

## EXHIBIT F

### **INSTALLATION AND MATERIALS REQUIREMENTS**

January 2023

The [Washington State Weatherization Manual](#), the [Washington State Weatherization Field Guide](#), and [the NREL Standard Work Specifications \(SWS\) for Home Energy Upgrades](#) are provided by the State Department of Commerce to agencies that coordinate low income weatherization programs throughout the state. The documents clarify program requirements that agencies (frequently referred to as the state's "contractor") must follow, including detailed specifications, installation procedures and related project documentation. Firms responding to this RFP must comply with areas of each of the above referenced documents that apply to their work, e.g. installation of measures, warranties, certificates of insulation, documentation of pressure readings, etc. Firms are not asked to comply with requirements that clearly are intended for agencies, e.g. computerized analysis, general program oversight, quality control inspections, etc.

**All work that may disturb lead based paint must be performed in accordance with Lead Safe Weatherization (LSW) practices and the Renovation, Repair, and Painting (RRP) Rule. Firms must document crew certification for utilizing LSW and RRP. Failure to utilize LSW and RRP, where required, may necessitate immediate work stoppage, clearance testing, relocation of occupants, clean-up and/or legal claims. Firms are responsible for costs of activities that arise from a failure to follow the lead safe protocol.**

KCHA promotes a sustainable approach to conducting its home repair and weatherization programs. Firms are encouraged to utilize "green" materials and products wherever possible and make every effort to recycle waste material.

#### **TIME AND MATERIALS CHARGES—ALL HOUSING TYPES**

For work that is unique to a particular project and not included in the RFP, the firm will be asked to provide a detailed cost estimate of the time involved and the materials required to accomplish the work item(s). The KCHA Construction Coordinator will either: 1) obtain the estimate from the firm prior to issuance of the Statement of Work Items so that the pricing can be included; or, 2) add the work by change order after the Statement of Work Items is issued. In all cases, the Construction Coordinator will develop an independent cost estimate for comparative purposes.

Examples of work that will be based on a time and materials estimate are the additional set-up and clean-up activities associated with Lead Safe Work, the scopes of which will vary among projects.

In addition, repairs identified by the firm while undertaking the weatherization project that are critical to completing weatherization activities may also be carried out based on a time and materials estimate. These repairs require the **prior approval of KCHA via a change order**. The firm will be required to submit an invoice that compares the detailed time and materials estimate with actual costs-- *materials used, number of man-hours worked and associated charges*.

Please note the below descriptions are referring to a specific building types and are divided between Multifamily, Mobile home and Single family. The work items may appear on all three building types; however, the specific information covered in Exhibit F is noted for the specific project type.

## UNIT PRICES

Please note that the following requirements, which correspond to items listed on Exhibit E, are **in addition** to the guidance in the [Field Guides](#) and [SWS](#). These additional requirements provide greater detail for particular items; item numbers that are not listed here do not have greater detail than is contained on the price list. The *Field Guides* and *SWS* continue to apply to all activities.

Changes are highlighted in yellow that have been updated with Addendum 1.  
Added work items are highlighted in blue.

## MULTIFAMILY PROJECTS

### A. INFILTRATION

**A1. Door weather-strip kit:** Includes removal of existing weather-stripping and installation of kit with metal supporting system. Acceptable types include Quolon, Thermal Brush and vinyl bulb. Foam tape is not acceptable.

**A7-A8. Box over non-IC rated fixture:** A solid flame-resistant enclosure securely attached over or around recessed lighting or other heat producing fixtures made of metal or sheet rock. Must keep insulation at least 3 inches and not more than 4 inches from the fixture and be air sealed and fastened to the ceiling structure to prevent movement during insulation application. Extend at least 4 inches above the top of insulation.

**A9-A16. Airseal attic/Airseal underfloor:**  
For multifamily buildings, air sealing will be performed in attics or under floors and priced per sq. ft.

