PROJECT DESIGN CRITERIA:

RISK CATAGORY: TYPE 1 (MINOR STORAGE FACILITIES)
IMPORTANCE FACTOR: 1
WIND SPEED: 110 MPH
EXPOSURE CATAGORY: C
INTERNAL PRESSURE COEFFICIENT: N/A
MAPPED SPECTRAL RESPONSE COEFFICIENTS:
SITE CLASS: D
SPECTRAL RESPONSE COEFFICIENTS: SDS = 0.872
SEISMIC DESIGN CATAGORY: D
BASIC SEISMIC-FORCE-RESISTING SYSTEM: WOOD SHEAR WALLS
DESIGN BASE SHEAR: SEE CALCULATIONS
SEISMIC RESPONSE COEFFICIENT: CS = 0.134
SEISMIC R = 6.5
ANALYSIS PRECEDURE: ELFP
ROOF D.L.: 10
ROOF LIVE LOAD: 20 PSF
FLOOR DEAD LOAD: 10 PSF
FLOOR LIVE LOAD: 40 PSF
RAIN LOAD: 0
FLOOD LOAD: 0

ENERGY COMPLIANCE REQUIREMENTS

Insulation R-Value at: Ceiling 49 Wall 21 Floor na
Attic Roof na Ducts na
Roofing: RR na TE na Radiant Barrier YES Cool Roof na
HVAC Equipment: FAU >= na % AC SEER/EER 14/1; Heat Pump 8.2 HSPF
Windows: U-Value 3 SHGC 23
Water Heater: EF or Efficiency NEEA
PV System Size (KWdc): na Storage Battery na kWH
Indoor Air Quality CFM 30

Energy Code: Required HERS Verification
(See project CF1R for specific measures)

RA 3.1 - Air Distribution / Duct Testing	
RA 3.2 - Refrigerant Charge of AC / Heat Pump	X
RA 3.3 - Airflow Rate, Fan Watt Draw / Fan Efficacy	X
RA 3.4 - HVAC Components and Devices	X
RA 3.5 - Quality Insulation Installation (QII)	
RA 3.6 - Water Heating Systems	
RA 3.7 - Testing of Mechanical Ventilation Systems	
RA 3.8 - Building / Dwelling Unit Air Leakage	
RA 3.9 - Whole House Fans	

THE APPROVAL OF ALL PLANNING/PRESERVATION WORK IS SUBJECT TO FIELD INSPECTIONS.

CITY OF SACRAMENTO Community Development — APPROVED — City of Sacramento Plan Review — PLANNING
By: *Adrienne Spease*
on Apr 14, 2021

CITY OF SACRAMENTO, DEPT OF UTILITIES NOTES:

1. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CITY OF SACRAMENTO STANDARD SPECIFICATION, DATED JUNE 2007
2. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL LOCATION OF ALL EXISTING UTILITIES AND FOR THE PROTECTION OF AND REPAIR OF DAMAGE TO THEM. CONTACT UNDERGROUND SERVICE ALERT 1-800-642-2444, 48 HOURS BEFORE WORK IS TO BEGIN
3. THE CONTRACTOR SHALL PROVIDE EROSION, SEDIMENT, AND POLLUTION CONTROL BEST MANAGEMENT PRACTICES (BMP'S) WHEN AND WHERE APPLICABLE PER THE CITY OF SACRAMENTO STANDARD SPECIFICATIONS SECTION 16-3
4. DIRECT ALL NEW DOWNSPOUTS ONTO NATURAL GROUND OR LANDSCAPED AREAS WHERE FEASABLE
5. FLOOD ZONE SHADED X, PANEL 0180.
6.NO PERMANENT STRUCTURE (INCLUDING WITHOUT LIMITATION GARAGES, PATIOS, CONCRETE SLABS, TOOL SHED, ROOF OVERHANGS AND SIMILAR STRUCTURES) SHALL BE CONSTRUCTED ON TOP OF WATER, SEWER OR DRAINAGE PIPELINES OR ANYWHERE WITHIN THE ASSOCIATED UTILITY EASEMENTS. (ORD. 2001-033)
7. CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXACT LOCATIONS AND PROTECTION OF ALL EXISTING MAINS AND LINES. YOU CAN CONTACT CITY CREWS AT 311 TO LOCATE SERVICES
8. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO DETERMINE THE LOCATION OF ANY EASEMENTS OF RECORD ENCUMBERED WITHIN THE PROPERTY.

INDEX OF DRAWINGS:

CITY OF SACRAMENTO Community Development — APPROVED — City of Sacramento Plan Review — Residential Building Division
By: *SBronson*
on Apr 12, 2021

COMMUNITY DEVELOPMENT DEPARTMENT APPROVED UNDER TITLE 8 AND 17 CITY CODE CITY OF SACRAMENTO, CALIF. BUILDING INSPECTION DIVISION

REFERENCED CODES:

2019 CALIFORNIA ENERGY CODE (C.E.C.)
2019 CALIFORNIA BUILDING CODE (C.B.C.)
2019 CALIFORNIA RESIDENTIAL BUILDING CODE (C.R.C.)
C.R.C. NOT APPLICABLE TO STRUCTURAL PER C.R.C. 301.1.3
2019 CALIFORNIA PLUMBING CODE (C.P.C.)
2019 CALIFORNIA MECHANICAL CODE (C.M.C.)
2019 CALIFORNIA ELECTRICAL CODE (C.E.C.)
2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (C.G.B.S.C.)

PROJECT DATA:

OCCUPANCY GROUP: R-3
TYPE OF CONSTRUCTION: V-B
ZONE: R-1 (LOW DENSITY SINGLE UNIT RESIDENTIAL)
STORIES: 1
LOT AREA: 8712 SQ. FT.
EXISTING LOT COVERAGE: 1419 + 468
EXISTING COVERAGE PERCENT: 21.7%
~~PROPOSED COVERAGE PERCENT: 27.6%~~
FIRE SPRINKLERS ON EXISTING STRUCTURE: NO
FIRE SPRINKLERS ON PROPOSED STRUCTURE: NO

PROPOSED ACCESSORY DWELLING UNIT SQUARE FOOTAGE = 510.00 SQ. FT.

THE APPROVAL OF ALL PLUMBING / MECHANICAL / ELECTRICAL IS SUBJECT TO FIELD INSPECTION

ADU SETBACKS SACRAMENTO COUNTY:

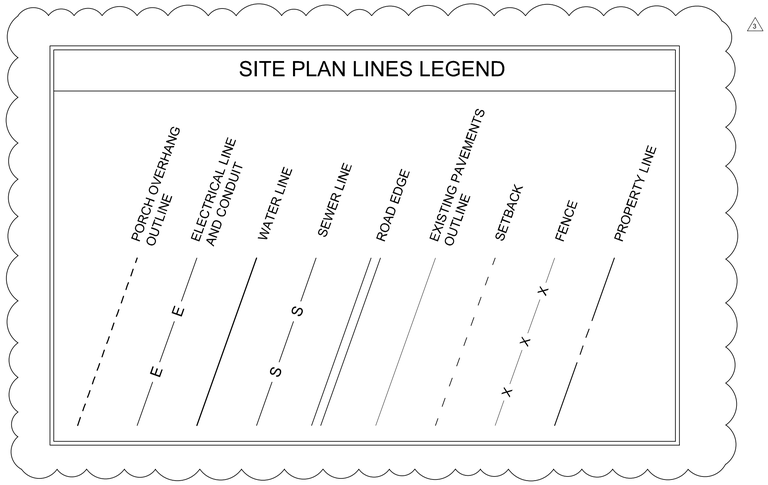
FRONT YARD SETBACK: 20'

SIDE YARD SETBACK: 5' MIN

REAR YARD SETBACK ADJACENT TO ALLEY: 5' MIN

STREET YARD SETBACK: 20'

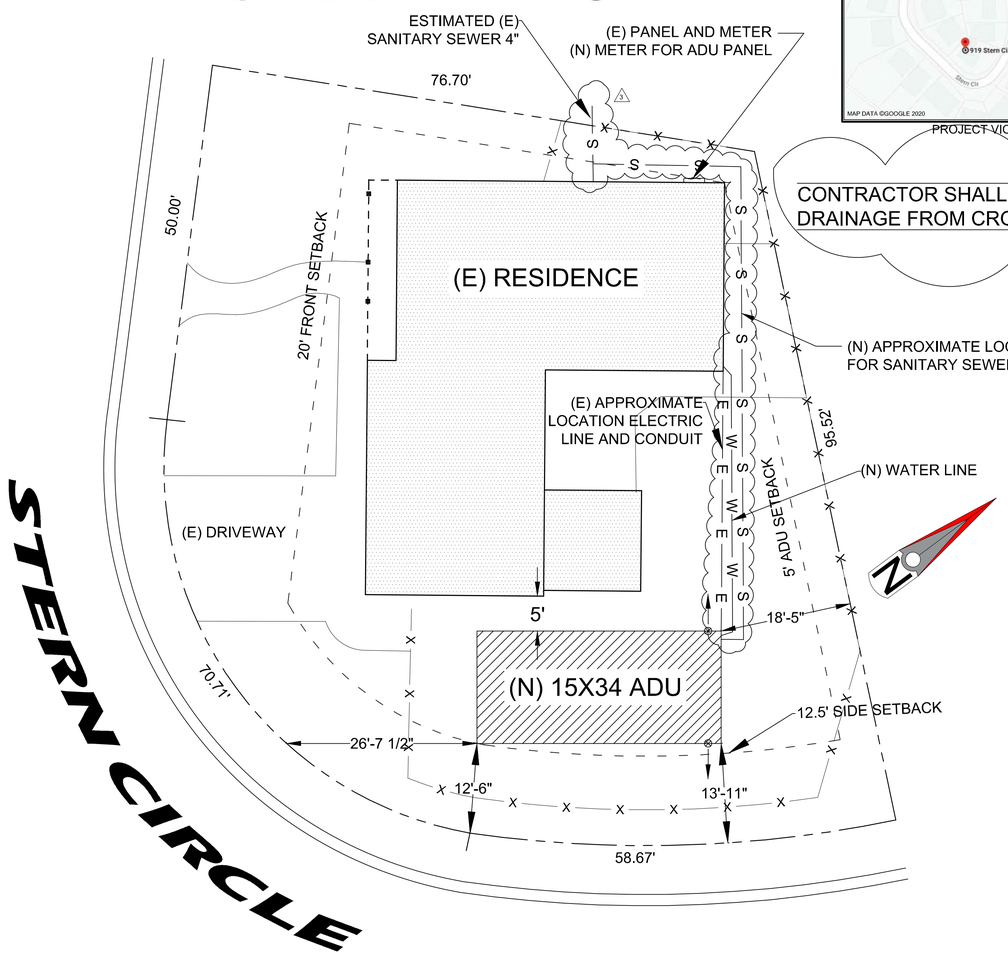
Per Call to owner upgrade electric service to 200AMPs S.E.B.4-12-21



CITY OF SACRAMENTO Department of Public Works — APPROVED — City of Sacramento Plan Review — DEVELOPMENT ENGINEERING
By: *Julie Eising*
on Apr 14, 2021

PROJECT VICINITY MAP

CONTRACTOR SHALL GRADE LOT TO PREVENT DRAINAGE FROM CROSSING PROPERTY LINES



1. SITE PLAN
SCALE 1" = 10'-0"

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES — APPROVED — City of Sacramento Plan Review — DEPARTMENT OF UTILITIES
Aangulo 04/15/2021

CITY OF SACRAMENTO Community Development — ISSUED BY — Community Development Department
By: *RODION KORNIYENKO*
on May 11, 2021

REGISTERED PROFESSIONAL ENGINEER TYRAS A. JANDAL No. 3031 Exp. 3-31-21 STRUCTURAL STATE OF CALIFORNIA

919 STERN CIR

RES-2100482

DRAWN BY: MR

REVISIONS:	BY:
1 12-30-2020	MR
2 1-5-2021	MR
3 2-26-2021	MR

Backyard Unlimited
4765 Pacific St, Rocklin, CA 95677
855-630-7433

15x34 ADU for:
EMILY PARMELEE
PROJECT ADDRESS: 919 STERN CIRCLE
Sacramento, CA 95822
APN: 024-0702-040-000

PAGE NAME: COVER SHEET

DATE: 12-9-2020
SCALE: NOTED
PAGE No: 1 of 5

FLOOR PLAN NOTES

1. ALL GLAZING SHALL MEET THE REQUIREMENTS OF C.R.C. 308. SAFETY GLAZING SHALL BE PROVIDED IN ALL OF THE FOLLOWING LOCATIONS:

GLAZING IN DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION EXCEPT GLAZING PANELS THROUGH WITH A 3 INCH DIAMETER SHPERE IS UNABLE TO PASS AND DECORATIVE GLAZING.
GLAZING IN WALLS, ENCLOSURES, OR FENCES FACING HOT TUBS, SPAS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS, SHOWERS AND INDOOR OR OUTDOOR SWIMMING POOLS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES MEASURED VERTICALLY ABOVE ANY STANDING OR WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION. THIS SHALL APPLY TO SINGLE GLAZING AND ALL PANES IN MULTIPLE GLAZING.
GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANELADJACENT TO A DOOR WHERE THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE FLOOR OR WALKING SURFACE AND WHERE THE GLAZING IS WITHIN 24 INCHES OF EITHER SIDE OF THE DOOR IN THE PLANE OF THE DOOR IN A CLOSED POSITION OR WHERE THE GLAZING IS ON A WALL PERPENDICULAR TO THE PLANE OF THE DOOR IN A CLOSED POSITION AND WITHIN 24 INCHES OF THE HINGE SIDE OF AN IN-SWINGING DOOR.
GLAZING WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 36 INCHES ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE OF STAIRWAYS LANDINGS BETWEEN FLIGHTS OF STAIRS AND RAMPS SHALL BE CONSIDERED A HAZARDOUS LOCATION.

