

OHCS HARP
**Construction Standards and Expectations for
Manufactured and Stick-Built Homes**

Version 1.0 – December 21, 2023



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Version History and Version Policy

The version history of this manual is tracked in the table below, with notes for each change. The dates of each publication are also tracked in the table.

After making non-substantial changes, such as minor wording and editing or clarification of existing policy that do not affect the interpretation or applicability of the policy, OHCS will publish a version of the document with a sequential number increase behind the primary version number such as 2.1, 2.2, etc.

Amendments made to may go into effect on the date of the revision or may be applied retroactively and whether a policy will be applied proactively or retroactively will be detailed in the version history below and/or within the relevant Program sections.

Version Number	Date Revised	Key Revisions
1.0	01/31/2023	Initial Document Creation



Introduction

1 Introduction

The purpose of the Oregon Housing and Community Services Program Construction and Design Standards (the Standards) is to ensure that all single-family housing Participants who receive new or rehabilitated construction housing through programs funded through The State of Oregon OHCS live in housing that is decent, safe, and sanitary as defined in 49 CFR 24.2(a)(8). Furthermore, these Standards shall ensure that the investment of public and homeowner funds results in lengthening the term of affordability, the preservation of habitability, and promotes resilience.

All work carried out with the assistance of funds provided through OHCS shall be done in accordance with these Standards and HUD Housing Construction Specifications as they apply to single-family housing Participants and, unless otherwise defined, shall meet or exceed industry and trade standards.

Where code, law, ordinance, rule, regulation, or legitimate order of any public authority is in conflict with installation, inspection, and testing, and is a more stringent rule or requirement than what is specified herein, shall take precedence over these Standards. This document is not meant to summarize all applicable codes or regulations and does not indicate that the project does not need to adhere to these requirements. It is expected that the projects adhere to codes and elements required to achieve plan review approval, permit issuance, and/or certificate of occupancy/completion.

1.1 Program Paths and Intent

The ReOregon HARP Program is designed to serve participants who have yet to complete their recovery from the 2020 Labor Day Wildfires and Straight-line Winds. This may include:

- Reconstruction of the destroyed or substantially damaged homes.
- Rehabilitation or completion of the damaged home, replacement home, or completion of reconstruction already in progress.
- Replacement of destroyed or substantially damaged manufactured homes.

Accessory Dwelling Units (ADU), structures commonly known as ‘Tiny Homes’ or ‘Mother-in-Law Suites’ shall be contemplated in another set of guidelines.

1.2 Pricing Considerations

Prices and costs associated with Program activities are based on local vendors and labor rates as reported to the estimating platform. Costs ascribed to project elements are done so through the lens of cost-reasonableness in order to ensure that costs incurred are necessary and reasonable.

Definitions and Acronyms



2 Definitions and Acronyms

Definitions or Acronym	Meaning
ACCA	Air Conditioning Contractors of America (quality standard)
ACM	Asbestos Containing Material
ADA	Americans with Disabilities Act
Contract Administrator	The grant administrator. This can be the subrecipient.
Contractor	Means the builder awarded the contract.
GFCI	Ground fault circuit interrupter (safety device)
Green and Resilient Building Standard(s)	Means for all new construction and reconstruction projects that a home adheres to the Energy Star standards and the ICC-700 Certified Compliance Path for Single-Family Homes, Townhomes, and duplexes. Replacement manufactured housing units adhere to the Northwest Energy-Efficient Manufactured Housing Program standards.
Green Standard Certification	Official certification by an entity empowered to issue such certification for the Green Standard selected by the builder.
Habitable	A habitable dwelling unit is one that is structurally sound, weather tight and in good repair.
HCDA	Housing and Community Development Act of 1974
Homeowner	The person(s) to receive assistance through a program to repair, reconstruct or replace their damaged structure.
Housing and Urban Development Act of 1968, Section 3	Requires program administrators to ensure that training, employment, and other economic opportunities generated by HUD financial assistance shall be directed to the greatest extent feasible and consistent with existing federal, state, and local laws and regulations, to low- and very low-income persons. Recipients of Section 3-covered funding ensure compliance and the compliance of their contractors/subcontractors with the Section 3 requirements, as outlined in 24 CFR 135.32.
HQS	HUD's Housing Quality Standards
HUD	Department of Housing and Urban Development
HVAC	Heating, ventilation, and air conditioning.

ICAT	Initiative for Climate Action Transparency
ICC	International Code Council
IRC	International Residential Code (for one- and two-family dwellings)
LEED	Leadership in Energy and Environmental Design (green building rating system)
Manufactured home or Manufactured housing unit (MH)	For the purposes of this Program, refers to manufactured homes more specifically refers to mobile homes.
Modular Home	Manufactured housing that is of modular construction will be treated as stick- or stick-built construction.
NEC	National Electrical Code (safety standard)
Noncombustible Material	Any material that in the form in which it is used and under the conditions anticipated will not ignite, burn, support combustion or release flammable vapors when subjected to fire or heat in accordance with ASTM E136.
Subrecipient	A unit of local government
Universal Design	Universal design is the concept of designing products, environments, and services that can be used by everyone, to the greatest extent possible, without the need for adaptation or specialized design. It aims to create inclusive spaces and experiences that are usable by people of all ages, abilities, and disabilities.
Visitability	As defined by ORS 456.510 Visitability requirements, encourage the construction of homes and public spaces that are more accessible to people of all abilities, including those with disabilities and older adults.
Work Covered	All new and remodel construction work called for in the “work write-up.”

Design Guiding Principles



3 Design Guiding Principles

The designer, architect, or engineer should consider the following principles when designing the home and/or home site.

Considerations for Universal Design, Visitability, and Disability should be incorporated into the home's design.

Home design should consider grouping of areas requiring specific services so as to reduce material and labor. Example: the master bathroom and guest bathroom should share the same wet-wall to reduce the installation labor and quantity of materials required.

3.1 Wildland-Urban Areas

For properties in the WUI and a risk classification of high or extreme, Senate Bill 762 requires actions to help mitigate the risk of wildfire through adoption of defensible space and home hardening building codes. Oregon State Fire Marshal is passing defensible space code requirements through a public process. Code adoption of defensible space requirements will occur December 2022, after the map validation and appeals period is closed. Those requirements won't apply until later. Visit OSFM's website for more information. Building Codes Division (BCD) will adopt home hardening building codes through a public process. Building codes will be adopted October 1, 2022 and will be effective April 1, 2023. Visit BCD's website for more information.

3.2 Environmental Concerns & Hazards

3.2.1 Wetlands

- Implement and maintain erosion and sedimentation control measures sufficient to prevent deposition of sediment and eroded soil in onsite and offsite wetlands and waters and to prevent erosion in onsite and offsite wetlands and waters.
- Minimize soil compaction by minimizing project ground disturbing activities in vegetated areas, including lawns.

<https://www.oregon.gov/dsl/WW/Pages/WetlandConservation.aspx>

<https://www.oregon.gov/dsl/WW/Pages/Permits.aspx>

3.2.2 Section 106

Section 106 of the National Historic Preservation Act

If project construction uncovers significant archaeological deposits (such as Native American pottery, stone tools, bones, or human remains), the Participant agrees to immediately stop all work in that area and inform the Program. Work will not commence again in that area until the Program has conferred with the State Historic Preservation Office (SHPO) and/or Native American Tribes and informed the Participant that work can re-commence.

3.2.3 Migratory Species

If project construction will occur on a new footprint and clearing of potential migratory bird habitat will occur within 50 feet of the construction site between March 15 and September 15, then a nest survey must be undertaken by a qualified biologist. If nests are identified, then a minimum 50-foot buffer from the work is required until the nest is no longer active. If an active migratory bird nest is incidentally disturbed during clearing, then the contractor shall collect and immediately transport the eggs to a wildlife rehabilitator. The grantee shall be notified of this action by the contractor so it can be placed into the ERR.

3.2.4 Asbestos

Projects shall be reviewed by a properly licensed and accredited entity for presence of asbestos if the structure was constructed prior to 2004. If testing indicates that components contain friable asbestos, the asbestos-containing material must be properly removed and disposed of by a DEQ licensed asbestos abatement contractor. If nonfriable (non-easily crumbed) asbestos-containing materials are identified, they can be removed by any Construction Contractors Board (CCB) licensed contractor. The CCB contractor must submit a nonfriable notification form to DEQ, follow all work practices, packaging, and disposal requirements.

Remediation activities, abatement activities, and/or clearance testing and reporting must be performed by a properly credentialed professional who holds all necessary and applicable certifications and licenses as required by the local and state jurisdiction. Contractor required to provide evidence of clearance at the conclusion of work.

3.2.5 Lead Based Paint Requirements

OHCS HARP will enforce the requirements mandated under HUD Lead Safe Housing Rule, 24 CFR 35

- Subpart B
- Subpart D
- Subpart H
- Subpart M
- Subpart R

Lead

EPA's Lead Renovation, Repair and Painting Rule (RRP Rule) requires that firms performing renovation, repair, and painting projects that disturb lead-based paint in homes, childcare facilities and pre-schools built before 1978 have their firm certified by EPA (or an EPA authorized state), use certified renovators who are trained by EPA approved training providers and follow lead-safe work practices.

For properties built before 1978, if the project will involve disturbing painted surfaces or cleaning up lead contaminated dust or soil, use certified renovation or lead abatement contractors and workers using lead-safe work practices and clearance examinations consistent with the more stringent of EPA's Renovation, Repair, and Painting Rule and HUD's Lead Safe Housing Rule. See HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition)".

Prohibited Methods

Do not use prohibited paint removal methods:

- Open flame burning or torching.
- Heat guns operating above 1,100 °F.
- Machine sanding or grinding without a HEPA vacuum exhaust tool.
- Uncontained hydro-blasting or high-pressure wash.
- Abrasive blasting or sandblasting without a HEPA vacuum exhaust tool.

Avoid using the following methods:

- Methylene chloride chemical paint removers.
- Dry scraping (except for limited areas).

If the unit was built January 1, 1978, or after, no child under age six will occupy or currently occupies it, is a 0-BR, elderly or handicapped unit with no children under age six on the

lease or expected, has been certified lead based paint free by a certified lead-based paint inspector (no lead based paint present or no lead-based paint present after removal of lead-based paint.), check NA and do not inspect painted surfaces.

This requirement applies to all painted surfaces (building components) within the unit. (Do not include tenant belongings). Surfaces to receive a visual assessment for deteriorated paint include walls, floors, ceilings, built in cabinets (sink bases), baseboards, doors, door frames, windows systems including mullions, sills, or frames and any other painted building component within the unit. Deteriorated paint includes any painted surface that is peeling, chipping, chalking, cracking, damaged or otherwise separated from the substrate.

All deteriorated paint surfaces more than 2 sq. ft. in any one interior room or space, or more than 10% of the total surface area of an interior type of component with a small surface area (i.e., windowsills, baseboards, and trim) must be stabilized (corrected) in accordance with all safe work practice requirements and clearance is required. If the deteriorated painted surface is less than 2 sq. ft. or less than 10% of the component, only stabilization is required. Clearance testing is not required. Stabilization means removal of deteriorated paint, repair of the substrate, and application of a new protective coating or paint. Lead-Based Paint Owner Certification is required following stabilization activities, except for de minimis level repairs.

Remediation activities, abatement activities, and/or clearance testing and reporting must be performed by a properly credentialed professional who holds all necessary and applicable certifications and licenses as required by the local and state jurisdiction. Contractor required to provide evidence of clearance at the conclusion of work.

3.2.6 Mold Inspection and Remediation

Inspect the interior and exterior of the building for evidence of moisture problems in storm damaged areas. Document the extent and location of the problems and implement the proposed repairs according to the Moisture section of the EPA Healthy Indoor Environment Protocols for Home Energy Upgrades.

When a mold infestation is determined to be present, the OHCS program will determine and correct the causes of mold, whether storm damaged or not. In cases of deferred maintenance, the OHCS program will do the minimum required to prevent a recurrence of mold.

Remediation activities, abatement activities, and/or clearance testing and reporting must be performed by a properly credentialed professional who holds all necessary and applicable certifications and licenses as required by the local and state jurisdiction. Contractor required to provide evidence of clearance at the conclusion of work.

3.2.7 Hazardous Materials

All activities must comply with federal, state, and local laws and regulations regarding asbestos, including if applicable the following:

- National Emission Standard for Asbestos, standard for demolition and renovation, 40 CFR 61.145
- National Emission Standard for Asbestos, standard for waste disposal for manufacturing, fabricating, demolition, and spraying operations, 40 CFR 61.150

Participant must comply with all laws and regulations concerning the proper handling, removal and disposal of hazardous materials (e.g. asbestos, lead-based paint) or household waste (e.g., construction and demolition debris, pesticides/herbicides, white goods).