Price to include sealing all penetrations in attic floor, including electrical and plumbing penetrations, all points where dissimilar materials are abutted in the thermal air barrier (top plates, sheetrock joints), and all points where there is a change in plane of the air barrier (knee wall/ ceiling connections). Materials used shall be installed in accordance with manufacturer specifications and all local codes. All penetrations in the attic floor shall be air sealed irrespective of clearance in the attic space above the attic floor.

**A23. Airseal top plate-walls on top of concrete:** Access interior of wall cavity and install air barrier to prevent loose fill dense pack material from cascading down interior of concrete stem wall. Reinstall siding and subsiding to original condition, persevering weather resistant envelope.

**A24. Airseal apartment marriage line walls:** Dense pack loose fiberglass wall insulation with summer hose such that material will accumulate and provide an air barrier at the perimeter. Price per (8) feet of marriage line.

## **B. ATTIC INSULATION**

**B3. Remove attic insulation - Loose fill:** Remove and properly dispose of all existing attic blown insulation, except vermiculite.

**B4. Remove attic insulation - batt:** Remove and properly dispose of all existing attic batt insulation.

**B5. R-11 on ceiling: cellulose, loose fill (Includes installation of baffles/dams up to 5 per 1000 sq. ft.):** R-11 on ceiling: cellulose, loose fill including installation of baffles (Assume 5 low vent baffles per 1000 sq. ft. of heated attic space, for additional baffles see B6), dams, electrical connection and depth markers.

**B13. Tent existing sprinkler distribution system:** per the National Renewable Energy Lab Standard work specifications 3.0103.1 (Price per linear feet; the sprinkler head is included in this price structure).

## **C. ATTIC ACCESS / VENTILATION**

**C2. Lockable Energy efficient ceiling access:** Prefabricated attic access to contain sturdy, compact housing (roughly 2'x4', continuous soft weather strip, finished solid door panel, and molding or self-trimming flange). Refer to the following website for clarification of one prefabricated option:  
[www.conservationtechnology.com](http://www.conservationtechnology.com)

- C3. Energy efficient knee wall access:** Prefabricated knee wall access to contain sturdy, compact housing (roughly 2'x4', continuous soft weather strip, finished solid door panel, and molding or self-trimming flange).
- C4. Eave vent without thermal bridging (22.5 x 3.5):** Outer 13.5" x 1" area to be screened with 1/8", 28 gauge galvanized metal for a net free area of 11.5 square inches
- C5. Eave vent without thermal bridging (22.5 x 5.5):** Middle 21.5" x 2.5" area to be screened with 1/8", 28 gauge galvanized metal for a net free area of 43 square inches.

#### **D. WALL INSULATION**

**D23. Flame Spread Barrier:** Insulation facing material meeting ASTM-E-84 specifications, typically used to cover fiberglass wall insulation in an area seldom accessible to humans; storage rooms, basements.

**D24. Weather Resistive Barrier:** Insulation cover material used to prevent convection heat loss on the back side of fiberglass insulation, typically used in knee wall applications to achieve six sided insulation.

#### **E. FLOOR INSULATION**

**E1. Remove floor insulation:** Remove and properly dispose of all existing floor insulation.

**E11. Slab on grade insulation:** Remove loose soil to 2" below grade and/or vegetation next to the slab. Clean the exposed slab, removing any earth that might impact the performance of the insulation. If necessary, cut the bottom of the siding. The new edge of the siding shall be below the edge of the top of the concrete slab approximately ½ inch. Any siding cut will be treated to maintain a weatherproof surface. Loosen the bottom of the siding by removing the bottom nails and prepare for the installation of flashing. Preparation includes air sealing between the mudsill plate and the cement slab and applying a waterproof coating to the exposed slab.

