SQ FT FIRST FLOOR OF NEW CONST/ADDITION	SQ FT 1336	$200.00	Total	
PER SQ FT SECOND FLOOR NEW CONST/ADDITION	SQ FT 1334	$200.00	Total	
PER SQ FT OF GARAGE SPACE	SQ FT 847	$41.66	Total	
PER SQ FT OF BASEMENT	SQ FT	$62.50	Total	
PER SQ FT OF CARPORTS/PORCHES	SQ FT 194	$62.50	Total	
PER SQ FT OF FOUNDATION - COMMERCIAL	SQ FT	$20.00	Total	
PER SQ FT OF FOUNDATION - MANUFACTURED	SQ FT	$10.00	Total	

Set Down Fees for manufactured structures or buildings and move-in buildings or structures will be **$800.00 per building or structure.**

BUILDING PERMIT FEE CALCULATIONS

Construction Valuation	Permit Fee
$1 to $500	$25.80
$501 to $2,000	$25.80 for the first $500 + $3.00 for each additional $100, or fraction thereof, to and including $2,000.
$2,001 to $25,000	$89.89 for the first $2,000 + $16.52 for each additional $1,000, or fraction thereof, to and including $25,000.
$25,001 to $50,000	$508.50 for the first $25,000 + $11.80 for each additional $1,000, or fraction thereof, to and including $50,000.
$50,001 to $100,000	$835.59 for the first $50,000 + $8.26 for each additional $1,000, or fraction thereof, to and including $100,000.
$100,001 to $500,000	$1,289.89 for the first $100,000 + $6.49 for each additional $1,000, or fraction thereof, to and including $500,000.
$500,001 to $1,000,000	$4,197.41 for the first $500,000 + $5.61 for each additional $1,000, or fraction thereof, to and including $1,000,000.
$1,000,001 and up	$7,279.84 for the first $1,000,000 + $4.13 for each additional $1,000, or fraction thereof.
Plan Check Fees	
Plan Review Check Fees	65% of Base Permit Fee
Fire Department Plan Review Fee	35% of Base Permit Fee
Other Fees	
Set Down Fees	An $800 set-down fee must be paid prior to moving manufactured structures, or modular structures or any buildings or structures into the Bellevue City jurisdiction.

DEVELOPMENT IMPACT FEE CALCULATIONS

Effective Date: March 31, 2021 – Bellevue Ordinance No. 2021-03

(see Exhibit "A" on page 3)

The Completion of this Application Does Not Constitute a Building Permit

I hereby acknowledge that I have filled in this application accurately to the best of my knowledge and that I agree to comply with all City Ordinances and State laws regulating building construction in the City of Bellevue, Idaho. I realize the information that I have stated hereon, and the plans and construction documentation submitted to the City of Bellevue, forms the basis for the issuance of the building permit. I further understand that approval of a building permit does not grant a waiver of any law, building ordinance or regulation. Any waiver or variance must be specifically described and approved by the proper authority. I further understand that no structure shall be used or occupied, until the Building Official for the City of Bellevue has issued a Certificate of Occupancy, and that doing so is unlawful.

WHERE NO WORK HAS BEEN STARTED AND/OR INSPECTED WITHIN 180 DAYS AFTER THE ISSUANCE OF A BUILDING PERMIT OR WHEN MORE THAN 180 DAYS LAPSES BETWEEN APPROVAL OF REQUIRED INSPECTIONS, SUCH PERMIT SHALL BE NULL AND VOID.

I agree in the event of a dispute concerning the interpretation or enforcement of the building permit in which the City of Bellevue is the prevailing party; I am responsible to pay the reasonable attorney fees, including fees on appeal and expenses of the City of Bellevue.

NOTE: Original Building Permits are valid for 365 days from the date issued; Building Permit Extensions are only valid for 180 days; A maximum of four (4) Extensions are allowed only.

X _____ Date: 06 / 16 / 2025

Signature of Contractor, Owner, or Authorized Agent

Homeowners Association, if applicable, may require additional approvals for the subject's property improvements.

☐ **Approved** ☐ **Denied** _____ **Date:** ____/____/____

Building Department Representative

EXHIBIT "A"

DEVELOPMENT IMPACT FEES

Effective Date: March 31, 2021 – Bellevue Ordinance No. 2021-03

Residential Development Impact Fee by Unit Size (in Square Feet)

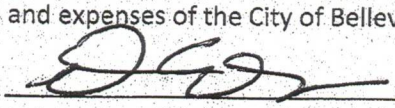
Housing Unit Size Department	Under 1,000 SF	1,001-1,600 SF	1,601-2,200 SF	2,201-2,800 SF	2,801 or more SF
Administration	$75.35	$150.70	$188.38	$207.21	$226.05
Buildings/Grounds	$163.32	$326.63	$408.29	$449.12	$489.95
Community Development	$183.99	$367.99	$459.99	$505.99	$551.98
Fire Services	$310.71	$621.42	$776.77	$854.45	$932.12
Library	$10.06	$20.12	$25.15	$27.66	$30.18
Marshal	$3.29	$6.57	$8.21	$9.04	$9.86
Parks	$30.14	$60.28	$75.35	$82.89	$90.42
Streets	$131.22	$262.44	$328.06	$360.86	$393.67
TOTAL IMPACT FEE/ UNIT	**$908**	**$1,816**	**$2,270**	**$2,497**	**$2,724**

Assumptions:

Under 1,000 SF= 1 person per unit
1,001 to 1,600 SF = 2 persons per unit
1,601 to 2,200 SF= 2.5 persons per unit
2,201 to 2,800 SF= 2.75 persons per unit
2,801 or more SF= 3 persons per unit

Commercial Development Impact Fee by Unit Size (in Square Feet)

DIF per 1,000 SF	Business/ Retail	Light Industrial	Office
Administration	$49.86	$41.63	$83.02
Buildings/Grounds	$108.07	$90.24	$179.93
Community Development	$121.75	$101.66	$202.71
Fire Services	$43.39	$36.23	$72.25
Library	$6.66	$5.56	$11.08
Marshal	$2.17	$1.82	$3.62
Parks	$19.94	$16.65	$33.21
Streets	$598.85	$500.04	$997.09
TOTAL IMPACT FEE/ per 1,000 SF	**$951 per 1,000 SF**	**$794 per 1,000 SF**	**$1,583 per 1,000 SF**

Water Meter Fee: RESO 2209
Fee for installation of the water meter is to be determined by the provider, and the market, at the time of purchase.
Water Meter Vault Fee:
New construction with a standard line size of ¾", a water meter vault may be purchased from the City of Bellevue. The city keeps standard sizes on hand for this purpose. If an applicant wishes to purchase their own vault, it must meet city standards.
Water Meter Vault ¾" - **$777.00**
Administrative fees:
Water Service Connection Fee for Service with Existing Water Line Tap. In situations where there is an existing water line tap for a service line, the property owner shall install the water service connection. Construction of the water service line, corporation stop, water meter vault, the backfilling of the trench, the replacement and compaction of any gravel or asphalt surfacing shall be done by and at sole expense of the applicant. All work shall be done in accordance with City ordinances and standards, including, without limitation, the Bellevue Water Ordinance and the Bellevue Street Standards Ordinance. At the time of filing the application for water service, the property owner shall pay an application fee of $50.00 to the City. The City shall inspect and approve the water line connection and meter vault installed by the Applicant service. The property owner shall pay the inspection fee of $50.00 prior to commencement of water service.
Inspection Fee. The fee for the City to inspect each water installation and sewer tap shall be $50.00 per inspection. Said fee shall be paid prior to final inspection approval.
Non-Standard Connection Fee. The fee for the City to process an application for the construction of a non-standard size water service line as set forth above shall be based on a time and material cost to the City as determined by the Water Superintendent. The tap of the public water main, the construction of the municipal water service line (to the point the private water service line begins), corporation stop, water meter vault, and water meter setter, the excavation and backfilling of the trench, the replacement and compaction of any gravel or asphalt surfacing shall be done either by the City or by the applicant's expense as determined by the Water Superintendent. All work shall be done in accordance with City ordinances and standards and the City shall inspect and approve same prior to commencement of water service.
Fire Line Permit Fee. The fee for the City to process an application for the construction of a fire line, to inspect said construction and to pressure test the line shall be $200.00. The tap of the public water main, the construction of the fire line, the backfilling of the trench, the replacement of any gravel or asphalt surfacing shall be done at the applicant's expense.
Administrative fees shall be paid prior to commencement of services.
Acknowledgement
*I hereby acknowledge that I have filled in this application to the best of my knowledge, and I agree to comply with City Ordinances and State Laws requiring building construction in the City of Bellevue, Idaho. I further understand that approval of a sewer and water service permit does not grant a waiver of any law, ordinance, or regulation. Any waiver or variance must be specifically described and approved by the proper authority. *I agree in the event of a dispute concerning the interpretation or enforcement of the water and sewer service permit in which the City of Bellevue is the prevailing party; I am responsible to pay the reasonable attorney fees, including fees on appeal and expenses of the City of Bellevue. Applicant's Signature:  Date: 06-11-2025
Official Use Only
Public Works Director Signature: _____ Date: _____

Water Capitalization Fee

The water capitalization fee shall be paid for all new connections and/or improvements connecting to the water system resulting in an increase in the use of the system.

Water capitalization fee – Res. 842-12-13-2007

Water line connection size with relating fee amount:

¾ inch - $2,750.00	1 inch - $4,889.00	1 ½ inch - $11,000.00
2 inch - $19,556.00	3 inch - $44,000.00	4 inch - $78,222.00

Sewer Capitalization Fee

The sewer capitalization fee shall be paid for all new connections and/or improvements connecting to the sewer system resulting in an increase in the use of the wastewater collection and treatment system.

Sewer capitalization fee – Res. 844-12-13-2007

The sewer capitalization fee is $3,330.00 per equivalent connection.

Equivalent user schedule-Bellevue Code – Title 8-2A-3-D

CLASSIFICATION	EQUIVALENT USER VALUE
Apartments, Duplex & Trailers in Trailer Courts (per each)	1.00
Assembly Hall or Lodge (no food prep / kitchen)	1.00
Bank	2.00
Bar or Tavern (no food prep / kitchen) (for each seat)	0.06
Barber & Beauty Shops (per chair)	0.50
Bowling Alley (per lane)	0.20
Café, with food prep / kitchen (per customer seating capacity) (min. assessment shall be two equivalent connections)	0.10
Car Washes, per stall (to be computed on individual basis)	XXX
Churches	2.00
Dentist, per practitioner	1.00
Department Store	2.00
Doctor's Office, per practitioner	1.00
Drug Store	2.00
Dwelling Unit (residential-house, duplex, mfg. home etc.)	1.00
Garage, Auto body and Maintenance Shops	1.00
Hospitals or Medical Clinics (with no beds)	3.00
(Additional for each bed)	0.50
Hotels, Motels, or Rooming House per room {Amended by Ord. 2016-02}	0.20
(Additional per unit with kitchens)	0.50
Industrial Users (to be determined on individual basis	XXX
Institution with permanent or temporary residents	2.00
Rest Homes, etc. (plus per resident)	0.30
Laundromat, up to 10 washers	4.00
(Each additional washer)	0.25
Laundry, Commercial (to be determined on individual basis)	XXX
Lodge or Private Club (with food prep / kitchen)	2.00
Mobile Home Park or Court, per unit	1.00
Office, up to 20 employees.	1.00

(For each additional employee)	0.03
Photo Develop Lab	2.00
Restaurant, per customer seating capacity (min. assessment shall be two equivalent connections)	0.10
Schools, per student	0.10
Service Station	1.50
Store or Business, up to 20 employees	1.00
(each Additional employee)	0.03
Supermarkets, Grocery, Convenience Store for ea. 1,500 sq. ft. gross floor area or fraction thereof	1.00
with butcher shop additional	1.50
with bakery additional	1.50
Tavern/Bar, (with food prep kitchen) customer seating capacity (minimum 2 equivalent connections)	0.10
Theater	2.00
Trailer court or park, first unit	1.00
(each additional space)	1.00
Veterinary	2.00
Light — Industrial uses (not otherwise listed above for each 3,000-sq. ft. of gross floor area)	1.05

Water Connection Fees – Res. 843-12-13-2007

Water Line Tap Fee: Fee for installation of only the water tap. This includes the tap to the water main, corporation stop, backfilling of trench, the replacement and compaction of any gravel or asphalt surfacing to be done by the Bellevue Public Works.

Connection size:	Fee:
3\4 inch	$1,974.00
1 inch	$2,022.00
1 ½ inch	$2,210.00
2 inch	$2,419.00

Water Meter Vault Fee: Fee for installation of only the water meter vault. This includes the installation of the water meter vault, backfilling of trench, the replacement and compaction of any gravel or asphalt surfacing to be done by the Bellevue Public Works.

Connection size:	Fee:
3\4 inch	$1,801.00
1 inch	$1,905.00
1 ½ inch	$3,596.00
2 inch	$3,812.00

Water Meter Vault and Tap Fee: Fee for installation of the water meter vault and tapping of the water main. This includes the installation of the water meter vault, water main tap, backfilling of trench, the replacement and compaction of any gravel or asphalt surfacing to be done by the Bellevue Public Works.

Connection size:	Fee:
3\4 inch	$3,364.00
1 inch	$3,517.00
1 ½ inch	$5,369.00
2 inch	$5,821.00

FOR OFFICE USE ONLY
PERMIT NO_____
DATE APPLIED_____

City of Bellevue
115 E Pine Street
P. O. Box 825 Bellevue, ID 83313
208-788-2128 Fax 208-788-2092

SEWER AND WATER SERVICE PERMIT APPLICATION

Application Fee is $50			
Project Information (To be filled by Applicant)			
Project Name: 600 6th St. Lot 1. Block 88			
Property Address: 600 6th St Lot 1 Block 88			
Owner: Derrick Ellis			
PO Box / Street Address: P.O. Box 221 Jerome ID 83338			
Phone #: 208-421-5103	email: deconstruction88@gmail.com		
Contractor: Tanner Park LLC			
Registration Number: RCE-42854			
PO Box/ Street Address: P.O Box 221 Jerome ID 83338			
Phone #: 208-421-5103	Fax #:		
email: deconstruction88@gmail.com			
Architect: —	Phone #: —		
email: —			
Engineer: EHM Engineers, Inc.	Phone #: 208-734-4888		
email: knild@ehmine.com			
Total of Fees (Administrative use only)			
Check #_____	**41815-20/30**	**Application Fee**	
	42005-20	**Water capitalization fee**	
Received by:	**42005-30**	**Sewer capitalization fee**	
_____	**42008-20**	**Water connection fee**	
	42011-20	**Water meter fee**	
Date: _____	**42006-20**	**Water meter vault fee**	
	41800-20/30	**Administrative fees**	
		Total fees	

Encroachment Application

City of Bellevue
115 E Pine Street
P.O Box 825 Bellevue, ID 83313
208-788-2128 Fax 208-788-2092

FOR OFFICE USE ONLY
PERMIT NO:_____
DATE APPLIED_____

Applicant Information	Encroachment Fee: $100.00
Business / Project Name:	609 N. 6th St.
Owner / Applicant Name:	Derrick Ellis
Phone #	208-421-5103 Email: deconstruction8@gmail.com
Location of Encroachment:	504 S. 5th st.
Mailing Address:	P.O. Box 221 Jerome ID 83338
Property Legal Description:	Lot 1 Block 88 Bellevue town site
Contractor Name/info:	Derrick Ellis 208-421-5103
Landscaping Company:	Gabriel florez 208-537-8390
Paving Company:	NA
Bona fide cost estimate:	

Type of Encroachment			
Public Utility	Driveway X	Pathway	Excavation

Description of work: we will be installing a graval driveway for each unit with storm drain & Dry well for water retention

Please attach a traffic control plan if there is work near traffic

Acknowledgement

*This application, and all required material in Bellevue Code 9-2-2 is due no less than 15 days prior to the next regularly scheduled meeting date of the Bellevue Common Council. This includes but is not limited to plans, specifications, drawings, engineering data and other information. Variances must be approved by Bellevue Common Council

The undersigned hereby agrees to comply with all terms and conditions of such Encroachment Permit as defined in Bellevue Code Title 9 Chapter 2 and to comply with all federal, state and City laws, rules and regulations with regard to all work done relative to such permit. In addition to such Encroachment Permit, the Applicant must apply for and receive Street Excavation Permit (s) for any work to be done on any city street or alley in accordance with the Bellevue Street Standards Ordinance.

A permit issued under this chapter shall expire if the work is not started within sixty (60) days or not completed within one year from the date of issuance, and a new permit shall be required before beginning or completing the work. A permit shall cover only contiguous construction, and the work shall be done as one continuous operation. An extension of no more than one year may be granted by the City upon written request of the applicant for good cause beyond control of applicant or his contractor(s).

ALL LEGAL, ENGINEERING AND OTHER CONSULTANT REVIEW FEES SHALL BE REIMBURSED AT 100% BY THE APPLICANT.

Applicant's Signature: _____ Date: 06-16-2025

Official Use Only

Public Works Director or
Street Superintendent Signature: _____ Date:

Description

The E7ICATNB is a compact and efficient recessed housing optimized and listed for EISA compliant tungsten-halogen, CFL and LED lamps as well as incandescent. Housing is suitable for residential or light commercial applications. For installation in insulated ceilings* and non-insulated ceilings with airtight code compliant construction. Use with a variety of trims and finishes to create different lighting effects or to match any decor. May be retrofit with compatible HALO LED lighting systems.

The E7ICATNB can save installation time. It is designed without a socket plate for use with socket supporting trims only. With these trims there is no need to spend time removing the socket plate and the fixed lamp position of socket supporting trims saves on lamp adjustment time too.

Catalog #		Type
Project		
Comments		Date
Prepared by		

Specification Features

Housing
- Single wall die-formed aluminum housing
- Housing features a precision rolled interlocking collar which maintains aperture geometry for greater assurance of installation results
- Integral gasket for code-required gasket between fixture and finished ceiling - seals aperture without need for additional caulk
- May be removed from the plaster frame to provide access to junction box

Plaster Frame
- Galvanized steel frame. Housing adjusts in plaster frame to accommodate up to 3/8" - 1" ceiling thickness.
- (2) Regressed locking screws for securing hanger bars
- Integral Air-Tite gasket seals housing and meets code-required gasket between fixture and finished ceiling

Includes:
Bar Hangers

All Nail!™
- Integral precisely positioned nail for engineered and natural framing
- Mini-foot leveling flange
- Integral T-Grid Clip, no accessory clips required

q-Channel bars with Pass-N-Thru™
- Unique inverted "q" interlocking channel for rigidity and stability
- Pass-N-Thru™ feature allows bars to cross-over for tool-less shortening in tight spaces

Hinged junction box w/ Slide-N-Side™
- (3) Slide-N-Side™ Non-Metallic (NM) wire traps, allow wiring outside the box
- For 14-2, 14-3, 12-2, 12-3 U.S. and 14-2, 14-3, 12-2 Canadian
- (4) ½" conduit pry-outs
- Hinged door for easy access
- Box is repositionable 90° on frame to avoid obstructions

Quick Connect™
- (3) Push wire nuts included, for speed & reliability
- Clear caps for wire connection visibility

cULus Listed
- Compact 16 in³ volume
- Listed for max. (10) No. 12 AWG or (14) No. 14 AWG 90° C splice conductors in box

Air-Tite™ code compliant
- Certified under ASTM E283
- Exclusive gasket seals aperture, frame & ceiling
- No additional caulk required

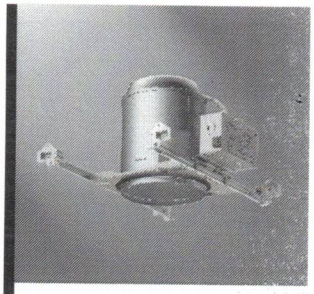
Socket
- Porcelain socket with nickel plated brass screw shell
- Snap-in socket speeds installation and attaches directly to the trim for consistent lamp positioning

Thermal Protector
- Self resetting thermal protector deactivates fixture if overheating occurs due to improper lamping or misapplied insulation.

Trims
- Halo Fit-All concept offers multiple trim options in a variety of design styles, and functional beam distributions to control beam angle and lumen delivery in accommodating various lamp types including Halogen, CFL and LED

Compliance
- cULus Listed 1598 Luminaire
- cULus Listed Damp Location
- cULus Listed for Wet Location, covered ceiling, with select trims
- cULus Listed for direct contact with insulation and combustible material*
- Air-Tite code compliant. Certified under ASTM E283; not exceeding 2.0 cfm (0.944 L/s) air leakage rate tested at a 1.57 psf (75 Pa) pressure differential
- RoHS compliant
- Options to meet Trade Agreements Act requirements

*Not to be used in direct contact with spray foam insulation (Consult NEMA LSD57-2013).