All activities must comply with applicable federal, state, and local laws and regulations regarding lead-based paint, including but not limited to HUD's lead-based paint regulations in 24 CFR 35(b)(h)(j) and grantee's Lead-Based Paint Mitigation Policy Standard Operating Procedure.

Project replacement, rehabilitation, and new construction shall apply appropriate materials and construction techniques to prevent radon gas contamination, where warranted and practicable (<https://www.epa.gov/radon/radon-resources-builders-and-contractors>).

Comply with all laws, regulations, and industry standards applicable to aboveground and underground storage tanks.

Storage tanks installed below the base flood elevation, where applicable, must be watertight and must be anchored to resist floatation and lateral movement during a storm surge or other flood.

Construction activities on parcels with ASTs between 125 and 1,000 gallons will require compliance with National Fire Protection Association (NFPA) 58 and associated set-back distances.

3.2.8 Noise Quality/Attenuation

- Outfit all heavy equipment with operating mufflers.
- Comply with the applicable local noise ordinance.
- If application site is in a high noise area then use appropriate Green Building Standard methods (see Condition 2) to attenuate.

3.2.9 Air Quality

- Use water or chemical dust suppressant in exposed areas to control excessive dust.
- Cover the load compartments of trucks hauling dust-generating materials.
- Reduce vehicle speed on non-paved areas and keep paved areas clean.
- Retrofit older equipment with pollution controls.
- Establish and follow specified procedures for managing contaminated materials discovered or generated during construction.
- Employ spill mitigation measures immediately upon a spill of fuel or other hazardous material.
- Minimize idling and ensure that all on-road vehicles and non-road construction equipment operated or visiting the project site comply with all applicable local and county regulations.

3.2.10 Oregon Scenic Waterways

While all Oregon Administrative Rules (OARs) for state scenic waterways may be applicable, the considerations listed below may be the most commonly encountered. These conditions apply to a project if it is within the designated boundary of an Oregon Scenic Waterway which is approximately ¼ mile from either side of a designated river.

Projects which are subject to these considerations will need to exercise the Notification of Intent process through the Oregon Parks and Recreation Department. Specific requirements will vary with the specific waterway that is in proximity to a project. Local zoning and permitting restrictions may also impact the specifications or construction plans as there may be additional local requirements.

Site-built projects on lands which can be seen from the waters within a scenic waterway shall:

- Be of such design and be constructed of such materials as to be unobtrusive and compatible with the scenic qualities of the area. For example, the following shall apply:
 - All structures shall be finished in muted tones appropriate to their natural surroundings;
 - No large areas, including roofs, shall be finished with white or bright colors or reflective materials;
 - No structures shall exceed 30 feet in height from natural grade on a side facing the river;
 - All structures shall be so designed and constructed that little or no soil is left exposed when construction is completed.

- Be located in such a way that topography and natural vegetation make them as inconspicuous as reasonably practicable, and in no case obtruding on the view from the river. The Commission may require that additional vegetative screening be established and maintained. In such event, it shall be evergreen, wherever practicable, and compatible with natural growth in the area.

Manufactured and Modular Home Projects on lands which can be seen from the waters within a scenic waterway shall:

- Not be established as dwellings, either permanent, (or) seasonal or temporary, within related adjacent lands unless they are entirely concealed from view from the waters within a scenic waterway by topography, except where homes are at least 20 feet wide, with exterior dimensions, less hitch, of 800 square feet, may be permitted under these rules subject to the same requirements and standards set forth in the previous section relating to criteria for review for structures and improvements that are visible from the waters within a scenic waterway. Additionally, full skirting shall be installed which in design, color and texture appears to be an integral part of the exterior of the structure.

Where structures will remain (typically rehabilitation):

- Owners and users of existing structures and other improvements shall maintain them and their surroundings in a manner and condition in harmony with the environment, compatible with the objectives set forth in these rules and regulations for the classified river area in which they lie, and without impairing substantially the natural beauty of the scenic waterway. The existing color of such structures may be maintained.

General Requirements for All Projects



4 General Requirements for All Projects

The contents of this section are intended to apply, where practicable, reconstruction, rehabilitation, and replacement projects. Additional project-specific requirements are noted in their respective sections.

The contractor shall understand that the work specified herein and shown on the drawings shall be a finished and working job as agreed upon with Program and participant. All work shall comply with current Federal, State, and Local building codes/ordinances, and State of Oregon program requirements as well as HUD minimum property standards located here: https://www.hud.gov/program_offices/housing/rmra/mps/mpshome.

Addenda and Change Orders to Drawings and Specifications take precedence over the original Construction Documents. Should there be a conflict between any of the Construction Documents, the most stringent of the conflicting requirements will apply. The builder will consult with the Program when conflicts arise.

Contractor to secure and pay for all permits and file all required drawings, specifications, and certifications with the City and/or County agency having jurisdiction.

The contractor shall provide Green Building Standard achievement for each house evidenced by a completed checklist.

Provide high-quality, durable, resilient, mold-resistant, energy efficient, decent, safe, and sanitary housing that meets Green Building Standards, and mitigates impact from future disasters. Resilient measures may include elevating the first floor of the habitable area; breakaway ground floor walls; reinforced roofs; storm shutters, etc. Rental units will also follow safe, decent, and sanitary requirements in the impacted areas identified in the HUD-approved Action Plan.

Nothing contained within this document shall be considered to supersede any specific local, state, or federal requirements where those requirements are more stringent than the requirements specified herein. If there is a conflict between the requirements, the more strict or demanding requirement should be followed.

Material standards shall conform to HUD requirements or as specified by Program plans, whichever is greater.

Documentation:

The following must be provided to the Program for inclusion with the Participant's record:

- Project Permits, inspection documents, and certificate of occupancy/completion.
- Photographs of installed insulation must be provided to evidence proper insulation installation.

- Evidence of roofing material class/grade.
- Evidence of exterior cladding and finishes class/grade.
- Manufacturer warranty documentation for installed components.
- Operational or User manuals which accompanied installed components.

Reference codes and requirements which may be applicable include, but may not be limited to, are:

- Oregon Energy Efficiency Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Documents/2021oeesc.pdf>
- Oregon Residential Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Pages/residential-structures.aspx>
- The Americans with Disabilities Act (ADA)
 - <https://www.ada.gov/law-and-regs/>
- Oregon Visitability Requirements
 - https://oregon.public.law/statutes/ors_456.510
- National Manufactured Housing Construction and Safety Standards act of 1974
 - <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>
 - <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282>
- Oregon Manufactured Dwelling Installation Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Documents/md-2010omdisc-codebook.pdf>
- Northwest Energy-Efficient Manufactured Housing Program
 - <https://www.neemhomes.com/program-info>
- 2 CFR Part 200
- 24 CFR Part 570
- 24 CFR Part 58
- 24 CFR Part 35
- 24 CFR Part 75
- 40 CFR Subpart M

4.1 Contractor Expectations

The designated contractor or vendor shall be responsible for procuring all applicable building and project permits, including any necessary testing, investigation, or clearance necessary to achieve project completion.

The contractor shall provide all necessary services, labor, materials, and equipment, to include mobilization, required to complete the project. Contractor will also provide maintenance and delivery of portable toilet.

Contractor is responsible for security of site and storage of materials from weather, theft, vandalism, and the like. The Program is not responsible for any expenses or costs incurred as a result of the aforementioned events.

4.2 Green and Resilient Building Standards

HUD requires that new housing construction, reconstruction or substantially rehabilitated housing comply with ONE of the following Green Standards:

- ENERGY STAR (Certified Homes or Multifamily High-Rise)
- Enterprise Green Communities
- EPA Indoor Air Plus (Energy Star a prerequisite)
- LEED (New Construction, Homes, Midrise, Existing Buildings Operations and Maintenance, or Neighborhood Development)
- ICC-700 National Green Building Standard.
- U.S. Environmental Protection Agency (EPA) Indoor airPLUS
- Equivalent or higher Oregon energy efficiency standards
- Any other equivalent comprehensive green building standard program acceptable to HUD

Additionally, all such covered construction must achieve a minimum energy efficiency standard, such as

- ENERGY STAR (Certified Homes or Multifamily High-Rise);
- DOE Zero Energy Ready Home;
- EarthCraft House, EarthCraft Multifamily;
- Passive House Institute Passive Building or EnerPHit certification from the Passive House Institute US (PHIUS), International Passive House Association;
- Greenpoint Rated New Home, Greenpoint Rated Existing Home (Whole House or Whole Building label);
- Earth Advantage New Homes; or
- Any other equivalent energy efficiency standard acceptable to HUD.

The ReOregon HARP program endeavors to build to both the Energy Star standard and the ICC-700 National Green Building Standard Certified Compliance Path for Single-Family Homes, Townhomes, and Duplexes as verified by Program staff.

- Energy Star:
 - https://www.energystar.gov/partner_resources/residential_new/homes_program_reqs/national_page
- ICC-700:

- <https://www.nahb.org/blog/2020/04/2020-National-Green-Building-Standard-Now-Available>

A completed program checklist and supporting documentation is to be submitted as proof of compliance. Homes and multifamily homes in high wind and Storms areas must also be built in compliance with FORTIFIED Home© standards or any other equivalent comprehensive resilient or disaster resistant building program. These standards also apply to rehabilitation projects that fall within the HUD definition of substantial rehabilitation.

Additionally, the implementation of Green Building Standards will apply to the greatest extent feasible for construction projects completed, underway, or under contract prior to the date that assistance is approved for the project. For specific required equipment or materials for which an ENERGY STAR-labeled, WaterSense-labeled, or FEMP-designated product does not exist, the requirement to use such products does not apply.

Rehabilitation work must follow, to the greatest extent feasible, the HUD CPD Green Building Retrofit Checklist.

- <https://www.hud.gov/sites/dfiles/CPD/documents/CPD-Green-Building-Retrofit-Checklist.pdf>

When older or obsolete products are replaced as part of the rehabilitation work, rehabilitation is required to use ENERGY STAR-labeled, WaterSense-labeled, or Federal Energy Management Program (FEMP) designated products and appliances.

4.3 General Guidelines

Manufacturer instructions and guidelines for installation or use shall be followed, to include application techniques, fastener requirements, etc.

All materials used shall be new and of good quality. Builder shall provide products that comply with the Contract Documents, that are undamaged, and unless noted otherwise, that are new at the time of installation. All work shall be done with skilled craftsmen and accomplished with care.

Contractor shall provide samples to the homeowner for selection for all materials as cited in the individual specifications and provide reasonable time to the homeowner to make selections.

Framing members should be crowned so as to avoid dips or humps in the finished element.

Upon completion of construction, but prior to final inspection, the contractor will:

- Remove all construction debris from the site

- Clean and mop all floors
- Clean all new and existing paint from other finished surfaces including window glass and mirrors
- Leave all newly installed items in operating condition
- Light gas water heater pilots, stove/oven pilots, and gas heater pilots, if applicable
- Start all other electrical and mechanical systems
- Put all hardware in operating condition and
- Schedule a meeting with the homeowner to furnish equipment manuals, warranty documents, and provide home operational and maintenance instructions as needed.

Discovery of defective elements made known to the contractor before or during the construction process shall be brought to the immediate attention of the contract administrator in writing. When repairs are made, the repairs shall reasonably match the surrounding materials in original design and dimension as approved by the contract administrator.

Where additional work is necessary to make repairs or to correct unforeseen dangerous conditions, the contractor shall submit to the contract administrator a proposal consisting of what type of work is needed, the cost of such work, and the time necessary for such work to be completed. Unless it is determined there exists an immediate health and safety danger, NO WORK SHALL BE AUTHORIZED until agreed upon in writing by the homeowner, contractor, and contract administrator.

4.4 Site

The lot or defined site shall be free of debris, garbage, or other accumulations of site stored items that create possibilities of infestations. The site shall be generally level, well-drained, and accessible.

Tree, tree limb, and/or brush trimming and removal within 10' of building footprint; If the home is being reconstructed in a location substantially different than that of the original structure, the contractor will remove and/or trim trees and/or brush up to 2' in diameter such that the home can be constructed.

Floodplain

Homes within the Floodplain, if being Reconstructed, Replaced, or substantially improved (Rehabilitated), must be elevated to the Program elevation requirement. Elevation, if required, must be included within the scope of work for these projects. Homes that were rehabilitated within the Floodplain that were subject to elevation requirements and which are not compliant, may not be eligible for Program assistance.

The elevation requirements are as follows and are described with the HARP Program policy manual:

- Structures that are elevated may need to meet Federal accessibility standards.
- If the home is located in the 100-year floodplain (the Special Flood Hazard Area), the home must be elevated to the greater of three (3) feet above Base Flood Elevation (BFE) or the elevation level required by the local jurisdiction.
 - **Possible exception:** If an Applicant has already initiated reconstruction prior to application and the home is located in the 100-year Floodplain, and the home is elevated two (2) feet above base flood elevation, the Program may not require the Applicant to elevate to three (3) feet. All homes in the 100-year Floodplain are required to be elevated at least two feet above the base flood elevation to be eligible for any Program assistance, per HUD requirements.

