Washington State Department of
Labor & Industries

Factory Assembled Structures Program

Factory Built Residential Buildings – Plan Submittal Checklist

Modular house construction plans must include the following drawings and information. Use this checklist to be sure your plans are complete. Incomplete plans will be returned without review. Include a completed copy of this checklist with your plans and applications.

This checklist provides general guidance for manufacturers about the typical drawings and other information that need to be submitted for design review of a residential house. *As such this list may not be all inclusive and may contain items that are not applicable to your particular project.*

Please check the box next to each document to show that it is included, or it is not applicable (N/A). If you indicate N/A, you must include an explanation. For all of the drawing items you will need to fill in the sheet numbers where the information can be found.

Documents and associated items:

At the front of your package, include the following:

- Plan approval and Insignia request forms (agency forms F623-006-000 and F623-014-000).
- The Plan and Insignia fees of as calculated in WAC 296-150F-3000.
- Notification to Local Enforcement agency form and fee (form F623-013-000).
- Completed Wildland Urban Interface Code Checklist (for 2021 code cycle plans only).
- Factory Built Residential Buildings- Plan Checklist. A copy of this checklist with each item completed.

Next, include each of these:

- A completed set of Washington State Energy Code (WSEC) forms including; prescriptive or UA component worksheets, glazing schedule and heat sizing worksheet. The energy code forms must include a completed WSEC "Residential Energy Compliance Certificate" (items that site measured/determined may be left blank). WSEC forms and resources are at http://energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx. If credit is being taken for high efficiency equipment, or renewable energy, either cuts sheets for this equipment must be included or the equipment specifications need to be listed on the plans.
  Note: WSU energy offers a hotline number on their website if you need assistance with filling out the forms.
- Engineering calculations. Gravity and lateral load calculations are required. A Washington State registered professional engineer (PE) or a Washington State registered Architect must stamp all engineering calculations. Calculation pages must be numbered and the professional stamp must be on each page or it can be on the title page and the index page. Please see the Plan Stamping Guidelines.

- "Statement of special inspection" and credentials for special inspectors: When required by the building code a "statement of special inspection" in accordance with chapter 17 of the IBC and sealed by the design engineer. If special inspections are required the credentials of any special insepctors/special inspection agency for the project must be included in the submitted plan sets.
- Truss drawings (if you are using trusses and/or girder trusses). Each type of roof or floor truss must include an engineered drawing stamped by a Washington PE. The company, who is building the trusses, provides truss drawings.

Plan sheets and associated documents:

Following the documents above, include a set of design drawings.
Design drawings and structural calculations must be stamped and signed by a Washington state registered professional engineer or registered architect in accordance with current Washington State laws and rules. The engineer's registration board also provides guidance on this subject. .
See also the FAS Plan Stamping Guidelines.

- Plan drawings must be neat, legible, and drawn to a recognized architectural "scale".
- Each page of the drawing set needs to have a
  - drawing name, for example; "floor plan", "details", "plumbing", etc.,
  - drawing number and
  - the date prepared or last revision.

- Cover drawing with:
  - Information identifying the person or company submitting the plans with mailing address, phone and email contact information. Also, include the factory address. The "factory address" is the off-site location where you will be building your modular house.
  - A list of any design professionals, such as engineers and architects for the project.
  - A list/index of all pages in the drawing set by page title and drawing number. You can choose the drawing numbers as long as each page has a unique number.
  - A list of the codes used to design the plan. These must include the version year of each code. See the WA State Building Code Council website for current code information: https://sbcc.wa.gov/state-codes-regulations-guidelines The location where the house will be installed and a list of the design criteria used for the house, such as roof load, wind load, earthquake zone etc. Most building departments publish the required minimum design criteria for their city or county on their web site; or will provide it as part of your permit inquiry with them.
  - List any prescriptive designs used to design the house. This would be specific code sections and table numbers from the IRC and could include such items as floor joists, wall studs, braced walls, wall headers, roof joists. An engineer or architect must stamp construction designs that are not prescriptive.
  - Other pertinent information, such as general notes, may be included.
  - Leave a 2"x3" blank space for the L&I plan approval stamp.
- Floor Plan of the main floor, and plan of any other floor levels (including sleeping lofts, attics, habitable attics or similar) in the house. The plan needs to show:
  - The location of each module or section of the house and the associated manufacturer's serial number.
  - The locations of the exterior and interior walls.

