

GENERAL NOTES

A. GENERAL

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, 2016 EDITION AND THE APPLICABLE LOCAL CODES. CONSTRUCTION SHALL BE PERFORMED/ SUPERVISED/ COORDINATED BY A LICENSE CONTRACTOR.
2. CONTRACTOR SHALL STUDY THE DRAWINGS, SPECIFICATIONS AND FIELD CONDITIONS INCLUDING BUT NOT LIMITED TO EXISTING SITE/CONSTRUCTION, SPACE RESTRICTIONS AND CONSTRUCTION METHODOLOGY BEFORE SUBMITTING BIDS/ COMMENCING WITH THE WORK INVOLVED. ANY DISCREPANCIES FOUND SHALL BE REPORTED TO THE ARCHITECT IN WRITING FOR CORRECTION OR CLARIFICATION.
3. ALL DETAILS ARE TYPICAL. SIMILAR CONDITIONS REFER TO SIMILAR DETAILS. ITEMS/ CONNECTIONS NECESSARY TO CONSIDER THE PROJECT COMPLETE SHALL BE PART OF THE BID CONTINGENCIES.
4. WALL AND CEILING COVERING UNLESS NOTED SHALL CONFORM TO CHAPTER 25 OF THE CBC/ IBC.
5. CONTRACTOR SHALL PROVIDE SHORING AND BRACING TO EXISTING STRUCTURE PRIOR TO ANY ALTERATION, DEMOLITION OR EXCAVATION.

B. FOUNDATION

1. FOUNDATION SITE PREPARATION, DESIGN, AND DATA SHALL BE AS PER CBC CHAPTER 18
2. ALLOWABLE BEARING PRESSURE 1500 PSF
- FILL AND BACK FILL SHALL BE COMPACTED TO A MINIMUM OF 90% DENSITY.

C. LOADING CRITERIA

1. DEAD LOAD CALCULATED
2. LIVE LOAD

ROOF	20 PSF
FLOOR	40 PSF

3. WIND

ULTIMATE WINDSPEED:	Vult	110 MPH
NOMINAL WINDSPEED	Vasd	85 MPH
RISK CATEGORY	II	
WIND EXPOSURE:	B	
INTERNAL COEFFICIENTS	+/-18	
COMPONENTS AND CLADDINGS	20 PSF	

4. EARTHQUAKE DESIGN DATA

SEISMIC IMPORTANCE FACTOR,	I=	1
RISK CATEGORY:	II	
MAPPED SPECTRAL RESPONSE ACCELERATIONS:	S _m =	1.464 S ₁ = 0.534
SITE CLASS:	D	
SPECTRAL RESPONSE COEFFICIENTS:	S _d =	0.976 S _{d1} = 0.534
SEISMIC DESIGN CATEGORY:	D	
BASIC SEISMIC FORCE RESISTING SYSTEM(S):	SHEARWALLS	
DESIGN BASE SHEAR	V=C _s W=	21.15 kips
TOTAL BUILDING WEIGHT (BASIS OF DES BASE SHEAR): W=	141 kips	
SEISMIC RESPONSE COEFFICIENT(S), C _s	C _s =	0.15
RESPONSE MODIFICATION FACTOR(S), R=	R=	6.5 ew R= 6.5
ANALYSIS PROCEDURE USED:	EQUIVALENT FORCE PROCEDURE	

- D. CONCRETE WORK SHALL CONFORM TO ACI 318-11 & latest editions of ACI 301 and ACI 315

CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE A MINIMUM OF 2500 PSI.

MIN. CONCRETE PROTECTION FOR REINF. STEEL

SLAB ON GRADE	2"
CONC. POURED AGAINST EARTH	3"
OTHERS	AS PER ACI 318, CHAPTER 7.

E. REINFORCING STEEL

ALL REINFORCING BAR SHALL CONFORM TO ASTM A615 DEFORMED GRADE 60, EXCEPT TIES AND STIRRUPS. WELDED REINFORCING BARS CONFORM TO BE ASTM A706.

SUBMIT REINFORCING BAR SHOP DRAWINGS FOR REVIEW PER ACI 315.

- F. WIRE MESH SHALL CONFORM TO ASTM A185.

G. MASONRY

MASONRY UNITS SHALL CONFORM TO UBC STANDARD NO. 24-4 HOLLOW CONCRETE UNITS- GRADE N, F_m= 1500 PSI. GROUT ALL CELLS. MINIMUM REINFORCEMENT SHALL BE
A) #4@16 VERT AT WALL AT CL OR NEAR DIRT FACE.
B) #4@24 HORIZ IN BOND BEAM UNITS
GROUT AND MORTAR SHALL BE BOTH HAVE 2000 PSI STRENGTH AND SHALL CONFORM TO THE PROVISIONS OF THE UNIFORM BUILDING CODE.

H. STRUCTURAL STEEL

ALL MATERIALS, WORKSMANSHIP AND MIN. REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST REVISED EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
ALL STRUCTURAL STEEL SHAPE SHALL CONFORM TO ASTM A36, F_y= 36 KSI. EXCEPT MOMENT FRAMES WHICH SHALL BE ASTM A992, F_y=50 KSI.

STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B, F_y=46 KSI.

SUBMIT STEEL SHOP DRAWINGS FOR REVIEW PER AISC STANDARDS.

I. WELDING

ALL WELDING SHALL BE DONE PER AWS SPECIFICATIONS AND BY CERTIFIED WELDERS. WELDING REQUIREMENTS INDICATED ON THE DRAWINGS MAYBE FIELD OR SHOP WELDED AS REQUIRED FOR ERECTION EFFICIENCY/ CONSTRUCTIBILITY SUBJECT TO THE OCCURRENCE OF THE ARCHITECT/ ENGINEER.

J. WOOD

ALL FRAMING LUMBER SHALL BE DOUGLAS FIR
FB=900 PSI FV= 180 PSI FOR 2X MEMBERS DF #2
FB=1200 PSI FV=180 PSI FOR 4X MEMBERS DF #1 OR BETTER
FB=1350 PSI FV=170 PSI FOR 6X BEAMS DF #1
ALL WOOD IN CONTACT WITH CONCRETE SHALL BE TREATED. ALL ANCHOR BOLTS/ CONNECTORS FOR TO TREATED WOOD SHALL BE STAINLESS STEEL.

PLYWOOD SHEATHING SHALL BE STRUCT I EXTERIOR TYPE UNLESS NOTED OTHERWISE. INSPECTION APPROVAL IS REQUIRED PRIOR TO COVERING THE SHEATHINGS. WALLS ON THE SAME PLANE OF THE SHEARWALLS SHALL BE PROVIDED WITH

PLYWOOD SHEATHING TO MAINTAIN WALL THICKNESS/ SURFACE.

MIN. NAILING SHALL BE AS PER CBC/IBC TABLE NO. 2304.9.1

WOOD CONNECTORS DESIGNATIONS INDICATED REFER TO STRONG TIE CONNECTORS AS MANUFACTURED BY SIMPSON COMPANY. OTHER CONNECTORS HAVING EQUIVALENT CAPACITY MAY BE USED. USE STANDARD CONNECTORS WHENEVER APPLICABLE.
USE APPLICABLE JOIST/BEAM HANGERS FOR JOIST TO BEAM AND BEAM TO BEAM, COLUMN CAP CONNECTORS FOR BEAM TO POST AND POST BASE, CONNECTORS FOR POSTS. MODIFY STANDARD CONNECTORS/ FABRICATE CONNECTORS AS REQUIRED.

K. PARALLAM PSL

PARALLAM PSL SHALL BE AS MANUFACTURED BY TRUS JOISTS (ESR 1387) AND SHALL BE 2.0 E PARALLAM PSL.

L. STRONGWALL

STRONG WALL SHALL BE AS MANUFACTURED/ FABRICATED BY SIMPSON STRONG-TIE CO., INC. AND INSTALLED WITH MATCHING HOLDOWN PER MANUFACTURES STANDARDS. ESR 1267
INSTALLATION/ CONNECTORS/ ETC. SHALL BE PER APPLICABLE MANUFACTURERS STANDARD DETAILS AND RECOMMENDATIONS.