Install flashing such that top leg is installed under the existing wall vapor retarder, with a ½ inch gap at least between the bottom of the siding and the flashing, and the bottom leg of the flashing is parallel to the insulation. The middle of the Z in the flashing will be installed with a slight slope away from the building. Flashing shall be a z configuration. Flashing shall be metal, with a hemmed drip edge. The top leg of the flashing shall be at least 4" long. The bottom leg of the flashing will be at least 1". Install an R-10 rigid mineral

insulation board (e.g. Roxul drain board or approved equal) to the edge of the slab per manufacturer's specifications. Rigid insulation will have no gaps, voids or overlap. Install a permanent protective board over the insulation. The protective board will be painted to match the siding. The protective board will be mechanically fastened to the concrete slab at exterior points of the protective cover such that the protective cover shall not move if kicked by an adult. Z flashing will span rigid board insulation and protective cover. Exterior corners of the flashing and protective cover board will be designed and installed to provide a continuous cover without sharp edges or points.

**E13. Cantilever floor, open to the outside:** For an open cantilever floor insulate the full thickness of the floor and cover with 3/8-inch exterior grade or pressure treated sheathing to protect the insulation installed. If area is in a visible location or subjected to intermittent moisture (i.e. splash back, etc) prime & paint sheathing on all exposed sides.

#### **F. CRAWL SPACE ACCESS, VENTILATION & VAPOR BARRIER**

**F3. Rescreen existing vent:** To be ¼" metal galvanized.

**F5. Vent Well:** Metal pre-formed mechanically attached with coated fasteners.

**F8. Ground cover: Removal of existing vapor barrier:** When necessary to remove existing vapor barrier prior to installation of new vapor barrier a charge for labor and disposal will be provided per sq. ft. A new vapor barrier will be a separate line item charge.

**F9. Closeable crawl space vent:** Manufactured or site built, vent to be compatible with existing opening or new penetration to maintain the enclosure's performance regarding weather and vermin protection. Vent to have long term measure life.

**F10. Disinfecting Crawl:** Apply a Mold bomb fogger per manufacturer instructions. (Price per square foot)

#### **G. OTHER INSULATION**

**G3. Atypical Spaces (cellulose):** Atypical spaces are unique cavities in the envelope that can sometimes be dense packed with insulation to provide an air tight assembly. Price solicited here is for material only in this installation. Material is cellulose treated with 100% borate. Time required to install the material will be discovered at the installation.

- G4. Atypical Spaces (fiberglass):** Atypical spaces are unique cavities in the envelope that can sometimes be dense packed with insulation to provide an air tight assembly. Price solicited here is for material only in this installation. Material is loose fill fiberglass. Time required to install the material will be discovered at the installation.
- G5. Atypical Spaces (under bathtub):** A common building detail is bathtub mounted on an exterior wall. Provide a price to dense pack the cavity below the tub with loose fill fiberglass.
- G6. Access to enclosed area without door, close and match existing finished:** In the course of an energy audit, inaccessible areas are found that need access to perform effective air sealing. Access is made to allow effective air sealing and or insulation. After air sealing and or insulation work is complete, the access point needs to be reconstructed to match adjoining areas as originally found. Cut an access to an enclosed space; under stairwells and chases.

## **H. OTHER INSULATION**

- H1. Pipe Wrap at Water Heater: Pipe insulation for all available feet of both hot and cold water pipes off the water heater:** All plumbing containing water accessible within mechanical room containing the water storage tank without removing fixed building components water heater shall be insulated regardless of length. Typical instance would be the standard 50 gallon electric hot water tank in an apartment closet. Price is each for per water heater per closet area. Only pipe wrap suitable for human contact is allowed, no fiberglass.

## **I. MECHANICAL VENTILATION**

- I6. Wall termination blocking:** Provide and install blocking for exterior wall ventilation cap, flashed and incorporated into the exterior drainage plane. Blocking shall match existing siding and provide a weather tight assembly.