E7ICATNB

6" IC, Air-Tite, New Construction Housing, No Bracket

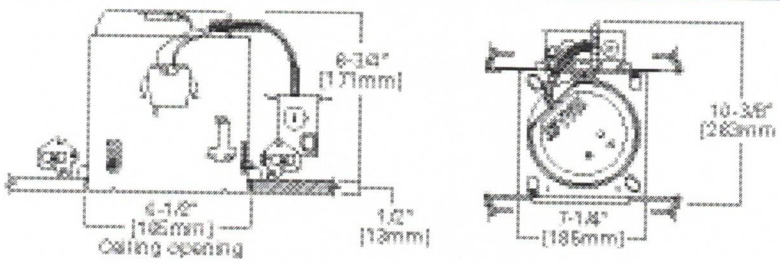
E26 Screw base housing

FOR USE IN INSULATED CEILINGS

FOR DIRECT CONTACT WITH INSULATION*

Special Features
All-Nail!™ bar hangers
q-Channel bars with Pass-N-Thru™
Hinged J-Box with Slide-N-Side™
Quick Connect™ push wire nuts
Air-Tite™ code compliant

Dimensions



COOPER Lighting Solutions

Ordering Information

Sample Number: E7ICATNB 6125WB
Order housing, trim and lamp (by others) separately for a complete luminaire.

Domestic Preferences[1]

[Blank] = Standard
TAA = Trade Agreements Act

Housing

E7ICATNB = 6" insulated ceiling, airtight recessed housing, new construction, no socket bracket, 120V

Trims

Reflectors

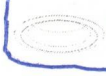
30 Reflector, Self-flange
OD: 7-1/4" [184mm]
30HAT=Haze Reflector, White Trim
30RGAT=Residential Gold Reflector, White Trim
30CAT=Clear Specular Reflector, White Trim

30SBAT Reflector, Self-flange
OD: 7-1/4" [184mm]
30SBAT=Black Specular Reflector, Self-flange

404 Specular Reflector
OD: 7-1/4" [184mm]
404C=Clear Specular Reflector, White Trim
404H=Haze Reflector, White Trim
404SN=Satin Nickel Reflector and Trim
404TBZ=Tuscan Bronze Reflector and Trim

4041 White Reflector, Self-flange
OD: 7-1/4" [184mm]
4041P=White Reflector and Trim

6120 Full Cone Reflector, Self-flange
OD: 7-3/4" [197mm]
6120WH=White Reflector and Trim
6120SN=Satin Nickel Reflector and Trim
6120TBZ=Tuscan Bronze Reflector and Trim



6121 Shallow Full Cone Reflector, Self-flange
OD: 7-3/4" [197mm]
6121WH=White Reflector and Trim

Baffles

30 Baffle, Self-flange
OD: 7-1/4" [184mm]
30WAT=White Baffle, Reflector and Trim
30WATH=White Baffle, Clear Reflector and White Trim
30PAT=Black Baffle, Clear Reflector and White Trim
30SNAT=Satin Nickel Baffle, Reflector and Trim
30TBZAT=Tuscan Bronze Baffle, Reflector and Trim

6125 Full Cone Baffle, Self-flange
OD: 7-3/4" [197mm]
6125WB=White Baffle and Trim
6125BB=Black Baffle, White Trim
6125BKBB=Black Baffle and Trim

Adjustable - Eyeballs & Gimbals

74 PAR30 Eyeball 30° Tilt, Self-flange
OD: 8" [203mm]
74P=White Eyeball and Trim

76 PAR38 Gimbal 30° Tilt, Self-flange
OD: 8" [203mm]
76P=White Gimbal and Trim

78 BR/PAR30 Eyeball 30° Tilt, Self-flange
OD: 8" [203mm]
78P=White Eyeball and Trim
78PAT=White Eyeball and Trim, Air-Tite
78SN=Satin Nickel Eyeball and Trim
78TBZ=Tuscan Bronze Eyeball and Trim

376 PAR30 Regressed Gimbal 30° Tilt, Self-flange
OD: 7-1/4" [184mm]
376W=White Baffle and Trim
376P=Black Baffle and White Trim

378 PAR30 Regressed Gimbal with Splay 25° Tilt, Self-flange
OD: 7-1/4" [184mm]
378P=White Splay and Trim
378=Clear Specular Splay and White Trim

420 BR/PAR30 Regressed Eyeball 30° Tilt, Self-flange
OD: 7-1/4" [184mm]
420W=White Eyeball, Baffle and Trim
420P=White Eyeball, Black Baffle, White Trim

478 PAR38 Adjustable Regressed Gimbal with Splay 25° Tilt, Self-flange
OD: 7-1/4" [184mm]
478P=White Splay and Trim

6130 BR/PAR30 Eyeball 35° Tilt, Self-flange
OD: 7-3/4" [197mm]
6130WH=White Eyeball and Trim

6170 PAR38 Gimbal 25° Tilt, Self-flange
OD: 7-3/4" [197mm]
6170WH=White Gimbal and Trim
6170BK=Black Gimbal and Trim
6170SN=Satin Nickel Gimbal and Trim
6170TBZ=Tuscan Bronze Gimbal and Trim

6215 PAR30 Double Gimbal 35°-50° Tilt, Self-flange
OD: 7-3/4" [197mm]
6215WH=White Gimbal and Trim
6215BK=Black Gimbal and Trim
6215SN=Satin Nickel Gimbal and Trim
6215TBZ=Tuscan Bronze Gimbal and Trim

6222 Regressed PAR30 Adjustable 45° Tilt, Self-flange
OD: 7-3/4" [197mm]
6222WB=White Baffle and Trim
6222BB=Black Baffle and Trim
6222SC=Specular Clear Reflector, White Trim
6222H=Haze Reflector, White Trim

Lenses & Wet Location Showerlights

170 Albalite Lens with Reflector
OD: 8" [203mm]
170P=Frosted Albalite Glass Lens, White Trim
170PS=Frosted Albalite Glass Lens, White Plastic Trim, Showerlight, Air-Tite

171 Drop Opal Lens with Reflector
OD: 8" [203mm]
171P=Drop Opal Glass Lens, White Trim
171PS=Drop Opal Glass Lens, White Plastic Trim, Showerlight, Air-Tite

172 Dome Lens with Reflector
OD: 7-3/4" [197mm]
172PS=Frosted Glass Dome, White Plastic Trim
172SNS=Frosted Glass Dome, Satin Nickel Plastic Trim
172TBZS=Frosted Glass Dome, Tuscan Bronze Plastic Trim

173 Fresnel Lens with Reflector
OD: 8" [203mm]
173P=Fresnel Glass Lens, White Trim
173PS=Fresnel Glass Lens, White Plastic Trim, Showerlight, Air-Tite

6145 Open Wet Location, Shallow Reflector, Self-flange - Showerlight*
OD: 7-3/4" [197mm]
6145WH=White Reflector and Trim
6145SN=Satin Nickel Reflector and Trim
6145TBZ=Tuscan Bronze Reflector and Trim

6146 Open Wet Location, Full Reflector, Self-flange - Showerlight*
OD: 7-3/4" [197mm]
6146WH=White Reflector and Trim
6146SN=Satin Nickel Reflector and Trim
6146TBZ=Tuscan Bronze Reflector and Trim

6150 Frost Dome Glass Lens, Self-flange
OD: 7-3/4" [197mm]
6150WH=Frost Dome Glass Lens with Reflector, White Plastic Trim
6150SN=Frost Dome Glass Lens with Reflector, Satin Nickel Plastic Trim
6150TBZ=Frost Dome Glass Lens with Reflector, Tuscan Bronze Plastic Trim

6162 Drop Opal Plastic Lens, Self-flange - Showerlight
OD: 7-3/4" [197mm]
6162WH=Drop Opal Plastic Lens with Reflector, White Plastic Trim

6230 Squircle Frost Glass Lens, Metal Trim - Showerlight
OD: 7-1/4" [183mm]
6230AH=Frost Glass Lens, Aluminum Haze Squircle Trim
6230PN=Frost Glass Lens, Polished Nickel Squircle Trim
6230SN=Frost Glass Lens, Satin Nickel Squircle Trim
6230TBZ=Frost Glass Lens, Tuscan Bronze Squircle Trim

6255 Soft Square, Frost Curve Glass Lens, Self-flange - Showerlight
OD: 7-1/4" [183mm]
6255WH=Frost Curve Glass Lens with Reflector, White Plastic Trim
6255SN=Frost Curve Glass Lens with Reflector, Satin Nickel Plastic Trim
6255TBZ=Frost Curve Glass Lens with Reflector, Tuscan Bronze Plastic Trim

Open, Splay & Wall Wash

300 Open Trim with Fixed Socket Bracket, Self-flange
OD: 7-1/4" [183mm]
300P=Self-flange with White Open Trim
300SN=Self-flange with Satin Nickel Open Trim
300TBZ=Self-flange with Tuscan Bronze Open Trim

327 White Splay Trim with Fixed Socket Bracket, Self-flange
OD: 7-3/4" [197mm]
327P=White Splay Trim with Socket Bracket

430 Wall Wash with Baffle & Full Reflector
OD: 7-1/4" [183mm]
430W=White Baffle, with Upper Reflector, White Trim
430P=Black Baffle, with Upper Reflector, White Trim

Notes: (1) Only product configurations with this designated prefix are built to be compliant with the Trade Agreements Act of 1979 (TAA). Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

*Outdoor rated lamp only (purchase separately)

COOPER Lighting Solutions

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

c UL us
LISTED
For use in Halo listed housings.

CLASSIFIED
c UL us
Select trims are classified for use in others housings.
www.cooperlighting.com

A New Duplex at:
608 N. 6th St. Lot 3 Block 88
Bellevue, Idaho

Structural Notes

Design Criteria

Structural design in accordance with International Residential Code, 2018 edition.

Design Loads:

Roof Snow Load	80 psf
Roof Dead Load	12 psf
Roof Live Load	40 psf
Roof Dead Load	12 psf
Wind	105 mph - Exposure C
Seismic Design Category	D
SDS	0.408g

Soil Bearing Capacity: 1500 psf (assumed)

Foundation

Footings shall be placed on undisturbed existing soil or compacted granular back fill compacted to 98% of the maximum density of a standard proctor at optimum moisture.

Contractor shall notify geotechnical engineer if clay soils or groundwater are encountered during excavation.

For bearing partially on soil and partially on rock, provide minimum 6" sand cushion between rock and bottom of footing.

Footing excavations shall be clean and free of loose debris, standing water, or uncompacted material at time of concrete placement.

Backfill against foundation walls or exterior walls below grade shall not be placed until the tops of the walls are restrained by the completed floor systems.

Concrete: 2500 psi in 28 days
5½ bag min. cement /c.y.

Reinforcing Steel: Conform to the requirements of ASTM A615
Grade 60 (Fy = 60 ksi) deformed bars for #4 and larger bars.
Grade 40 (Fy = 40 ksi) deformed bars permitted for #3 and smaller u.n.o.
Minimum coverage: 3" cast against earth
1.5" formed
Minimum lap splices: no. 4 -- 22" u.n.o.
no. 5 -- 28" u.n.o.
other sizes per schedule

All reinforcing shall be tied or otherwise held in place to prevent movement during concrete placement.

Anchor Bolts: 1/2" Diameter ASTM A307 @ Exterior
1/2" Diameter ASTM A307 @ Interior Pony Walls
Except as otherwise noted on Plan or Shearwall Schedule

A.B. spacing:
Exterior Walls: 4'-0" o.c.
Interior Pony Walls: 6'-0" o.c.
Except as otherwise noted on Plan or Shearwall Schedule

Provide additional anchor bolts not more than 12" and not less than 4 1/2" from the ends of all sill plates.
Provide minimum (2) anchor bolts per sill plate or wall segment.

Anchor Bolts for Holdowns: sizes and minimum embedments as shown on plans or per manufacturer's specifications.

Unless noted otherwise, embedded bolts shall be placed prior to concrete placement, and shall be held in place with templates or other suitable means to prevent movement during concrete placement.

Structural Framing Lumber and Plywood Sheathing

Solid Sawn Lumber:
2" - 4" thick lumber:
2"- 4" wide: Standard & Better Douglas Fir - Larch, except Stud grade for studs less than 10'
5" and wider: No. 2 and Better Douglas Fir - Larch
5" and thicker lumber: No. 1 Douglas Fir - Larch

Structural Glued Laminated Timber (Glulam):
Fb = 2400 psi -- Balanced for continuous members
Fv = 190 psi
E = 1.8E+6 psi
Fc (perpendicular to grain) = 650 psi
Fc (parallel to grain) = 1650 psi

Laminated Veneer Lumber (LVL):
Fb = 2600 psi
Fv = 285 psi
E = 1.9E+6 psi
Fc (perpendicular to grain, parallel to glue line) = 750 psi
Fc (parallel to grain) = 2310 psi

Parallel Strand Lumber (PSL):
Fb = 2900 psi
Fv = 290 psi
E = 2.0E+6 psi
Fc (perpendicular to grain, parallel to wide face of strands) = 650 psi
Fc (parallel to grain) = 2900 psi

Structural Framing Lumber and Plywood Sheathing Cont.

Laminated Strand Lumber (LSL):
Fb = 2250 psi (1700 psi for 1.3E material)
Fv = 285 psi
E = 1.5E+6 psi (1.3E+6 psi for 1.3E material)
Fc (perpendicular to grain, parallel to wide face of strands) = 650 psi
Fc (parallel to grain) = 1950 psi (1400 psi for 1.3E material)

Manufactured Plywood Web Joists:
Rim joist shall be solid, minimum 1 1/2" thick lumber or minimum 1 1/4" thick LSL manufactured rim joist material.
Use squash blocks or continuous blocking between joists at all interior walls that support load-bearing walls above.
Use squash blocks below point loads.
Web stiffeners may be required at interior bearing points for continuous and cantilevered joists, see plan. Web stiffeners may be required at joists supported by joist hangers, see hanger schedule and manufacturer's specifications.
All installation per manufacturer's specifications.

Roof Sheathing: 1/2" (nominal) CD-X or OSB, minimum APA 24/0 span rating per PRP-108 and PS-2
Minimum panel width = 24"
Minimum panel length = 3 spans
10d nails at 6" o.c. edges
12" o.c. field

Floor Sheathing: 3/4" Tongue and Groove Sheathing -- 24 oc span rating or better.
Minimum panel width = 24"
Minimum panel length = 3 spans
Glued and screwed
Screws at 6" o.c. edges
12" o.c. field

Exterior Sheathing Application:
8d nails at 6" o.c. @ panel edges and 12" o.c. field at all exterior walls typ.

Provide 2" nominal (min.) blocking between studs at all sheathing panel edges - sheathing must be nailed at all four edges at all shearwalls.
Stud spacing at shear walls shall be maximum 16" o.c. unless otherwise noted.
Where sheathing panels are required on both sides of a wall, and nail spacing is less than 6" o.c., panel joints shall be offset to fall on different framing members, or framing shall be 3" nominal minimum thickness and nails on each side shall be staggered.

All framing nailing shall meet the minimum requirements of IBC Table 2304.10.1.

All nails specified by pennyweight in these notes, on the plans, and in all schedules are common nails unless otherwise noted.

All framing hardware shall be fully nailed or bolted.

Bolts: ASTM A307 unless noted otherwise.
Provide washers at all bolt heads and nuts.

Deferred Submittals

Roof Truss Shop drawings shall be submitted to Engineer for review & approval, prior to fabrication of truss package.

Drawing Index

T-1	Title Sheet
C-1	Plot Plan
A-1	Foundation Plan and Details
A-2	Main Level Floor Plan
A-2.1	Second Level Floor Framing Plan
A-2.2	Second Level Floor Plan
A-3	Building Elevations
A-4	Building Section
A-5	Roof Framing Plan
A-5.1	Framing Details

ENERGY CODE COMPLIANCE:

THIS BUILDING IS TO BE CONSTRUCTED USING THE PRESCRIPTIVE METHOD, REFER TO 2018 IRC FOR WALLS, CEILING AND CRAWLSPACE EXTERIOR WALL OR FLOOR R VALUE REQUIREMENTS, AND WINDOW U VALUES.

R-21 WALLS
R-30 CEILINGS

SQUARE FOOTAGES

MAIN LEVEL CONDITIONED SPACE	1,336 SF
MAIN LEVEL GARAGE, COVERED PORCH/PATIO UNCONDITIONED SPACE	847 SF
TOTAL MAIN LEVEL AREA	2183 SF
SECOND LEVEL CONDITIONED SPACE	1,834 SF
SECOND LEVEL COVERED DECK UNCONDITIONED SPACE	194 SF
TOTAL SECOND LEVEL AREA	2019 SF
TOTAL AREA	4202 SF

GENERAL NOTES:

1. ALL WORK SHALL MEET STATE, LOCAL CODES, ORDINANCES, & 2018 I.R.C.
2. ALL MECHANICAL, ELECTRICAL, & PLUMBING WORK SHALL MEET ALL APPLICABLE STATE & LOCAL CODES.
3. ALL UTILITIES SHALL BE PROPERLY IDENTIFIED & LOCATED BEFORE WORK BEGINS ON PROJECT.
4. CONTRACTOR SHALL VERIFY ALL CONDITIONS & DIMENSIONS AT THE JOB SITE & NOTIFY THE DESIGNER OF ANY DIMENSIONAL ERRORS, OMISSIONS, OR DISCREPANCIES BEFORE BEGINNING OR FABRICATING ANY WORK.
5. DO NOT SCALE DRAWINGS.

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
Engineers / Surveyors / Planners
621 North College Road, Suite 100 Twin Falls, Idaho 83301
p (208)-734-4888 fax (208)-734-6049 web: ehminc.com

Title Sheet
For:
Ellis Duplex
Bellevue, Idaho

REVISIONS:

PROFESSIONAL ENGINEER LICENSED 17866 12/1/22 STATE OF IDAHO KAHLER NIELD

APPROVED	
DESIGN	
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

T-1

Site Plan For 600 N 6th Street Bellevue, Idaho 2023

GENERAL NOTES:

1. CONTRACTOR SHALL HAVE A CURRENT SET OF CONSTRUCTION PLANS STAMPED BY THE ENGINEER WITH AN APPROVAL STAMP BY THE CITY AT THE WORKSITE.
2. ALL CONSTRUCTION SHALL CONFORM TO THE 2017 IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION, THE CITY OF BELLEVUE REVISIONS TO THE 2017 ISPWC AND ALL OTHER LOCAL, STATE AND FEDERAL AGENCIES WHICH ARE APPLICABLE UNLESS OTHERWISE SHOWN.
3. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM RUNOFF AND OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SITE CONSTRUCTION. THE CONTRACTOR, AND EACH SUBCONTRACTOR, SHALL BE RESPONSIBLE FOR THE CLEAN-UP AND REMOVAL FROM THE JOB-SITE ANY TRASH OR EXCESS MATERIAL CREATED BY THE PERFORMANCE OF THEIR WORK. SUCH MATERIAL SHALL BE PLACED IN A DUMPSTER OR SIMILAR DEVICE PROVIDED BY THE CONTRACTOR OR TRANSPORTED FROM THE JOB-SITE.
4. RECORDED AND/OR FILED SURVEY MONUMENTS EXIST WITHIN THE LIMITS OF THIS PROJECT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND/OR HAVE ANY MONUMENTS DISTURBED, DESTROYED OR REMOVED DURING CONSTRUCTION, REESTABLISHED AND RE-MONUMENTED BY A PROFESSIONAL LAND SURVEYOR IN ACCORDANCE WITH IDAPA 55-1613. THE COST TO REESTABLISH SURVEY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE THE CONTRACTORS RESPONSIBILITY.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND INGRESS AND EGRESS TO SAID CONSTRUCTION.
6. CONTRACTOR SHALL REMOVE AND SORT ALL ON-SITE EXCAVATED NATIVE MATERIAL AND USE SUITABLE MATERIAL WHERE DESIGNATED ON THE CONSTRUCTION PLANS AS REQUIRING FILL MATERIAL. FILL SHALL BE PLACED AND COMPACTED BY METHODS APPROVED BY THE CITY OF BELLEVUE AND APPROVED BY THE DESIGN ENGINEER. ALL STRIPPINGS NOT SUITABLE FOR FILL MATERIAL SHALL BE USED AS DIRECTED BY THE ENGINEER OR DISCARDED OFF-SITE AT THE CONTRACTOR'S EXPENSE.
7. EXISTING UTILITIES ARE LOCATED ON THE PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
8. POWER/LIGHT POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHALL BE VERIFIED PRIOR TO COMMENCING WORK.
9. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CALL "DIGLINE" 48 HOURS PRIOR TO COMMENCING WORK.
10. MODIFICATIONS OF EXISTING UTILITIES SHALL CONFORM TO ALL APPLICABLE STANDARDS AND SPECIFICATIONS.
11. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
12. ALL CHANGES REQUIRE APPROVAL BY THE PROJECT ENGINEER AND THE CITY ENGINEER. THE ENGINEER TAKES NO RESPONSIBILITY FOR ANY DEVIATIONS FROM THESE PLANS UNLESS AUTHORIZED, IN WRITING, BY THE ENGINEER.
13. IDAHO CODE 39-118 REQUIRES IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY (IDEQ) APPROVAL PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE COMPLIANCE.
14. PIPE TRENCHING AND BEDDING AND FIRE HYDRANT INSTALLATIONS SHALL COMPLY WITH THE AFOREMENTIONED STANDARDS.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FILL OUT AND SUBMIT A NOTICE OF INTENT (NOI) TO EPA AND HAVE A COPY OF THE POLLUTION PREVENTION PLAN AVAILABLE AT THE JOBSITE PRIOR TO CONSTRUCTION. SEE WEBSITE https://www.epa.gov/npdes/stormwater-discharges-construction-activities. QUESTIONS REGARDING THIS REQUIREMENT MAY BE REFERRED TO MISHA VAKOC OF EPA AT: (206) 553-6650. CONTRACTOR TO SUBMIT COPIES OF DOCUMENTS TO THE CITY OF TWIN FALLS.
16. DEVELOPER WILL PROVIDE ONE SET OF CONSTRUCTION STAKES ONLY. ANY SUBSEQUENT STAKING & COSTS INCURRED WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
17. TRAFFIC CONTROL & SIGNAGE FOR SUCH SHALL BE INCIDENTAL TO THE CONTRACT AND BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE PROJECT ENGINEER PRIOR TO COMMENCING WORK.