2. CAULK ALL DOORS, WINDOWS, JOINTS AND AREAS REQUIRED TO PROVIDE A WEATHERPROOF SEAL.

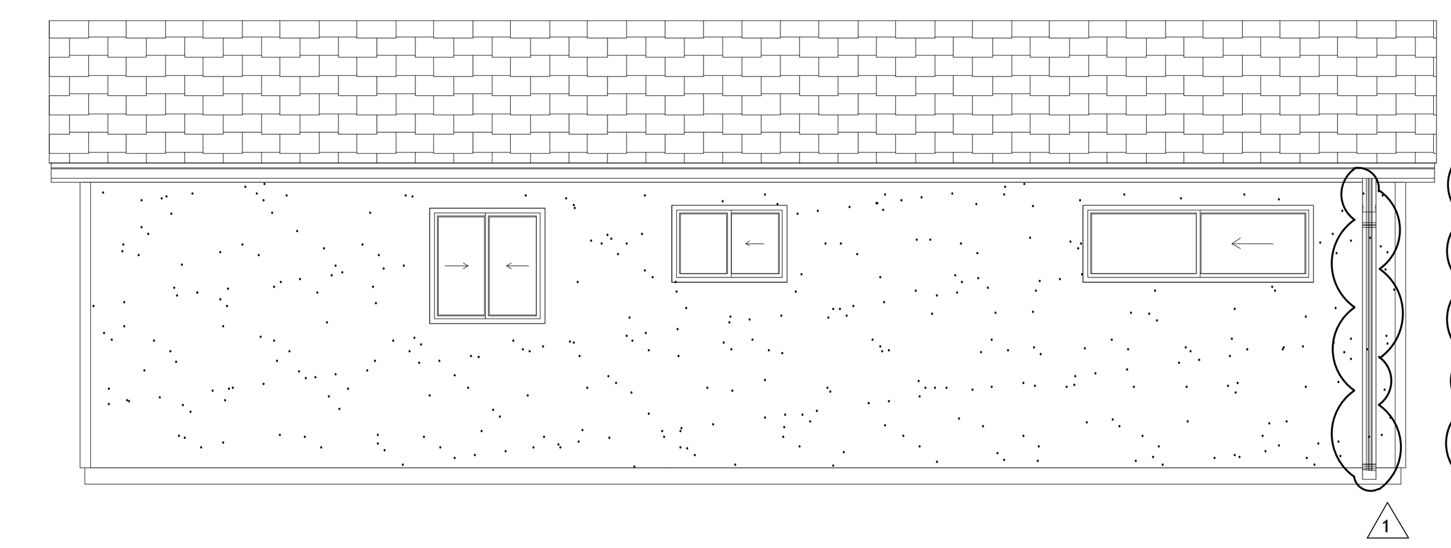
3. DRYWALL NAILING SHALL BE IN ACCORDANCE WITH C.B.C. REQUIREMENTS FOR THE TYPES AND THICKNESSES BEING USED UNLESS OTHERWISE NOTED.

4.NO WATER CLOSET OR BIDET SHALL BE SET CLOSER THAN 15 INCHES FROM ITS CENTER TO A SIDE WALL OR OBSTRUCTION OR CLOSER THAN 30" CENTER TO CENTER TO A SMILAR FIXTURE. THE CLEAR SPACE IN FRONT OF A WATER CLOSET, LAVATORY, OR BIDET SHALL BE NOT LESS THAN 24 INCHES. **C.P.C. 402.5**

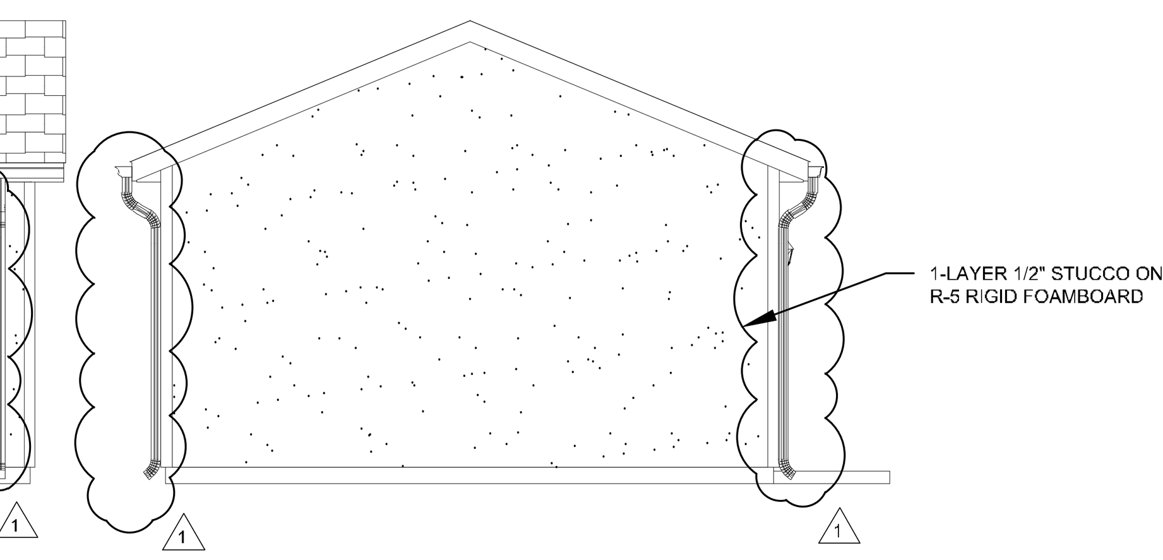
5.BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR. **C.R.C. 307.2**

6.WINDOW FALL PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH **C.R.C. 312.2.1 -312.2.2**

PLUMBING NOTES
1. ALL PLUMBING FOR THIS PROJECT IS NEW
2. SHOWERS AND TUB-SHOWER COMBINATIONS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION PRESSURE BALANCE/THERMOSTATIC MIXING VALVE TYPE THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION FOR THE RATED FLOW RATE OF THE INSTALLED SHOWERHEAD. THESE VALVES SHALL BE INSTALLED AT THE POINT OF USE AND IN ACCORDANCE WITH ASSE 1016, OR ASME A112.1016/CSA B125.16 OR ASME A112.18.1/CSA 8125.1. HANDLE POSITION STOPS SHALL BE PROVIDED ON SUCH VALVESAND SHALL BE ADJUSTED PER THE MANUFACTURERS INSTRUCTIONS TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120°F (49°C). C.P.C. 408.3
3. CONTROL VALVES AND SHOWERHEADS SHALL BE LOCATED ON THE SIDEWALL OF SHOWER COMPARTMENTS OR OTHERWISE ARRANGED SO THAT THE SHOWERHEAD DOES NOT DICHARGE DIRECTLY AT THE ENTRANCE TO THE COMPARTMENT SO THAT THE BATHER CAN ADJUST THE VALVES BEFORE STEPPING INTO THE SHOWER SPRAY. C.P.C. 408.9
4. WATER HEATERS INSTALLED ON THIS PROJECT SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENT DUE TO EARTHQUAKE MOTION. STRAPPING SHALL BE AT POINTS WITHIN THE UPPER ONE-THIRD AND LOWER ONE-THIRD OF ITS VERTICAL DIMENSIONS. AT THE LOWER POINT, A MINIMUM DISTANCE OF 4 IN. SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING. C.P.C. 507.2 THIS APPLIES TO ALL NEW AND EXISTING WATER HEATERS PER THE CALIFORNIA HEALTH AND SAFETY CODE SECTION 19211(a)
5. WHERE A WATER HEATER IS INSTALLED PIPING SHALL BE INSULATED AS REQUIRED IN. C.E.C. 150 (J) 2
6. POTABLE WATER OUTLETS WITH HOSE ATTACHMENTS OTHER THAN WATER HEATER DRAINS, BOILER DRAINS, AND CLOTHES WASHER CONNECTIONS, SHALL BE PROTECTED BY A NON REMOVABLE HOSE-BIB-TYPE BACKFLOW PREVENTER, A NON REMOVABLE HOSE BIB TYPE VACUUM BREAKER, OR BY AN ATMOSPHERIC VACUUM BREAKER INSTALLED NOT LESS THAN 6 IN. ABOVE THE HIGHEST POINT OF USAGE LOCATED ON THE DISCHARGE SIDE OF THE LAST VALVE C.P.C. 603.5.7
7. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3 FEET ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET FROM A LOT LINE, ALLEY AND STREET EXCEPTED. C.P.C. 906.2



1. REAR ELEVATION
SCALE 1/4" = 1'-0"



2. LEFT ELEVATION
SCALE 1/4" = 1'-0"

ROOF NOTES:

1. NEW ROOF ATTIC AREA VENTILATION IS THE FOLOWING: ATTIC AREA IS 510 SQUARE FEET / 150 = 40.8 SQUARE INCHES OF VENTILATION. OR 510/300 = 20.4 SQUARE INCHES OF VENTILATION IF EVENLY DISTRIBUTED BETWEEN THE RIDGE AND THE EAVE.

2. ENCLOSED ATTICS AND ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE BY VENTILATING OPENINGS PROTECTED AGAINST THE ENTRANCE OF RAIN OR SNOW. VENTILATION OPENINGS SHALL HAVE A LEAST DIMENSION OF 1/16 INCH MINIMUM AND 1/4 INCH MAXIMUM. VENTILATION OPENINGS HAVING A LEAST DIMENSION LARGER THAN 1/4 INCH SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARE CLOTH, PERFORATED VINYL, OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF 1/16 INCH MINIMUM AND 1/4 INCH MAXIMUM. REQUIRED VENTILATION OPENINGS SHALL OPEN TO THE OUTSIDE AIR AND SHALL BE PROTECTED TO PREVENT THE ENTRY OF BIRDS, RODENTS, SNAKES, AND OTHER SIMILAR CREATURES **C.R.C. 806.1**

3. THE MINIMUM NET FREE VENTILATING AREA SHALL BE 1/150 OF THE AREA OF THE VENTED SPACE. EXCEPT THAT THE MINIMUM NET FREE VENTILATING AREA SHALL BE 1/300 OF THE VENTED SPACE PROVIDED BOTH OF THE FOLLOWING CONDITIONS ARE MET:

   A. IN CLIMATE ZONES 14 AND 16, A CLASS I OR II VAPOR RETARDER IS INSTALLED ON THE WARM-IN-WINTER SIDE OF THE CEILING.

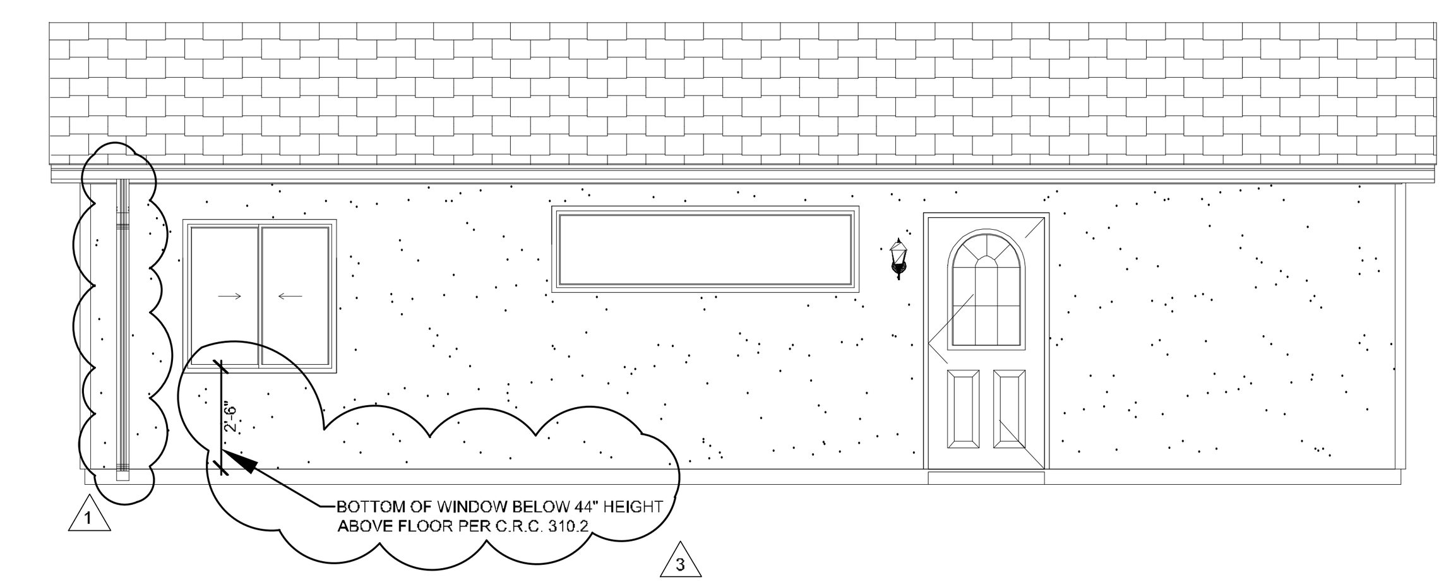
   B. NOT LESS THAN 40 PERCENT AND NOT MORE THAN 50 PERCENT OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTILATORS LOCATED IN THE UPPER PORTION OF THE ATTIC OR RAFTER SPACE. UPPER VENTILATORS SHALL BE LOCATED NOT MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE, MEASURED VERTICALLY. THE BALANCE OF THE REQUIRED VENTILATION PROVIDED SHALL BE LOCATED IN THE BOTTOM ONE-THIRD OF THE ATTIC SPACE. WHERE THE LOCATION OF WALL OR ROOF FRAMING MEMBERS CONFLICTS WITH THE INSTALLATION OF UPPER VENTILATORS, INSTALLATION MORE THAN 3 FEET (914 MM) BELOW THE RIDGE OR HIGHEST POINT OF THE SPACE SHALL BE PERMITTED. **C.R.C. 806.2**

SHEAR WALL LEGEND

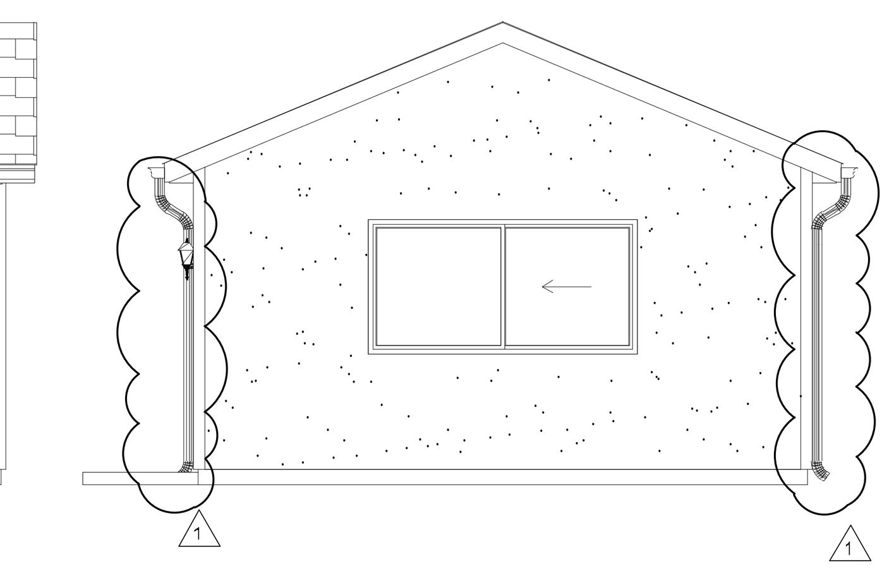
1. 'L' INDICATES SHEAR WALL PANEL. SEE NOTES & SCHEDULE THIS SHEET
2. HTT INDICATES VERTICAL TIE DOWNSTRAP OR HOLDOWN.

