CITY OF MANTECA
COMMUNITY DEVELOPMENT DEPARTMENT
1001 West Center Street • Manteca, CA 95337 • FAX (209) 923-8949
Building Safety Division (209) 456-8550 • Community Development/Planning Division (209) 456-8500

Residential Addition

NOTE: Check with your homeowners' association and architectural review committee for Conditions, Covenants & Restrictions (CC&R's). The City of Manteca has no regulatory authority to enforce or notify permit applicants of CC&R requirements, nor deny permits for non-compliance.

DESIGN CRITERIA/APPLICABLE CODES

- Seismic Design Category: D
- Basic wind speed: 93 mph, Exposure C
- Climate Zone 12
- Codes: 2019 CRC: California Residential Code
  2019 CPC: California Plumbing Code
  2019 CMC: California Mechanical Code
  2019 CEC: California Electrical Code
  2019 CEC: California Energy Code
  2019 CGBSC: CA Green Building Standards Code

DRAWING CRITERIA

- It is preferred that drawings be limited in size to a MINIMUM of 18"x24" and a MAXIMUM of 30"x42"
- Plans must be clear, complete, and legible; illegible or incomplete plans will not be accepted.
- Preferred scale: 1/4 inch per foot for structural and architectural; 1 inch = 20 feet for site plans

WHAT'S INCLUDED IN THIS HANDOUT

SUBMITTAL REQUIREMENTS

- *Effective 7/1/2020, City of Manteca will transition to electronic plan review. All documents must be submitted through goPost.*
- *Incomplete submittals will not be accepted*
- *Plan check fees are to be paid at the time of submittal*

SUBMITTAL DOCUMENTS CHECKLIST

o COMPLETED BUILDING PERMIT APPLICATION
o COVER SHEET
o SITE PLAN
o FLOOR PLAN
o ELEVATIONS
o ARCHITECTURAL & STRUCTURAL SHEETS
o PLUMBING/MECHANICAL/ELECTRICAL SHEETS
o STRUCTURAL CALCULATIONS
o TRUSS CALCULATIONS
o TITLE 24 ENERGY DOCUMENTS
o GRADING PLAN

THE FOLLOWING ADDITIONAL ITEMS MAY BE REQUIRED BASED ON PROJECT TYPE, SCOPE, AND/OR LOCATION:

- Manteca Unified School District certificate of fees paid (additions of 500 sq. ft. and over)
- Special Inspection Agreement
- Soils Report
- Electrical Load Calculations
- Plumbing Calculations
- Sound Attenuation Details

INFORMATION REQUIRED ON PLAN SUBMITTALS

COVER SHEET:

- Legal address of project site
- Assessor's Parcel Number (APN)
- Name, address, phone number of owner, contractor and contact person
- Name, address, phone number, title and registration information of project design professional
- Written description of work to be undertaken
- Current applicable codes and edition dates
- Occupancy classification and type of construction
- Zoning
- Gross square footage area by floor
- Index of drawings
- Scale used for any drawings on cover sheet

SITE PLAN (see sample on pg. 7):

- North arrow
- Lot dimensions & boundaries, showing entire parcel
- Scale used
- Legal address of job site
- Existing and proposed structures, including solid covered patios, porches, sheds, etc., and their areas in square feet and number of stories; include building walls on adjoining properties that are within 10 feet of the subject property
- Distances of structures from property lines and other structures
- Utility lines and connection points (water, sewer, electrical, gas, cable, fire hydrants, etc.)
- Adjoining streets
- Driveways and parking areas
- All easements
- Existing trees on property; note those to be removed
- Fence bollards, barriers or walls; indicate material of construction and height
- Patios, walkways, existing and proposed sidewalks
- Proposed pad and finished floor elevations
- Signature of preparer (two copies must be wet-stamped)

FLOOR PLAN (see sample on pg. 8):

- Dimensions and use of all existing and proposed rooms and/or areas inside buildings

ELEVATIONS SHALL SHOW ALL SIDES OF BUILDING, INCLUDING:

- Windows, doors
- Rooftop equipment
- Types of siding and roofing materials
- Dimensions of all elements, including height of structures
- Roof vents: show compliance with Sec. R806 CRC

TRUSS PLANS & CALCULATIONS (if applicable):

- Truss layout plan with truss member identification corresponding to each truss
- Connection details
- Lateral bracing details
- Project designer approval

ARCHITECTURAL & STRUCTURAL PLANS:

- Foundation and structural floor framing plans; include details of footings, piers, and grade beams
- Architectural floor plan(s), dimensioned, will all openings listed as to size and operation. If it is an addition, show all rooms adjoining the new addition and their window sizes
- Roof plan; show eaves, overhangs, rakes and gables, size of rafters, sheathing material, roofing material, etc.
- A cross-section of each structural system, detailing all structural connections
- Structural second-floor, ceiling-joist, and rafter plans
- Structural systems and materials listing
- Details to include:
    - Fireplace: masonry
    - Post and girder intersections
    - If applicable, stairway rise and run, framing, attachment, and dimensions of members

PLUMBING, MECHANICAL & ELECTRICAL SHEETS:

- Location of all plumbing fixtures
- Location of all mechanical units, ducts, and registers
- Location of all electrical outlets, switches, lights, arc fault and G.F.C.I. outlets, smoke detectors, and service and sub-panel locations and sizes

TITLE 24 ENERGY DOCUMENTS:

- CF-1R ADD form with required signatures if addition is under 1,000 square-feet.
- CF-1R form with required signatures if addition is over 1,000 square-feet.
- Integrate MF-1R (mandatory measures) into plans
- Heating/cooling calculations and equipment listings

GRADING PLAN (if required):

- Existing and proposed grading plans
- Pad elevations ground slope drainage scheme and topographic plan drawn to 1'-0" contours
- Retaining walls and drainage systems, existing and proposed

SETBACK AND LOT COVERAGE REQUIREMENTS

This overview is provided for your reference only. *Prior to building any structure or making an addition or modification to any existing structure, check with the Development Services Department at (209) 456-8500 regarding minimum required distances from property lines and other structures, as well as finding the location of any easements.*

LOT COVERAGE:

The maximum area of a lot that may be covered by roof structures (house, patio, garage, carport, sheds, etc.) is sixty (60) percent.

PROPERTY LINE:

Contact the Planning Division for property line setbacks. The back edge of the sidewalk is NOT the property line. The property line is normally 2 feet in back of the sidewalk.

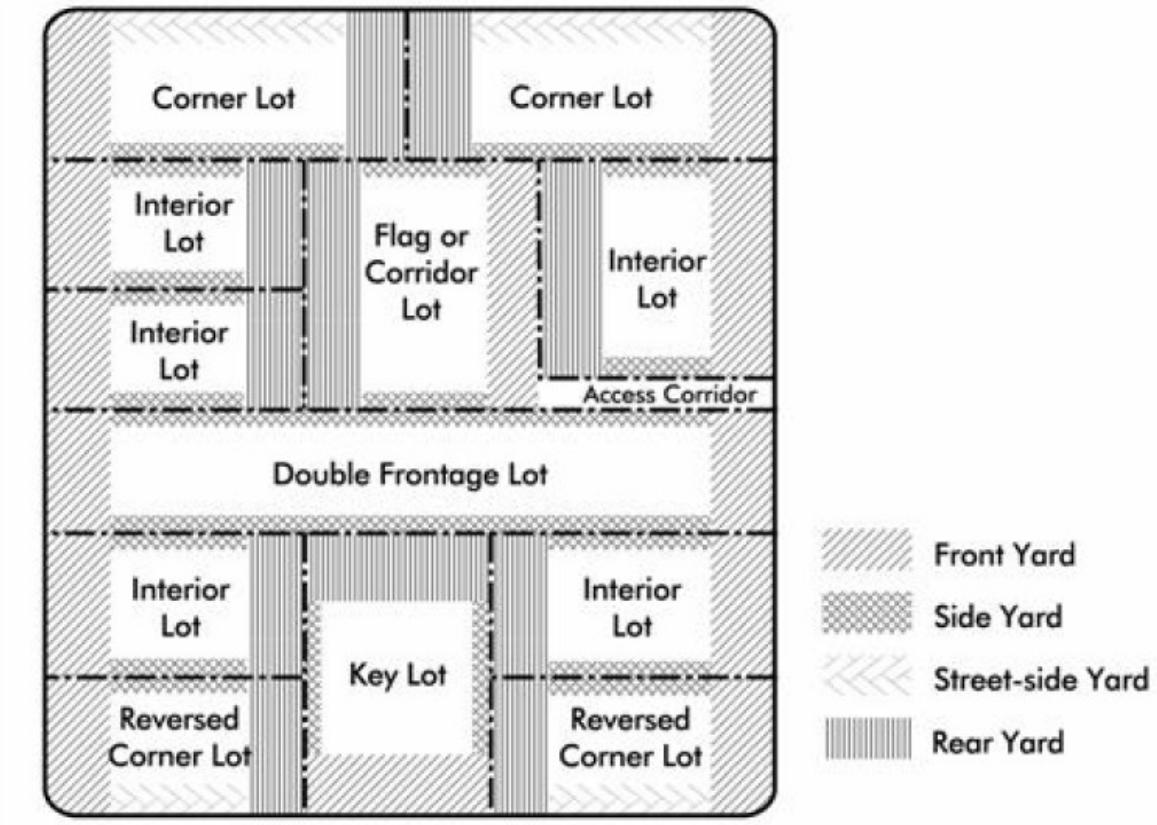
DRIVEWAYS:

Driveways shall be a minimum of 20 feet in length, from carport or garage to property line.

CORNER LOT DRIVEWAYS:

Driveways shall not be located closer than 20 feet to radius return.

FIGURE 17.100.060-3 LOT TYPES



REQUIRED INSPECTIONS

When you are ready for an inspection, call the Building Safety Division's 24-hour inspection recorder at (209) 456-8552. You will be asked to leave your permit number, job site address, type of inspection being requested, date for which you wish to schedule the inspection, and your contact information. Please speak slowly and clearly. Requests left by 3:30 p.m. will be scheduled for the next business day; requests left after 3:30 p.m. will be scheduled for the second following business day.

The approved set of plans, including structural calculations, truss calculations, and/or energy calculations, must be on-site for each inspection. The Inspection Record card must be posted for the inspector's signature.

