

# Chapter 15 - Rough-in Mechanicals

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**Things to Consider**

- This phase will require coordination with the Construction Supervisor and the Contractors.
- As much as possible, the volunteer’s activities should be performed prior to the Contractors arrival.

**Components**

<b>Electrical Systems</b>	<b>Plumbing Systems</b>	<b>HVAC Systems</b>
<b>Water Lines</b>	<b>Sewer Line</b>	<b>Gas Lines</b>
<b>Radon Systems</b>		

**Timing & Prerequisites**

- This phase of the project will begin when the following are complete:
  - Framing
  - Roofing
  - Chases and soffits.
- The work areas are to be clean and clear before the contractors begin work.
- The Construction Superintendent and the House/Project Lead will coordinate these contractor and volunteer activities.
- Careful coordination is required between the House Lead, Construction Superintendent and the Contractors for installation of the following:
  - Smart Trim for mounting the electric meter
  - J-blocks
  - Water manifold mounting panel
  - Communication termination panel.
  - Mechanical Platform
- As the mechanical contractors complete their rough in work, they will call for an inspection of their work. After the mechanical inspections, the Construction Supervisor will call for a Framing Inspection. All inspections must be passed before the interior insulation can be installed.
- This phase is complete when the rough mechanical and Aware inspections are complete.

Materials Needed	
Electric Meter Mount Panel	J-Blocks
10" Smart Trim for Meter Mount Panel 3 1/2" Wood Screws White Exterior Paint	Siding J-Blocks (Standard & Recessed, Electrical, Bath, Dryer, and Range Hood Vents) Master Intake Vent 2 1/2" Siding Nails Construction Tape 2x6 blocks
Manifold & Communication Panels	Mechanical Platform
2x4 sheet of 3/4" OSB (Comm. Panel) 4x8 sheet of 3/4" OSB (Manifold Panel) 3 1/2" drywall screws	(2) 10' – 2x6 (1) 6' – 4x4 p.t. (1) 3/4" – 4x8 OSB (4) 4x4 post bases (8) 3/8" x 6" carriage bolts, nuts & washers

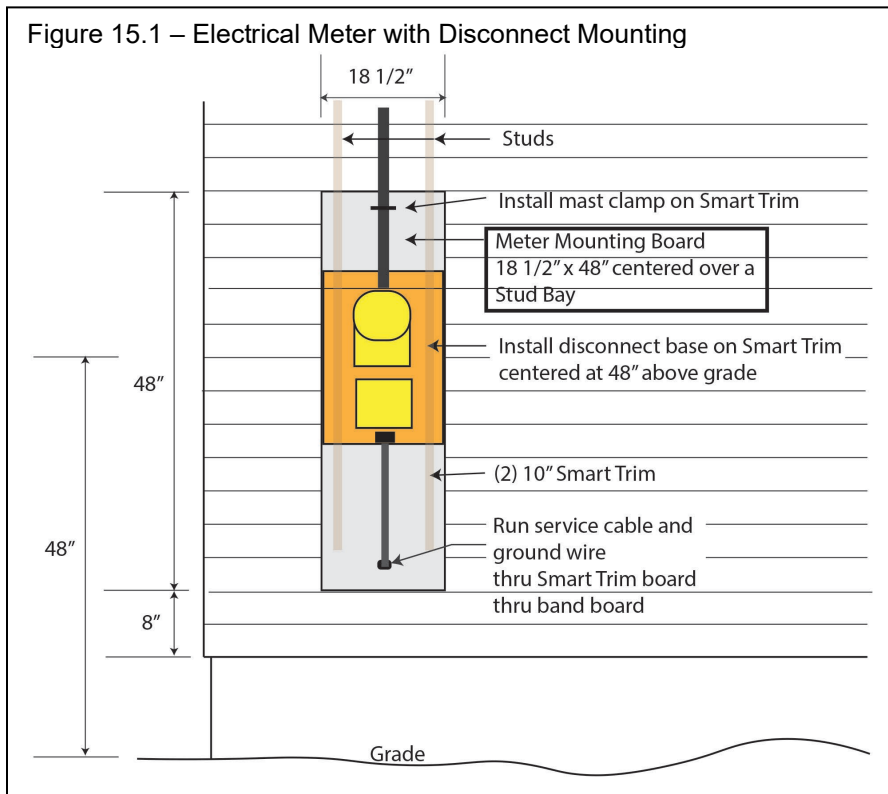
## Rough-In Preliminary

### Electric Meter Mounting Panel (Volunteers)

<i>Critical Issues</i>
<ul style="list-style-type: none"> <li>◆ To ensure the electric meter can be fastened to the house securely, the Smart Trim mounting panel must be secure to the framing members.</li> </ul>

