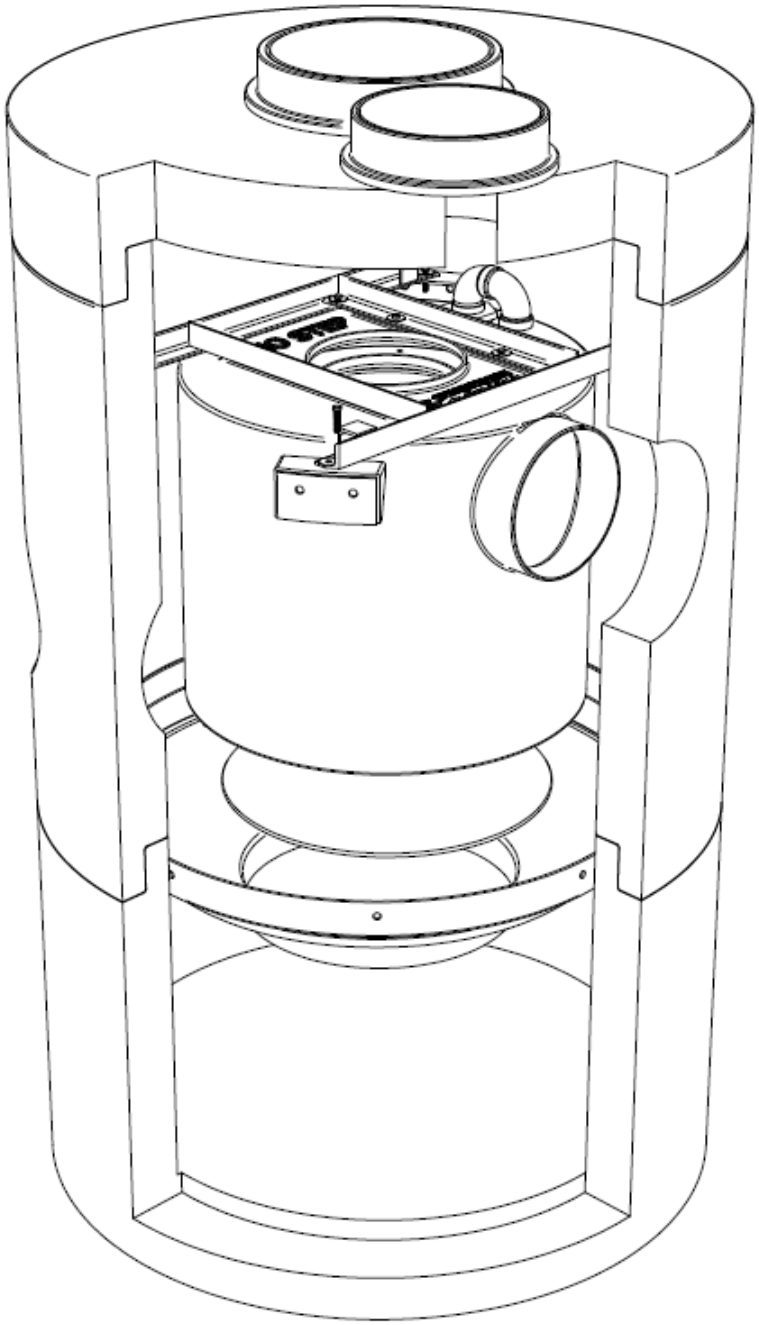
6 ft. Downstream Defender® Handling, Storage and Pre-Assembly Instructions



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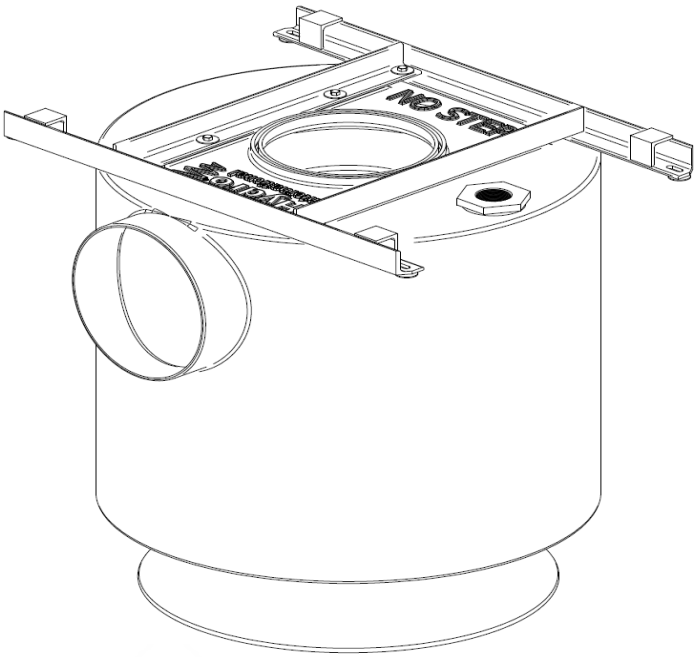
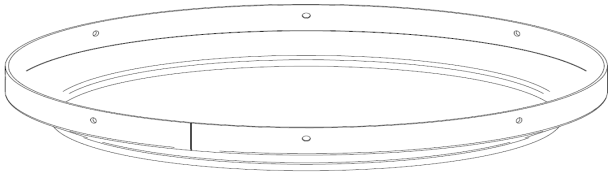
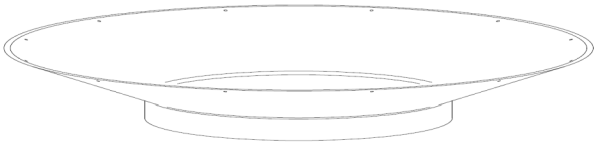
Before assembling the Downstream Defender® make sure you have the following items:

Materials Supplied By Hydro International



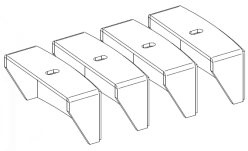


Benching Skirt Ledger*



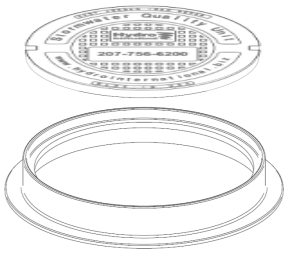
Benching Skirt Cone*

Stencil Kit

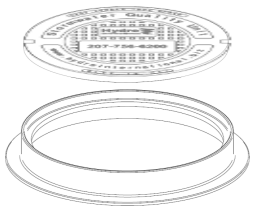


Support Frame Ledger Angles (x4)