LEGEND:

PROPERTY BOUNDARY
ROADWAY CENTERLINE
SETBACK
EASEMENT
WATER LINE — 8"W —
SANITARY SEWER LINE — 8"SS —
STORM DRAIN LINE — 6"SD —
PRESSURE IRRIGATION LINE — 4"PI —
GRAVITY IRRIGATION LINE — 24"IRR —
TELEPHONE LINE — T —
OVERHEAD POWER LINE — OHP —
GAS LINE — G —
STANDARD CURB & GUTTER
RELEASE CURB & GUTTER
STANDUP CURB
SIDEWALK
EDGE OF ASPHALT — EA —
GRADE BREAK
CONTOUR LINE — 5108 —
SEWER SERVICE
WATER SERVICE
IRRIGATION SERVICE
CLEAN-OUT — CO
BLOW-OFF ASSEMBLY — BO
AIR-INJECTION ASSEMBLY — AI
FIRE HYDRANT
SEWER MANHOLE — S
STORM DRAIN MANHOLE — SD
IRRIGATION BOX — IRR
CATCH BASIN
CURB INLET
VALVE
GAS METER
TELEPHONE RISER
WELL
POWER POLE
GUY ANCHOR
SIGN
SITE LIGHTING
MAILBOX
PROPOSED GRADE — 5193.07TC, 3692.59ng
EXISTING GRADE

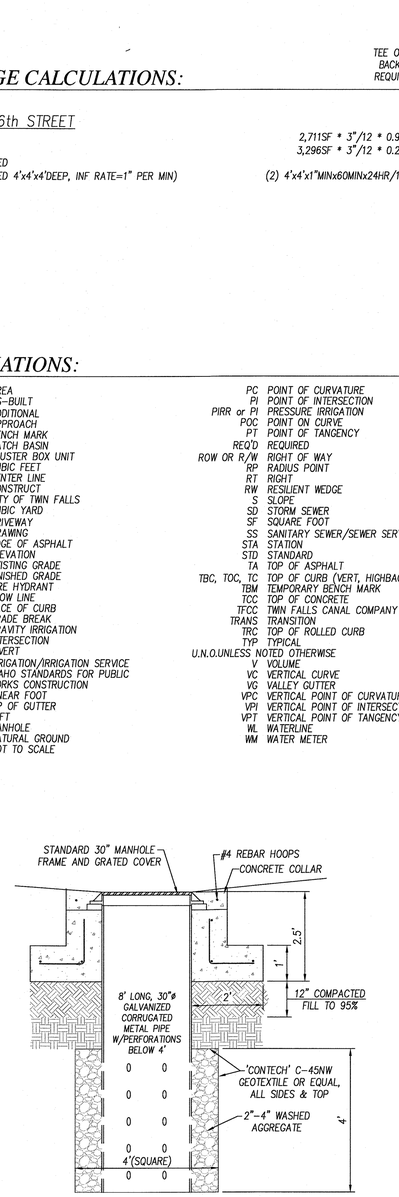
DRAINAGE CALCULATIONS:

600 NORTH 6th STREET

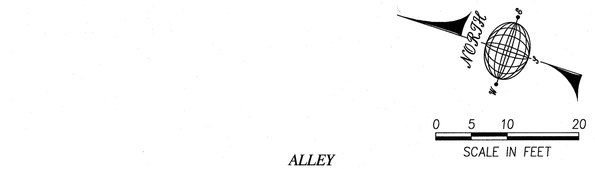
IMPERVIOUS	2,711SF * 3"/12 * 0.95 =	644cf
LANDSCAPING	3,296SF * 3"/12 * 0.25 =	206cf
RETENTION REQUIRED	=	850cf
RETENTION PROVIDED 4'x4'x4'DEEP, INF RATE=1" PER MIN)	(2) 4'x4'x1"MINx60MINx24HR/12 =	3,840cf

ABBREVIATIONS:

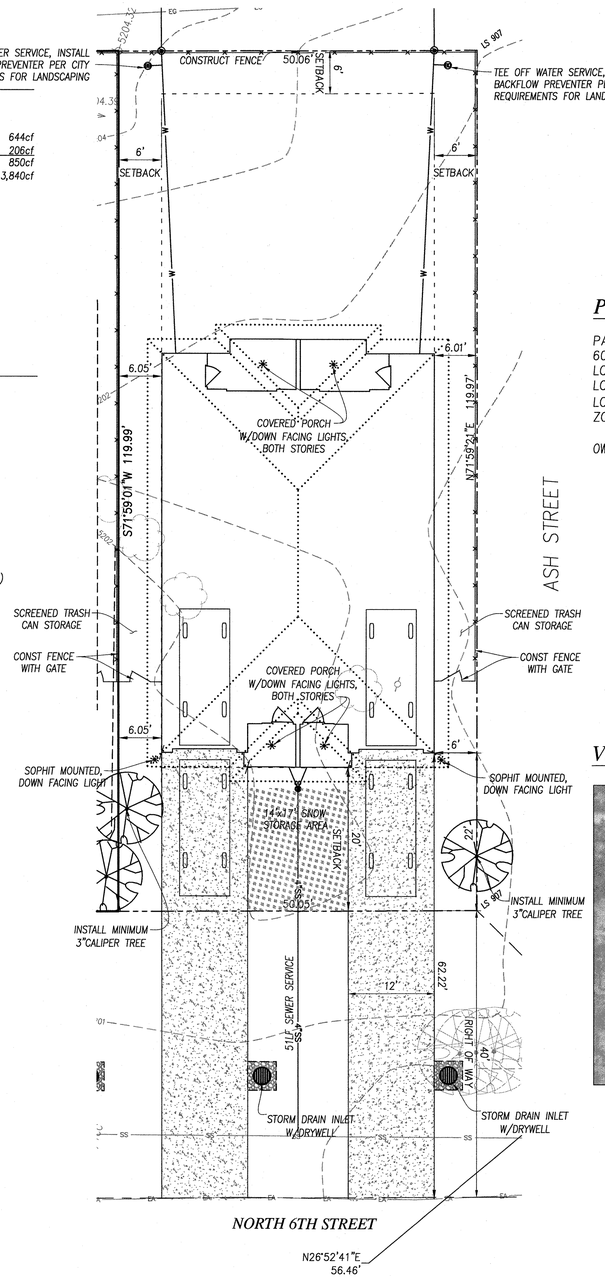
A	AREA	PC	POINT OF CURVATURE
AB	AS-BUILT	PI	POINT OF INTERSECTION
ADD'L	ADDITIONAL	PIRR or PI	PRESSURE IRRIGATION
APPR. A.A	APPROACH	POC	POINT ON CURVE
BM	BENCH MARK	PT	POINT OF TANGENCY
CB	CATCH BASIN	REQ'D	REQUIRED
CBU	CLUSTER BOX UNIT	ROW OR R/W	RIGHT OF WAY
CF	CUBIC FEET	RP	RADIUS POINT
CL or ℄	CENTER LINE	RT	RIGHT
CONST	CONSTRUCT	RW	RESILIENT WEDGE
COTF	CITY OF TWIN FALLS	S	SLOPE
CY	CUBIC YARD	SD	STORM SEWER
DW or D/W	DRIVEWAY	SF	SQUARE FOOT
DWG	DRAWING	SS	SANITARY SEWER/SEWER SERVICE
EA or EOA	EDGE OF ASPHALT	STA	STATION
EL or ELEV	ELEVATION	STD	STANDARD
EG	EXISTING GRADE	TA	TOP OF ASPHALT
FG	FINISHED GRADE	TBC, TOC, TC	TOP OF CURB (VERT, HIGHBACK, STD)
FHYD or FH	FIRE HYDRANT	TBM	TEMPORARY BENCH MARK
FL	FLOW LINE	TOC	TOP OF CONCRETE
FOC	FACE OF CURB	TFCC	TWIN FALLS CANAL COMPANY
GB	GRADE BREAK	TRANS	TRANSITION
GI or GIRR	GRAVITY IRRIGATION	TRC	TOP OF ROLLED CURB
INT	INTERSECTION	TYP	TYPICAL
INV	INVERT	U.N.O.	UNLESS NOTED OTHERWISE
IRR	IRRIGATION/IRRIGATION SERVICE	V	VOLUME
ISPWC	IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION	VC	VERTICAL CURVE
		VG	VALLEY GUTTER
LF	LINEAR FOOT	VPC	VERTICAL POINT OF CURVATURE
LG	LIP OF GUTTER	VPI	VERTICAL POINT OF INTERSECTION
LT	LEFT	VPT	VERTICAL POINT OF TANGENCY
MH	MANHOLE	WL	WATERLINE
NG	NATURAL GROUND	WM	WATER METER
NTS	NOT TO SCALE		



STORM DRAIN INLET WITH DRYWELL
nts



ALLEY



PROJECT INFORMATION:

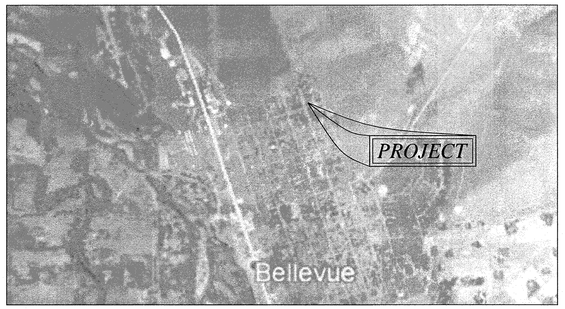
PARCEL NUMBER: RPB00000880010
600 NORTH 6TH STREET, BELLEVUE, ID 83313
LOT 1, BLOCK 88, BELLEVUE TOWNSITE
LOCATED IN A PORTION OF SECTION 25, TOWNSHIP 2 NORTH, RANGE 18 EAST
LOT SIZE = 6,007SF / 0.138 ACRES
ZONING: GENERAL RESIDENTIAL

OWNER/DEVELOPER: DAVID ELLIS/DERRICK ELLIS
PO BOX 221
JEROME, ID 83338

ENGINEER: EHM ENGINEERS, INC.
621 N. COLLEGE RD., STE 100
TWIN FALLS, ID 83301
(208)734-4888

VICINITY SKETCH:

n.t.s.



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621 North College Road, Suite 100 Twin Falls, Idaho 83301
p (208)-734-4888 fax (208)-734-6049 web: ehminc.com

Site Layout for 600 N 6TH STREET

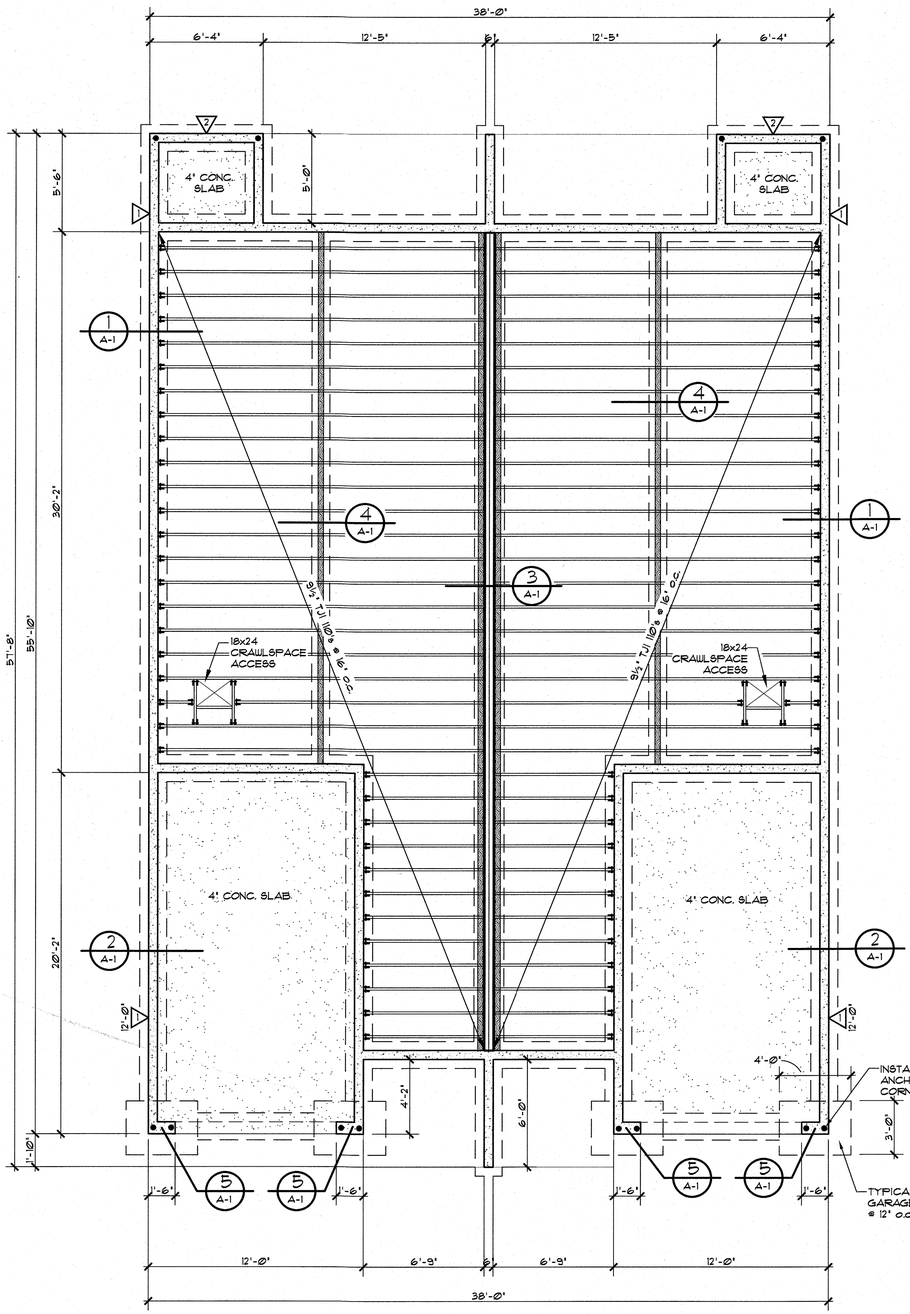
REVISIONS

DO NOT SCALE DRAWINGS
CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE JOB SITE AND NOTIFY THE ENGINEER OF ANY DIMENSIONAL ERRORS, OMISSIONS, OR DISCREPANCIES BEFORE BEGINNING OR FABRICATING ANY WORK.

STAMP

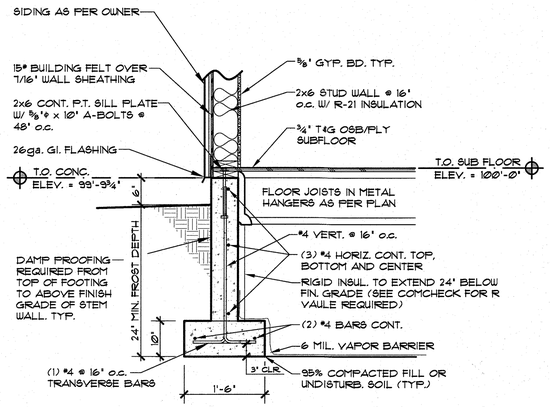
PROFESSIONAL ENGINEER LICENSED 17866 6/11/25 STATE OF IDAHO KAHLER WIELD

APPROVED	–
DESIGN	K. NIELD
DRAWN	J. SKEEN
DATE	6/5/2025
SCALE	AS SHOWN
DWG	6603-22 CIVIL COPY.COPY
SHEET	C-1



FOUNDATION PLAN

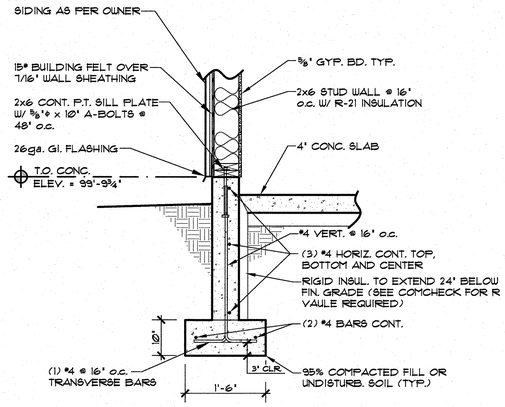
SCALE: 1/4" = 1'-0"



TYPICAL STEM WALL DETAIL

SCALE: ¾" = 1'-0"

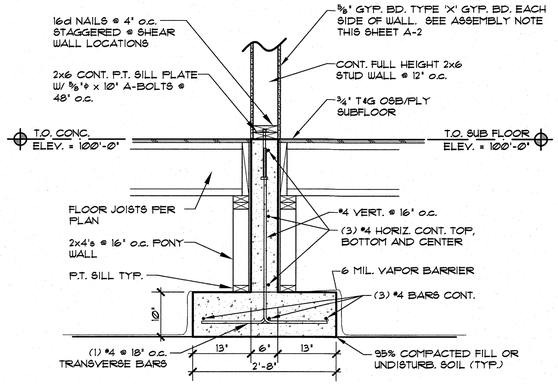
1 A-1



TYPICAL STEM WALL DETAIL

SCALE: ¾" = 1'-0"

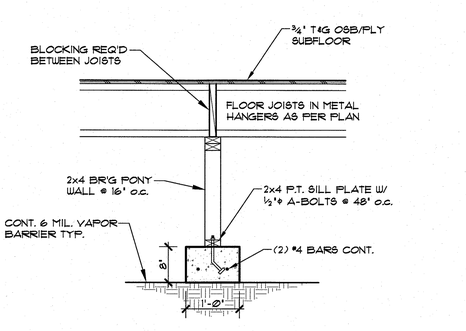
2 A-1



INTERIOR STEM WALL @ FIREWALL

SCALE: ¾" = 1'-0"

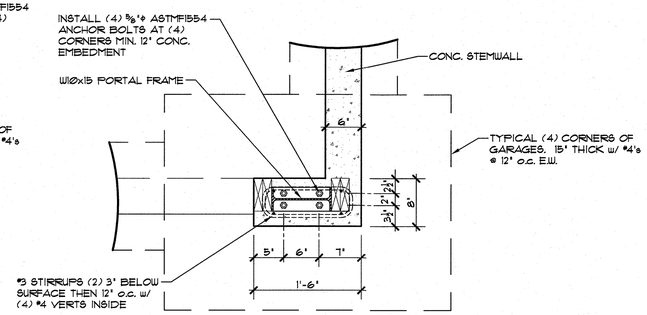
3 A-1



2x4 PONY WALL FOOT'G DETAIL

SCALE: ¾" = 1'-0"

4 A-1



FOUNDATION DETAIL @ PORTAL FRAME

SCALE: 1" = 1'-0"

