# COOPER'S HAWK

# COUPER'S HAWK Apartment Units 9 & 10 a Sonora, CA Residential Duplex Development

UNIT 9: R-3 OCCUPANCY, TYPE V CONSTRUCTION 1.152 SF. CONDITIONED SPACE 150.0 SF. COVERED PATIO 62 SF COVERED ENTRY PORCH 1,152 SF CONDITIONED ATTIC, ALL UNDER 30" HEIGHT

UNIT 10: R-3 OCCUPANCY, TYPE V CONSTRUCTION 1.152 SF. CONDITIONED SPACE 150.0 SF. COVERED PATIO 62 SF. COVERED ENTRY PORCH 1,152 SF CONDITIONED ATTIC, ALL UNDER 30" HEIGHT

#### **APPLICABLE CODES:**

2016 CALIFORNIA BUILDING CODE 2016 CALIFORNIA RESIDENTIAL CODE 2016 CALIFORNIA ELECTRICAL CODE 2016 CALIFORNIA PLUMBING CODE 2016 CALIFORNIA MECHANICAL CODE 2016 CALIFORNIA ENERGY CODE 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE

NO SPECIAL INSPECTIONS ARE REQUIRED BY THE ENGINEER OF RECORD AS LONG AS THESE PLANS ARE FOLLOWED.

HOME ENERGY RATER SHALL BE REQUIRED TO INSPECT INSULATION QUALITY AND INDOOR AIR QUALITY ISSUES PER THE US EPA INDOOR AIR-PLUS CHECKLIST, AND PER US DOE ZERO-ENERGY READY PROGRAM REQUIREMENTS, PRIOR TO DRYWALL INSTALLATION. HOME ENERGY RATER SHALL ALSO PERFORM OR WITNESS THE FINAL BLOWER DOOR TEST, AND SHALL VERIFY AND RECORD THE FINAL AIR INFILTRATION RATE (ACH50)

#### **DESIGN CRITERIA:**

**ROOF LIVE LOAD: 25 PSF ROOF & CEILING DEAD LOAD: 15 PSF ROOF SNOW LOAD: 25 PSF** FLOOR & MECHANICAL LOFT LIVE LOAD: 40 PSF MECHANICAL LOFT DEAD LOAD: 15 PSF EXTERIOR WALL DEAD LOAD: 10 PSF INTERIOR WALL DEAD LOAD: 7 PSF CMU WALL DEAD LOAD: 84 PSF SEISMIC FACTORS: Ss = .414, S1 = .211 SEISMIC DESIGN CATEGORY: "D" WIND EXPOSURE "B", 3-SECOND GUST = 110 MPH ASSUMED ALLOWABLE SOIL BEARING PRESSURE = 1,500 PSF

# **SCOPE OF WORK:**

CONSTRUCT (2) SIDE-BY-SIDE DUPLEX UNITS PER THESE PLANS, AND ADHERING TO ALL SPECIFICATIONS ON THESE PLANS, AND OTHERWISE PROVICED BY OWNER. WORK INCLUDES ALL WORK THAT WOULD NORMALLY BE EXPECTED TO BE PERFORMED IN THE CONSTRUCTION OF A RESIDENTIAL BUILDING, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

- 1. CLEARING AND GRADING (PER SITE PLAN), INSTALL
- TEMPORARY EROSION CONTROL MEASURES
- 2. EXCAVATION
- 3. FOUNDATION
- 4. UNDER-FLOOR PLUMBING, ELECTRICAL, AND INSULATION
- 5. SLAB FLOOR INSTALLATION AND FINISH ABOVE WOOD FRAMING
- 6. ERECTION OF DOUBLE-FRAMED PARTY WALL
- 7. FRAMING, INCLUDING SIPS PANEL ERECTION AND SIPS ROOF **OVER TRUSSES**
- 8. WIRING, PLUMBING, AND MECHANICAL ROUGH-IN WORK (INCLUDING FIRE SPRINKLER SYSTEM)
- 9. AIR-SEALING AND INSULATION NOT INCLUDED IN SIPS WORK
- 10. DRYWALL AND PAINT, INCLUDING TRIM PAINT
- 11. INTERIOR TRIM, DOORS, AND CASEWORK
- 12. TRIM-OUT OF ELECTRICAL, MECHANICAL, AND PLUMBING 13. TRIM-OUT OF FIRE SPRINKLER SYSTEM
- 14. SHEET METAL ROOFING
- 15. EXTERIOR SIDING, SOFFIT, AND TRIM
- 16. EXTERIOR COVERED PORCH CONSTRUCTION, INCLUDING
- MASONRY WORK AT COLUMN BASES
- 17. EXTERIOR PAINT, INCLUDING SIDING, SOFFIT, AND TRIM 18. TOPSOIL AND FINAL GRADING, LANDSCAPING PER
- LANDSCAPE PLANS
- 18. CLEANUP AND FINAL INSPECTION, REMOVAL OF TEMPORARY **EROSION CONTROL MEASURES**

# **SOLAR PANELS:**

THE ENTIRE ROOF HAS BEEN DESIGNED TO SUPPORT THE LOAD OF STANDARD PHTOVOLTAIC SOLAR PANELS AND RACKING SYSTEM USING S-5 CLIPS TO THE RIBS OF THE STANDING-SEAM STEEL ROOFING PANELS. ROOF PANELS SHALL BE FASTENED TO SIPS ROOF FILLING ALL SCREW SLOTS WITH 1 1/4" STAINLESS STEEL TRUSS-HEAD SCREWS. THE SOLAR PANELS THEMSELVES ARE NOT A PART OF THIS SUBMITTAL, BUT ARE ANTICIPATED AT A LATER DATE.

#### **ENERGY SYSTEMS SUMMARY:**

- 1. HEATING, COOLING, AND DOMESTIC WATER HEATING: CHILTRIX CX34 IPLV COOLING EER = 17.59, NPLV COOLING EER = 19.27, NPLV HEATING EER = 20.36 (COP= 5.97)
- 2. VENTILATION DUCTS ARE ENTIRELY INSIDE THE BUILDING ENVLOPE, **INSULATE TO R-8**
- 3. WINDOW SHGC = .15 TO .19, U-FACTOR = .13 TO .16
- 4. WALL INSULATION IS 5.5" TYPE 1 EPS FOAM IN SIPS, R-25 ASSEMBLY
- 5. ROOF INSULATION IS 5.5" NEOPOR® FOAM IN SIPS, WITH R-15 H.D. BATT IN TOP CHORD OF TRUSS BELOW, R-43 ASSEMBLY
- 6. UNDER-FLOOR INSULATION IS R-38 FIBERGLASS BATTS, TIGHT TO UNDERSIDE OF FLOOR ASSEMBLY
- 7. FOUNDATION PERIMETER INSULATION IS 2" XPS FOAM INSULATION INSTALLED VERTICAL FROM TOP OF SLAB TO TOP OF FOOTING, INSIDE **FOUNDATION WALL**
- 8. THERMAL-MASS SLAB OVER WOOD FRAMING SHALL USE HELIX REINFORCING AT 8# PER CU. YD., OR EQ.
- 9. ALL HOT WATER LINES SHALL BE INSULATED PER CODE, AND THE PROVIDED ENERGY REPORT

#### FIRE SPRINKLER SYSTEM:

THE FIRE SPRINKLER INSTALLER SHALL SUBMIT THE SPECIFIC DESIGN OF THE FIRE SPRINKLER SYSTEM FOR APPROVAL PRIOR TO INSTALLATION. THE FIRE SPRINKLER SYSTEM SHALL MEET ALL REQUIREMENTS OF THE 2016 CALIFORNIA MECHANICAL CODE, 2016 CALIFORNIA RESIDENTIAL CODE, AND ALL OTHER APPLICABLE CODES IN EFFECT AT THE TIME. THE INSTALLER IS RESPONSIBLE FOR ALL APPROVALS AND INSPECTIONS, INCLUDING ANY SPECIAL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL FIRE MARSHAL OR OTHER GOVERNING BODY.

# WILDLAND-URBAN INTERFACE CODE (CRC 327):

A. ALL EXTERIOR SIDING AND TRIM SHALL BE NON-COMBUSTIBLE, IGNITION RESISTANT, OR MEET THE STATE FIRE MARSHAL TESTING STANDARD B. ALL EXTERIOR GLAZING SHALL HAVE AT LEAST ONE TEMPERED PANE, OR BE IN A 20-MINUTE RATED ASSEMBLY

- C. ALL ROOF PROJECTIONS SHALL BE PROTECTED WITH NON-COMBUSTIBLE OR IGNITION RESISTANT MATERIALS, OR SHALL MEET THE STATE FIRE MARSHAL TESTING STANDARDS. THIS REQUIREMENT DOES NOT APPLY TO GABLE END EAVES OR UNENCLOSED PORCHES WITHOUT CEILINGS
- D. EAVE VENTS ARE PROHIBITED, AND ARE NOT USED ON THIS STRUCTURE E. ALL RAIN GUTTERS WHALL BE PROVIDED WITH DEBRIS BARRIERS F. EXTERIOR DOORS SHALL BE 20-MINUTE RATED ASSEMPLIES, SOLID CORE

WITH 1 3/8" MINIMUM STILES AND RAILS. AND 1 1/4" INTERIOR FIELD PANEL

THICKNESS OR OF NONCOMBUSTIBLE CONSTRUCTION.