If the inspector approves the work, the Inspection Record card will be initialed and dated. If the work is not approved, the inspector will leave a correction notice stating which corrections are needed. It is the permit-holder's responsibility to make the required corrections and request a re-inspection of the work.

THE TYPICAL ORDER OF ON-SITE INSPECTIONS IS AS FOLLOWS:

1. UNDER-SLAB PLUMBING:

Drain lines must be plugged and filled with water through a 10' vertical riser. Water lines must be tested with a pressure of 50 psi or City water street pressure for a minimum of 15 minutes. Property lines should be clearly marked.

2. FOUNDATION:

Trenches must be excavated and reinforcing in place. Forms erected and hold-downs held in place. Property lines should be clearly marked.

3. SLAB INSPECTION:

Gravel, compacted sand or soil must be in place. Mesh or reinforcement must be placed over moisture barrier if required. Pipes penetrating slab must be protected from expansion and breakage.

4. UNDERFLOOR INSPECTION:

Prior to installation of floor sheathing, the drain lines must be plugged and filled with water through a 10' vertical riser. Water lines must be tested with a pressure of 50 psi or City water street pressure for a minimum of 15 minutes. Gas lines must be tested to hold a pressure of 10 psi for 15 minutes. The mechanical duct system must be installed and insulated. All floor framing must be in place.

5. DIAPHRAGM & ROOF NAILING:

If the building has shear panels (walls, roof, floor) a nailing inspection is required prior to covering. All metal connectors must be installed. Plans to state exact size and spacing of nails. Trusses should be completed and ready for inspection at the time of the roof nail inspection and truss plans on the job site. *All framing should be completed prior to scheduling this inspection.*

6. ROUGH FRAME INSPECTION:

All rough plumbing, mechanical and electrical must be complete. Windows, roofing and siding installed (stucco lath installed without stucco). No insulation can be installed.

7. INSULATION INSPECTION:

Only certified or approved insulation may be installed. All gaps around windows and penetrations through plates must be sealed with foam sealant. Underfloor must be accessible to inspector and insulation certificate must be on-site.

8. SHEETROCK NAILING INSPECTION:

Prior to taping and texturing, all sheetrock must be in place and must be inspected and approved. Walls of bathtub/shower areas must have moisture-resistant (green board) sheetrock. Gas lines should be pumped to 15 lbs.

9. LATH INSPECTION:

Sheetrock must be installed prior to lath inspection. All tears and holes in lath must be patched or sealed.

10. FINAL INSPECTION:

Structure must be completely finished and ready for occupancy. Electric service must be energized.

11. ELECTRIC METER TAGGING:

(If upgrading service)

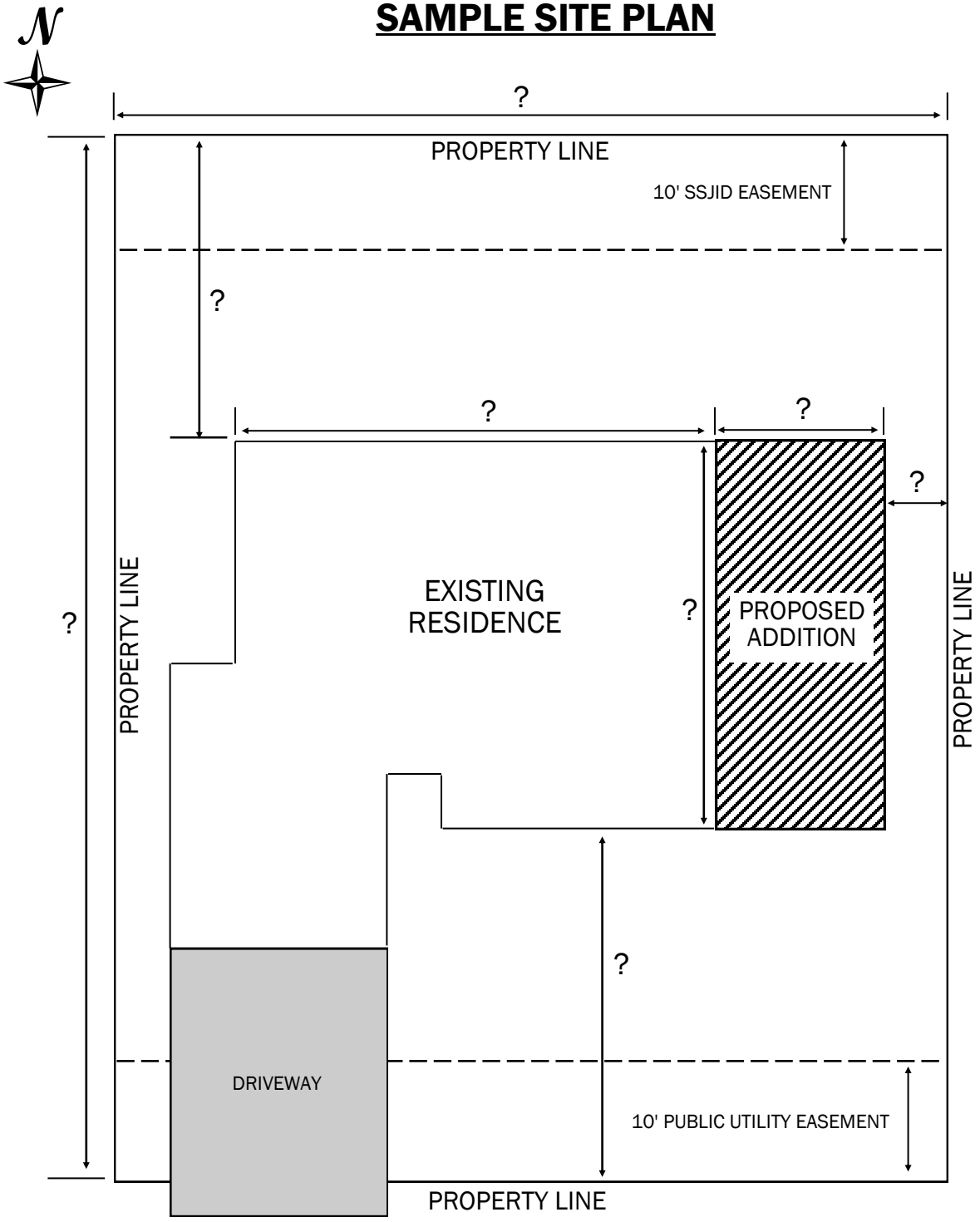
Method of grounding (Ufer) must be visible for inspection. If no Ufer ground available, must install two (2) 5/8" ground rods spaced a minimum of six feet apart. When approved, the inspector will leave a clearance tag on/in the panel box and a card for the applicant to fax to PG&E.*

12. GAS METER TAGGING:

The gas test must be approved prior to requesting a gas tag. At least one appliance must be installed. If approved, the inspector will leave a clearance tag on the gas line at the meter location and will give the applicant a PG&E clearance card. A clearance tag will not be issued unless the building has received a final inspection approval or an application for "Temporary Clearance for Connection of Utilities" has been submitted and approved. The submittal for "Temporary Clearance for Connection of Utilities" must comply with the utility release policy and must be accompanied by a letter stating the reason for the early release of the gas utility.

*Release forms may be faxed to: (800) 700-5722.

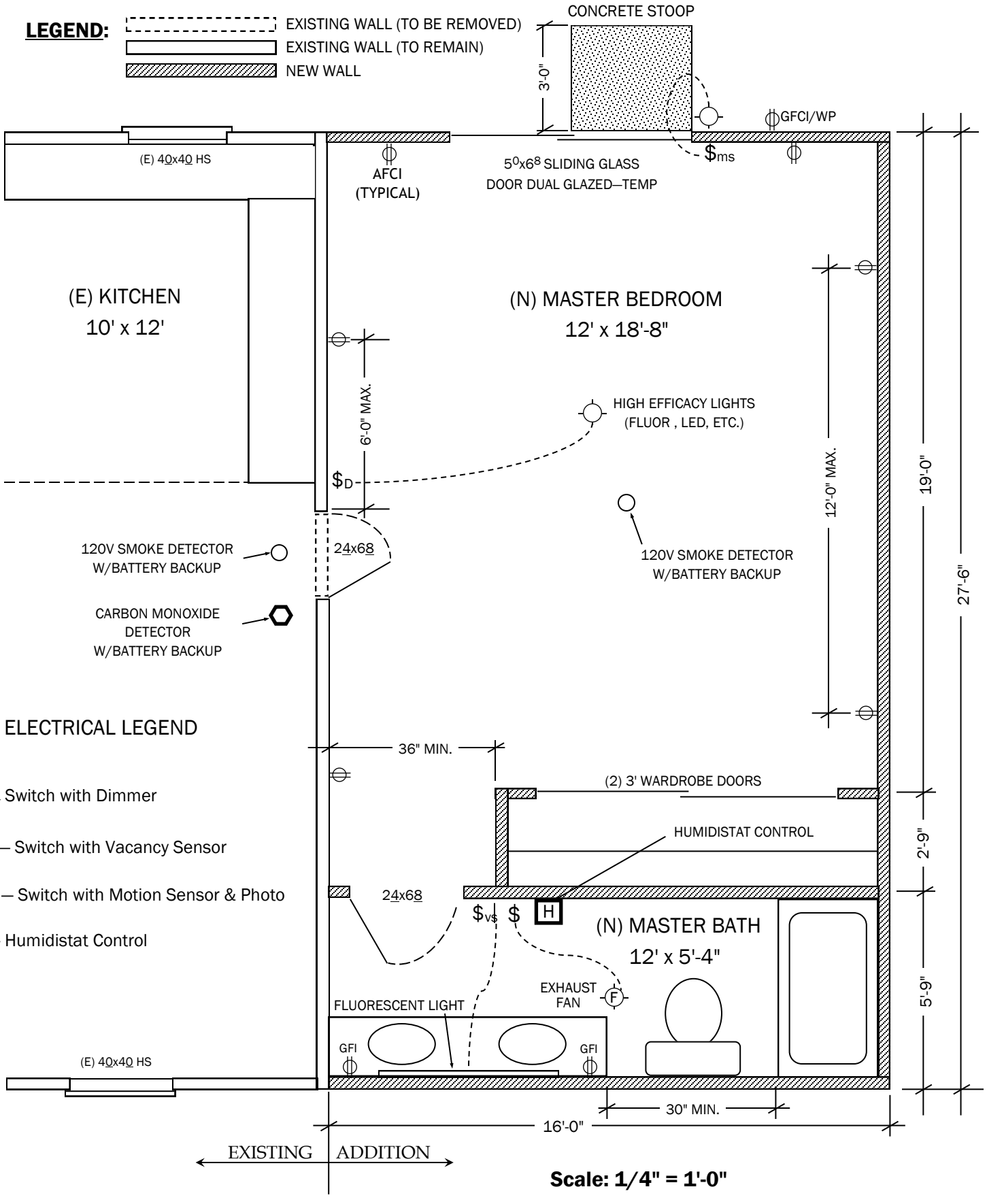
SAMPLE SITE PLAN



HOUSE NUMBER AND STREET NAME

1) Show lot dimensions and total square footage of all covered areas.
2) Check with the Planning Division for building setback requirements.
3) Check with Public Works for location of any utility easements.