M. NOTICE TO CONTRACTOR- THE FOLLOWING ITEMS ARE CONSIDERED PART OF THE BID/ CONTRACT.

1. DETAILS/ DRAWINGS SHOWN ARE THE INTENDED CONSTRUCTED CONDITIONS OF THE STRUCTURE MEANS AND METHODS UTILIZED BY THE CONTRACTOR TO CONSTRUCT THE BUILDING SHALL BE HIS RESPONSIBILITY. INCLUDING BUT NOT LIMITED TO CONSTRUCTION METHODOLOGY, BRACING, SHORING, SHOP DRAWINGS, SPECIAL FABRICATIONS, DEPUTY INSPECTIONS, MATERIAL TESTINGS, ETC.
 2. WHERE DISCREPANCIES/ CONFLICTS OF DETAIL REQUIREMENTS, MATERIAL SPECIFICATIONS, ETC., OCCUR, THE MOST STRINGENT REQUIREMENT SHALL GOVERN. ANY OTHER DETAILS/ ELEMENTS SHALL BE ADJUSTED ACCORDINGLY. SEE ALSO NOTE A.2.
 3. EXISTING ITEMS INDICATED/ FOUND AFFECTED BY THE NEW CONSTRUCTION SHALL BE CONNECTED TO NEW CONSTRUCTIONS AS INDICATED. PROVIDE APPROPRIATE CONNECTORS IF NOT INDICATED.
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N. STRUCTURAL OBSERVATIONS

STRUCTURAL OBSERVATIONS SHALL BE AS REQUIRED BY THE PROVISIONS OF SECTIONS 1704.5.1
1. REINFORCING BARS PRIOR TO CONCRETING
2. ANCHOR BOLTS/ HOLDOWNS/ TIES/ FRAMING.
3. SHEARWALLS AND DIAPHRAGMS

O. SPECIAL INSPECTIONS

SPECIAL INSPECTIONS BY DEPUTY SPECIAL INSPECTORS ARE REQUIRED FOR THE FOLLOWING.
1. CONCRETE WITH F'C OVER 2500 PSI.
2. ALL EPOXY APPLICATIONS
3. FIELD WELDING
4. HIGH STRENGTH BOLTS
5. HIGH LIFT GROUTING

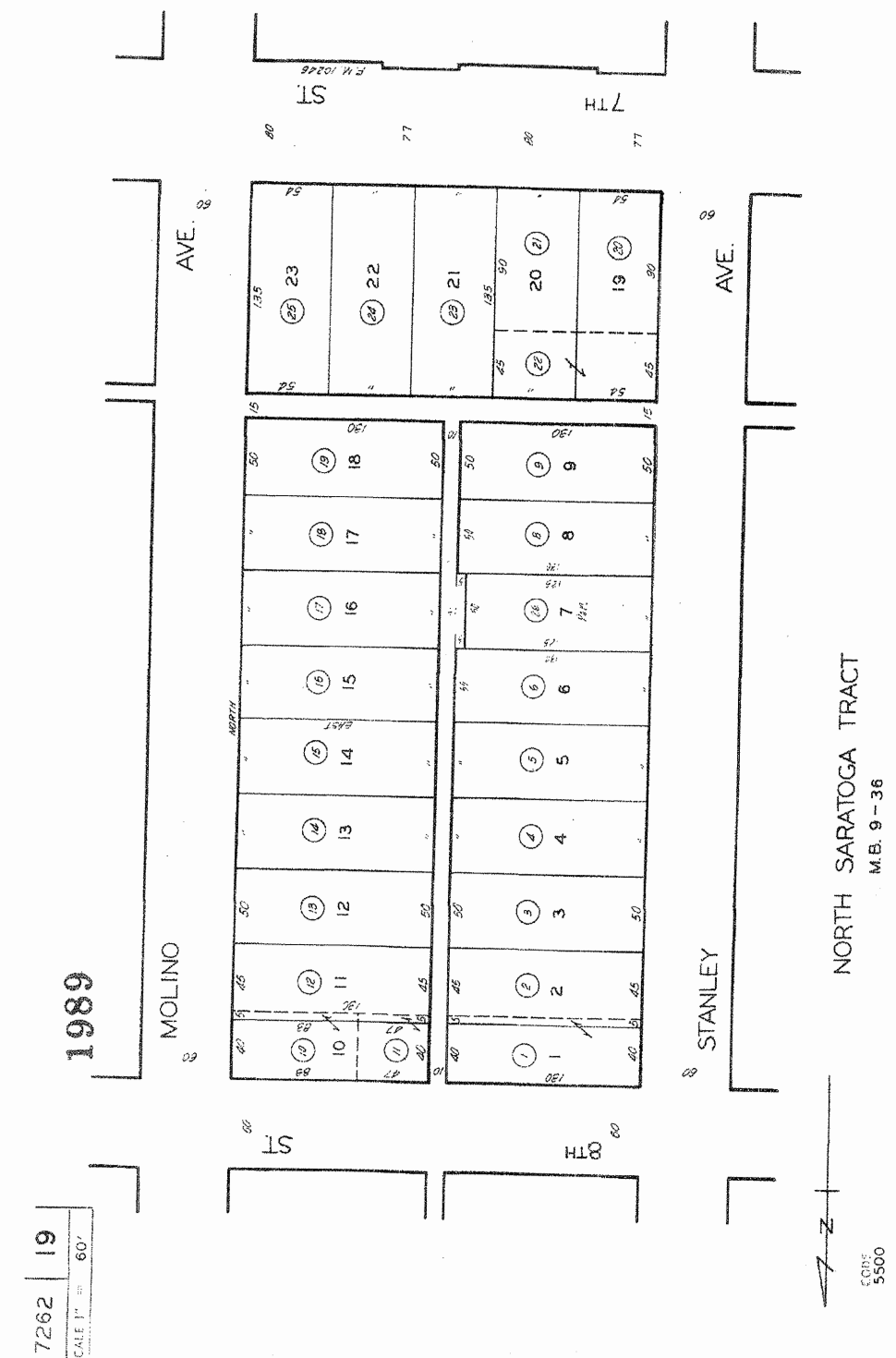
P. REQUIRED VERIFICATION AND INSPECTION

REQUIRED VERIFICATION AND INSPECTIONS SHALL BE AS PER SECTION 1705.
APPLICABLE PROVISIONS ON TABLE 1705.2.2, 1705.3, 1705.6, 1705.7 AND 1705.8 SHALL APPLY.

N. EXISTING UTILITIES

UTILITY LINES AND ACCESSORIES INDICATED ON THE DRAWINGS OR FOUND AT THE SITE THAT INTERFERE WITH THE NEW CONSTRUCTION SHALL BE RELOCATED AS NECESSARY.
THE CONTRACTOR SHALL OBTAIN ANY BUILDING PERMIT REQUIRED. THE CONTRACTOR SHALL ALSO PROVIDE AND GET APPROVAL OF ANY DRAWINGS AND DATA REQUIRED TO OBTAIN CITY APPROVAL FOR THE RELOCATION.

EXHIBIT C

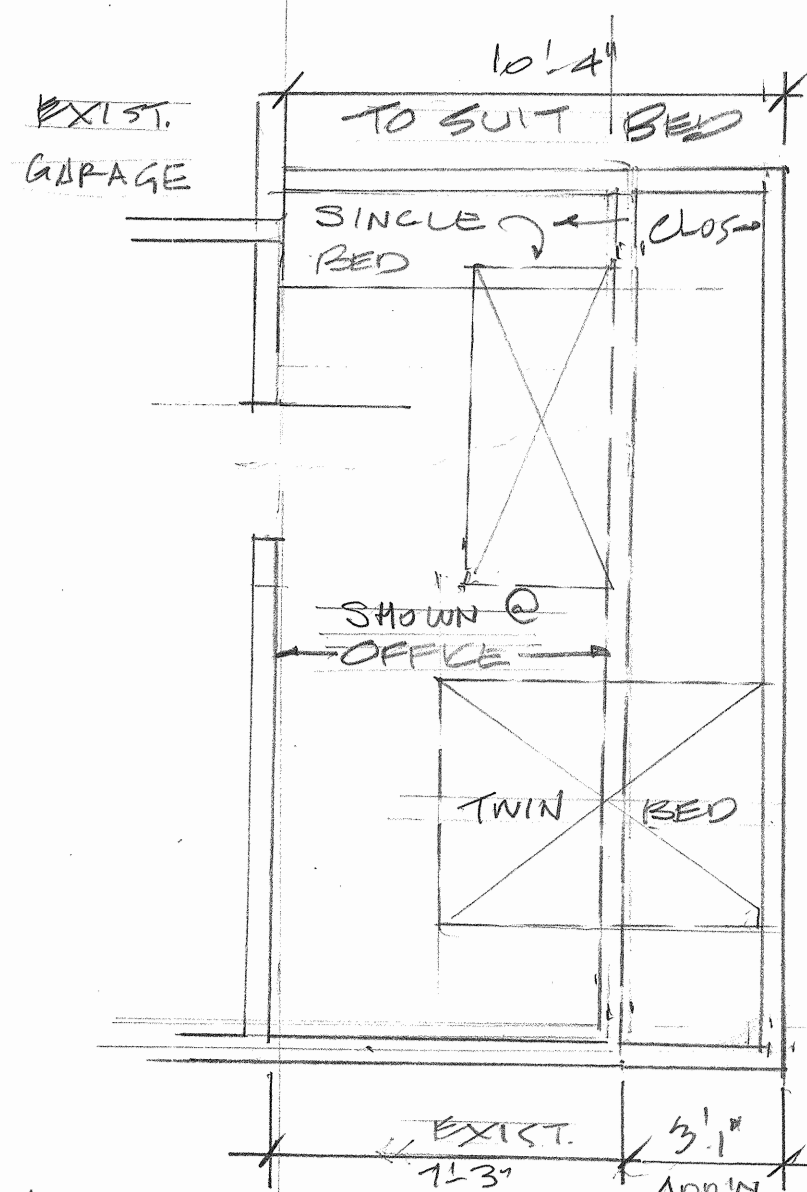


Property Information

Primary Owner:	LEFFLER, STEPHEN R
Secondary Owner:	STEPHEN R LEFFLER LIVING TRUST,
Site Address:	752 STANLEY AVE LONG BEACH, CA 90804-4612
Mailing Address:	N/A
Assessor Parcel Number:	7262-019-006
County/Name:	Los Angeles
Tax Account ID:	N/A
Phone:	N/A
Census Tract:	5769.04
Housing Tract Number:	N/A
Lot Number:	6
Page Grid:	795-H7
Legal Description:	Lot 6 ; Abbreviated Description: LOT:6 NORTH SARATOGA TRACT LOT 6