# **GENERAL NOTES:**

A. ADDRESS SHALL BE PLACED ON THE FRONT-MAIN ENTRANCE AREA OF ALL MEW BUILDINGS THAT IS PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD ON WHICH THE PROPERTY IS ADDRESSED. ADDRESS NUMBERS SHALL BE PERMANENT AND SHALL CONTRAST WITH THEIR BACKGROUND. THE NUMBERS SHALL BE A MINIMUM OF 4 INCHES IN HEIGHT WITH A MINIMUM 1/2" STROKE. NUMBERS SHALL BE REFLECTING AND OF CONTRASTING COLOR. HOUSES FURTHER THAN 50' FROM THE ROAD SHALL HAVE THE NUMBERS POSTED AT THE BEGINNING OF THE DRIVEWAY. (TC Ord. Code 12.12.080) (CRC R139)

B. EMERGENCY ESCAPE AND RESCUE, FROM BASEMENTS IN DWELLING UNITS AND EVERY SLEEPING ROOM BELOW THE FOURTH STORY, SHALL HAVE AT LEAST ONE OPERABLE WINDOW OR DOOR APPROVED FOR EMERGENCY ESCAPE OR RESCUE THAT SHALL OPEN DIRECTLY INTO A PUBLIC WAY, YARD, OR COURT THAT OPENS INTO A PUBLIC WAY. (CRC R310)

. MINIMUM SIZE OF SINGLE HUNG WINDOWS FOR EGRESS PURPOSES SHALL BE 3'X5'. ALL OTHER WINDOW OPERATIONS WILL BE EVALUATED FOR APPROPRIATE CLEARANCES WITH A REDUCTION OF 4" IN EACH DIRECTION 2. EACH EGRESS WINDOW SHALL HAVE A NEAT CLEAR OPENING OF

# 5.7 SOUARE FEET.

EXCEPTION: 5 SQ. FT. REQUIRED FOR GRADE-FLOOR OPENINGS, NET CLEAR OPENING NOR GREATER THAN 44" ABOVE GRADE.

3. EACH WINDOW SHALL HAVE A MINIMUM NET OPENING HEIGHT OF 24" 4. EACH WINDOW WHALL HAVE A MINIMUM NET OPENING WIDTH OF 20" 5. THE BOTTOM OF NET CLEAR OPENING SHALL NOT BE MORE THAN 44" ABOVE THE FINISHED FLOOR

#### **GENERAL ELECTRICAL NOTES:**

- a. A grounding electrode shall be provided per [CEC Article 250-50].
- b. At least one 20-ampere branch circuit shall be dedicated to supply bathroom receptacles. At least one receptacle is required within 3-ft of each basin.[CEC Articles 210.11(C)(3)] [CEC 210.52(D)]
- Where the 20-ampere circuit supplies a single bathroom, outlets for other equipment within the same bathroom shall be permitted to be supplied in accordance with [CEC Article 210.23(A)(1) and (A)(2)].
- d. At least one additional 20-ampere branch circuit shall be dedicated to supply laundry receptacle outlet(s) required by [CEC Articles 210-11(C)(2) & 210-52(F)]. This circuit shall have no other outlets.
- e. Provide G.F.C.I. protection to all 125 volt, 15 and 20 amp receptacles serving the following: [CEC Art. 210.8(A)]
  - countertop surfaces in kitchens
  - within 6-ft of laundry
  - sinks other than kitchen sinks
  - bathrooms
- Receptacle outlets shall be installed so that no point along the floor line in any wall space is more than 6-ft measured horizontally from an outlet in that space. Receptacle outlets are required in walls 2-ft or greater. Hallways of 10-ft or more in length shall have at least one receptacle outlet. [CEC Art. 210.52(A) and (H)]
- All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas shall be protected by a listed arc-fault circuit interrupter, combination type installed to provide protection of the branch circuit. [CEC Art. 210.12]
- Tamper-Resistant Receptacles in Dwelling Units. In all areas specified in 210.52, all 125 volt, 15 and 20 ampere receptacles shall be listed as tamper-resistant receptacles. [CEC 406.12]
- Light fixtures that weight more than 6lbs or exceed 16-in in any dimension shall not be supported by the screw shell of a lamp holder. [CEC Art. 410.30(A)]
- Outlet boxes or outlet box systems used as the sole support of a ceiling-suspended (paddle) fan shall be listed and marked by the manufacturer as suitable for this purpose. The required marking shall include the maximum weight to be supported for ceiling fans that weigh more than 35-lbs. [CEC Art. 314.27(D), 422.18]
- Provide a disconnecting means at air condition units and heat pumps with sight from and readily accessible. Provide fuses or approved circuit breakers to protect the A.C. equipment and the branch circuit serving such equipment and the unit nameplate ratings. [CEC Art. 440.14, 440-52(B)]
- Lighting in Garages, Laundry Rooms, and Utility Rooms shall be high efficacy and controlled by a Vacancy Sensor [Cal Energy 150.0(k)6.]
- m. Lighting for Bathrooms shall have at least one high efficacy luminaire. All other lighting shall be high efficacy or controlled by a Vacancy Sensor [CAL Energy 150.0(k)5]
- n. At least half of the rated lighting wattage installed in a kitchen shall be high efficacy luminaires. [Cal Energy 150.0(K)3A]
- o. Lighting for Other Rooms shall be high efficacy or dimmable or controlled by a Vacancy Sensor. [Cal Energy 150.0(k)7]
- All lighting attached to the residence or to other buildings on the same lot must be high efficacy, or controlled by a motion sensor and either a photocell or an astronomical time clock. [Cal Energy 150.0(k)9]

#### **GENERAL MECHANICAL NOTES:**

- a. Domestic clothes dryer moisture exhaust ducts to be installed as follows: [CMC 504.3.1]
  - Terminate on the outside of the building and be equipped with a back draft damper.
  - Not be connected or installed with sheet metal screws or other fasteners, which will obstruct the flow. 14-ft maximum run with two 90° bends, deduct 2-ft per 90° bend in excess of two bends as required
- by the manufacturer's installation instructions and approved by the building official.
- Listed cooking appliance or microwave oven above a listed cooking appliance shall conform to the conditions of the upper appliance's listing and the manufacturer's installation instructions. [CMC 916.2]
- c. Domestic range vents, or ducts used for domestic kitchen range ventilation, shall be of metal and have smooth interior surfaces. [CMC 504.2]. Exception: Downdraft grill-range ventilation installed under a concrete slab floor may be of approved
  - Schedule 40 PVC provided:
    - The under-floor trench where duct is installed is completely backfilled with sand or gravel. Not more than 1-in of 6-in diameter PVC coupling may protrude above the concrete floor surface.
  - PVC pipe joints shall be solvent cemented to provide an air- and grease-tight duct. Duct shall terminate above grade outside the building and be equipped with a backdraft damper.
- All Exhaust vents shall terminate outside the building and be equipped with backdraft dampers [CMC 504.1]. No. Date Appr Termination of all environmental air ducts shall be a minimum of 3-ft from any openings into the building (i.e., dryers, bath and utility fans, etc., must be 3-ft away from doors, windows, opening skylights or attic

# **GENERAL PLUMBING NOTES:**

vents). [CMC 504.5].

- Joints where a fixture meets wall or floor must be sealed and made watertight. [CPC 407.2]
- Relief valves located inside a building shall be provided with a drain of galvanized, steel, hard drawn copper piping and fittings, CPVC, or listed valve drain. The drain shall extend from the valve to the outside of the building with the end of the pipe not more than 2-ft nor less than 6-in above the ground and pointing downward. [CPC 608.5]
- Note 1: No part of such drainpipe shall be trapped, and the terminal end of the drainpipe shall not be
- Note 2: Discharge from a relief valve into a water heater pan shall be prohibited. [CPC 508.5]
- c. Shut-off valves shall be installed in the fuel supply piping outside of each appliance. [ANZI Z21.24, NFPA 54:9.6.1]
- Showers & tub-shower combinations shall be provided with individual control valves of the pressure balance or thermostatic mixing valve type with a maximum mixed water setting of 120 degrees. [CPC 408.3]
- e. Showers shall be finished with a smooth, hard, nonabsorbent surface to a height not less than 6 feet above the floor. [CRC R308.4.5]
- Potable water outlets with hose attachments, other than water heater drains, boiler drains, and clothes washer connectors, shall be protected a listed non-removable hose bibb type backflow prevention devise, a non-removable hose bib type vacuum breaker or by a listed atmospheric vacuum breaker. [CPC 603.5.7]
- Dishwasher air gap fitting required above sink flood rim. [CPC 807.4]



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- 4. SECTIONS, 3-D VIEWS, MISC. DETAILS
- 5. EXTERIOR ELEVATIONS 6. ENGINEERING SKETCHES & CALLOUTS
- 7. ENGINEERING COVER SHEET 8. ELECTRICAL & MECHANICAL PLANS

No. Date Issue Notes **ENERGY** 

> Zero-Energy Plans LLC 107 S. Main St. Ste. G201 Coupeville, WA 98239 (360) 969-2363