  - The overall dimensions of the house and the interior dimensions for rooms and width of hallways.
  - Label each room showing its use (e.g. bedroom, bathroom, kitchen, living room etc…).
  - The uses must be name with recognized/defined building code terminology.
  - Locations and sizes of doors (identify swing, or slide direction), windows and skylights. Identify which windows/skylights are for emergency escape (you can add "esc" to the window/skylight size callout).
  - Location of any safety glazing.
  - Attic accesses and crawl space accesses if located inside the house.
  - Cabinets, equipment, appliances and fixture locations.
  - Interior stairs, location, orientation and run.
  - Other egress components (ladders, alternating tread devices, and ships ladders), location and orientation.
  - Exterior porches, decks, stairs, awnings.
  - Locations of handrails and guardrails at stairs, porches, sleeping lofts, and similar.
  - Radon vent pipe location through the conditioned space/structure (if required by IRC appendix F & WAC 51-51).
- Outside Elevations showing:
  - Door and window configurations (show opening types/direction of windows).
  - Roof eaves and overhangs.
  - Exterior porches, decks, awnings, and guardrails.
  - Location of vent, flue, and similar terminations (identify by equipment).
  - Include information documenting compliance with the Wildland-Urban Interface Code (for 2021 code cycle plans only).
- Cross Section(s) – a major transverse section through the house showing:
  - The main material components of the floor, wall and roof assemblies including: framing materials, sheathing type exterior coverings materials (specify siding, roofing & similar), type and depth of insulation in each assembly, location& type of vapor retarder, interior finish, and similar.
  - Vertical and horizontal dimensions showing overall width and height and the finished floor to ceiling dimensions for all areas. Multiple sections may be required if there are areas of varying ceiling height, etc.
  - Roof eave and overhangs.
  - Locations of roof vents, baffles, etc. (including a calculation of the venting per square foot of floor area).
  - Show the complete structural load paths from the roof through the supporting structure and into the foundation or chassis support locations under the floor of the house.
  - Include information documenting compliance with the Wildland-Urban Interface Code (for 2021 code cycle plans only).
  - Cross sections should be drawn at 1/2" scale or larger.
- Structural Plans and Framing Plans (as applicable).
  - Types, locations and lengths of prescriptive braced walls (see IRC 602.10) or engineered shear-walls.
  - Wall headers, beam sizes, locations, column sizes, locations, and section/detail reference tags.
  - Connection details for all braced walls to upper framing (roof/ceiling), and to the floor framing.

  - Structural framing drawings for floors and roof where the spacing and layout of the structural members is not obvious from the structural floor plan and cross section. If you are using trusses in a roof or floor, then provide a truss plan showing the location of each type of truss in the assembly. These may be part of the engineered truss drawings from the truss manufacturer.
- Construction/Section Details (as needed).
  - Relevant structural details including connections of trusses/ rafters to the ridge-beam and sidewalls.
  - General fastening schedule or code section references.
  - Diaphragm and shearwall construction and connection details and/or schedules.
  - Shearwall and beam uplift tie details and/or schedules.
  - Truss bracing details.
  - Ridge beam fabrications details.
  - Section details are normally drawn at ¾" scale or larger.
- Stair & Vertical Egress Details (if applicable).
  - If the house has an interior stair, provide a section drawing through the long dimension showing the rise and run overall and of the steps along with any landing dimensions.
  - Indicate guardrail, and handrail, locations either on a "stair plan" or on the main floor plan.
  - Provide sections and complete details for any other egress elements.
  - Ensure all section details include head height at the stairs/egress elements.
- Foundation Plan, Details and Site Plan – these can be two separate drawings. Please include the following:
  - Location of the house on the building site and dimensions to nearest property lines (a site plan is not needed if you list the clearances from property lines on the "Plan Approval Request" form).
  - Foundation wall locations with dimensions.
  - Pier and blocking locations with spacing dimensions.
  - Point load locations corresponding with the framing plans
  - Hold down/strap connection points (if applicable) corresponding to framing (brace/shear wall) plans.
  - Tie-down or special connection locations.
  - Details on foundation footings, walls and pier construction
  - Design load values for all point loads, and uplift connection requirements.
- Note: L&I only reviews the foundation plan to be sure it is representative for the general house design. The local building department where your house is being installed must approve your foundation plans.
- Chassis (for Modular Houses with a permanent transport frame under it), this drawing(s) will require an engineer's stamp and supporting calculations.
  - All frame components such as steel beams, axles, cross-members, outriggers headboard and towing hitch.
  - Welding callouts showing how each of the chassis components is welded together. The welding callouts need to show the location, type and length of each weld.