If the home is located in the 500-year floodplain, the home must be elevated to the greater of either three (3) feet above BFE of the 100-year floodplain or the elevation level required by the local jurisdiction.

- **Possible exception:** If an Applicant has already initiated reconstruction and the home is located in the 500-year Floodplain, and the home is not elevated, the Program may not require the Applicant to elevate to the Program elevation standard.

Elevation less than or equal to three (3) feet in height above the lowest adjacent grade as determined by the elevation certificate is included within the Reconstruction Multiplier. Should a reconstruction require elevation over three (3) feet in height above the lowest adjacent grade, the Program will allow for an additional amount above the applicable maximum award amount.

Note: Dirt fill as an elevation method is not eligible. Exceptions may be granted on a case-by-case basis.

Slab on grade foundations, unless already installed, are not allowable. Exceptions may be granted on a case-by-case basis. For relocation where the participant has the option to find a replacement home, the following considerations are made:

- Where the home is not within a designated flood zone, a pre-existing slab foundation may be allowable. If it is within a designated flood zone, then the home must be minimum two (2) feet above the 100 year base flood elevation.

Elevation less than or equal to three (3) feet in height above the lowest adjacent grade as determined by the elevation certificate is included within the Reconstruction Multiplier allowance. Should a Reconstruction project require elevation over three (3) feet in height

above the lowest adjacent grade, the Program will allow for an additional amount above the applicable maximum award amount.

Flood Hazard Area

Areas that have been determined by the flood plain administrator to be prone to flooding and that are not subject to high-velocity wave action shall be designated as flood hazard areas. Flood hazard areas that have been delineated as subject to wave heights between 1 1/2 feet (457 mm) and 3 feet (914 mm) or otherwise designated by the jurisdiction shall be designated as Coastal A Zones and are subject to the requirements. Required elevations shall adhere to the three (3) foot Program standard unless more stringent requirements are determined by the flood plain administrator.

Stormwater Runoff Design Criteria

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) is responsible for the stewardship of the nation's living marine resources and their habitats. As part of this mission, NMFS works to manage stormwater runoff to protect aquatic ecosystems. Stormwater runoff is water that flows off impervious surfaces, such as roads, parking lots, and rooftops, during rain or snow events. This runoff can carry pollutants, such as sediment, nutrients, and chemicals, into waterways, which can harm fish and other aquatic life.

Projects which increase the volume of runoff must include the approach to contain the runoff within the scope of work.

Sidewalks and Driveways

Sidewalks, driveways, and parking pads shall be provided as required by federal (The Fair Housing Act, Section 504, Americans with Disabilities Act (ADA), state, or local jurisdiction, and as follows:

- A handicap-accessible route shall be provided from the street to one entrance door of the house.
- Sidewalks shall consist of 3- to 4-foot-wide concrete with a specified finish from the front entrance of the home (front porch) connecting to the driveway or concrete ADA parking pad.
- Driveway and Parking Pads: If a driveway or parking pad is required, a 9-foot wide concrete driveway with a specified finish from the street to the garage, (if the house has a garage) or to the parking pad if the house has a parking pad). The length of the driveway is 20 FT minimum (unless less is required from the house to street access). Any increase of length over 20 feet is determined on a case-by-case basis.
- When not in a municipality (or determined by commonality in the existing neighborhood), an all-weather surface, i.e., decomposed granite, shells, crushed

limestone, etc., that forms a hard-packed surface for an automobile to drive on may be used as feeder access for a vehicle to travel from the main road to a concrete driveway, parking pad or a suitably sized concrete exit pad that will allow a disabled person to exit and enter his/her vehicle and have access to a 36-inch-wide route that meets ADA standards for slope and leads to a 36-inch-wide entry door on the home.

- All walkways and decks shall be continuous and usable, free from tripping hazards or other defects.
- Walkways that include two or more steps or decks more than 30 inches high shall include railing installed per building code.

Grading

Where the site allows, finish grade at house foundation shall provide positive drainage away from the structure and shall start a minimum of 6 inches below finish floor at the slab on grade or a minimum of 6 inches below pier footings for the elevated floor. Grading below the elevated floor slab shall provide positive drainage away from the house footprint and prevent pooling under the house.

Hazardous Conditions

Hazardous and substandard conditions shall include any condition that threatens the health and or safety of the occupants. Substandard conditions include any condition that threatens, defeats, or will lead to the lack of functional viability of a single feature of a home.

These conditions may include but not be limited to:

- Accumulated debris, waste, or garbage either in enclosed areas such as storage buildings or in yard areas.
- Deteriorated and/or irreparable outbuildings, sheds, wells, privies, or other structures that are no longer in use or are made unusable by their condition.
- Holes, ditches, exposed meter boxes, or other conditions that create a tripping hazard excluding drainage ditches that are part of a designed drainage system.
- Rodents, insects, or other infestations; pre-emptive measurements should be taken as necessary such as soil treatment (termite control), and removal of nearby overgrown vegetation (vermin) to address such issues.
- Standing water or depressions that hold water during wet weather, leaking water supply, percolating or leaking sewage.
- Exposed pipes, railings, or other installations creating trip hazards.
- Damaged, missing, or deteriorated walkways, steps, and decks that create tripping hazards or are otherwise unsafe.
- Stairways or steps with two steps or more and without a functional rail.
- Removing tree limbs that are within 2 feet of the roof or sides of the house.

- Tripping hazards in primary walkways or decks caused by upheaval, broken or damaged wood or concrete, or other conditions creating a hazard.
- Any condition not mentioned that meets the definition of a hazardous or substandard condition shall be repaired and/or rehabilitated to meet industry standards.

4.5 Exterior Framing, Finishes, and Requirements

The exterior shall adhere to the following requirements:

Garages & Carports

Garage floor surfaces shall be of approved noncombustible material. The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. Automatic garage door openers, if provided, shall be listed and labeled in accordance with UL 325.

Carports shall be open on not less than two sides. Carport floor surfaces shall be of approved noncombustible material. The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.

Exception: Asphalt surfaces shall be permitted at ground level in carports.

For buildings located in flood hazard areas as determined by the flood plain administrator, garage floors shall be one of the following:

- Elevated to or above the design flood elevation as determined in accordance with Section R322.
- Located below the design flood elevation provided that the floors are at or above grade on not less than one side, are used solely for parking, building access or storage, meet the requirements of Section R322 and are otherwise constructed in accordance with this code.

Framing & Sheathing

Exterior wall assembly to be framed in 2x6, plywood or OSB sheathing to meet code requirements, with continuous rigid insulation per Energy Star to reduce or eliminate thermal bridging.

All exterior corners shall be constructed to allow access for the installation of \geq R-6 insulation that extends to the exterior wall sheathing.

Wall intersections where impacting the conditioned envelope shall use ladder blocking, full length 2x6 or 1x6 furring behind the first partition stud.

The underfloor area of elevated structures shall be enclosed to grade in accordance with the requirements of Oregon Residential Specialty Code and shall be protected by noncombustible or ignition-resistant material.

Decks and Entry Structures

Decks or covered porches, which are included in the building footprint must meet and maintain the following requirements:

- Deck walking surfaces must be constructed with noncombustible materials.
 - Must have no woody vegetation (trees, shrubs), or vegetation of any kind underneath. Noncombustible ground cover or bare earth is permitted.
 - Must have nothing stored underneath.
- Additionally, for decks or porches 4 feet or less above the ground (when measured nominally from the walking surface to the ground at the location where this distance is maximum), the underdeck area must be enclosed to reduce the accumulation of debris using one of the following methods:
 - Install non-combustible, corrosion-resistant mesh material with openings not to exceed 1/8 inch around the outer edge of the deck from the walking surface to the ground to prevent ember intrusion. If a material (e.g., lattice) is installed over the mesh, it needs to be non-combustible.
 - Fully enclose with a noncombustible wall covering/cladding. For decks with an additional structure (like a pergola or gazebo), that additional structure must be constructed of noncombustible materials and shall not have a solid cover (noncombustible slats that cover no more than 10% total of the surface area where a roof cover would be is acceptable) and be free from any vegetation and curtains/drapes/screens.
- Detached decks must meet the same requirements as attached decks.
 - Home Ignition Zone – The First 5 Feet Around the Home - The Home Ignition Zone (HIZ) is one of the most critical aspects of wildfire mitigation at the parcel level and includes the space from the edge of the exterior walls to a distance of 5 feet from the building footprint. - Note that when decks and/or covered porches are present, the HIZ must extend around them.
- The HIZ must meet and maintain monthly all the following conditions:
 - Ground cover must be non-combustible and maintained free of debris (noncombustible hardscape such as gravel or paving stones is recommended)
 - No vegetation (trees, shrubs, bushes, plants, grass, weeds, etc.) should exist within or overhang the HIZ. Any overhanging limbs or branches from nearby trees and bushes must be trimmed back to be outside the HIZ.

Roof & Roofing Materials

Low slope roofing styles are generally prohibited and are defined as homes where the roof slope is less than or equal to 3 over 12.

Roofing materials shall be as specified in scope of work or plans and, depending upon material type, shall adhere to the below:

- **Asphalt Shingle:** Roofing shall be asphalt shingle of the Class A type, with the unit cost reasonableness being based on asphalt shingles. Roofing shall be rated for the applicable wind zone as required by Oregon Residential Specialty Code. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D7158 and the required classification.
- **Metal Roof Panels:** Metal roof panel roof coverings shall be applied to solid or spaced sheathing, except where the roof covering is specifically designed to be applied to spaced supports. Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with the applicable Oregon Residential Specialty Code and shall be secured to the supports in accordance with Oregon Residential Specialty Code.

Underlayment shall be installed as per code or manufacturer instructions and Oregon Residential Specialty Code, including Ice and water shield installed in all valleys and on all roof surfaces to a point not less than 24" inside the exterior wall line of the building.

Ice and water shield on the entirety of the roof deck if the roof pitch is less than 3/12.

Gutters & Downspouts

When included within scope, gutters and downspouts must be made out of noncombustible material. Gutters and downspouts must be provided with a means to prevent accumulation of leaves and debris in the gutter.

Vents

Ventilation openings for enclosed attics, gable ends, ridge ends, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations, and crawl spaces; under eaves and cornices; or for any other opening intended to permit ventilation, either in a horizontal or vertical surface, must meet the following requirements:

All vents must resist the intrusion of burning embers and flames by meeting one of the following requirements:

Performance: Corrosion-resistant vents conforming with the following ASTM E2886 test requirements:

- No flaming ignition of the cotton material during the Ember Intrusion Test.
- No flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
- Temperature of the unexposed side of the vent does not exceed 662°F.

Prescriptive: Vents must be made of noncombustible material and covered with noncombustible, corrosion-resistant mesh with openings not to exceed 1/8 inch.

- Exceptions:
 - Dryer vents should not have mesh and must have a louver or flap.
 - Plumbing vents are excluded from these requirements.

Radon

Radon mitigation measures shall be included in all projects as per Program policy.

Cladding

Exterior walls must have a minimum of 6 vertical inches measured from the ground (at grade) and shall be comprised of a noncombustible material or ignition resistant material. Recommended materials include fiber cement siding or cementitious siding, or other Program approved Noncombustible Material. Vinyl siding or wood products are not allowable. All trim components must be noncombustible material or ignition resistant material.

Exterior wall surfaces shall be free from chipped, cracking, or peeling paint. All such loose paint shall be completely removed, and bare wood surfaces primed. All primed surfaces shall be properly painted. Siding shall be smooth and free from gaps, cracks, rot, termite damage, holes, and other areas of damage. All gaps, seams, and laps shall be sealed.

Buildings not designated as historic by the Housing Recovery Office environmental review may have siding replaced with Fiber Cement Siding.

Doors

Exterior doors shall have a width of at least 36 inches and should be unobstructed.

Exterior doors facing towards the front of the home shall include storm door unless protected from solar radiation through other means such as a recessed doorway.

No less than two egress doors shall be provided for each unit.

Exception: Single-wide manufactured homes in parks where not allowable.

Exterior doors, if having a glass pane, shall be minimum laminated multi pane units or, if single pane, tempered glass. Exterior surface or cladding of the exterior doors shall be constructed with noncombustible materials.

Windows

Windows shall be minimum laminated multi pane units or, if single pane, tempered glass. Windows shall be rated to comply with the requirements of Oregon Specialty Residential Code R327. Window style shall be double hung, single hung, or slider, with fixed panel windows allowable at non-egress locations.

Hallways with a length greater than eight (8) feet shall have a window that is a minimum of four (4) square feet.

Insulation & Weatherization/Air Sealing

Insulation shall be:

Area	R-Value – MH	R-Value – Stick-Built
Floor	R- 33 (combined belly and joist)	R-30
Wall	R- 21	R-21
Attic	R- 49	R-49

Air and Moisture Sealing

Where the following standards differ from the Green Standards, the Green standards shall take precedence.