SAMPLE FLOOR PLAN/ELECTRICAL PLAN



NATURAL LIGHT AND VENTILATION REQUIREMENTS
(Windows, Doors and Skylights)

NATURAL LIGHT:
Habitable rooms within a dwelling unit shall be provided with natural light by means of exterior glazed openings with an area not less than 8% of the floor area of such rooms. *(2019 CRC R303.1)*

VENTILATION:
Habitable rooms within a dwelling unit shall be provided with natural ventilation by means of openable exterior openings with an area of not less than 4% of the floor area being ventilated. *(2019 CRC R303.1)*

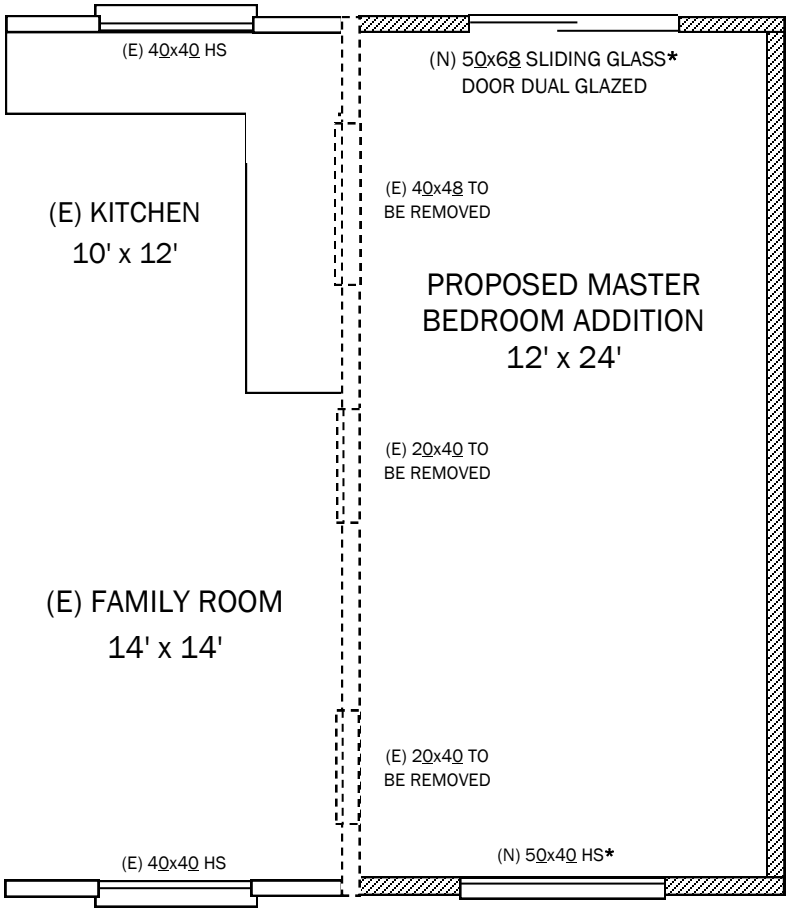
***EMERGENCY ESCAPE & RESCUE OPENINGS (CRC SECTION R310.2)**
Minimum net clear opening of 5.7 sqft per; minimum net clear opening height of 24 inches; minimum net clear opening width of 20 inches and the bottom of the emergency escape and rescue clear opening shall not be greater than 44 inches measured from the floor.

ROOMS ADJOINING PROPOSED ADDITION:
If there are windows and doors that are affected by the addition, rooms adjoining the addition need to be reviewed for lighting and ventilation requirements the same as for new construction.

NOTE: Provide dimensioned floor plans of rooms adjoining the addition. Indicate any windows and doors (including their sizes and method of opening) which are affected by the addition.

SAMPLE ANALYSIS

LEGEND: EXISTING WALL (TO BE REMOVED)
EXISTING WALL (TO REMAIN)
NEW WALL



PROPOSED ADDITION: 12'x24' = 288 SQ. FT.

LIGHTING REQUIREMENT:
288 SQ. FT. x .08 ..... = 23.04 SQ. FT.
VENTILATION REQUIREMENT:
288 SQ. FT. x .04 ..... = 11.52 SQ. FT.
PROPOSED LIGHTING:
5' x 4' + 5' x 6.67 = 53.35 SQ. FT. ..... > 23.04 SQ. FT. ***OK!***
PROPOSED VENTILATION:
2.5' x 4' + 2.5' x 6.67 = 26.68 SQ. FT. . > 11.52 SQ. FT. ***OK!***

EXISTING KITCHEN: 10'x12' = 120 SQ. FT.

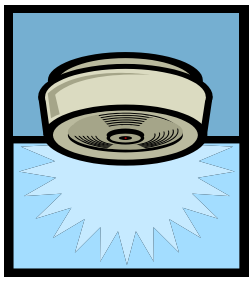
LIGHTING REQUIREMENT:
120 SQ. FT. x .08 ..... = 9.6 SQ. FT.
VENTILATION REQUIREMENT:
120 SQ. FT. x .04 ..... = 4.8 SQ. FT.
(E) WINDOW:
LIGHTING: 4' x 4' = 16 SQ. FT..... > 9.6 SQ. FT. ***OK!***
VENTILATION: 2' x 4' = 8 SQ. FT. ..... > 4.8 SQ. FT. ***OK!***

EXISTING FAMILY RM: 14'x14' = 196 SQ. FT.

LIGHTING REQUIREMENT:
196 SQ. FT. x .08 .....= 15.68 SQ. FT.
VENTILATION REQUIREMENT:
196 SQ. FT. x .04 ..... = 7.84 SQ. FT.
(E) WINDOW:
LIGHTING: 4' x 4' = 16 SQ. FT.....> 15.68 SQ. FT. ***OK!***
VENTILATION: 2' x 4' = 8 SQ. FT. .....>7.84 SQ. FT. ***OK!***

Based on these calculations, no additional windows or enlarging of the existing window is required.

Smoke Detectors and Carbon Monoxide Detectors

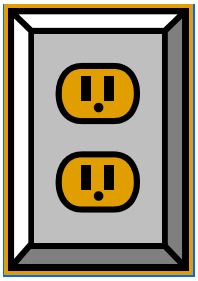


- Smoke detectors shall be installed in every sleeping room, in the hallway outside any sleeping room and on every story including basements and habitable attics.
- Smoke detectors in new bedrooms or hallways must be connected to the house wiring and must also have a battery backup. They shall be interconnected when accessible.
- Carbon Monoxide detectors are required outside sleeping area and on every story. These detectors are also to be interconnected.
- Show locations of smoke and carbon monoxide detectors on the plans.

ELECTRICAL RECEPTACLES, SWITCHES & FIXTURES

Show locations of all electrical receptacles, switches, and fixtures.

A. Receptacles must be spaced not more than 12 feet apart, with the first outlet not more than six (6) feet from the door, fireplace, or similar opening. Every wall section at least two (2) feet wide or greater requires at least one receptacle. Note: Fixed glazing is considered a wall section.



B. At least one receptacle outlet shall be installed in hallways ten (10) feet or more in length.

C. The following receptacles shall be Ground-Fault Circuit-Interrupter Protection (GFCI)
   Bathrooms
   Outdoors
   Garages and also accessory buildings that have a floor located at or below grade level.
   Crawl spaces at or below grade level and unfinished basements
   Kitchens—where the receptacles are installed to serve the countertop surfaces
   Sinks—where receptacles are installed within 6' of the outside edge of the sink.
   Laundry areas

D. Receptacles in kitchens and dining areas shall be installed at each counter space so that no point along the wall line is more than 24 inches, measured horizontally from a receptacle outlet in that space. Island and peninsular counter tops 12 inches or wider shall have at least one receptacle.

E. All rooms, halls, and exterior doors must have a switch controlling a light fixture or receptacle.

F. Arc-fault circuit interrupter (AFCI) shall be provided in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas or similar rooms.

G. All receptacles shall be listed tamper-resistant. CEC 406.12(A).

HIGH-EFFICACY GENERAL LIGHTING

Provide high-efficacy general lighting throughout (see exceptions in the CE$_n$C 150(k). High-efficacy lighting shall be at least 30 lumens per watt (see Table 150.0-A) be switched separately and shall be controlled by the most accessible switch location.

Refer to the information on the following two pages for information on California's Title 24 Residential Lighting Standards.