SHEAR WALL SCHEDULE

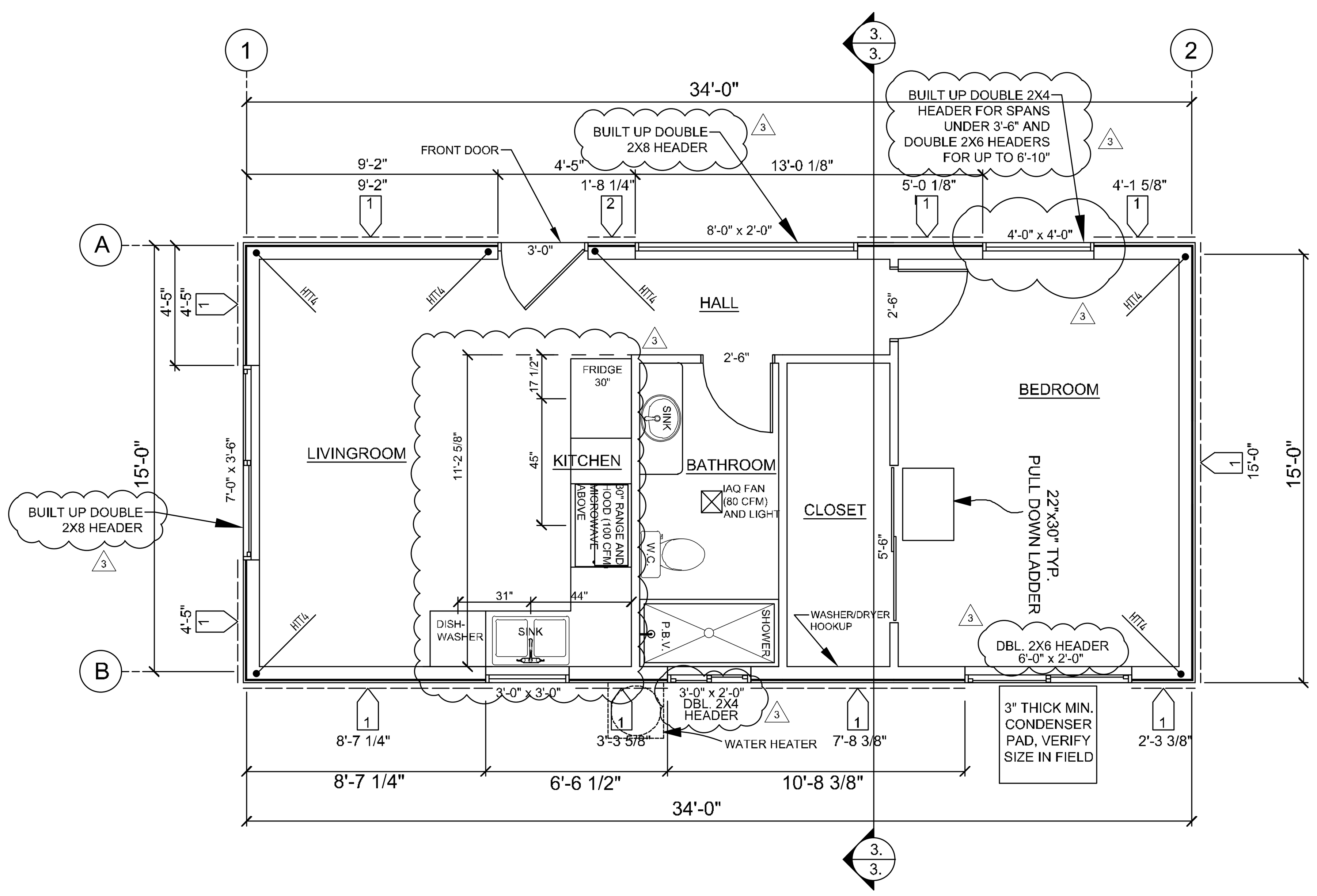
MARK	DESCRIPTION
'L' 1	15/32" C-C, C-D, OR OSB SHEATHING 8d COMMONS @ 6" O.C. AT ALL PANEL EDGES AND 12" O.C. IN THE FIELD. PLYWOOD SHALL BE ON ONE FACE WITH ALL EDGES BLOCKED. THE SILL PLATES SHALL BE ANCHORED WITH TWO 5/8"Ø A.B. MIN. PLACED AT 60" MAX. WITH 3" x 3" x 1/4" PLATE WASHERS AT FOUNDATION LEVEL FOR PLATES ANCHORED TO FRAMING 2 BOLTS PER PLATE MINIMUM. SEE SHEAR WALL PANEL NOTES.
'L' 2	15/32" C-C, C-D, OR OSB SHEATHING 8d COMMONS @ 3" O.C. AT ALL PANEL EDGES AND 12" O.C. IN THE FIELD. PLYWOOD SHALL BE ON ONE FACE WITH ALL EDGES BLOCKED. THE SILL PLATES SHALL BE ANCHORED WITH TWO 5/8"Ø A.B. MIN. PLACED AT 32" MAX. WITH 3" x 3" x 1/4" PLATE WASHERS AT FOUNDATION LEVEL FOR PLATES ANCHORED TO FRAMING 2 BOLTS PER PLATE MINIMUM. SEE SHEAR WALL PANEL NOTES.



3. FRONT ELEVATION
SCALE 1/4" = 1'-0"



4. RIGHT ELEVATION
SCALE 1/4" = 1'-0"



5. FLOOR PLAN
SCALE 1/4" = 1'-0"

SHEAR WALLNOTES:

1. LENGTHS ('L') SHOWN ARE MINIMUMS. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL WALL LINES FLUSH.

2. ANCHORBOLTS SHALL HAVE 7" MIN. EMBEDMENT AND SHALL BE LOCATED NOT MORE THAN 12" OR CLOSER THAN 4" FROM THE SILL PLATE ENDS, WITH A MINIMUM OF TWO PER PIECE

3. No. 6x1-1/4" SCREWS MAY BE USED IN LIEU OF 5d COOLER NAILS.

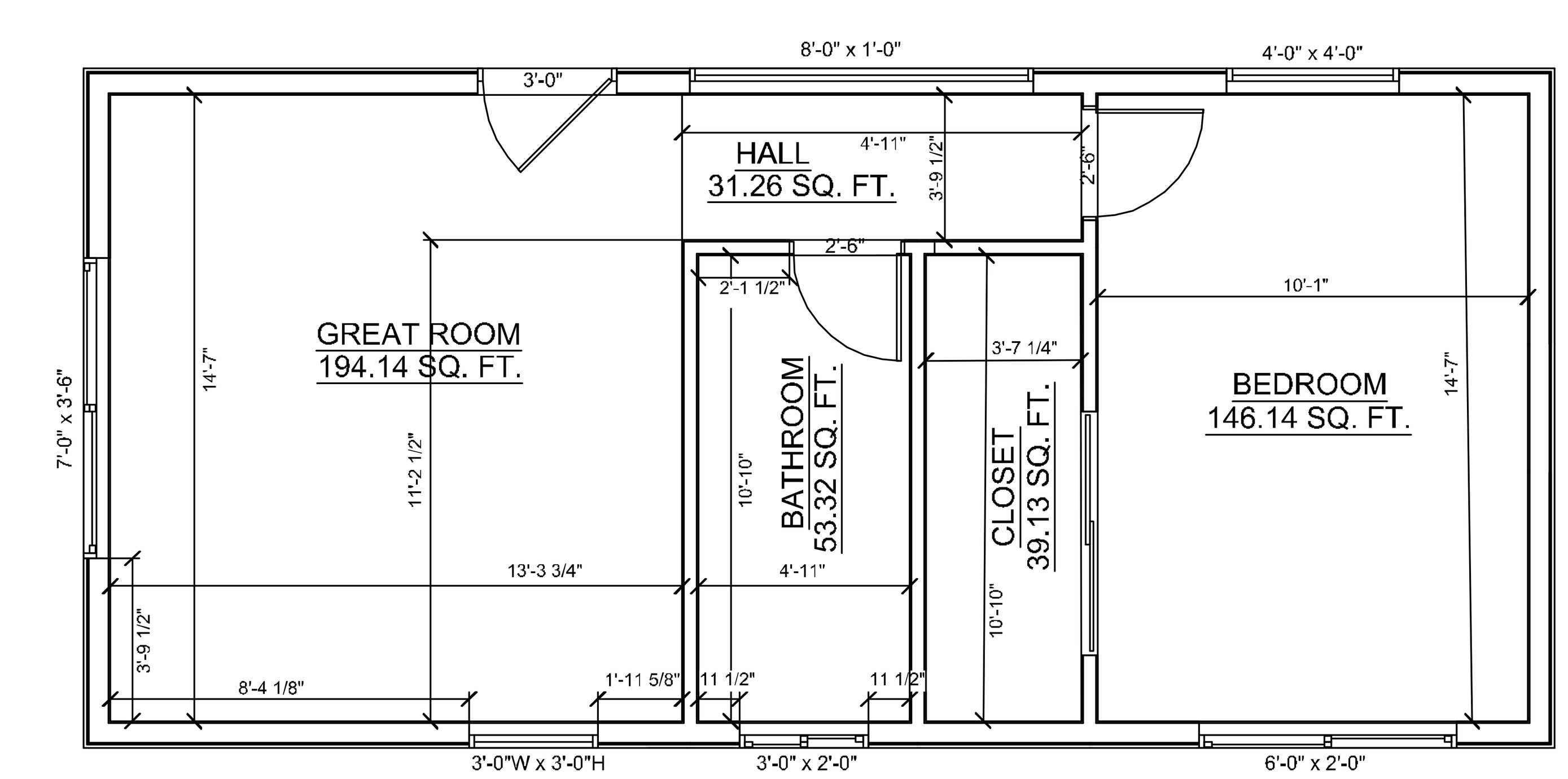
4. SIMPSON HTT4 WITH SIMPSON SSTB16 TYPICAL, DEEPEN FOOTING TO PROVIDE REINFORCEMENT CLEARANCE AS REQUIRED.

FLOOR PLAN LEGEND

WALLS

ABBREVIATIONS

AT	@
DOUBLE	DBL.
EXISTING	(E)
MINIMUM	MIN.
ON CENTER	O.C.
ORIENTED STRAND BOARD	O.S.B.
OVERHANG	O.V.H.
PRESSURE BALANCE VALVE	P.B.V.
SINGLE HUNG	S.H.
SINK	S.K.
TYPICAL	TYP.
UNLESS OTHERWISE NOTED	U.O.N.
WATER CLOSET	W.C.
WITH	W/



6. FINISHING DIMENSIONS
SCALE 1/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
No. 3031
Exp. 3-31-21
STRUCTURAL
STATE OF CALIFORNIA

DRAWN BY: MR

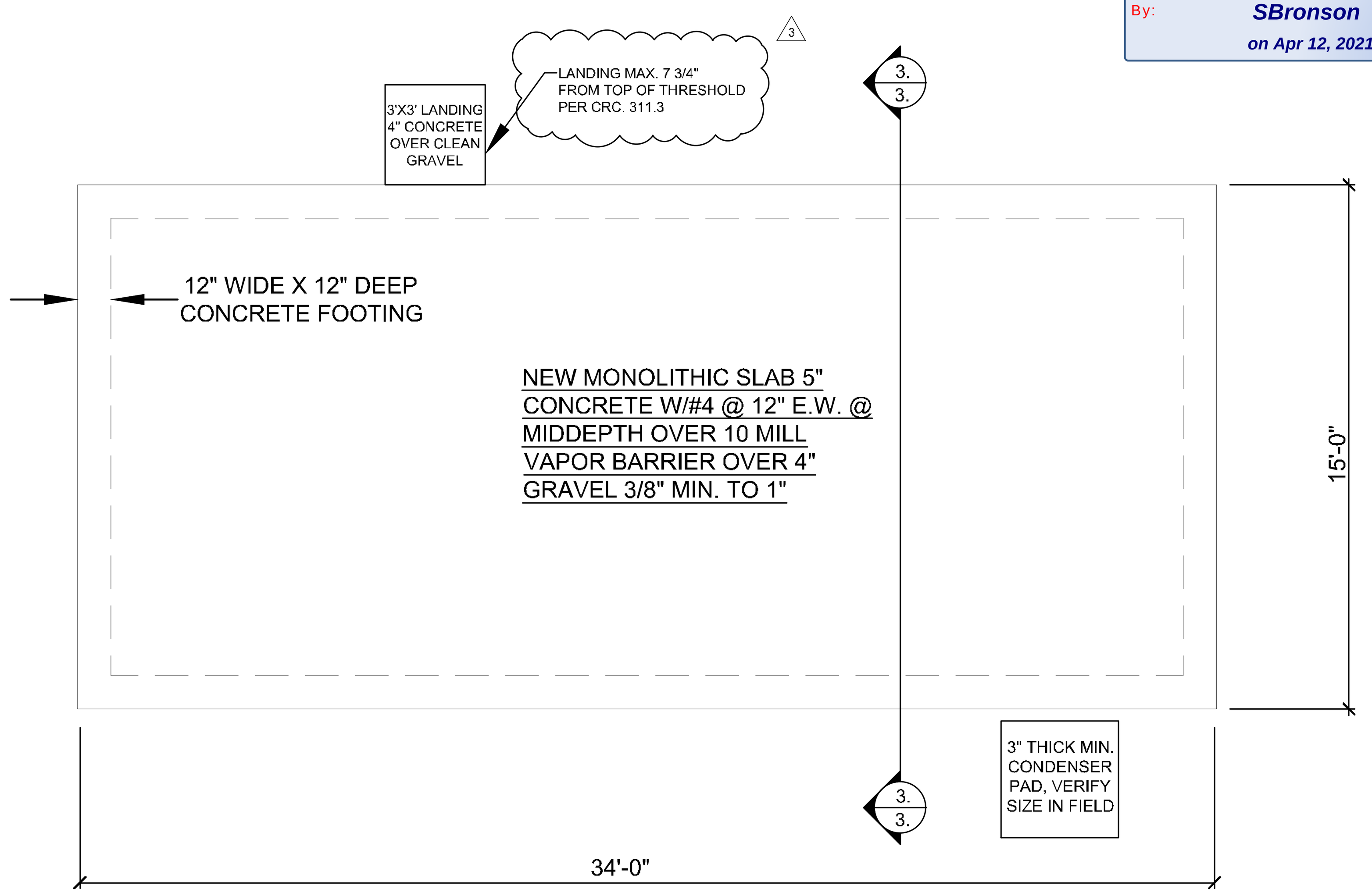
REVISIONS:	BY:
1 12-30-2020	MR
3 2-26-2021	MR

Backyard UNLIMITED
4765 Pacific St. Rocklin, CA 95677
855-630-7433

15x34 ADU for:
EMILY PARMELEE
PROJECT ADDRESS: 919 STERN CIRCLE
Sacramento, CA 95822
APN: 02401020040000