PVC Vent



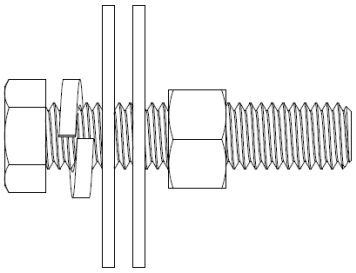
24 in. Frame and Cover



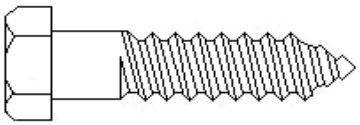
18 in. Frame and Cover

***** All 6' Downstream Defender® plastic components are molded from red high density polyethylene

Hardware Supplied By Hydro International



- A-304 SS 3/8 in.-16 UNC x 1 3/4 in. Fully Threaded Bolt
- A-304 SS 3/8 in. x 1-1/2 in. Flat/Fender Washer (x2)
- A-304 SS 3/8 in. Lock Washer
- A-304 SS 3/8 in.-16 UNC Hex Nut
- Pictured assembly x4 included for securing support frame to ledger angles in 6 ft. units



- A-304 SS 3/8 in.. x 1 1/2 in. Lag Bolt (x16)

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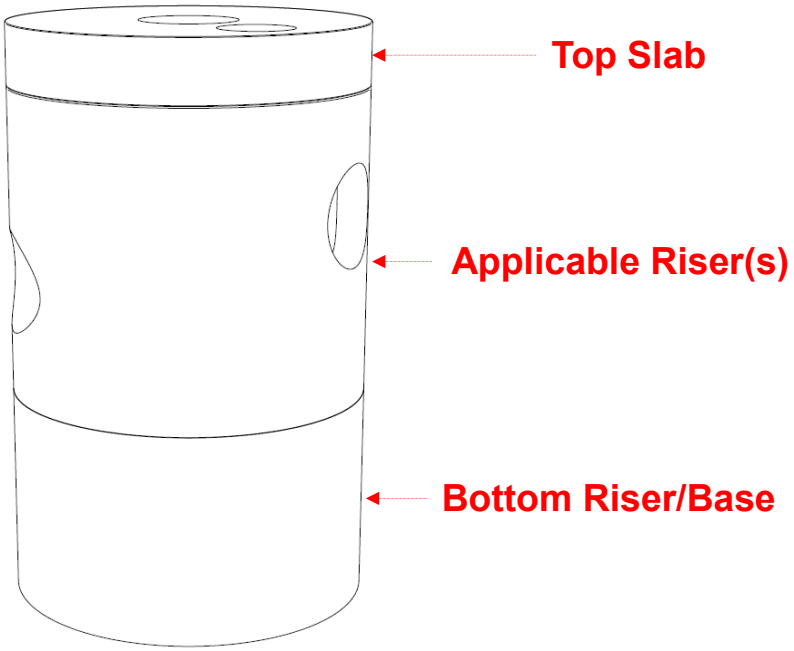
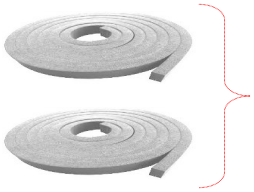
Materials Supplied By Precaster

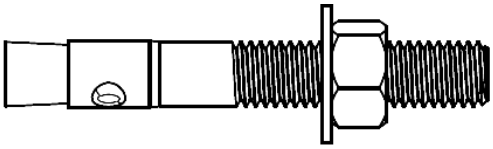


6 ft. Diameter Precast Concrete Manhole:

- Top slab cored for corresponding frames and covers
- Risers with cored inlet and outlet
- Joint Sealant
- Pipe boots (in required locations)



Hardware Supplied By Precaster



- A-304 SS 1/2 in.-13 UNC x 3 3/4 in. Expansion Anchor*****
- A-304 SS 1/2 in. I.D. Flat Washer
- A-304 SS 1/2 in.-13 UNC Hex Nut
- Pictured assembly x8 needed for ledger angles
- Pictured assembly x10 required for benching skirt

***** Minimum embedment depth of the 3 3/4 in expansion anchors is 2 1/2 in.

Required Tools and Equipment

- Measuring Tape
- Ladder
- Hammer
- Hammer Drill and Concrete Bits
- Adjustable Wrench or Ratchet with Deep Sockets
- Crane or Forklift with Lifting Gear
- Wood Blocking
- Large C-Clamps
- **Approved Shop Drawings (Contact Hydro to obtain if necessary)**

Handling and Storage

Hydro International's **Downstream Defender®** internal components are manufactured utilizing highly durable thermoplastics; however, improper handling can result in damage to components and accessories. Failure to comply with handling, storage, and pre-assembly instructions voids all warranties.

