

Residential Plan Review

2018 International Residential Code

GENERAL ITEMS/ SITE/ ZONING REVIEW

General Items

- Architect's & engineer's seals are signed and dated (if applicable)
- Applicable codes listed (correct for jurisdiction)

Project Data

- Owner of project
- Address/ legal description/ assessor's parcel number
- Project description
- Floor areas

Site Plan

- Vicinity Map
- Zoning district
- Property line dimensions
- Recorded easements & letters of encroachment (if required)
- Location on property per zoning ordinance (setbacks)
- Lot coverage calculation (zoning)
- Location on property per building code (R302.1)
- Check building height vs. allowable (zoning)
- Check parking – required spaces; parking surface; driveway width (zoning)
- Check fences – maximum height (zoning)
- Finish floor elevation & grading (R401.3 and R403.1.7.3)
- Utility locations – water ; sewer; electric; gas
- Septic system location
- Typical site plan for standard plans showing minimum setbacks

ARCHITECTURAL/ LIFE SAFETY REVIEW

Floor Plan

- Overall dimensions – match site plan
- Room names – declare room use
- Room sizes/ dimensions/ minimums (R304)
- Ceiling heights (R305)
- Landings at exterior doors (R311.3)
- Exit door – minimum one – 3'-0" X 6'-8" (R311.2)
- Halls – minimum 3'-0" clear width (R311.6)
- Natural light & ventilation in habitable rooms (R303.1)
- Wall construction; stud size & spacing [R301.3, Table R602.3(5)]
- Safety glazing locations (R308.4)
- Attic access location (R807.1, M1305.1.3)
- Guardrails – 36" min. height; 4" sphere rule (R312)
- Fireplaces – type/ fuel (Chapter 10)
- Slope patio slabs to drain away from house (R401.3)

- Carbon monoxide alarms – attached garage/ fuel-fired appliances (R315)
- Kitchen – appliances labeled (energy source)
- Automatic fire sprinklers (R313, P2904)

- Bedrooms
 - Rescue opening (R310.1)
 - Smoke alarms in bedrooms and spaces providing access to bedrooms (R314)

- Bathrooms
 - Fixture clearances (Figure R307.1)
 - Shower finishes (R307.2, R702.4.2)
 - Safety glazing – windows & shower enclosures (R308.4.5)
 - Natural light & ventilation or exhaust fan (R303.3)

- Laundry room
 - Appliances labeled (energy source)
 - Dryer vent (M1502)

- Garage
 - Fire separation – walls & ceiling (Table R302.6)
 - Protected door to house; self-closing (R302.5.1)
 - No doors or openings into sleeping rooms (R302.5.1)
 - Non-combustible floor sloped to drain or vehicular door (R309.1)
 - Platforms for appliances with ignition source (M1307.3)
 - Protection of appliances from impact (M1307.3.1)
 - Ducts into house shall be min. 26 ga. steel with no openings in garage (R302.5.2)

- Stairway
 - Minimum width (R311.7.1)
 - Headroom (R311.7.2)
 - Tread/ riser dimensions; nosing profile (R311.7.5)
 - Landings (R311.7.6)
 - Handrails: continuity, height, profile (R311.7.8)
 - Gypsum wall board at usable space below (R302.7)

- Basements
 - Rescue openings (R310.1)
 - Smoke alarms (R314)
 - Window wells/ ladders/ grates (R310.2.3)

Exterior Elevations

- Match floor plan and roof plan configuration?
- Heights of building (zoning)
- Roof slope (R905)
- Roof materials specified (R905)
- Wall finishes specified/ weather barrier (R703)
- Veneer treatments (R703.8)
- Chimney heights (R1003.9, R1005)

- Attic vents & calculations (R806)
- Roof/ wall flashings (R703.4)
- Check special zoning design stipulations

Building Cross Sections

- Specify materials
- Keyed to plans
- Building heights – finish floors/ plates/ ridges
- Roof slopes (R905)
- Details keyed
- Basement dampproofing/ waterproofing (R406)
- Foundation drainage system (R405)
- Interior finishes – gypsum board, sag-resistant ceiling board, exterior gyp board (R702.3)
- Provide ignition barrier at exposed foam board to attic and crawl spaces (R316.5)

Roof Plan

- Roof slopes & directions
- Roofing materials (R905)
- Roof drains & scuppers (R903.4)
- Attic vents & calculations (R806)
- Flashing details keyed (R903.2)