- Before the Electrician installs the electrical service, install pieces of Smart Trim for mounting the electric meter. (See Figure 15.1).
- The electrician and the Construction Superintendent will provide the location for the electric meter. They will also determine if an additional disconnect box will be needed.
  1. Cut two (2) pieces of 10" Smart Trim 48" long.
  2. Position the two (2) pieces of 10' Smart Trim side by side centered on a stud bay at the location identified. The Smart Trim will be installed on top of the Styrofoam Insulation board and their long edges will run up the house.
  3. Attach the Smart Trim to the house with 3 1/2" wood screws through the Smart Trim, Styrofoam, and OSB into the studs; 6 to 8 screws per board.

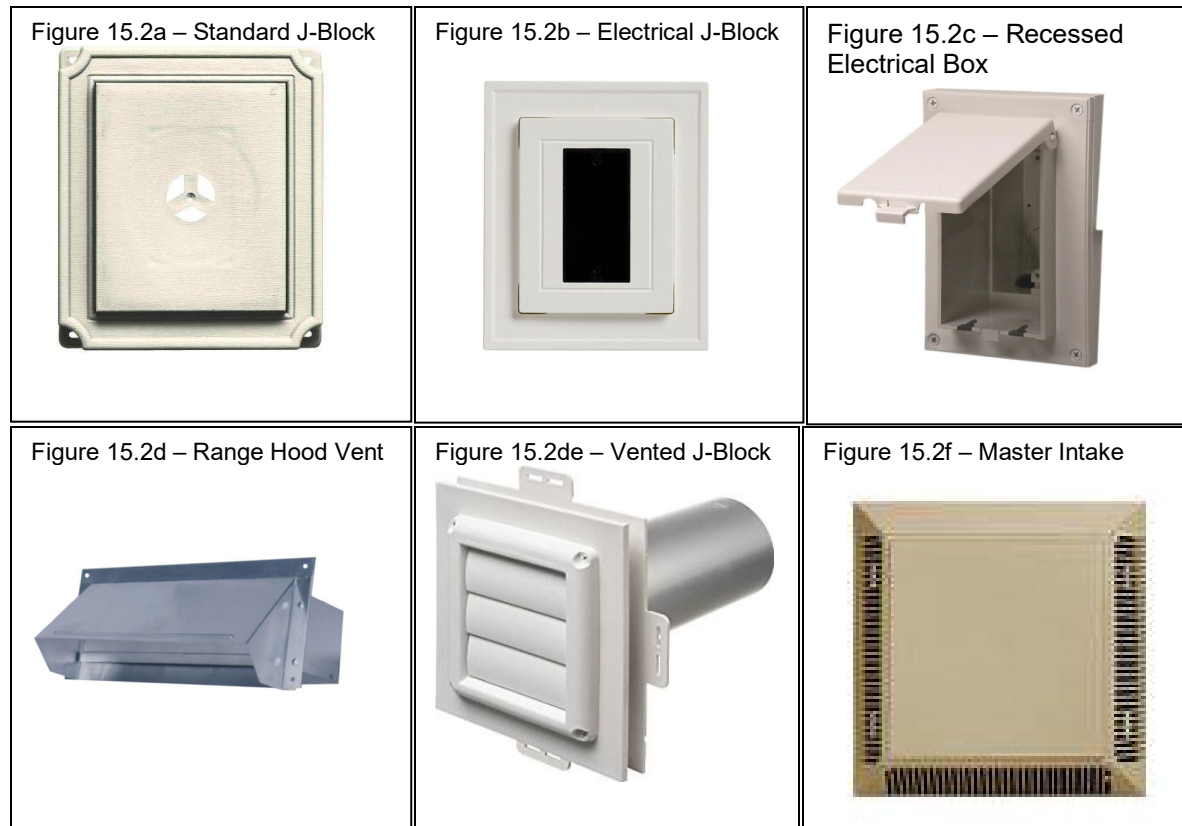
4. Paint the Smart Trim with exterior white paint. Cover all surfaces. Painting the Smart Trim before installing the J-channel eliminates the need to tape off the edges.