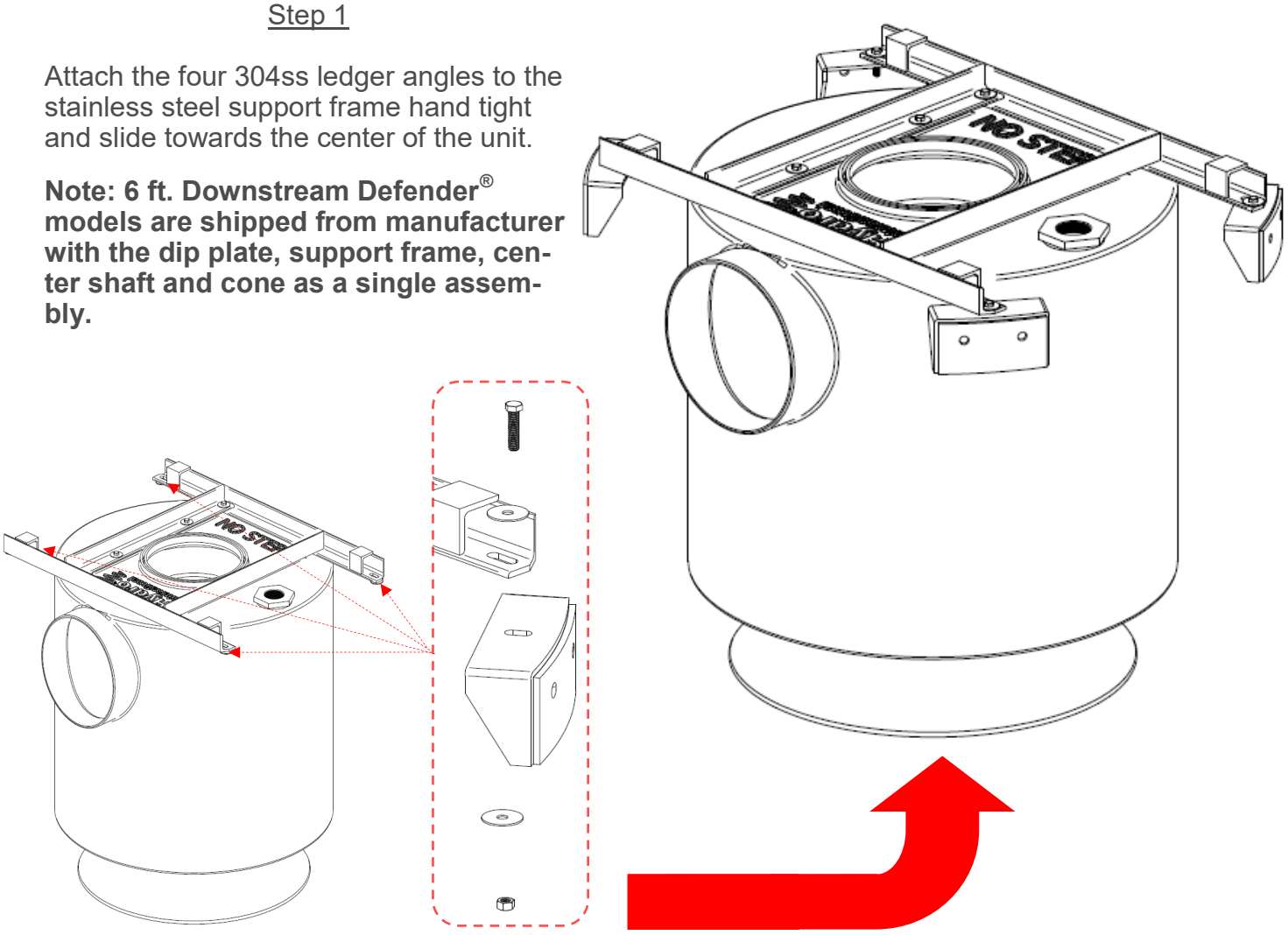
1. Upon receipt of the **Downstream Defender®** components, inspect immediately for defects or shipping damage. If any discrepancies or missing components are identified, notify Hydro International prior to unloading to initiate corrective action.
2. At all times, avoid unnecessary and extreme impacts to the internal components. At no time shall anyone step, stand, or otherwise place an unnecessary load, on the components.
3. The **Downstream Defender®** shall be pre-assembled inside and delivered as soon after as possible. Pending pre-assembly, the internal components shall be stored inside in an area protected from dirt, ultraviolet (uv) light, and impact. Post pre-assembly the unit may be stored outside providing unit is adequately protected from uv light, vandalism, and the elements until delivery.

Pre-Assembly

Step 1

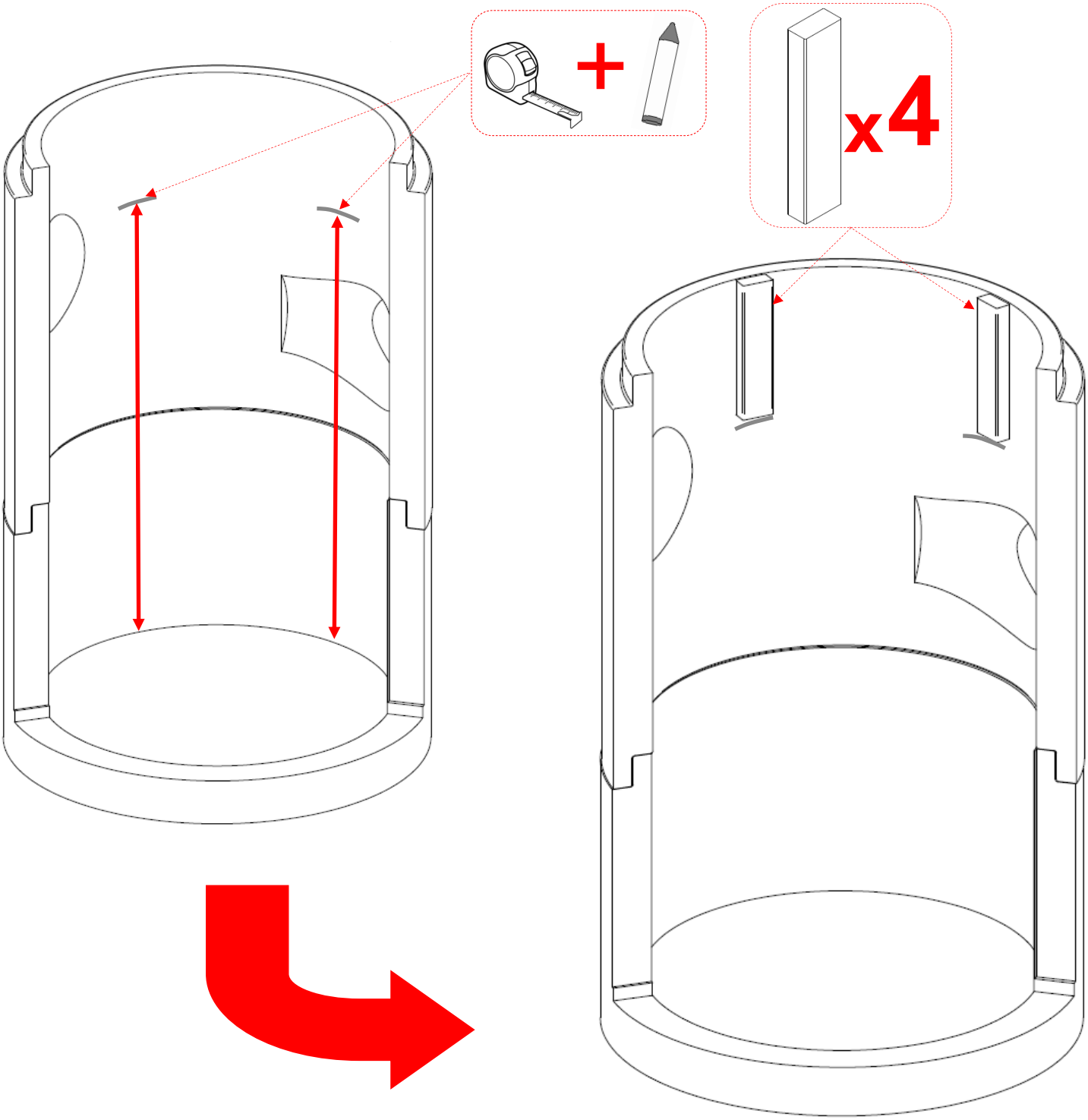
Attach the four 304ss ledger angles to the stainless steel support frame hand tight and slide towards the center of the unit.