Property Characteristics

Bedrooms:	2	Year Built:	1905	Square Feet:	1050
Bathrooms:	1.0	Garage:	N/A	Lot size:	6505 SF
Partial Bath:	0	Fireplace:	N/A	Number of Units:	1
Total Rooms:	0	Pool/Spa:	N	Use Code:	Single Family Residential
Zoning:	LBR2N				

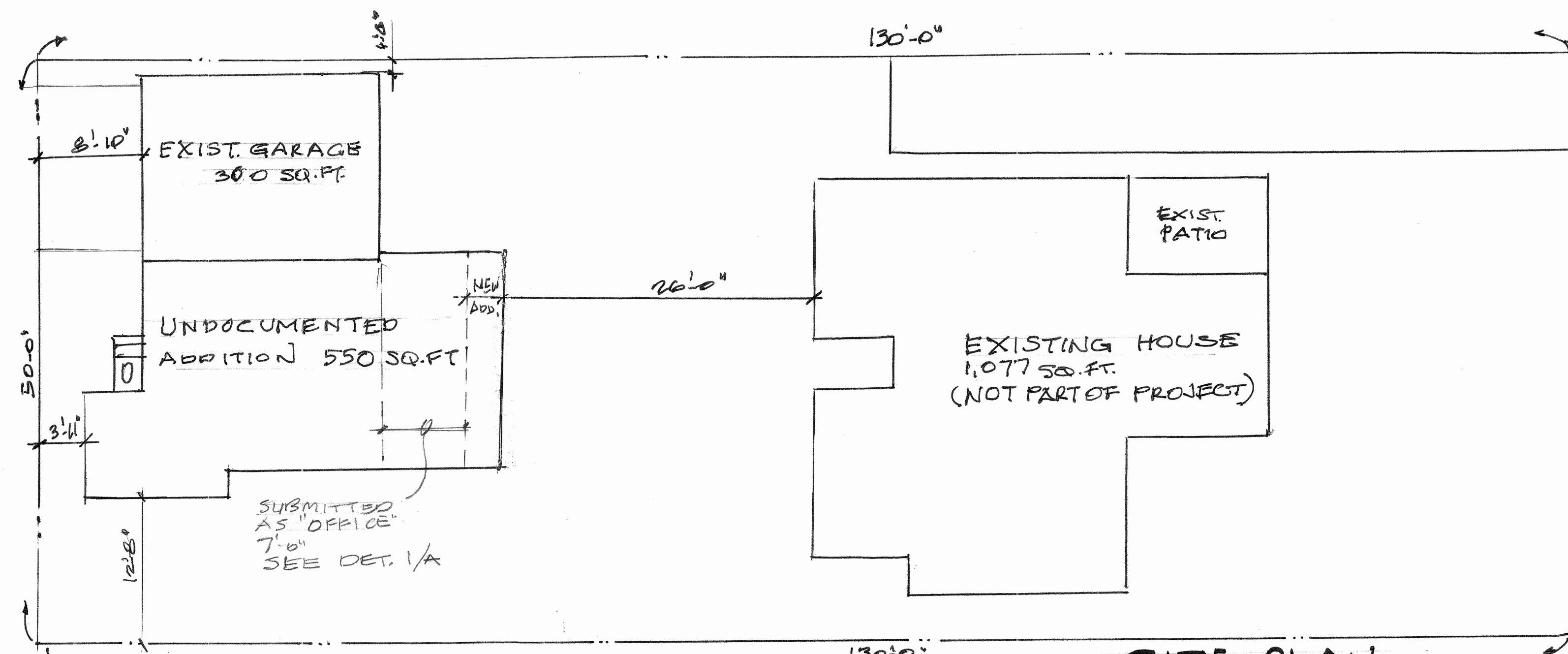


NOTE: TWIN BED REQUIRES 10'0" SPACE

1/4 EXPANSION

NOTE: HELD UP FOR SUBMITTAL UNTIL ROOF DESIGN WAS APPROVED

NOTE: UNCOVER SECTION(S) OF (WATER, ELECTRIC, GAS) TO DETERMINE POSSIBLY REQUIRED UPGRADING

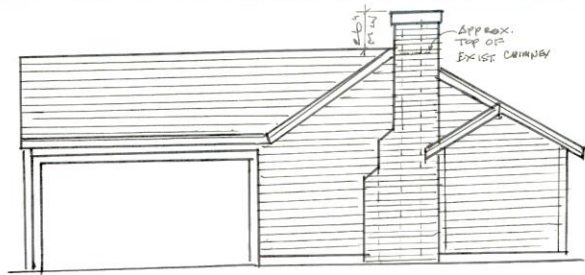


SITE PLAN

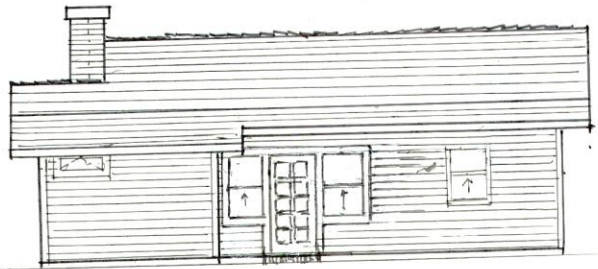
SHEET	CONTENT
1	NOTES & SITE PLAN
2	FLOOR PLANE ELEVATIONS
3	FOUNDATION & ROOF FRAMING & DETAILS

UNDOCUMENTED ADDITION TO EXISTING GARAGE FOR
STEPHEN LEFFLER & CHRISTINA MONTANA
752 STANLEY AVENUE, LONG BEACH, CA 90804

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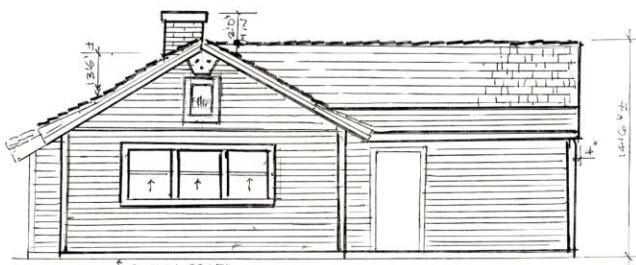
EAST ELEVATION
1/4" = 1'-0"



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



SOUTH ELEVATION
1/4" = 1'-0"



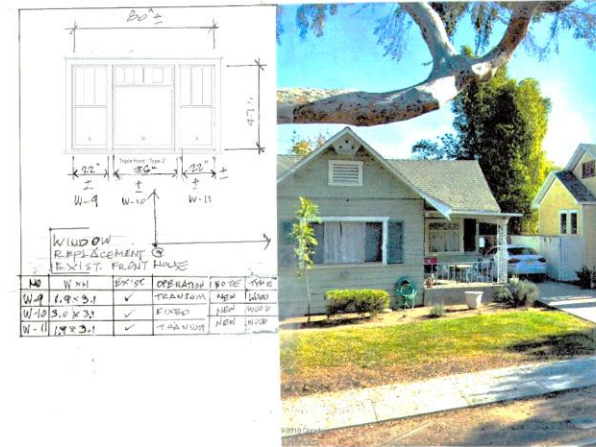
WEST ELEVATION
1/4" = 1'-0"

NOTE:
ALL WINDOWS & EXTER DOORS
SHALL BE WOOD

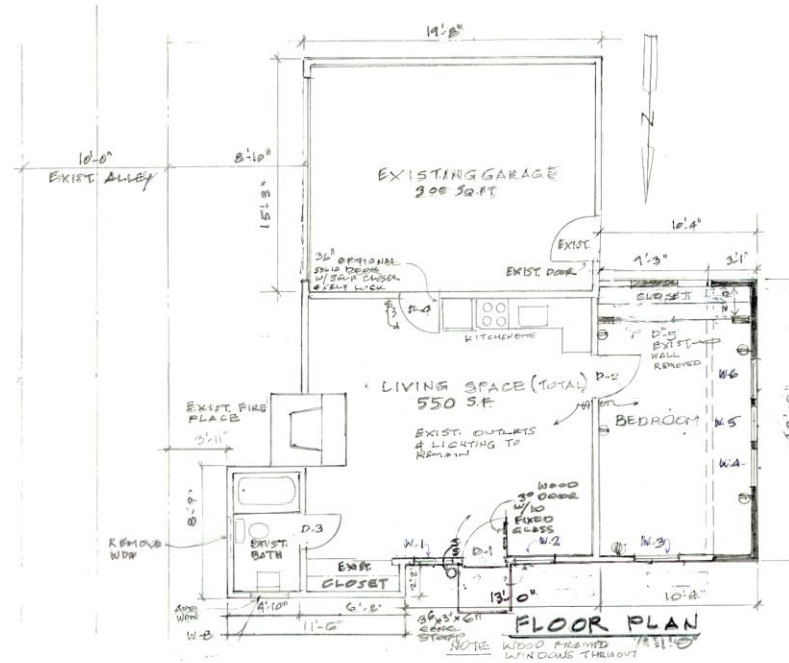
WINDOW SCHEDULE						
NO.	W x H	TOP ELEV.	OPERATION	CL. OPS	NOTES	TYPE
W-1	2'8" x 4'0"	6'-8"	TRANSOM	10.7 SQ. FT.	NEW	WOOD
W-2	2'6" x 4'0"	6'-8"	TRANSOM	10.7 SQ. FT.	NEW	WOOD
W-3	2'6" x 3'6"	6'-8"	TRANSOM	8.8 SQ. FT.	NEW	WOOD
W-4	2'6" x 3'6"	6'-8"	TRANSOM	8.8 SQ. FT.	NEW	WOOD
W-5	2'6" x 3'6"	6'-8"	FIXED	8.8 SQ. FT.	NEW	WOOD
W-6	2'6" x 3'6"	6'-8"	TRANSOM	8.8 SQ. FT.	NEW	WOOD
W-7	1'6" x 2'0"	1'16"	FIXED	3.0 SQ. FT.	NEW	WOOD
W-8	2'6" x 1'6"	6'-8"	TRANSOM	3.8 SQ. FT.	NEW	WOOD