Exterior joints around window and door frames, between wall cavities and window or door frames, between walls and foundation, between walls and roof, between wall panels, at penetrations or utility services through walls, floors and roofs and all other openings in the exterior envelope shall be adequately sealed as per Energy Star guidelines. Use high-quality, durable, and long-lasting caulk and/or sealants for optimal performance.

- **Windows:**

- All windows shall be properly sealed with elastic putty or gasket material provided to create a tight seal.
- Ensure that the weatherstripping is not worn, cracked, or missing around the window sash and frame.
- Caulk gaps: Fill any gaps between the window frame and the surrounding wall with appropriate caulking. Use an elastomeric sealant like silicone or polyurethane for lasting flexibility.
- Seal between sashes: If your windows have double-hung sashes, apply weatherstripping between the sashes to prevent air infiltration.

- Consider storm windows: Installing storm windows on the exterior can provide an additional layer of air sealing and insulation.
- **Doors:**
 - Ensure that the weatherstripping not worn, cracked, or missing, and has a tight seal with the door jamb.
 - Adjust door sweep at the bottom of the door to seal the gap between the door and the threshold and ensure that the threshold is high enough to create a proper seal when the door is closed.
 - Fill any gaps around the door frame and threshold with caulking for improved air sealing.
- **Penetrations:**
 - Use caulk or foam sealant to close any gaps around pipes, wires, and other penetrations through walls or ceilings.
 - All holes, open seams, or other incursions that result in air leaks will be properly sealed.
- **Miscellaneous:**
 - Use high-quality, durable, and long-lasting caulk and/or sealants for optimal performance.
 - Rod stock backup shall be flexible, closed cell, expanded round polyethylene rodding 1-1/3 times the joint width in diameter conforming to Federal Specifications HH-f-341, Type 1, Class A and B.
 - Before applying sealants, all surfaces shall be absolutely clean of dirt, grease, loose material, and foreign matter. Apply primers and sealants in strict accordance with manufacturer's printed instructions. All sealants in exposed or visible locations to be tooled smooth as recommended by sealant manufacturer.
 - Complete sealant installation before the final coat of paint is applied.
 - Building Wrap should be Dupont Tyvek© HomeWrap© or ThermaWrap© or similar weather resistant barrier on all exterior walls (ensure compliance with chosen Green Standard).

4.6 Interior Finishes and Requirements

General

All hardware, electrical trim components, plumbing trim components, and mechanical trim components, shall be of uniform color and/or finish. For example, door handles should be brushed nickel to agree with the brushed nickel hinges; white electrical switches shall match with white cover plates.

All rooms, except kitchens, baths, hallways, storage rooms, and porches shall have a minimum width of 8 feet. Porches may not exceed 100 SF maximum (regardless of plan) without approval.

Basements, habitable attics, and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

Interior hallways shall have a solar tube light installed to provide visibility during power outages.

Flooring

All subfloors shall be solid and continuous, without liberal movement or bounce, free from rot and deterioration. All flooring shall be sealed and/or tight at the edges, free from tripping hazards with a minimum of seams spaced at logical locations such as doorways and matched to the existing floor.

Common rooms and wet rooms, such as the living, kitchen, bathroom(s), laundry, or mud room, shall be water resistant sheet goods which meet HUD material standards. Carpet which meets HUD material standards is allowable in sleeping areas as an alternative.

Provide standard 1" sloped vinyl transition strip or reducer between all dissimilar flooring materials (bull-nosed style and any that has abrupt change of level is not allowable).

Flooring materials for different living areas:

- Living room – water-resistant sheet goods or vinyl.
- Dining room– water-resistant sheet goods or vinyl.
- Kitchen – water-resistant sheet goods or vinyl.
- Bedrooms – carpet or water-resistant sheet goods or vinyl.
- Closets – carpet or water-resistant sheet goods or vinyl.
- Bathrooms – water-resistant sheet goods or vinyl.
- Utility – water-resistant sheet goods or vinyl.

Wall, Trim, and Paint Finish

Wall finishes shall be minimum ½" drywall with Level 3 finish and knock-down or orange-peel texture. Finish paint shall include one coat of primer and two coats of finish color. Bathrooms to have minimum satin paint finish. All other rooms to have minimum eggshell finish. Paint must be applied as per manufacturer specifications. Caulking shall be applied at all trim joints and returns as well as along the edge abutting the surface.

Trim and Doors

Interior passage doors will have a clear opening width of at least 32 inches.

Doors shall open towards the nearest perpendicular wall with clear access to light switch(es). Exterior doors shall open to the interior, outswing doors not allowable.

Pocket doors, if required, shall have locking mechanisms installed.

Pull-down attic access doors are to be trimmed with door casing. The attic access door and casing are to be painted.

Mitered corners are allowable with no visible gaps. Butt joints shall be mitered. Returns shall be mitered.

Interior doors shall be minimum hollow core Colonist, Craftsman, or other panel style door finish. Flush panel doors are not allowable.

Casing shall be minimum 2 ¼" finger-joint primed material with detail. Sanitary casing is not allowable.

Baseboard shall be minimum 3 ¼" finger-joint primed material with detail. Sanitary baseboard is not allowable.

Windows shall be finished with drywall returns, stool, and apron.

Kitchen

General

Minimum dimensions shall be twelve (12) feet by twelve (12) feet or one hundred forty-eight (148) square feet total.

All kitchens shall have adequate food storage facilities including at least three linear feet of counter area for food preparation and adequate cabinet space.

All kitchens shall have a working refrigerator/freezer, stove with oven, dishwasher, and microwave hood vent.

The cabinet and/or countertop fabricator/installer and general contractor shall be responsible for all required appliance "cut-outs" taken from the manufacturer's installation instructions and templates.

Cabinets

Cabinets shall have factory-grade finish, paint or stain. Particle board or MDF is not allowable for cabinet boxes and frames. Hinges shall be soft-close and adjustable. Cabinet over refrigerator is required. Cabinets shall be attached to each other with appropriate

length screws and fastened to the wall as per manufacturer recommendation. Toe-kick in matching finish is required at all base cabinets unless the design is such that a toe-kick is not required. End panels in matching finish shall be added to unfinished end cabinets. Additional cost for custom built-in cabinets will not be compensated for by the Program. Countertop shall be caulked to wall. Pulls and handles are required and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist.

Countertops

Countertops shall be laminate with 4" laminate splash. Laminate ends shall be covered with matching finish. Mitered corners shall be joined using manufacturer approved joining methods and hardware. Waterproof around sink cut out perimeter top, edge, and bottom. Contractor to provide Owner with preselected color samples for color selection.

Fixtures

Fixtures shall be installed as per manufacturer instructions with all finishes matching.

- **Sink:** 2 equal sized compartments, 22" x 33", 6" deep minimum, stainless-steel finish.
- **Garbage Disposal:** 1/2-HP continuous feed garbage disposal.
- **Faucet:** Single handle, Water Sense-compliant, metal bodied faucet with sprayer. Solid brass or durable metal alloy construction for strength and long-lasting performance.
- **Dishwasher:** Shall be installed in line with cabinetry, have minimum three wash cycles (heavy, normal, and light), four wash levels, cool & hot air dry, water heater, and Energy Star rating.
- **Microwave Hood Vent:** shall, at a minimum, be ducted to the exterior, 200 CFM, 1.6 cubic feet, 1,000 watts, EnergyStar rated, and installed above the range.
- **Refrigerator:** shall be a minimum of 18 cubic feet, top freezer, and EnergyStar rated. Doors shall be adjusted to open be away from the main kitchen area.
- **Electric Range:** shall be free-standing and installed in line with cabinetry, contain 4 burners, porcelain top, knob controls, digital clock, oven timer, hot surface indicator lights, and self-cleaning oven.

Bathroom

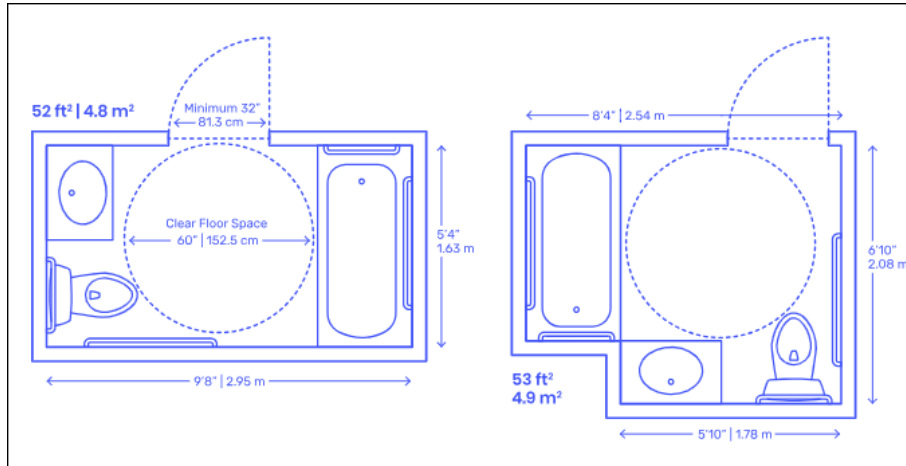
When a plan includes two or more bathrooms, provide a master bathroom and a master closet in the master bedroom.

- Master Bathroom:
 - Minimum dimensions shall be twelve (12) feet by twelve (12) feet.
- Secondary Bathroom(s):

- Minimum dimensions shall be large enough to accommodate the vanity, toilet, and tub/shower unit as scoped.

One commonly accessible bathroom area will be large and open, providing wheelchair radius access to toilet, bath/shower, sink, and linen hooks.

- Example:



Cabinets

Cabinets shall have factory-grade finish, paint or stain. Particle board or MDF is not allowable for cabinet boxes and frames. Hinges shall be soft-close and adjustable. Cabinets shall be attached to each other with appropriate length screws and fastened to the wall as per manufacturer recommendation. Toe-kick in matching finish is required at all base cabinets unless the design is such that a toe-kick is not required. End panels in matching finish shall be added to unfinished end cabinets. Additional cost for custom built-in cabinets will not be compensated for by the Program. Pulls and handles are required and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist.

- Master Bathroom Vanity: 36" width
- Secondary Bathroom Vanity: 36" width

Countertops

Countertops shall be single-piece solid polymer material with integral bowl and splash. Splash shall also be included where the side of countertop abuts the wall. Countertop shall be caulked to wall. Contractor to provide Owner with preselected color samples for color selection.

Fixtures and Functions

- **Toilet:** shall be comfort height or ADA height with elongated bowl, Water Sense-compliant, and soft close toilet seat. Fabric or cushioned toilet seats are not allowable. Toilet flush handle finish shall match door and cabinet hardware finish.
- **Sink Faucet:** shall be, Water Sense-compliant, metal bodied, single handled lever type, and in a finish to match adjacent hardware. Solid brass or durable metal alloy construction for strength and long-lasting performance.
- **Tub/shower Fixtures:** shall be, Water Sense-compliant, metal bodied, single handled lever type, detachable hand sprayer/shower wand, and in a finish to match adjacent hardware.
- **Tub/shower Unit:** shall be single or multi panel, with joints sealed as per manufacturer specifications. Panels shall be installed to framing, installation of shower panels adhered to drywall or wall board is not allowable. Insulation must be installed behind the unit if on exterior wall.
 - **ADA Requirements (if applicable):** Roll-in shower may be selected by participant which shall include bench seat, grab bars, and adjustable shower head/wand.
- **Grab Bars:** if being installed, shall be in a finish to match adjacent hardware, and mounted to additional framing elements in wall. If grab bars are not contained within the scope of work, framing elements shall be added prior to drywall to accommodate future grab bar installation shall be installed.
 - Grab bars shall be installed as per The Americans with Disabilities Act design standards.
- **Heater Vent Light:** Vented to exterior, XXXCFM, XXXBTU, with humidistat switch for vent.

Accessories

- Towel bars, two (2), 18" long.
- Toilet tissue holder, single roll.
- Wall mounted medicine cabinet style mirror centered on sink faucet or, if vanity is greater than 36", a wall mounted mirror with medicine cabinet mounted to side wall is allowable. Minimum mirror size shall not be smaller than six (6) inches less the width of the vanity. Installation height shall be no higher than forty (40) inches from the floor to the bottom, and no less than seventy-four (74) inches from the floor to the top.

Living and Sleeping Areas

Bedrooms

- Master Bedroom:

- Minimum dimensions shall be twelve (12) feet by twelve (12) feet or 148 square feet total with one wall a minimum of 10 feet long.
- Minimum 5 ft. 0 in. wide x 2 ft. 0 in. deep closet required in each bedroom.
 - Closet shall include shelf and closet rod which shall span length of closet wall. Shelf installed at 80-84" height from floor and rod installed at 80-82" height from floor.
- Minimum of two (2) windows required.
- Secondary Bedroom(s):
 - Minimum dimensions shall be ten (10) feet by ten (10) feet or 100 square feet total with one wall a minimum of 8 feet long.
 - Minimum 5 ft. 0 in. wide x 2 ft. 0 in. deep closet required in each bedroom.
 - Closet shall include shelf and closet rod which shall span length of closet wall. Shelf installed at 80-84" height from floor and rod installed at 80-82" height from floor.