Note: 6 ft. Downstream Defender® models are shipped from manufacturer with the dip plate, support frame, center shaft and cone as a single assembly.



Step 2

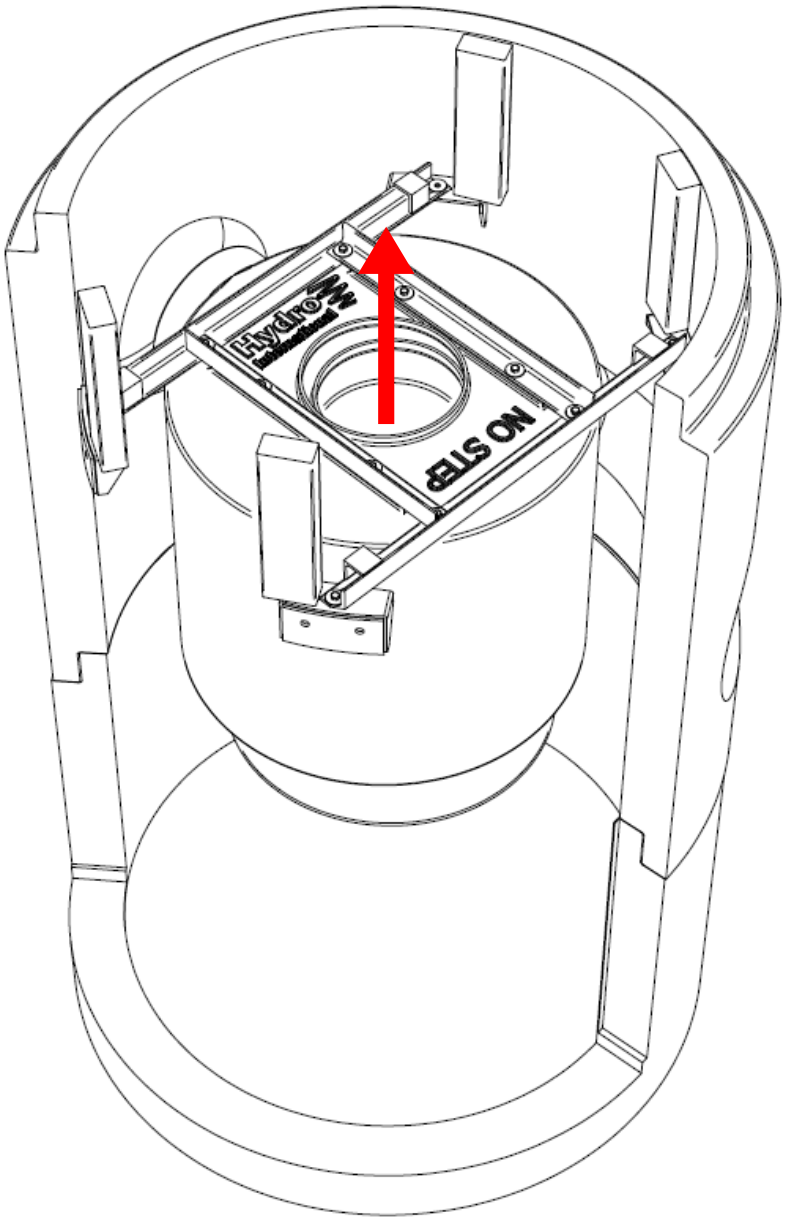
Locate and mark top of ledger angle elevations in the manhole at several locations by laying out the dimension shown on production detail drawings. Clamp four boards to the precast so that the bottom of the boards align with the elevation of the top surface of the ledger angles.

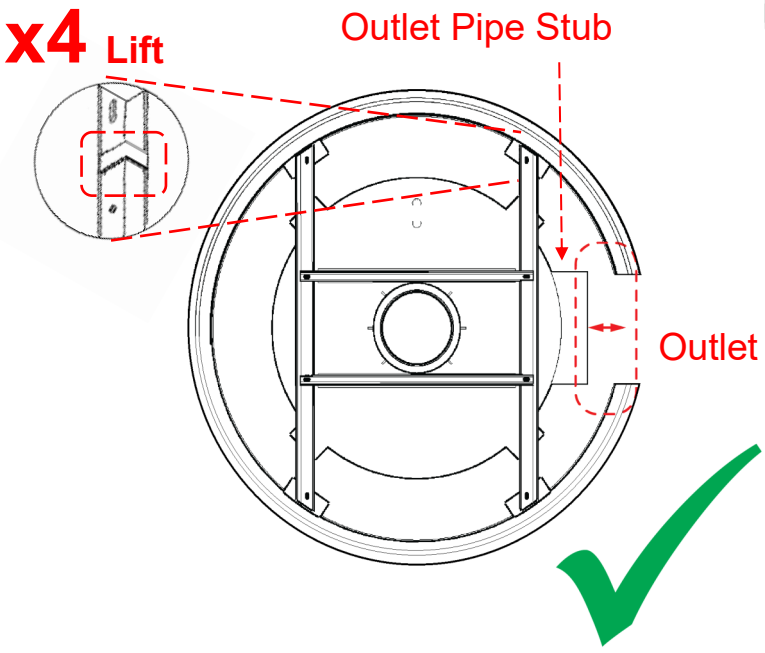


Step 3

Using the support frame lift points lower the dip plate assembly into the precast riser and rotate until the outlet pipe stub is oriented facing the outlet knockout. Lift the dip plate assembly (consisting of the dip plate, support frame, ledger angles, center shaft and cone) until the four ledger angles stop firmly against the bottom of the four boards. Ensure dip plate assembly is level and centered.

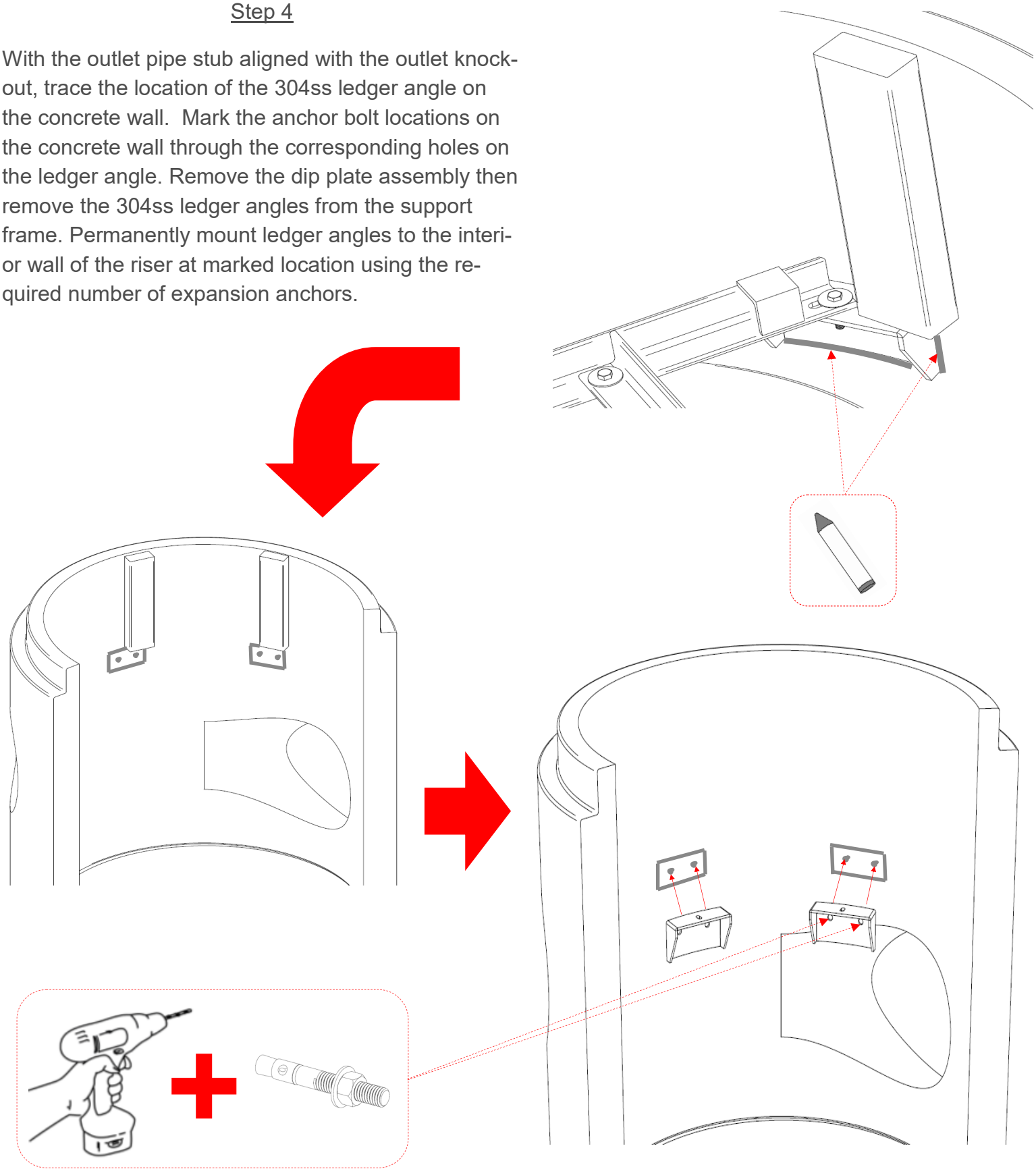
Note: Measurements and not outlet knockout determine vertical location of the outlet pipe stub. Verify locations of all internal components, inlet and outlet cutouts, are in accordance with approved shop drawings.





Step 4

With the outlet pipe stub aligned with the outlet knock-out, trace the location of the 304ss ledger angle on the concrete wall. Mark the anchor bolt locations on the concrete wall through the corresponding holes on the ledger angle. Remove the dip plate assembly then remove the 304ss ledger angles from the support frame. Permanently mount ledger angles to the interior wall of the riser at marked location using the required number of expansion anchors.



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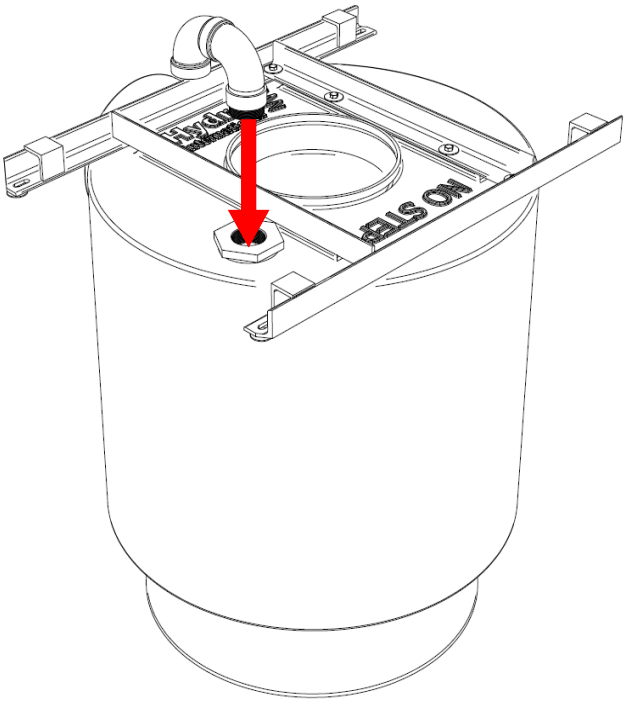
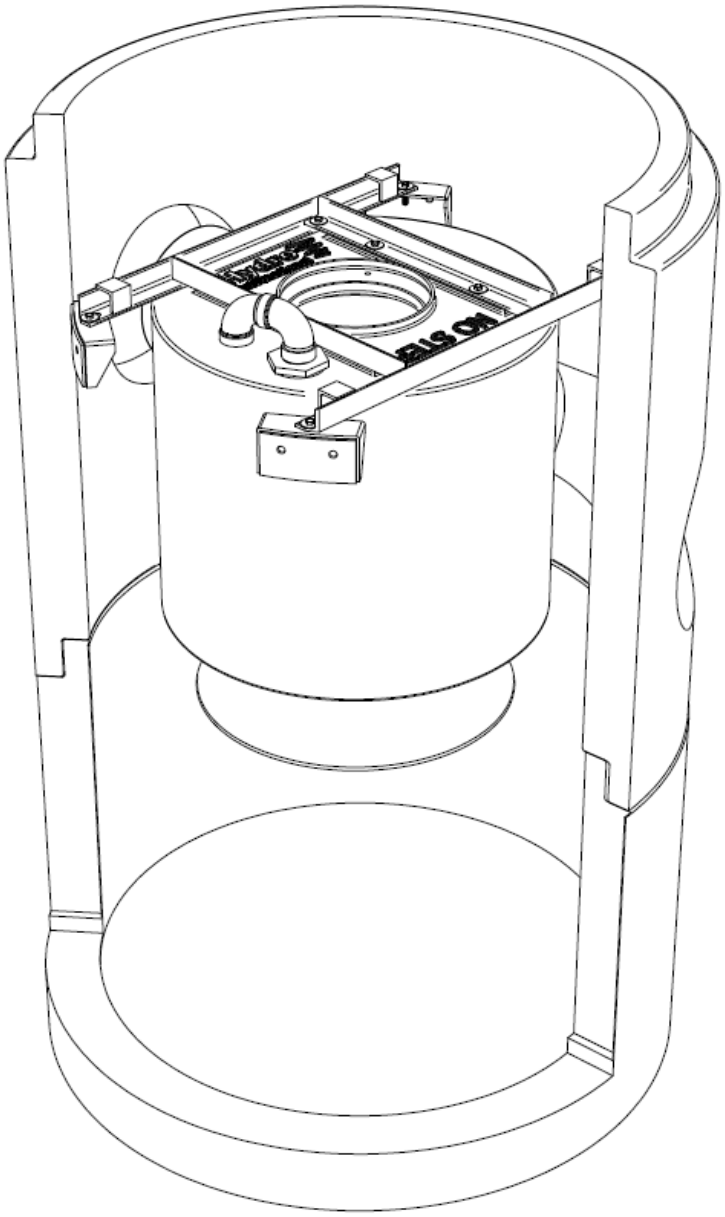
Step 5

Install the included 2 in. PVC vent by threading into bulkhead fitting installed through the top surface of the dip plate



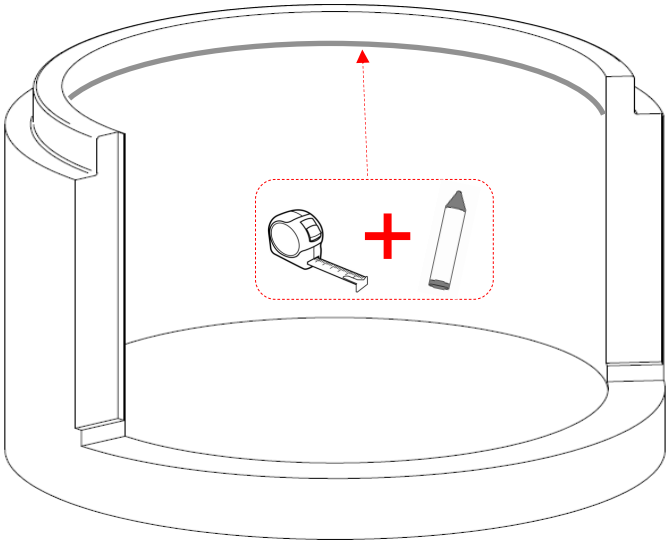


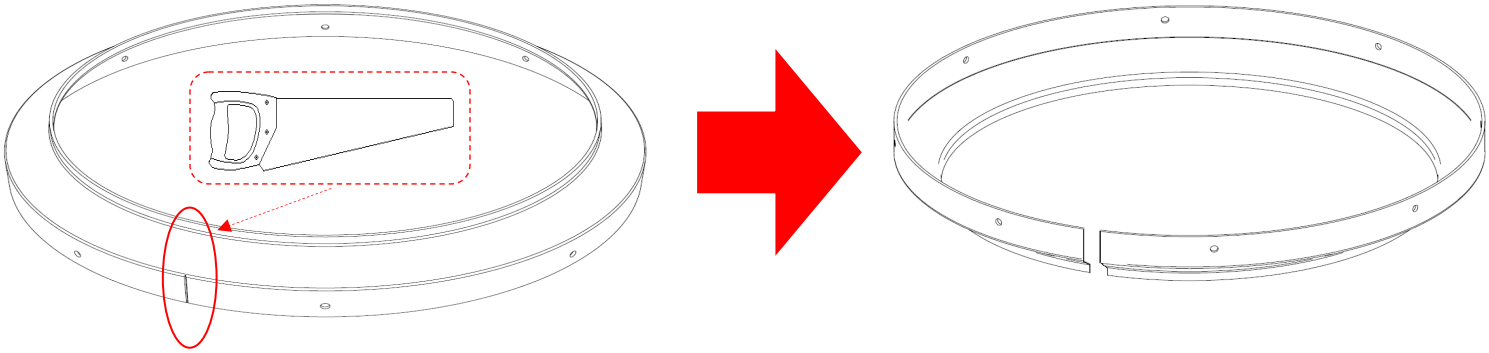
Step 6

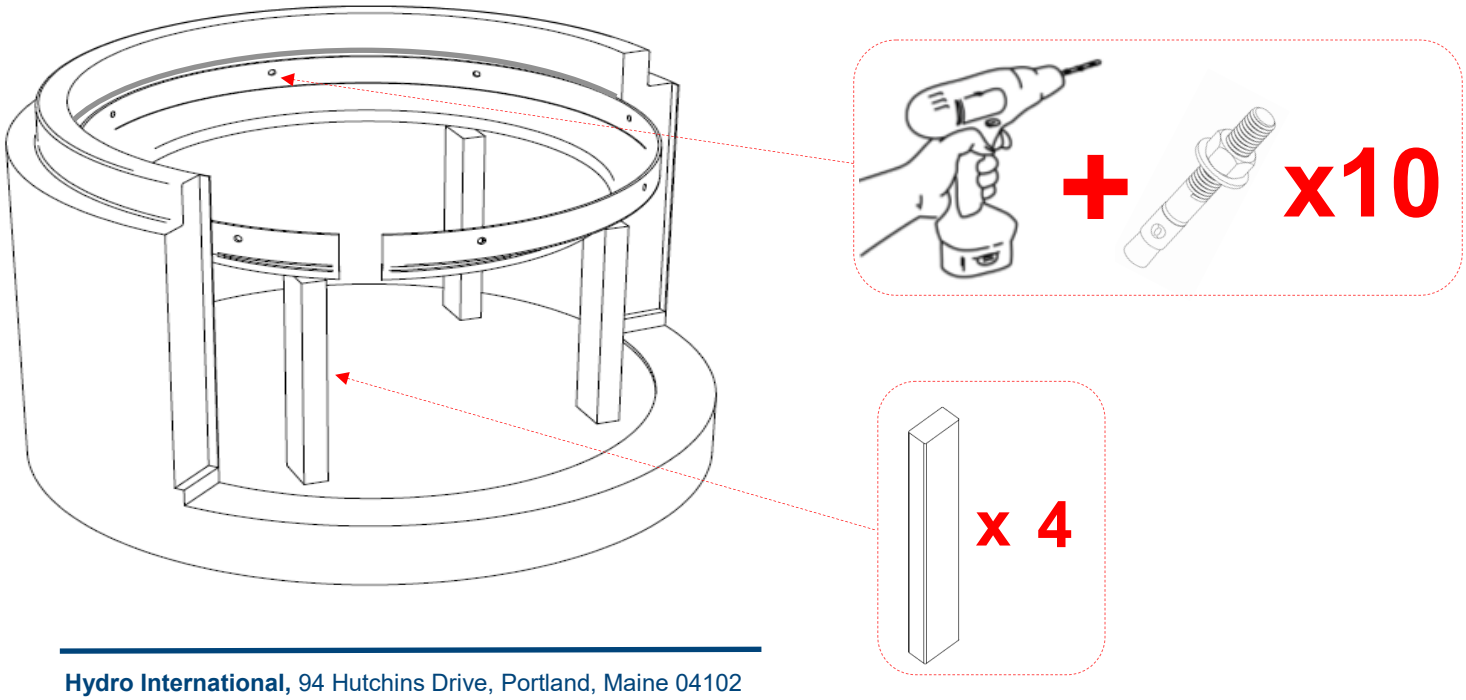
Verify orientations and elevations of installed components are correct by replacing assembly. Confirm that assembly is level, and that overflow knockout aligns vertically and horizontally with overflow pipe stub. Ensure there is adequate clearance for outlet pipe wall thickness through outlet knockout.

Step 7

Referencing the Hydro shop drawing measure and mark the elevation of the benching skirt rim on the precast wall. Locate the scribed location in the front of the benching skirt ledger and cut creating two ends. Blocking at the correct elevation expand the two ends of the ledger so that it matches the diameter of the precast. Permanently secure the benching skirt ledger to the precast wall using expansion anchors through each of the mounting flange holes.







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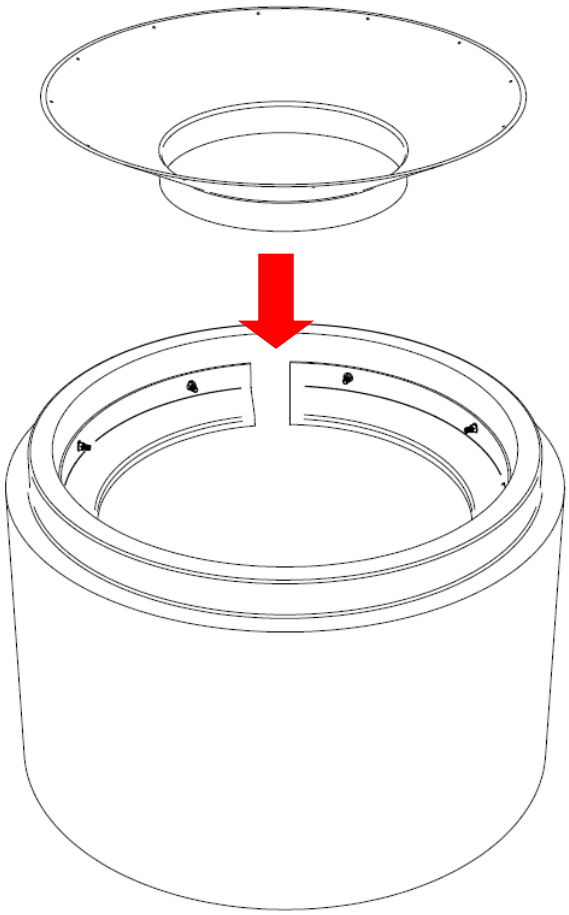
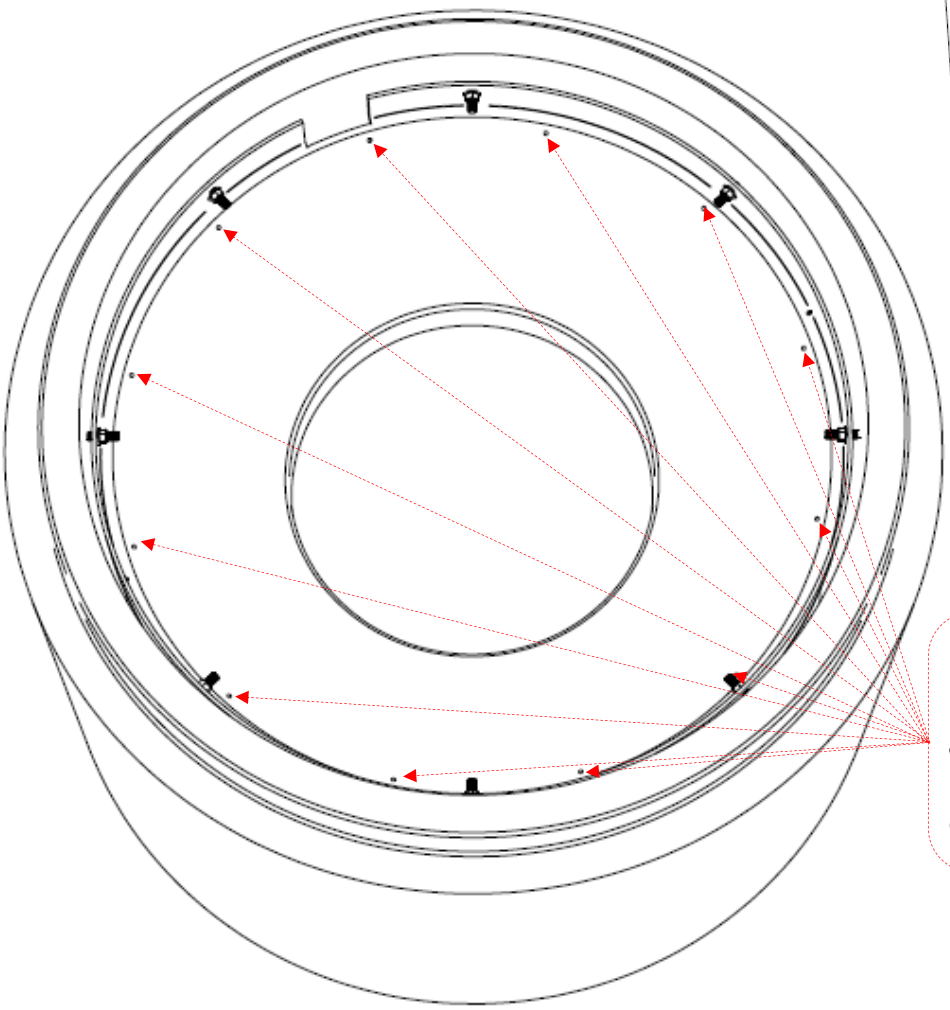
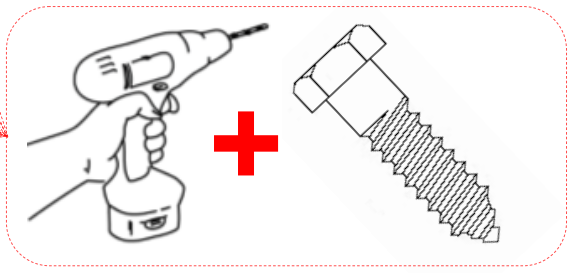
Step 8

Center the benching skirt cone on the installed benching skirt ledger. Drill concentric 1/4-in. pilot holes through the (16) marked locations around the perimeter of the benching skirt cone and ledger. Secure the cone to the ledger by installing lag screws through each of the (16) pilot holes.

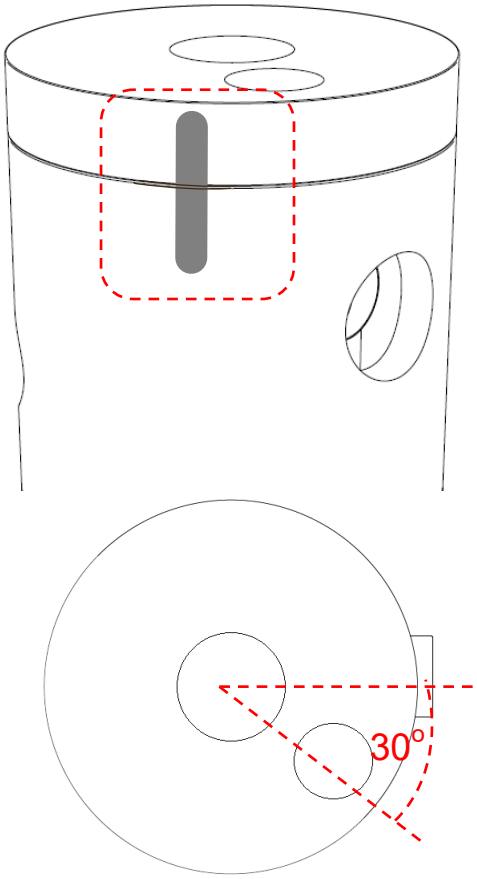




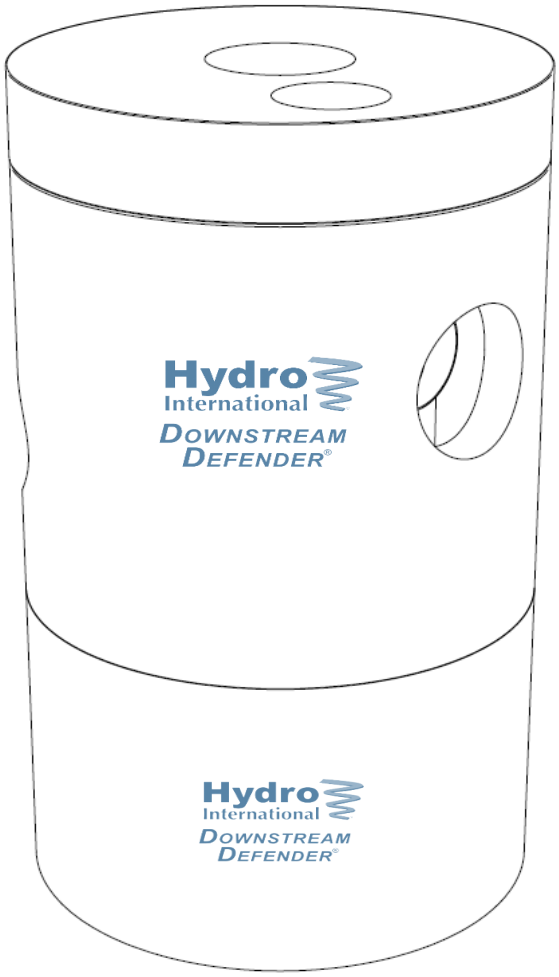


Step 9

Position the top slab on the manhole so that floatables access opening (smaller 18 in. opening on 6 ft. models) is 30° upstream from the outlet as shown in the diagram below. Paint a vertical match line on the side of the top slab and on the side of the uppermost riser/barrel where the eccentric floatables access is to be oriented in the field.



6 ft. Diameter Downstream Defender



Step 10

Stencil precast with “Hydro International” and “Downstream Defender” logos using navy blue spray paint.

Step 11

Take pictures of:

- Center shaft & cone, dip plate and support frame assembly
- Installed benching skirt
- Installed ledger angles
- Riser section with center shaft & cone, dip plate and support frame assembly blocked on top as shipped

Pictures shall be e-mailed to astevens@hydro-int.com prior to shipping with reference to the product and job name.

Step 12

Ship unit with benching skirt and ledger angles installed in corresponding sections. Ensure center shaft & cone, dip plate and support frame are shipped as a single assembly. Dip plate assembly should be secured on wood blocking mounted on top of the corresponding riser during shipping. Include base, riser(s), top slab, joint sealant, castings, and remaining (4) 3/8-in. bolts, washers and nuts in shipment.

Downstream Defender® Components as shipped to Jobsite