> > Tim Garrison Mount Vernon, WA

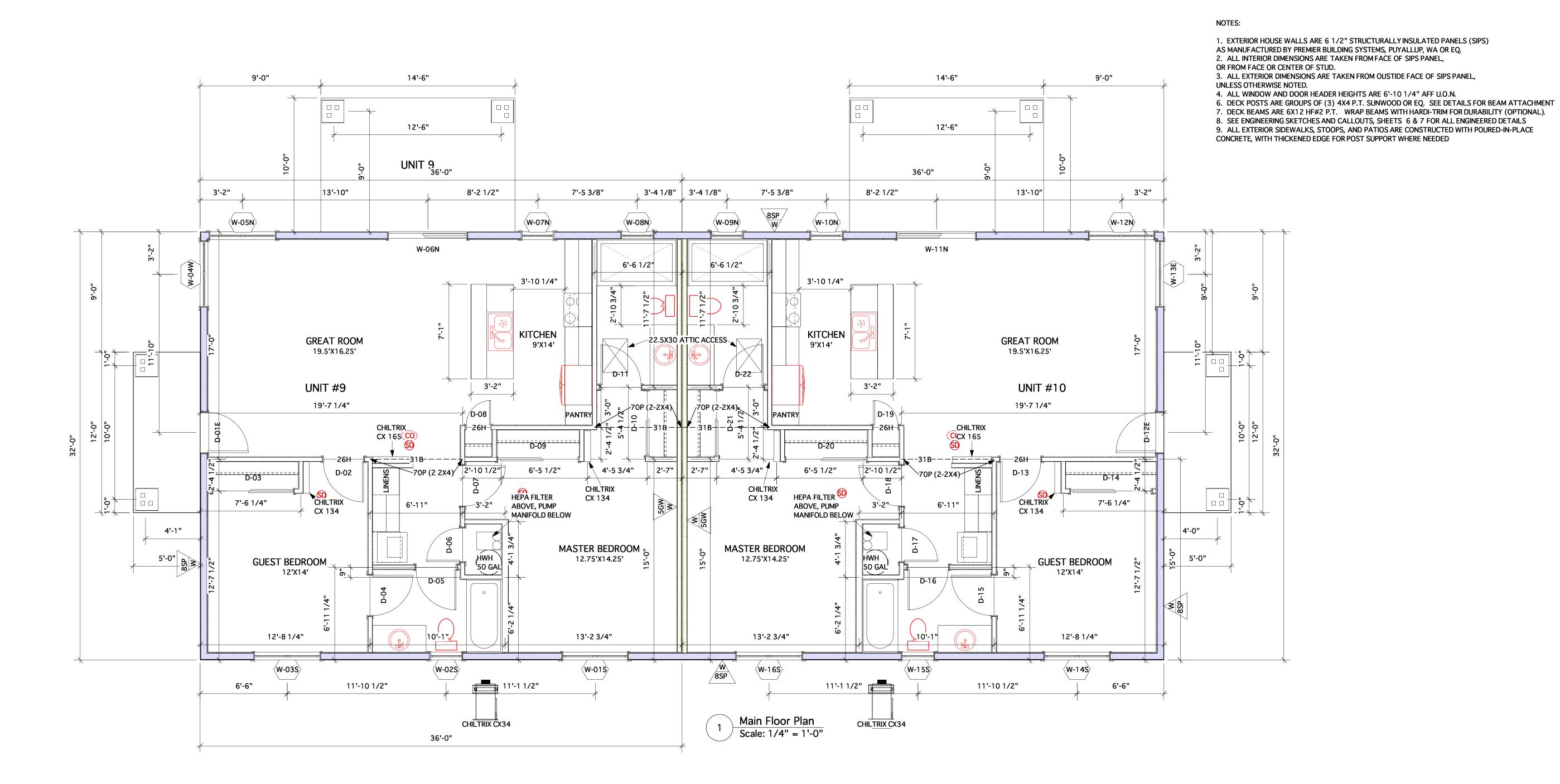
Cooper's Hawk Duplexes

**Cover Sheet** 

ZEP Coopers Hawk Ted L. Clifton Sht-00

04/02/2019

Doo	or Schedule									Wind	Window Schedule											
	Nominal Size	Doo	r	Door Fr	a Frame De	etails	Fire R	ating	Openin	Door Da	ta				Nomina	l Size	Glass	Details		Open	Window Data	
Mark	Width	Ss U Door Operation	Slab Style	Jamb Thick	Jamb Detail	Sill Detail	HW Set	RO Width	RO Height	Mfr	Model No.	. Accessories	s Comments	Mark	O.A. Width	O.A. Height O.A. Height O.A. Height		Egress Win	RO Width	RO Height	Mfr Model No.	Accessories Comments
16	3'0" 6'8"	1 3/8" Swing Simple	Panel		" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel			W- 01 S	5'0"		270-180-189	TRUE	5'0"	5'0"	Vinyltek Boreal	Screen
- 12 E	3'0" 6'8"	1 3/4" Swing Simple	Custom	3/4	" 7 1/16"		DHW-#	3'2"	6'10 1/4"	Codel	6 panel			W- 02 S	2'6"		270-180-189	FALSE	2'6"		Vinyltek Boreal	Screen
- 15	3'0" 6'8"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel			W- 03 S	5'0"		270-180-189	TRUE	5'0"		Vinyltek Boreal	Screen
/- 11 N		1 3/4" Slider	Glass	3/4	" 7 1/16"		DHW-#	6'0"	6'11 1/2"	Vinyltek	6 panel		270-180-i89	W- 04 W	5'0"		270-180-189	FALSE	5'0"		Vinyltek Boreal	Screen
- 18	3'0" 6'8"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel			W- 05 N	5'0"		270-180-189	FALSE	5'0"		Vinyltek Boreal	Screen
- 17		1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	2'8"	6'10"	Masonite	6 panel			W- 07 N	2'6"		270-180-189	FALSE	2'6"		Vinyltek Boreal	Screen
- 13		1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel			W- 08 N	2'6"		270-180-189	FALSE	2'6"		Vinyltek Boreal	Screen
- 14	6'0" 6'8"	1 3/8" Slider	Glass	3/4	" 7 1/16"		DHW-#	6'2"	6'10"	Masonite	6 panel			W- 09 N	2'6"		270-180-189	FALSE	2'6"		Vinyltek Boreal	Screen
- 19	1'10" 6'9"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	2'0"	6'9"	Masonite	6 panel			W- 10 N	2'6"		270-180-189	FALSE	2'6"		Vinyltek Boreal	Screen
- 20	6'0" 6'8"	1 3/8" Slider	Glass	3/4	" 7 1/16"		DHW-#	6'2"	6'10"	Masonite	6 panel			W- 12 N	5'0"		270-180-189	FALSE	5'0"		Vinyltek Boreal	Screen
- 22	3'0" 6'8"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel			W- 13 E	5'0"		270-180-189	FALSE	5'0"		Vinyltek Boreal	Screen
- 21	5'0" 6'10"	1 3/8" Slider	Panel	3/4	" 7 1/16"		DHW-#	5'0"	<del>                                     </del>	Masonite	6 panel			W- 14 S	5'0"		270-180-189	TRUE	5'0"		Vinyltek Boreal	Screen
- 05	3'0" 6'8"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel		Codel	W- 15 S	2'6"		270-180-189	FALSE	2'6"	2'6"	Vinyltek Boreal	Screen
)- 01 E	3'0" 6'8"	1 3/4" Swing Simple	Custom	3/4	" 7 1/16"		DHW-#	3'2"	6'10 1/4"	Codel	6 panel			W- 16 S	5'0"		270-180-189	TRUE	5'0"		Vinyltek Boreal	Screen
- 04		1 3/8" Swing Simple	Panel	-	" 7 1/16"		DHW-#	3'2"		Masonite	6 panel					-		_				
- 06 N	6'0" 6'10 1/4"	1 3/4" Slider	Glass	3/4	" 7 1/16"		DHW-#	6'0"	6'11 1/2"	Vinyltek	6 panel		270-180-i89									
- 07	3'0" 6'8"	1 3/8" Swing Simple	Panel	-	" 7 1/16"		DHW-#	3'2"	6'10"	Masonite	6 panel											
06	2'6" 6'8"	1 3/8" Swing Simple	Panel	3/4	" 7 1/16"		DHW-#	2'8"	t	Masonite	6 panel											
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6'10" Masonite

6'9" Masonite

6'10" Masonite

6'10" Masonite

6'9" Masonite

2'3" Masonite

2'3" Masonite

6 panel

D- 03

D- 08

D- 09

D- 11

D- 10

D- 03

D- 03

1'10"

5'0"

2'6"

2'6"

6'8" 1 3/8" Slider

6'8" 1 3/8" Slider

6'10" 1 3/8" Slider

6'9" 1 3/8" Swing Simple

6'8" 1 3/8" Swing Simple

2'2" 1 3/4" Swing Simple

2'2" 1 3/4" Swing Simple

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3/4" 7 1/16"

Glass

Solid

DHW-#

DHW-#

DHW-#

DHW-#

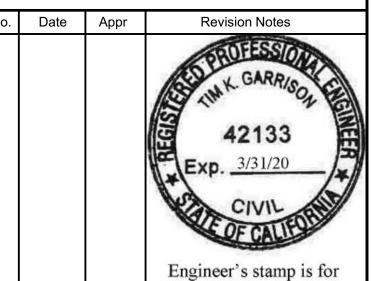
DHW-#

DHW-#

6'2"

6'2"

2'8"



structural items only.

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No. Date Issue Notes

ENERGY
HOME PLANS

Zero-Energy Plans LLC 107 S. Main St. Ste. G201 Coupeville, WA 98239 (360) 969-2363