OVERVIEW of 2019 TITLE 24 LIGHTING STANDARDS

Kitchen	***All luminaires must be high-efficacy and controlled by a vacancy sensor or dimmer.***
Bathroom Garage Laundry Rm Utility Rm	***Bathroom—All luminaires must be high efficacy and at least one must be controlled by a vacancy sensor; additional maybe controlled by either a vacancy sensor or a dimmer.*** ***Garage, Laundry Rm & Utility Rm—All luminaires must be high efficacy and must be controlled by vacancy sensors.***
All Other Interior Rooms (Living Room, Bedrooms, Dining Room, Hallways, etc.) except closets less than 70 sq. ft.	***All luminaires must be high-efficacy and must be controlled by vacancy sensors or by dimmers.***
Outdoor lighting attached to buildings	***All luminaires must be high-efficacy and must be controlled by a motion-sensor and photo cell, astronomical time clock or energy management control system (EMCS)***

FOR ALL APPLICATIONS:

- Electronic ballasts for all fluorescent lamps rated 13 watts or greater
- Recessed luminaires in all insulated ceilings approved for zero-clearance insulation cover (IC) and certified airtight ASTM E283

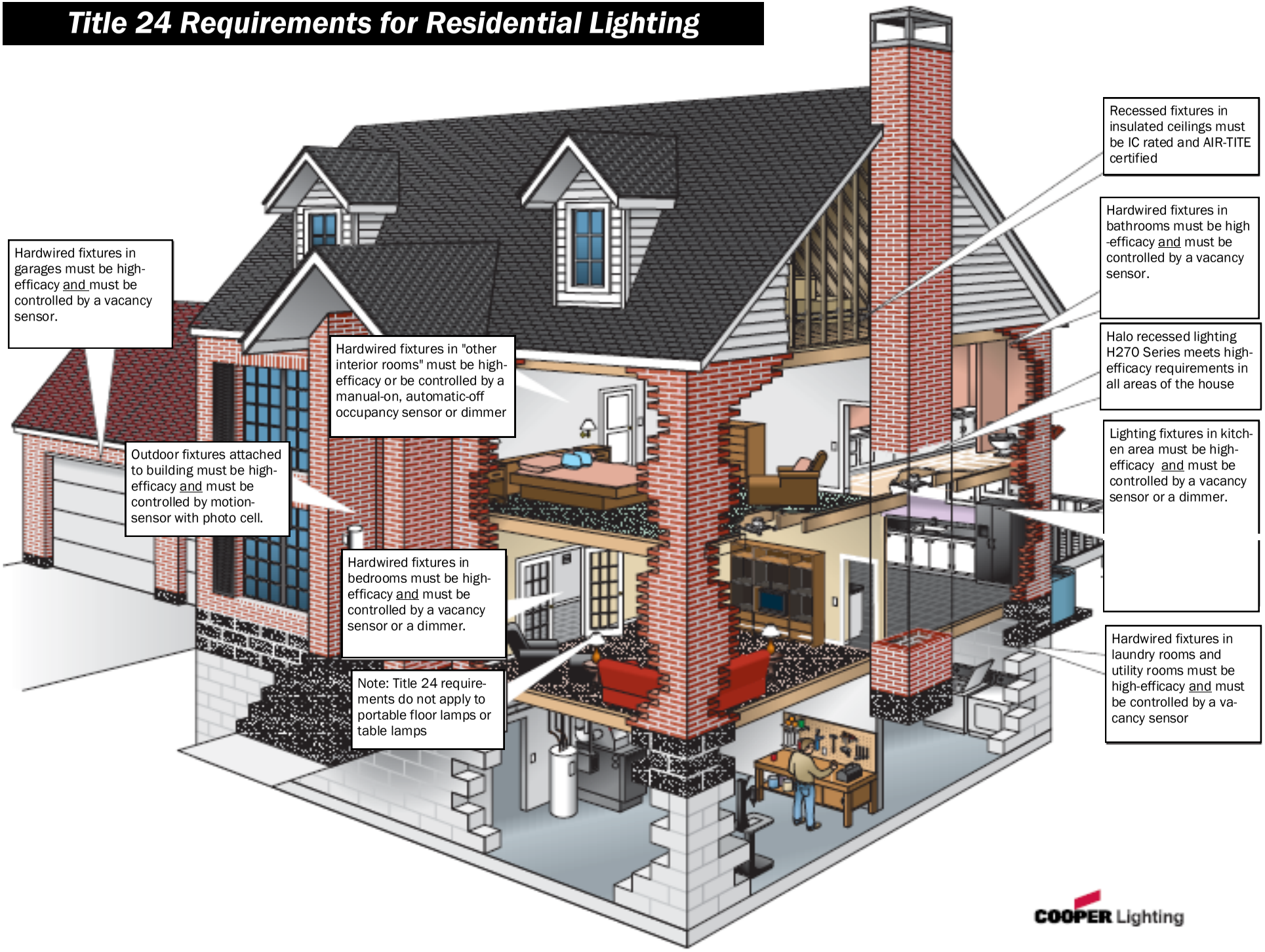
HIGH-EFFICACY FIXTURES

Lamp Power	*Minimum Efficacy Lumens per Watt*	*Compliant Indoor Lamps*	*Compliant Outdoor Lamps*
5 Watts or Less	*30 lm/W*	• *Compact Fluorescent* • *Fluorescent*	• *Metal Halide* • *HPS* • *Compact Fluorescent*
>5 Watts to 15 Watts	*45 lm/W*	• *Compact Fluorescent* • *Fluorescent*	• *Metal Halide* • *HPS* • *Compact Fluorescent*
>15 Watts to 40 watts	*60 lm/W*	• *Compact Fluorescent* • *Fluorescent*	• *Metal Halide* • *HPS* • *Compact Fluorescent*
Over 40 watts	*90 lm/W*	• *Compact Fluorescent* • *Fluorescent*	• *Metal Halide* • *HPS* • *Compact Fluorescent*

Note:

• *High-efficacy luminaires may not contain medium screw-base sockets. Exception: outdoor metal halide or high-pressure sodium (HPS) high-intensity discharge luminaires with electromagnetic ballast may have medium screw-base sockets if minimum efficacy and motion-sensor/ photo-control requirements are met.*

Title 24 Requirements for Residential Lighting



COOPER Lighting

PRESCRIPTIVE ENERGY STANDARDS FOR ROOM ADDITIONS

REQUIREMENTS FOR ADDITIONS OF ≤400 sq. ft.	REQUIREMENTS FOR ADDITIONS OF >400 TO ≤700 sq. ft.	REQUIREMENTS FOR ADDITIONS OF >700 sq.ft.[1]
BUILDING INSULATION Roof = R-38 Walls = R-15(2x4)/R-21(2x6) Crawl Space = R-19 (U=.037) Window U = 0.30 (Low E) SHGC = 0.23	**BUILDING INSULATION** Roof = R-38 Walls = R-15(2x4)/R-21(2x6) Crawl Space = R-19 (U=.037) Window U = 0.30 (Low E) SHGC = 0.23	**BUILDING INSULATION** Roof = R-38 Walls = R-15(2x4) or R-21(2x6) Crawl Space = R-19 (U=.037) Window U = 0.30 (Low E) SHGC = 0.23
Radiant Barrier Required (Above Attic Spaces)	**Radiant Barrier Required (Above Attic Spaces)**	**Radiant Barrier Required (Above Attic Spaces)**
HEATING & COOLING* AFUE = 80% SEER Rating = 14 SEER EER = 12.2 Duct Sealing = Required**	**HEATING & COOLING*** AFUE = 80% SEER Rating = 14 SEER EER = 12.2 Duct Sealing = Required**	**HEATING & COOLING*** AFUE = 80% SEER Rating = 14 SEER EER = 12.2 Duct Sealing = Required**
***Refrigerant Charge or Charge Indicator Display—Required **	***Refrigerant Charge or Charge Indicator Display—Required**	***Refrigerant Charge or Charge Indicator Display—Required**
MAXIMUM GLAZING **(Dual Glaze)** ≤ 75 sq. ft. or 30% x CFA, whichever is greater **WEST ORIENTATION GLAZING MAXIMUM** 60 sqft. CFA—Conditioned Floor Area	**MAXIMUM GLAZING** **(Dual Glaze)** ≤ 120 sq. ft. or 25% x CFA, whichever is greater **WEST ORIENTATION GLAZING MAXIMUM** 60 sqft. CFA—Conditioned Floor Area	**MAXIMUM GLAZING** **(Dual Glaze)** ≤ 175 sq. ft. or 20% x CFA, whichever is greater **WEST ORIENTATION GLAZING MAXIMUM** 70 sqft. or 5% x CFA, whichever is greater CFA—Conditioned Floor Area

Cool Roof - Steep Sloped (>2:12):
Aged Solar Reflectance = 0.20 ; Thermal Emittance = 0.75 (Exception: Addition ≤300 sqft.)

Water Heater—Minimum Energy Factor
Gas Storage ≤ 55 gallons : Currently = 0.67 - (.0019 x storage volume)
(40 gal = 0.594 EF and 50 gal = 0.575 EF)

* If heating and cooling system is left unchanged, compliance with the standards is not required.

** If more than 40 feet of new or replacement ducts are installed in unconditioned space: All duct insulation, duct system sealing, and HERS verification are required.

[1] QII applies to the addition > 1000 sq. ft.

A. GENERAL INFORMATION:

PROJECT LOCATION: _____

PROJECT NAME/SCOPE: _____

BUILDING FRONT ORIENTATION (NSWE): _____ **Total Conditioned Floor Area (CFA):** _____

Prepared By: _____

Signature: _____ **Date:** _____

B. FENESTRATIONS:

Window Size	Orientation (NWSE)	Fenestrations Area (Sqft)	Proposed U Factor	Proposed SHGC	Comments
Total Fenestrations		A.			
Total (W) Fenestrations		B.			

C. COMPLIANCE CALCULATIONS:

Maximum Glazing Allowed:

1. **(CFA) x % (30% for ≤ 400sqft; 25% for >400sqft to ≤ 700sqft & 20% for >700 sqft.**

   _____X_____ = _____

2. **75 sqft for ≤ 400sqft; 120 sqft for > 400sqft to ≤ 700sqft & 175 sqft for >700 sqft.**