- A detail or details showing the connection of the modular house to the chassis.
- A detail or details showing how the building/chassis is connected to the foundation system.

- Draft-stopping or fire rated construction located in or on the building must be detailed on the plans showing:
  - The location of draft stopping.
  - The locations and hourly ratings of the various fire resistant assemblies, fire/smoke dampers and fire doors/windows.
  - List the testing references showing the ratings assigned to the fire assemblies.
  - Door and equipment schedules listing fire door/window and fire damper ratings, manufacturers, model numbers and characteristics.
  - Details showing how penetrations, joints and openings in fire resistant assemblies are protected.

- Welding (as applicable for any welded assemblies):
  - All welding must be detailed on the structural plans.
  - Coordinate welding details with engineering calculations
  - All welding is required to have special inspection

- Electrical Plan Drawing or layout of the house showing the locations of:
  - Appliances.
  - Electrical equipment such as the electrical panel(s), electrical utility meter, ATS, MTS
  - If Tiny House is supplied by a service - Emergency disconnect required by NEC 230.85 (readily accessible outdoor location)
  - Required working space width and depth per NEC 110.26A - Working space depth and width shall be identified with dash lines and in inches or feet.
  - Rooms and spaces properly identified
  - HVAC equipment and water heaters.
  - Disconnects for equipment such as HVAC, water heaters, (Indicate if fused or non-fused)
  - Receptacles, lights and switches.
  - Ground fault circuit interrupter receptacles/devices shall be identified “GFCI” – GFCI protection shall be installed in a readily accessible location. A GFCI receptacle located behind an appliance such as a refrigerator is not considered readily accessible. GFCI protection located in panel board is considered readily accessible.
  - Identify all devices/equipment with a circuit number(s) consistent with a circuit(s) on the panel schedule drawing.
  - Smoke alarms.
  - Carbon monoxide detectors.
  - The electrical plan shall indicate the “wiring methods” utilized (interior and exterior). Chapter 3 of the National Electrical Code describes wiring methods. Examples: NM-B cable, EMT, RMC, LFMC, FMC – do not use words such as “romex”
  - Contain symbol legend or shall be provided on an additional electrical plan drawing.

- Electrical cover drawing shall indicate the currently adopted NEC year and WAC 296-46B

- Electrical Panel Schedules located on Electrical Drawing shall indicate:
  - Panel Identification
  - System Voltage, Phase, Bus Rating, bus AIC rating
  - Main CB Amp rating/setting and Main CB AIC rating, or Main Lug Only,
  - Each branch circuit number (shall be shown as actual installation (odd numbers on left and even numbers on the right)
  - Each branch circuit breaker rating/setting
  - Circuit identification/description (Clear, evident, specific purpose)
  - Connected VA or KVA on each circuit phase
  - Total connected KVA
  - Size of each branch circuit conductor
  - Circuit breakers that are lockable per NEC 110.25
  - Identify each circuit breaker that is a GFCI, AFCI, or a combination AFCI/GFCI circuit breaker. (If GFCI protection is provided via a GFCI circuit breaker, it should not be identified on floor plan drawing as a GFCI receptacle) Only the method of protection used shall be identified.)
- A "one line Service/Feeder" diagram shall indicate:
  - Distribution equipment identification
  - System Voltage and phase (singe phase or three phase)
  - Service and feeder overcurrent protective device sizes/ratings
  - Bus ratings and AIC ratings of main electrical distribution equipment
  - Clearly identified Service Point and clearly identified Service Disconnect if building is supplied by service
  - Clearly identified Building main disconnect if building is supplied by feeders from a remote service.
  - Service and feeder conductor sizes, type of conductor, and counts (including grounding electrode conductors(GEC) and/or equipment grounding conductors(EGC)). Example (3) 3/0 XHHW-CU, (1) #4 XHHW-CU (EGC)
  - Service and feeder raceway sizes, types, and counts. (Examples of types: RMC, EMT, schedule 80 PVC) -
  - A compliant grounding electrode system per NEC 250.50 including size of grounding electrode conductors and type of grounding electrodes as identified in NEC 250.52A. (All available grounding electrodes shall be used).
  - If House is supplied by a service - Emergency disconnect required by NEC 230.85
  - If House is supplied by a service - Surge protection device required by NEC 230.67 (Shall indicate if Type 1 SPD or a Type 2 SPD)
- Electrical load calculation(s) for the modular house showing:
  - A total electrical building load calculation per NEC 220
  - Indicate if the NEC 220 standard method was used or the NEC 220.82 optional method was used
  - An electrical load calculation for each panel board shall be provided
- Electrical load calculations shall indicate:
  - Panel or distribution equipment identification/name