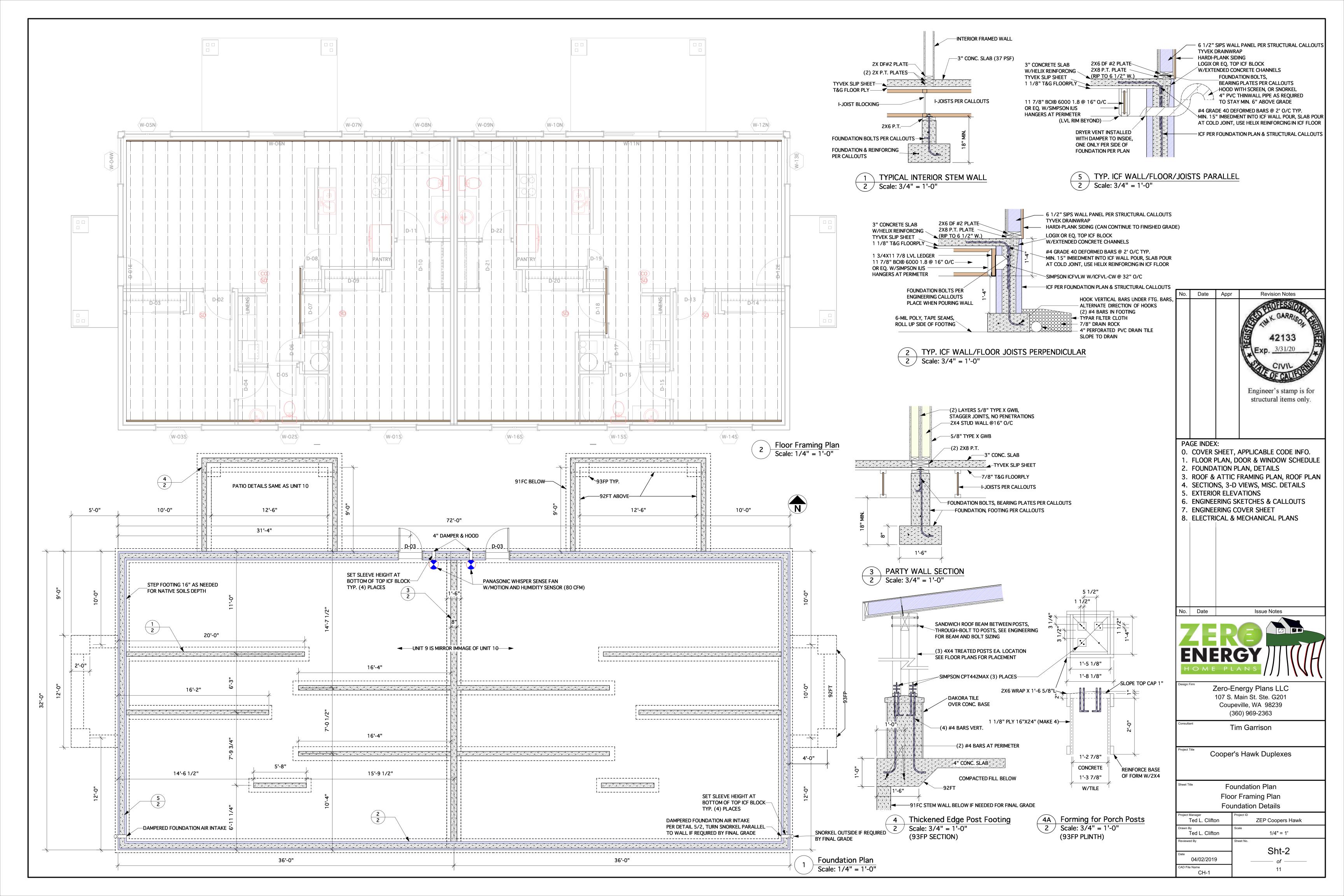
Tim Garrison

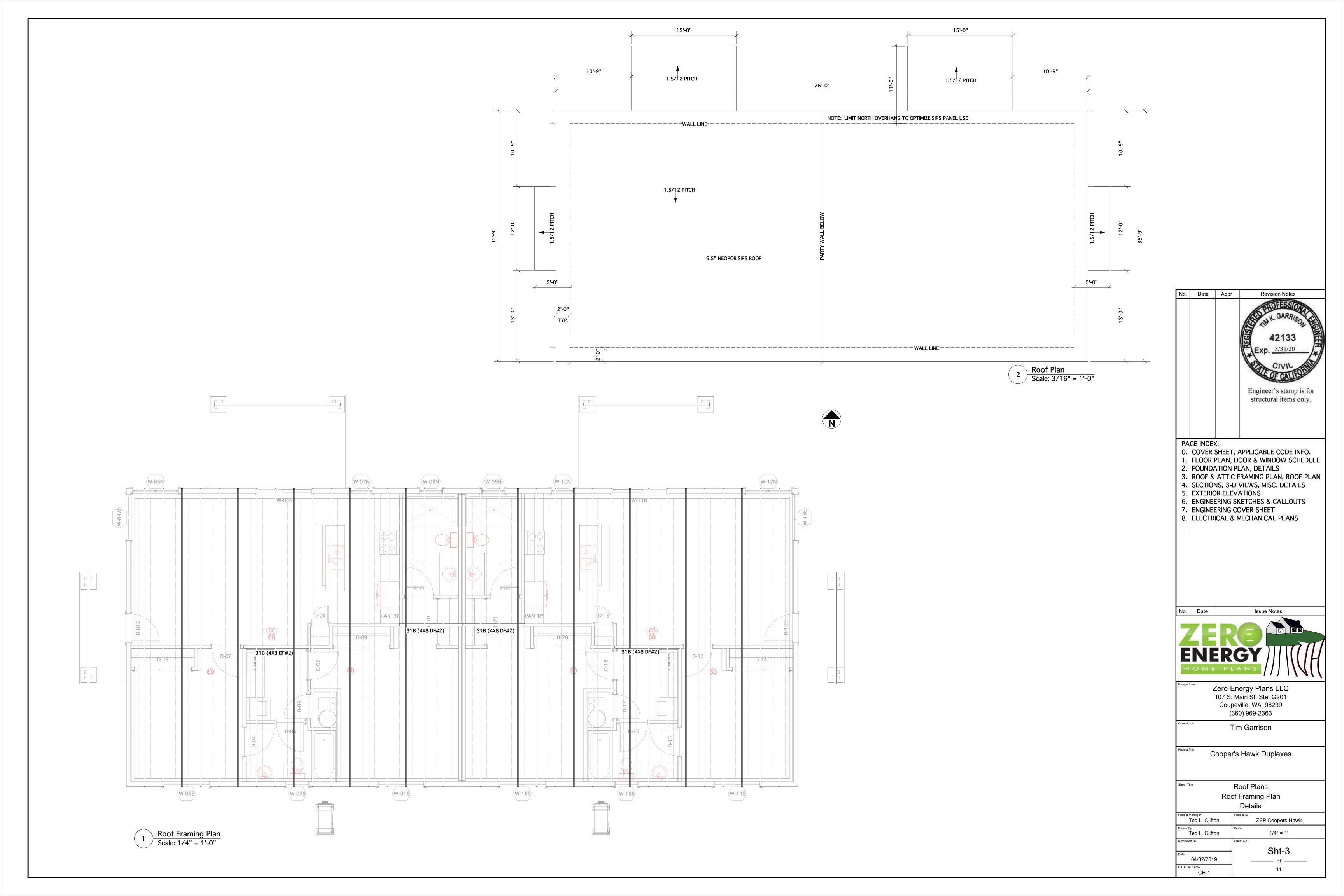
Cooper's Hawk Duplexes

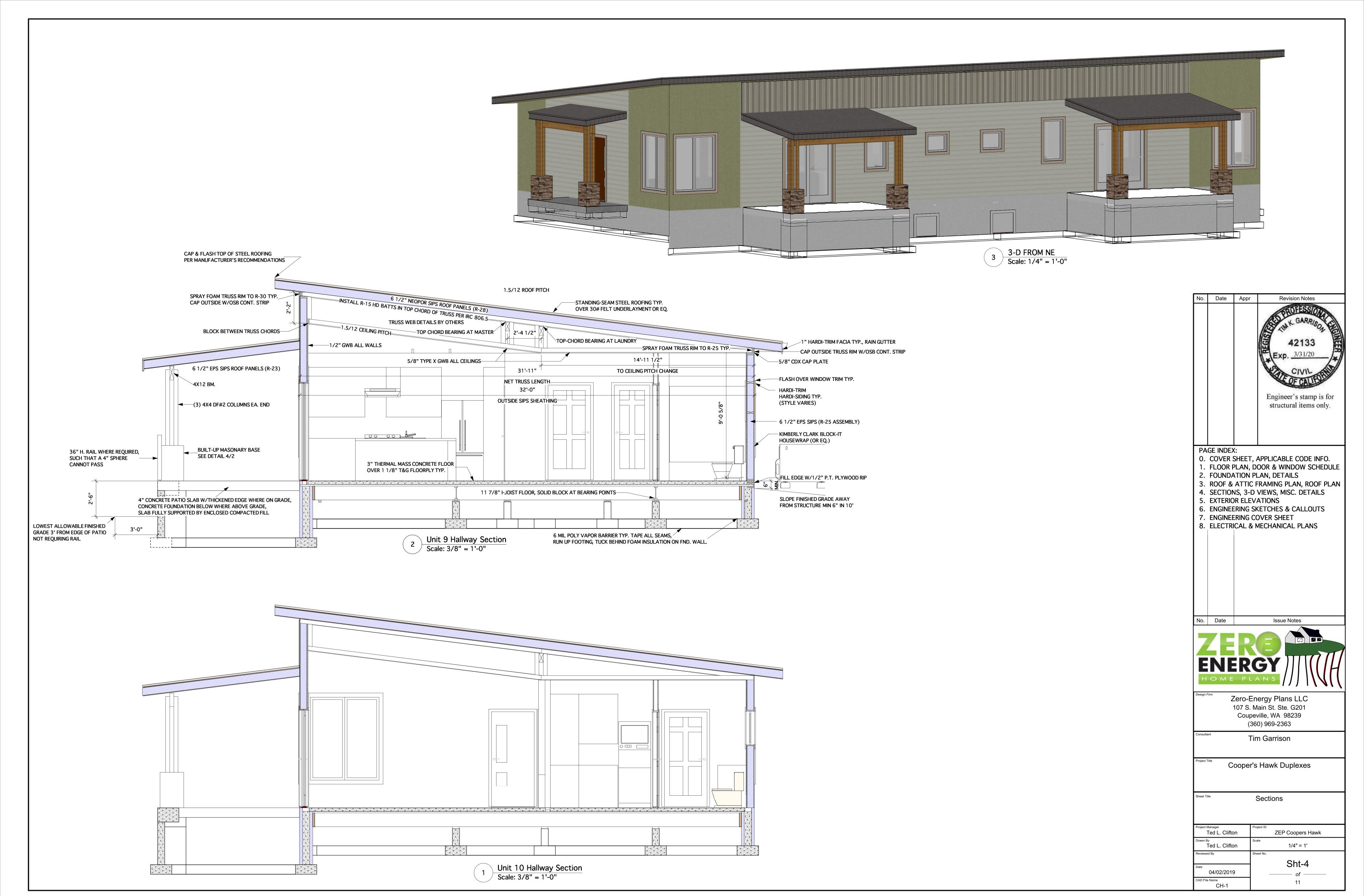
Floor Plans
Units H-9 & H-10
Door & Window Schedules

Ted L. Clifton	ZEP Coopers Hawk
Drawn By Ted L. Clifton	Scale 1/4" = 1'
Reviewed By	Sheet No.
Date 04/02/2019	Sht-1

CAD File Name









SLOPE FINISHED GRADE AWAY FROM STRUCTURE MIN 6" IN 10'

North Elevation
Scale: 1/4" = 1'-0"





South Elevation
Scale: 1/4" = 1'-0"



Engineer's stamp is for structural items only. PAGE INDEX:

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Issue Notes

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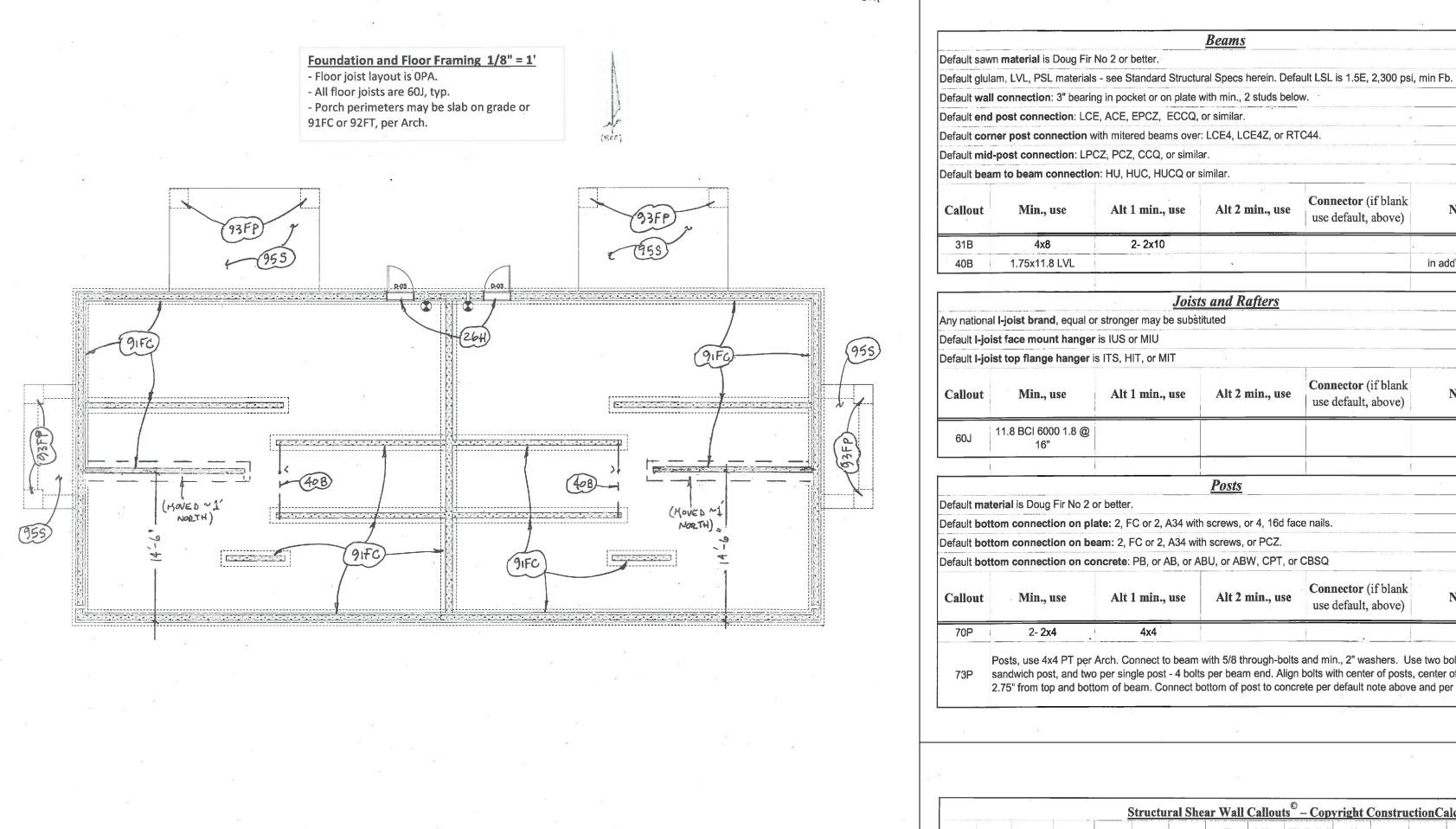
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Cooper's Hawk Duplexes

Elevations

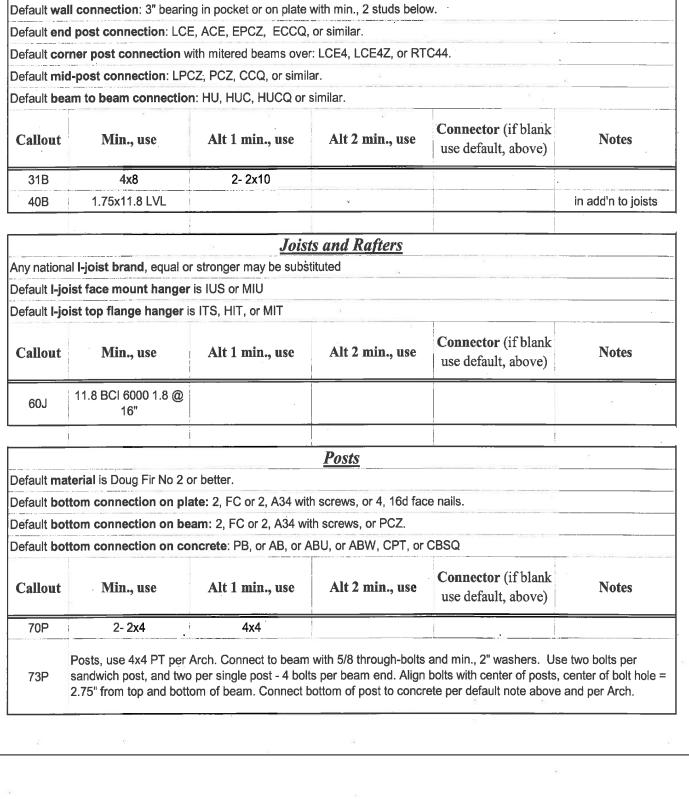
Ted L. Clifton ZEP Coopers Hawk Ted L. Clifton 1/4" = 1' Sht-5

04/02/2019 CAD File Name



Walls and Roof Framing 1/8" = 1'

- Trusses and layout are OPA.



SKZ

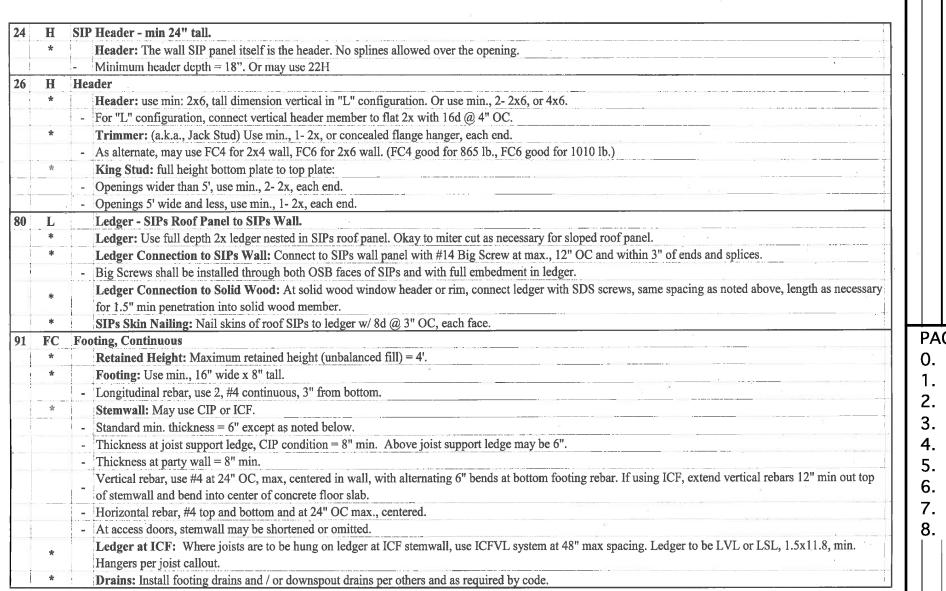
<u>Beams</u>

(9-10)

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Call- out	Capa- city, wind/ seis, Eh, plf	Sheath- ing, min.	Sides of wall	Nails or screws, size	Stud height, max., ft.	Stud spac'g, max., in.	Stud size, min.	Stud mat'l (see std st'l specs)	Nail Edge / Field spac'g @ Stud spac'g, in.	Top Plate,	Top plate splice, min.	Sill plate & studs w/ edge nail'g	unsup-	Top of wall conn to parallel framing	Top of wall conn to perpendicular framing	Bot plate to framing, max. spc'g, in.	Mud sill anchor to concrete	
5GW	110/ 110	1/2" or 5/8" gyp	One, directly to studs. Other side per arch.	5d for 1/2"; 6d for 5/8"	1	16	2x4 2x4 2x6	Sawn Sawn	4/4@24 7/7@16	2- 2x4	48" lap w/ 8- 16d	2x	NA	Con't gyp. to roof. Roof to top plate per 10RDS	NA .	SDS .25x4.5 @ 9	5/8" j-bolt or 5/8" Titen HD, w/ 3" wshr. Or MASA or MASAP	

			Y		Structu	iral Sho			ts <sup>©</sup> – Cop		Constru	ctionCa	le, Inc (	CCI)			1	
			8 SP 3.4	7-		lls witho Min. len If "W",	indicates a ut this sym- agth of shea construct e	dedicate bol are n r panel, ntire Wa	all Callout S ed shear wal ot dedicated ft. ll per this ca Wall. Build	ll or pane l shear w	alls - use of	ode-stand m individ	lard const		dicated on	plan.		, c
SIPs shear wall	Capa- city, wind/ seis, Eh, plf	Panel height, max. ft	Core thick- ness, min., in.	Type. May use either unless spec'd on Plan		Skin nails to splines	Vert lumber req'd at sides of openings		Skin nails to top and bot plate	on top	parallel	Top of wall conn to perpen- dicular framing	wall conn to SIPs	on	Bot plate on framed floor, Alt 2	or another	Mud sill anchor to concrete	1
8SP	360/ 360	20	5.5	S	7/16" x 3" wide	8d @ 6" OC, ea face	greater of 2x or king stud per header callout	8d @ 6" OC, ea face	8d @ 6" OC, ea face	no	A34 or LTP4 at 32" max	Con't blkg + H3 at 24" max	Big screws at 9" max	LTP4 at	9" OC thru flr cavity w/	SDS @ 6, or	5/8" j-bolt or Titen HD or MASA or MASAP	72/4