Hallway(s)

- Minimum of one (1) window required when hallway is adjacent to exterior wall and longer than five (5) feet. Not required to be operable or egress.

Living Room

- Minimum dimensions shall be 175 square feet with one wall being a minimum of twelve (12) feet.
- Coaxial cable to be run from within five (5) feet of exterior service entry to non-windowed longest wall or wall designed/designated as media location, terminated in single gang junction box with cover plate.

Dining Area

- Dining area shall be 175 square feet, provided this does not include square footage from adjacent room. Example: Open concept living, dining, and kitchen, where the minimum square footage of one area does not detract from the minimum square footage of the adjacent.

Laundry

Provide hook-up and venting for electric clothes washer and dryer as shown on plans. Dryer exhaust vent connection shall be to exterior. Clothes washer and dryer are not in the contract, not to be supplied. Appliances shall match in finish and/or color.

- Washer shall be, at minimum, EnergyStar rated, with 3.8 CF capacity, and 3 wash cycles.

- Dryer shall be, at minimum, EnergyStar rated, 6 CF capacity, 3 cycle, vented to exterior.

Laundry rooms shall be sized such that the side-by-side washer and dryer and heat pump water heater fit within area with the required amount of clearance space.

Laundry room shall contain one wall cabinet and shall include shelf and closet rod. Shelf installed at 80-84" height from floor and rod installed at 80-82" height from floor.

4.7 Paint and Coatings

Before commencing work, the Contractor shall make certain that the surface to be covered is in proper condition to receive the finish specified. The coverage of the surface shall be held to denote the acceptance of the surface.

All interior and exterior spaces are to be primed and painted as scheduled. Interior painting will be a total of three paint colors: one wall color, one ceiling color, and one trim color. Exterior selections will consist of a wall color, trim color, and one accent color.

If required for environmental reasons, exterior paint color must conform to requirements.

Ceilings shall be flat white or off-white paint color.

All paints, coatings, and finishes are to be applied in strict accordance with manufacturer's directions and carry a manufacturer's warranty.

Interior coatings shall be low/no VOC.

Exterior Paint Standard:

- Fiber Cement / Cementitious Materials
 - Prime - 1 coat on all surfaces, 4 mils wet; 1.4 mils dry.
 - Primer is not necessary on paint-ready fiber cement;
 - Finish - 2 coats at 4 mils wet; 1.5 mils dry per coat. Satin finish.
- Metals
 - Prime - 1 at 7 mils wet;
 - Finish - 2 coats at 9 mils wet; 3 mils dry per coat. Satin Finish.

Note: Projects located near State Scenic Waterways will need additional considerations regarding colors and reflectivity, vegetation, and structure height.

Interior Paint Standard:

- Gypsum Wall Board
 - 1 coat primer at 4 mils wet; 1.4 mils dry.
 - Finish - 2 coats at 4.2 mils wet; 1.6 mils dry per coat, egg-shell finish.

- Wood
 - Primer - 1 coat at 4 mils wet; 1.4 mils dry.
 - Finish - 2 coats at 4 mils wet; 1.4 mils dry per coat, semi-gloss finish.
- Interior Doors and Trim
 - See wood finish above, semi-gloss finish.
- Metal
 - Primer - 1 coat at 7 mils wet; 3 mils dry.
 - Finish - 2 coats at 9 mils wet; 3 mils dry per coat.

4.8 Mechanical, Plumbing, & Electrical

Mechanical

The HVAC system will be an Energy Star certified heat pump that meets the following conditions:

- Air Source Heat Pump: HSPF 10.0 / 16 SEER cooling or 8.5 HSPF2 / 15.0 SEER2 or
- Ground-Source Heat Pump: COP 3.5 or Energy Star rated

Supplementary electric resistance heat elements shall be included to meet the heating load. Elevated exterior condenser pad installed per municipal height requirements or to the finished floor level. A drain pan shall be installed at the air handler with a float-valve and overflow piped to the exterior. Thermostats shall meet Energy Star Smart Thermostat criteria. Minimum 8 MERV filters shall be installed.

Heating and cooling equipment and appliances shall be sized in accordance with Oregon Residential Specialty Code or manufacturer's recommendation. Equipment and appliances installed outdoors shall be listed and labeled for outdoor installation with supports and foundations that shall prevent excessive vibration, settlement, or movement of the equipment as per Oregon Residential Specialty Code or manufacturer's recommendation.

In flood hazard areas as determined by the flood plain administrator, heating and cooling equipment and appliances shall be located or installed in accordance with Oregon Residential Specialty Code.

Heating and cooling equipment and appliances shall be located with respect to building construction and other equipment and appliances to permit maintenance, servicing, and replacement. Clearances shall be maintained to permit cleaning of heating and cooling surfaces; replacement of filters, blowers, motors, controls and vent connections; lubrication of moving parts; and adjustments.

HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.

Plumbing

A PEX plumbing system shall be installed, complete with a minimum of two (2) outside freeze-proof spigots. A 50-gallon Energy Star heat pump water heater shall be installed with a drain pan piped to the exterior. All visible stub-outs shall be copper and appropriately mounted to fixed blocking. Electric heat pump water heater with minimum 3.45 UEF. Preferably installed in laundry area and door to area is louvered to allow for required air exchange or ducted using approved pipe and adapters such that it achieves the required air exchange.

All exposed plumbing shall be freeze protected or insulated to a minimum R-value of 3.5.

Electrical

A GFCI-type receptacle shall be installed adjacent to the sink in each bathroom.

Every habitable room shall have a minimum of one (1) receptacle per wall.

Switches shall be illuminated Decora (paddle) style switches.

Light fixtures in rooms with more than one point of entry shall be switched with three-way switches within reach of the point of entry.

Rooms in excess of 150 square feet shall contain multiple light fixtures.

Trim out & Finishes

- Exterior Entry Door:
 - Independent switches for exterior entry light(s), exterior flood light(s), and interior room light. Each entry or exit door shall have a minimum of one lighting fixture, with two at the principal entry.
 - Minimum of two switchable double-bulb exterior flood lights with motion sensing capabilities, installed on opposing corners with lights, when on, illuminating all four sides.
 - Exterior receptacles shall be installed, at minimum, adjacent to the exterior doors.
- Master Bedroom:
 - Ceiling fan with light, minimum 52" width, LED dome light. Fan and light shall be wired for independent switches. Bedroom light fixture shall be controlled from both the entry door and the bed-side area.
 - One of the receptacles installed shall be installed at typical height below the light switch located at bed side. Receptacle shall include one (1) USB-C port and one (1) USB-A port.
- Closets:
 - Flush mount LED dome light with switch.

- Hallway(s)
 - IC rated recessed LED light. Three-way switch required when hallway is longer than 8 feet.
 - Hallways five (5) feet or longer shall have a minimum of one (1) receptacle.
- Kitchen
 - IC rated recessed LED light over kitchen sink, switched near sink.
 - Minimum of four (4) switched IC rated recessed LED lights situated equidistant over work areas.
- Living Room
 - Ceiling fan with light, minimum 52" width, LED dome light. Fan and light shall be wired for independent switches.
- Dining Room
 - One fan-box installed at room center point, wired for future fixture use, with switch leg terminating at recessed light switch junction box.
 - Minimum of four (4) switched IC rated recessed LED lights situated equidistant over work areas.
- Laundry Room
 - Switched four (4) foot ceiling mount LED or Fluorescent light fixture.
- Staircase
 -
- Lighting and Electrical

Smoke and Carbon Monoxide Alarms

Per NFPA 72, smoke alarms must be hardwired or use 10-year non-rechargeable nonreplaceable primary batteries and are sealed, tamper-resistant, containing silencing means, and provide notification for persons with hearing loss.

- Combination smoke and carbon monoxide alarms shall be permitted to be used in lieu of smoke alarms provided they are listed in accordance with UL 268 and UL 2075.

Smoke alarms shall receive their primary power from the building wiring. Where more than one smoke alarm is required to be installed within an individual dwelling unit in, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual dwelling unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

Exception: Hardwired interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure.

4.9 Solar Ready

Homes shall be constructed so as to be solar ready and allow the installation of additional solar components with minimal need to include design retrofits.

Roof and Attic Considerations

Design roof areas for solar placement. (Arrays need to be placed on large roof faces in aesthetic, orderly fashion for efficiency. Stay away from dormers, vents, gables and other obstructions)

Roofs with steeper pitches will produce the most energy throughout the year.

A flashed/waterproofed solar-specific junction box is mounted to the pre-determined position on the roof.

Metal shingle roofs may require additional racking supports.

If the home has a vaulted ceiling, with no attic, additional measures are required to ensure cables are routed internally.

Place mechanical obstructions (vents, skylights, chimneys, satellite dishes, plumbing stacks, etc.) away from solar area, when possible.

If obstructions must be placed on the same face as the pre-determined solar array face, then the obstructions need to be grouped together near the crest, eave or edge, allowing for maximum unobstructed space for the solar panel array.

Planning

If known, the following should be taken into consideration when planning:

- Tree cover
- Direction of sun in accordance with largest facing roof
 - South-facing will optimize potential.
 - East-West is also applicable, but will result in a slight efficiency loss.
- % day/month/year of cloud or smoke cover

Installation

When roughing in the home, hide any extra cabling by installing the wiring behind the walls, along with electrical wiring.

Install 1.5" conduit from the attic, throughout the home to the point where the pre-determined battery system will be located.

Install 1.5" conduit from battery system location to the electric panel.

Install wiring from the junction box, through the conduit and to the pre-determined battery system location. (Wiring size and type will vary, depending on size and type of paneling installed)

Install wiring from battery system location to the electric panel. (Wiring size and type will vary, depending on size and type of paneling installed)

Electrical Panels Considerations

It is best practice to increase the electrical panel busbar size, relative to the main breaker rating.

There should be a small area near the electrical panel, that is dedicated to providing space for a potential need for a string inverter (if required).

4.10 Miscellaneous

Emergency Escape and Rescue Opening Required.

Basements, habitable attics, and every sleeping room shall have not less than one operable emergency escape and rescue opening. Reference Oregon Residential Specialty Code for additional and applicable standards. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge. Window opening control devices on windows serving as a required emergency escape and rescue opening shall comply with ASTM F2090.

Emergency escape and rescue openings shall adhere to Oregon Residential Specialty Code. Where a window is provided as the emergency escape and rescue opening, it shall have a sill height of not more than 44 inches (1118 mm) measured from the finished floor to the bottom of the clear opening. Where the sill height is below grade, it shall be provided with a window well in accordance with Oregon Residential Specialty Code.

Exception: The ladder or steps required by Section R310.2.3.1 shall be permitted to encroach not more than 6 inches (152 mm) into the required dimensions of the window well.

Window wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position.

Area wells shall be designed for proper drainage in accordance to 2021 Oregon Residential Specialty Code.

Refer to Oregon Residential Specialty Code for additional requirements.

4.11 Warranty

The Program requires that warranties be provided by the contractor/vendor for:

- New Construction
 - 1-year fit and finish warranty period
 - 3- year mechanical, electrical and plumbing (MEP) warranty period
 - 10-year structural warranty period.
- Rehabilitation – For components addressed as part of Program scope.
 - 1-year fit and finish warranty period
 - 2- year mechanical, electrical and plumbing (MEP) warranty period
 - 2-year structural warranty period.
- Manufactured Home Replacement
 - 1-year fit and finish warranty period
 - 2- year mechanical, electrical and plumbing (MEP) warranty period
 - 2-year structural warranty period.

Contractor/vendor warranty shall include all materials and labor to repair any defects or leaks that develop and repair or make good any damage caused by leaks and roof repairs for the specified period from date of substantial completion.

All warranty claims are between the homeowner and the contractor. The Program does not provide warranty services. Contractor should present warranty documents to the Participant which detail the length and method of claim request.

Modular Homes



5 Modular Homes

For this program, modular homes are considered stick-built homes. Sections of the home are built offsite and assembled onsite. This can dramatically increase project efficiency. All modular homes will comply with the standards contained within Section 7 Reconstruction Projects (Stick-Built).

Rehabilitation & Repair Projects



6 Rehabilitation & Repair Projects

The condition of the structure at the time of Program assessment will dictate whether the project may continue as a rehabilitation or if it must follow the reconstruction pathway as dictated by applicable policy. If the estimated cost of Rehabilitation required to return the property to Program standards exceeds the amount stipulated in Policy, the Participant will only be eligible for Reconstruction or Replacement.

Repairs shall not make the building any less conforming with the provisions of applicable code than the building was before the repair was undertaken. Repairs for the purposes of building maintenance shall comply with IRC Section R105.2.2. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any gas, piping, or mechanical work.