3. **_____ (Whichever is greater between 1 and 2 above)**

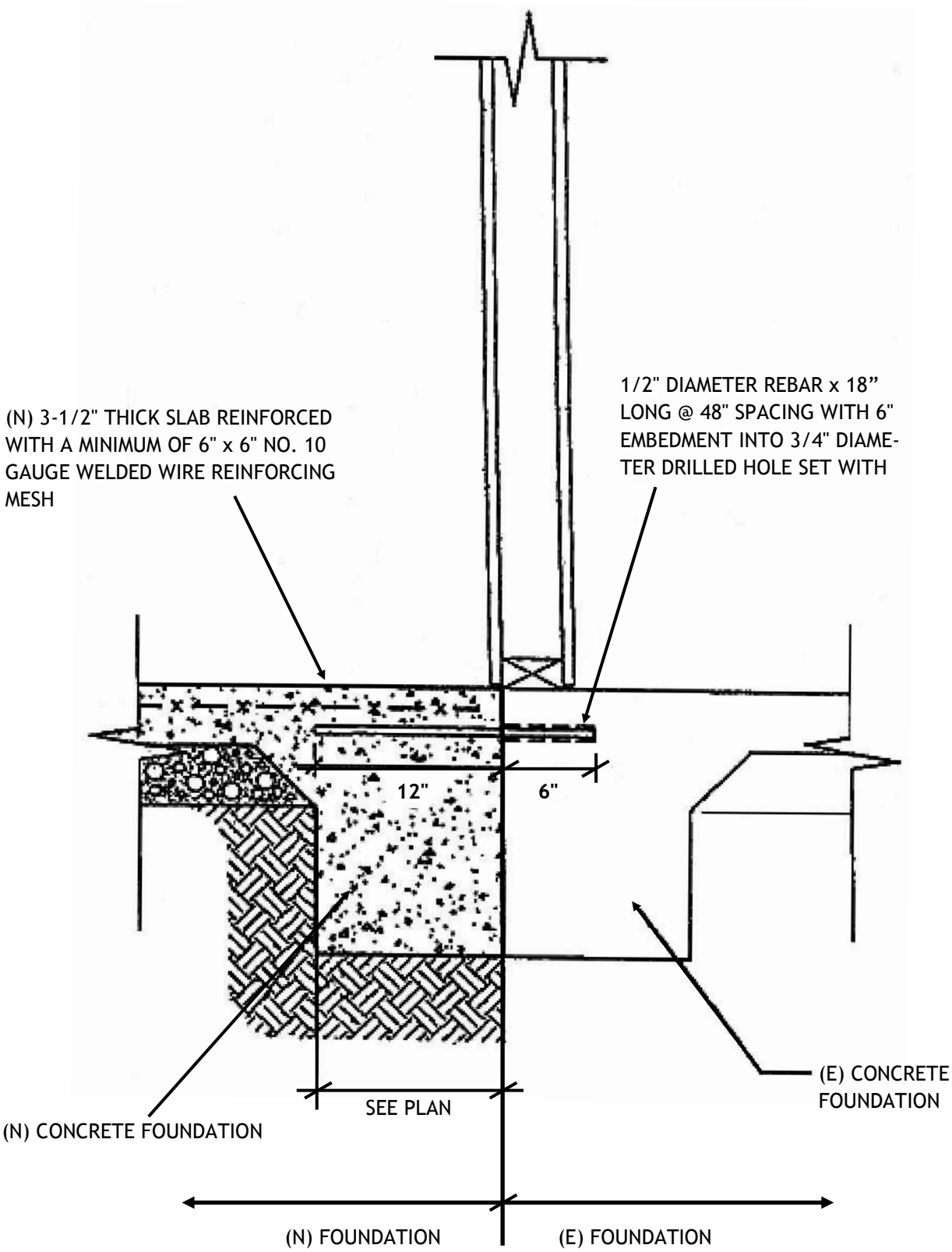
   ≥ than _____ Total Fenestration (A)

Maximum West Glazing Allowed: _____ (60sqft for ≤ 700sqft & 70 sqft for >700 sqft.)

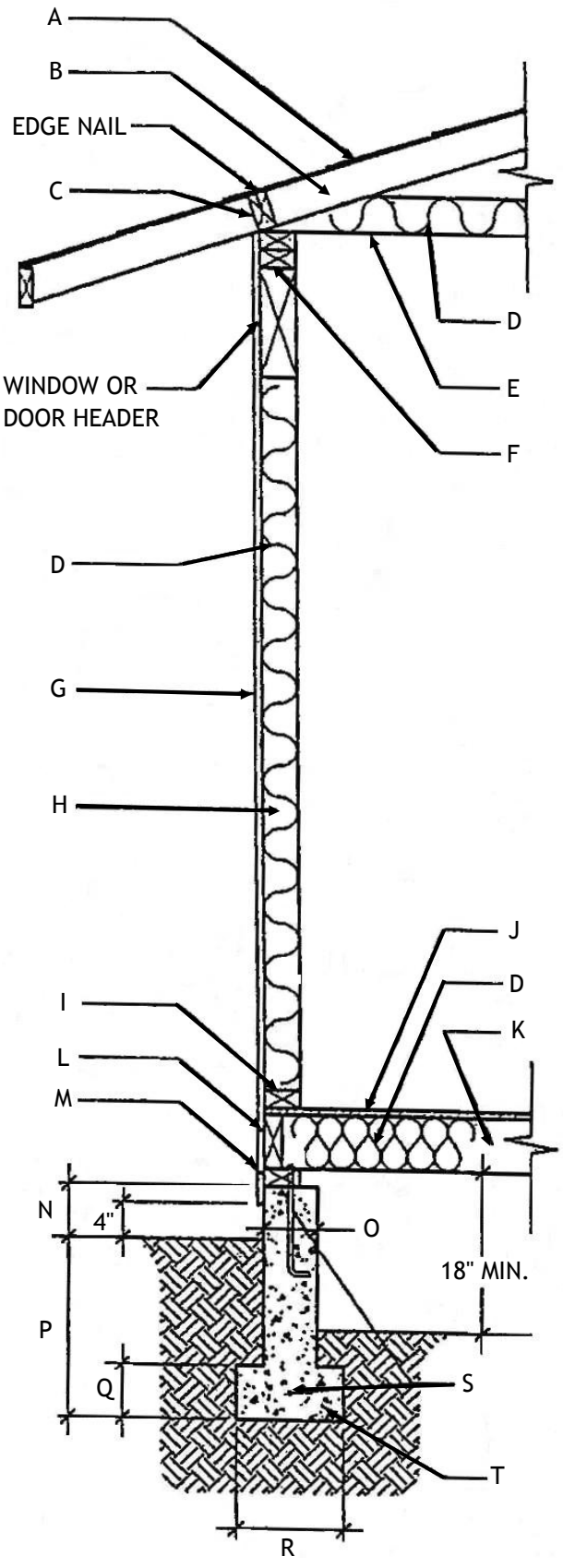
≥ than _____ Total (W Orientation) Fenestrations (B)

SEE PAGE 12 FOR OTHER CIRCLED APPLICABLE ENERGY REQUIREMENTS.

ATTACHMENT OF NEW FOOTING TO EXISTING FOOTING



RAISED-FLOOR CONSTRUCTION SECTION



A. ROOF COVERING ON 15# FELT PAPER ON PLYWOOD OR 1" x 4" SKIP SHEATHING (WOOD SHAKE OR WOOD SHINGLE ONLY). PLYWOOD EDGE NAIL 8d @ 6" O.C.
_____" THICK, _____ SHEATHING

B. MANUFACTURED TRUSSES OR RAFTERS.
IF TRUSSES ARE USED, PROVIDE TRUSS CALCULATIONS.
RAFTERS: 2" x _____" @ _____ O.C.
(REFER TO ALLOWABLE SPAN FOR RAFTERS)

C. BLOCKING OR EAVE VENTS WITH 16d NAILS @ 8" O.C. TO DBL. TOP PLATE (Drill for venting as required)

D. MINIMUM REQUIRED INSULATION OR BETTER.
CEILING: R-_____, WALL: R-_____,
FLOOR: R-_____ (SEE "PRESCRIPTIVE ENERGY STANDARDS" PAGE FOR REQUIRED INSULATION)
(Maintain 1" air space between insulation & roof deck)

E. CEILING JOIST: 2" x _____ @ _____" O.C.
(REFER TO ALLOWABLE SPAN FOR CEILING JOISTS)

F. DOUBLE TOP PLATE (MIN. 48" SPLICE) WITH 12 (16d) NAILS @ EACH SIDE OF SPLICE

G. SIDING MATERIAL: _____

H. STUD WALL WITH 2" x _____" STUDS @ 16" O.C.

I. WALL SILL PLATE WITH 16d NAILS @ 8" O.C. TO RIM JOIST

J. FLOOR SHEATHING: _____" THICK, _____ SHEATHING

K. FLOOR JOISTS OR FLOOR TRUSSES.
JOIST: 2" x _____ @ _____" O.C.
(REFER TO ALLOWABLE SPAN FOR FLOOR JOISTS)

L. 2" x _____" RIM JOIST WITH 16d NAILS @ 8" O.C. TO BOTTOM PLATE

M. BOTTOM PLATE (PRESSURE-TREATED WHEN IN CONTACT WITH CONCRETE) WITH 1/2" x 10" ANCHOR BOLT @ 6' O.C. MAX (MIN. TWO BOLTS PER SILL SECTION)

N. 8" MINIMUM CLEARANCE TO GRADE

O. 7-1/2" MINIMUM

P. 12" FOR ONE-STORY (18" FOR TWO-STORY)

Q. 6" FOR ONE-STORY (7" FOR TWO-STORY)

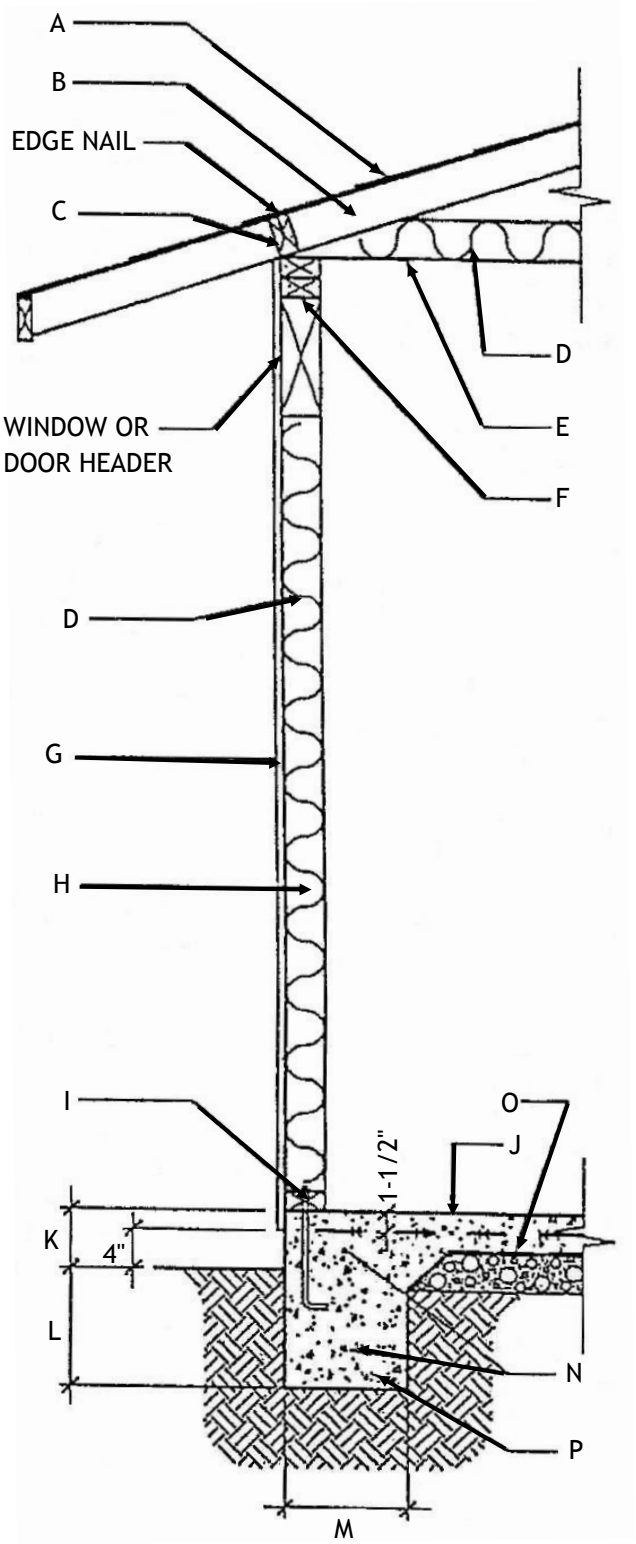
R. 12" FOR ONE-STORY (15" FOR TWO-STORY)