PAGE NAME:
FLOOR PLAN AND ELEVATIONS

DATE: 12-9-2020
SCALE: NOTED



1. FOUNDATION PLAN

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

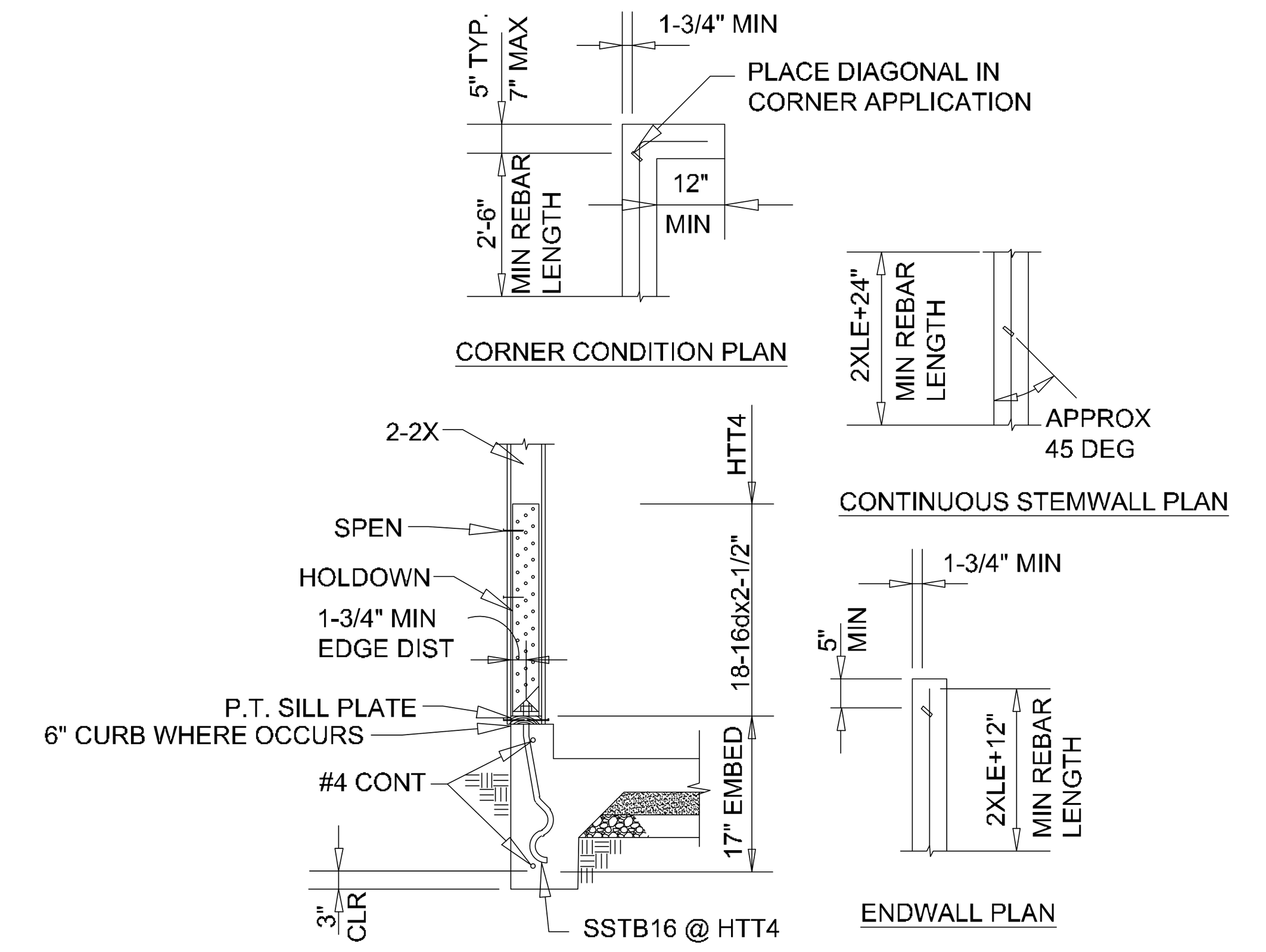
APPROVED — City of Sacramento Plan Review, Residential Building Division. By: SBronson on Apr 12, 2021

APPROVED UNDER TITLE 8 & 15 & 17 CITY CODE CITY OF SACRAMENTO, CALIF. BUILDING INSPECTION DIVISION

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division. The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

THE APPROVAL OF ALL PLANNING/PRESERVATION WORK IS SUBJECT TO FIELD INSPECTIONS.

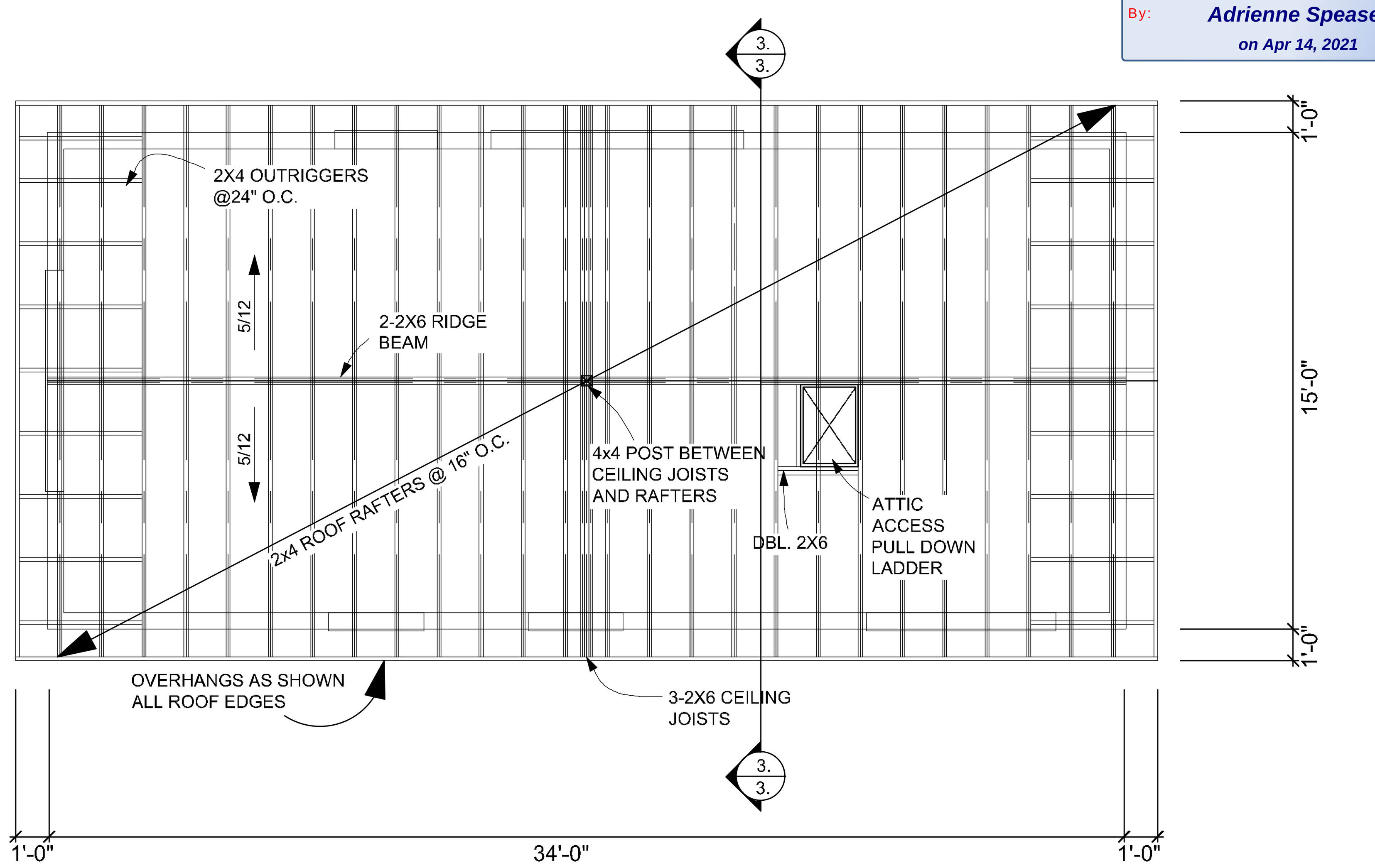
APPROVED — PLANNING. By: Adrienne Spease on Apr 14, 2021



NOTE:
1. ANCHOR BOLTS SHALL BE SIMPSON SSTB.
2. DEEPEN FOOTING AS REQUIRED TO ACCOMIDATE BOLTS LONGER THAN FOOTINGS SPECIFIED ON FOUNDATION PLAN
3. THE PLAN VIEWS SHOW TYPICAL REBAR INSTALLATION

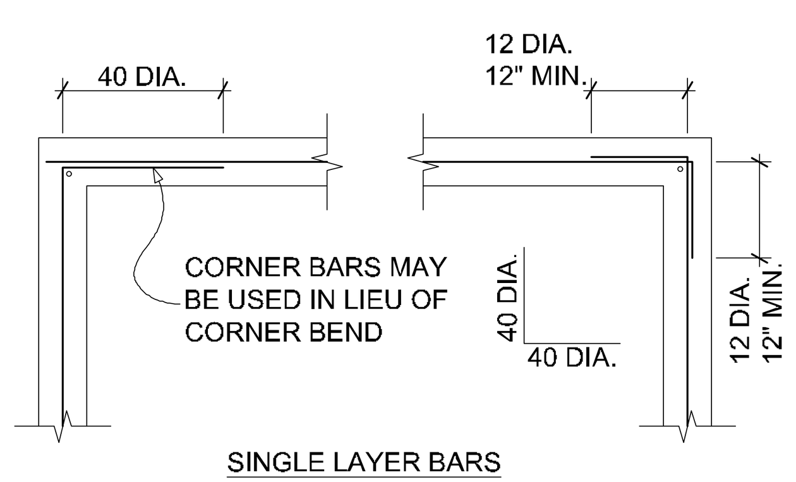
A HOLDOWN DETAIL

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



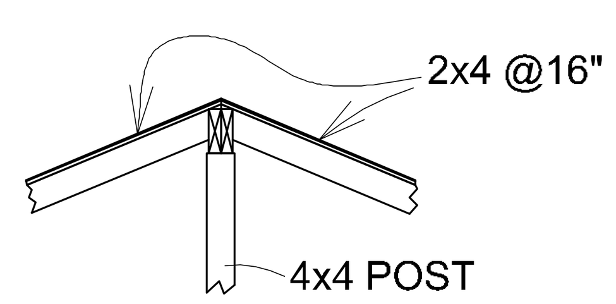
2. ROOF FRAMING

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

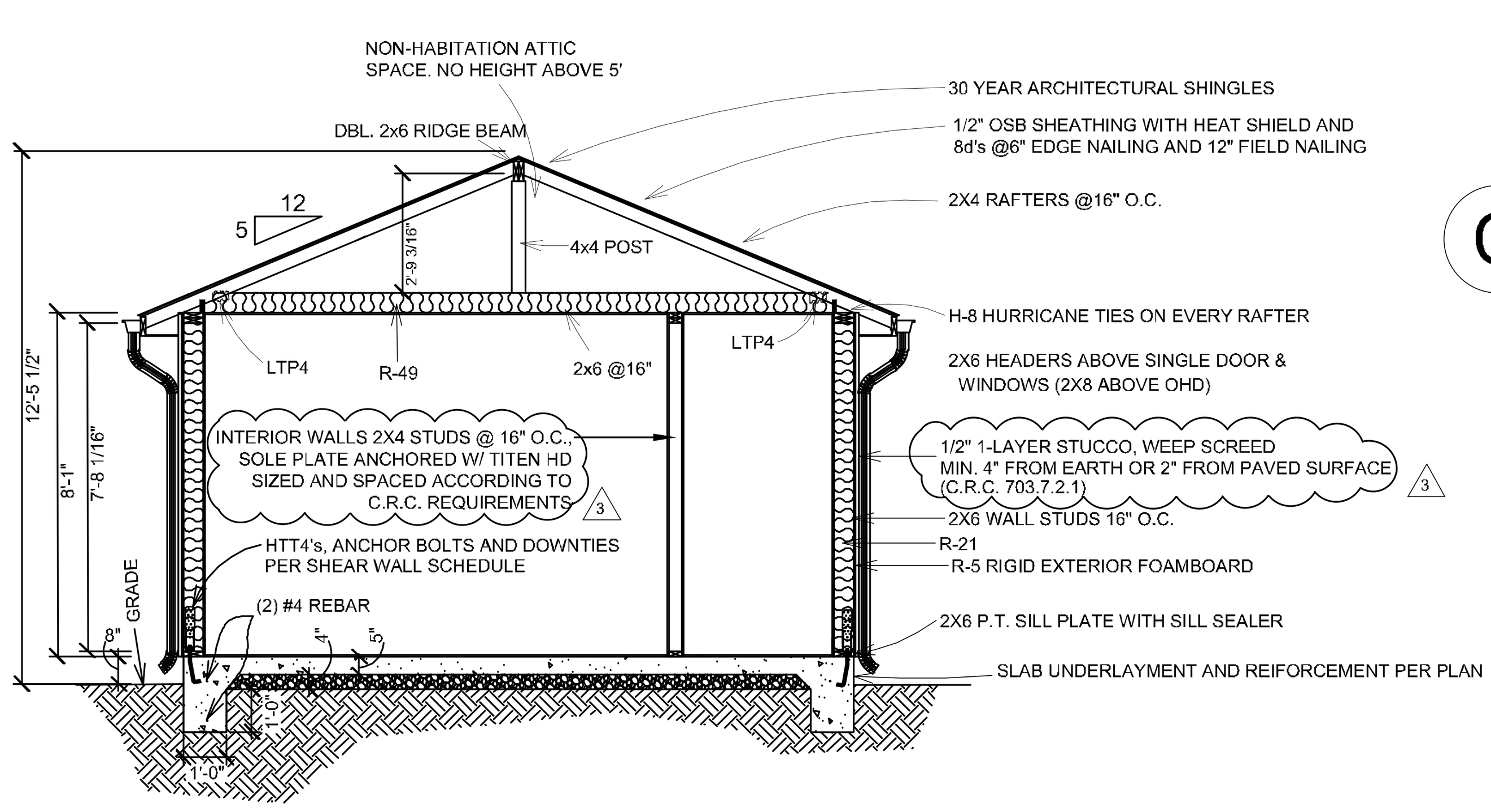


B TYPE. CORNER REINFORCING

SCALE: 1/2" = 1'-0"



C BEAM AND POST DETAIL



3. CROSS-SECTION

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

WOOD NOTES:

1. ALL STRUCTURAL WOOD SHALL CONFORM WITH THE FOLLOWING SPECIFICATIONS: ALL LUMBER SPECIES, GRADED VISUALLY OR MECHANICALLY, SHALL COMPLY WITH THE NDS BY AF+PA, AND THE AMERICAN SOFTWOOD LUMBER STANDARD' (PS-20-94) BY THE U.S. DEPARTMENT OF COMMERCE.

   THE MINIMUM GRADE AND SPECIES FOR POSTS, BEAMS, HEADERS, AND OTHER PRIMARY STRUCTURAL MEMBERS SHALL BE DENSE SELECTED SOUTHERN PINE. U.O.N.

   LUMBER USED FOR SECONDARY FRAMING SHALL BE #1 SOUTHERN PINE OR BETTER

   PLYWOOD - US PRODUCT STANDARD P.S. 2-92 FOR SOFT PLYWOOD STRUCTURAL 1 @ WALLS; CDX @ FLOORS AND ROOF U.O.N.