5 A-1

SHEAR WALL SCHEDULE

1. 7/16" OSB/PLY APPLIED TO ONE SIDE OF WALL PERPENDICULAR TO FRAMING, WITH 8d (2½"x0.131") NAILS @ 6" o.c. PANEL EDGES AND 12" o.c. FIELD. BLOCKING REQUIRED AT PANEL JOINTS. 2x6 DOUGLAS FIR #2 OR BETTER STUDS @ 16" o.c., ¾"ø ANCHOR BOLTS @ 2'-6" MAX. TO STEM WALL AND 16d NAILS TO SILL PLATE @ 8" OC.
2. 7/16" OSB/PLY APPLIED TO ONE SIDE OF WALL PERPENDICULAR TO FRAMING, WITH 8d (2½"x0.131") NAILS @ 3" o.c. PANEL EDGES AND 12" o.c. FIELD. BLOCKING REQUIRED AT PANEL JOINTS. 2x6 DOUGLAS FIR #2 OR BETTER STUDS @ 16" o.c., WITH (2) 2x6 END POSTS, HDSB HOLDOWNS & SSTB24 BOLTS
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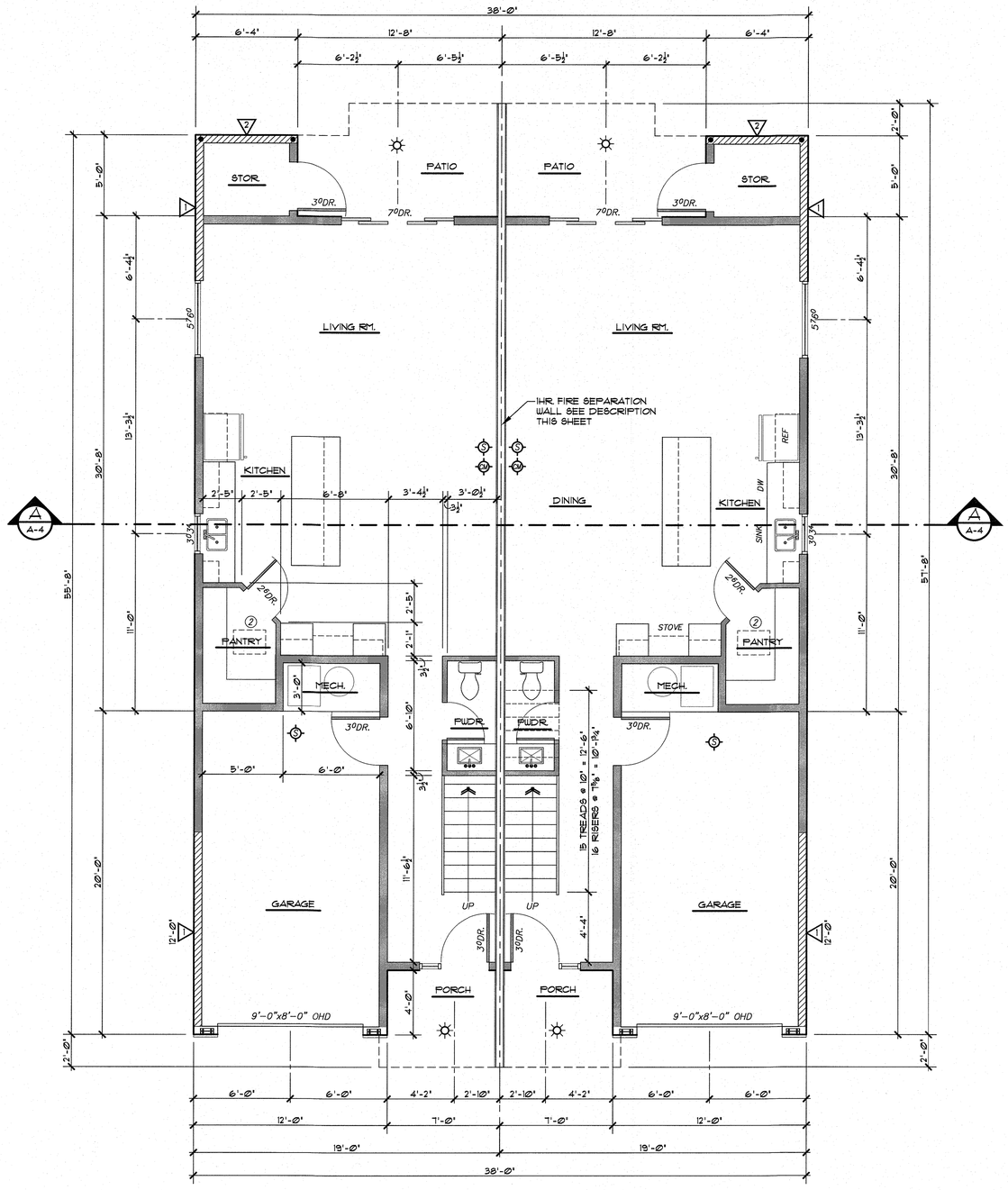
Foundation Plan
For: **Ellis Duplex**
Bellevue, Idaho

REVISIONS:

PROFESSIONAL ENGINEER — LICENSED — 17866 — 12/1/22 — STATE OF IDAHO — KAHLER NIELD

APPROVED	
DESIGN	
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-1



MAIN LEVEL FLOOR PLAN

SCALE: 1/4" = 1'-0"

SYMBOL LEGEND

- EXTERIOR WALLS W/ 2x6 STUDS @ 16" o.c. WITH R-21 INSUL
- INTERIOR WALLS W/ 2x STUDS @ 16" o.c.
- SHEAR WALLS W/ 2x STUDS @ 16" o.c.
- 1HR RATED FIRE WALL
- FIRE EXTINGUISHER 2A10BC
- SMOKE DETECTORS
- CARBON MONOXIDE DETECTORS
- SHEAR WALL ID.
- HOLDOWN ID.

EXTERIOR LIGHTING

1

- INSTALL RECESSED CAN LIGHTS AT FRONT AND REAR PORCHES AND FRONT EAVE OVERHANGS

1 HR. FIRE-RESISTANCE WALL

1 HOUR FIRE-RESISTANCE WALL ASSEMBLY

2018 IBC TABLE 721(2). ITEM NUMBER: 15-1.4
2x6 WOOD STUDS AT 16" OR 12" (SEE FRAMING PLAN) WITH DOUBLE TOP PLATES, SINGLE BOTTOM PLATE, INTERIOR AND EXTERIOR SIDES COVERED WITH ⅝" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS OVER STUDS, AND FASTENED WITH 2¼" TYPE S DRYWALL SCREWS, SPACED 7" ON CENTER

KEY NOTES

1. INTERIOR FINISH, TYPE AND COLOR PER OWNER
2. LOCATE 18"x24" MIN. CRAWLSPACE ACCESS AT CONVENIENT & ACCESSIBLE LOCATIONS AT EACH SIDE OF DUPLEX
3. LOCATE 22"x30" MIN. ATTIC ACCESS AT CONVENIENT & ACCESSIBLE LOCATIONS AT EACH SIDE OF DUPLEX

SHEAR WALL SCHEDULE

1. ⅜" OSB/PLY. APPLIED TO ONE SIDE OF WALL PERPENDICULAR TO FRAMING, WITH 8d (2½"x0.131") NAILS @ 6" o.c. PANEL EDGES AND 12" o.c. FIELD. BLOCKING REQUIRED AT PANEL JOINTS. 2x6 DOUGLAS FIR #2 OR BETTER STUDS @ 16" o.c.
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WITH (2) 2x6 END POSTS, HD5B HOLDOWNS & SSTB24 BOLTS
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Main Level Floor Plan
For: **Ellis Duplex**
Bellevue, Idaho

REVISIONS:
1 1/20/23 REVISED PER C.O.B. LETER DATED JAN 18, 2023
2 3/28/23 EXTERIOR LIGHTING LOCATIONS SHOWN

PROFESSIONAL ENGINEER — KAHLER WIELD — 17866 — STATE OF IDAHO

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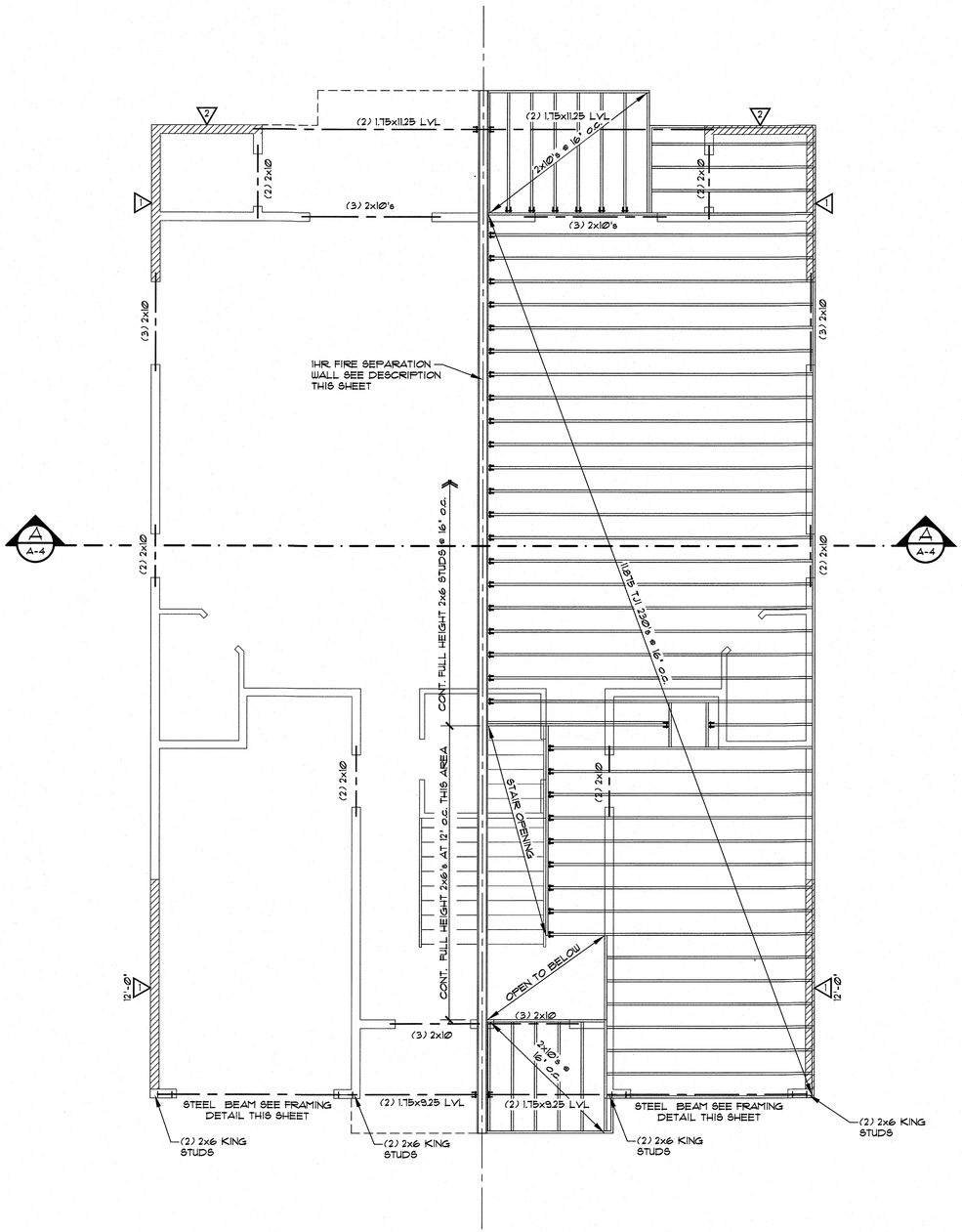
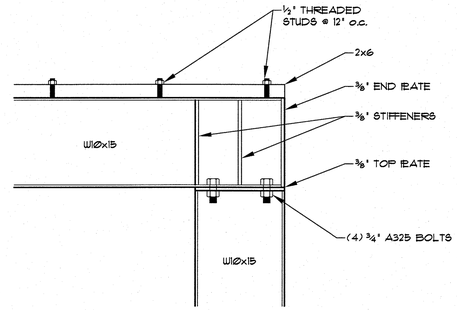
DESIGN	
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-2



FLOOR PLAN

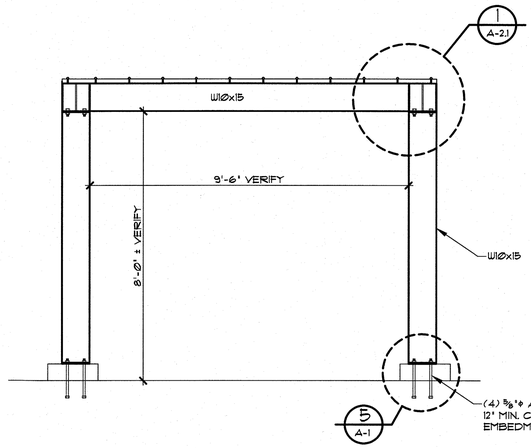
SCALE: 1/4" = 1'-0"



STEEL FRAME CORNER DETAIL

SCALE: 1½" = 1'-0"

1
A-2.1



STEEL FRAME ELEVATION

SCALE: 3/4" = 1'-0"

1 HR. FIRE-RESISTANCE WALL

1 HOUR FIRE-RESISTANCE WALL ASSEMBLY

2018 IBC TABLE 721.1(2) ITEM NUMBER: 15-1.14
2x6 WOOD STUDS AT 16" OR 12" (SEE FRAMING PLAN) WITH DOUBLE TOP PLATES, SINGLE BOTTOM PLATE, INTERIOR AND EXTERIOR SIDES COVERED WITH ⅝" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS OVER STUDS, AND FASTENED WITH 2¼" TYPE S DRYWALL SCREWS, SPACED 7" ON CENTER

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SECOND FLOOR FRAMING PLAN

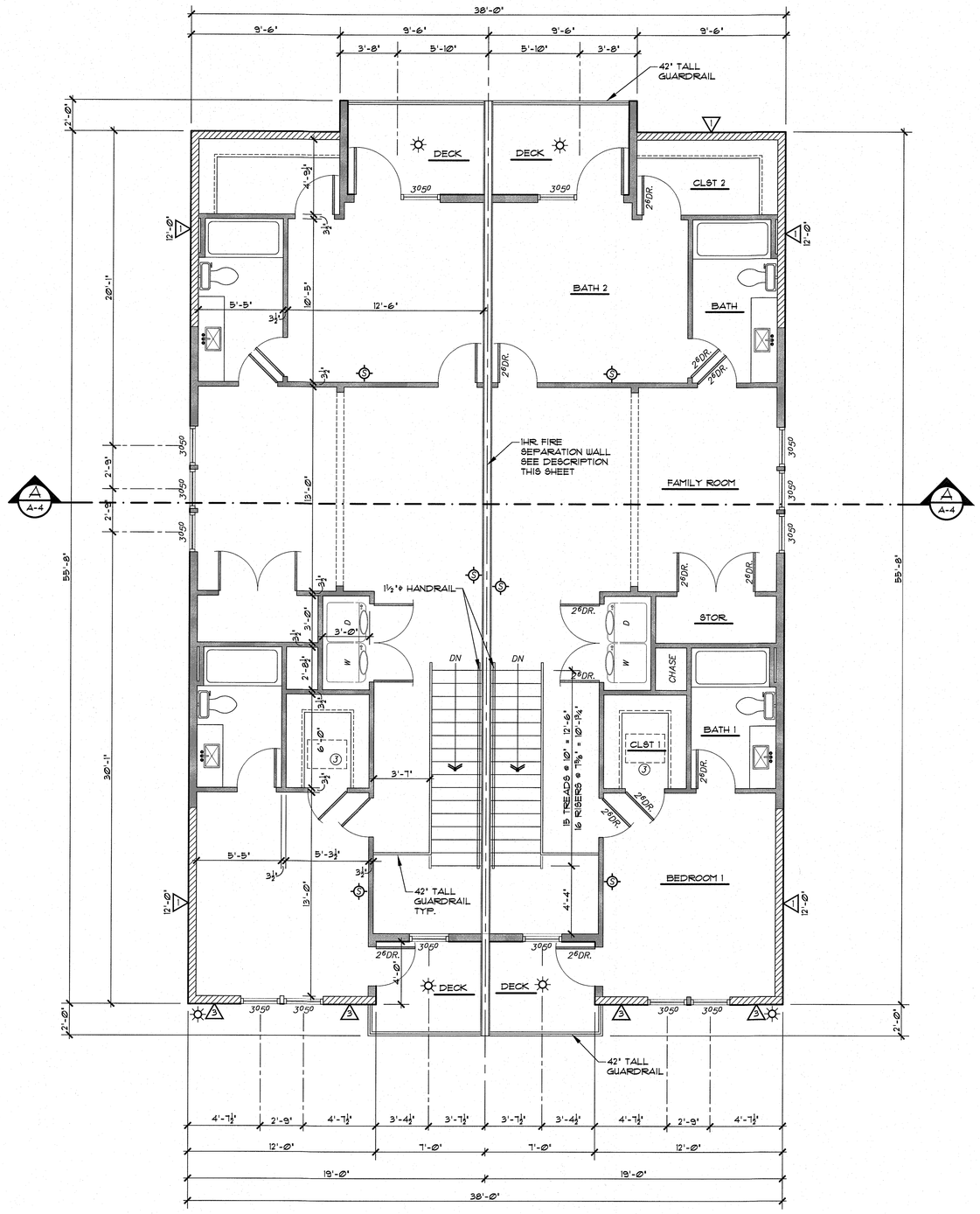
For: **Ellis Duplex**
Bellevue, Idaho

REVISIONS:

PROFESSIONAL ENGINEER LICENSED 17866 12/1/22 STATE OF IDAHO KAHLER NIELD

APPROVED	
DESIGN	
DRAWN	T.HANCHETT
DATE	SEPT. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-2.1



SECOND LEVEL FLOOR PLAN

SCALE: 1/4" = 1'-0"

EXTERIOR LIGHTING

☼ INSTALL RECESSED CAN LIGHTS AT FRONT AND REAR PORCHES AND FRONT EAVE OVERHANGS

1

1 HR. FIRE-RESISTANCE WALL

1 HOUR FIRE-RESISTANCE WALL ASSEMBLY

2018 IBC TABLE 721.1(2) ITEM NUMBER: 15-1.14 2x6 WOOD STUDS AT 16" OR 12" (SEE FRAMING PLAN) WITH DOUBLE TOP PLATES, SINGLE BOTTOM PLATE, INTERIOR AND EXTERIOR SIDES COVERED WITH ⅝" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS OVER STUDS, AND FASTENED WITH 2¼" TYPE S DRYWALL SCREWS, SPACED 7" ON CENTER

KEY NOTES

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SYMBOL LEGEND

- EXTERIOR WALLS W/ 2x6 STUDS @ 16" o.c. WITH R-21 INSUL
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Second Level Floor Plan
For: **Ellis Duplex**
Bellevue, Idaho

REVISIONS:
1. 1/20/23 REVISED PER C.O.B. LETER DATED JAN 18, 2023
2. 3/28/23 EXTERIOR LIGHTING LOCATIONS SHOWN

PROFESSIONAL ENGINEER — LICENSED — 17866 — 3/28/23 — STATE OF IDAHO — KAHLER WIELD

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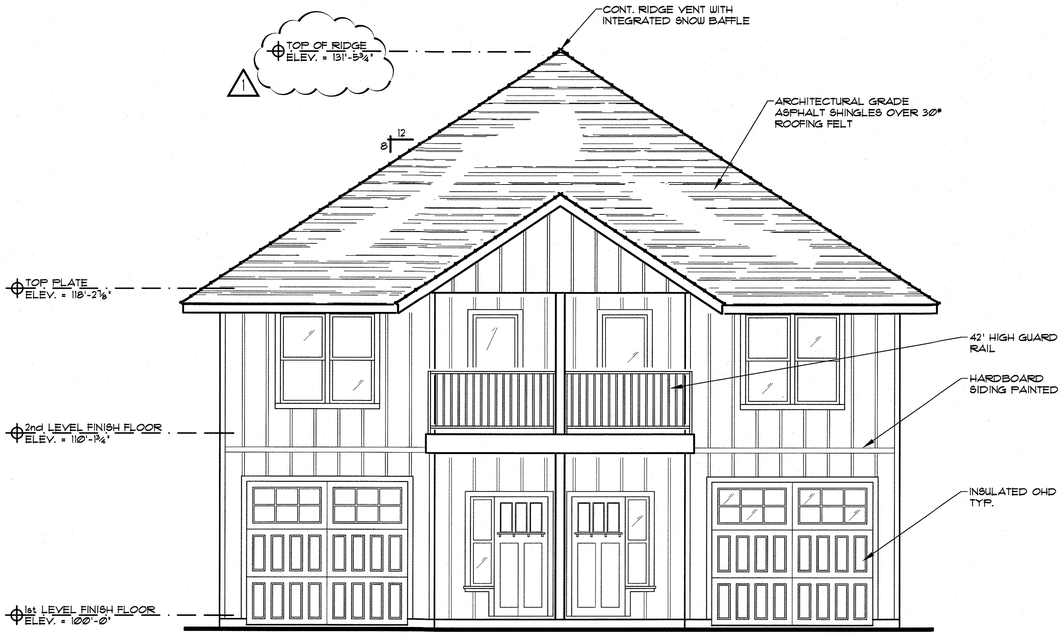
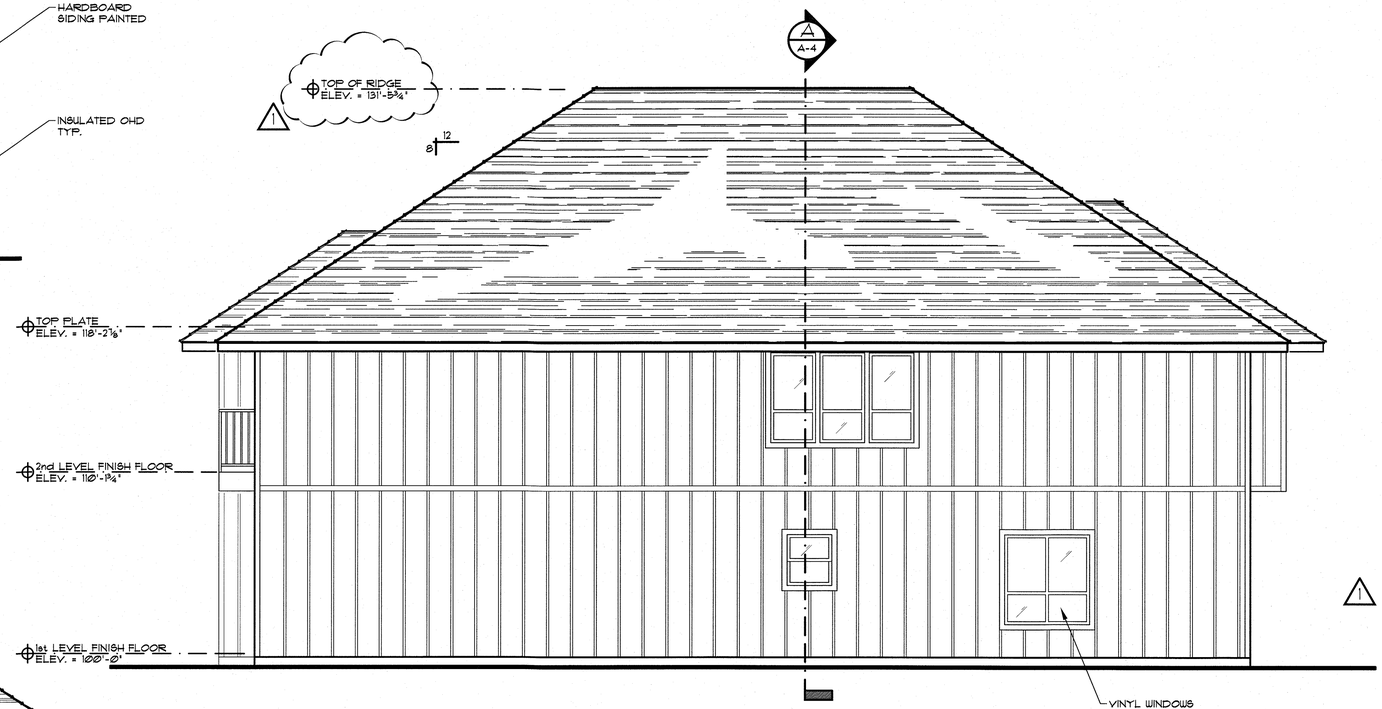
DESIGN	
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-2.2