## **K. GENERAL/ OPTIONAL**

*This section is the ONLY optional price. If the contractor is not equipped to perform the blower door testing, they can opt out of including this price.*

- K1. Shell blower door (whole building, 4-plex):** Conduct a whole building depressurization test to ASTM-3158 standard, with 5 pressure points and a confidence level greater than 95%. Testing shall be conducted using blower door manufacturer software. Intentional openings of the envelope (Including trickle vents) and all parts of the mechanical ventilation system shall be sealed as part of

the pre-test and post-test. Records of the test shall be submitted with the invoice, including individual fan readings per period of record. The minimum size for pricing will be a four-plex with independent apartment entries.

- K2. Shell blower door (whole building, above 4 units, not double loaded corridor):** This is a price to add an additional apartment to the test described in M3. If the building needed to be tested is a six-plex, the cost will be the cost of the four-plex identified in M3 plus two additional costs identified here. The standard for the test is identical to M3.

# SINGLE FAMILY WORK ITEM LIST

## APPLIANCES

### **07-01-011-15, 07-01-011-18, 07-01-011-21 - Appliances: Refrigerator Replacement (Optional Bid Item)**

Replacement refrigerators shall meet the following criteria:

- Energy Star or better energy efficiency.
- Top-mount freezer (two door models).
- Models with no extra features such as door ice, through door water dispensing, or automatic icemakers.
- Automatic defrost
- Contractor must register warranty with manufacturer and provide the receipt of purchase and warranty registration to KCHA for payment and to client for warrantable issues.
- Contractor is to verify and inspect new replacement unit is working order without any defects prior to removing existing unit for disposal any destruction (cutting of power cord) of existing unit.
- Contractor shall remove the old refrigerator from the property and dispose of it properly per Section 608 of the 1990 Clean Air Act, as amended by 40 CFR 82, Subpart F, 1995 at an EPA-approved disposal site that reclaims the refrigerant.
  - The invoice file contain documentation of the proper disposal from the disposal facility, or a statement signed by a commercial vendor indicating that the vendor will dispose of the refrigerator at an approved disposal site that reclaims the refrigerant.

### **07-01-013 Appliances: Refrigerator Removal of additional underused unit (Optional Bid Item)**

Disposal of additional underused refrigerators other than the primary shall meet the following criteria:

- Contractor shall remove the old, underused refrigerator from the property and dispose of it properly per Section 608 of the 1990 Clean Air Act, as amended by 40 CFR 82, Subpart F, 1995 at an EPA-approved disposal site that reclaims the refrigerant.
  - The invoice file contain documentation of the proper disposal from the disposal facility, or a statement signed by a commercial vendor indicating that the vendor will dispose of the refrigerator at an approved disposal site that reclaims the refrigerant.



## ATTIC INSULATION

**04-01-002 to 04-01-141 - Attic Insulation:** Loose fill cellulose insulation in site built homes unless Scope of Work specifies loose fill fiberglass.

## WALL INSULATION

**04-02-063 to 4-02-065 - Wall Insulation:** Dense pack cellulose insulation in 2x4 walls unless Scope of Work specifies dense pack fiberglass insulation in 2x4 walls. If wall size differs from 2x4 we will adjust with time and materials.

**04-04-002 to 04-04-004 - Rim Joist/Sillbox Insulation:** Insulate and air seal the rim joist using any approved method in the SWS. Scope of work may specify rigid foam board or Fiberglass batts in open cavities or bag and blow cellulose insulation in closed cavities.

## MECHANICAL VENTILATION

**06-02-001 to 06-02-006 - Mechanical Ventilation:** Bath/Utility Exhaust Fan: Panasonic Whisper Line or equivalent with prior approval. Range Hood Continuous Exhaust Fan: Air King ECQ Series or equivalent with prior approval. Test fan flow to verify settings. Label Whole house fan.

**06-01-003 - Mechanical Ventilation: Programmable Smart Switch:** Ventilation Fan Control Panasonic FV-WCPT1-W Fan/Light Control with Delay Timer or equivalent with prior approval.

**06-01-004, 06-01-005, 06-01-007- Mechanical Ventilation: Plug in fan modules:** Systems utilizing plug in controls are use toggle switch to control power at source.