   PRESSURE TREATED DOUGLAS FIR - AWPA (AMERICAN WOOD PRESERVERS' ASSOCIATION) U1.
2. ALL WOOD IN DIRECT CONTACT WITH EARTH OR CONCRETE SHALL BE PRESSURE TREATED.
3. BEARING/BRACE/SHEAR WALLS SHALL HAVE DOUBLE TOP PLATES, LAPPED AT WALL AND PARTITION INTERSECTION WITH (3) 16d's.
4. PROVIDE SOLID BLOCKING BETWEEN JOISTES AND RAFTERS AT ALL SUPPORTS.
5. LAY ALL STRUCTURAL PLYWOOD ON ROOF AND FLOORS WITH FACE GRAIN PERPENDICULAR TO SUPPORT U.O.N.
6. CONNECTOR HARDWARE MODEL NUMBERS ARE FOR SIMPSON STRON-TIE COMPANY. EQUIVALENT CONNECTORS WITH ICBO ACCEPTANCE MAY BE SUBSTITUTED.
7. FASTENERS FOR PRESERVATIVE TREATED $ FIRE RETARDANT TREATED WOOD SHALL BE OF HOT DIPPED ZINC COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATING WEIGHTS FOR ZINC COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A 153

NAILING NOTES:

ALL NAILS FOR STRUCTURAL WORK SHALL BE COMMON WIRE NAILS CONFORMING TO THE FOLLOWING MINIMUM SIZES

8d 0.131" DIAMETER X 2 1/2"
10d 0.148" DIAMETER X 3"
16d 0.162" DIAMETER X 3 1/2"

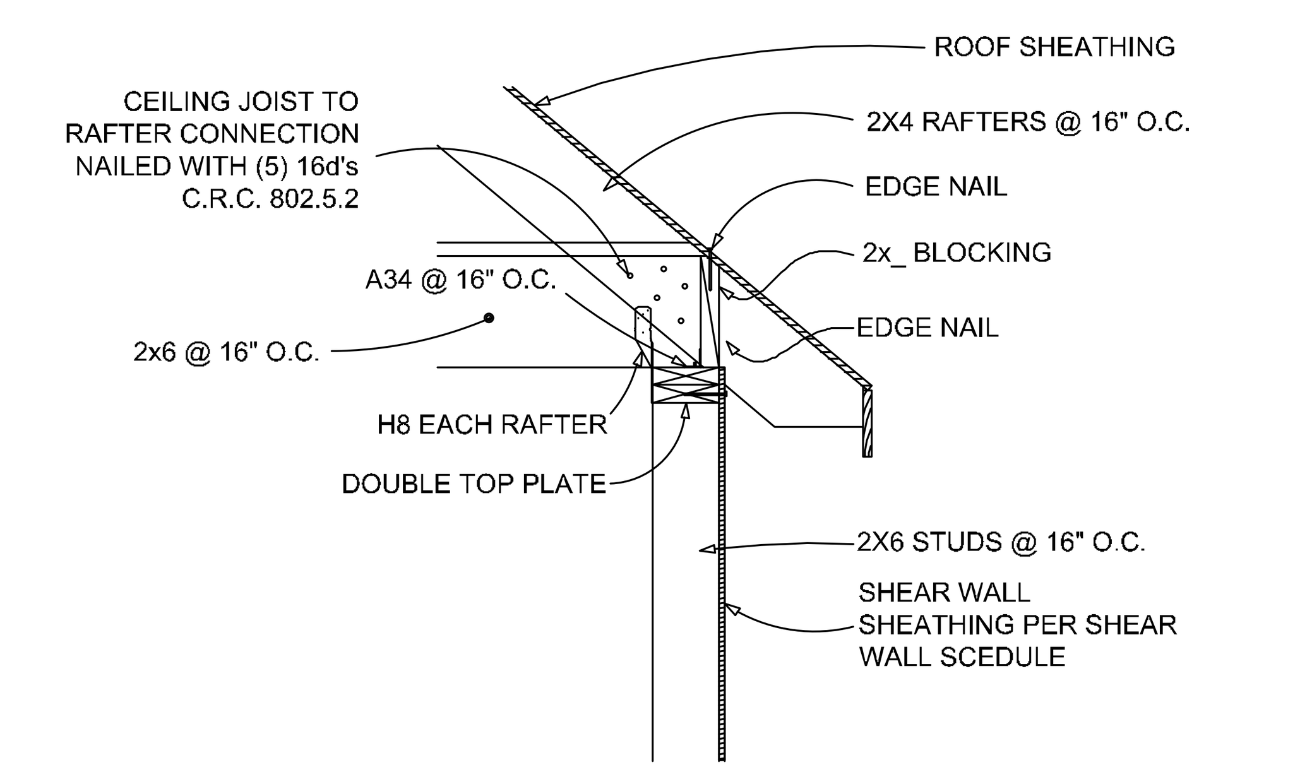
HOLES SHALL BE SUBDRILLED WHERE NECESSARY TO PREVENT SPLITTING. NAILING NOT NOTED BELOW OR ON PLANS SHALL BE A MINIMUM OF TWO NAILS AT EACH CONTACT. 8d NAILS FOR 1" MATERIAL AND 16d NAILS FOR 2" MATERIAL.

1. JOISTS TO SILL OR GIRDER, TOE NAIL (3) 8d
2. SOLE PLATE TO JOIST OR BLOCKING, TYPICAL FACE NAIL 16d @ 16" O.C.
3. SOLE PLATE TO JOIST OR BLOCKING, AT BRACED WALL PANEL (3) 16d PER 16"
4. TOP PLATE TO STUD, END NAIL (2) 16d
5. STUD TO SOLE PLATE (4) 8d, TOENAIL OR (2) 16d, END NAIL
6. DOUBLE STUDS, FACE NAIL 16d @ 24" O.C.
7. DOUBLE TOP PLATES, TYPICAL FACE NAIL 16d @ 16" O.C.
8. DOUBLE TOP PLATES, LAP SPLICE , U.N.O. (10) 16d COMMONS IN 48" SPLICE
9. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE, TOE NAIL (3) 8d
10. TOP PLATES, LAPS AND INTERSECTION, FACE NAIL (2)-16d
11. CONTINUOUS HEADER, TWO PIECES, TOENAIL 16d @ 16" O.C. ALONG EACH EDGE
12. RAFTER TO TOP PLATE, TOENAIL (3) 8d
13. BUILT UP CORNER STUDS 16d @ 24" O.C.

CONCRETE NOTES:

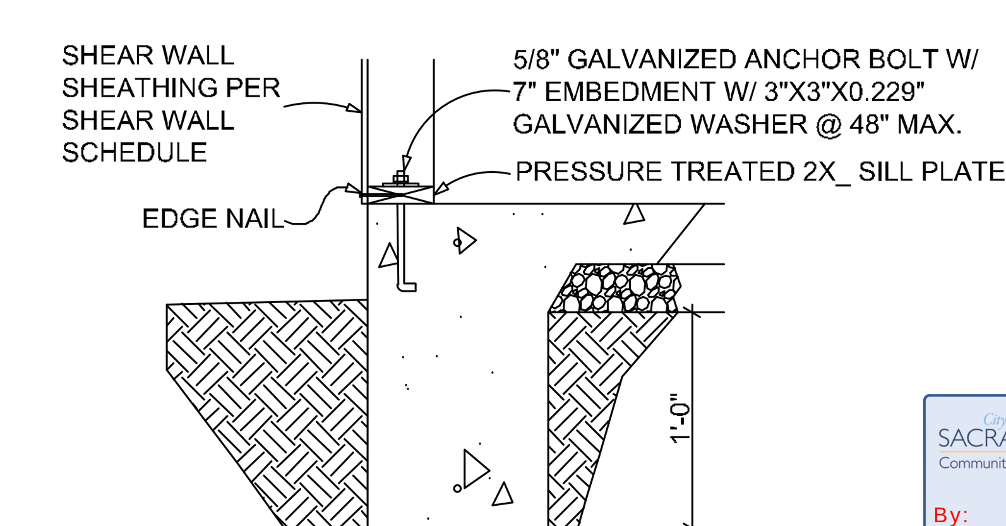
1. STRUCTURAL CONCRETE SHALL ATTAIN 28 DAY COMPRESSIVE STRENGTH F' C = 2500 P.S.I.
2. CONCRETE MIX DESIGN SHALL BE PREPARED BY AN INDEPENDENT LABORATORY. SELECTION OF CONCRETE MIX PROPORTIONS SHALL BE PER THE CALIFORNIA BUILDING CODE.
3. CEMENT SHALL CONFORM TO ASTM C-150 TYPE I OR II.
4. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C-33. AGGREGATES FOR LIGHTWEIGHT CONCRETE SHALL CONFORM TO ASTM C-330.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A615- GRADE 60.
6. REINFORCING STEEL SHALL BE FABRICATED ACCORDING TO "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION".
7. WIRE FABRIC SHALL CONFORM TO ASTM A-185.
8. DIMENSIONS SHOWN FOR LOCATION OF REINFORCING ARE TO THE FACE OF MAIN BARS AND DENOTE CLEAR COVERAGE. CONCRETE COVERAGE SHALL BE AS FOLLOWS: CONCRETE DEPOSITED AGAINST GROUND (EXCEPT SLABS) 3" MIN. CONCRETE EXPOSED TO GROUND BUT PLACED IN FORMS 2" MIN. SLABS (ON GROUND) 2" CLEAR FROM TOP U.O.N.
9. SPLICES IN CONTINOUS REINFORCEMENT SHALL BE 48 BAR DIAMETERS AND SPLICES IN ADJACENT BARS SHALL NOT BE LESS THAN 5'-0" APART. SPLICE CONTINUOUS BARS IN SPANDRELS, GRADE BEAMS, ETC., AS FOLLOWS: TOP BARS AT MID-SPAN; BOTTOM BARS AT CENTERLINE AT SUPPORT, U.O.N. SPLICES IN WELDED WIRE FABRIC SHALL BE 1.5 MESHES WIDE.
10. REMOVE ALL DEBRIS FROM FORMS BEFORE CASTING ANY CONCRETE.
11. REINFORCING, DOWELS, BOLTS, ANCHORS, SLEEVES, ETC., TO BE EMBEDED IN CONCRETE SHALL BE TIED SECURELY IN POSITION BEFORE PLACING CONCRETE.
12. MAXIMUM FREE FALL OF CONCRETE SHALL BE 8'-0"
13. CONSOLIDATE CONCRETE PLACED IN FORMS BY MECHANICAL VIBRATING EQUIPMENT SUPPLEMENTED BY HAND SPADING, RODDING OR TAMPING. USE EQUIPMENT AND PROCEDURES FOR CONSOLIDATION OF CONCRETE IN ACCORDANCE WITH THE RECOMMENDED PRACTICES OF ACI 309 TO SUIT THE TYPE OF CONCRETE AND PROJECT CONDITIONS.
14. NO WOOD SPREADERS ALLOWED. NO WOOD STAKES ALLOWED IN AREAS TO BE CONCRETED.
15. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER APPROVED POINT OF COLLECTION THAT DOES NOT CREATE A HAZARD. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES WITHIN THE FIRST 10 FEET. EXCEPTION: WHERE LOT LINES, WALLS, SLOPES OR OTHER PHYSICAL BARRIERS PROHIBIT 6 INCHES (152 MM) OF FALL WITHIN 10 FEET, DRAINS OR SWALES SHALL BE CONSTRUCTED TO ENSURE DRAINAGE AWAY FROM THE STRUCTURE. IMPERVIOUS SURFACES WITHIN 10 FEET OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING. R. 401.3

REGISTERED PROFESSIONAL ENGINEER — No. 3031 Exp. 3-31-21 STRUCTURAL STATE OF CALIFORNIA



E SHEAR TRANSFER @ EAVES

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



F SHEAR TRANSFER @ FOUNDATION

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

ISSUED BY — City of Sacramento Community Development Department. By: RODION KORNIYENKO on May 11, 2021

DRAWN BY:	MR
REVISIONS:	BY:
2-26-2021	MR

Backyard UNLIMITED — 4765 Pacific St. Rocklin, CA 95677 — 855-630-7433

15x34 ADU for: EMILY PARMELEE
PROJECT ADDRESS: 919 STERN CIRCLE Sacramento, CA 95822
APN: 02401020040000

PAGE NAME: STRUCTURAL PLANS AND DETAILS

DATE: 12-9-2020
SCALE: NOTED

PAGE No: 3 of 5

COMMUNITY DEVELOPMENT DEPARTMENT APPROVED UNDER TITLE 8 &15 & 17 CITY CODE CITY OF SACRAMENTO, CALIF. BUILDING INSPECTION DIVISION

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.
The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

ADU PANEL									
125 AMP			1 PHASE				3 WIRE		
CIRCUIT	BREAKER	DESCRIPTION	LOAD VA			LOAD VA	DESCRIPTION	BREAKER	CIRCUIT
1	20	AFCI LIVING (RECEP)	900	954		54	LIVING, KITCHEN, BATH (LIGHT)	20	2
3	20	AFCI BEDROOMS (RECEP)	900		1029	129	BEDROOMS & OUTDOOR (LIGHT)	20	4
5	20	GFCI KITCHEN & BATH (RECEP)	720	1720		1000	MICROWAVE W/ HOOD	20	6
7	20	GARBAGE DISPOSAL	480		840	360	REFRIGERATOR	20	8
9	20	EXTERIOR GFCI (RECEP)	180	2280		2100	ELECTRIC RANGE	40	10
11	20	SPARE	0		2100	2100			12
13	30	WATER HEATER	2500	3160		660	DISHWASHER	20	14
15			2500		3940	1440	WASHER	20	16
17	20	MINI SPLIT HVAC (1.5 TON)	1260	3760		2500	ELECTRIC DRYER	30	18
19			1260		3760	2500			20
CONNECTED WATTAGE PER PHASE				11,874	11,669	CONNECTED WATTAGE PER PHASE			