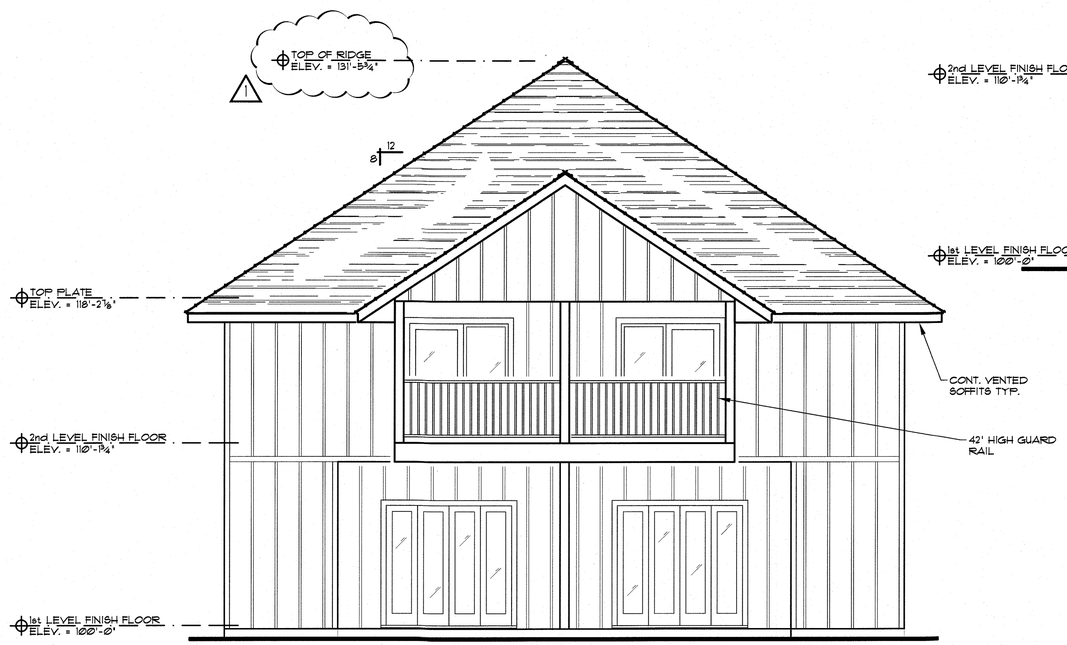
FRONT ELEVATION

SCALE: 1/4" = 1'-0"



SIDE ELEVATION

SCALE: 1/4" = 1'-0"



REAR ELEVATION

SCALE: 1/4" = 1'-0"

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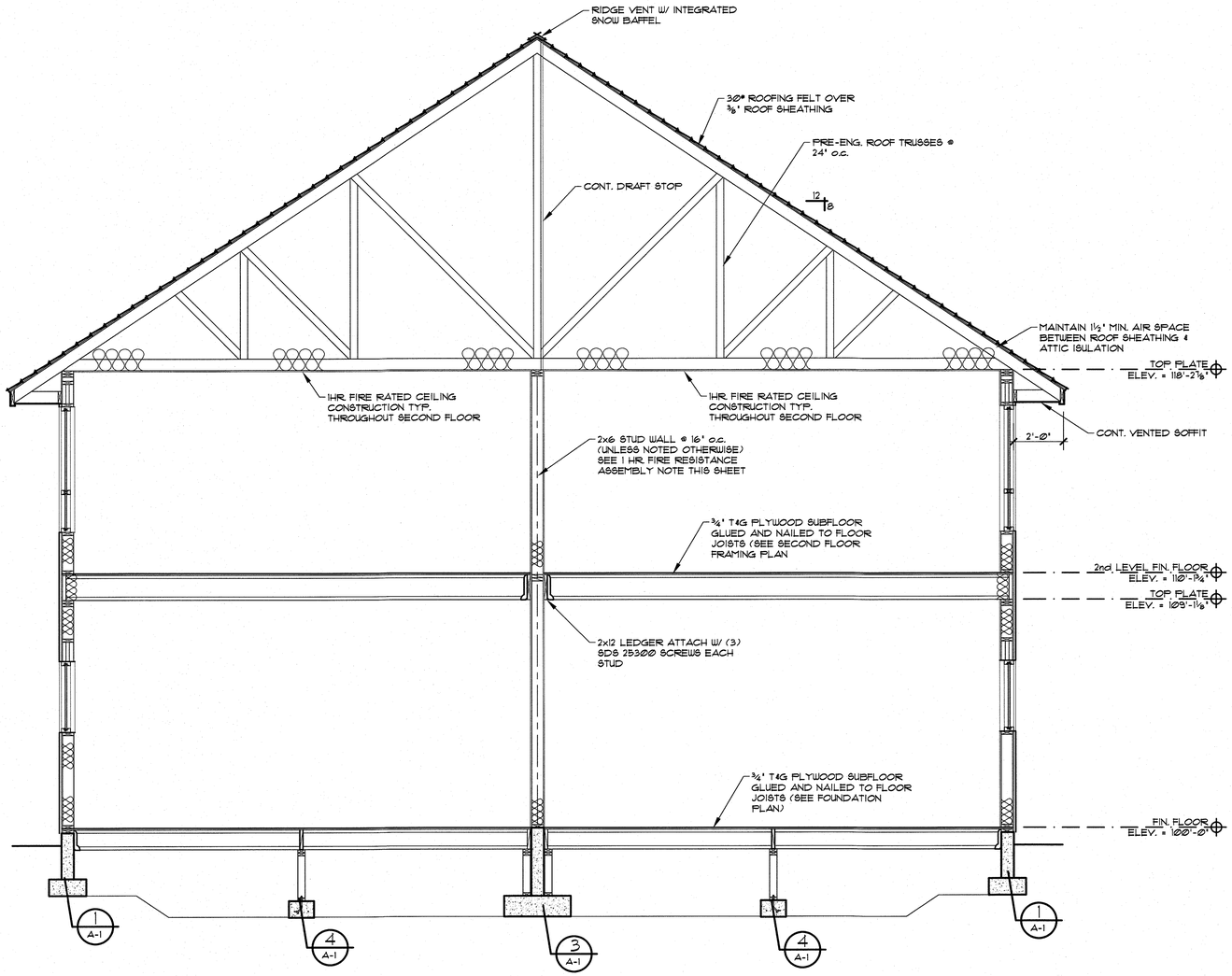
Building Elevations
For:
Ellis Duplex
Bellevue, Idaho

REVISIONS:
1/20/23 REVISED PER C.O.B. LETER DATED JAN 18, 2023

PROFESSIONAL ENGINEER LICENSED 17866 STATE OF IDAHO KAHLER NIELD 1/20/23

APPROVED	
DESIGN	T.HANCHETT
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-3



BUILDING SECTION

SCALE: 3/8" = 1'-0"

A A-4

1 HR. FIRE-RESISTANCE WALL
1 HOUR FIRE-RESISTANCE WALL ASSEMBLY 2018 IBC TABLE 721.1(2) ITEM NUMBER: 15-1.14 2X6 WOOD STUDS AT 16" OR 12" (SEE FRAMING PLAN) WITH DOUBLE TOP PLATES, SINGLE BOTTOM PLATE, INTERIOR AND EXTERIOR SIDES COVERED WITH ⅝" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS OVER STUDS, AND FASTENED WITH 2¼" TYPE S DRYWALL SCREWS, SPACED 7" ON CENTER

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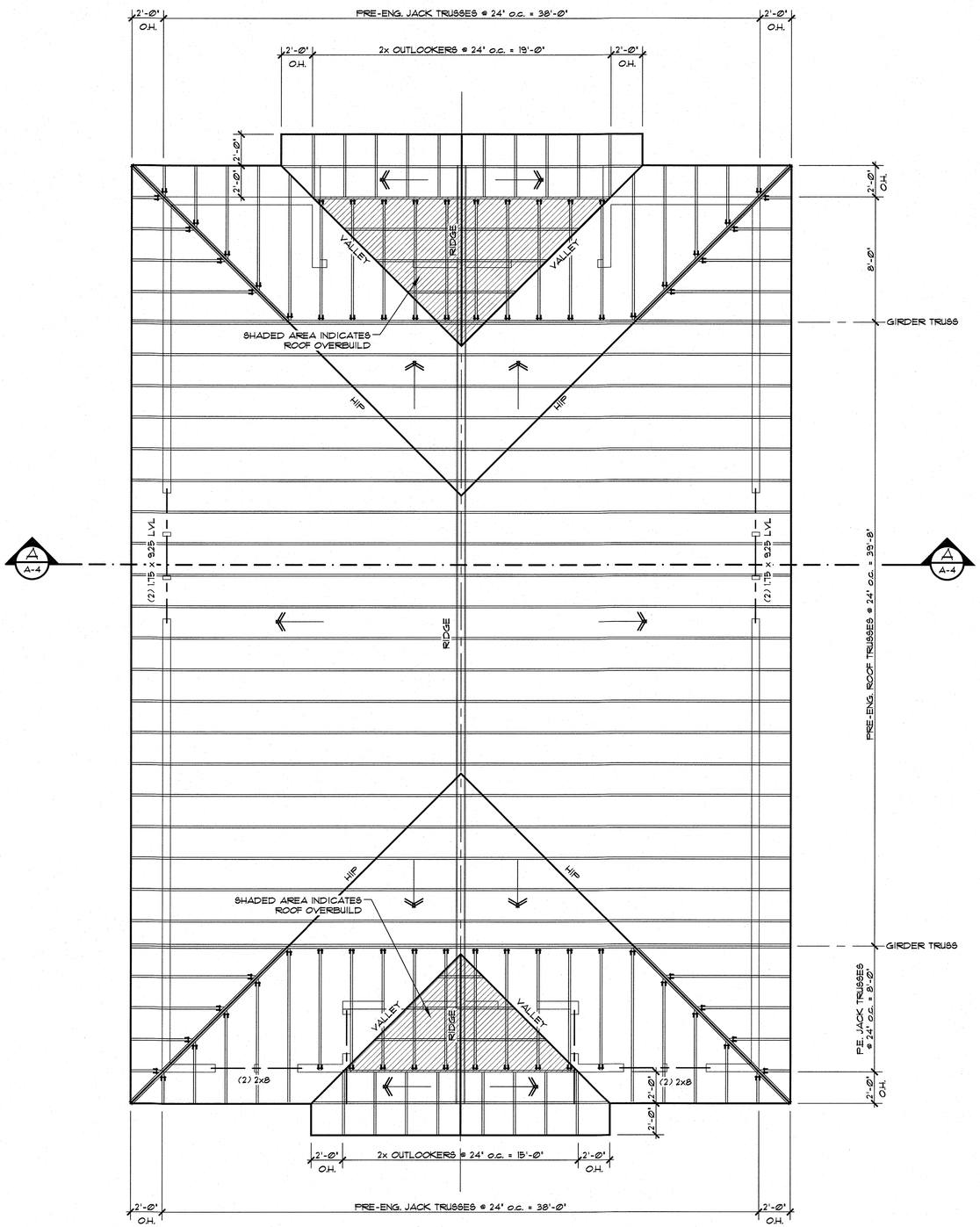
Building Section
For:
Ellis Duplex
Bellevue, Idaho

REVISIONS:
1

PROFESSIONAL ENGINEER LICENSED 17866 12/1/22 STATE OF IDAHO KAHLER NIELD

APPROVED	
DESIGN	T.HANCHETT
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-4



ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

FRAMING NOTES:

REFERENCE DETAIL 2/A-6 FOR TYPICAL FRAMING AT WINDOWS AND DOORS, WHERE A DISCREPANCY OCCURS, USE THE HEAVIER MEMBER CALL-OUT

INSTALL SIMPSON STRONG-TIE H2.5A HURRICANE TIES AT EACH END OF TRUSS, TYPICAL AT ALL LOCATIONS.

Deferred Submittals

Roof Truss Shop drawings shall be submitted to Engineer for review & approval, prior to fabrication of truss package, and placement of any concrete footings.

EHM Engineers, Inc.
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Roof Framing Plan
For: **Ellis Duplex**
Bellevue, Idaho

REVISIONS:

PROFESSIONAL ENGINEER LICENSED 17866 12/1/22 STATE OF IDAHO KAHLER NIELD

APPROVED	
DESIGN	
DRAWN	T.HANCHETT
DATE	NOV. '22
SCALE	AS SHOWN
DWG. NO.	365-22

A-5

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
621 North College Road, Suite 100 Twin Falls, Idaho 83301 208/734-4888 FAX 208/734-6049

JOB NAME Ellis Duplex - Bellevue, ID JOB NO. 365-22

BY Ben DATE 10/31/22 SHEET 1 OF 40

PROFESSIONAL ENGINEER REGISTERED 7778 11/03/2022 STATE OF IDAHO BRIAN MARTENS

Pages 1 - 40

Design Criteria

Soil: 1500 psf Assumed
Concrete: 2500psi
Reinforce: Gr. 60
Seismic: S_S=0.417 S_1=0.14 SDC: D (35% Snow for Dead) Pg 40
Wind: 105 MPH Exp. C
Snow: Ground = 81 psf UofI 2015
Roof = 80 psf
Frost: 24"
Roof DL 15 psf
Floor DL 12 psf
Floor LL 40 psf

Lateral

Seismic:

$V = C_s I W$ $C_s = S_{DS}/(R/I_e) = .0628$ $S_{DS} = .408$ $R = 6.5$

Upstairs $W_R = 59.67(42)(15) = 37,592$ lb
$W_S = 59.67(42)(80)(.35) = 70,172$ lb
$W_W = 187(4)(7) + 200(4)(7) = 10,830$ lb
118,594

$V_{upstairs} = 118,594(.0628) = 74471$ lb ⇐ Governs F>B

Downstairs $W_F = 55.67(38)(12) = 25,385$
$W_W = 287(7)(9) = 24,781$ +10%
57,472

$V_{down} = 57,472(.0628) = 34381$ lb

$V_T = 10,885(.7) = 76201$ lb

Wind: $h = 24'$ $\theta = 34°$ $\lambda = 1.34$ $a = 3.8$

Mwrs $p_A = 19.7(1.34) = 26.4$ psf
$p_B = 13.4(1.34) = 18.0$ psf
$p_C = 15.6(1.34) = 20.9$ psf
$p_D = 10.8(1.34) = 14.5$ psf

C-C $p_4 = 21.5(1.34) = 28.8$ psf
$p_5 = 26.6(1.34) = 35.6$ psf

Front - Back:
Upstairs $V = 124(20.9) + 301(14.5) = 6956$
Downstairs $V = 349(20.9) = 7294$ ⇐ Governs
V_T = 14,250(.6) = 8550 Governs

Side - Side Up $V = 206(20.9) + 575(14.5) = 12,643$ ⇐ Governs
Down $V = 568(20.9) = 11,871$ ⇐ Governs
V_T = 24,514(0.6) = 14,708 ⇐ Governs

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
621 North College Road, Suite 100 Twin Falls, Idaho 83301 208/734-4888 FAX 208/734-6049

JOB NAME _____ JOB NO. _____

BY _____ DATE _____ SHEET 2 OF _____

SHEAR WALLS ⚠1 7/16" OSB w/ 8d @ 6" $V_w = 365$ $V_{allow} = 260$

UPSTAIRS SIDE WALLS
SEISMIC GOV $V = 1/2(7447)(.7) = 7,606 / 260 = 10'$ REQ'D
USE 12' FROM EA. CNR

UPSTAIRS FRONT WALL
WIND GOVERNS $V = (1/2(12,643) + 4(3.8)(2)(5.5) + (1/2(5)(7.6)(3.5))(0.6) = 3933$

$\ell_{req} = 3933/365 = 10.8'$ USE ALL 13.5' AVAILABLE
$T = 2330$

REAR WALL
$V = 3933$
USE ALL 18' AVAILABLE

DOWNSTAIRS SIDE WALLS

WIND $V = (1/2(14,250) + (16)(7.6)(5.5) + 1/2(5)(7.6)(3.5))(0.6) = 4539\#$

$\ell_{req} = 4539/365 = 12.4'$

OR E $V = 7620/2 = 3810/260 = 14.6'$
USE REAR CNR 9' & 12' FRONT
$T = 21'$

DOWNSTAIRS REAR WALL
WIND $V = (1/2(24,514) + 484)(.6) = 7645\#$
$V_{req} = 7645/(6.33)(2) = 604$ 7/16 OSB w/ 8d @ 3" o.c. $V_{allow} = 685$

SEISMIC $V = 3810/2(6.33) \Rightarrow 301\# < 490$ ∴ OK

$T = (7645/2)(10)/6.33 = 6038\# - 70(6.33)(3.17) = 4633$
HD5B w/ (2) 2x6 END POSTS + SST32Y

DOWNSTAIRS FRONT WALL
$V = 7645$
IF (4) SIMPSON PANELS $V_{req} = 1911$ DOES NOT WORK / NO AVAILABLE ROOM (4) WSHH 12/8
$V_{all} = 1860 \approx 1911$ ∴ OK

STEEL FRAME
USE W10 x 15 MOMENT @ TOP CONN 15.31 k-ft PGS 3-5
REACTIONS ↕ 3.4 / 1.4

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

2D Frame

Project File: ENERCALC_20

DESCRIPTION: SHEAR FRAME OVER GARAGE DOORS

Members...

Member Label	Property Label	Endpoint Joints I Joint	Endpoint Joints J Joint	Member Length ft	Releases Specify Connectivity of Member Ends to Joints I End x	I End y	I End z (rotation)	J End x	J End y	J End z (rotation)
A	Column	1	2	8.000	Fixed	Fixed	Pinned	Fixed	Fixed	Fixed
B	Beam	2	3	9.000	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
C	Column	3	4	8.000	Fixed	Fixed	Fixed	Fixed	Fixed	Pinned

Member Sections...