Where it becomes necessary to repair all or a portion of a legally existing building that has been damaged by, including but not limited to fire, wind, flood, earthquake, or other similar damage, and where prior to the damage the legally existing building did not contain unsafe conditions, the building may be reconstructed in substantially the same manner as it existed prior to the damage. The following requirements from the currently effective code shall be included in the rehabilitation, where practicable:

- Repaired structural elements in accordance with the design criteria and loading requirements of Chapter 3 or to the maximum extent practical as approved by the building official.
- Smoke alarms in accordance with Section R314.
- Carbon monoxide alarms in accordance with Section R315.
- Guards and fall protection in accordance with Section R312.
- Hazardous glazing locations in accordance with Section R308.
- Emergency escape and rescue openings in accordance with Section R310.
- Table N1101.2, to the maximum extent practical.
- Floodplain construction requirements, where applicable, as determined by the flood plain administrator.

Additionally, if a component is being substantially repaired or replaced, it should be repaired or replaced in the manner specified within Section 3 General Requirements for All Projects. When older or obsolete products are replaced as part of the rehabilitation work, rehabilitation is required to use ENERGY STAR-labeled, WaterSense-labeled, or Federal Energy Management Program (FEMP) designated products and appliances.

Rehabilitation work must follow, to the greatest extent feasible, the HUD CPD Green Building Retrofit Checklist.

- <https://www.hud.gov/sites/dfiles/CPD/documents/CPD-Green-Building-Retrofit-Checklist.pdf>

Such repairs for the purposes of correcting damage are not required to meet other current code requirements for new construction. Where unsafe conditions existed prior to the damage occurring, the building may be reconstructed in accordance with this section provided that the unsafe conditions are corrected, as determined by the building official.

In damaged areas of the home, siding and trim will be intact and weatherproof. Buildings designated as historic will have existing wood siding repaired in kind. New exterior wood will blend with existing and will be spot-primed and top-coated in a lead-safe manner. Buildings not designated as historic by the Housing Recovery Office environmental review may have siding replaced with Fiber Cement Siding to match the existing configuration.

As a general rule, the Program seeks to minimize the disturbance of ACM to the extent that is reasonably practicable to achieve Minimum Program Standards. If siding can be repaired without disturbing the underlying ACM then that is the preferred method.

If siding contains asbestos and repairs are defined as substantial, replace all siding. If asbestos siding is covered with non-asbestos siding and the non-asbestos siding must be patched, asbestos siding may not be required to be removed provided it is not being disturbed.

Stucco siding will be patched where damaged. Material may be tinted or painted to match as closely as possible. Brick siding will be patched with brick matched as closely as possible to existing. Standard replacement of siding will be Fiber Cement siding or approved equal.

Homeowner will have a choice of color for exterior cladding if completely replaced or, if partial repair, cladding finish shall match the existing color.

Reconstruction Projects (Stick- Built)



7 Reconstruction Projects (Stick-Built)

All single-family rehabilitation and reconstruction carried out with the assistance of funds provided through community development block grant disaster recovery (CDBG-DR) funding shall be carried out in accordance with these Standards and Construction Specifications as they relate to single-family housing, and unless otherwise defined shall meet or exceed industry and trade standards.

HUD housing must be decent, safe, sanitary, and in good repair. Owners of housing described in §5.701(a), mortgagors of housing described in § 5.701(b), and PHAs and other entities approved by HUD owning housing described in § 5.701(c), must maintain such housing in a manner that meets the physical condition standards set forth in this section in order to be considered decent, safe, sanitary and in good repair. These standards address the major areas of HUD housing: the site; the building exterior; the building systems; the dwelling units; the common areas; and health and safety considerations.

Construction standards for new housing units must conform to the requirements specified in the current adopted codes:

- Oregon Energy Efficiency Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Documents/2021oeesc.pdf>
- Oregon Residential Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Pages/residential-structures.aspx>

In the event that relevant codes and/or standards are updated prior to this document, the most recently adopted codes and/or standards shall apply.

7.1 Floor Plan

The floor plan shall include Living/Dining/Kitchen with open floor plans expressed in square footages (sq. ft.) (gross square footage including all framed walls, excluding exterior masonry lug. Attached garages not included). For floor plans with the same indicated room counts, the excess square footage for the larger floorplans will be applied to common areas (living, dining, kitchen, etc.).

HARP Floorplan	Square Footage	Bedrooms	Full Bathrooms	Lowest Square Footage Threshold
1	1,000	2	2	0
2	1,100	2	2	1,050
3	1,200	2	2	1,150
4	1,300	3	2	1,250
5	1,400	3	2	1,350
6	1,500	3	2	1,450
7	1,600	4	2	1,550
8	1,700	4	2	1,650
9	1,800	4	2	1,750
10	1,900	5	3	1,850
11	2,000	5	3	1,950

7.2 Foundation & Framing

Exterior footings shall be placed not less than 12 inches (305 mm) below the finished grade on undisturbed ground surface unless otherwise specified within Oregon Residential Specialty Code. The top surface of any foundation elements shall be level and uniform in finish/appearance.

Seismic Provisions

Buildings in Seismic Design Categories C, D0, D1, and D2 shall be constructed in accordance with 2021 Oregon Residential Specialty Code R301.2.2.

The value of SDS determined in accordance with Section 1613.2 of the Building Code is permitted to be used to set the seismic design category in accordance with Table R301.2.2.1.1.

Buildings located in Seismic Design Category E in accordance with Figure R301.2.2.1 are permitted to be reclassified as being in Seismic Design Category D2 provided that one of the following is done, as referenced in 2021 Oregon Residential Specialty Code R301.2.2.1.2.

Primary seismic zones which are identified below must be verified prior to design. The below is for general reference only.

County	Burn Scar Seismic Zone(s)	Other Seismic Zone(s)
Clackamas	D0	D1, C
Marion	D0, C	D1
Lincoln	D2	E
Lane	D0, C	D1
Linn	D0, C	D1
Douglas	D0	D2, D1, C
Klamath	D1, D0	D2, C
Jackson	D0	D1, C

Snow Loads

Wood-framed construction, cold-formed, steel-framed construction and masonry, concrete construction, and structural insulated panel construction in regions with ground snow loads, 70 pounds per square foot (3.35 kPa) or less, shall be in accordance with Oregon Residential Specialty Code Chapters 5, 6, and 8. Buildings in regions with ground snow loads greater than 70 pounds per square foot (3.35 kPa) shall be designed in accordance with accepted engineering practice.

Site-specific ground snow loads shall be those set forth in the online lookup tool at Snowload.seao.org/lookup.html. Where the site elevation is higher than the modeled elevation reported by the online lookup tool, the reported ground snow load values shall be adjusted as per code prescribed method. The minimum ground snow load, for prescriptive design is 36 psf (1.724 kN/m²). The minimum roof snow load for engineered design is 25 psf (1.197 kN/m²).

Wind Design

Buildings and portions thereof shall be constructed in accordance with the wind provisions of the Oregon Residential Specialty Code using the basic design wind speed, V, in Table R301.2(1). Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section referenced in Oregon Residential Specialty Code R301.2.1, shall apply. A continuous load path shall be

provided to transmit the applicable uplift forces in Section R802.11.1 from the roof assembly to the foundation.

Foundations

Geotechnical evaluations are likely required for the purpose of foundation design, and

The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for buildings. In addition to the provisions of this chapter, the design and construction of foundations in flood hazard areas as determined by the flood plain administrator shall meet the provisions of Section R322.

Foundation construction shall be capable of accommodating all loads in accordance with Section R301 and of transmitting the resulting loads to the supporting soil. Fill soils that support footings and foundations shall be designed, installed, and tested in accordance with accepted engineering practice.

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 not fewer than 6 inches (152 mm) within the first 10 feet (3048 mm). All drainage plans shall conform to NMFS requirements.

Exception: Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3048 mm), drains, swales or other means shall be provided and shall be constructed to ensure drainage away from the structure. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped not less than 2 percent away from the building.

Where data indicate expansive soils, compressible soils, shifting soils, or other questionable soil characteristics are likely to be present, the building official shall determine whether to require a soil test to determine the soil's characteristics at a particular location. This test shall be done by an approved agency using an approved method.

7.3 Electrical

Electrical

Units shall have a minimum of 200-amp electrical system/service and distribution that shall meet municipality requirements and plan specifications.

7.4 Section 3 Requirements

If the project cost exceeds \$200,000, Section 3 requirements shall apply.

Section 3 of the Housing and Urban Development Act of 1968, as amended, requires that training, employment, and other economic opportunities generated by certain HUD financial assistance shall be directed, to the greatest extent feasible, and consistent with existing Federal, State, and Local laws and regulations, to low- and very low-income persons. Contractor will make every effort to ensure Recipients of Section 3-covered funding achieve compliance and the compliance of their contractors/subcontractors with the Section 3 requirements, as outlined in 24 CFR §135.32.

Replacement Projects (Manufactured Housing)



8 Replacement Projects (Manufactured Housing)

Construction standards for new manufactured housing units are set by the National Manufactured Housing Construction and Safety Standards act of 1974 (HUD Code Standards 3280 and 3282), and the Oregon Manufactured Dwelling Installation Specialty Code. Additionally, manufactured dwellings must conform to the Northwest Energy-Efficient Manufactured Housing Program standards.

- National Manufactured Housing Construction and Safety Standards act of 1974
 - <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>
 - <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282>
- Oregon Manufactured Dwelling Installation Specialty Code
 - <https://www.oregon.gov/bcd/codes-stand/Documents/md-2010omdisc-codebook.pdf>
- Northwest Energy-Efficient Manufactured Housing Program
 - <https://www.neemhomes.com/program-info>

In the event that relevant codes and/or standards are updated prior to this document, the most recently adopted codes and/or standards shall apply.

All manufactured housing shall be constructed to NEEM 1.1 or better.

All manufactured housing shall be installed on a permanent foundation and will be tied down through the installation of approved tie-downs to meet state requirements. All road transport accessories such as wheels, trucks, and hitching devices shall be removed to make the installation permanent.

Manufactured Housing Units (MHUs or mobile homes) are eligible for rehabilitation at the discretion of the Program; however, the MHU to be rehabilitated must not exceed the thresholds stipulated within Program policy and must return the home to a habitable state.

Minimum Manufactured Housing Standards. Construction standards for new manufactured housing units are set by the agencies and programs stipulated above. Where a conflict among the standards exists, the more stringent requirement shall be adhered to.

- All manufactured housing shall be installed on a permanent foundation.
- All manufactured homes will be tied down through the installation of approved tie-downs adequate to meet state requirements.
- All road transport accessories such as wheels, trucks, and hitching devices shall be removed to make the installation permanent.

- Hazardous conditions shall include any condition that threatens the health and or safety of the occupants. Substandard conditions include any condition that threatens, defeats, or will lead to the lack of functional viability of a single feature of a home. These conditions shall include but not be limited to:
 - A manufactured home that is not permanently situated on a permanent foundation.
 - A manufactured home that is not adequately tied down or affixed by an approved tie-down system.
 - A manufactured home that has not had its wheels, truck, and hitch removed.
 - Any other condition not mentioned that meets the definition of a hazardous or substandard condition shall be repaired and/or rehabilitated to meet industry standards.

8.1 Foundation and Framing

Manufactured home foundations shall be designed by a licensed engineer, or other party permitted to design foundations, on contiguous footing supporting the entirety of the structural and load-bearing walls. Material and dimensions shall meet structural engineering specifications suitable for the specific soil and seismic conditions of the site. Piers shall be constructed from CMU block as designed by foundation engineer. Areas between footing elements to be compacted gravel with appropriate moisture barrier. Perimeter skirting to be masonry block.

Anchors

Anchors shall be designed and installed to transfer the anchoring loads to the foundation element and shall be designed to Seismic Design Category D2 as described within the Oregon Manufactured Dwelling Installation Specialty Code.

Manufactured ground anchors shall be listed and installed in accordance with the terms of their listing and the anchor manufacturer's instructions and shall conform to applicable code. Ground anchor manufacturer's installation instructions shall include the amount of preload required and load capacity. These instructions shall include tensioning adjustments where needed to prevent damage to the manufactured home, particularly damage that can be caused by frost heave. Each ground anchor shall be marked with the manufacturer's identification and listed model identification number, which shall be visible after installation.

Anchoring Equipment

Anchoring equipment, where installed as a permanent installation, shall be capable of resisting all loads as specified within the applicable provisions. Where the stabilizing

system is designed by an engineer or architect licensed by the state to practice, such alternative designs shall include anchoring equipment capable of withstanding a load equal to 1.5 times the calculated load. Anchoring equipment shall be listed and labeled as being capable of meeting the requirements of these provisions. Anchors, as specified in this code, shall be attached to the main frame of the manufactured home by an approved connector plate that conforms to the applicable code. Other anchoring devices or methods meeting the requirements of these provisions shall be subject to the evaluation and approval of the building official and Program construction staff.