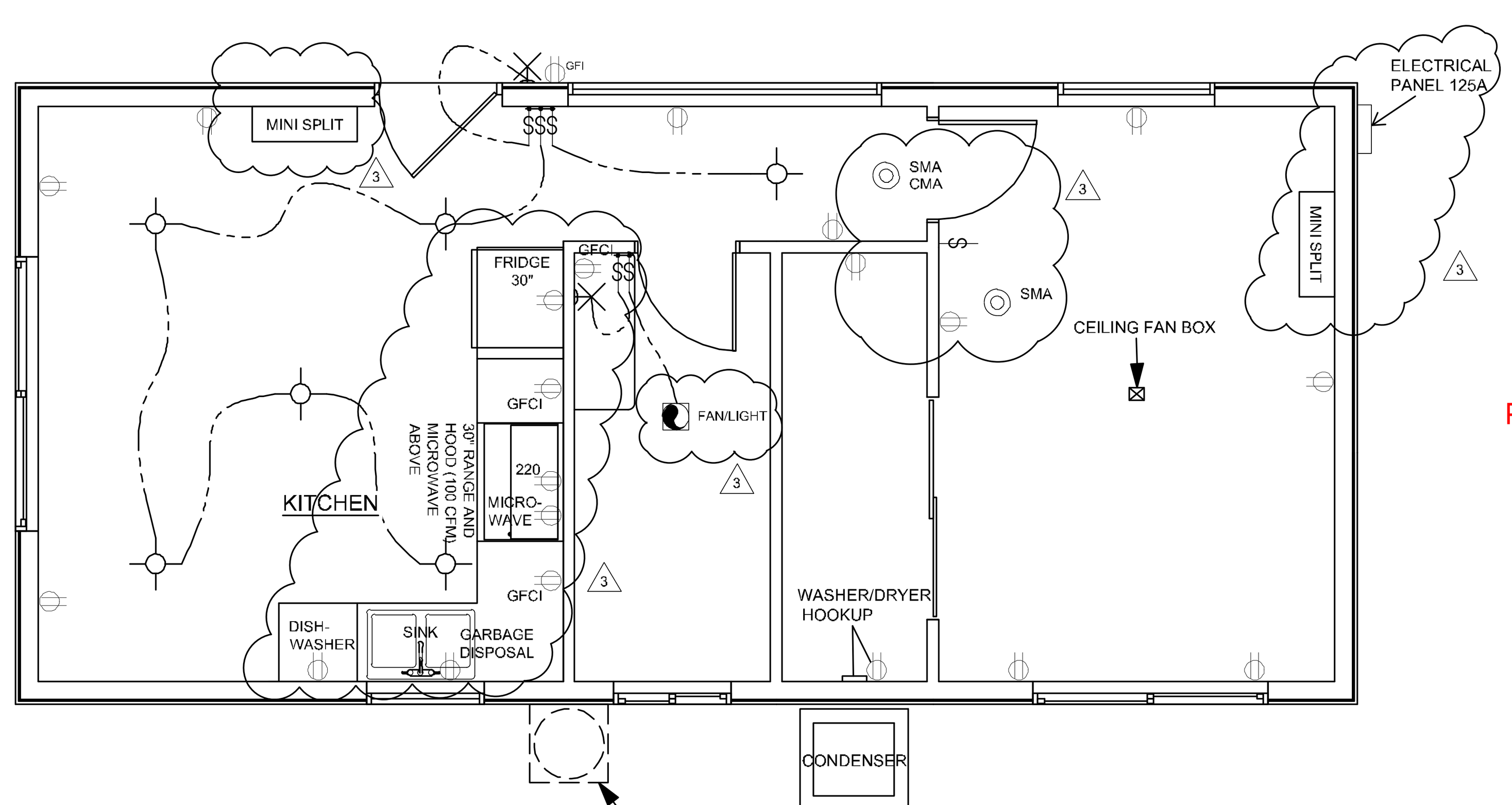
WATTS	23,543.00 W	
25% OF (LARGEST MOTOR + LIGHTING)	1,295.75 W	
TOTAL	24,838.75 W	103.49 AMPS
HIGHEST LEG	13,169.75 W	109.75 AMPS

2/23/2021 - 4:50 PM

4765 Pacific St., Rocklin, CA 95677
CA CSLB Lic# 971320

ELECTRICAL LEGEND

- SWITCH
- CEILING FAN AND LIGHT SWITCH COMBINATION
- DIMMER — DM
- MANUAL ON OCCUPANT SENSOR — OCC
- MANUAL ON/MOTION SENSOR/PHOTO SENSOR FOR OUTDOOR LIGHTING — PS
- TAMPER RESISTANT DUPLEX RECPETACLE
- TAMPER RESISTANT SPLIT OUTLET
- ARC FAULT CIRCUIT INTERUPTER — AFCI
- GROUND FAULT CIRCUIT INTERUPTER — GFCI
- GROUND FAULT CIRCUIT INTERUPTER WITH ALL WEATHER USE COVER PER C.E.C.406.8 — WP GFCI
- GENERAL LIGHTING
- HIGH EFFICACY LIGHTING — HE
- WALL SCONCE — WS
- SMOKE ALARM/CARBON MONOXIDE ALARM COMBINATION — SMA CMA
- EXHAUST FAN — FAN



1. ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

LIGHTING

1. HIGH AND LOW EFFICACY LIGHTING SHALL BE DEFINED PER C.E.C. 150 (k).
2. HIGH EFFICACY LUMINAIRES SHALL BE SWITCHED SEPARATELY FROM LOW EFFICACY LUMINAIRES. C.E.C. 150 (k) 2 A
3. EXHAUST FANS (INCLUDING KITCHEN, BATH AND LAUNDRY FANS) SHALL BE SWITCHED SEPARATELY FROM LIGHTING SYSTEM(S), EXCEPT FOR AN EXHAUST FAN WITH AN INTEGRAL LIGHTING SYSTEM WHERE THE LIGHTING SYSTEM CAN BE MANUALLY TURNED ON AND OFF WHILE ALLOWING THE FAN TO CONTINUE TO OPERATE FOR AN EXTENDED PERIOD OF TIME. C.E.C. 150 (k) 2 B
4. A MINIMUM OF 50 PERCENT OF THE TOTAL RATED WATTAGE OF PERMANENTLY INSTALLED LIGHTING IN KITCHENS SHALL BE HIGH EFFICACY. C.N.C. 150 (k) 8
5. UP TO 50 WATTS FOR DWELLING UNITS LESS THAN OR EQUAL TO 2,500 SQUARE FEET OR 100 WATTS FOR DWELLING UNITS OVER 2,500 SQUARE FEET MAY BE EXEMPT FROM THE 50 PERCENT HIGH EFFICACY REQUIREMENT WHEN ALL LIGHTING IN THE KITCHEN IS CONTROLLED IN ACCORCDANCE WITH THE APPLICABLE PROVISIONS OF C.E.C. 150 (K) 2 C.E.C. 150 (k) 3 B EXCEPTION
6. A MINIMUM OF ONE HIGH EFFICACY LUMINAIRE SHALL BE INSTALLED IN EACH BATHROOM; AND ALL OTHER LIGHTING IN EACH BATHROOM SHALL BE HIGH EFFICACY OR CONTROLLED BY VACANCY SENSORS. C.E.C. 150 (k) 5 A-B
7. LIGHTING INSTALLED IN ROOMS OR AREAS OTHER THAN IN KITCHENS, BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS SHALL BE HIGH EFFICACY LUMINAIRES OR SHALL BE CONTROLLED BY EITHER DIMMERS OR VACANCY SENSORS C.E.C. 150 (K) 7 (CLOSETS LES THAN 70 SQUARE FEET ARE EXEMPT FROM THIS REQUIREMENT PER EXCEPTION 1)
8. LUMINAIRES INSTALLED NEAR COMBUSTIBLES SHALL MEET THE REQUIREMENTS OF C.E.C. 410.11
9. LUMINAIRES INSTALLED IN WET OR DAMP LOCATIONS SHALL MEET THE REQUIREMENTS OF C.E.C. 410.10
10. FOR SINGLE-FAMILY RESIDENTIAL, OUTDOOR LIGHTING PERMANENTLY MOUNTED TO A RESIDENTIAL BUILDING OR TO OTHER BUILDINGS ON THE SAME LOT SHALL BE HIGH EFFICACY LUMINAIRES. PERMANENTLY INSTALLED OUTDOOR LOW EFFICACY LUMINAIRES SHALL BE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED BY A MANUAL ON/OFF SWITCH THAT DOES NOT OVERRIDE REQUIRED LIGHTING CONTROLLS, A MOTION SENSOR NOT HAVING AN OVERRIDE OR BYPASS SWITCH THAT DISABLES THE MOTION SENSOR, AND ONE OF THE FOLLOWING METHODS: A. PHOTOCONTROL NOT HAVING AN OVERRIDE OR BYPASS SWITCH THAT DISABLES THE PHOTOCONTROL; OR B. ASTRONOMICAL TIME CLOCK NOT HAVING AN OVERRIDE OR BYPASS SWITCH THAT DISABLES THE ASTRONOMICAL TIME CLOCK; OR C. ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) NOT HAVING AN OVERRIDE OR BYPASS SWITCH THAT ALLOWS THE LUMINAIRE TO BE ALWAYS ON AND IS PROGRAMED TO AUTOMATICALLY TURN THE OUTDOOR LIGHTING OFF DURING DAYLIGHT HOURS. C.E.C. 150 (k) 9

ELECTRICAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT CODES, RULES, AND REGULATIONS AND COMPLY WITH THE REQUIREMENTS OF THE SERVING POWER AND TELEPHONE COMPANIES.
2. ALL ELECTRICAL SHOWN IS NEW UNLESS LABLED AS EXISTING (E).

RECEPTACLES

1. IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM, OR SIMILAR ROOM OR AREA OF DWELLING UNITS, RECEPTACLE OUTLETS SHALL BE INSTALLED SUCH THAN NO POINT MEASURED HORIZONTALLY ALONG THE FLOOR LINE IN ANY WALL SPACE OVER 2' IN LENGTH (INCLUDING SPACE MEASURED AROUND CORNERS) IS MORE THAN 6 FT FROM A RECEPTACLE OUTLET. C.E.C 210.52(A)
2. ALL 12-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. WHERE RMC, IMC, EMT, OR STEEL ARMORED CABLE, TYPE AC, MEETING THE REQUIREMENTS OF C.E.C. 250.118 USING METAL OUTLET AND JUNCTION BOXES IS INSTALLED FOR THE PORTION OF THE BRANCH CIRCUIT BETWEEN THE BRANCH-CIRCUIT OVER CURRENT DEVICE AND THE FIRST OUTLET, IT SHALL BE PERMITTED TO INSTALL A COMBINATION AFCI AT THE FIRST OUTLET TO PROVIDE PROTECTION FOR THE REMAINING PORTION OF THE BRANCH CIRCUIT. C.E.C. 210.12(B) AND C.E.C. 210.12 EXCEPTION 1
3. IN DWELLING UNITS ALL 125 AMP, SINGLE PHASE, 15- AND 20-AMPERE RECEPTACLES INSTALLED IN THE FOLLOWING PLACES SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION: BATHROOMS, GARAGES (AT OR BELOW GRADE) AND SIMILAR SPACES, OUTDOORS, CRAWL SPACES (AT OR BELOW GRADE), KITCHENS (WHERE RECEPTACLES ARE INSTALLED TO SERVE COUNTERTOP SURFACES), AND SINKS LOCATED IN AREAS OTHER THAN KITCHENS WHERE THE RECPTACLES ARE INSTALLED WITHIN 6' OF THE OUTSIDE EDGE OF THE SINK. C.E.C. 210.8(A)
4. IN ALL AREAS OF DWELLING UNITS SPECIFIED IN C.E.C. 210.52, ALL NONLOCKING-TYPE 125 VOLT, 15- AND 20-AMPERE RECEPTACLES SHALL BE LISTED TAMPER RESISTANT. C.E.C.406.12
5. IN KITCHENS, PANTRIES, BREAKFAST ROOMS, DINING ROOMS, AND SIMILAR AREAS OF DWELLING UNITS, RECEPTACLE OUTLETS FOR COUNTERTOP SPACES SHALL BE INSTALLED AT EACH COUNTERTOP SPACE THAT IS MORE THAN 12" OR WIDER. RECEPTACLE OUTLETS SHALL BE INSTALLED SO THAT NO POINT ALONG THE WALL LINE IS MORE THAN 24" MEASURED HORIZONTALLY FROM A RECEPTACLE OUTLET IN THAT SPACE. AT LEAST TWO OR MORE 20-AMPERE BRANCH CIRCUITS SHALL BE PROVIDED FOR SMALL APPLIANCES IN THE ABOVE MENTIONED ROOMS, WHICH MAY ALSO SUPPLY COUNTERTOP RECEPTACLES. C.E.C. 210.11(C)(1) AND 210.52(C)(1).
6. AT LEAST ONE RECEPTACLE SHALL BE INSTALLED AT EACH ISLAND COUNTERTOP SPACE WITH A LONG DIMENSION OF 24 IN. OR GREATER AND A SHORT DIMENSION OF 12 IN. OR GREATER. C.E.C. 210.52(C)(2)
7. RECEPTACLE OUTLETS SHALL BE LOCATED ABOVE, BUT NOT MORE THAN 20 IN., ABOVE THE COUNTERTOP. RECEPTACLE OUTLETS RENDERED NOT READILY ACCESSIBLE BY APPLIANCES FASTENED IN PLACE, APPLIANCE GARAGES, SINKS, OR RANGE TOPS AS COVERED IN C.E.C. 210.52(C)(1), EXCEPTION, OR APPLIANCES OCCUPYING DEDICATED SPACE SHALL NOT BE CONSIDERED AS THESE REQUIRED OUTLETS. C.E.C. 210.52(C)(4)
8. AT LEAST ONE RECEPTACLE OUTLET SHALL BE INSTALLED IN BATHROOMS WITHIN 3 FT OF THE OUTSIDE EDGE OF EACH BASIN. THE RECEPTACLE OUTLET SHALL BE LOCATED ON A WALL OR PARTITION THAT IS ADJACENT TO THE BASIN OR BASIN COUNTERTOP, OR INSTALLED ON THE SIDE OR FACE OF THE BASIN CABINET NOT MORE THAN 12 IN. BELOW THE COUNTERTOP. AT LEAST ONE 20-AMPERE BRANCH CIRCUIT SHALL BE PROVIDED FOR THESE RECEPTACLES. C.E.C. 210.11(C)(3) AND 210.52(D)
9. A 125-VOLT, SINGLE PHASE, 15- OR 20-AMPERE-RATE RECEPTACLE OUTLET SHALL BE INSTALLED AT AN ACCESSIBLE LOCATION FOR THE SERVICING OF HEATING, AIR-CONDITIONING, AND REFRIGERATION EQUIPMENT. THE RECEPTACLE SHALL BE LOCATED ON THE SAME LEVEL AND WITH 7.5 M (25 FT) OF THE HEATING, AIR-CONDITIONING, AND REFRIGERATION EQUIPMENT. THE RECEPTACLE OUTLET SHALL NOT BE CONNECTED TO THE LOAD SIDE OF THE EQUIPMENT DISCONNECTION MEANS. C.E.C. 210.63
10. RECEPTACLE OUTLETS INSTALLED IN DAMP OR WET CONDITIONS SHALL MEET THE REQUIREMENTS OF C.E.C. 406.8
11. A SWITCHED ELECTRICAL OUTLET INSTALLED 18" ABOVE THE FLOOR SHALL BE PROVIDED FOR THE GARBAGE DISPOSAL.
12. WIRING SHALL BE PROVIDED FOR RANGE, HOOD, LIGHT AND FAN AT 72" ABOVE FLOOR WHERE REQUIRED.
13. A 110-VOLT RECEPTACLE OUTLET SHALL BE PROVIDED FOR THE WATER HEATER AND ANY HEATING EQUIPMENT.
14. FOUR PRONGED RECEPTACLE OUTLETS ARE REQUIRED FOR ALL DRYERS AND COOK TOPS. SUPPLYING CONDUCTOR WIRES SHALL HAVE INSULATED NEUTRAL. C.E.C. 250.140