Prop Label	Group Tag	Material	Area	Depth	Width	Ixx	Iyy
W10x15	Column	Steel	4.410 in^2	9.990 in	4.0 in	68.90 in^4	2.890 in^4
W10x15	Beam	Steel	4.410 in^2	9.990 in	4.0 in	68.90 in^4	2.890 in^4

Extreme Joint Displacements

Only Load Combinations giving maximum values are listed

Joint Label		Joint Displacements X in	Y in	Z Radians
1	Max	0.0 W Only	0.0 W Only	0.0
1	Min	0.0 +0.450W	0.0 +0.450W	0.0
2	Max	0.7435 W Only	0.004251 W Only	-0.001279 +0.450W
2	Min	0.3346 +0.450W	0.001913 +0.450W	-0.002842 W Only
3	Max	0.7409 W Only	-0.001913 +0.450W	-0.001271 +0.450W
3	Min	0.3334 +0.450W	-0.004251 W Only	-0.002825 W Only

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2D Frame

Project File: ENERCALC_20

DESCRIPTION: SHEAR FRAME OVER GARAGE DOORS

Extreme Joint Displacements

Only Load Combinations giving maximum values are listed

Joint Label		Joint Displacements X in	Y in	Z Radians
4	Max	0.0 W Only	0.0 +0.450W	0.0
4	Min	0.0 +0.450W	0.0 W Only	0.0

Extreme Joint Reactions

Only Load Combinations giving maximum values are listed

Joint Label		Joint Reactions X k	Y k	Z k-ft
1	Max	-1.435 +0.450W	-2.548 +0.450W	
	Min	-3.189 W Only	-5.663 W Only	
2	Max			
	Min			
3	Max			
	Min			
4	Max	-1.432 +0.450W	5.663 W Only	
	Min	-3.182 W Only	2.548 +0.450W	

Extreme Member End Forces

Only Load Combinations giving maximum values are listed

Member Label		Member " I " End Forces Axial k	Shear k	Moment k-ft	Member " J " End Forces Axial k	Shear k	Moment k-ft
A	Max	0.0	1.913 +0.60W	0.0	3.398 +0.60W	0.0	15.307 +0.60W
A	Min	-3.398 +0.60W	0.0	0.0	0.0	-1.913 +0.60W	0.0
B	Max	1.909 +0.60W	0.0	0.0	0.0	3.398 +0.60W	0.0
B	Min	0.0	-3.398 +0.60W	-15.307 +0.60W	-1.909 +0.60W	0.0	-15.274 +0.60W
C	Max	3.398 +0.60W	1.909 +0.60W	15.274 +0.60W	0.0	0.0	0.0
C	Min	0.0	0.0	0.0	-3.398 +0.60W	-1.909 +0.60W	0.0

Extreme Member Forces

Only Load Combinations giving maximum values are listed

Mmbr Label		Axial	Dist from "I" Joint	Moment	Dist from "I" Joint	Shear	Dist from "I" Joint
A	Max	3.398 k *+0.60W*	0.0 ft	-0.2343 k-ft *+0.450W*	0.1633 ft	1.913 k *+0.60W*	0.0 ft
A	Min	2.548 k *+0.450W*	0.0 ft	-15.307 k-ft *+0.60W*	8.0 ft	1.435 k *+0.450W*	0.0 ft
B	Max	-1.432 k *+0.450W*	0.0 ft	15.274 k-ft *+0.60W*	9.0 ft	-2.548 k *+0.450W*	0.0 ft
B	Min	-1.909 k *+0.60W*	0.0 ft	-15.307 k-ft *+0.60W*	0.0 ft	-3.398 k *+0.60W*	0.0 ft
C	Max	-2.548 k *+0.450W*	0.0 ft	15.274 k-ft *+0.60W*	0.0 ft	1.909 k *+0.60W*	0.0 ft

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

2D Frame

Project File: ENERCALC_20

DESCRIPTION: SHEAR FRAME OVER GARAGE DOORS

Extreme Member Forces

Only Load Combinations giving maximum values are listed

Mmbr Label	Axial	Dist from "I" Joint	Moment	Dist from "I" Joint	Shear	Dist from "I" Joint
C	-3.398 k	0.0 ft	0.2338 k-ft	7.837 ft	1.432 k	0.0 ft
Min	*+0.60W*		*+0.450W*		*+0.450W*	

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JOB NAME _____ JOB NO. _____

BY _____ DATE _____ SHEET 6 OF _____

TOP MOMENT CONNECT

M = 15.3 k-ft
T = 15.3/.5 = 30.6 K ⇒ (2) 3/4" A325 Bolts (19.4 K ALL)
(4) TOTAL

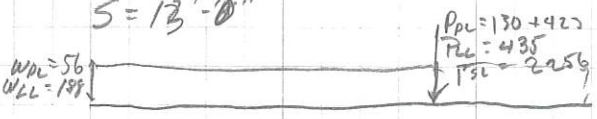
ANCHOR BOLTS
T_u = 3.4/.6 = 5.7K V_u = 1.4/.6 = 2.3K
(4) 5/8" ø x 12" IN 8" WALL
PG 7-12

UPSTAIRS HEADERS

8' WINDOW
w_{DL} = 11.5(15) = 173 lb/ft
w_{SL} = 11.5(80) = 920 lb/ft
USE (2) 1.75 x 9.25 PG 13

5' W/ WINDOWS NON-BEARING
w_{DL} = 3(15) = 45 lb/ft
w_{SL} = 3(80) = 240 lb/ft
USE (2) 2x8 PG 14

FLOOR BEAMS
PATIO & ROOF W/ONE SUPPORT
S = 13'-0"



(2) 1.75 x 11.25 PG 15

PATIO HEADER
S = 7'
w_{DL} = 53
w_{LL} = 140
w_{SL} = 480
(2) 2x10 PG 16

5' W/ WINDOW DOWNSTAIRS
w_{DL} = 11.5(15) + 9.5(12) = 286 lb/ft
w_{SL} = 11.5(80) + 4 = 920 lb/ft
w_{LL} = 9.5(40) = 380 lb/ft
(3) 2x10 PG 17

SIMPSON Strong-Tie®

Anchor Designer™ Software
Version 3.0.7947.3

Company:	WESTERN SPECIALTY	Date:	7/15/2022
Engineer:	EHM ENGINEERS	Page:	1/6
Project:	ITD NAMPA		
Address:			
Phone:			
E-mail:			

1.Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description: MAIN FRAME ANCHOR BOLTS
Location:
Fastening description:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-14
Units: Imperial units

Anchor Information:
Anchor type: Bonded anchor
Material: F1554 Grade 36
Diameter (inch): 0.625
Effective Embedment depth, h_{ef} (inch): 12.500
Code report: ICC-ES ESR-2508
Anchor category: -
Anchor ductility: Yes
h_{min} (inch): 16.25
c_{ac} (inch): 26.30
C_{min} (inch): 1.75
S_{min} (inch): 3.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 24.00
State: Cracked
Compressive strength, f'_c (psi): 3000
$\Psi_{c,V}$: 1.0
Reinforcement condition: A tension, A shear
Supplemental reinforcement: Not applicable
Reinforcement provided at corners: Yes
Ignore concrete breakout in tension: Yes
Ignore concrete breakout in shear: Yes
Hole condition: Dry concrete
Inspection: Continuous
Temperature range, Short/Long: 150/110°F
Ignore 6do requirement: Not applicable
Build-up grout pad: No

Base Plate
Length x Width x Thickness (inch): 5.00 x 10.00 x 0.50

Recommended Anchor
Anchor Name: SET-XP® - SET-XP w/ 5/8"Ø F1554 Gr. 36
Code Report: ICC-ES ESR-2508

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Company:	WESTERN SPECIALTY	Date:	7/15/2022
Engineer:	EHM ENGINEERS	Page:	2/6
Project:	ITD NAMPA		
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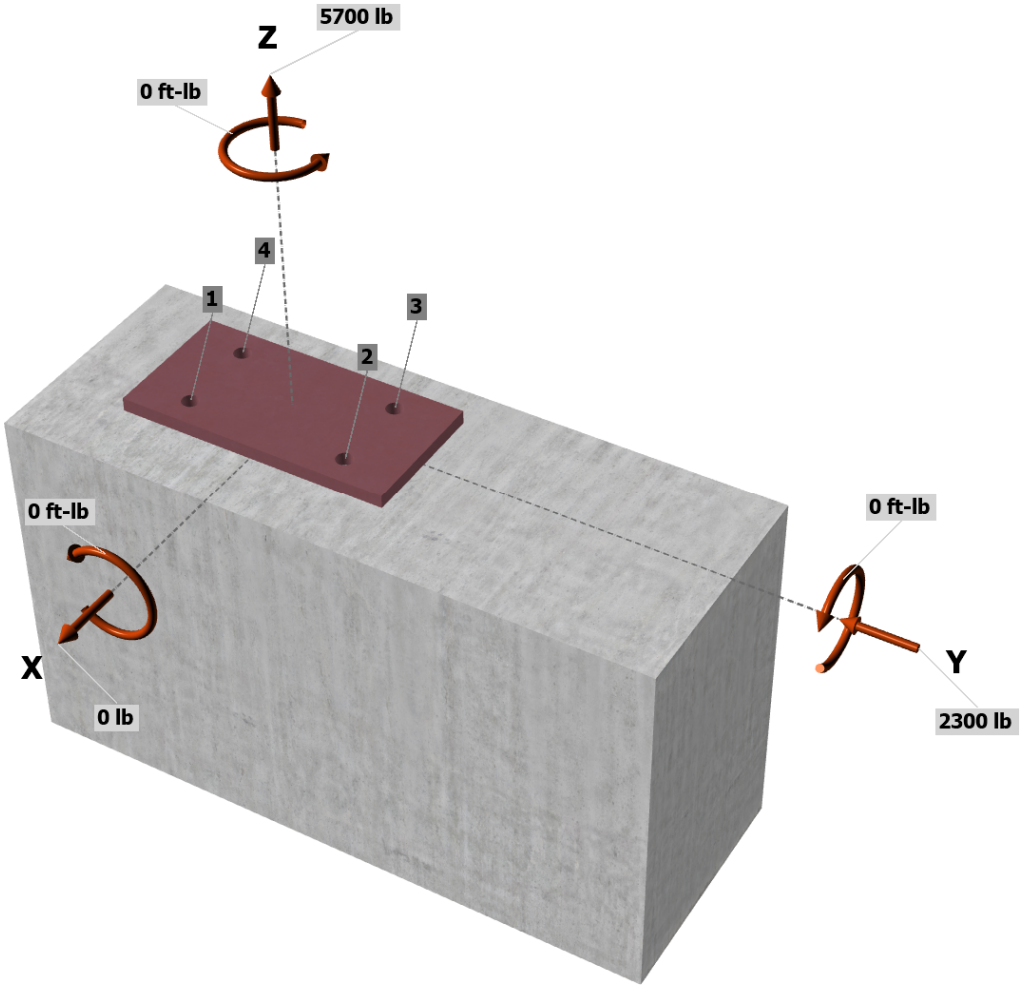
Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: No
Anchors subjected to sustained tension: No
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

N_{ua} [lb]: 5700
V_{uax} [lb]: 0
V_{uay} [lb]: -2300
M_{ux} [ft-lb]: 0
M_{uy} [ft-lb]: 0
M_{uz} [ft-lb]: 0

<Figure 1>



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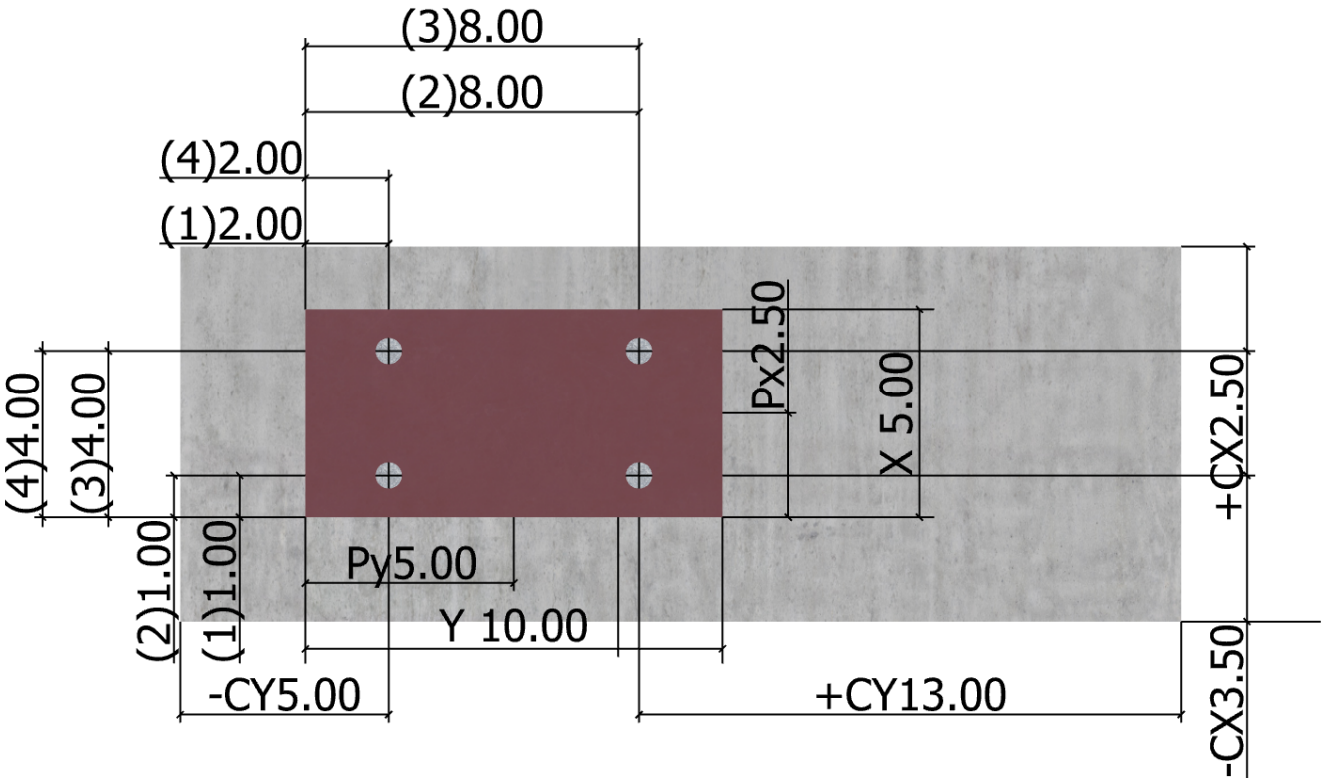
Company:	WESTERN SPECIALTY	Date:	7/15/2022
Engineer:	EHM ENGINEERS	Page:	3/6
Project:	ITD NAMPA		
Address:			
Phone:			
E-mail:			

<Figure 2>



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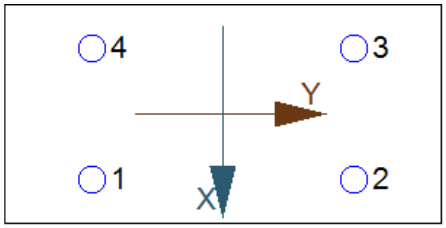
Company:	WESTERN SPECIALTY	Date:	7/15/2022
Engineer:	EHM ENGINEERS	Page:	4/6
Project:	ITD NAMPA		
Address:			
Phone:			
E-mail:			

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	1425.0	0.0	-575.0	575.0
2	1425.0	0.0	-575.0	575.0
3	1425.0	0.0	-575.0	575.0
4	1425.0	0.0	-575.0	575.0
Sum	5700.0	0.0	-2300.0	2300.0

Maximum concrete compression strain (‰): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 0
Resultant compression force (lb): 0
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.4.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13110	0.75	9833

6. Adhesive Strength of Anchor in Tension (Sec. 17.4.5)

$\tau_{k,cr} = \tau_{k,cr} f_{short\text{-}term} K_{sat}$

$\tau_{k,cr}$ (psi)	$f_{short\text{-}term}$	K_{sat}	$\tau_{k,cr}$ (psi)
435	1.72	1.00	748

$N_{ba} = \lambda_a \tau_{cr} \pi d_a h_{ef}$ (Eq. 17.4.5.2)

λ_a	τ_{cr} (psi)	d_a (in)	h_{ef} (in)	N_{ba} (lb)
1.00	748	0.63	12.500	18364

$\phi N_{ag} = \phi (A_{Na} / A_{Na0}) \Psi_{ec,Na} \Psi_{ed,Na} \Psi_{cp,Na} N_{ba}$ (Sec. 17.3.1 & Eq. 17.4.5.1b)

A_{Na} (in²)	A_{Na0} (in²)	c_{Na} (in)	$c_{a,min}$ (in)	$\Psi_{ec,Na}$	$\Psi_{ed,Na}$	$\Psi_{cp,Na}$	N_{ba}(lb)	ϕ	ϕN_{ag} (lb)
171.42	258.98	8.05	2.50	1.000	0.793	1.000	18364	0.65	6267

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Company:	WESTERN SPECIALTY	Date:	7/15/2022
Engineer:	EHM ENGINEERS	Page:	5/6
Project:	ITD NAMPA		
Address:			
Phone:			
E-mail:			

8. Steel Strength of Anchor in Shear (Sec. 17.5.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
7865	1.0	0.65	5112

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.5.3)

$\phi V_{cpg} = \phi \min|k_{cp}N_{ag}\ ;\ k_{cp}N_{cbg}| = \phi \min|k_{cp}(A_{Na}/A_{Na0})\Psi_{ec,Na}\Psi_{ed,Na}\Psi_{cp,Na}N_{ba}\ ;\ k_{cp}(A_{Nc}/A_{Nco})\Psi_{ec,N}\Psi_{ed,N}\Psi_{c,N}\Psi_{cp,N}N_b|$ (Sec. 17.3.1 & Eq. 17.5.3.1b)

k_{cp}	A_{Na} (in^2)	A_{Na0} (in^2)	$\Psi_{ed,Na}$	$\Psi_{ec,Na}$	$\Psi_{cp,Na}$	N_{ba} (lb)	N_a (lb)
2.0	171.42	258.98	0.793	1.000	1.000	18364	9641

A_{Nc} (in^2)	A_{Nco} (in^2)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	N_{cb} (lb)	ϕ
216.00	676.00	1.000	0.758	1.000	1.000	21687	5250	0.70

ϕV_{cpg} (lb)
7351

11. Results

Interaction of Tensile and Shear Forces (Sec. R17.6)

Tension	Factored Load, N_{ua} (lb)	Design Strength, øN_n (lb)	Ratio	Status
Steel	1425	9833	0.14	Pass
Adhesive	**5700**	**6267**	**0.91**	**Pass (Governs)**

Shear	Factored Load, V_{ua} (lb)	Design Strength, øV_n (lb)	Ratio	Status
Steel	575	5112	0.11	Pass
Pryout	**2300**	**7351**	**0.31**	**Pass (Governs)**

Interaction check	$(N_{ua}/\phi N_{ua})^{5/3}$	$(V_{ua}/\phi V_{ua})^{5/3}$	Combined Ratio	Permissible	Status
Sec. R17.6	0.85	0.14	99.8%	1.0	Pass

SET-XP w/ 5/8"Ø F1554 Gr. 36 with hef = 12.500 inch meets the selected design criteria.

12. Warnings

- When cracked concrete is selected, concrete compressive strength used in concrete breakout strength in tension, adhesive strength in tension and concrete pryout strength in shear for SET-XP adhesive anchor is limited to 2,500 psi per ICC-ES ESR-2508 Section 5.3.

- Minimum spacing and edge distance requirement of 6da per ACI 318 Sections 17.7.1 and 17.7.2 for torqued cast-in-place anchor is waived per designer option.

- Concrete breakout strength in tension has not been evaluated against applied tension load(s) per designer option. Refer to ACI 318 Section 17.3.2.1 for conditions where calculations of the concrete breakout strength may not be required.

- Concrete breakout strength in shear has not been evaluated against applied shear load(s) per designer option. Refer to ACI 318 Section 17.3.2.1 for conditions where calculations of the concrete breakout strength may not be required.

- Designer must exercise own judgement to determine if this design is suitable.

- Refer to manufacturer's product literature for hole cleaning and installation instructions.