### Siding J-Blocks (Contractors/Volunteers)

#### Critical Issues

- ◆ Siding J-blocks provide a secure area for installing Electrical, HVAC, and Plumbing penetrations.
  - ◆ Siding J-blocks provide a good way to hide siding edges around penetrations through the siding.
- Siding J-blocks are installed around the house to support electric, plumbing and HVAC penetrations in the exterior walls. Most of the J-blocks will be the standard solid rectangular blocks. Other specialty blocks required are:
    - electrical (with electric box built in),
    - vent with louvers and grids
    - vent with louvers and without grids
    - range hood
    - Master Intake
    - Combustion Air Intake/Exhaust



**Types and use of J-Blocks** to be installed are as follows:

Electrical J-Blocks

- (2) Porch Electrical Outlets (Recessed Electrical)
- (1) Back Flood light (Electrical)

Plumbing J-Blocks

- (1) Gas Line (Standard)
- (2) Hose Bib (Standard)
- (1) Sump Pump Discharge (Standard)

HVAC J-Blocks

- (1) Combustion Air Intake and Exhaust (Contractor)\*
- (1) Water Heater Exhausts (Standard)
- (1) Passive Fresh Air Intake (Master Intake)
- (1) Dryer (Vent with louvers and without grids)
- (1 per bath) Bathroom Vents (Vent with louvers and grids)\*\*
- (1) A/C Line (Standard)
- (1) A/C Electrical (Standard)
- (1) Range Hood (Range Hood Vent Cover)

\* - Provided by the Contractor

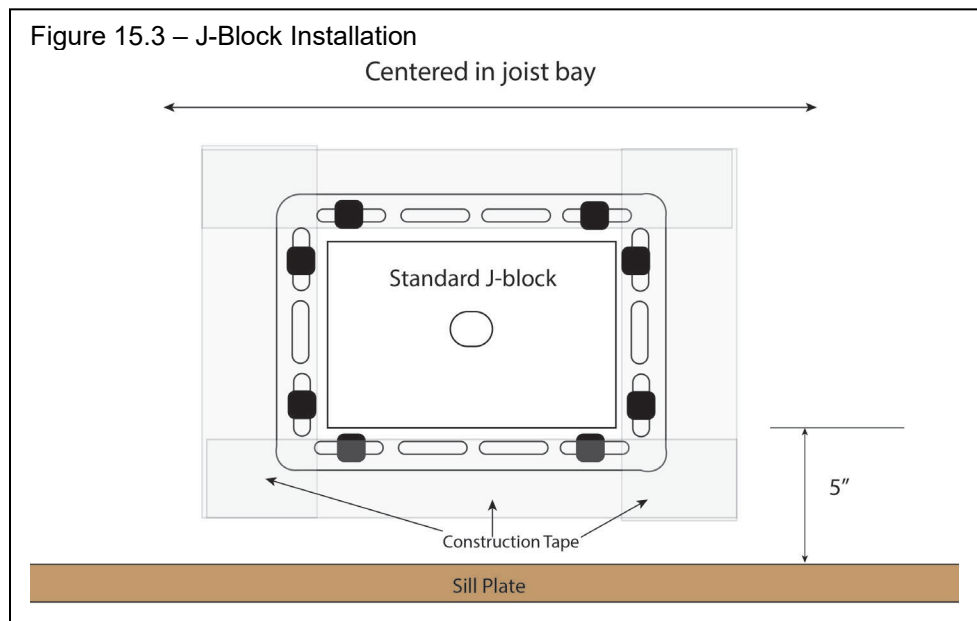
\*\* - Inside the louvers is a plastic grid with holes to let air out and a grid to keep animals out.

**When**

- The HVAC sub-contractors will install their furnace Combustion Air Intake and Exhaust vent during their rough-in.
- The volunteers will install the remaining HVAC, Electrical and Plumbing J-Blocks at the locations identified by the Construction Superintendent before the contractors start their rough-in.

**Where**

- The Construction Superintendent will identify the approximate location for the J-Blocks and Meter Mounting Panel.
- Make sure the J-blocks are positioned such that they are not located over a stud, truss, or joists.
- The J-blocks on the rim joists and band boards should be centered in the cavity. Install the siding J-blocks with the bottom 5" above the sill plate. Aligning the tops of the j-blocks along the sides of the house looks better.
- Porch Recessed Electrical J-blocks need to be centered 18" off the porch deck and centered in a stud bay.
- Back Flood Light J-block needs to be centered on the back of the house 8' – 12' off the ground.

**How**

- For standard J-Blocks and non-recessed electrical J-Blocks, Install the J-Blocks on the Styrofoam exterior insulation.

- For recessed electrical and HVAC J-blocks, a hole must be cut through the Styrofoam and OSB. For dryer and bath vents, a 4" hole saw will work best. A reciprocating saw will be needed for the others.
- Add 2x6 blocks inside the following siding J-blocks:
  - Hose Bibs
  - A/C Electrical Disconnect
- Nail the J-blocks in place with 2 ½" siding nails. Use a Torpedo level to ensure the tops of the J-blocks are level.
- Flash the nail flanges of the siding J-blocks to the Styrofoam insulation using construction tape. Install four pieces of tape in a bottom-to-top sequence to create a water shed plane.

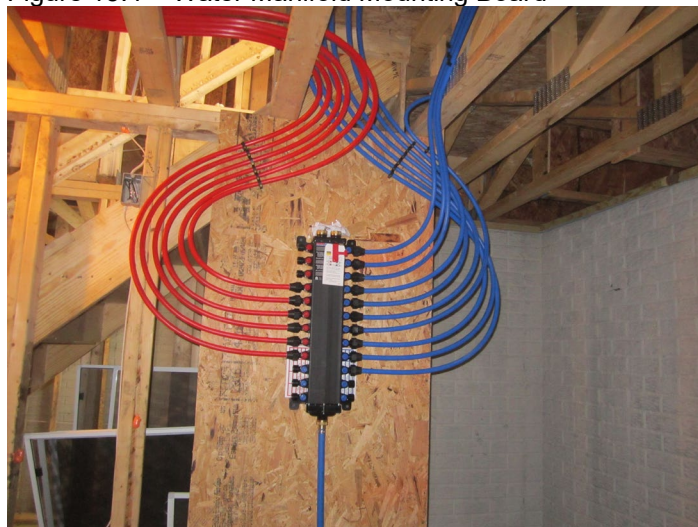
### Mounting Board for Water Manifold (Volunteers)

#### **Critical Issues**

- ◆ **To provide for a secure installation of the water manifold, install a 4'x8' sheet of ¾" OSB securely fastened to the framing.**

- Before the plumber installs the interior water lines, install a 4'x8' sheet of ¾" OSB for mounting the water manifold and securing the ends of the water lines.
- The OSB panel should have been stored in the basement prior to the first floor decking being installed. (See Decking- Mounting board for Water Manifold).
  1. The Construction Supervisor will provide the exact location for installing the mounting board.
  2. At the location specified, attach the top edge and vertical edges of the OSB panel to the framing with 3 1/2" drywall screws through the OSB 1 screw every 12".

Figure 15.4 – Water Manifold Mounting Board



### Mounting board for Communication Terminations (Volunteers)

#### *Critical Issues*

- ◆ To provide for a secure installation of the communication terminators, install a 2'x4' sheet of 3/4" OSB.
- Install a 2'x4' sheet of 3/4" OSB to the foundation for securing the ends of the communication lines. (see figure 15.5).
  1. The panel will be installed on the inside of the basement wall just below the Electric Meter Mounting Panel located on the outside wall. Verify this location with the Construction Supervisor.
  2. At the location specified, attach the top edge of the OSB panel to the sill plate with 3 1/2" drywall screws through the OSB and insulation drape; 1 screw every 12".



Figure 15.5 – Communication Panel



3. The Electrician will install an electrical outlet and a grounding strap on the board. He will also route the communication lines to the board for use by the Home Owner's communication vendor.

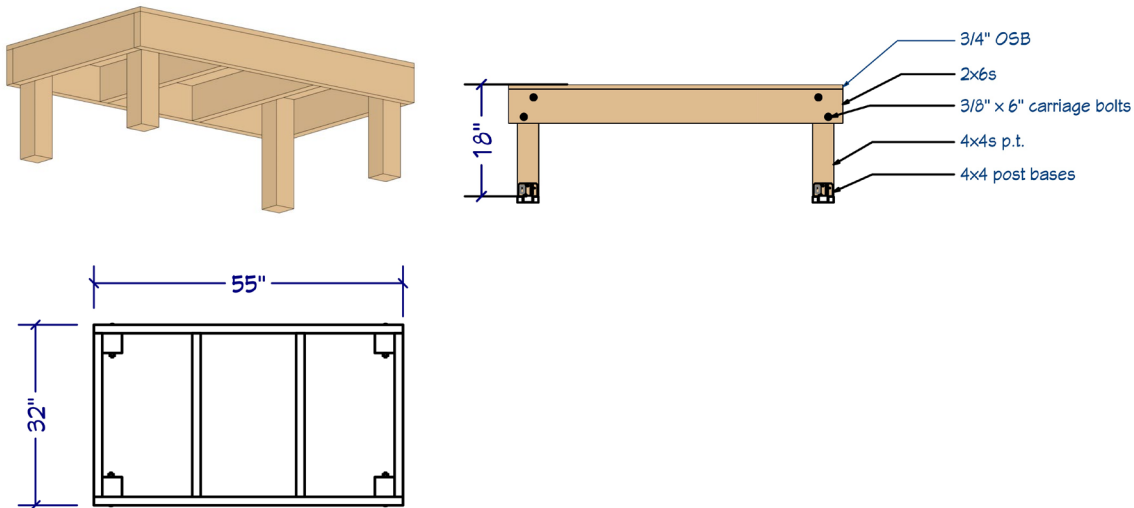
## Mechanical Platform (Volunteers)

### Critical Issues

- ◆ To prevent damage to the furnace and hot water tank from water on the basement floor, they must be raised off the floor.
- ◆ The platform must be sturdy as it will be supporting over 650 pounds.

- If possible, the mechanical platform will be built in the Habitat Warehouse and delivered with the Rough-In Mechanical materials.
- Locate and level the platform in the location specified in the prints.

Figure 15.6 – Mechanical Platform



## **HVAC Rough-In (Contractor)**

### **HVAC Boots & Ductwork**

The HVAC contractor will cut holes in the floors and walls for installing the boots and ductwork for the furnace supply and return air ducts. They will ensure the ductwork is sealed to Aware standards. The boots must be sealed to the flooring after the flooring is installed. (See the “Post Mechanicals Activities” in the “Air Sealing and Insulation” chapter).

### **HVAC System**

The HVAC contractor will install the furnace, A/C and ductwork.

- The furnace will be installed on the mechanical platform.
- The A/C condenser will be installed on a platform bolted to the foundation.

### **Radon System (Contractor)**

- The Radon contractor will install 4” PVC pipe from the sump pump pit up through the roof.
- The electrician will install an outlet in the attic near the radon piping with a dedicated circuit.
- The Radon contractor will install the radon fan.

## **Plumbing Top-out (Contractor)**

### **Plumbing System**

The plumber will install all rough plumbing in the house, including:

- The water supply lines to the bath and kitchen
- The drain lines to the bath and kitchen
- The vent pipe up through the roof
- The drain pipe to the sewer.

### **Sump Pump (Contractor)**

The plumber will install the sump pump and discharge line.

The plumber will also install a backup system for powering the sump pump.

### **Install the Bathtub Enclosure (Contractor)**

Before the bathtub can be installed, the exterior walls behind the tub must be covered with OSB. (See “Sealing Plumbing & Chases Wall Stud Bays” in the “Air Sealing and Insulation” chapter).

The plumber will:

- Position the bath tub enclosure into place.
- Pre-drill holes in the tub wall flanges.
- Screw the enclosure to the studs with drywall screws.

## Electrical Rough-In (Contractor)

### Electric Cabling System

The electrician will install:

- All electrical boxes
- The service panel
- The electrical meter box per Figure 15.1
- The electrical service lines and weather head
- All wiring into the boxes
- The electrical service to the furnace and A/C.

The electrician will install two or three temporary GFCI outlets. These outlets will be located in the bathroom and/or kitchen. These outlets will be available for use after the electric service is connected to the house. They will be replaced during the Finish Electrical phase.

### Phone and Coax Cabling Systems (Contractor)

The electrician will install electrical boxes for a combination of Coax and Cat-5e cabling to be used for phone, cable TV and computer connections.

**Coax/Cat-5e:** Both Coax and Cat-5e to living room and all bedrooms

**CAT-5e:** Cat-5e cable to above the kitchen counter (if specified)

## Gas Rough-In (Contractor)

The plumber will install:

- The gas piping into the house
- The gas piping to the furnace
- ❖ The gas piping to the range and hot water tank will be installed during the Finish Mechanical phase.

## Inspections

Once all mechanical inspections are completed, the contractors will each schedule inspections for their work.

The Structural Inspection (Framing) will be scheduled once the rough-in mechanical inspections are complete.