0	PA	Per Architect
	*	Structural Item: This item and related connectors shall be per architect / designer.
10	RDS	Roof Diaphragm, SIPs
	242	Shear Capacity: Good for Eh = 430 plf diaphragm shear. Max snow or live load = 25 psf. Max aspect ratio = 4:1.
	*	SIP Panels: All panels shall be type S, 5.5" thick core (6.5" overall thickness), min. (max true length span = 11'.)
i	*	Type S Splines: Surface splines allowed on top face only at supports. Use splines on both faces where possible. Use 8d @ 3" OC, each side of splice.
	*	Interior Support: Where SIPs bear on beams, shear walls, and bearing walls:
		- Attach SIPs to support with Big Screws at 9" OC.
. 1	*	Boundary Support: at ends of panels:
- 1		- At ledger, see 80L.
		- Boundary spline. Connect both faces to 2x embedded end member with 8d at 6" OC.
		- Boundary support: In addition to boundary spline nails, connect SIPs panel to support with Big Screws at 9" OC.
11	RDS	Roof Diaphragm, SIPs Over Framing at 24" OC.
	*	Shear Capacity: Good for 430 plf diaphragm shear. Max aspect ratio = 4:1.
	*	SIPs Panels, Splines, and Connections: Same as 10RDS with the following exceptions:
		- Between edges, ends and rims (IE in field), connect with Big Screws at 18" OC, max.
12	FD	Floor Diaphragm
	*	Sheathing: With joists at 24" or 19.2" OC, use min., 24 oc rated, APA Sturd-I-Floor; either 3/4" species group 1, or 7/8" species group 4. May be OSB or plywood. Good for 130 psf, TL @ L/360 defl.
	*	Sheathing: With joists at 16" OC, use min., 16 oc rated, APA Sturd-I-Floor, min., 19/32" thick. May be OSB or plywood. Good for 245 psf TL @ L/360 defl
	*	Sheathing Layout: Case 1 per IBC 2306.2.1(1)
		- Orient sheets continuous over two or more spans, with the long dimension across supports.
	*	Nailing: Glue, and connect with 8d ring shank nails or #9 screws, at 6" edges, 12" field.
	*	Blocking: not required except at supports (beams) and connections to shear walls below.
22	H	InsulBeam Header
	*	Header: Use Premier InsulBeam II Header.
	*	Trimmer: (a.k.a., Jack Stud) use min., 1-2x, each end.
	*	King Stud:
		- For openings 6-feet wide and less, use 1, 2x, each end.
Ĭ		- For openings greater than 6-feet wide, use 2, 2x, each end.
23	Н	SIP Header - min 24" tall.
	*	Header: The wall SIP panel itself is the header. A spline may occur over the opening no closer than 6" from either edge of opening.
		- Minimum header depth = 18".



At interior locations, footing to be min., 8" tall x 18" wide at bottom. Height may include slab height if poured monolithically. At exterior locations footing to be min., 12" tall x 12" wide at bottom. Height may include slab height if poured monolithically.

If in slab area, footing may be mono-poured with slab or below slab. Height may include slab height if poured monolithically.

If height > 18", use #4 vertical rebar at 24" max spacing, centered, extending from bottom horizontal rebar to top horizontal rebar. Use 6" bends at top and

Underslab Insulation: May use XPS or EPS rigid foam with min., 25 psi compressive strength under thickened slab footing. If used, provide and install per

Plinth: If plinth is called for use round or square per Arch, min diameter or width such that all rebar and post base connectors have 2" min., 3" max., concrete

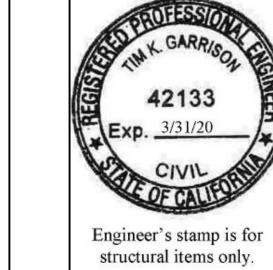
Subgrade: Use structural fill or native material, compacted to 95% relative compaction. It is strongly recommended that all structural fill be checked by a

Underslab Insulation: May use XPS or EPS rigid foam with min., 25 psi compressive strength under slab. If used, provide and install per insulation

Control Joints: Maximum recommended spacing = 8' OC, each way. This is a non-structural item and may be changed or omitted by Owner or Architect.

Plinth rebar, use 4, #4 vertical, equally spaced, with 4", 90-degree bend at bottom footing rebar. Hoops or horizontal rebar is not required in plinth.

At exterior locations, use min., 1, #4 continuous 2" from top and min., 1, #4 continuous 3" from bottom.



Revision Notes

PAGE INDEX:

Date

O. COVER SHEET, APPLICABLE CODE INFO. 1. FLOOR PLAN, DOOR & WINDOW SCHEDULE

2. FOUNDATION PLAN, DETAILS

3. ROOF & ATTIC FRAMING PLAN, ROOF PLAN 4. SECTIONS, 3-D VIEWS, MISC. DETAILS

5. EXTERIOR ELEVATIONS

6. ENGINEERING SKETCHES & CALLOUTS

7. ENGINEERING COVER SHEET

8. ELECTRICAL & MECHANICAL PLANS

Zero-Energy Plans LLC 107 S. Main St. Ste. G201 Coupeville, WA 98239 (360) 969-2363

Tim Garrison 2316 Antone Way Anacortes, WA 98221 (360)708-1865

Engineering Sks

Cooper's Hawk Duplexes

	Pro	ject Manager	Project ID	
,		Ted L. Clifton		ZEP Coopers Hawk
	Dra	awn By	Scale	
•		Tim Garrison		Not to Scale
	Re	viewed By	Sheet No.	

Ted L. Clifton 04/28/2019

92 FT Footing, Thickened Slab - Optional per Arch.

Horizontal Rebar:

93 FP Footing, Pad

95 S Slab

Footing: Use a monolithically poured thickened slab:

insulation manufacturer's recommendations.

\* Footing Rebar: Use 2, #4 each way, 3" from bottom.

manufacturer's recommendations. Slab Thickness: Use 4" min.

Reinforcement: Use any of the following:

Fibermesh per manufacturer's recommendation. Helix micro rebar, min., 5 lbs. per cubic yard.

Min., #3 rebar at 24".OC, each way, centered in slab.

\* Vapor Barrier: Use a min., 6 mil., plastic vapor barrier under interior slabs.

Footing: Use min., 18" square x 8" tall.

At interior locations, use 2, #4 continuous, 3" from bottom.

Vertical Rebar: No vertical rebar necessary if total height is less than 18".

Slab Reinforcement: Extend slab reinforcement (if any) through this footing

Welded wire fabric, min., W2.9, 6"x6" (6 Ga.), centered in slab. Splices overlap 8" min.

cover on all sides. Chamfer per Arch or as necessary to shed water.

#### **BASIS OF DESIGN – APPLICABLE CODES:**

Code. The designs herein are prepared in accordance with the 2015 IBC and CBC. Construction shall conform with the most recent building code adopted by the approving jurisdiction.

Calculations. The calculations included herein are only those required to ensure compliance with code. We do not intend to compute every structural element nor every load combination. Much of our analysis is "BI" (By Inspection.)

# **ABBREVIATIONS:**

AC: Asphalt Concrete BI: By Inspection BRNG: Bearing (wall usually) E: Elastic modulus or Electrical (E): Existing CCI: ConstructionCalc. Inc. CIP: Cast in place concrete CMU: Concrete Masonry Unit CO: Callout or Cleanout Conc: Concrete Cont: Continuous DF: Douglas Fir

K: Kip (1,000 lbs.) KSI: Kips per Square Inch NA: Not Applicable NB: Not Bearing NIC: Not Included OC: On Center spacing PCF: Pounds per cubic foot

HVAC: Heating, Ventilation, and Air Conditioning GW: Gypsum shear wall Gyp: Gypsum wall board GLB: Glulam Beam I: Moment of Inertia IBC: International Building Code ICF: Insulated Concrete Form

IEBC: International Existing Building IRC: International Residential Code LVL: Laminated Veneer Lumber LSL: Laminated Strand Lumber OSB: Oriented Strand Board

PLF: Pounds per Lineal Foot PSL: Parallel Strand Lumber PSF: Pounds per Square Foot PSI: Pounds per Square Inch PT: Pressure Treated with preservative PW: Plywood or OSB shear wall RC: Relative Compaction

REF: Reference, not actual

REQ or Reqd: Required ROW: Right Of Way Rt: Right S: Section modulus SC: See Callout SD: Storm Drain SIP: Structural Insulated Panel SK: Sketch SOG: Slab On Grade SPF: Spruce Pine Fir SS: Sanitary Sewer

STAO: Shear Transfer Around Opening SP: SIPs shear wall TYP: Typical UNO: Unless Otherwise specified V or v: Shear (lbs) or unit shear (plf) W: Wall, full length

#### LIMITED SCOPE OF CONSULTANT'S WORK:

Consultant. The consultant in responsible charge of the work indicated herein is Tim K. Garrison, P.E., doing business as ConstructionCalc, Inc., hereafter indicated as "CCI."

Scope of Consultant's Work. The scope of work of CCI is limited to structural analysis of a new singlestory duplex. CCI takes responsibility only for items specifically addressed in our drawings and calculations. Constructed items not specifically addressed herein shall be built per minimum code. LOADS

# Following are the loads used for the subject design / analysis:

O Roof live: 20 psf. O Roof + ceiling dead, includes 3 psf for

solar panels: 15 psf. O Roof snow: 25 psf O Floor live: 40 psf

O Floor dead, 3" concrete or gypcrete over framing: 46 psf.

O Exterior wall dead: 10 psf O Interior wall dead: 7 psf O Seismic Factors: Ss= 0.362, S1= 0.183 O Seismic Des Category: "D"

O Wind Exposure 'C', 3-sec gust: 110 mph. O Assumed allowable soil bearing pressure: 1,500 psf.

Slabs on Grade. Subgrade below slabs shall be similar to the above. A layer of free draining material and a suitable vapor barrier (designed by others) are recommended for all interior slabs.

Footing Drains. Footing drains, with washed drain rock or Mira Drain or equivalent extending to finished grade, shall be provided at the base of all footings and retaining walls which will have earth placed against them. Footing drains shall be 4" perforated pipe routed downgradient to daylight, unless otherwise

### STANDARD CONCRETE:

Standard Concrete. Concrete for footings, slabs, and walls shall attain a minimum 28 day strength of fc = 2,500 psi unless otherwise noted on Plans. Minimum cement content = 5 sacks per cubic yard. Maximum water/cement ratio shall be 0.45. All materials shall be in accordance with ACI 318, latest edition. Mixing and placing of all concrete to be in accordance with IBC and ACI 304, latest edition.

Admixtures. Industry recognized and approved admixtures affecting set time, flowability, and / or waterproofing may be used provided the strength and durability of the concrete is not adversely affected.