DOOR SCHEDULE					
NO.	W x H	TOP ELEV.	DOOR	NOTES	THICK.
D-1	3'0" x 6'8"	6'-8"	SOLID	10-GLASS PANELS	1 3/8"
D-2	2'6" x 6'8"	6'-8"	LAM.		1 3/8"
D-3	2'6" x 6'8"	6'-8"	LAM.		1 3/8"
D-4	3'0" x 6'8"	6'-8"	SOLID	SELF-CLOSING	1 3/8"
D-5	2'0" x 6'8"	6'-8"	LAM.	WARDROBE DOORS	1 3/8"

FRONT WINDOW AT STREET
REMOVE EXIST WINDOWS & REPLACE WITH
WOOD TRANSOM WINDOWS @ SAME SIZE, SHIT 2



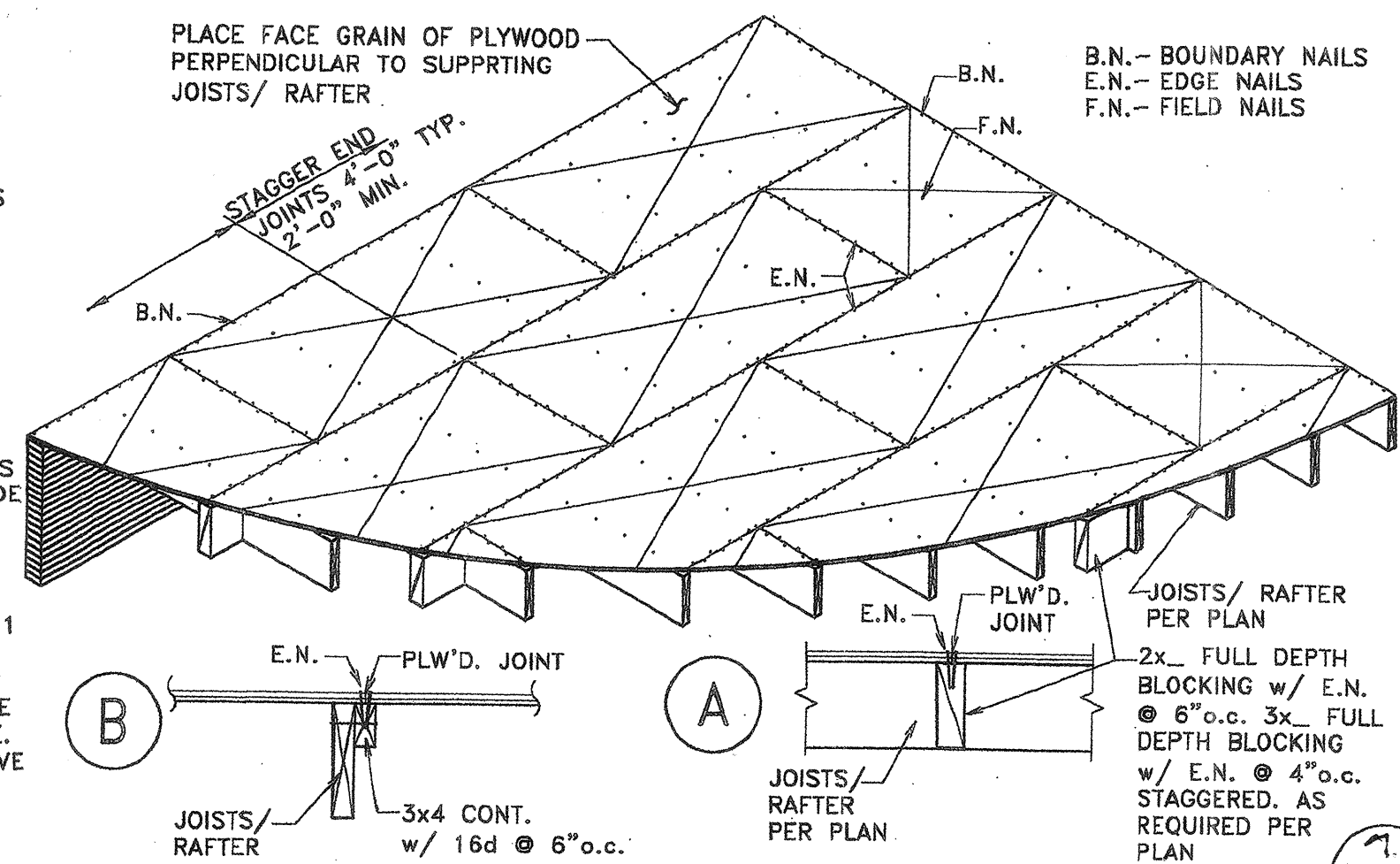
FRONT OF EXIST. HOUSE



6 inch siding
light green
SIDING MFG
MODEL NUMBER
MERAND 55 KU

PLYWOOD SHEATHING NOTES:

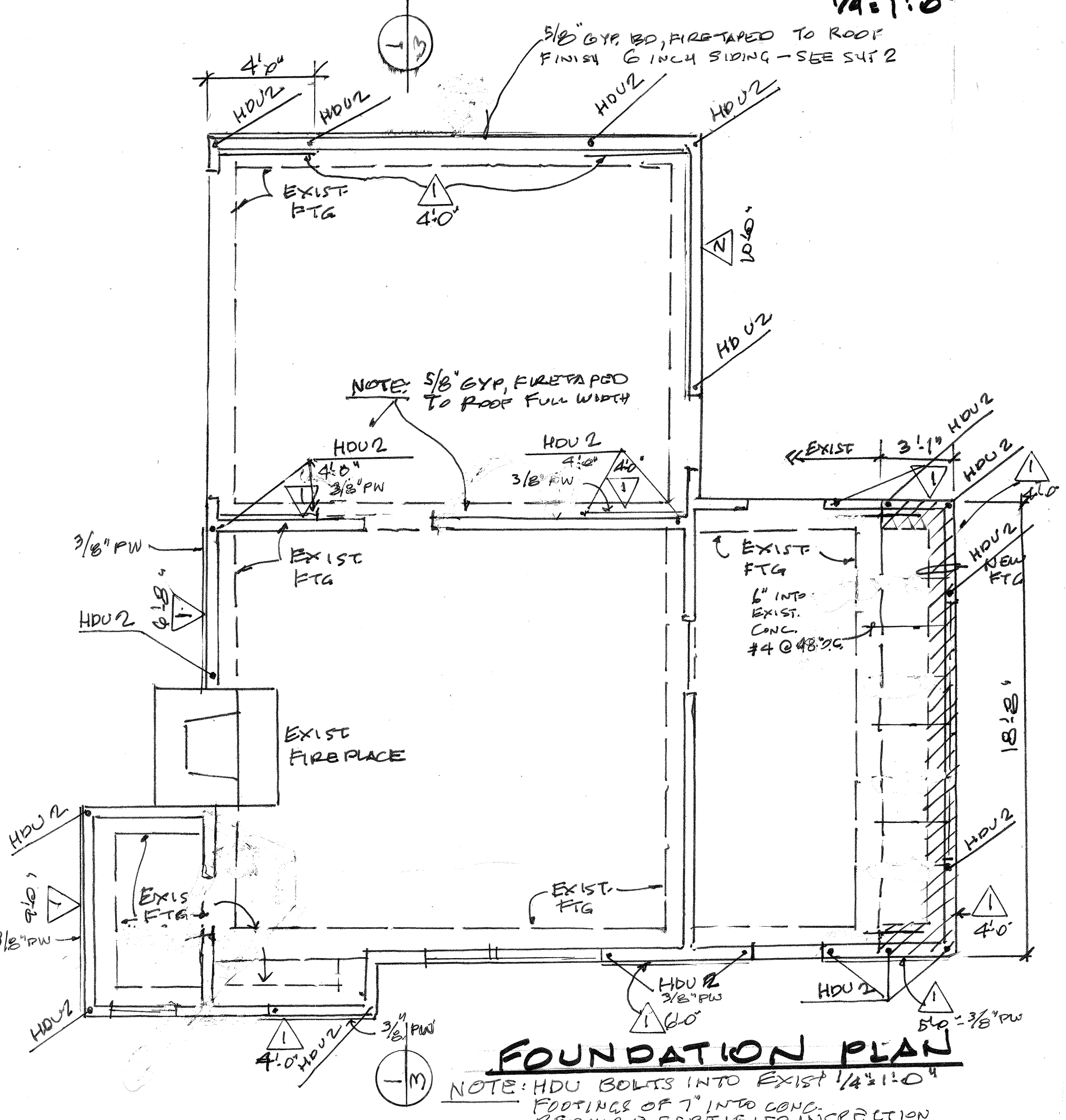
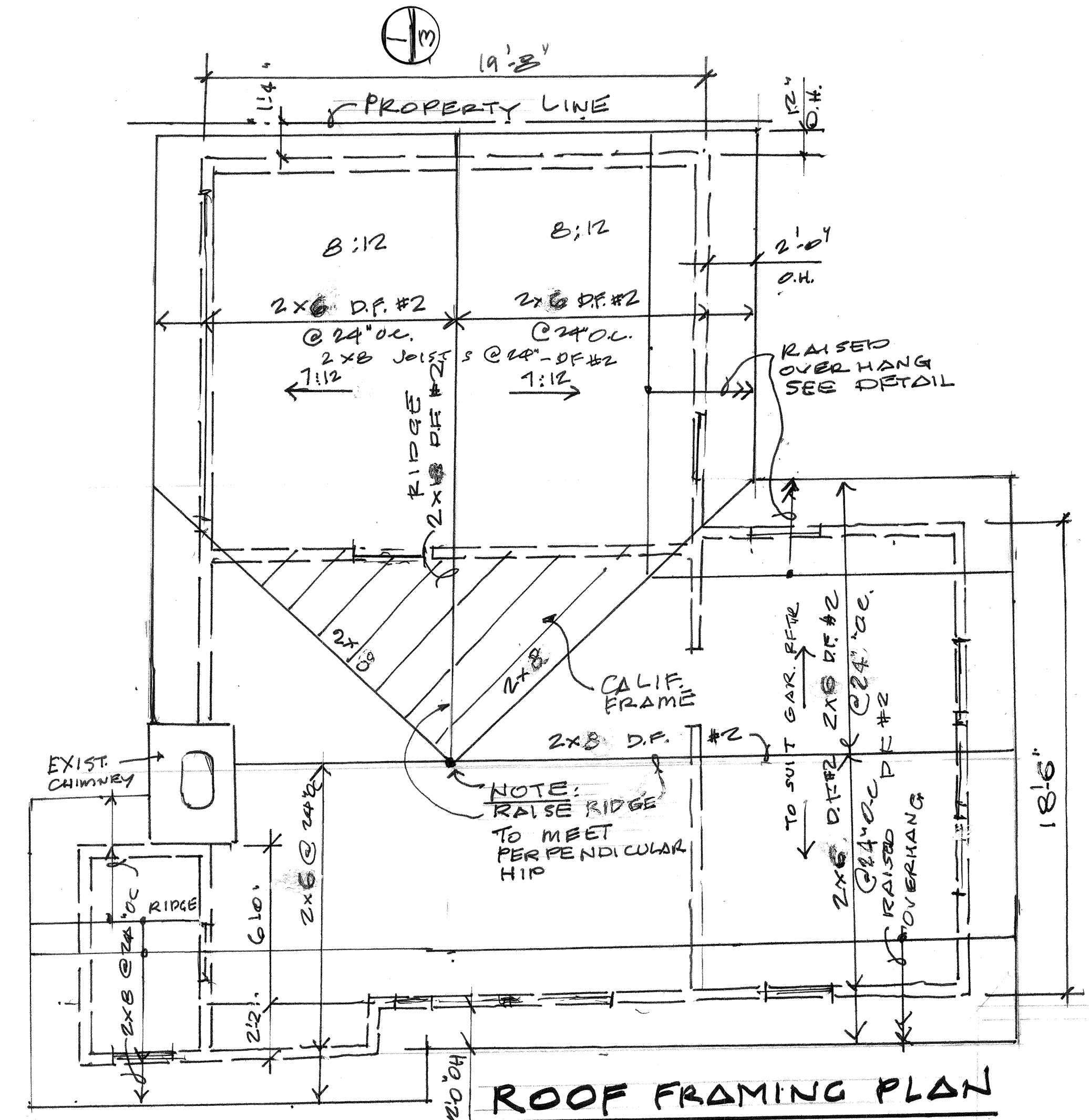
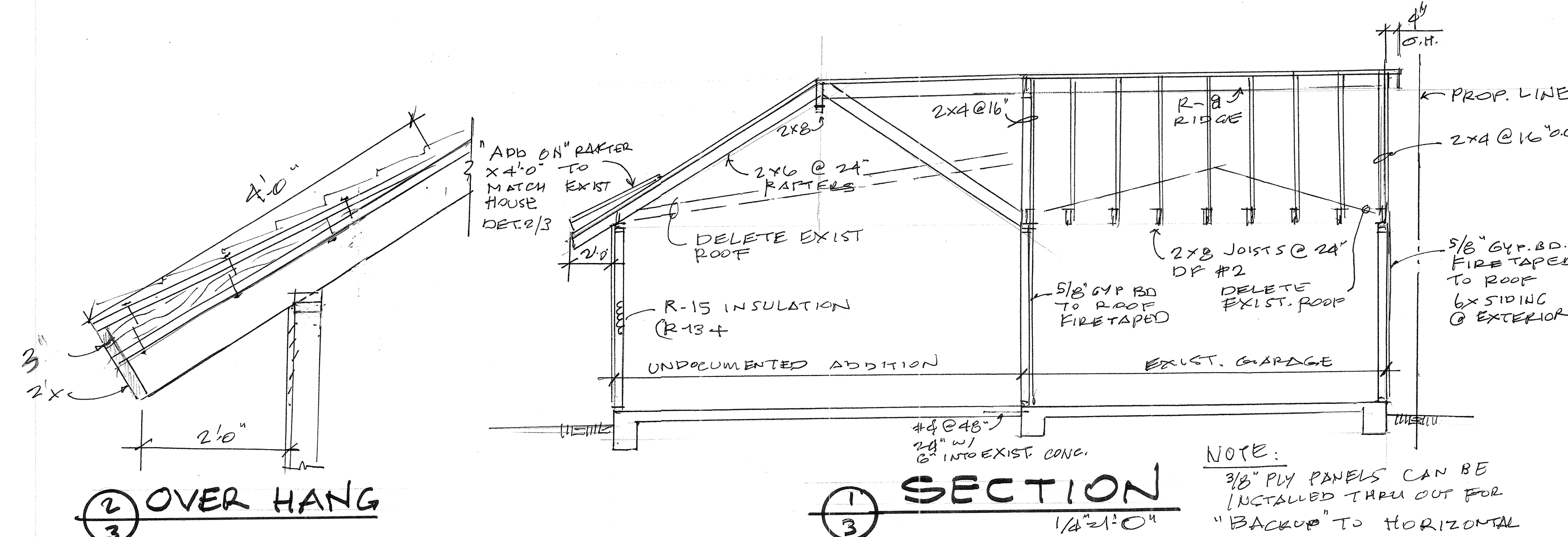
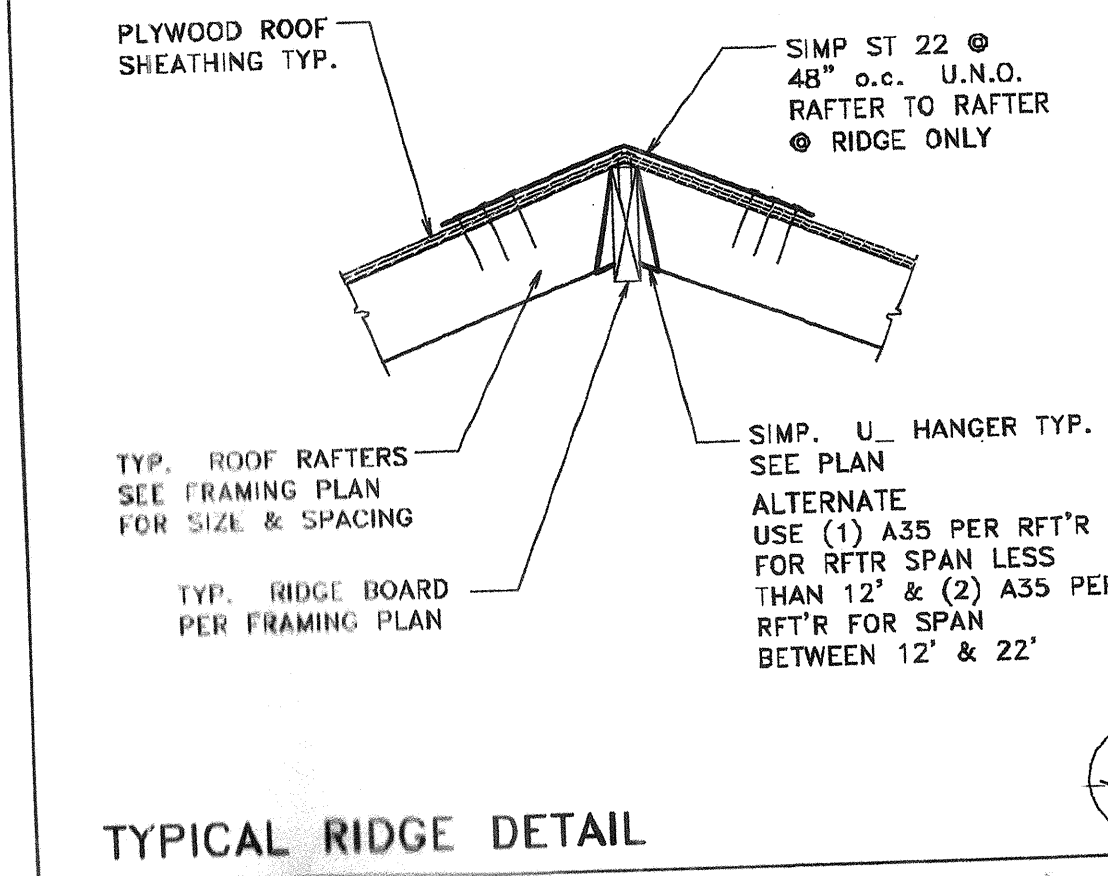
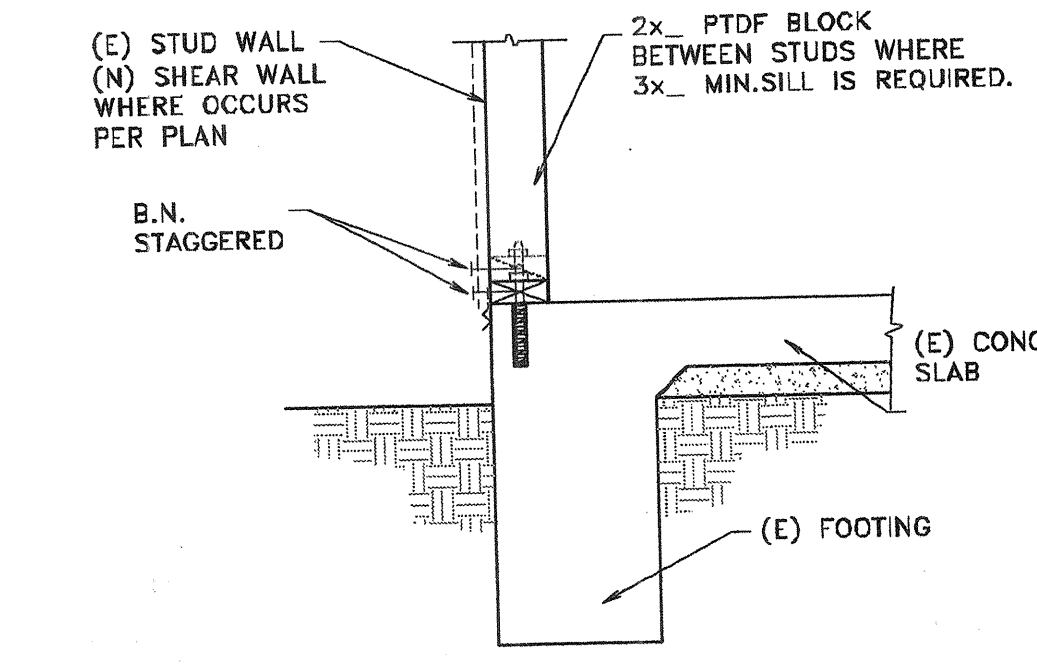
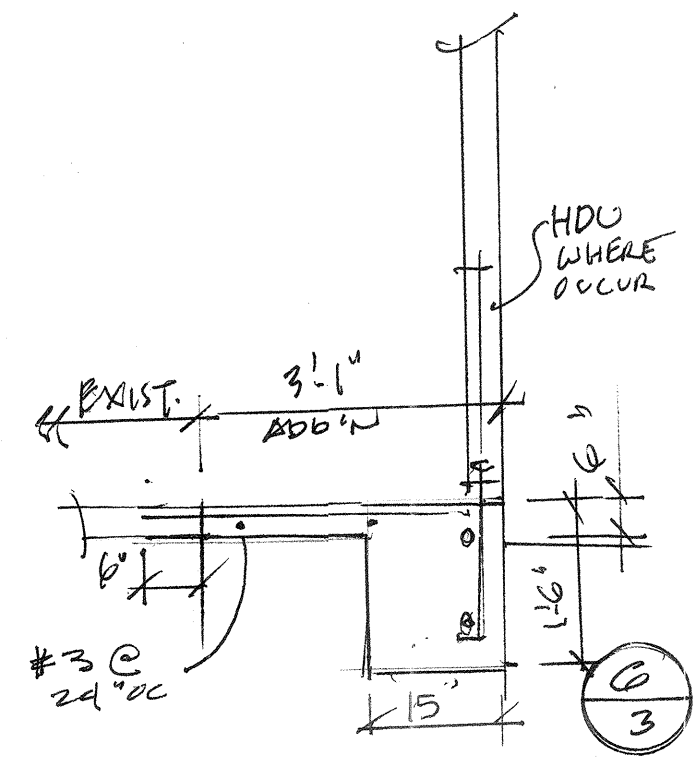
1. RUN LONG DIMENSION OF PLYWOOD PERPENDICULAR TO JOISTS OR RAFTER.
2. NAILING SIZE AND SPACING SHALL BE AS NOTED ON PLAN.
3. ALL NAILING SHALL BE COMMON NAILS OR GALVANIZED BOX.
4. NAILS SHALL HAVE A MIN. 3/8" EDGE DISTANCE.
5. LAY OUT JOINTS IN A 4 FOOT MODULE TO COINCIDE WITH PLYWOOD PATTERN.
6. USE TONGUE & GROOVE PLYWOOD AT UNBLOCKED FLOOR/ FLAT ROOF PER PLAN.
7. USE BOUNDARY NAILING AT FRAME BEAMS, RIDGES, VALLEYS AND OPENINGS.
8. WHERE JOIST OR RAFTER LAP SPLICE OCCURS AND PLYWOOD JOINT IS CONTINUOUS, PROVIDE 3x4 CONT. PER DETAIL B.
9. PROVIDE EDGE NAILING TO INTERIOR BRACING SUPPORT.
10. PLYWOOD DIAPHRAGM: PRODUCT STANDARD PS1-95, DOUGLAS FIR-LARCH, STRUCTURAL 1 (CDX).
11. STRUCTURAL PLYWOOD SHALL BE GRADE PER A.P.A. PS1-74 AND SHALL BE INTERIOR TYPE SHEATHING C-D GRADE WITH EXTERIOR GLUE.
12. FLOOR SHEATHING SHALL BE AS NOTED ABOVE EXCEPT NOTE 6, UNLESS NOTED OTHERWISE. SEE PLAN.