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
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Wood Beam

Project File: ENERCALC_20

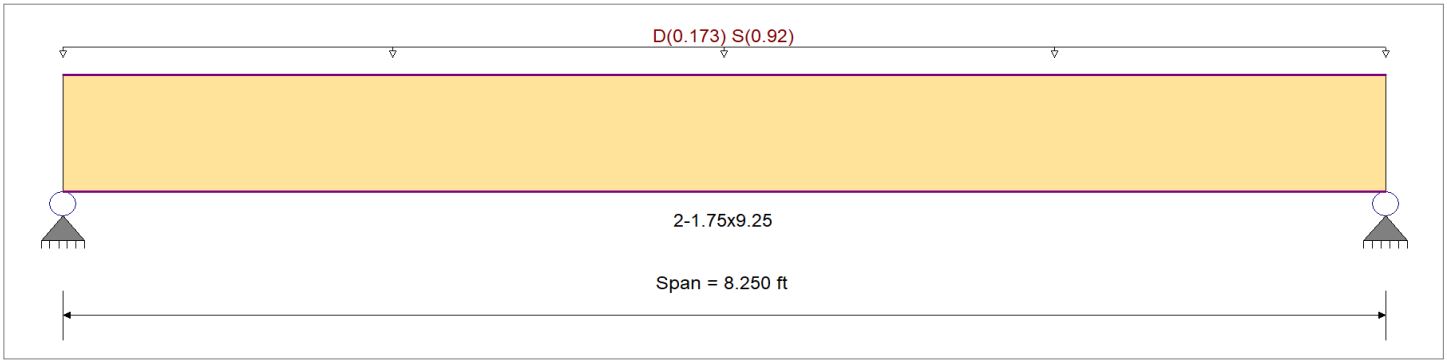
DESCRIPTION: 8' WINDOW HEADER UPSTAIRS

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	2600 psi	*E : Modulus of Elasticity*	
Load Combination :	ASCE 7-16	Fb -	2600 psi	Ebend- xx	1900 ksi
		Fc - Prll	2510 psi	Eminbend - xx	965.71 ksi
Wood Species :	iLevel Truss Joist	Fc - Perp	750 psi		
Wood Grade :	MicroLam LVL 1.9 E	Fv	285 psi		
		Ft	1555 psi	Density	42.01 pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.1730, S = 0.920 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.754 : 1	Maximum Shear Stress Ratio	=	0.526 : 1
Section used for this span		2-1.75x9.25	Section used for this span		2-1.75x9.25
fb: Actual	=	2,255.05 psi	fv: Actual	=	172.25 psi
Fb: Allowable	=	2,990.00 psi	Fv: Allowable	=	327.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	4.125 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	0.220 in	Ratio =	450 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.264 in	Ratio =	375 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.548	4.548
Overall MINimum	3.795	3.795
D Only	0.753	0.753
+D+S	4.548	4.548
+D+0.750S	3.599	3.599
+0.60D	0.452	0.452
S Only	3.795	3.795

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Beam

Project File: ENERCALC_20

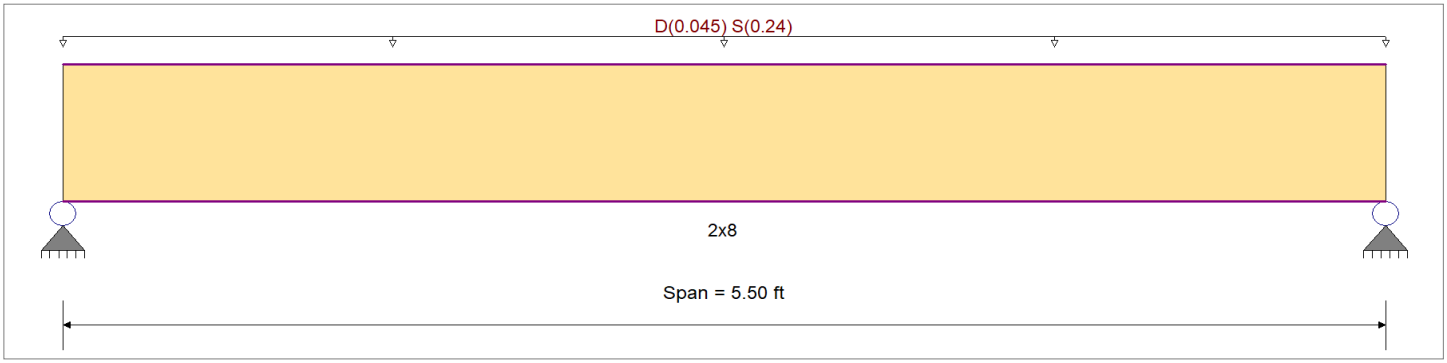
DESCRIPTION: 5' WINDOW NON-BEARING WALL UPSTAIRS

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	900 psi	*E : Modulus of Elasticity*	
Load Combination :	ASCE 7-16	Fb -	900 psi	Ebend- xx	1600 ksi
		Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Wood Species :	Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade :	No.2	Fv	180 psi		
		Ft	575 psi	Density	31.21 pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0450, S = 0.240 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.799 : 1	Maximum Shear Stress Ratio	=	0.411 : 1
Section used for this span		2x8	Section used for this span		2x8
fb: Actual	=	992.25 psi	fv: Actual	=	85.13 psi
Fb: Allowable	=	1,242.00 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	2.750 ft	Location of maximum on span	=	4.898 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.065 in	Ratio =	1012 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.078 in	Ratio =	845 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.790	0.790
Overall MINimum	0.660	0.660
D Only	0.130	0.130
+D+S	0.790	0.790
+D+0.750S	0.625	0.625
+0.60D	0.078	0.078
S Only	0.660	0.660

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Beam

Project File: ENERCALC_20

DESCRIPTION: REAR WALL FLOOR BEAM

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : ASCE 7-16

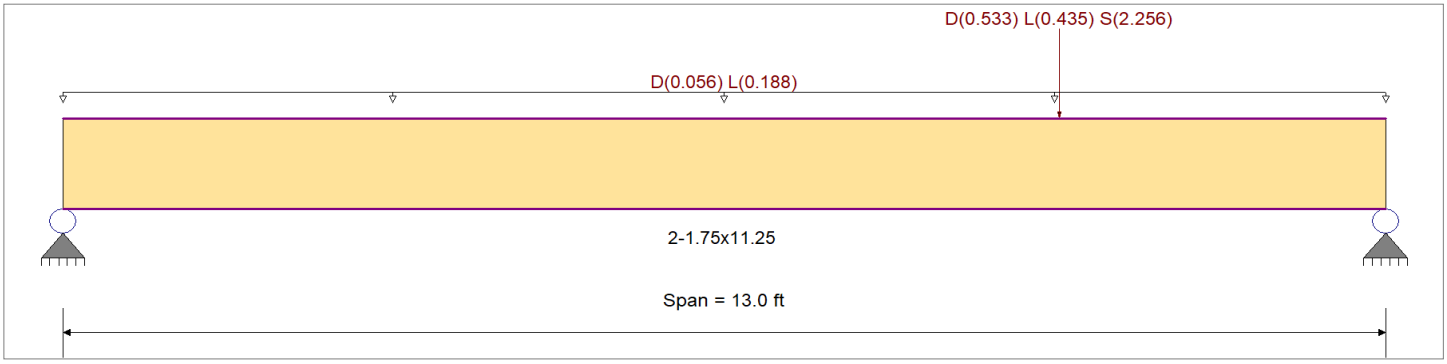
Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 1.9 E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2600 psi
Fb -	2600 psi
Fc - Prll	2510 psi
Fc - Perp	750 psi
Fv	285 psi
Ft	1555 psi

E : Modulus of Elasticity

Ebend- xx	1900 ksi
Eminbend - xx	965.71 ksi
Density	42.01 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0560, L = 0.1880 , Tributary Width = 1.0 ft
Point Load : D = 0.5330, L = 0.4350, S = 2.256 k @ 9.80 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.503 : 1	Maximum Shear Stress Ratio	=	0.352 : 1
Section used for this span		2-1.75x11.25	Section used for this span		2-1.75x11.25
fb: Actual	=	1,502.61 psi	fv: Actual	=	115.28 psi
Fb: Allowable	=	2,990.00 psi	Fv: Allowable	=	327.75 psi
Load Combination		+D+0.750L+0.750S	Load Combination		+D+0.750L+0.750S
Location of maximum on span	=	9.679 ft	Location of maximum on span	=	12.099 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.184 in	Ratio =	848 >=360	Span: 1 : L Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.337 in	Ratio =	462 >=180	Span: 1 : +D+0.750L+0.750S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.909	3.204
Overall MINimum	0.555	1.701
D Only	0.495	0.766
+D+L	1.824	2.316
+D+S	1.051	2.466
+D+0.750L	1.492	1.928
+D+0.750L+0.750S	1.909	3.204
+0.60D	0.297	0.459
L Only	1.329	1.550
S Only	0.555	1.701

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Beam

Project File: ENERCALC_20

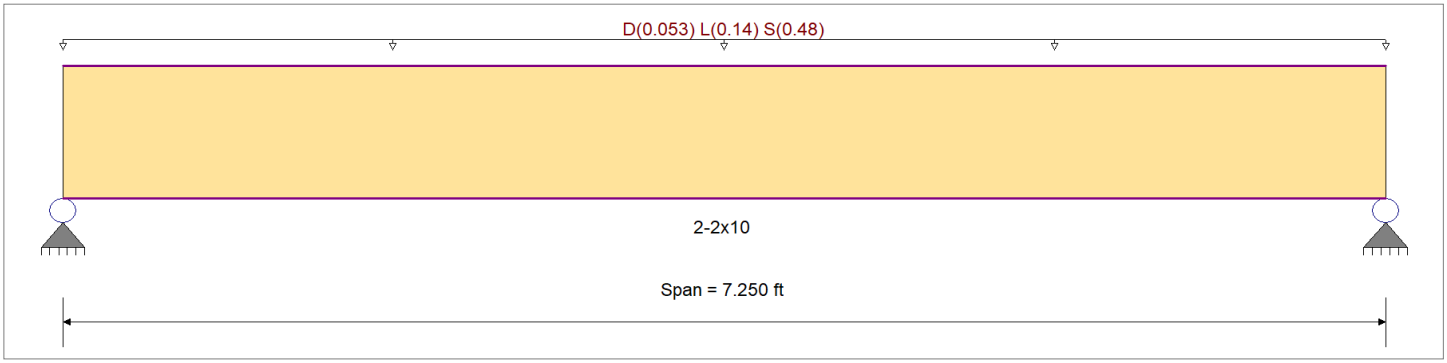
DESCRIPTION: REAR PATIO FLOOR BEAM

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	900 psi	*E : Modulus of Elasticity*	
Load Combination :	ASCE 7-16	Fb -	900 psi	Ebend- xx	1600 ksi
		Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Wood Species :	Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade :	No.2	Fv	180 psi		
		Ft	575 psi	Density	31.21 pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0530, L = 0.140, S = 0.480 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.863 : 1	Maximum Shear Stress Ratio	=	0.398 : 1
Section used for this span		**2-2x10**	Section used for this span		**2-2x10**
fb: Actual	=	982.29 psi	fv: Actual	=	82.33 psi
Fb: Allowable	=	1,138.50 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	3.625 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	0.095 in	Ratio =	917 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.105 in	Ratio =	826 >=180	Span: 1 : +D+S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.932	1.932
Overall MINimum	1.740	1.740
D Only	0.192	0.192
+D+L	0.700	0.700
+D+S	1.932	1.932
+D+0.750L	0.573	0.573
+D+0.750L+0.750S	1.878	1.878
+0.60D	0.115	0.115
L Only	0.508	0.508
S Only	1.740	1.740

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Beam

Project File: ENERCALC_20

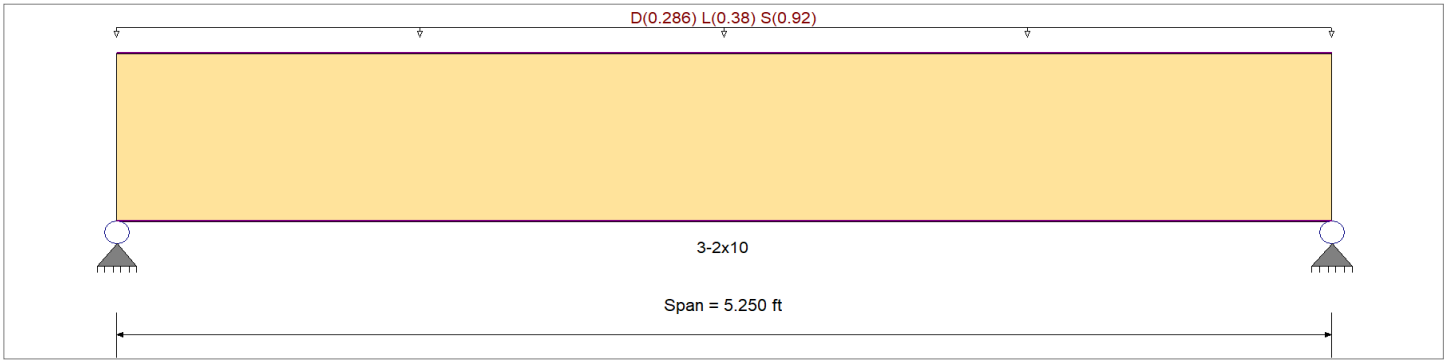
DESCRIPTION: DOWNSTAIRS 5' WINDOW

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	900 psi	*E : Modulus of Elasticity*	
Load Combination :	ASCE 7-16	Fb -	900 psi	Ebend- xx	1600 ksi
		Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Wood Species :	Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade :	No.2	Fv	180 psi		
		Ft	575 psi	Density	31.21 pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.2860, L = 0.380, S = 0.920 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.714 : 1	Maximum Shear Stress Ratio	=	0.408 : 1
Section used for this span		3-2x10	Section used for this span		3-2x10
fb: Actual	=	812.42 psi	fv: Actual	=	84.46 psi
Fb: Allowable	=	1,138.50 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+0.750L+0.750S	Load Combination		+D+0.750L+0.750S
Location of maximum on span	=	2.625 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	0.033 in	Ratio =	1891 >=360	Span: 1 : S Only
Max Upward Transient Deflection	0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection	0.046 in	Ratio =	1379 >=180	Span: 1 : +D+0.750L+0.750S
Max Upward Total Deflection	0 in	Ratio =	0 <180	n/a

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	3.310	3.310
Overall MINimum	2.415	2.415
D Only	0.751	0.751
+D+L	1.748	1.748
+D+S	3.166	3.166
+D+0.750L	1.499	1.499
+D+0.750L+0.750S	3.310	3.310
+0.60D	0.450	0.450
L Only	0.998	0.998
S Only	2.415	2.415

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
621 North College Road, Suite 100 Twin Falls, Idaho 83301 208/734-4888 FAX 208/734-6049

JOB NAME _____ JOB NO. _____

BY _____ DATE _____ SHEET 18 OF _____

UPSTAIRS FLOOR JOISTS
DL = 12 PSF
LL = 40 PSF
SCL = 18'-3 3/4"

11 7/8 TJI 230 @ 16" O.C.
> L/480 PG 19

1ST FLOOR JOISTS
DL = 12 PSF
LL = 40 PSF
SCL = (2) 9'-1 7/8" SPANS

9 1/2 TJI 110's @ 16" O.C PG 20

UPSTAIRS STUDS
@16" P_{DL} = 11.5(15)(16/12) = 2301b
P_{SL} = 11.5(80)(16/12) = 1226 lb
h = 8'-1"
w_w = 35.6(16/12) = 47.5 plf

2x6 @ 16 DF #1 STUD OK PG 21

UPSTAIRS JAMB STUDS @ 8' WINDOW
P_{DL} = 7331b
P_{SL} = 3910 lb
h = 7.4'

(1) 2x6 STUD OK PG 22

KING STUDS @ 8' WINDOW
P_{DL} = 158 lb
P_{SL} = 8431 lb
w_w = 4.91(28.8) = 142 lb/ft

(1) 2x6 DF #1 OK PG 23

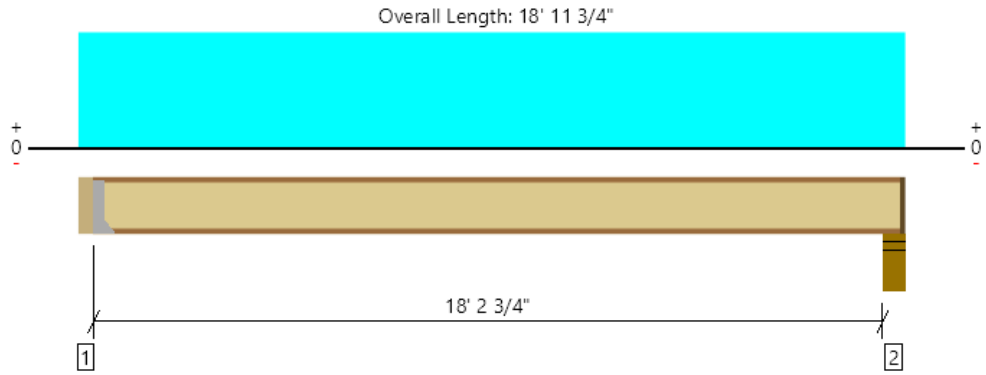
TYPICAL 1ST FLOOR STUDS
@16" P_{DL} = (9.5/12)+11.5/15))(16/12) = 382 lb
P_{SL} = 1226 lb
P_{LL} = 9(40) = 360 lb
w_w = 47.5 lb/ft
h = 9.1'

2x6 @ 16 STUD GR OK PG 24

TRIM STUDS @ 5' WINDOW
P_{DL} = 2.75((9.5(12) + 11.5(15)) = 788
P_{SL} = 2.75(11.5)(80) = 2530
P_{LL} = 2.75(9.5)(40) = 1045

(1) 2x6 STUD OK PG 25

1 piece(s) 11 7/8" TJI® 230 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	635 @ 3 1/2"	1060 (1.75")	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	635 @ 3 1/2"	1655	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2906 @ 9' 5 3/8"	4215	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.388 @ 9' 5 3/8"	0.458	Passed (L/567)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.504 @ 9' 5 3/8"	0.916	Passed (L/436)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	41	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	151	504	655	See note [1]
2 - Stud wall - DF	5.50"	4.25"	1.75"	153	508	661	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 11" o/c	
Bottom Edge (Lu)	18' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS2.37/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 18' 11 3/4"	16"	12.0	40.0	Default Load

Weyerhaeuser Notes

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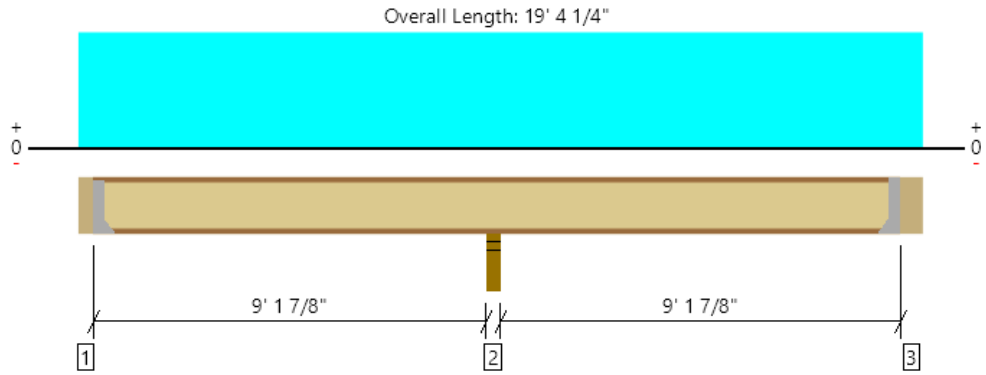
The product application, input design loads, dimensions and support information have been provided by BRIAN MARTENS

ForteWEB Software Operator	Job Notes
Brian Martens EHM Engineers (208) 734-4888 brianm@ehminc.com	

Weyerhaeuser

Level, Floor: Joist

1 piece(s) 9 1/2" TJI® 110 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	806 @ 9' 7 1/8"	1935 (3.50")	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	376 @ 9' 8 7/8"	1342	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-750 @ 9' 7 1/8"	2500	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.048 @ 4' 8 1/4"	0.233	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.058 @ 4' 7 1/4"	0.465	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	60	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Hanger on 9 1/2" DF beam	3.50"	Hanger[1]	1.75" / - [2]	60	233/-15	293	See note [1]
2 - Stud wall - SPF	3.50"	3.50"	3.50"	186	620	806	None
3 - Hanger on 9 1/2" DF beam	5.50"	Hanger[1]	1.75" / - [2]	63	241/-7	305	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 11" o/c	
Bottom Edge (Lu)	5' 10" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-Strong-Grip	
3 - Face Mount Hanger	MIU1.81/9	2.50"	N/A	16-10dx1.5	2-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 19' 4 1/4"	16"	12.0	40.0	Default Load

Member Notes
ELLIS 1ST FLOOR

ForteWEB Software Operator	Job Notes
Brian Martens EHM Engineers (208) 734-4888 brianm@ehminc.com	JOISTS OVER GARAGE

Weyerhaeuser

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: TYPICAL UPSTAIRS STUDS

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	8.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 8.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 14.483 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 8.10 ft, D = 0.230, S = 1.226 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.04750 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.3396 : 1**

Load Combination	+D+0.60W
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	4.077 ft
At maximum location values are .	
Applied Axial	0.2445 k
Applied Mx	0.2337 k-ft
Applied My	0.0 k-ft
Fc : Allowable	933.54 psi

PASS Maximum Shear Stress Ratio = **0.07287 : 1**

Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	20.986 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.1924 k	Bottom along Y-Y	0.1924 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.1597 in at 4.077 ft above base
for load combination : W Only

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: JAMB STUDS @ 8' UPSTAIRS WINDOW

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	8.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 8.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 14.483 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 8.10 ft, D = 0.7330, S = 3.910 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.7330 : 1**

Load Combination	+D+S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	4.657 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	770.15 psi

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

Load Combination	+0.60D
Location of max.above base	8.10 ft
Applied Design Shear	0.0 psi
Allowable Shear	288.0 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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: KING STUDS @ 8' UPSTAIRS WINDOW

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	8.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	No.2		
Fb +	900 psi	Fv	180 psi
Fb -	900 psi	Ft	575 psi
Fc - Prll	1350 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1600	1600	1600 ksi
Minimum	580	580	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.30
Area	8.250 in^2	Cf or Cv for Compressio	1.10
Ix	20.797 in^4	Cf or Cv for Tension	1.30
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 8.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 14.483 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 8.10 ft, D = 0.1580, S = 0.8430 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1420 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.6008 : 1**

Load Combination	+D+0.60W
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	4.023 ft
At maximum location values are .	
Applied Axial	0.1725 k
Applied Mx	0.6987 k-ft
Applied My	0.0 k-ft
Fc : Allowable	1,249.38 psi

PASS Maximum Shear Stress Ratio = **0.2178 : 1**

Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	62.738 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.5751 k	Bottom along Y-Y	0.5751 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.4178 in at 4.077 ft above base
for load combination : W Only

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: TYPICAL DOWNSTAIRS STUD WALL

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	9.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 16.271 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 9.10 ft, D = 0.3820, L = 0.360, S = 1.226 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.04750 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.4413 : 1**

Load Combination	+D+0.60W
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	4.519 ft
At maximum location values are .	
Applied Axial	0.3983 k
Applied Mx	0.2950 k-ft
Applied My	0.0 k-ft
Fc : Allowable	817.30 psi

PASS Maximum Shear Stress Ratio = **0.08187 : 1**

Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	23.577 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.2161 k	Bottom along Y-Y	0.2161 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.2544 in at 4.581 ft above base
for load combination : W Only

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: JAMB STUDS @ DOWNSTARIS 5' WINDOW

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	9.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 16.271 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 9.10 ft, D = 0.7880, L = 1.045, S = 2.530 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.6009 : 1**

Load Combination	+D+0.750L+0.750S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	3.486 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	703.11 psi

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

Load Combination	+0.60D
Location of max.above base	9.10 ft
Applied Design Shear	0.0 psi
Allowable Shear	288.0 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