Air Entrainment. Provide 5% air entraining in all concrete exposed to the earth or weather. Fly Ash. High quality fly ash or other natural pozzolan may be used in accordance with ASTM C618 with a corresponding reduction in cement content. Any such concrete shall obtain at least the strength and durability characteristics as Standard Concrete listed above.

#### **CONCRETE REINFORCING:**

Strength: Standard Footings, Stem walls, Slabs on Grade. Reinforcing bars (rebar) for standard footings, stem walls, and slabs on grade shall be grade 40 (Fy = 40 ksi) or better, unless otherwise specified in the

Splicing, Bending. All reinforcing shall be spliced, detailed, bent, and supported in accordance with the most recent ACI code adopted by the jurisdiction.

Welded Wire Fabric. Unless otherwise specified, welded wire fabric (WWF) shall be W2.9, 6"x6" (6 Ga.). ASTM A-185. Splice by lapping one mesh +2" all sides.

Cover. Provide the following minimum cover:

Footings and other unformed surfaces, distance from the bar to earth face...3"

Formed surfaces in direct contact with earth .....2"

Surfaces exposed to weather.....1-1/2"

For slabs on grade, center the reinforcement in the slab unless otherwise specified.

#### **BOLTS AND DOWELS IN CURED CONCRETE:**

**CONVENTIONAL WOOD FRAMING:** 

General. This section shall apply to bolts and dowels installed in cured concrete using rotohammer techniques. Minimum concrete embedment = 4-inches unless otherwise specified. Minimum distance to any edge or end of concrete = 3" from hole centerline unless otherwise specified.

Existing Reinforcing. It is important that no existing rebars are drilled or cut during rotohammer operations. Location of existing reinforcing bars may be by non-destructive methods (pachometer, radar, or similar).

Washers. Use 3"x3"x.229" washers on all wood mud sill anchor bolts. Such washers may be slotted, with plate washer under the nut as allowed by the IBC. At non-mud sill locations, smaller washers may be used. Use a steel plate or malleable iron washer under nuts and the heads of all bolts that connect wood.

Non-Epoxy Systems. Use Simpson Titen HD where shown in the Plans. These anchors may be used to resist tension loads and shear loads. Install per manufacturer's recommendations.

bottom of header in an "L" configuration with 16d at 4" max spacing. If no header is specified, the wall is assumed non-load bearing and wall top plate may serve as the header.

Multiple Adjacent Openings. Where adjacent door or window openings occur in a wall, headers for each opening shall be individual members with full-height king studs between them. Each header shall use the number of king studs specified below or in the Structural Callouts.

Trimmers, aka Jack Studs. Use size (or larger) per Structural Callouts. Concealed flange hanger of similar bearing length and capacity may be substituted for trimmer.

King Studs. These must be full-height, bottom plate to top plate, IE diaphragm to diaphragm.

Discontinuous Top Plate. Where wall top plates are cut, omitted, or otherwise discontinuous at a header, the end of the header shall be connected to the remaining top plate beyond with a horizontal CS18 strap with minimum 12" length on the header and 12" length on the top plate beyond. Strap may be on top, inside, or outside of wall.

#### Anchor Bolts.

Shear wall anchor bolts connecting mud sills, use 5/8" diameter x 8" min embedment at the spacing shown in the Plans but never greater than 60" OC and within 12" of ends and corners, with 3" x 3" x .229" steel washers, wrench tight. Wet set anchor bolts shall have a hook or head on the embedded end. Rotohammered anchor bolts at the same spacing may be used in lieu of wet set - see specifications in previous section. An alternate to wet-set anchor bolts and washers may be Simpson MASA or MASAP at the same spacing specified for wet set anchor bolts.

Non-shear wall anchor bolts shall be spaced a maximum of 72-inches and within 12-inches of ends and corners and shall be fitted with 2" steel plate washers. Use either 1/2" diameter x 8" min embedment wetset, or 1/2" Titen HD with 4" min embedment.

Non-shear wall anchors may be 0.145" diameter powder-actuated pins with 1-1/2" min concrete embedment, at 16" OC, unless otherwise shown.

Pressure Treated <u>Lumber</u>. Use pressure treated lumber in contact with concrete and / or soil, and when directly exposed to weather. Pressure treating chemicals shall be inert, or otherwise non-reactive with metal connectors (including nails, bolts, framing connectors, etc.) or structural steel members.

In certain cases non-pressure treated lumber may butt against concrete. In these cases use a layer of heavy, asphaltic-treated construction paper between wood and concrete.

Blocking / Bridging. Provide continuous blocking at all bearing locations. Provide full depth bridging or blocking at 8' OC max. in joist or rafters without continuous plywood diaphragm connection on the top. Framed floors which support posts shall be solidly blocked within the floor cavity to positively transfer post, column, or other concentrated loads through the floor to the supports beneath.

Bolts. Unless otherwise specified: Use washers on all bolts; tighten all bolts to a very snug wrench tight condition; use standard A307 bolts; for bolts in wood, drill the same diameter hole as the bolt; for bolts in steel drill holes 1/16" larger than the bolt diameter. Provide the following minimum edge distances between centerline of bolt and all edges of bolted wood, and between centerline of multiple bolts:

#### 5/8 inch diameter bolts ...... 2.75 inches

Minimum distance between edge of bolt and any edge of steel plate (angles, gussets, flanges, webs, etc.) shall be one inch.

Engineer shall specifically approve any bolted connection using less edge distance than shown above.

manufacturer's specifications, rather, manufacturer's recommendations and specifications are hereby incorporated into this specification by reference.

Manufacturer. Use only a nationally-recognized brand which has undergone ASTM laboratory testing and approval in accordance with current IBC and IRC requirements for the system and its major components. SIP Manufacturer shall be a Manufacturing Member, in good standing, of the Structural Insulated Panel Association (SIPA).

Wall Top Plates. Top plates shall be full width of wall, either single 2x or double 2x per the Callouts and manufacturer's recommendation.

At single top plate splices and discontinuities (beam pocket, wall intersection, etc.) center a CS18 over the splice or discontinuity of sufficient length such that min., 8" is provided on each side (min., 16" total strap length at splices, longer at beam pockets, intersections, etc.) As an alternate, a full width strip of min., 7/16" OSB, minimum 48" long, centered over the splice or discontinuity nailed with 8d at 3" OC, staggered may be substituted for CS18. Good for 1,000 lb. drag force.

With double top plate splices, either provide min 48" overlap with min., 10, 16d nails, or use CS18 per the

Splines. Provide the type of splines and connections shown in the Plans. Deviations must be approved the Engineer. OSB, PBS Spline, or I-beam for use in joining SIPs shall be supplied by SIPs manufacturer.

Fasteners. Use the type and numbers of connectors as shown in the Plans. If not specifically called out, use manufacturer's recommendations. PBS or 'Big Screws', use corrosion resistant SIP screws compatible with SIP system as provided by the SIPs manufacturer.

SIP Mastic. Shall be specifically designed for use with SIPs. Mastic must be compatible with all components of the SIP. Mastic shall be provided by the SIP manufacturer.

Dimensional Lumber. Doug Fir or SPF, #2 or better, or engineered equivalent unless otherwise required by

Headers. Where allowed on the Plans, the SIP panel may be used as a header without additional wood. In other cases use Insul-Beam headers, and trimmers per Plans and manufacturer.

Vapor Retarder SIP Tape. Tape with an adhesive suitable for indoor use, min. 6 inch wide for use on SIP joints, 18 inch wide for use at roof beams. SIP Tape shall be supplied by the SIP manufacturer.

SIP Installation. The Contractor installing this system shall be trained and experienced in the specific brand being used. The Contractor shall strictly adhere to the manufacturer's recommendations and specifications for the provision and construction of the products and accessories. All connections, details and workmanship for SIPs walls, floors, and or roofs shall be in accordance with the manufacturer's

SIP Supports: Provide level and square foundation/structural system/substrate that support wall and/or roof SIPs. For wall SIPs, hold sill plate back from edge of rim board 1/2" (12 mm) to allow full bearing of OSB skins. Provide 1 -1/2" (38 mm) diameter access holes in plating to align with electrical wire chases in SIPs. Provide adequate bracing of SIPs during erection. Remove debris from plate area prior to SIP placement.

SIP Fastening: Connect SIPs by nails or staples as shown on Plans. Screws of equal strength and corrosion resistance may be substituted for nails and staples. SIP mastic must be used together with each fastening techniques. Where SIP Screw Fasteners are used, provide a minimum of 1" (25.4 mm) penetration into support. Join SIPs using plates and splines. Secure attachment with nails, staples, or screws, and SIP mastic. Apply SIP mastic following SIP manufacturer recommendations.

Date Revision Notes Engineer's stamp is for

# **SINGLE PROJECT:**

The calculations, drawings, notes, specifications, and / or tables prepared by CCI are valid only for the project indicated herein. These documents are not valid, are not applicable to, and shall not be used for any other project at any other location.

COMPETENT CONSTRUCTION PERSONNEL / SAFETY:

Only competent personnel familiar with construction and safety practices germane to the project shown herein should be employed to assemble and construct the work.

Contractor shall be responsible to comply with all OSHA and State Labor and Industries Standards. Contractor assumes full responsibility as to construction methods used, safety provisions employed, and the finished as-built condition of the structure and related systems.

# **MATERIALS AND METHODS:**

Provide and install all materials in accordance with manufacturer's requirements and recommendations. It is the contractor's responsibility to ensure all field personnel understand and adhere to this. TEMPORARY SUPPORT AND BRACING:

General. Provide adequate temporary support to all walls, roofs, beams, columns, and floors during construction. Design of same is not included herein. Contractor or owner should check all temporarysupporting devices with a qualified person. Contractor shall be responsible for the adequacy of all temporary and/or permanent support systems.

Retaining Walls. Do not backfill against retaining walls until concrete has cured to at least 2,500 psi (okay to use high early strength admixtures or additional cement in the mix to achieve this). For retaining walls that are to be connected at their top to horizontal floor diaphragms, do not backfill against the retaining wall until such horizontal diaphragms are in place and properly connected to the retaining wall.