TYPICAL PLYWOOD FLOOR AND ROOF DIAPHRAGM CONSTRUCTION

HOLDOWN CAPACITIES (SIMPSON)	(KIPS)	SHORT TERM LOADING	SHEAR WALL CAPACITIES	COVERING	NAILING	SIL	5/8 AB	A35 FRM	CBC	LA
MSTA36	1.995(1.355)	2-2x	1	3/8" PW	8d @ 6"	@40"	16d @ 6"	@24"	230	200
CS16	1.65 (END LENGTH=14")	75%	2	15/32" PW	10d @ 6"	@24"	20d @ 6"	@16"	340	340
HDU2-SDS2.5	3.075	2.306	3	15/32" PW	10d @ 4"	@24"	20d @ 4"	@10"	510	510
HDU4-SDS2.5	4.585	3.424	4	7/8" STUCCO	11 Ga. x 1 1/2" @ 72"	16d @ 12"	@48"	90	90	90
HDU5-SDS2.5	5.645	4.234	5	5/8" blk'd gyp	6d @ 4"	@72"	16d @ 12"	30	30	30
HDU6-SDS2.5	5.980	4.485	6	15/32" PW	10d @ 4"	@12"	1/2s @ 9"	@10" ef	1020	1020
HDU8-SDS2.5	7.87	5.903	8	1/2" gyp bd	5d @ 7"	@72"	16d @ 12"	30	30	30
HDU11-SDS2.5	9.535	7.151	9	15/32" PW	10d @ 6"	@18"	1/2s @ 1"	@5"	680	680
HDU14-SDS2.5	14.39	10.793	10	15/32" PW	10d @ 2"	@16"	1/2s @ 1"	@5"	770	670

1. Plywood Shearwalls with capacity of 300#/ft shall be inspected by a deputy inspector.
2. Use only common nails for plywood shearwalls & diaphragms.
3. Plywood to be at least 4-ply. 3-ply plywood shall only have a max cap of 200#/ft.
4. Use 3x sill plate for shearwall w/ cap over 350 pft.