THE APPROVAL OF ALL PLUMBING / MECHANICAL / ELECTRICAL IS SUBJECT TO FIELD INSPECTION

City of SACRAMENTO Community Development — APPROVED — City of Sacramento Plan Review, Residential Building Division — By: SBronson on Apr 12, 2021

City of SACRAMENTO Community Development — ISSUED BY Community Development Department — By: RODION KORNIYENKO on May 11, 2021

REGISTERED PROFESSIONAL ENGINEER — No. 3031 Exp. 3-31-21 — STRUCTURAL — STATE OF CALIFORNIA

2019 CALIFORNIA GREEN BUILDING CODE -MANDATORY MEASURES-

4.1 SITE DEVELOPMENT

1. PROJECT DISTURBS LESS THAN ONE ACRE OF SOIL AND IS NOT PART OF A LARGER DEVELOPMENT WHICH DISTURBS MORE THAN ONE ACRE OF SOIL. SEE EROSION AND DUST CONTROL NOTES FOR INFORMATION REGARDING SITE RUNOFF DURING CONSTRUCTION. RUNOFF WILL BE CONTROLLED PER LOCAL STORM WATER ORDINANCES WHERE THEY EXIST. C.G.C. 4.106.2
2. SITE HAS BEEN PLANNED TO PREVENT THE ENTRANCE OF STORM WATER INTO THE BUILDING PER C.G.C. 4.106.3

4.2 ENERGY EFFICIENCY

1. PROJECT AT MINIMUM COMPLIES WITH CALIFORNIA ENERGY STANDARDS. C.G.C. 4.201.1

4.3 WATER EFFICIENCY AND CONSERVATION

1. PLUMBING FIXTURES SHALL MEET THE FOLLOWING FLOW RATES PER C.G.C. 4.303:
   A. 2.0 GALLONS MAXIMUM PER MINUTE FOR NEW SINGLE SHOWER HEADS AT 80 PSI
   B. 2.0 GALLONS MAXIMUM PER MINUTE COMBINED FLOW RATE FOR NEW MULTIPLE SHOWER HEADS AND/OR OTHER OUTLETS CONTROLLED BY ONE VALVE AT 80 PSI
   C. 1.2 GALLONS MAXIMUM PER MINUTE FOR NEW LAVATORY FAUCETS AT 60 PSI AND 0.8 GALLONS PER MINUTE MINIMUM AT 20 PSI
   D. 1.8 GALLONS MAXIMUM PER MINUTE FOR NEW KITCHEN FAUCETS (EXCEPT FOR TEMPORARY FLOW RATES UP TO 2.2 GPM MAX @ 60 PSI)
   E. 1.28 GALLONS MAXIMUM PER FLUSH FOR NEW TOILETS
   C.G.C. 4.303
2. RESIDENTIAL DEVELOPMENTS SHALL COMPLY WITH A LOCAL WATER EFFICIENT LANDSCAPE ORDINANCE OR THE CURRENT CALIFORNIA DEPARTMENT OF WATER RESOURCES' MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) WHICHEVER IS MORE STRINGENT. C.G.C. 4.304.1

4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

1. ANNULAR SPACES AROUND PIPES, ELECTRIC CABLES, CONDUITS, OR OTHER OPENINGS IN PLATES AT EXTERIOR WALLS SHALL BE PROTECTED AGAINST THE PASSAGE OF RODENTS BY CLOSING SUCH OPENINGS WITH CEMENT MORTAR, CONCRETE MASONRY OR A SIMILAR METHOD ACCEPTABLE TO THE ENFORCING AGENCY. C.G.C. 4.406.1
2. A MINIMUM OF 65% OF THE NON-HAZARDOUS CONSTRUCTION WASTE GENERATED AT THE SITE IS DIVERTED TO RECYCLE OR SALVAGE PER C.G.C. 4.408.1
3. A CONSTRUCTION WASTE MANAGEMENT PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL THAT AT MINIMUM:
   A. IDENTIFIES THE CONSTRUCTION AND DEMOLITION WASTE MATERIALS TO BE DIVERTED FROM DISPOSAL BY RECYCLING, REUSE ON THE PROJECT OR SALVAGE FOR FUTURE USE OR SALE.
   B. SPECIFIES IF THE CONSTRUCTION AND DEMOLITION WASTE MATERIALS WILL BE SORTED ON-SITE OR BULK MIXED.
   C. IDENTIFIES THE DIVERSION FACILITY WHERE THE THE CONSTRUCTION AND DEMOLITION WASTE MATERIAL WILL BE TAKEN.
   D. IDENTIFIES CONSTRUCTION METHODS EMPLOYED TO REDUCE THE AMOUNT OF THE CONSTRUCTION AND DEMOLITION WASTE GENERATED.
   E. SPECIFIES THAT THE AMOUNT OF THE CONSTRUCTION AND DEMOLITION WASTE MATERIALS DIVERTED SHALL BE CALCULATED BY WEIGHT OR VOLUME, BUT NOT BOTH.
   C.G.C. 4.408.2
4. AT THE TIME OF FINAL INSPECTION, A MANUAL, COMPACT DISK, WEB-BASED REFERENCE OR OTHER MEDIA ACCEPTABLE TO THE ENFORCING AGENCY WHICH INCLUDES ALL OF THE FOLLOWING SHALL BE PLACED IN THE BUILDING BY THE CONTRACTOR.
   A. DIRECTIONS TO THE OWNER OR OCCUPANT THAT THE MANUAL SHALL REMAIN WITH THE BUILDING THROUGHOUT THE LIFE CYCLE OF THE STRUCTURE.
   B. OPERATION AND MAINTENANCE INSTRUCTIONS FOR EQUIPMENT AND APPLIANCES, INCLUDING WATER-SAVING DEVICES AND SYSTEMS, HVAC SYSTEMS, PHOTOVOLTAIC SYSTEMS, ELECTRIC VEHICLE CHARGERS, WATER-HEATING SYSTEMS AND OTHER MAJOR APPLIANCES AND EQUIPMENT. ROOF AND YARD DRAINAGE, INCLUDING GUTTERS AND DOWNSPOUTS. SPACE CONDITIONING SYSTEMS, INCLUDING CONDENSERS AND AIR FILTERS. LANDSCAPE IRRIGATION SYSTEMS. WATER REUSE SYSTEMS.
   C. INFORMATION FROM LOCAL UTILITY, WATER AND WASTE RECOVERY PROVIDERS ON METHODS TO FURTHER REDUCE RESOURCE CONSUMPTION, INCLUDING RECYCLE PROGRAMS AND LOCATIONS.
   D. PUBLIC TRANSPORTATION AND/OR CARPOOL OPTIONS AVAILABLE IN THE AREA.
   E. EDUCATIONAL MATERIAL ON THE POSITIVE IMPACTS OF AN INTERIOR RELATIVE HUMIDITY BETWEEN 30-60% AND WHAT METHODS ON OCCUPANT MAY USE TO MAINTAIN THE RELATIVE HUMIDITY LEVEL IN THAT RANGE.
   F. INFORMATION ABOUT WATER CONSERVING LANDSCAPE AND IRRIGATION DESIGN AND CONTROLLERS WHICH CONSERVE WATER.
   G. INSTRUCTION FOR MAINTAINING GUTTERS AND DOWNSPOUTS AND THE IMPORTANCE OF DIVERTING WATER AT LEAST 5 FEET AWAY FROM THE FOUNDATION.
   H. INFORMATION ON REQUIRED ROUTINE MAINTENANCE MEASURES, INCLUDING, BUT NOT LIMITED TO, CAULKING, PAINTING, GRADING AROUND THE BUILDING, ETC.
   I. INFORMATION ABOUT STATE SOLAR ENERGY AND INCENTIVE PROGRAMS AVAILABLE.
   J. A COPY OF ALL SPECIAL INSPECTION VERIFICATIONS REQUIRED BY THE ENFORCING AGENCY OR THIS CODE.
   C.G.C. 4.410.1

4.5 ENVIRONMENTAL QUALITY

1. ANY INSTALLED GAS FIREPLACES SHALL BE A DIRECT-VENT SEALED-COMBUSTION TYPE. ANY INSTALLED WOODSTOVE OR PELLET STOVE SHALL COMPLY WITH U.S. EPA NEW SOURCE PERFORMANCE STANDARDS (NSPS) EMISSION LIMITS AS APPLICABLE, AND SHALL HAVE A PERMANENT LABEL INDICATING THEY ARE CERTIFIED TO MEET THE EMISSION LIMITS. THEY SHALL ALSO COMPLY WITH ALL LOCAL ORDINANCES. C.G.C. 4.503.1
2. AT THE TIME OF ROUGH INSTALLATION, DURING STORAGE ON THE CONSTRUCTION SITE, AND UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF WATER, DUST, AND DEBRIS WHICH MAY ENTER THE SYSTEM. C.G.C. 4.504.1
3. ADHESIVES, SEALANTS, CAULKS AND OTHER TOXIC COMPOUNDS SHALL MEET VOC LIMITS OF C.G.C. TABLE 4.504.1 OR TABLE 4.504.2. C.G.C. 4.504.2.1
4. PAINTS, STAINS AND OTHER COATINGS SHALL BE COMPLIANT WITH VOC LIMITS OF C.G.C. TABLE 4.504.3. C.G.C. 4.504.2.2
5. AEROSOL PAINTS AND COATINGS SHALL BE COMPLIANT WITH PRODUCT-WEIGHTED MIR LIMITS FOR ROC AND OTHER TOXIC COMPOUNDS IN COMPLIANCE WITH CALIFORNIA CODE OF REGULATIONS, TITLE 17. C.G.C. 4.504.2.3
6. ALL CARPET INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE TESTING AND PRODUCT REQUIREMENTS OF ONE OF THE FOLLOWING:
   A. CARPET AND RUG INSTITUTE'S GREEN LABEL PLUS PROGRAM
   B. CALIFORNIA DEPARTMENT OF PUBLIC HEALTH "STANDARD PRACTICE FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMCAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS" VERSION 1.1, FEBRUARY 2010
   C. NSF/ANSI 140 AT THE GOLD LEVEL
   D. SCIENTIFIC CERTIFICATIONS SYSTEMS INDOOR ADVANTAGE GOLD
   C.G.C. 4.504.3.
7. ALL CARPET CUSHION INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE REQUIREMENTS OF THE CARPET AND RUG INSTITUTE GREEN LABEL PROGRAM. C.G.C. 4.504.3.1
8. ALL CARPET ADHESIVE SHALL MEET THE REQUIREMENTS OF C.G.C. TABLE 4.504.1. C.G.C. 4.504.3.2
9. WHERE RESILIENT FLOORING IS INSTALLED, AT LEAST 80 PERCENT OF FLOOR AREA RECEIVING RESILIENT FLOORING SHALL COMPLY WITH ONE OR MORE OF THE FOLLOWING.
   A. PRODUCTS COMPLIANT WITH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH "STANDARD PRACTICE FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMCAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS" VERSION 1.1, FEBRUARY 2010, CERTIFIED AS A CHPS LOW-EMITTING MATERIAL IN THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS HIGH PERFORMANCE PRODUCTS DATABASE.
   B. PRODUCTS CERTIFIED UNDER UL GREENGAURD GOLD
   C. CERTIFCATION UNDER THE RESILIENT FLOOR COVERING INSTITUTE FLOORSCORE PROGRAM.
   D. MEET THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, "STANDARD PRACTICE FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMCAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS" VERSION 1.1, FEBRUARY 2010
   C.G.C. 4.504.4
10. HARDWOOD PLYWOOD, PARTICLEBOARD AND MEDIUM DENSITY FIBERBOARD COMPOSITE WOOD PRODUCTS USED ON THE INTERIOR OR EXTERIOR OF THE BUILDING SHALL MEET THE REQUIREMENTS FOR FORMALDEHYDE AS SPECIFIED IN ARB'S AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS SHOWN IN C.G.C. TABLE 4.504.5. C.G.C. 4.504.5
11. A CAPILLARY BREAK SHALL BE INSTALLED IN COMPLIANCE WITH AT LEAST ONE OF THE FOLLOWING:
   A. A 4-INCH THICK BASE OF ½" OR LARGER CLEAN AGGREGATE SHALL BE PROVIDED WITH A VAPOR RETARDER IN DIRECT CONTACT WITH CONCRETE AND A CONCRETE MIX DESIGN, WHICH WILL ADDRESS BLEEDING, SHRINKAGE, AND CURLING, SHALL BE USED.
   B. OTHER EQUIVALENT METHODS APPROVED BY THE ENFORCING AGENCY.
   C. A SLAB DESIGN SPECIFIED BY A LICENSED DESIGN PROFESSIONAL.
   C.G.C. 4.505.2.1
12. WALL AND FLOOR FRAMING SHALL NOT BE ENCLOSED WHEN THE FRAMING MEMBERS EXCEED 19 PERCENT MOISTURE CONTENT. MOISTURE CONTENT SHALL BE VERIFIED IN COMPLIANCE WITH THE FOLLOWING:
   A. MOISTURE CONTENT SHALL BE DETERMINED WITH EITHER A PROBE-TYPE OR CONTACT-TYPE MOISTURE METER. EQUIVALENT MOISTURE VERIFICATION METHODS MAY BE APPROVED BY THE ENFORCING AGENCY AND SHALL SATISFY REQUIREMENTS FOUND IN SECTION C.G.C. 101.8.
   B. MOISTURE READINGS SHALL BE TAKEN AT A POINT 2 FEET TO 4 FEET FROM THE GRADE STAMPED END OF EACH PIECE TO BE VERIFIED.
   C. AT LEAST THREE RANDOM MOISTURE READINGS SHALL BE PERFORMED ON WALL AND FLOOR FRAMING WITH DOCUMENTATION ACCEPTABLE TO THE ENFORCING AGENCY PROVIDED AT THE TIME OF APPROVAL TO ENCLOSE THE WALL AND FLOOR FRAMING.
   C.G.C. 4.505.3
13. EACH BATHROOM SHALL BE MECHANICALLY VENTILATED AND COMPLY WITH THE FOLLOWING:
   A. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE THE BUILDING.
   B. UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL. HUMITIDY CONTROLS SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF ≤ 50 PERCENT TO A MAXIMUM OF 80 PERCENT. A HUMIDITY CONTROL MAY UTILIZE MANUAL OR AUTOMATIC MEANS OF ADJUSTMENT, AND MAY BE A SEPARATE COMPONENT TO THE EXHASUT FAN (IT IS NOT REQUIRED TO BE INTEGRAL/BUILT IN).
   C.G.C. 4.506.1
14. HEATING AND AIR CONDITIONING SYSTEMS SHALL BE SIZED, DESIGNED, AND HAVE THEIR EQUIPMENT SELECTED USING THE FOLLOWING METHODS:
   A. THE HEAT LOSS AND HEAT GAIN IS ESTABLISHED ACCORDING TO ANSI/ACCA 2 MANUAL J-2016, ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
   B. DUCT SYSTEMS ARE SIZED ACCORDING TO ANSI/ACCA 1-MANUAL D 2016, ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
   C. SELECT HEATING AND COOLING EQUIPMENT ACCORDING TO ANSI/ACCA 3- MANUAL S 2014.
   C.G.C. 4.507.2

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DATE: 12-9-2020
SCALE: NOTED

2019 Low-Rise Residential Mandatory Measures Summary

*NOTE: 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.*
(01/2020)

Section	Measure
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 per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.*
§ 110.6(a)5:	**Labeling.** Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	**Field fabricated exterior doors and fenestration** products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.*
§ 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 must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	**Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	**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(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	**Radiant Barrier.** When required, radiant barriers must have an emittance of 0.05 or less and be certified to 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 a 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 drywall 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, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.*
§ 150.0(d):	**Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f):	**Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per 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 through 16, 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(d).
§ 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 air-permeable insulation.
§ 150.0(q):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.*
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:	
§ 110.5(e)	**Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.*
§ 150.0(e)3:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 110.0-§ 110.3:	**Certification.** Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California 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-on 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 heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(c)4:	**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 connection requirements of § 110.3(c)4.
§ 110.3(c)6:	**Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater 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 (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters.*
§ 150.0(h)1:	**Building Cooling and Heating Loads.** Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.