- Anchoring systems shall be so installed as to be permanent.
- Anchoring equipment shall be so designed to prevent self-disconnection with no hook ends used.
- All anchoring equipment, tension devices, and ties shall have a resistance to deterioration as required by this code.
- Tensioning devices, such as turnbuckles or yoke-type fasteners, shall be ended with clevis or welded eyes.

Ties, Materials, and Installation

Approved seismic anchors, steel strapping, cable, chain, or other approved materials shall be used for ties. Ties shall be fastened to anchors and drawn tight with turnbuckles or other adjustable tensioning devices or devices supplied with the ground anchor. Ties shall connect the anchor and the main structural frame. Ties shall not connect to steel outrigger beams that fasten to and intersect the main structural frame unless specifically stated in the manufacturer's installation instructions. Connection of cable ties to main frame members shall be code-prescribed closed-eye bolts affixed to the frame member in an approved manner. Cable ends shall be secured with no fewer than two U-bolt cable clamps with the "U" portion of the clamp installed on the short (dead) end of the cable to ensure strength equal to that required by applicable provisions.

Wood floor support systems shall be fixed to perimeter foundation walls in accordance with provisions of this code. The minimum number of ties required per side shall be sufficient to resist the loads stated in applicable code. Ties shall be as evenly spaced as prescribed along the length of the manufactured home. Where continuous straps are provided as vertical ties, such ties shall be positioned at rafters and studs. Where a vertical tie and diagonal tie are located at the same place, such ties are connected to a single anchor that can carry both loads. Vertical ties that are not continuous over the top of the manufactured home shall be attached to the main frame.

8.2 Electrical

Electrical

Single-wide units shall have a minimum of 150-amp electrical system/service and distribution that shall meet municipality requirements and plan specifications.

Double-wide units shall have a minimum of 200-amp electrical system/service and distribution that shall meet municipality requirements and plan specifications.

8.3 Section 3 Requirements

If the project cost exceeds \$200,000, Section 3 requirements shall apply however they do not apply to factory-built housing.

Regarding the site work and installation of the manufactured housing unit, Section 3 of the Housing and Urban Development Act of 1968, as amended, requires that training, employment, and other economic opportunities generated by certain HUD financial assistance shall be directed, to the greatest extent feasible, and consistent with existing Federal, State, and Local laws and regulations, to low- and very low-income persons. Contractor will make every effort to ensure Recipients of Section 3-covered funding achieve compliance and the compliance of their contractors/subcontractors with the Section 3 requirements, as outlined in 24 CFR §135.32.

ICC-700 Certified Compliance Path for Single-Family Homes, Townhomes, and Duplexes

9 ICC-700 Certified Compliance Path for Single-Family Homes, Townhomes, and Duplexes

9.1 Green Building Practices

The following items are noted in Section 12 of the 2020 NGBS National Green Building Standard. The adopting entity shall be permitted to substitute one or more practices with alternatives that achieve the overall intent of this standard. The determination of intent and equivalency is in the purview of the adopting entity. Additionally, many of these items exist within the preceding standards.

9.1.1 Lot Development

1201.1 Floodplain. Construction shall not occur in a floodplain or construction shall be elevated above the floodplain.

1201.2 Lot slope. Finished grade at all sides of a building shall be sloped to provide a minimum of 6 in. (152 mm) of fall within 10 ft. (3048 mm) of the edge of the building. Where lot lines, walls, slopes, or other physical barriers prohibit 6 in. (152 mm) of fall within 10 ft. (3048 mm), the final grade shall be sloped away from the edge of the building at a minimum slope of 2%.

1201.3 Soil preparation for new plants. Soil shall be tilled or new soil shall be added down 6 in. for new plants and 12 in. for new trees. Soil shall be amended with organic matter, such as mulch or compost, as needed. Long acting sources of nutrients shall be added if the soil is deficient. Alternately, the landscaping plan shall incorporate the jurisdictional Department of Transportation (DOT) specifications (or equal) for soil preparation and amendment for landscape planning. Other approved sources such as University or County agricultural extension services shall be permitted for use.

1201.4 Regionally appropriate vegetation. When an Agency that has jurisdiction has developed a specification for planting, including non-invasive vegetation that is native or appropriate for local growing conditions, vegetation from that specification is selected for the landscaping plan and that landscaping is installed.

1201.5 Protection of natural resources. Any trees or other natural resources that do not conflict with the home construction or finished grading and drainage of the lot and adjacent lots shall be properly protected during construction and all controls shall be removed following construction. The landscape plan shall contain details for the protection and instructions for incorporation of the trees/areas into the final landscape plan.

9.1.2 Resource Efficiency (Durability)

1202.1 Capillary break. A capillary break and vapor retarder shall be installed at concrete slabs in accordance with IRC Sections R506.2.2 and R506.2.3.

1202.2 Foundation drainage. Where required by the IRC for habitable and usable spaces below grade, exterior drain tile shall be installed.

1202.3 Dampproof walls. Dampproof walls shall be provided below finished grade.

1202.4 Sealed crawlspace. 6-mil polyethylene sheeting, or other Class I vapor retarder shall be installed in accordance with § 408.3 or IRC Section 506.

1202.5 Dry Insulation. Insulation in cavities shall be dry in accordance with manufacturer's instructions before enclosing (e.g., with drywall).

1202.6 Water-resistive barrier. A water-resistive barrier and/or drainage plane system shall be installed in accordance with IRC requirements behind exterior veneer and/or siding.

1202.7 Flashing. Flashing shall be provided as follows to minimize water entry into wall and roof assemblies and to direct water to exterior surfaces or exterior water-resistive barriers for drainage. Flashing details shall be provided in the construction documents and shall be in accordance with the fenestration manufacturer's instructions, the flashing manufacturer's instructions, or as detailed by a registered design professional.

Flashing shall be installed at the following locations, as applicable:

1. Around exterior fenestrations, skylights, and doors
2. At roof valleys
3. At building-to-deck, -balcony, -porch, and -stair intersections
4. At roof-to-wall intersections, at roof-to-chimney intersections, at wall-to-chimney intersections, and at parapets
5. At ends of and under masonry, wood, or metal copings and sills
6. Above projecting wood trim
7. At built-in roof gutters
8. Drip edge shall be installed at eave and rake edges
9. Window and door head and jamb flashing is either self-adhered flashing complying with AAMA 711 or liquid applied flashing complying with AAMA 714 and installed in accordance with flashing fenestration or manufacturer's installation instructions.
10. Pan flashing is installed at sills of all exterior windows and doors.
11. Seamless, preformed kickout flashing, or prefabricated metal with soldered seams is provided at all roof-to-wall intersections. The type and thickness of the material used for roof flashing including but not limited kickout and step flashing is commensurate with the anticipated service life of the roofing material.

12. Through-wall flashing is installed at transitions between wall cladding materials, or wall construction types

1202.8 Tile backing materials. Tile backing materials installed under tiled surfaces in wet areas shall be in accordance with ASTM C1178, C1278, C1288, or C1325. Tile shall not be installed over paper-faced drywall in wet areas.

1202.9 Ice and water shield. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier shall be installed in accordance with the IRC at roof eaves of pitched roofs and shall extend a minimum of 24 in. (610 mm) inside the exterior wall line of the building.

1202.10 Architectural features. Horizontal ledgers shall be sloped away to provide gravity drainage as appropriate for the application.

1202.11 Visible suspect fungal growth. Building materials with visible suspect fungal growth shall not be installed or shall be addressed in accordance with industry recognized guidelines such as ANSI/IICRC S520 Mold Remediation or EPA 402-K-01-001 Table 2: Mold Remediation Guidelines, prior to concealment and closing. Porous and semi-porous building materials should be stored in such a manner as to prevent excessive moisture content prior to installation or use. Relative humidity within the structure shall be controlled during construction to minimize the potential for microbial growth.

1202.12 Exterior doors. At least one entry at an exterior door assembly, inclusive of side lights (if any), are covered by one of the following methods to protect the building from the effects of precipitation and solar radiation. Either a storm door or a projection factor of 0.375 minimum is provided. Eastern- and western- facing entries in Climate Zones 1, 2, and 3, as determined in accordance with Figure 6(1) or Appendix A, have either a storm door or a projection factor of 1.0 minimum, unless protected from direct solar radiation by other means (e.g., screen wall, vegetation).

- a) Installing a porch roof or awning
- b) Extending the roof overhang
- c) Recessing the exterior door
- d) Installing a storm door

1202.13 Roof overhangs. Roof overhangs, in accordance with Table 602.1.12, are provided over a minimum of 90% of exterior walls to protect the building envelope.

1202.14 Roof Water discharge. Each downspout shall discharge 5 ft. from building, onto impervious surfaces, into areas designed to infiltrate drainage into the ground, to water vegetation, or into a rain collection system.

9.1.3 Energy Efficiency

1203.1 Mandatory requirements. The building shall comply with § 1203.1 through § 1203.9 in addition to one of the following: § 1203.10 (Energy Performance Path); § 1203.11 through § 1203.14 (Energy Prescriptive Path); or § 1203.15 (ERI Target Path). Sampling shall not be permitted for this alternative compliance path.

1203.2 Adopting entity review. A review by the Adopting Entity or approved third party shall be conducted to verify design and compliance with these energy requirements.

1203.3 Duct testing. Ducts shall be pressure tested to determine air leakage by one of the following methods:

- a) Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 in. w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.
- b) Post-construction test: Total leakage shall be measured with a pressure differential of 0.1 in. w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

Exceptions: 1) A duct air-leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope; and 2) A duct air-leakage test shall not be required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

1203.4 Radiant and hydronic space heating. Where installed as a primary heat source in the building, radiant or hydronic space heating system is designed, installed, and documented, using industry- approved guidelines and standards (e.g., ACCA Manual J, AHRI I=B=R, ACCA 5 QI, or an accredited design professional's and manufacturer's recommendations).

1203.5 Building thermal envelope air sealing. The building thermal envelope is durably sealed to limit infiltration. The sealing methods between dissimilar materials allow for differential expansion and contraction. The following are caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film, or solid material:

- a) All joints, seams and penetrations
- b) Site-built windows, doors, and skylights
- c) Openings between window and door assemblies and their respective jambs and framing
- d) Utility penetrations

- e) Dropped ceilings or chases adjacent to the thermal envelope
- f) Knee walls
- g) Walls and ceilings separating a garage from conditioned spaces
- h) Behind tubs and showers on exterior walls
- i) Common walls between dwelling units
- j) Attic access openings
- k) Rim joist junction
- l) Other sources of infiltration

1203.6 Air sealing and insulation. Insulation shall be installed to Grade I. Grade II and Grade III insulation shall not be permitted. Building envelope air tightness and insulation installation shall be verified to be in accordance with the following.

A) Testing is conducted in accordance with ASTM E 779 using a blower door at a pressure of 1.04 psf (50 pa). Testing is conducted after rough-in and installation of penetrations in the building envelope, including but not limited to penetrations for utilities, electrical, plumbing, ventilation and combustion appliances. Testing is to be conducted under the following conditions:

- a) Exterior windows and doors, fireplace and stove doors are closed, but not sealed;
- b) Dampers are closed, but not sealed, including exhaust, intake, make-up air, backdraft and flue dampers;
- c) Interior doors are open;
- d) Exterior openings for continuous ventilation systems and heat recovery ventilators are closed and sealed;
- e) Heating, cooling, and ventilation systems are turned off;
- f) HVAC duct terminations are not sealed; and
- g) Supply and return registers are not sealed.

B) Visual inspection. The air barrier and insulation items listed in Table 1203.6(B) shall be field verified by visual inspection.

Table 1203.6(B): Air Barrier and Insulation Installation

Component	Air Barrier Criteria	Insulation Installation Criteria
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier.	Air-permeable insulation shall not be used as a sealing material.

	Breaks or joints in the air barrier shall be sealed.	
Ceiling/attic	<p>The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed.</p> <p>Access openings, drop downstairs or knee wall doors to unconditioned attic spaces shall be sealed.</p>	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	<p>The junction of the foundation and sill plate shall be sealed.</p> <p>The junction of the top plate and the top of exterior walls shall be sealed.</p> <p>Knee walls shall be sealed.</p>	<p>Cavities within comers and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum.</p> <p>Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.</p>
Windows, skylights and doors	The space between window/doorjamb and framing, and skylights and framing shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous

		insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.

Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

1203.7 High-efficacy lighting. A minimum of 90% of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.

1203.8 Appliances. If installed, refrigerator, dishwasher, and/or washing machine shall be ENERGY STAR or equivalent.

1203.9 Clothes washers. Where installed, clothes washers rated with an IWF (integrated water factor), MEF (modified energy factor), or IMEF (integrated modified energy factor), shall be rated as follows:

1. Residential Clothes Washers, Front-loading, greater than 2.5 cu-ft maximum 3.2 IWF, minimum IMEF 2.76
2. Residential Clothes Washers, Top-loading, greater than 2.5 cu-ft maximum 4.3 IWF, minimum IMEF 2.06

3. Residential Clothes Washers, less than or equal to 2.5 cu-ft maximum 4.2 IWF, minimum IMEF 2.07

1203.10 Energy performance pathway.

1203.10.1 ICC IECC analysis. Energy efficiency features are implemented to achieve energy cost or source energy performance that exceeds the ICC IECC by 7.5%. A documented analysis using software in accordance with ICC IECC Section R405 is required.

1203.10.2 Energy performance analysis. Energy savings levels above the ICC IECC are determined through an analysis that includes improvements in building envelope, air infiltration, heating system efficiencies, cooling system efficiencies, duct sealing, water heating system efficiencies, lighting, and appliances.

1203.11 Energy prescriptive pathway.

1203.11.1 Building envelope. The building thermal envelope complies with § 1203.11.1.1 or § 1203.11.1.2. Exception: Section 1203.11.1.1 is not required for Tropical Climate Zone.

1203.11.1.1 Insulation and fenestration requirements. The building thermal envelope shall meet the requirements of Table 1203.11.1.1 and 1203.11.1.2.

1203.11.1.2 The total UA proposed and baseline calculations are documented where the total proposed building thermal envelope UA is less than or equal to the total baseline UA resulting from multiplying the U-factors in Table 1203.11.1.2 by the same assembly area as in the proposed building. REScheck is deemed to provide UA calculation documentation. SHGC requirements of Table 1203.11.1.1 shall be met.

Table 1203.11.1.1: Insulation and Fenestration Requirements by Component

Climate Zone	Fenestration ^b U-Factor	Skylight ^b U-Factor	Glazed Fenestration SHGC ^{b,e}	Ceiling R-Value ⁱ	Wood Frame Wall R-Value	Mass Wall R-Value ⁱ	Floor R-Value	Basement ^c Wall R-Value	Slab ^d R-Value & Depth	Crawlspace ^c Wall R-Value
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 OR 13+5 ^h	8/13	19	5/13 ^f	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 OR 13+5 ^h	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 OR 13+5 ^h	13/17	30 ^g	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20+5 ^h OR 13+10 ^h	15/20	30 ^g	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 ^h OR 13+10 ^h	19/21	38 ^g	15/19	10, 4 ft	15/19

NR = Not Required

For SI: 1 foot = 304.8 mm.

- a) R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.
- b) The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: In Climate Zones 1 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.
- c) 10/13 means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall. 15/19 means - R15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. Alternatively, compliance with 15/19 shall be R -13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
- d) R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs. as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.
- e) There are no SHGC requirements in the Marine Zone.
- f) Basement wall insulation is not required in warm-humid locations as defined by ICC IECC Figure R301.1 and ICC IECC Table R301.1.
- g) Alternatively, insulation sufficient to fill the framing cavity and providing not less than an R-value of R-19.
- h) The first value is cavity insulation, the second value is continuous insulation. Therefore as an example, "13+5" means R -13 cavity insulation plus R-5 continuous insulation.
- i) Mass walls shall be in accordance with ICC IECC Section R402.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

Table 1203.11.1.2: Equivalent U-Factors^a

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor ^b	Floor U-Factor	Basement Wall U-Factor	Crawlspace Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.32	0.55	0.030	0.060	0.098	0.047	0.091 ^c	0.136
4 except Marine	0.32	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.30	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	0.026	0.045	0.057	0.028	0.050	0.055

a) Non-fenestration U-factors shall be obtained from measurement, calculation, or an approved source.

b) Mass walls shall be in accordance with Section R402.2.5. Where more than half the insulation is on the interior, the mass wall U-factors shall not exceed 0.17 in Climate Zone 1, 0.14 in Climate Zone 2, 0.12 in Climate Zone 3, 0.087 in Climate Zone 4 except Marine, 0.065 in Climate Zone 5 and Marine 4, and 0.57 in Climate Zones 6 through 8.

1203.12 Space heating and cooling and water heating system efficiencies. The Space Heating and Cooling and Water Heating systems are in accordance with Table 1203.12.

Table 1203.12: Space Heating and Cooling and Water Heating System Efficiencies

Climate Zone	Space Cooling System	Space Heating System - select 1 option from below				Water Heating System - select 1 option from below		
	AC	Gas Furnace	Gas Boiler	ASHP	GSHP or WSHP	Gas Tank WH	Gas Tankless WH	Elec Tank WH
	Min. Req.	Min. Req.	Min. Req.	Min. Req.	Min. Req.	Min. UEF Req.	Min. UEF Req.	Min. UEF Req.
1	15 SEER**	NR	85%	NR	Any	0.78	>.93	>.92
2	15 SEER**	NR	85%	NANR	Any	0.78	>.93	>.92
3	15 SEER**	92%	85%		Any	0.78	>.93	>.92
4	15 SEER**	92%	85%		Any	0.78	>.93	>.92
5	14 SEER	95%	85%		Any	0.78	>.93	>.92
6	14 SEER	95%	85%		Any	0.78	>.93	>.92
7	14 SEER	95%	85%		Any	0.78	>.93	>.92
8	14 SEER	95%	85%		Any	0.78	>.93	>.92

>= 8.2 HSPF for single package

**zones 1-4 >=12.5 EER for split; >= EER for single package

NR = No requirement

1203.13 Duct leakage. The total leakage of the ducts, where measured in accordance with Section R403.3.3, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is

not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area.

2. Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 sq. ft. (9.29 m²) of conditioned floor area.

1203.14 High-efficacy lighting. A minimum of 95% of the total hard-wired lighting fixtures or the bulbs in those fixtures qualify as high efficacy or equivalent.

1203.15 ERI target pathway.

1203.15.1 ERI target compliance. Energy efficiency features are implemented to achieve an ERI performance that is 8 points less than the EPA National ERI Target Procedure for ENERGY STAR Certified Homes version 3.0 as computed based on Step 1 of the EPA National ERI Target Procedure. Dwelling ratings shall be submitted to a quality control registry approved by the Adopting Entity for calculating points under this section.

9.1.4 Energy Efficiency

1204.1 Lavatory faucets. Water-efficient lavatory faucets in bathrooms shall have a maximum flow rate of 1.5 gpm (5.68 L/min), tested at 60 psi (414 kPa) in accordance with ASME A112.18.1/CSA B125.1.

1204.2 Water closets. Water closets shall have an effective flush volume of 1.28 gallons or less and shall be in accordance with the performance criteria of the EPA WaterSense Specification for tank-type toilets.

1204.3 Irrigation systems. Where an irrigation system is installed, one of the following is met:

1. Drip irrigation is installed for all landscape beds and/or subsurface drip irrigation is installed for all turf grass areas.
2. Irrigation zones are organized by plant water needs.
3. The irrigation system(s) is controlled by a climate-based controller or soil moisture controller.
4. No irrigation is installed.

1204.4 Alternative Compliance Path. Water Rating Index (WRI) needs to achieve a level 70.

9.1.5 Indoor Environmental Quality

1205.1 Gas-fired fireplaces and direct heating equipment. Gas-fired fireplaces and direct heating equipment is listed and is installed in accordance with the NFPA 54, ICC IFGC, or the applicable local gas appliance installation code. Gas-fired fireplaces within dwelling units and direct heating equipment are vented to the outdoors.

1205.2 Solid fuel-burning fireplaces, inserts, stoves and heaters. Solid fuel-burning fireplaces, inserts, stoves and heaters are code compliant and are in accordance with one or more of the following requirements:

1. Site-built masonry wood-burning fireplaces use outside combustion air and include a means of sealing the flue and the combustion air outlets to minimize interior air (heat) loss when not in operation.
2. Factory-built, wood-burning fireplaces are in accordance with the certification requirements of UL 127 and are EPA certified or Phase 2 Qualified.
3. Wood stove and fireplace inserts, as defined in UL 1482 Section 3.8, are in accordance with the certification requirements of UL 1482 and are in accordance with the emission requirements of the EPA Certification and the State of Washington WAC 173-433-100(3).
4. Pellet (biomass) stoves and furnaces are in accordance with ASTM E1509 or are EPA certified.
5. Masonry heaters are in accordance with the definitions in ASTM E1602 and IBC Section 2112.1.
6. Fireplaces, woodstoves, pellet stoves, or masonry heaters are not installed.

1205.3 Garages.

- a) Attached garage
 1. Doors installed in the common wall between the attached garage and conditioned space are tightly sealed and gasketed; and
 2. A continuous air barrier is provided separating the garage space from the conditioned living spaces.
- b) A carport is installed, the garage is detached from the building, or no garage is installed.

1205.4 Carpets. Wall-to-wall carpeting shall not be installed adjacent to

- a) Water closets and bathing fixtures, and
- b) Exterior doors.

1205.5 Carbon monoxide (CO) alarms. A carbon monoxide (CO) alarm shall be provided in accordance with IRC Section R315 in any dwelling unit with a combustion fueled appliance or an attached garage with an opening that communicates with the dwelling unit.

1205.6 Interior architectural coatings. A minimum of 85% of the interior architectural coatings are in accordance with one or more of the following:

- a) Low VOC as determined by EPA Method 24 (VOC content is below the detection limit for the method)
- b) Green Seal GS-11
- c) CARB Suggested Control Measure for Architectural Coatings (see Table 901.9.1).

1205.7 Local ventilation. shall be in accordance with the following:

1. Bathrooms are vented to the outdoors. The minimum tested ventilation rate is 50 cfm (23.6 L/s) for intermittent operation or 20 cfm (9.4 L/s) for continuous operation in bathrooms. Exhaust fans are ENERGY STAR, or equivalent.
2. Kitchen exhaust units and/or range hoods are ducted to the outdoors and have a minimum ventilation rate of 100 cfm (47.2 L/s) for intermittent operation or 25 cfm (11.8 L/s) for continuous operation.
3. Bathroom and kitchen exhaust ventilation rates are tested to meet minimum ventilation rates or ducts are installed to meet the prescriptive requirements in IRC Table M1504.2.

1205.8 Whole Dwelling Ventilation. One of the following whole dwelling ventilation systems shall be implemented and shall be in accordance with the specifications of ASHRAE Standard 62.2-2010 Section 4. An explanation of the operation and importance of the ventilation system shall be included in the homeowner's manual.

1. Exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air.
2. Exhaust air ventilation system equipped with outdoor air ducts and intake(s) for ventilation air and with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.
3. Supply air ventilation system.
4. Supply air ventilation system equipped with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads.
5. Balanced air ventilation system with exhaust and supply fan(s) with supply intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back into the building.
6. Heat-recovery ventilator.

7. Balanced air ventilation system with exhaust and supply fan(s) with automatic ventilation controls to limit ventilation air during periods of extreme temperature, extreme humidity and/or during times of peak utility loads, and with intakes located in accordance with the manufacturer's guidelines to not introduce polluted air back in to the building.
8. Energy-recovery ventilator

1205.9 Radon control. Radon control measures are installed in accordance with 902.3 for Zone 1 as defined in Figure 9(1).

- a) A passive radon system is installed, or
- b) An active radon system is installed

1205.10 Kitchen exhaust. If a kitchen exhaust unit(s) that equals or exceeds 400 cfm (189 L/s) is installed, make-up air shall be provided.

1205.11 MERV filters. Minimum 8 MERV filters shall be installed on central forced air systems and are accessible.

1205.12 HVAC system protection. One of the following HVAC system protection measures shall be performed.

- a) HVAC supply registers (boots), return grilles, and rough-ins are covered during construction activities to prevent dust and other pollutants from entering the system.
- b) Prior to owner occupancy, HVAC supply registers (boots), return grilles, and duct terminations are inspected and vacuumed. In addition, the coils are inspected and cleaned, and the filter is replaced if necessary.

9.1.6 Homeowner Operation and Maintenance

1206.1 Homeowners Manual. A homeowner's manual shall be provided. The homeowner's manual shall include all items below:

1. A document indicating compliance with applicable requirements.
2. List of green building features (can include the National Green Building Standard checklist).
3. Product manufacturer's manuals or product data sheet for installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance in lieu of inclusion in the building owners' manual.
4. Information on the importance and operation of the home's fresh air ventilation system.

5. Provide information on regionally-appropriate vegetation from the local authority with jurisdiction.
6. A narrative detailing the importance of maintenance and operation of the green building features from the National Green Building Standard checklist in retaining the attributes of a green-built home.
7. Where stormwater management measures are installed on the lot, information on the location, purpose, and upkeep of these measures.

1206.2 Training of initial homeowners. Initial homeowners shall be familiarized with the role of occupants in achieving green goals. Training is provided to the responsible party(ies) regarding equipment operation and maintenance, control systems, and occupant role.

These include:

1. HVAC filters
2. Water heater settings
3. Whole-house ventilation systems
4. Operation of household equipment