STRUCTURAL REVIEW

Roof & Floor Framing Plans

- Does roof framing plan match floor plan, roof plan & elevations?
- Roof slopes/ directions – to edges, drains or scuppers (R903.4)
- Roof slopes – proper for type of roofing (R905)
- List of lumber species & grades
- Check roof & floor sheathing [R803 & Table R503.2.1.1(1)]
- Framing members specified – trusses, rafters, beams, headers, posts
- Do openings match floor plan – doors, windows, etc.?
- Check trusses (see notes below).
- Check roof rafter sizes (Table R802.4.1)
- Check ceiling joist sizes (Table R802.5.1)
- Check floor joist sizes (Table R502.3.1)
- Check beam & header sizes (Table R602.7.1)
- Posts provided at beam & girder truss bearing; connection details keyed
- Specify & detail roof over-framing

Roof & Floor Truss Diagrams

- Truss types keyed to roof and floor framing plans or truss plans?
- Do truss plans match roof & floor framing plans?
- Truss diagrams: sealed by engineer (R802.10, R502.11)
- Check loads
- Check truss length
- Check roof slope
- Bearing points & locations (reactions)
- Bearing width required

- Special load cases (such as concentrated loads)
- Check roof uplift force (connector required) (R802.11)
- Space for attic HVAC unit & access walkway (M1305.1.3)
- Check connectors – adequate for loads and sizes of members?
- Slip connectors at scissor trusses for horizontal movement

Roof & Floor Framing Details

- Are all critical details provided?
- Roof-to-wall connections; nailing schedule [Table R602.3(1)]
- Roof rafter/ floor joist blocking at bearing (R802.8, R502.7)
- Beam/ header/ girder truss – to – post connections
- Roofing type/ underlayment (R905)
- Flashing details (R903.2 & R905)
- Fireblocking (R302.11)
- Ceiling finish – gypsum wallboard – sag-resistant? Exterior grade? (Table R702.3.5)
- Framing details at masonry chimneys – clearances & fireblocking (R1001.11 & R1001.12)
- Insulation & clearance at vents (Table N1102.1.2 & R806.3)

Wall Details

- Stud size/ spacing/ height [Table R602.3(5)]
- Interior finish (R702.3)
- Exterior finish/ weather barrier (R703)
- Stucco (EIFS) system (R703.9)
- Veneer – brick or stone (R703.8)
- Insulation (Table N1102.1.2)
- Provide ignition barrier at exposed foam board to attic (R316.5.3)

Lateral Design/ Shear Wall Plan

- Empirical design per R602.10 or R602.12 (or provide engineering)
- Exterior braced wall lines & panels
- Interior braced wall lines & panels
- Alternate braced wall panels
- Shear wall transfer details – to roofs, floors & foundation (R602.10.8)
- Holddowns on shear wall plan and/ or foundation plan

Foundation Plan

- Check soils report for special design requirements
- Soil bearing capacity specified (Table R401.4.1 or soils report)
- Concrete strength specified (Table R402.2 or soils report)
- Does foundation plan match floor plan & dimensions?
- Special conditions shown, i.e. steps, recessed areas, etc.
- Garage floor sloped to opening or drain (R309.1)
- Footings shown at all exterior walls (R403.1)
- Footings shown at interior bearing walls
- Spread footings at post locations
- Shear wall locations – anchors – holddowns (R403.1.6, Table R602.10.6.1)
- Slab thickness specified (R506.1 or soils report)
- Subgrade preparation (R506.2 or soils report)
- Termite treatment specified (R318)
- Are details keyed for all critical conditions?
- Slope patio slabs and sidewalks to drain away from house (R401.3 Exception)

Foundation Details

- Footing types – T-footing vs. monolithic (Figure R403.1(1), Figure R403.1.3)
- Minimum size required (Table R403.1 or soils report or engineer's calcs.)
- Minimum depth required (R403.1.4 or soils report or engineer's calcs.)
- Minimum reinforcing (R403.1.3 or soils report or engineer's calcs.)
- Spread footing sizes
- Sole plates – height above grade (R404.1.6), anchorage (R403.1.6), treated (R317)

MECHANICAL (HVAC) REVIEW

Mechanical Plan

- Locations of HVAC equipment shown
- Roof-mounted HVAC unit – structural support/ trusses
- Attic HVAC unit – access opening/ access walkway/ working platform (M1305.1.2)
- Space in trusses for attic HVAC unit & access walkway (M1305.1.2)
- Garage HVAC unit – raised platform (M1307.3), impact (M1307.3.1), metal ducts (R302.5.2)
- Closet HVAC unit – clearances/ access (M1305.1.1)
- Supply air to all habitable rooms (heating req.) (R303.10)
- Return air locations (M1602.2)
- Exhaust fans at bathrooms (R303.3, M1505)
- Dryer vent – size & length (M1502)
- Equipment specifications (electrical amps; gas BTUH)
- Vents & vent connectors for gas units (G2426, G2427)
- Primary & secondary condensate drains (M1411.3)
- Combustion air – vents & ducts (Chapter 17, G2407)
- Sizing calculations per ACCA Manuals S & J (M1401.3)