- Bus amp rating, System voltage
- Connected load in VA or KVA for each load type category
- Demand factor applied to each load category
- Calculated load in VA or KVA for each load category
- Total connected load in VA or KVA and total connected amp load
- Total calculated load in VA or KVA and total calculated amp load
- Load calculations shall be clear and detailed. Please see NEC Annex D examples for dwelling load calculation expectations

Not limited to, electrical plan drawings shall clearly show how the dwelling complies with the following NEC code sections:

- NEC 210.8A, C, D, E, F: Ground fault interrupter protection for personnel
- NEC 210.11C: Branch circuits required
- NEC 210.12A: Arc-fault circuit interrupter Protection
- NEC 210.52A through I: Dwelling unit receptacle outlets

- Potable water line drawing in plan or isometric view. Indicate:
  - The type of piping material.
  - All fixture locations.
  - Pipe size and locations along with changes in direction.
  - Indicate where the water service and the water heater connect along with shut off valves required in these locations.
  - Indicate the size, and type, of the water heater
  - Note seismic strapping for tank-type water heaters.
  - When a water heater pan is required - show the drain location to the exterior of the building.
  - The pressure relief valve (PRV) with the overflow pipe discharging to the exterior of the house (for all storage tank heaters and as required by manufacturer specs if on-demand)..
  - A tee installed at each cold-water inlet if specifying a storage tank water heater (for an expansion tank if required by the local building department).
- Drain/waste/vent (DWV) piping system shown in isometric view. Indicate:
  - Type of pipe material.
  - The sewer connection location
  - All fixture locations.
  - All pipe runs with the pipe size, changes in direction.
  - Locations of clean-outs, traps and vents through the roof.
  - If condensate drains terminate to the DWV system show the type, method and location.
- Gas System (if applicable) in plan or isometric view. Indicate:
  - List the type (propane or natural gas), and pressure of the gas piping system.
  - The type of pipe material.
  - Locations, length and size of each part of the gas piping system along with changes in direction.
  - Label the points where gas appliances connect to the system.
  - List the BTU input rating of each appliance connected to the system.

  - Indicate where the gas service connects to the system.
  - Indicate where all shut off valves are located where required at the service and at each appliance.
- Fire Sprinkler (if applicable)
  - Plans showing location and types of sprinkler heads, locations and size of piping runs and the location of the sprinkler riser.
  - Hydraulic calculations
  - Sprinkler riser diagram.
  - Cut sheets for each sprinkler head type, the piping material and for the components of the sprinkler riser.
  - A WA registered sprinkler designer must stamp sprinkler plans and calculations.
- Mechanical drawing showing
  - The location of all equipment such as furnaces, heaters, heat pumps, mini-split HVAC system components. List the make, model and size of equipment.
  - Heat loss/gain calculations showing proper sizing of the HVAC system (may be included on the energy compliance forms).
  - Locations of controls such as thermostats and timers.
  - Locations, type and size of ductwork and registers that are part of a forced air heating system.
  - Hydronic systems must include a plan of the zoned piping layout and a diagram of the boiler set up.
  - Locations, make, model of spot ventilation fans, and the whole house fan. Show the method of control for the whole house fan –intermittent, or continuous.
  - Information on special equipment required for energy credits
  - The exterior termination locations of all exhausts and condensate drains.

Once you are ready to submit please email FAS1@lni.wa.gov for electronic submittal instructions. When your plans are received, they will be assigned a plan number. It will typically be several weeks before the review of your plan will start. Once we have reviewed your plans, we will send you an approved plan set or we will notify you via email of what else we need to finish our review.

This list may not be all-inclusive and may contain items that are not applicable to your particular project. Plans containing repetitive non-complying code issues that have been clearly identified in prior reviews may be returned to the applicant for revision prior to acceptance of the submittal.