S. (2) #4 REINFORCING BARS (CONTINUOUS)

T. CONCRETE FOUNDATION

Note: Underfloor Ventilation = 1 sqft for each 150 sqft of underfloor area.

SLAB-FLOOR CONSTRUCTION FOOTING



A. ROOF COVERING ON 15# FELT PAPER ON PLYWOOD OR 1" x 4" SKIP SHEATHING (WOOD SHAKE OR WOOD SHINGLE ONLY). PLYWOOD EDGE NAIL 8d @ 6" O.C.
_____" THICK, _____ SHEATHING

B. MANUFACTURED TRUSSES OR RAFTERS.
IF TRUSSES ARE USED, PROVIDE TRUSS CALCULATIONS.
RAFTERS: 2" x _____" @ _____ O.C.
(REFER TO ALLOWABLE SPAN FOR RAFTERS)

C. BLOCKING OR EAVE VENTS WITH 16d NAILS @ 8" O.C. TO DBL. TOP PLATE (Drill for venting as required)

D. MINIMUM REQUIRED INSULATION OR BETTER.
CEILING: R-_____, WALL: R-_____,
(SEE "PRESCRIPTIVE ENERGY STANDARDS" PAGE FOR REQUIRED INSULATION)
Maintain 1" air space between insulation and roof deck

E. CEILING JOIST: 2" x _____ @ _____" O.C.
(REFER TO ALLOWABLE SPAN FOR CEILING JOISTS)

F. DOUBLE TOP PLATE (MIN. 48" SPLICE) WITH 12 (16d) NAILS @ EACH SIDE OF SPLICE

G. SIDING MATERIAL: _____

H. STUD WALL WITH 2" x _____" STUDS @ 16" O.C.

I. BOTTOM PLATE (PRESSURE-TREATED WHEN IN CONTACT WITH CONCRETE) WITH 1/2" x 10" ANCHOR BOLT @ 6' O.C. MAX (MIN. TWO BOLTS PER SILL SECTION)

J. 3-1/2" CONCRETE SLAB 2,500 PSI MINIMUM REINFORCED WITH A MINIMUM OF 6" x 6" #10 GAUGE WELDED WIRE REINFORCING MESH

K. 8" MINIMUM CLEARANCE TO GRADE

L. 12" FOR ONE-STORY. 18" FOR TWO-STORY.

M. 12" FOR ONE-STORY. 15" FOR TWO-STORY.

N. (2) #4 REINFORCING BARS (CONTINUOUS)

O. VAPOR BARRIER

P. CONCRETE FOUNDATION

SPAN TABLES AND ALLOWABLE LOADS

2019 CRC FOR RESIDENTIAL LIGHT-FRAME ONLY

FLOOR JOISTS
Table R502.3.1(2) - LL=40psf/DL=10psf

SIZE & SPACING		GRADE #1	GRADE #2
2 x 6	@ 12" O.C.	10' 11"	10' 9"
	@ 16" O.C.	9' 11"	9' 9"
	@ 24" O.C.	8' 8"	8' 3"
2 x 8	@ 12" O.C.	14' 5"	14' 2"
	@ 16" O.C.	13' 1"	12' 9"
	@ 24" O.C.	11' 0"	10' 5"
2 x 10	@ 12" O.C.	18' 5"	18' 0"
	@ 16" O.C.	16' 5"	15' 7"
	@ 24" O.C.	13' 5"	12' 9"
2 x 12	@ 12" O.C.	22' 0"	20' 11"
	@ 16" O.C.	19' 1"	18' 1"
	@ 24" O.C.	15' 7"	14' 9"

CEILING JOISTS—No Storage
Table R802.5.1(1) - LL=10psf/DL=5psf

SIZE & SPACING		GRADE #1	GRADE #2
2 x 4	@ 12" O.C.	12' 8"	12' 5"
	@ 16" O.C.	11' 6"	11' 3"
	@ 24" O.C.	10' 0"	9' 10"
2 x 6	@ 12" O.C.	19' 11"	19' 6"
	@ 16" O.C.	18' 1"	17' 8"
	@ 24" O.C.	15' 9"	15' 0"
2 x 8	@ 12" O.C.	Note A	25' 8"
	@ 16" O.C.	23' 10"	23' 4"
	@ 24" O.C.	20' 1"	19' 1"
2 x 10	@ 12" O.C.	Note A	Note A
	@ 16" O.C.	Note A	Note A
	@ 24" O.C.	24' 6"	23' 3"

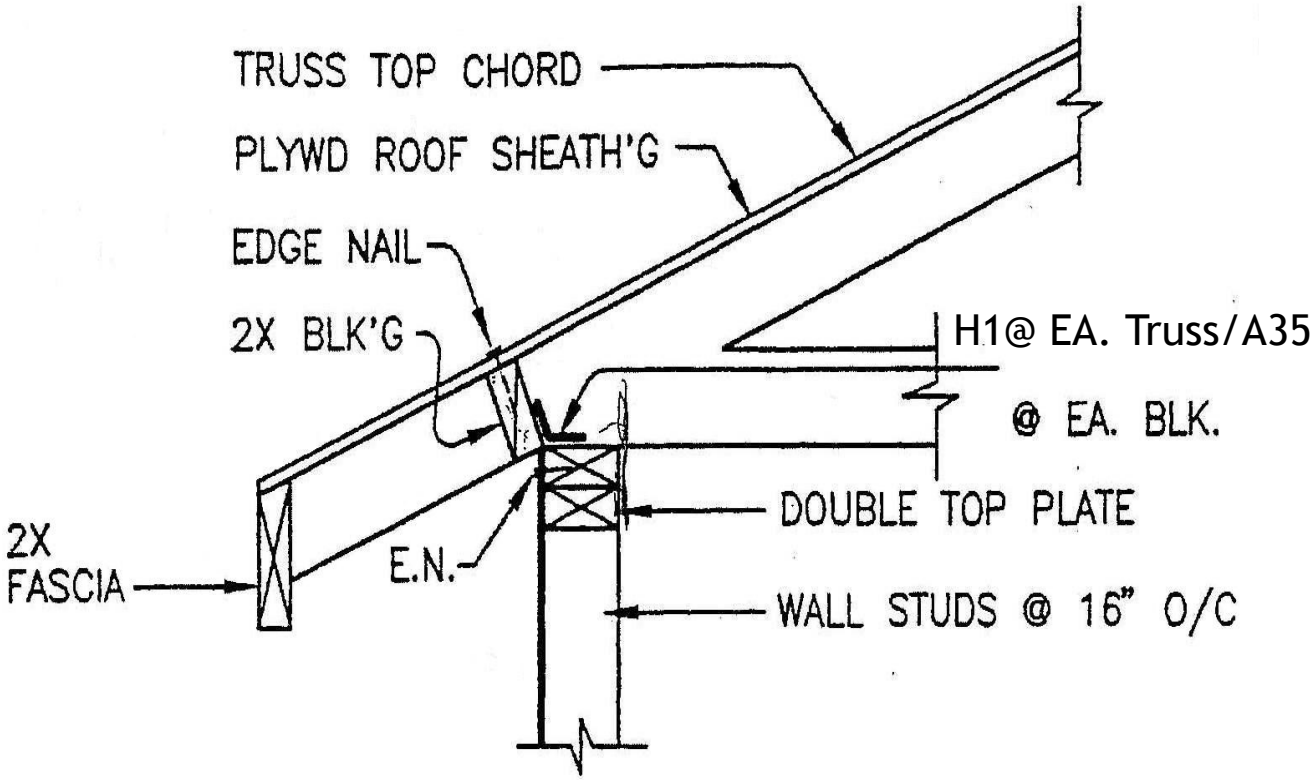
RAFTERS
Table R802.4.1(1) - LL=20 psf/DL=10psf

SIZE & SPACING		GRADE #1	GRADE #2
2 x 4	@ 12" O.C.	11' 1"	10' 10"
	@ 16" O.C.	10' 0"	9' 10"
	@ 24" O.C.	8' 7"	8' 2"
2 x 6	@ 12" O.C.	17' 4"	16' 10"
	@ 16" O.C.	15' 4"	14' 7"
	@ 24" O.C.	12' 6"	11' 11"
2 x 8	@ 12" O.C.	22' 5"	21' 4"
	@ 16" O.C.	19' 5"	18' 5"
	@ 24" O.C.	15' 10"	15' 1"
2 x 10	@ 12" O.C.	Note A	26' 0"
	@ 16" O.C.	23' 9"	22' 6"
	@ 24" O.C.	19' 5"	18' 5"
2 x 12	@ 12" O.C.	Note A	Note A
	@ 16" O.C.	Note A	26' 0"
	@ 24" O.C.	22' 6"	21' 4"

Note A: Span exceeds 26 feet in length. Check sources for availability of lumber in lengths greater than 20 feet.