# FOOTINGS, FOUNDATIONS, SLABS ON GRADE:

Geotechnical Report: Soils analysis and geotechnical engineering were conducted for this project by Holdrege & Kull, Job No. 4542-01, report dated 4/4/16. The Contractor shall obtain, read, and adhere to recommendations and conclusions of that report. Should any part of that report conflict with these Specifications, the more stringent shall govern.

Structural Fill: "Structural Fill" shall be granular material conforming to local or state highway specifications for imported road base or sub base; or use sand or other clean granular materials no larger than pea gravel. All structural fill must be compacted per the following section.

Compaction: Place all fill materials in lifts not exceeding 8-inches. Compact using mechanical (vibratory or impact) methods. In paved areas and under structures, use structural backfill compacted to 95% relative compaction. In non-paved or non-footing areas use structural backfill or native backfill minus rocks, lumps, and organic matter, compacted to 92% relative compaction. Where pipes enter and exit structures (distribution boxes, utility boxes, catch basins, manholes, etc.) use

structural fill around the structure. Carefully place and compact to 95% relative compaction under and When roots, rocks, or other undesirable materials cause over-excavation, fill over-excavation and compact

per the above. Foundations, Footings on Soil: All footings and foundations to bear on undisturbed existing soil or structural fill. All organic and deleterious material beneath footings and foundations to be removed and

replaced with structural fill. Bottom of footings to be below locally prescribed frost zone, not less than 12"

Epoxy Systems. For bolts, use Simpson epoxy-tie bolt system with ET-HP or SET high strength epoxy, with zinc plated, A307 'all-thread' bolts as shown in the sketches. For dowels, use ET-HP or SET high strength epoxy and rebar as specified on the Plans and Callouts. Drilling of holes and installation shall be in strict accordance with epoxy manufacturer's recommendation.

General Construction: Predrill all nail holes where required to avoid splitting. Connect all wood members per the Plans and applicable building code. Where Structural Plans do not specifically address a structural element, construct said element per minimum building code.

Framing Material. All sawn framing lumber, not including beams, posts, and columns, shall be Spruce Pine Fir, Hem Fir, or Douglas Fir - Larch, Number 2 or better, unless otherwise shown. All sawn wood shall have moisture content less than 25%.

Studs. Studs in exterior walls shall be a single member (not spliced nor discontinuous) from horizontal diaphragm to horizontal diaphragm (horizontal diaphragms are roofs and floors that connect to exterior walls.) Use balloon framing at stairwells, openings in floor diaphragms, etc. Stud size, material, and maximum length between diaphragms is shown in shear wall table.

Beams and Posts. All sawn structural beams, headers, and posts shall be Doug Fir Larch No 2 or better, except where exposed to weather and specified as PT (Pressure Treated) may be Hem Fir No. 2 or better. Glulams, PSLs, LVLs, etc. shall be per Prefabricated Wood Products section below.

Nails: Nails called out herein are "common" sizes, i.e. 16d, 12d, 10d, 8d. Smaller diameter, similar length nail gun nails may be substituted provided 50% more nails are used. For example if 8, 16d are called out, the number of similar length .131 diameter nail gun nails required is 8\*1.5 = 12. As another example if 16d nails are called out at 4" spacing, the spacing of similar length, narrower nail gun nails shall be 4/1.5 = 2.7". Shear Walls: Walls called out as shear walls on the Plan shall be constructed per the Structural Shear Wall Table herein using materials designated for lateral load resistance by nationally-approved manufacturers.

All shear walls must be positively connected at top and bottom to diaphragms. Walls not specifically called

out, or labled "NS" are not intended as shear walls and shall be built per minimum code. Sheathing. "GW" walls are drywall shear walls, use per Shear Wall Table.

Wood and dowel shall be clean and dry prior to epoxy installation.

Sheathing Joints. Use blocking behind joints if indicated in the Shear Wall Table. With "GW" walls, no sheathing joints are allowed within 2-feet in any direction of a door or window corner.

# Multiple Ply Members.

Trimmers, King Studs, Headers. Where more than one 2x is placed against another and used as a multiple ply king stud, trimmer, or header, connect all plies with 16d at 4" OC, staggered.

Beams, Columns. Where more than one 2x, or LVL, or LSL is placed against another and used as a multiple ply beam or column, connect all plies with glue and 2, 16d at 4" spacing.

Glue, Epoxy. Where specified, wood glue shall be commercial grade with minimum shear strength of 450 psi at 28 days. Use Liquid Nails LN-940 or similar. Prep and apply per manufacturer's recommendations. Epoxy used with wood dowels or drift pins shall be Simpson ET-HP, or other brand intended for wood use.

# Window and Door Openings.

Header. Use minimum size as called out on Plans. All headers shall be installed with their tall dimension vertical. If header is less than 3 inches wide (I.E. a single 2x or single LVL) use a flat 2x nailed to the

Lag Bolts, All lag bolts greater in diameter than 1/4" shall have pilot holes pre-drilled. Size of pilot hole in threaded portion shall be 70% of the unthreaded shank diameter (or alternatively, 90% of the root diameter of the threaded portion). Pilot hole diameter of unthreaded portion shall be the same diameter as the unthreaded shank.

# PRE-FABRICATED FRAMING CONNECTORS:

Manufacturer: Simpson brand is specified, however any other nationally recognized brand may be used provided that they are equivalent in their ability to carry all applied loads in all orientations.

Installation: The Contractor shall install all prefabricated items in strict accordance with the manufacturer's recommendations and requirements. The load carrying capacity of the prefabricated item cannot be guaranteed if this provision is not adhered to. Nails and screws which will be exposed to weather shall be galvanized or stainless steel. If installation risks cracking of wood, contact engineer for alternate nailing and

Simpson SDS Wood Screws. Where specified, install per manufacturer's recommendations. In general these do not need pilot holes. However, if wood is old and or very dry pilot holes may be required to avoid splitting. Use length as specified in Plans but never less than required to ensure full strength.

Simpson SD Wood Screws. With most Simpson connectors, Contractor may use SD9 in lieu of 10d nails, and / or SD10 in lieu of 16d nails. These are provided in 1-1/2" and 2-1/2" lengths. Use the length necessary for full penetration into the member(s) connected.

# PREFABRICATED WOOD PRODUCTS:

Prefabricated Trusses. Where shown on the plans, all prefabricated structural roofing members shall be designed by a certified professional engineer. The prefabricated structural roofing designer shall provide to the Contractor stamped design drawings with appropriate notes showing member sizes, forces, installation procedures, blocking, bracing, etc.

Engineered Wood – General. These products must be provided, stored, and installed in accordance with manufacturer's recommendations. Failure to do this may void the warranty and diminish load carrying capacity. Any nationally-recognized brand that meets the below specifications is acceptable.

I-beam Composite Web / Flange Joist Products. The contractor shall install the I-Joist products complete with web stiffeners and other blocking / bracing as shown on the Plans and / or as recommended by the

PSL (Parallel Strand Lumber) and Versa-Lam. Use minimum 2.0E, 2,900 psi minimum allowable bending

LVL (Laminated Veneer Lumber). Use minimum 1.9E, 2,600 psi minimum allowable bending stress. LSL (Laminated Strand Lumber). Members indicated as 1.5E shall have min., 1.5E modulus of elasticity and 2,300 psi allowable bending stress. Members indicated as 1.3E shall have min., 1.3E modulus of elasticity and 1,700 psi min. allowable bending stress.

Glue-Laminated Timbers. Unless otherwise noted, all glulam beams shall be 24F-V4 DF/DF. Any that span continuously over one or more interior supports or are cantilevered, use 24F-V8 DF/DF. Use industrial appearance grade, unless visually exposed to interior living space use architectural appearance grade. All glulams shall be manufactured by an AITC approved fabricator. Store and install in accordance with manufacturer's recommendations.

# STRUCTURAL INSULATED PANEL (SIP) SYSTEMS:

General. These systems generally consist of outer layers, 'skins', of OSB structurally adhered to an inner layer of expanded polystyrene insulation. This specification is not intended to supersede or replace

SIP Tape: Provide SIP Tape at joints between SIP wall panels, roof panels and at intersection of SIP roof and wall panels and as shown in SIP Manufacturer's details.

# <u>Vapor Retarders</u>: Provide vapor retarders as mandated by building code.

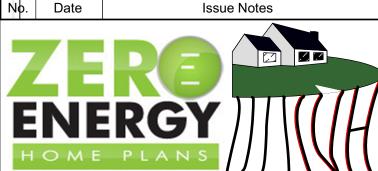
Thermal Barriers: Interior surfaces of SIPs shall be finished with a minimum 15-minute thermal barrier, such as gypsum wallboard, nominal 1" (25 mm) wood paneling, or other approved materials. Apply code approved thermal barriers according to SIP manufacturer's recommendations.

Restrictions: Do not install SIPs directly on concrete. Do not install plumbing in SIPs without consulting SIP manufacturer. Do not over cut skins for field-cut openings and do not cut skins for electrical chases. SIPs shall be protected from exposure to solvents and their vapors that damage the EPS foam core.

<u>Damaged SIPs</u>: Remove and replace SIPs which have become excessively wet or damaged before proceeding with installation of additional SIPs or other work.

# PAGE INDEX:

- COVER SHEET, APPLICABLE CODE INFO. 1. FLOOR PLAN, DOOR & WINDOW SCHEDULE
- 2. FOUNDATION PLAN, DETAILS
- 3. ROOF & ATTIC FRAMING PLAN, ROOF PLAN
- 5. EXTERIOR ELEVATIONS 6. ENGINEERING SKETCHES & CALLOUTS
- 8. ELECTRICAL & MECHANICAL PLANS



Zero-Energy Plans LLC 107 S. Main St. Ste. G201 Coupeville, WA 98239

Tim Garrison, Builders Engineer 2316 Antone Way Anacortes, WA 98221 (360) 708-1865

**Engineering Cover Specs.** 

Ted L. Clifton ZEP Coopers Hawk Tim Garrison

04/28/2019 CH-1

structural items only.

4. SECTIONS, 3-D VIEWS, MISC. DETAILS

7. ENGINEERING COVER SHEET

Issue Notes

(360) 969-2363

Cooper's Hawk Duplexes

Sht-7