REVISIONS	BY

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 www.SteveFalkAIA.com

UNDOCUMENTED ADDITION TO EXISTING GARAGE FOR
 STEPHEN LEFFLER & CHRISTINA MONTANA
 752 STANLEY AVENUE, LONG BEACH, CA 90804

Date	
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Job	1807
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STATE OF CALIFORNIA
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
(CSC-CPH-RALT-05-E (Revised 04/16))

CALIFORNIA ENERGY COMMISSION
CFIR-ALT-05-E

CERTIFICATE OF COMPLIANCE		(Page 6 of 8)
Prescriptive Residential Alterations That Do Not Require HERS Field Verification		
Project Name: Undocumented Addition to Existing Garage for Leffler and Montana		Date Prepared: 8/16/2018

G. Space Conditioning (SC) Systems – Heating/Cooling (Prescriptive Section 150.2(b))
 Alterations to Space Conditioning Systems shall be exempt from HERS verification requirements as prerequisite for use of the CFIR-ALT-05 and C2R-ALT-05 Compliance Documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from HERS verification, then a CFIR-ALT-03 shall be completed and registered with a HERS Provider Data Registry. In each row below for each dwelling unit in the building, check the box that indicates the exemption from HERS verification compliance:

- ☐ a. space conditioning system was not altered;
- ☐ b. less than 40 F.t of ductwork added or replaced;
- ☐ c. (exempt from duct leakage testing) if: the existing duct system was insulated with asbestos;
- ☐ d. (exempt from duct leakage testing) if: the existing duct system was previously tested and passed by a HERS Rater.

D1		D2		D3		D4			
Dwelling Unit Name		SC System Identification or Name		SC System Location or Area Served		Exemption From HERS Verification			
						<input type="checkbox"/> a	<input type="checkbox"/> b	<input type="checkbox"/> c	<input type="checkbox"/> d
						<input type="checkbox"/> a	<input type="checkbox"/> b	<input type="checkbox"/> c	<input type="checkbox"/> d
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CA Building Energy Efficiency Standards - 2016 Residential Compliance April 2016

UNDOCUMENTED ADDITION TO EXISTING GARAGE FOR
STEPHEN LEFFLER & CHRISTINA MONTANA
752 STANLEY AVENUE, LONG BEACH, CA 90804

T24-1

STATE OF CALIFORNIA
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
CERTIFICATE OF COMPLIANCE
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
Undocumented Addition to Existing Garage for Lefler and Montana
H. Water Heating Systems (Section 150.2(b)(16))

STATE OF CALIFORNIA
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
CERTIFICATE OF COMPLIANCE
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
Undocumented Addition to Existing Garage for Lefler and Montana
DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
RESPONSIBLE PERSON'S DECLARATION STATEMENT
For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

RESIDENTIAL MEASURES SUMMARY
Project Name: Undocumented Addition to Existing Garage
Project Address: 752 Stanley Avenue Long Beach
CA Climate Zone 06
RMS-1
Building Type: Single Family
Total Cond. Floor Area: 550
Addition: 550
of Units: 1
INSULATION
FENESTRATION
HVAC SYSTEMS
HVAC DISTRIBUTION
WATER HEATING

2016 Low-Rise Residential Mandatory Measures Summary
NOTES: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. Exceptions may apply.
Building Envelope Measures:
§ 110.6(a)1. Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 cfm/ft² or less when tested per NFRC-600 or ASTM E283 or AIAA/ENR-354. (01/15/2014/2011)
§ 110.6(a)5. Labeling. Fenestration products must have a label meeting the requirements of § 10-111(a).
§ 110.6(a)6. Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from TABLES 110.6-A and 110.6-B for compliance and must be caulked and/or weatherstripped.
§ 110.7. Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed or weather stripped.
§ 110.8(a). Insulation Certification by Manufacturers. Insulation specified or installed must meet Standards for Insulating Material.
§ 110.8(b). Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(c). Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(h) when the installation of a cool roof is specified on the CPD.
§ 110.8(i). Radiant Barrier. A radiant barrier must have an emittance of 0.05 or less and be certified by the Department of Consumer Affairs.
§ 150.0(a). Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling, or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a dwarf ceiling.
§ 150.0(b). Loose-fill Insulation. Loose-fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c). Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less (R-19 in 2x6 or U-factor of 0.074 or less). Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood-framed assembly.
§ 150.0(d). Raised floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.
§ 150.0(e). Slab Edge Insulation. Slab-edge insulation must meet all of the following: have a water vapor permeance no greater than 2.0 perm-inch; be protected from physical damage and UV light deterioration; and when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1. Vapor Retarder. In Climate Zones 1-15, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(g).
§ 150.0(g)2. Vapor Retarder. In Climate Zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with an impermeable insulation.
§ 150.0(h). Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.35 or the weighted average U-factor of all fenestration must not exceed 0.59.
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:
§ 150.0(a)1A. Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(a)1b. Combustion Intake. Masonry or factory-built fireplaces must have a combustion intake air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tightly fitting damper or combustion air control device.
§ 150.0(a)1c. Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.
§ 150.0(a)2. Pilot Light. Continuous burning pilot lights and the use of indoor air for cooling a fluebox jacket, when that indoor air is vented to the outside of the building, are prohibited.
Space Conditioning, Water Heating, and Plumbing System Measures:
§ 110.04 § 110.3. Certification. Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showheaters, faucets, and all other regulated appliances must be certified by the manufacturer to the Energy Commission.
§ 110.2(a). HVAC Efficiency. Equipment must meet the applicable efficiency requirements in TABLE 110.2-A through TABLE 110.2-K.
§ 110.2(b). Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone, and in which the cut-on temperature for compression heating is higher than the cut-off temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.
§ 110.2(c). Thermostats. All unitary heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.
§ 110.2(d). Water Heating Recirculation Loops Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop correction requirements of § 110.2(e).
§ 110.3(a)7. Isolation Valves. Instantaneous water heaters with an input rating greater than 6.9 kBtu/h (2 kW) must have isolation valves with hose bibbs or other fittings on both cold water and hot water lines of water heating systems to allow (or water tank flushing when the valves are closed).
§ 110.5. Pilot Lights. Continuously burning pilot lights are prohibited for natural gas fan-type central furnaces, household cooking appliances (appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr, are exempt), and pool and spa heaters.
§ 150.0(h)1. Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with ASHRAE Handbook, Equipment Sizing, Applications Volume, and Fundamentals Volume, SHARCNA Residential Comfort System Installation Standards Manual, or APCA Manual, using design conditions specified in § 150.0(h)2.

2016 Low-Rise Residential Mandatory Measures Summary
§ 150.0(h)3A. Clearances. Installed air conditioner and heat pump outdoor condensing units must have a clearance of at least 5 feet from the outlet of any dryer vent.
§ 150.0(h)3B. Liquid Line Drain. Installed air conditioner and heat pump systems must be equipped with liquid line filter driers if required, as specified by manufacturer's instructions.
§ 150.0(i)1. Storage Tank Insulation. Unvented hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have R-12 external insulation or R-15 external insulation where the heating insulation value is indicated on the exterior of the tank.
§ 150.0(i)2A. Water piping and cooling system line insulation. For domestic hot water system piping, whether buried or unburied, all of the following must be insulated according to the requirements of TABLE 120.3-A: the first 5 feet of hot and cold water pipes from the storage tank, all piping with a nominal diameter of 3/4 inch or larger, all piping associated with a domestic hot water recirculation system regardless of the pipe diameter, piping from the heating source to storage tank or between tanks, piping buried below grade, and all hot water pipes from the heating source to kitchen fixtures.
§ 150.0(i)2B. Water piping and cooling system line insulation. All domestic hot water pipes that are buried below grade must be installed in a water proof and non-adhesive casing or sleeve.
§ 150.0(i)2C. Water piping and cooling system line insulation. Pipe for cooling system lines must be insulated as specified in § 150.0(i)2A. Distribution piping for steam and hydronic heating systems or hot water systems must meet the requirements in TABLE 120.3-A.
§ 150.0(j). Insulation Protection. Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.
§ 150.0(j)3A. Insulation Protection. Insulation exposed to weather must be installed with a cover suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. The cover must be water retardant and provide shielding from solar radiation that can cause degradation of the material.
§ 150.0(j)3B. Insulation Protection. Insulation covering chilled water piping and refrigerant suction piping isolated outside the conditioned space must have a Class I or Class II vapor retarder.
§ 150.0(k)1. Gas or Propane Systems. Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: a 20V electrical receptacle within 3 feet of the water heater, a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed, a condensate drain that is no more than 2 inches higher than the base of the water heater, and allows natural draining without pump assistance, and a gas supply line with a capacity of at least 200,000 Btu/hr.
§ 150.0(k)2. Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(d).
§ 150.0(k)3. Solar Water Heating Systems. Solar water heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC) or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:
§ 150.0(l)3. Ducts. Insulation installed on an existing space conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the local owner, in writing, that the insulation meets § 150.0(l)3.
§ 150.0(m)1. CMC Compliance. All air distribution system ducts and plenums must be installed, sealed, and insulated to meet the requirements of CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply air and return air ducts and plenums must be insulated to a minimum installed level of R-6.0 (or higher if required by CMC § 605.0) or a minimum installed level of R-4.2 when entirely in conditioned space as confirmed through field verification and diagnostic testing (RAS 1.4.3B). Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-seal system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meet the requirements of UL 722. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area of the ducts.
§ 150.0(m)2. Factory Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures, joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3. Field Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7. Backdraft Dampers. All fan systems that exchange air between the conditioned space and the outside of the building must have backdraft or automatic dampers.
§ 150.0(m)8. Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9. Protection of Insulation. Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10. Porous Inner Core Flex Duct. Porous inner core flex duct must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11. Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix D-A3.
§ 150.0(m)12. Air Filtration. Mechanical systems that supply air to an occupiable space through ductwork exceeding 10 feet in length and through a thermal conditioning component, except evaporative coolers, must be provided with air filter devices that meet the design, installation, efficiency, pressure drop, and labeling requirements of § 150.0(m)12.