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
621 North College Road, Suite 100 Twin Falls, Idaho 83301 208/734-4888 FAX 208/734-6049

JOB NAME _____ JOB NO. _____

BY _____ DATE _____ SHEET 26 OF _____

KING STUDS @ 5' WINDOW
$P_{DL} = .92(9.5(12) + 11.5(15)) = 159$ lb
$P_{SL} = .92(11.5)(80) = 846$ lb
$P_{LL} = .92(9.5)(40) = 350$ lb
$W_W = 3.67(288) = 1061$ lb/ft (1) 2x6 SPRUCE OK PG 27

KING STUDS @ GARAGE DOORS
$P_{DL} = 3(2)(15) = 90$ lb
$P_{SL} = 3(2)(80) = 480$ lb
$W_W = 6(35.6) = 214$ lb/ft (2) 2x6 PG 28

DIVIDER W/NO STUDS
WHERE BRACED BY FLOOR

@16" O.C. $P_{DL} = 19(15) = 285(16/12) = 3801$ lb
$P_{SL} = 19(80) = 1520(16/12) = 2026$ lb
$P_{DL} = 19(12) = 228(16/12) = 304$ lb } HALF LOAD TO EA. SIDE
$P_{LL} = 19(40) = 760(16/12) = 1013$ lb
$h = 18'-2\frac{7}{8}"$ BRACED @ 10.15' 2x6 @ 16" SPAN O.C. OK PG 29

WITHOUT BRACE
$P_{DL} = 285$ lb/ft
$P_{SL} = 1520$ lb/ft
$h = 18'-2\frac{7}{8}"$ 2x6 DFL SELECT STRUCT @ 16" O.C. OK PG 30
OR TIMBERSTRAND 1.55E 1.5x5.5 @ 16" O.C. PG 31
2x6 DFL #2 @ 12" O.C. PG 32

FOUNDATION
TYPICAL EXTERIOR
$W_{DL} = 11.5(15) + (9.5)(12) + 5(12) + 18(10) = 5271$ lb/ft
$W_{SL} = \cancel{1520}$ lb/ft 920
$W_{LL} = 9.5(40) + 5(40) = 5801$ lb/ft USE 18" x 10" PG 33-34

DIVIDER W/ LOAD
$W_{DL} = 9(15) + 19(12) + 10(12) + 18(10) = 8131$ lb
$W_{SL} = 19(80) = 1520$ lb
$W_{LL} = 19(40) + 10(40) = 1160$ lb USE 28" x 10" PG 35-36

PONY W/ LOADS
$W_{DL} = 9.5(12) = 114$ lb/ft
$W_{LL} = 9.5(40) = 380$ lb/ft 12" x 8" OK PG 37-38

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: KING STUDS @ DOWN STAIRS 5' WINDOW

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	9.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 16.271 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 9.10 ft, D = 0.1590, L = 0.350, S = 0.8460 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1060 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.9524 : 1**

Load Combination	+D+0.60W
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	4.519 ft
At maximum location values are .	
Applied Axial	0.1753 k
Applied Mx	0.6583 k-ft
Applied My	0.0 k-ft
Fc : Allowable	817.30 psi

PASS Maximum Shear Stress Ratio = **0.1827 : 1**

Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	52.615 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.4823 k	Bottom along Y-Y	0.4823 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.5678 in at 4.581 ft above base
for load combination : W Only

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: KING STUDS @ GARAGE DOORS

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	9.1 ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2-2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**3.0** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	16.50 in^2	Cf or Cv for Compressio	1.0
Ix	41.594 in^4	Cf or Cv for Tension	1.0
Iy	12.375 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9.1 ft, k

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 32.543 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 9.10 ft, D = 0.090, S = 0.480 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.2140 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.9482 : 1**

Load Combination	+D+0.60W
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	4.581 ft
At maximum location values are .	
Applied Axial	0.1225 k
Applied Mx	1.329 k-ft
Applied My	0.0 k-ft
Fc : Allowable	817.30 psi

PASS Maximum Shear Stress Ratio = **0.1844 : 1**

Load Combination	+D+0.60W
Location of max.above base	0.0 ft
Applied Design Shear	53.111 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.9737 k	Bottom along Y-Y	0.9737 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.5731 in at 4.581 ft above base
for load combination : W Only

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL STUDS @ FLOOR BRACING LOCATION

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	18.24' ft		
(Used for non-slender calculations)			
Wood Species	Douglas Fir-Larch		
Wood Grade	Stud		
Fb +	700 psi	Fv	180 psi
Fb -	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 10.15 f

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 32.614 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 18.240 ft, D = 0.380, S = 2.026 k
Axial Load at 10.150 ft, Yecc = 2.750 in, D = 0.1520, L = 0.5070 k
Axial Load at 10.150 ft, Yecc = -2.750 in, D = 0.1520, L = 0.5070 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, L = 0.00670 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.9568 : 1**

Load Combination	+D+0.750L+0.750S
Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	9.059 ft
At maximum location values are .	
Applied Axial	2.997 k
Applied Mx	0.2090 k-ft
Applied My	0.0 k-ft
Fc : Allowable	628.48 psi

PASS Maximum Shear Stress Ratio = **0.06172 : 1**

Load Combination	+D+L
Location of max.above base	18.240 ft
Applied Design Shear	11.110 psi
Allowable Shear	180.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.06110 k	Bottom along Y-Y	0.06110 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.5793 in at 9.181 ft above base
for load combination : +D+L

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL STUDS @ STAIRWELL (NO BRACING)

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design				
End Fixities	Top & Bottom Pinned				
Overall Column Height	18.24' ft				
(Used for non-slender calculations)					
Wood Species	Douglas Fir-Larch				
Wood Grade	Select Structural				
Fb +	1500 psi	Fv	180 psi		
Fb -	1500 psi	Ft	1000 psi		
Fc - Prll	1700 psi	Density	31.21 pcf		
Fc - Perp	625 psi				

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1900	1900	1900 ksi
Minimum	690	690	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.30
Area	8.250 in^2	Cf or Cv for Compressio	1.10
Ix	20.797 in^4	Cf or Cv for Tension	1.30
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 18.24'

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 32.614 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 18.240 ft, D = 0.380, S = 2.026 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, L = 0.00670 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.8569 : 1**

Load Combination	+D+S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	2.439 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	344.945 psi

PASS Maximum Shear Stress Ratio = **0.06172 : 1**

Load Combination	+D+L
Location of max.above base	18.240 ft
Applied Design Shear	11.110 psi
Allowable Shear	180.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.06110 k	Bottom along Y-Y	0.06110 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.4268 in at 9.181 ft above base
for load combination : +D+L

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

Wood Column

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL STUDS @ STAIRWELL (NO BRACING)

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		
End Fixities	Top & Bottom Pinned		
Overall Column Height	18.24' ft		
(Used for non-slender calculations)			
Wood Species	iLevel Truss Joist		
Wood Grade	TimberStrand LSL 1.55E		
Fb +	2325 psi	Fv	310 psi
Fb -	2325 psi	Ft	1070 psi
Fc - Prll	2050 psi	Density	45.01 pcf
Fc - Perp	800 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1550	1550	1550 ksi
Minimum	787.815	787.815	

Wood Section Name	**1.5x5.5**		
Wood Grading/Manuf.	Trus Joist		
Wood Member Type	TimberStrand LSL		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.0
Area	8.250 in^2	Cf or Cv for Compressio	1.0
Ix	20.797 in^4	Cf or Cv for Tension	1.0
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 18.24'

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 47.035 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 18.240 ft, D = 0.380, S = 2.026 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, L = 0.00670 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.7421 : 1**

Load Combination	+D+S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	2.453 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	400.688 psi

PASS Maximum Shear Stress Ratio = **0.03584 : 1**

Load Combination	+D+L
Location of max.above base	18.240 ft
Applied Design Shear	11.110 psi
Allowable Shear	310.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.06110 k	Bottom along Y-Y	0.06110 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.5232 in at 9.181 ft above base
for load combination : +D+L

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
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365-22

Wood Column

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL STUDS @ STAIRWELL (NO BRACING)

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design				
End Fixities	Top & Bottom Pinned				
Overall Column Height	18.24' ft				
(Used for non-slender calculations)					
Wood Species	Douglas Fir-Larch				
Wood Grade	No.2				
Fb +	900 psi	Fv	180 psi		
Fb -	900 psi	Ft	575 psi		
Fc - Prll	1350 psi	Density	31.21 pcf		
Fc - Perp	625 psi				

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1600	1600	1600 ksi
Minimum	580	580	

Wood Section Name	**2x6**		
Wood Grading/Manuf.	Graded Lumber		
Wood Member Type	Sawn		
Exact Width	**1.50** in	Allow Stress Modification Factors	
Exact Depth	**5.50** in	Cf or Cv for Bending	1.30
Area	8.250 in^2	Cf or Cv for Compressio	1.10
Ix	20.797 in^4	Cf or Cv for Tension	1.30
Iy	1.547 in^4	Cm : Wet Use Factor	1.0
		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 18.24'

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 32.614 lbs * Dead Load Factor
AXIAL LOADS . . .
Axial Load at 18.240 ft, D = 0.2850, S = 1.520 k
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, L = 0.0050 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.7701 : 1**

Load Combination	+D+S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	1.838 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	289.237 psi

PASS Maximum Shear Stress Ratio = **0.04606 : 1**

Load Combination	+D+L
Location of max.above base	18.240 ft
Applied Design Shear	8.291 psi
Allowable Shear	180.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.04560 k	Bottom along Y-Y	0.04560 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y 0.3783 in at 9.181 ft above base
for load combination : +D+L

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

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: EXTERIOR FOOTING WORST CASE

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00120
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	2.330	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

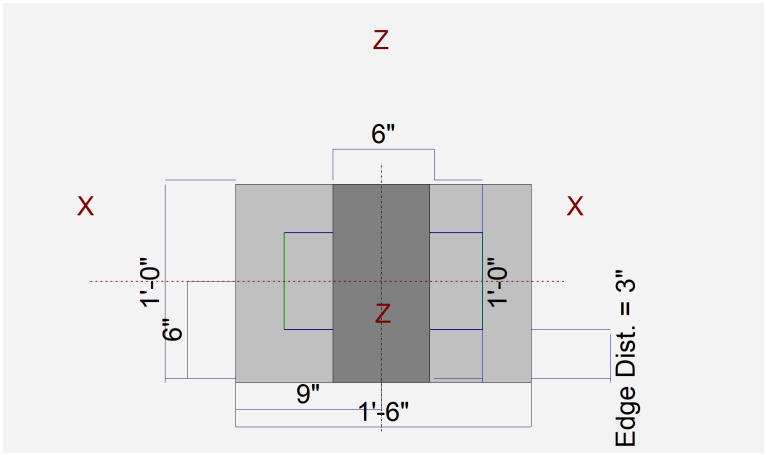
Width parallel to X-X Axis	=	1.50 ft
Length parallel to Z-Z Axis	=	1.0 ft
Footing Thickness	=	10.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	6.0 in
pz : parallel to Z-Z Axis	=	12.0 in
Height	=	24.0 in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in



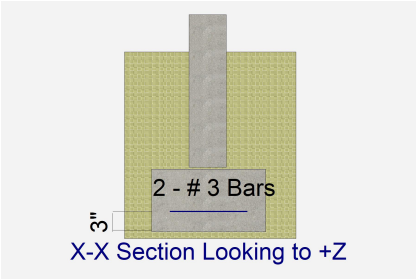
Reinforcing

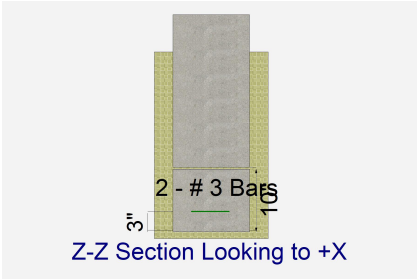
Bars parallel to X-X Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3
Bars parallel to Z-Z Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation

	Bars along Z-Z Axis
# Bars required within zone	80.0 %
# Bars required on each side of zone	20.0 %





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	0.5270		0.580	0.920				k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: EXTERIOR FOOTING WORST CASE

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9527	Soil Bearing	1.429 ksf	1.50 ksf	+D+0.750L+0.750S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.04567	Z Flexure (+X)	0.2058 k-ft/ft	4.506 k-ft/ft	+1.20D+0.50L+1.60S
PASS	0.04567	Z Flexure (-X)	0.2058 k-ft/ft	4.506 k-ft/ft	+1.20D+0.50L+1.60S
PASS	0.0	X Flexure (+Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	0.0	X Flexure (-Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	2-way Punching	0.0 psi	75.0 psi	+1.40D

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL FOOTING

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.0
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	0.250	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

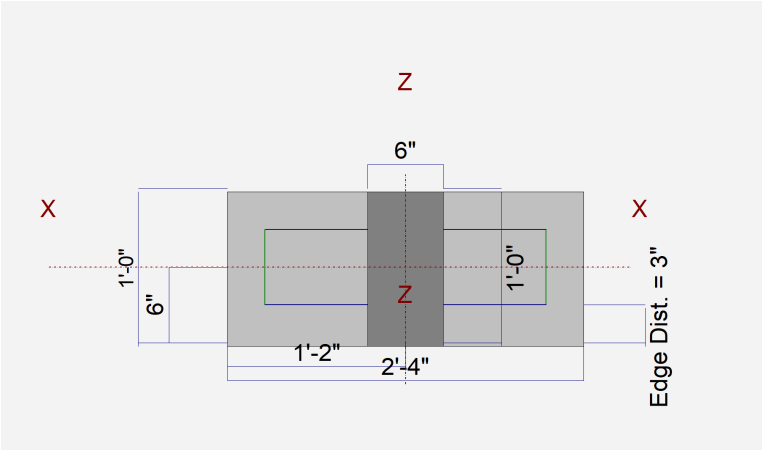
Width parallel to X-X Axis	=	2.333 ft
Length parallel to Z-Z Axis	=	1.0 ft
Footing Thickness	=	10.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	6.0 in
pz : parallel to Z-Z Axis	=	12.0 in
Height	=	36.0 in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in



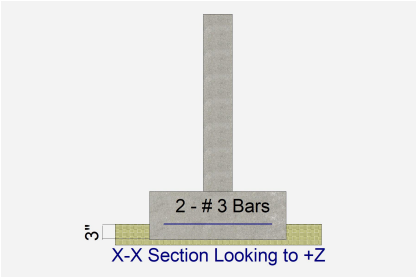
Reinforcing

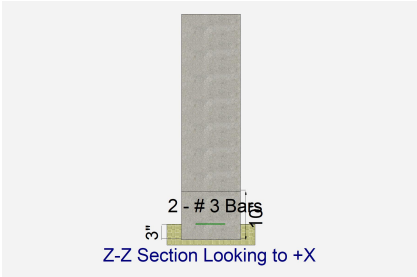
Bars parallel to X-X Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3
Bars parallel to Z-Z Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation

	Bars along Z-Z Axis
# Bars required within zone	60.0 %
# Bars required on each side of zone	40.0 %





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	0.8130		1.520	1.160				k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: DIVIDER WALL FOOTING

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9493	Soil Bearing	1.424 ksf	1.50 ksf	+D+0.750L+0.750S about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1697	Z Flexure (+X)	0.7648 k-ft/ft	4.506 k-ft/ft	+1.20D+1.60L+0.50S
PASS	0.1697	Z Flexure (-X)	0.7648 k-ft/ft	4.506 k-ft/ft	+1.20D+1.60L+0.50S
PASS	0.0	X Flexure (+Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	0.0	X Flexure (-Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	0.09441	1-way Shear (+X)	7.081 psi	75.0 psi	+1.20D+1.60L+0.50S
PASS	0.09441	1-way Shear (-X)	7.081 psi	75.0 psi	+1.20D+1.60L+0.50S
PASS	n/a	1-way Shear (+Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	75.0 psi	n/a
PASS	0.0	2-way Punching	0.0 psi	150.0 psi	+1.40D

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
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365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: PONY WALL FOOTINGS

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	40	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.0
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	Yes

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Soil Density	=	110.0	pcf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Increases based on footing Depth

Footing base depth below soil surface	=	0.250	ft
Allow press. increase per foot of depth	=		ksf
when footing base is below	=		ft

Increases based on footing plan dimension

Allowable pressure increase per foot of depth	=	ksf
when max. length or width is greater than	=	ft

Dimensions

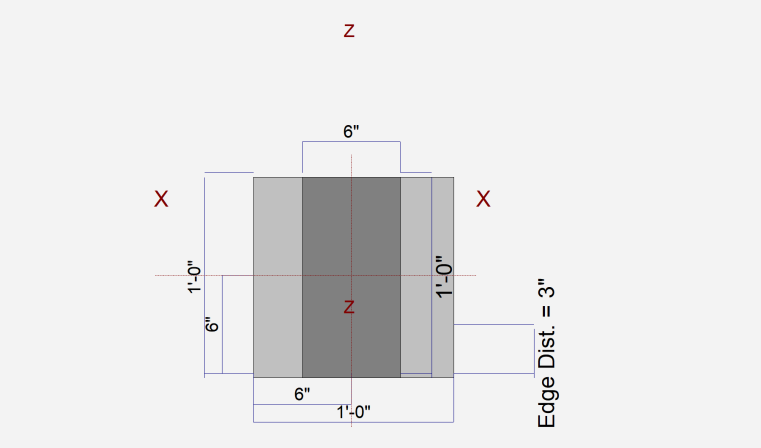
Width parallel to X-X Axis	=	1.0 ft
Length parallel to Z-Z Axis	=	1.0 ft
Footing Thickness	=	8.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	6.0 in
pz : parallel to Z-Z Axis	=	12.0 in
Height	=	0.250 in

Rebar Centerline to Edge of Concrete...

at Bottom of footing	=	3.0 in

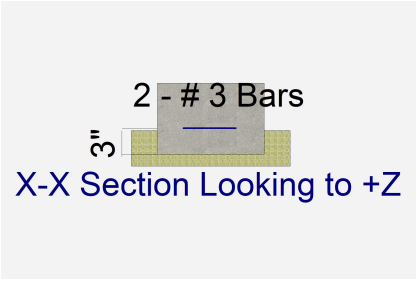


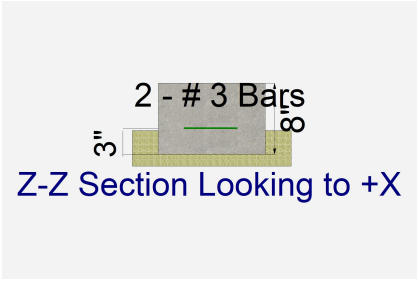
Reinforcing

Bars parallel to X-X Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3
Bars parallel to Z-Z Axis			
Number of Bars	=		2
Reinforcing Bar Size	=	#	3

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a





Applied Loads

		D	Lr	L	S	W	E	H	
P : Column Load	=	0.1140		0.380	0.0				k
OB : Overburden	=								ksf
M-xx	=								k-ft
M-zz	=								k-ft
V-x	=								k
V-z	=								k

ELLIS DUPLEX
BELLEVUE, ID
EHM ENGINEERS
BRIAN MARTENS P.E.
365-22

General Footing

Project File: ENERCALC_20

DESCRIPTION: PONY WALL FOOTINGS

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.3948	Soil Bearing	0.5922 ksf	1.50 ksf	+D+L about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.007323	Z Flexure (+X)	0.02333 k-ft/ft	3.186 k-ft/ft	+1.20D+1.60L
PASS	0.007323	Z Flexure (-X)	0.02333 k-ft/ft	3.186 k-ft/ft	+1.20D+1.60L
PASS	0.0	X Flexure (+Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	0.0	X Flexure (-Z)	0.0 k-ft/ft	0.0 k-ft/ft	No Moment
PASS	n/a	1-way Shear (+X)	0.0 psi	75.0 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	75.0 psi	n/a
PASS	n/a	2-way Punching	0.0 psi	75.0 psi	+1.40D

EHM Engineers, Inc.
BUILDING THE FUTURE ON A FOUNDATION OF EXCELLENCE
621 North College Road, Suite 100 Twin Falls, Idaho 83301 208/734-4888 FAX 208/734-6049

JOB NAME _____ JOB NO. _____

BY _____ DATE _____ SHEET 39 OF _____

FLOOR LOADS TO STUDS

$W_{DL} = 9.5(12) = 114\,lb/ft$

$W_{LL} = 9.5(40) = 380\,lb/ft$

$494\,lb/ft$

(3) SDS25300 1901b ALLOWABLE

ELLIS DUPLEX

Latitude, Longitude: 43.47157180, -114.25677090

Date	11/3/2022, 11:15:35 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.418	MCE_R ground motion. (for 0.2 second period)
S_1	0.14	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.613	Site-modified spectral acceleration value
S_{M1}	0.324	Site-modified spectral acceleration value
S_{DS}	0.408	Numeric seismic design value at 0.2 second SA
S_{D1}	0.216	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1.466	Site amplification factor at 0.2 second
F_v	2.321	Site amplification factor at 1.0 second
PGA	0.184	MCE_G peak ground acceleration
F_{PGA}	1.433	Site amplification factor at PGA
PGA_M	0.263	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.418	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.462	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.14	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.151	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.184	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.904	Mapped value of the risk coefficient at short periods