**06-01-009 Mechanical Ventilation: Fan Humidistat Wall Switch:** Ventilation Fan Control Panasonic FV-WCCS1-W or equivalent with prior approval.

## DOORS

**03-02-009 Doors: New Lockset:** Door knob and deadbolt to be keyed alike.

**03-02-024 Doors: Peephole:** to be installed at homeowner's preference. If installing two, lower to be mounted at ADA height, 42" from the floor.

## GENERAL

**01-00-002 Other: Demolition/Removal of Existing Materials:** A Per hour price for Demolition or Removal of Existing Materials in a work space such as, but not limiting, attic, crawl, garage, and outdoor spaces where such materials would hinder installation of Weatherization Measures

## INFILTRATION

**05-01-019 Ducts Sealing:** Price based on square footage of unconditioned space; price includes entire accessible system.

**05-01-020 Duct Sealing: Registers/Boots:** Price per register

**05-01-022 to 05-01-026 Ductwork Installation: Flex Supply/Return, Rigid Supply/Return, Crossover Replacement:** All new ductwork installed shall include duct sealing and R-11 insulation unless Scope of Work specifies otherwise.

## MISC. LOW COST

**07-01-001 Lighting: LED Bulbs:** Contractor to leave bulbs with client

## ROOFS

**01-00-005 Other: EPDM Roof (MH):** Roofing products and installation techniques to be in accordance with manufacturer's instructions and Washington State Department of Labor and Industries (L&I) requirements. Materials are to meet ASTM (American Society for Testing Materials) standards. Firm to have available on site the manufacturer's material safety data sheets (MSDS) and installation instructions as well as any ICBO approvals. Install appropriate flashing for awnings where gutters do not fit. Ethylene Propylene Diene Monomer (EPDM) single-ply membrane is to be minimum 45 mils (.045"). A minimum rooftop insulation level of R-9 is to be included in work item cost. Insulation should meet roofing installation specifications. Manufacturer is to warrant the roof material for a minimum period of twelve years. Firm is to warrant labor for a minimum period of five years. Both warranties are to be transferable to subsequent homeowners. Firm to initiate manufacturer's warranty and assure homeowner is in receipt of warranty at job completion. Alteration Permit with L&I required. Evidence of approved permit and registered warranty are to be submitted with invoice. Firm is responsible for establishing with L&I the process for obtaining Alteration Permit.

**01-00-026 Other: TPO Roof (MH):** Roofing products and installation techniques to be in accordance with manufacturer's instructions and Washington State Department of Labor and Industries (L&I) requirements. Materials are to meet

ASTM (American Society for Testing Materials) standards. Firm to have available on site the manufacturer's material safety data sheets (MSDS) and installation instructions as well as any ICBO approvals. Install appropriate flashing for awnings where gutters do not fit. Thermoplastic Polyolefin (TPO) single-ply membrane is to be minimum 45 mils (.045"). A minimum rooftop insulation level of R-9 is to be included in work item cost. Insulation should meet roofing installation specifications. Manufacturer is to warrant the roof material for a minimum period of twelve years. Firm is to warrant labor for a minimum period of five years. Both warranties are to be transferable to subsequent homeowners. Firm to initiate manufacturer's warranty and assure homeowner is in receipt of warranty at job completion. Alteration Permit with L&I required. Evidence of approved permit and registered warranty are to be submitted with invoice. Firm is responsible for establishing with L&I the process for obtaining Alteration Permit.

## **SAFETY**

**01-00-015 Other: Asbestos Encapsulation:** Price for mastic encapsulation of asbestos tape on existing ductwork. Where undamaged, S-ACM tape is fully visible, accessible, and NOT inside a component of the forced air duct system, like a register boot, wet the tape and encapsulate with mastic, based upon the appropriate SOP in Policy and Exhibit 9.9 in the Weatherization Manual. If the Firm does not have a competent person to perform the work, work may be subcontracted by the Firm or KCHA on a time and materials or bid basis.