2016 Low-Rise Residential Mandatory Measures Summary
§ 150.0(n)13. Duct System Sizing and Air Filter Grit Sizing. Space conditioning systems that use forced air ducts to supply cooling to an occupiable space must have a hole for the placement of a static pressure probe (SPSP), or a permanently installed static pressure probe (PSP) in the supply plenum. The space conditioning system must also demonstrate a minimum of 0.50 CFM per ton of nominal cooling capacity through the return plies, and an air-handling unit fan efficiency > 0.50 WCFM as confirmed by field verification and diagnostic testing, in accordance with Reference Residential Appendix RA3.3. This applies to both single zone central forced air systems and every zone for zonally controlled central forced air systems.
§ 150.0(o). Ventilation for Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 62.2. Neither window operation nor continuous operation of central forced air system air handlers used in central fan integrated ventilation systems are permissible methods of providing whole-building ventilation.
§ 150.0(p)1A. Field Verification and Diagnostic Testing. Whole-building ventilation airflow must be confirmed through field verification and diagnostic testing, in accordance with Reference Residential Appendix RA3.7.
Pool and Spa Systems and Equipment Measures:
§ 110.4(a). Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations, an on/off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting, a permanent weatherproof plate or card with operating instructions, and must not use electric resistance heating.
§ 110.4(a)1. Piping. Any pool or spa heating equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
§ 110.4(a)2. Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3. Directional inlets and time switches for pools. Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5. Pilot Light. Natural gas pool and spa heaters must have a continuously burning pilot light.
§ 150.0(a). Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.
Lighting Measures:
§ 110.9. Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.
§ 110.9(a). JAB High Efficiency Light Sources. To qualify as a JAB high efficiency light source for compliance with § 150.0(p), a residential light source must be certified to the Energy Commission according to Reference Joint Appendix JAB.
§ 150.0(q)1A. Luminaires Efficiency. All installed luminaires must be high efficacy in accordance with TABLE 150.0-A.
§ 150.0(q)1B. Blank Electrical Boxes. The number of electrical boxes that are more than 5 feet above the finished floor and do not contain a luminaire or other device must not be greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(q)1C. Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must meet all of the requirements for insulation contact (IC) labeling, air leakage, sealing, maintenance, and socket and light source as described in § 150.0(q)1C-A, JAB-2016-E light source rated for elevated temperature must be installed by final inspection in all recessed downlight luminaires in ceilings.
§ 150.0(q)1D. Electronic Ballasts. Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 2 Hz.
§ 150.0(q)1E. Night Lights. Permanently installed night lights and night lights integral to installed luminaires or exhaust fans must be rated to consume no more than 5 watts of power per luminaire or exhaust fan as determined in accordance with § 150.0(q). Night lights do not need to be controlled by a vacancy sensor.
§ 150.0(q)1F. Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(q).
§ 150.0(q)1G. Recessed Downlight Luminaires. Recessed downlight luminaires must not be recessed downlight luminaires in ceilings and must contain lamps that comply with Reference Joint Appendix JAB. Installed lamps must be marked with "JAB-2016-E" or "JAB-2016-E" as specified in Reference Joint Appendix JAB.
§ 150.0(q)1H. Enclosed Luminaires. Light sources installed in enclosed luminaires must be JAB-compliant and must be marked with "JAB-2016-E".
§ 150.0(q)2A. Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL-7A.
§ 150.0(q)2B. Interior Switches and Controls. Exhaust fans must be switched separately from lighting systems.
§ 150.0(q)2C. Interior Switches and Controls. Luminaires must be switched with readily accessible controls that permit the luminaires to be manually switched ON and OFF.
§ 150.0(q)2D. Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(q)2E. Interior Switches and Controls. No control must bypass a dimmer or vacancy sensor function if the control is installed to comply with § 150.0(q).
§ 150.0(q)2F. Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(q)2G. Interior Switches and Controls. An energy management control system (EMCS) may be used to comply with dimmer requirements if it functions as a dimmer according to § 110.9, meets the Installation Certificate requirements of § 130.4, meets the EMCs requirements of § 150.0(q), and meets all other requirements in § 150.0(q).
§ 150.0(q)2H. Interior Switches and Controls. An EMCs may be used to comply with vacancy sensor requirements of § 150.0(q) if it meets all of the following: it functions as a vacancy sensor according to § 110.9, the Installation Certificate requirements of § 130.4, the EMCs requirements of § 150.0(q), and all other requirements in § 150.0(q).
§ 150.0(q)2I. Interior Switches and Controls. A multi-scene programmable controller may be used to comply with dimmer requirements in § 150.0(q) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(q).
§ 150.0(q)2J.

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UNDOCUMENTED ADDITION TO EXISTING GARAGE FOR
STEPHEN LEFFLER & CHRISTINA MONTANA
752 STANLEY AVENUE, LONG BEACH, CA 90804

DATE: 09-17-18
SCALE: AS SHOWN
DRAWN: ABDS
JOB:
SHEET:

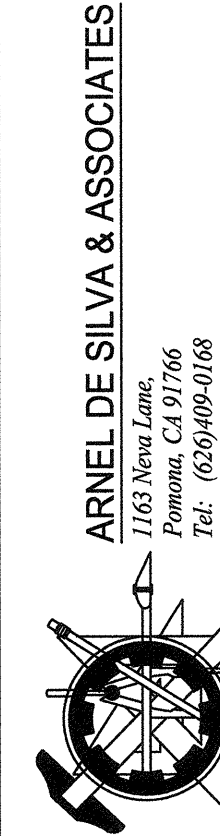
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2016 Low-Rise Residential Mandatory Measures Summary	
§ 150.0(k)(2)	Interior Switches and Controls. In bedrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by a vacancy sensor.
§ 150.0(k)(2)(K)	Interior Switches and Controls. Dimmers or vacancy sensors must control all luminaires required to have light sources compliant with Reference Junt Appendix J48, except luminaires in closets less than 20 square feet and luminaires in hallways.
§ 150.0(k)(2)(L)	Interior Switches and Controls. Undercabinet lighting must be switched separately from other lighting systems.
§ 150.0(k)(3A)	Residential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirements in (a) § 150.0(k)(3A) (ON and OFF switch) and the requirements in either (i) § 150.0(k)(3A) (photo cell) and motion sensor) or item § 150.0(k)(3A) (photo control and automatic time switch control, astronomical time clock, or BMS).
§ 150.0(k)(3B)	Residential Outdoor Lighting. For low-rise multifamily residential buildings, outdoor lighting for private patios, entrances, balconies, and porches, and outdoor lighting for residential parking lots and residential carports with less than eight vehicles per site must comply with either § 150.0(k)(3A) or with the applicable requirements in §§ 110.9, 130.0, 130.2, 130.4, 140.7, and 141.0.
§ 150.0(k)(3C)	Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, outdoor lighting not regulated by § 150.0(k)(3B) or § 150.0(k)(3D) must comply with the applicable requirements in §§ 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(k)(3D)	Residential Outdoor Lighting. Outdoor lighting for residential parking lots and residential carports with a total of eight or more vehicles per site must comply with the applicable requirements in §§ 110.9, 130.0, 130.2, 130.4, 140.7, and 141.0.
§ 150.0(k)(4)	Internally illuminated address signs. Internally illuminated address signs must comply with § 140.8, or must consume no more than 5 watts of power as determined according to § 130.0(e).
§ 150.0(k)(5)	Residential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0(k)(6A)	Interior Common Areas of Low-rise Multi-Family Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be high-efficacy luminaires and controlled by an occupant sensor.
§ 150.0(k)(6B)	Interior Common Areas of Low-rise Multi-Family Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting in that building must: i. Comply with the applicable requirements in §§ 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 30 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress.
Solar Ready Buildings:	
§ 110.10(a)(1)	Single Family Residences. Single family residences located in subdivisions with ten or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete by the enforcement agency must comply with the requirements of § 110.10(a) through § 110.10(g).
§ 110.10(a)(2)	Low-rise Multi-family Buildings. Low-rise multi-family buildings must comply with the requirements of § 110.10(b) through § 110.10(g).
§ 110.10(b)(1)	Minimum Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 60 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area.
§ 110.10(b)(2)	Orientation. All sections of the solar zone located on steep-sloped roofs must be oriented between 110 degrees and 270 degrees of true north.
§ 110.10(b)(3A)	Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof-mounted equipment.
§ 110.10(b)(3B)	Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.
§ 110.10(b)(4)	Structural Design Loads on Construction Documents. For areas of the roof designated as solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
§ 110.10(c)	Interconnection Pathways. The construction documents must indicate a location for inverters and metering equipment and a pathway for routing of conduit from the solar zone to the point of interconnection with the electrical service (for single family residences the point of interconnection will be the main service panel), and a pathway for routing of plumbing from the solar zone to the water-heating system.
§ 110.10(d)	Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(g) must be provided to the occupant.
§ 110.10(e)(1)	Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)(2)	Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be positioned at the opposite (load) end from the input feeder location or main panel location, and permanently marked as: "For Future Solar Electric".



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REVISIONS	DATE

DATE: 09-17-18
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T24-3