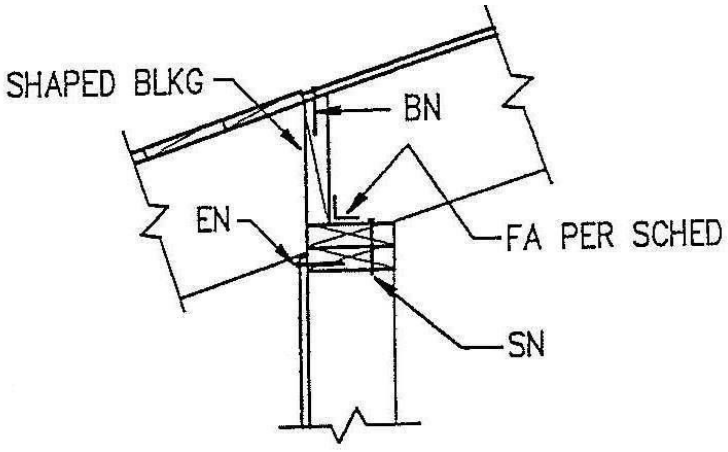
TYPICAL BLOCKING DETAIL

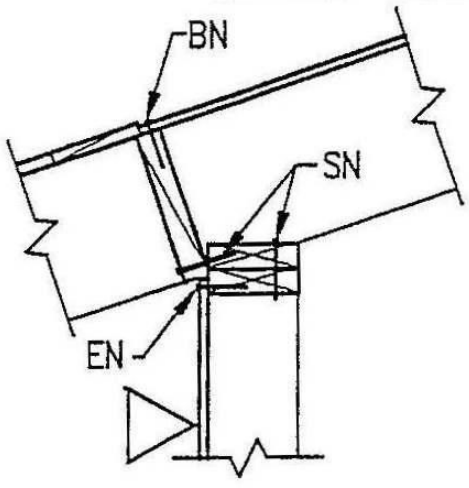
Not to scale



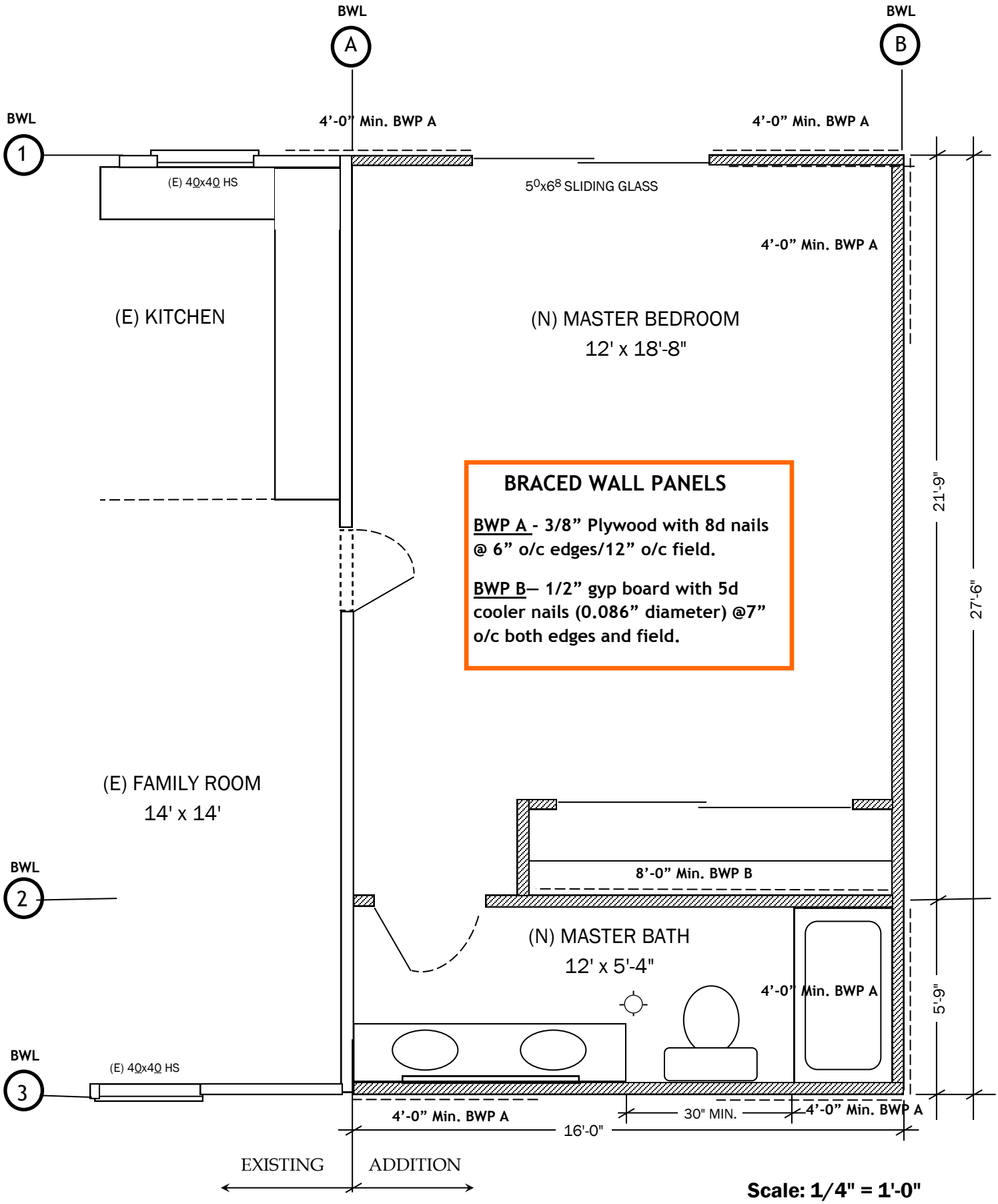
ROOF JOISTS AT PITCHED ROOF

Examples of completed load path





CONVENTIONAL WALL BRACING



CONVENTIONAL WALL BRACING

(CRC SECTION R602.10.4)

Locations of braced wall lines (BWL) and brace wall panels (BWP) shall be shown on the plans.

Buildings shall be braced in accordance with CRC Section R602.10 and shall comply with the following:

1. The length of braced wall line shall be the distance between its ends. The end of a braced wall line shall be the intersection with a perpendicular braced wall line. CRC Section R602.10.1.1.

2. The spacing between parallel braced wall lines shall be in accordance with Table R602.10.1.3. (SDC D_0, D_1 and D_2 = 25'). Exception: up to 35' to allow for a single room not to exceed 900 sq. ft. CRC Section R602.10.1.3.

3. Locations of braced wall panels in SDC D_0, D_1 and D_2: braced wall panel shall be located at each end of a braced wall line. Exception: braced wall panels constructed of method WSP or BV-WSP and continuous sheathing methods as specified in CRC Section R602.10.4 shall be permitted to begin no more than 10 feet from each end of a braced wall line provided each end complies with one of the following: (CRC Section R602.10.2.2.2) (See Figure R602.10.7 on **Page 21**).

    a. 24" min wide panel for method WSP, BV-WSP, CS-WSP, CS-G, CS-PF, and 32" wide panel for method CS-SFB is applied to each side of the building corner as shown in Condition 4 of Figure R602.10.7.

    b. The end of each braced wall panel closest to the end of the braced wall line shall have an 1800# hold-down device fastened to the stud at the edge of the braced wall panel closest to the corner and to the foundation or framing below as shown in Condition 5 of Figure R602.10.7.

    C. For method BV-WSP, hold-down devices shall be provided in accordance with Table R602.10.6.5 at the ends of each braced wall panel.

5. The required length of bracing along each braced wall line shall use the greater value determined from Table R602.10.3(1) or Table R602.10.3(3) and the applicable adjustment factors in Table R602.10.3(2) or Table R602.10.3(4). CRC Section R602.10.3.

6. The distance between adjacent edges of braced wall panels along a braced wall line shall be not greater than 20 feet. CRC Section R602.10.2.2.

7. Braced wall panels may be offset out-of-plane up to 4' from the designated braced wall line provided that the total out-to-out offset of braced wall panels in a braced wall line is not more than 8'. CRC Section R602.10.1.2.

8. Provide an alternate braced wall panel not less than 2'-8" wide where a 48" wide wall is not available. (See alternate braced wall panel detail on **Page 22**).