2019 Low-Rise Residential Mandatory Measures Summary

Section	Measure
§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer
§ 150.0(h)3B:	**Liquid Line Drier.** Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	**Storage Tank Insulation.** Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	**Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; 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 two 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 per hour.
§ 150.0(n)2:	**Recirculating Loops.** Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	**Solar Water-heating Systems.** Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:	
§ 110.8(d)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 customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	**CMC Compliance.** All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 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 a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ 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 to convey 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.*
§ 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 Damper.** Fan systems that exchange air between the conditioned space and outdoors 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, 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 ducts 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 RA3.
§ 150.0(m)12:	**Air Filtration.** Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13:	**Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*

2019 Low-Rise Residential Mandatory Measures Summary

Section	Measure
Requirements for Ventilation and Indoor Air Quality:	
§ 150.0(o)1:	**Requirements for Ventilation and Indoor Air Quality.** All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1.
§ 150.0(o)1C:	**Single Family Detached Dwelling Units.** Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.
§ 150.0(o)1E:	**Multifamily Attached Dwelling Units.** Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.
§ 150.0(o)1F:	**Multifamily Building Central Ventilation Systems.** Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.
§ 150.0(o)1G:	**Kitchen Range Hoods.** Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.
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(b)1:	**Piping.** Any pool or spa heating system or 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(b)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 not have a continuously burning pilot light.
§ 150.0(p):	**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.*
§ 150.0(k)1A:	**Luminaire Efficacy.** All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(k)1B:	**Blank Electrical Boxes.** The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(k)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(k)1C.
§ 150.0(k)1D:	**Electronic Ballasts for Fluorescent Lamps.** Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0(k)1E:	**Night Lights, Step Lights, and Path Lights.** Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.
§ 150.0(k)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(k).*
§ 150.0(k)1G:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*
§ 150.0(k)1H:	**Light Sources in Enclosed or Recessed Luminaires.** Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1I:	**Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0(k)2A:	**Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	**Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems.*
§ 150.0(k)2C:	**Interior Switches and Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*
§ 150.0(k)2D:	**Interior Switches and Controls.** Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(k)2E:	**Interior Switches and Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k).
§ 150.0(k)2F:	**Interior Switches and Controls.** Lighting controls must comply with the applicable requirements of § 110.9.

2019 Low-Rise Residential Mandatory Measures Summary

Section	Measure
§ 150.0(k)2G:	**Interior Switches and Controls.** An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2.
§ 150.0(k)2H:	**Interior Switches and Controls.** A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2.
§ 150.0(k)2I:	**Interior Switches and Controls.** In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to manual-on operation using the manual control required under Section 150.0(k)2C.
§ 150.0(k)2J:	**Interior Switches and Controls.** Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*
§ 150.0(k)2K:	**Interior Switches and Controls.** Under cabinet lighting must be controlled separately from ceiling-installed 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 requirement in item § 150.0(k)3Ai (ON and OFF switch) and the requirements in either § 150.0(k)3Aii (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Aiii (astronomical time clock), or an EMCS.
§ 150.0(k)3B:	**Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches; and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 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, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 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(c).
§ 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 Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0(k)6A:	**Interior Common Areas of Low-rise Multifamily 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 comply with Table 150.0-A and be controlled by an occupant sensor.
§ 150.0(k)6B:	**Interior Common Areas of Low-rise Multifamily 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 for the interior common areas in that building must: i. Comply with the applicable requirements in Sections 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 50 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 10 or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b) through § 110.10(e).
§ 110.10(a)2:	**Low-rise Multifamily Buildings.** Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d).
§ 110.10(b)1:	**Minimum Solar Zone 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 80 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. The solar zone requirement is applicable to the entire building, including mixed occupancy.*
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 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 a 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 reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing 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(c) 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 permanently marked as "For Future Solar Electric".

City of SACRAMENTO Community Development

300 Richards Blvd, 3rd Floor
Sacramento, CA 95811
Help Line: 916-264-5011
CityofSacramento.org/dsd

Mandatory Requirements 2019 California Green Building Standard Code for Residential Building Permits

Project Address:______________________________Date:__________

ITEM#	CODE SECTION	REQUIREMENTS	MEASURE SUMMARY
		PLANNING AND DESIGN	
1	4.106.2	Storm Water Drainage and Retention	Prevention of Erosion and Runoff on Site
2	4.106.3	Grading and Paving	Prevention of Water from Entering Buildings
		WATER EFFICIENCY & CONSERVATION	
3	4.106.4	Electric Vehicle (EV) charging station (New Dwellings Only)	Facilitate Future EV Charging Station
4	4.303	Indoor Water Use Reduction Fixture Schedules	CA Plumbing Code
5	4.304.1	Landscape areas all Residential developments	MWELO Landscape Budget Required
		MATERIAL CONSERVATION & RESOURCE EFFICIENCY	
6	4.406.1	Rodent Proofing	Seal Plates with Mortar, Concrete or Other
7	4.408	Construction Waste Reduction, Disposal & Recycling	Recycle/Reuse 65% of nonhazardous Demolition Materials, Waste Management Plan
8	4.410.1	Operation and Maintenance Manual	Owner Manual for Measures Used
		ENVIRONMENTAL QUALITY	
9	4.503.1	Fireplaces and Woodstoves	Gas Direct Vent, Wood EPA Phase II
10	4.504.1	Covering of Duct Opening/Protection of Equipment	Plastic, Sheet-Metal, Tape or Other
11	4.504.2	Finish Material Pollutant Control	Adhesives, Sealants, State VOC Limits
12	4.504.2.4	Verification/Certification of Compliance	City Form CDD-0179 Required at Final Inspection
13	4.504.3	Carpet Systems	Carpet and Rug Institutes' Green Label, Scientific Certifications System Indoor Advantage Gold
14	4.504.3.1	Carpet Cushion	
15	4.504.4	Resilient Flooring Systems	80% of Flooring VOC Limits
16	4.504.5	Composite Wood Products	Formaldehyde Limits Table 4.504.5
17	4.505.2.1	Capillary Break	Under Slab Vapor Barrier, No Sand
18	4.505.3	Moisture Content of Building Materials	Building Materials 19% Max.
19	4.506.1	Bathroom Exhaust Fans ≤50 % to Max 80 %	Humidity Control
20	4.507.2	Heating and Air-Conditioning System Design	ACCA Manuals J (heat load), D (duct sizing) And S (equipment sizing)

TABLE R602.3(1A) FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS
	Roof		
1	Blocking between joists or rafters to top plate, toe nail	3-8d ($2\frac{1}{2}$" × 0.113")	—
2	Ceiling joists to plate, toe nail	3-8d ($2\frac{1}{2}$"× 0.113")	—
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	—
4	Collar tie rafter, face nail or $1\frac{1}{4}$" × 20 gage ridge strap	3-10d (3" × 0.128")	—
5	Rafter to plate, toe nail	2-16d ($3\frac{1}{2}$" × 0.135")	—
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	 4-16d ($3\frac{1}{2}$" × 0.135") 3-16d ($3\frac{1}{2}$" × 0.135")	 — —
	Wall		
7	Built-up corner studs	10d (3" × 0.128")	24" o.c.
8	Built-up header, two pieces with $\frac{1}{2}$" spacer	16d ($3\frac{1}{2}$" × 0.135")	16" o.c. along each edge
9	Continued header, two pieces	16d ($3\frac{1}{2}$" × 0.135")	16" o.c. along each edge
10	Continuous header to stud, toe nail	4-8d ($2\frac{1}{2}$" × 0.113")	—
11	Double studs, face nail	10d (3" × 0.128")	24" o.c.
12	Double top plates, face nail	10d (3" × 0.128")	24" o.c.
13	Double top plates, minimum 24-inch offset of end joints, face nail in lapped area	8-16d ($3\frac{1}{2}$"× 0.135")	—
14	Sole plate to joist or blocking, face nail	16d ($3\frac{1}{2}$" × 0.135")	16" o.c.
15	Sole plate to joist or blocking at braced wall panels	3-16d ($3\frac{1}{2}$" × 0.135")	16" o.c.
16	Stud to sole plate, toe nail	3-8d ($2\frac{1}{2}$" × 0.113") or 2-16d $3\frac{1}{2}$" × 0.135")	— —
17	Top or sole plate to stud, end nail	2-16d ($3\frac{1}{2}$" × 0.135")	—
18	Top plates, laps at corners and intersections, face nail	2-10d (3" × 0.128")	—
19	1" brace to each stud and plate, face nail	2-8d ($2\frac{1}{2}$" ×0.113") 2 staples $1\frac{3}{4}$"	— —
20	1" × 6" sheathing to each bearing, face nail	2-8d ($2\frac{1}{2}$" × 0.113") 2 staples $1\frac{3}{4}$"	— —
21	1" × 8" sheathing to each bearing, face nail	2-8d ($2\frac{1}{2}$" × 0.113") 3 staples $1\frac{3}{4}$"	— —
22	Wider than 1" × 8" sheathing to each bearing, face nail	3-8d ($2\frac{1}{2}$" × 0.113") 4 staples $1\frac{3}{4}$"	— —
	Floor		
23	Joist to sill or girder, toe nail	3-8d ($2\frac{1}{2}$" × 0.113")	—
24	1" × 6" subfloor or less to each joist, face nail	2-8d ($2\frac{1}{2}$" × 0.113") 2 staples $1\frac{3}{4}$"	— —
25	2" subfloor to joist or girder, blind and face nail	2-16d ($3\frac{1}{2}$" × 0.135")	—
26	Rim joist to top plate, toe nail (roof applications also)	8d ($2\frac{1}{2}$" × 0.113")	6" o.c.
27	2" planks (plank & beam - floor & roof)	2-16d ($3\frac{1}{2}$" × 0.135")	at each bearing
28	Built-up girders and beams, 2-inch lumber layers	10d (3" × 0.128")	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice.
29	Ledger strip supporting joists or rafters	3-16d ($3\frac{1}{2}$" × 0.135")	At each joist or rafter

TABLE R602.3(1B) FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER[b, c, e]	SPACING OF FASTENERS: Edges (inches)[i]	SPACING OF FASTENERS: Intermediate supports[c, e] (inches)
	Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing			
30	$\frac{3}{8}$" - $\frac{1}{2}$"	6d common (2"×0.113") nail (subfloor wall) 8d common ($2\frac{1}{2}$"×0.131") nail (roof)[f]	6	12[g]
31	$\frac{19}{32}$" - 1"	8d common nail ($2\frac{1}{2}$"×0.131")	6	12[g]
32	$1\frac{1}{8}$" - $1\frac{1}{4}$"	10d common (3"×0.148") nail or 8d ($2\frac{1}{2}$"×0.131") deformed nail	6	12
	Other wall sheathing[h]			
33	$\frac{1}{2}$" structural cellulosic fiberboard sheathing	$1\frac{1}{2}$" galvanized roofing nail, $\frac{7}{16}$" crown or 1" crown staple 16 ga., $1\frac{1}{4}$ "long	3	6
34	$\frac{25}{32}$" structural cellulosic fiberboard sheathing	$1\frac{3}{4}$ " galvanized roofing nail, $\frac{7}{16}$" crown or 1" crown staple 16 ga., $1\frac{1}{2}$" long	3	6
35	$\frac{1}{2}$" gypsum sheathing[d]	$1\frac{1}{2}$ " galvanized roofing nail; staple galvanized, $1\frac{1}{2}$" long; $1\frac{1}{4}$ screws, Type W or S	7	7
36	$\frac{5}{8}$" gypsum sheathing[d]	$1\frac{3}{4}$" glavanized roofing nail; staple galvanized, $1\frac{5}{8}$ "long; $1\frac{5}{8}$ "screws, Type W or S	7	7
	Wood structural panels, combination subfloor underlayment to framing			
37	$\frac{3}{4}$" and less	6d deformed (2" × 0.120") nail or 8d common ($2\frac{1}{2}$" × 0.131") nail	6	12
38	$\frac{7}{8}$"- 1"	8d common ($2\frac{1}{2}$" × 0.131") nail or 8d deformed ($2\frac{1}{2}$" × 0.120") nail	6	12
39	$1\frac{1}{8}$"- $1\frac{1}{4}$"	10d common (3" × 0.148") nail or 8d deformed ($2\frac{1}{2}$" × 0.120") nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1ksi = 6.895 MPa.

a. All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
b. Staples are 16 gage wire and have a minimum $\frac{7}{16}$-inch on diameter crown width.
c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
d. Four-foot-by-8-foot or 4-foot-by-9-foot panels shall be applied vertically.
e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
f. For regions having basic wind speed of 110 mph or greater, 8d deformed ($2\frac{1}{2}$"×0.120) nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.
g. For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
h. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.

i. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.

City of SACRAMENTO Community Development — APPROVED — City of Sacramento Plan Review — Residential Building Division
By: SBronson
on Apr 12, 2021

COMMUNITY DEVELOPMENT DEPARTMENT — APPROVED — UNDER TITLE 8 &15 & 17 CITY CODE CITY OF SACRAMENTO, CALIF. — BUILDING INSPECTION DIVISION

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.
The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

REGISTERED PROFESSIONAL ENGINEER — FIRAS A. JANDALI — No. 3031 — Exp. 3-31-21 — STRUCTURAL — STATE OF CALIFORNIA

City of SACRAMENTO Community Development — ISSUED BY — Community Development Department
By: RODION KORNIYENKO
on May 11, 2021

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REVISIONS: | BY:

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Sacramento, CA 95822
APN: 02401020040000

PAGE NAME:
FORMS AND NOTES

DATE: 12-9-2020
SCALE: NOTED

PAGE No:
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