PLUMBING REVIEW

Plumbing Plan

- Locations of fixtures/ clearances (Figure R307.1)
- List of supply pipe materials (P2905)
- Hose bibs with backflow preventers (P2902.4.3)
- Air gap for dishwasher (P2902)
- Backcheck valve for sewage ejector (P3007)
- Specify fixture compliance with low water usage ordinances
- Provide water hammer arrestors at quick-closing valves (P2903.5)
- Pressure-reducing valve when supply pressure >80 psi (P2903.3.1)

- Water heater compliance:
 - Electric or gas?
 - Pressure-temperature relief line to outside (P2804)
 - Raised platform in garage & protection (P2801.7)
 - Vent & vent connector for gas HWH (G2427)
 - Combustion air for gas HWH (G2407)
 - Drain pan at water heater (P2801.6)

Waste/ Vent Isometric

- Show all fixtures, floor drains & ejectors
- List of waste pipe materials (P3002) (UPC 701)
- Check waste & vent line sizes (IRC Tables P3004.1, P3005.4.1, P3005.4.2)
- Detail for island sink venting (P3112)
- Backcheck valve for ejectors (P3007)
- Provide cleanouts (P3005.2)
- Air admittance valve as a plumbing vent alternative (P3114)

Water Supply Pressure Calculation

- List of all fixtures; verify with floor plan
- Specify developed length = maximum distance from meter to plumbing fixture
- Available water pressure from municipal map or on-site verification)
- Determine water meter (and street lateral) and water supply line sizes (IRC Tables P2903.6)

Gas Line Isometric

- Verify fixtures with plans
- Need appliance BTUH, gas line lengths, gas line sizes (G2413)
- Gas line materials specified (G2414)

ELECTRICAL REVIEW

Electrical Plan

- Engineering required for services over 400 amps
- Receptacle spacing in habitable rooms (E3901.2.1)
- Receptacle in hallways 10' long (E3901.10)
- Receptacle spacing at kitchen countertops (E3901.4)
- Receptacle at kitchen island and peninsula countertops (E3901.4)
- Receptacle within 3 feet of each bath lavatory (GFCI) (E3901.6)
- Arc-fault protection for all 15- and 20-amp circuits (E3902.16)
- Add arc-fault protection where existing wiring is modified (E3902.17)
- Exterior receptacles at front & rear of house (weatherproof & GFCI) (E3901.7)
- Exterior receptacles at balconies, decks and porches/ patios (E3901.7)
- Receptacle in garage – minimum (1) per each vehicle (GFCI) (E3901.9)
- Receptacle within 25' of outdoor HVAC equipment (weatherproof & GFCI) (E3901.12)
- Switch-controlled light (or receptacle) in every habitable room (E3903.2)
- Switch-controlled light in basements, utility rooms and garage (E3903.3, E3903.4)
- Light fixture at stairs with switches at both levels (R303.6, E3903.3.1)
- Switch controlled light at each exterior door at grade (E3903.3)
- Clearances to light fixtures in clothes closets (E4003.12)
- Damp/ wet listed fixtures at required locations (E4003.9)
- Switched light at attic HVAC equipment (E3903.4)
- Smoke alarms in bedrooms, halls & basements (R314)
- Carbon monoxide alarms (R315)
- Approved outlet boxes for ceiling fans (E4203.4)
- GFCI for whirlpool tub with access panel (P2720, E3902.1)
- Disconnects at all HVAC equipment and water heaters
- Clearances to overhead service drop (E3604)

Circuit Schedule

- Schedule for main panel & all subpanels
- Indicate required circuits & ratings (E3703)
- Indicate arc-fault and ground-fault protected circuits (E3902)

Load Calculations

- Calculations for main panel & all subpanels (Table E3602.2 and Table E3704.2(1))
- Include all appliances
- Include all HVAC loads
- Include special use loads, such as swimming pools, sewage ejectors, etc.

One-Line Diagram

- Rating of main panel & subpanels
- Grounding electrode (E3608)
- Bonding to water & gas pipes (E3609)
- Service conductor & grounding conductor sizes (Table E3603.4)
- Distribution wire sizes & types; conduit sizes (Tables E3705.1, E3705.2 & E3705.3)

ENERGY EFFICIENCY

- Compliance of R-values for ceilings, walls, floors, basement walls, slabs and crawl spaces (Table N1102.1.2)
- Compliance of fenestration U-factor (Table N1102.1.2)
- Compliance of glazed fenestration Solar Heat Gain Coefficient (SHGC) (Table N1102.1.2)
- Insulation locations shown
- Insulation of supply & return ducts (N1103)
- Insulation of mechanical system piping & hot water piping (N1103)
- Sizing calculations for heating & cooling equipment per ACCA Manual S & J (M1401.3)
- Provision of compliance report such as RESCHECK