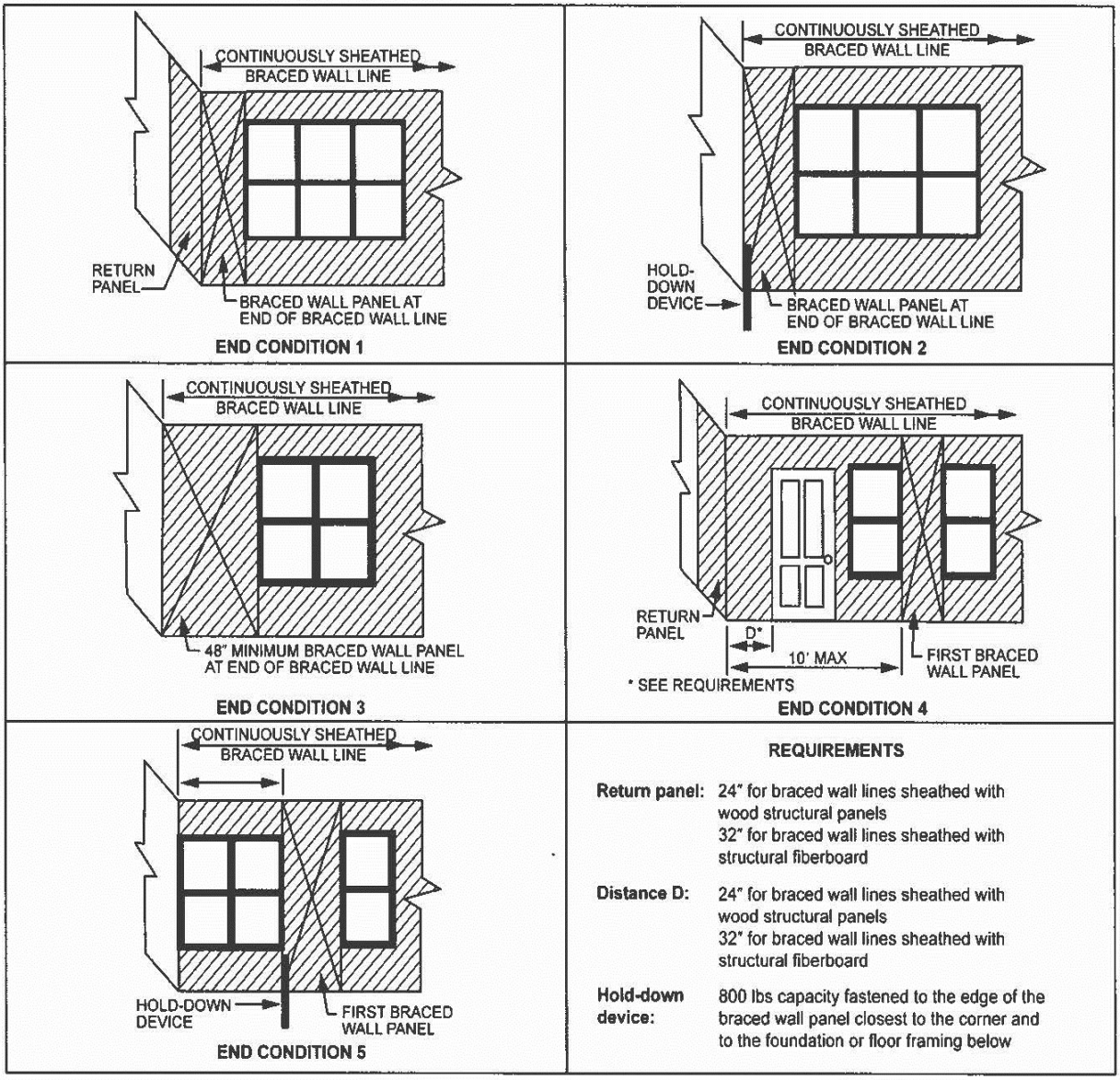
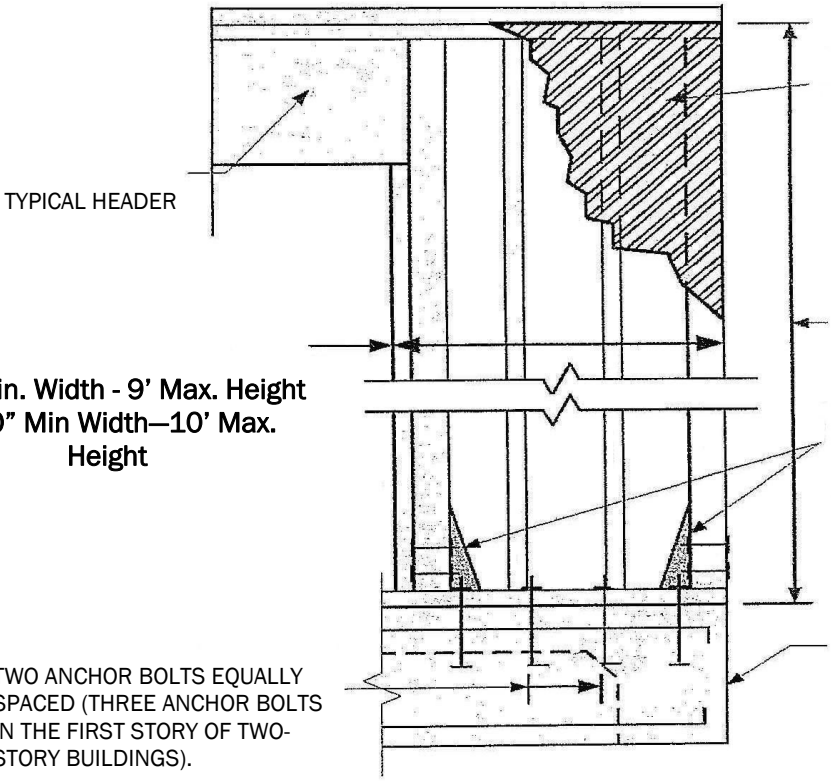


FIGURE R602.10.7
END CONDITIONS FOR BRACED WALL LINES WITH CONTINUOUS SHEATHING

ALTERNATE WALL BRACING (ABW)



PORTAL FRAMES WITH HOLDOWNS (PFH)

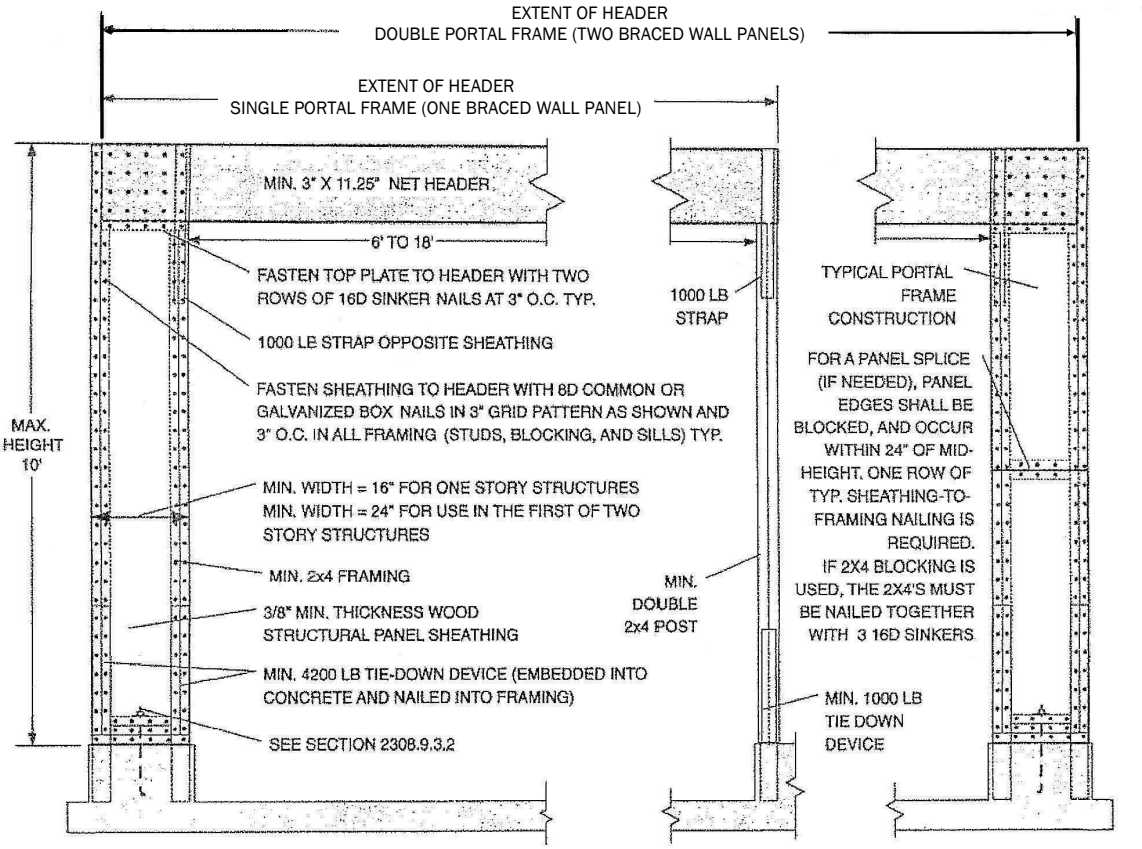


TABLE R602.3(1) - FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
	Roof		
1	Blocking between ceiling joists or rafters to top plate	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
2	Ceiling joists to top plate	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions [see Section R802.5.2 and Table R802.5.2	4-10d box (3″ × 0.128″); or 3-16d common (3 1/2″ × 0.162″); or 4-3″ × 0.131″ nails	Face nail
4	Ceiling joist attached to parallel rafter (heel joint) [see Section R802.5.2 and Table R802.5.2	Table R802.5.2	Face nail
5	Collar tie to rafter, face nail or 1 1/4″ × 20 ga. ridge strap to rafter	4-10d box (3″ × 0.128″); or 3-10d common (3″ × 0.148″); or 4-3″ × 0.131″ nails	Face nail each rafter
6	Rafter or roof truss to plate	3-16d box nails (3 1/2″ × 0.135″); or 3-10d common nails (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss[i]
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2″ ridge beam	4-16d (3 1/2″ × 0.135″); or 3-10d common (3 1/2″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box 3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
	Wall		
8	Stud to stud (not at braced wall panels)	16d common (3 1/2″ × 0.162″)	24″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	16″ o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d box (3 1/2″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
		16d common (3 1/2″ × 0.162″)	16″ o.c. face nail
10	Built-up header (2″ to 2″ header with 1/2″ spacer)	16d common (3 1/2″ × 0.162″)	16″ o.c. each edge face nail
		16d box (3 1/2″ × 0.135″)	12″ o.c. each edge face nail
11	Continuous header to stud	5-8d box (2 1/2″ × 0.113″); or 4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toe nail
12	Top plate to top plate	16d common (3 1/2″ × 0.162″)	16″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	12″ o.c. face nail
13	Double top plate splice	8-16d common (3 1/2″ × 0.162″); or 12-16d box (3 1/2″ × 0.135″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails	Face nail on each side of end joint (minimum 24″ lap splice length each side of end joint)

TABLE R602.3(1) - FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
14	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 1/2″ × 0.162″)	16″ o.c. face nail
		16d box (3 1/2″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
15	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″); or 4-3″ × 0.131″ nails	3 each 16″ o.c. face nail 2 each 16″ o.c. face nail 4 each 16″ o.c. face nail
16	Top or bottom plate to stud	4-8d box (2 1/2″ × 0.113″); or 3-16d box (3 1/2″ × 0.135″); or 4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
17	Top plates, laps at corners and intersections	3-10d box (3″ × 0.128″); or 2-16d common (3 1/2″ × 0.162″); or 3-3″ × 0.131″ nails	Face nail
18	1″ brace to each stud and plate	3-8d box (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples 1 3/4″	Face nail
19	1″ × 6″ sheathing to each bearing	3-8d box (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail
20	1″ × 8″ and wider sheathing to each bearing	3-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail
		Wider than 1″ × 8″ 4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 4 staples, 1″ crown, 16 ga., 1 3/4″ long	
Floor			
21	Joist to sill, top plate or girder	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
22	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box (2 1/2″ × 0.113″)	4″ o.c. toe nail
		8d common (2 1/2″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails	6″ o.c. toe nail
23	1″ × 6″ subfloor or less to each joist	3-8d box (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail