

Oldcastle Polymer

**Polymer Concrete
Underground Enclosures**

Technical Guide



Oldcastle Infrastructure™
A CRH COMPANY

WARNING:

All installations must be performed by qualified personnel with proper safety equipment. When installing any surface-level underground enclosures installers must follow all national and local electrical, safety and building codes.

Pedestrian / Greenbelt

Typical installations are pedestrian and greenbelt spaces and other non-deliberate traffic locations.



Performance Load Rating:

Light Duty | Pedestrian | Design Load: 300 PSF

Medium Duty | ANSI/SCTE Tier 8 | Design Load: 8,000 lb

Enclosure Brands:

• Carson® • Christy® • Fibrelyte®

Greenbelt, Sidewalk & Right of Way

Typical installations are greenbelt spaces, sidewalks and right of ways and other occasional non-deliberate traffic locations.



Performance Load Rating:

Medium Duty | ANSI/SCTE Tier 15 | Design Load: 15,000 lb

Heavy Duty | ANSI/SCTE Tier 22 | Design Load: 22,500 lb

Enclosure Brands:

• Carson® Heavywall BFC • Carson® NexGen
• Duralite® • Oldcastle FRP • Oldcastle Polymer

Roadways and Deliberate Traffic Areas

Typical installations are roadways and deliberate traffic areas.

Traffic rated products require a steel frame and cover with a concrete collar.



Performance Load Rating:

Traffic | AASHTO H20 | Design Load: 20,800 lb

Enclosure Brands:

• Christy® • STAKKAbOX™ ULTIMA Connect

Always ensure the product load rating matches the anticipated load rating of the application.

Our products are available in a variety of materials and are rated for performance. This chart provides descriptions, details, terminology and iconography that is used throughout our literature. It should be used to help define the appropriate product choices for the application.

Description	Application	Performance (Design Load)	Oldcastle Infrastructure Designation / Marking / Icon
Pedestrian Load Rating Specified for sidewalks, planters and greenways where no vehicular traffic is anticipated under any condition.	Light Duty: Pedestrian traffic only	250 to 350 lbs. per sq./ft.	Pedestrian  
ANSI / SCTE Tier 8 Load Rating Specified for sidewalk applications for non-deliberate light vehicular traffic. Design load 8,000 lbs. and a minimum failure load of 12,000 lbs.	Medium Duty: Occasional non-deliberate light vehicular traffic	8,000 lbs. Single Tire (10" x 10")	Tier 8  
ANSI / SCTE Tier 15 Load Rating Specified for driveway, parking lot and off-roadway applications subject to occasional non-deliberate heavy vehicular traffic. Design load 15,000 lbs. and a minimum failure load of 22,500 lbs.	Medium Duty: Occasional non-deliberate heavy vehicular traffic	15,000 lbs. Single Tire (10" x 10")	Tier 15  
20K Load Rating Specified for areas subjected to occasional heavy traffic such as driveways, alley ways and parking lots. 20K loading is not appropriate for areas subjected to continuous and deliberate traffic such as streets and highways.	Medium Duty: Occasional non-deliberate heavy vehicular traffic	20,800 lbs. Dual Tire (10" x 20")	20K  
ASSHTO H20-44 or HS20-44 Load Rating Specified for deliberate vehicular traffic installations such as streets and highways. Enclosures are fitted with a steel frame and cover.	Traffic: Deliberate vehicular traffic	20,800 lbs. Dual Tire (10" x 20")	H20  
ANSI / SCTE Tier 22 Load Rating Specified for driveway, parking lot and off-roadway applications subject to occasional non-deliberate heavy vehicular traffic. Design load 22,500 lbs. and a minimum failure load of 33,750 lbs.	Heavy Duty: Occasional non-deliberate heavy vehicular traffic	22,500 lbs. Dual Tire (10" x 20")	Tier 22  
32K Load Rating Non-concrete products suitable for deliberate vehicular traffic installations.	Traffic: Deliberate vehicular traffic	32,000 lbs. per axle	32K  
64K Load Ratings Non-concrete products suitable for deliberate vehicular traffic installations.	Traffic: Deliberate vehicular traffic	64,000 lbs. per axle	64K  

Product load ratings are determined by the lowest component rating.

The Rural Utility Service (RUS) is a department of the US Department of Agriculture organized to facilitate rural developments. You will find Oldcastle Infrastructure enclosures listed by the RUS. Please reference brand specific product data sheets for additional clarifications. All Oldcastle Infrastructure enclosures conform to the RUS "Tamper Resistant" fastener design for buried pedestals found listed by code and group.

The "Test Load" term is used in ANSI/SCTE 77-2010 to designate the minimum load that an enclosure must be able to sustain to qualify for a particular performance rating. The term is synonymous with (minimum) Failure Load. It should be noted that within the ANSI/SCTE 77-2010 specification, the "Test Load" is 1.5 x the Design Load. Some specification and operating companies select a higher multiple or safety factor for proof of Design Load.

Oldcastle Infrastructure underground enclosures are suitable for delivery to job sites on any construction vehicle. Enclosures can be safely handled by hand by the proper number of trained workers or proper lifting equipment for loading and unloading.

Always ensure the product load rating matches the anticipated load rating of the application.

Installations on a slope or hillside:

Enclosures installed on a slope or hillside should be installed level and have a retaining wall built to hold the soil to prevent erosion above the enclosure.

Sidewalks:

If the installation is to be within a sidewalk, it is generally more practical to use a masonry saw and remove the entire sidewalk width to facilitate proper soil removal.

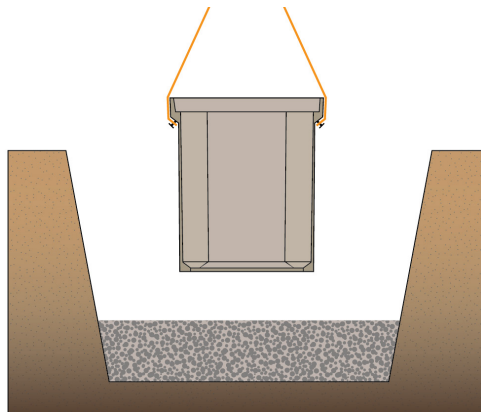
Base (crushed stone):

A base of 6" - 8" is recommended in high water table areas. A deeper layer of crushed stone may reduce the chances of settling over time. 2" to 4" of stone may be used in areas with high soil stability.

Lifting:

Enclosures can be safely handled by hand by the proper number of trained workers or with proper lifting equipment. Always follow guidelines for safe lifting.

Lifting must be performed by qualified personnel with proper safety equipment, following all national and local safety codes.



Lifting details for Oldcastle FRP and Oldcastle Polymer Concrete enclosures:

Lifting Points

Boxes larger than 24" x 24" are equipped with lifting points.

- Oldcastle FRP boxes are equipped with cable lifting loops or bolts.
- Oldcastle Polymer boxes are equipped with lifting bolts.



Oldcastle FRP



Oldcastle Polymer - Style A



Oldcastle Polymer - Style B

Lifting Straps

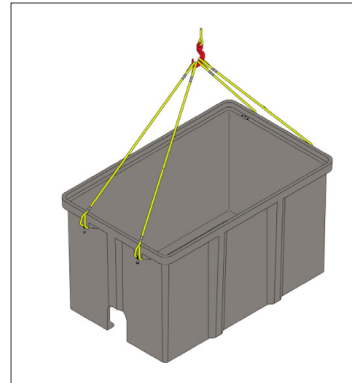
Boxes can be lifted using nylon straps or chain.

If using nylon straps, inspect straps prior to connection to be sure they are not frayed or damaged.

The length of the lifting straps should be long enough to ensure no more than a 30-degree angle with the vertical axis.



Do not use frayed straps.



Use correct strap/chain length to ensure proper angle.

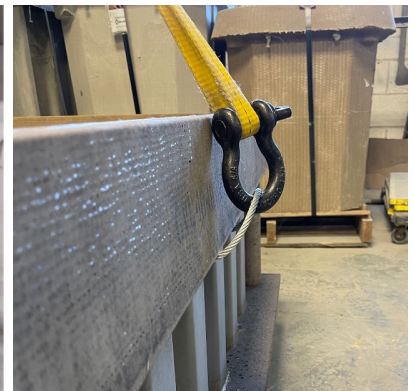


Preventative Maintenance

To prevent fraying of the nylon straps while lifting, it is recommended to connect a properly-rated metal hook or shackle to the lifting point first and then connect the nylon strap so that the nylon strap does not touch the polymer ring.



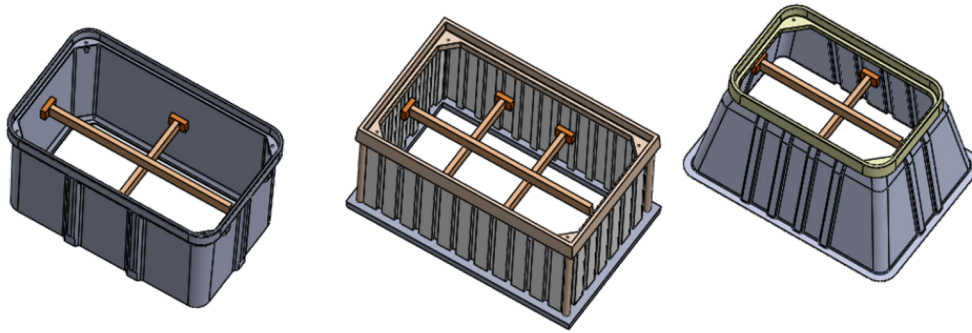
Metal Hook



Shackle

Bracing:

Install bracing within the enclosure to protect the sides from bowing during installation if heavy equipment is left stationary or is to be moving near an enclosure, or when 95% compacting is required. Suitable bracing could be one or multiple wooden 2x4's cut to length and installed at the mid-depth, snug against the inside walls of the enclosure. Install the internal bracing and cover before starting backfill operation.



Backfill:

Be sure to remove any stones 3" or larger from the backfill material. An alternate 'dry lean mix' may be prepared for backfill using Portland cement and crushed rock in a ratio of 1:10. This higher strength alternative is useful where known traffic is anticipated within the vicinity of the enclosure that could cause vehicular surcharge loading.

Tamping:

It is recommended not to use mechanical tamping tools such as a tamping ram or plate compactor when tamping the backfill material around the enclosure to prevent bowing to sides of the enclosure. Mechanical compactors can increase the soil density by as much as 200%. DO NOT use heavy equipment, like backhoes, for tamping as damage will occur.

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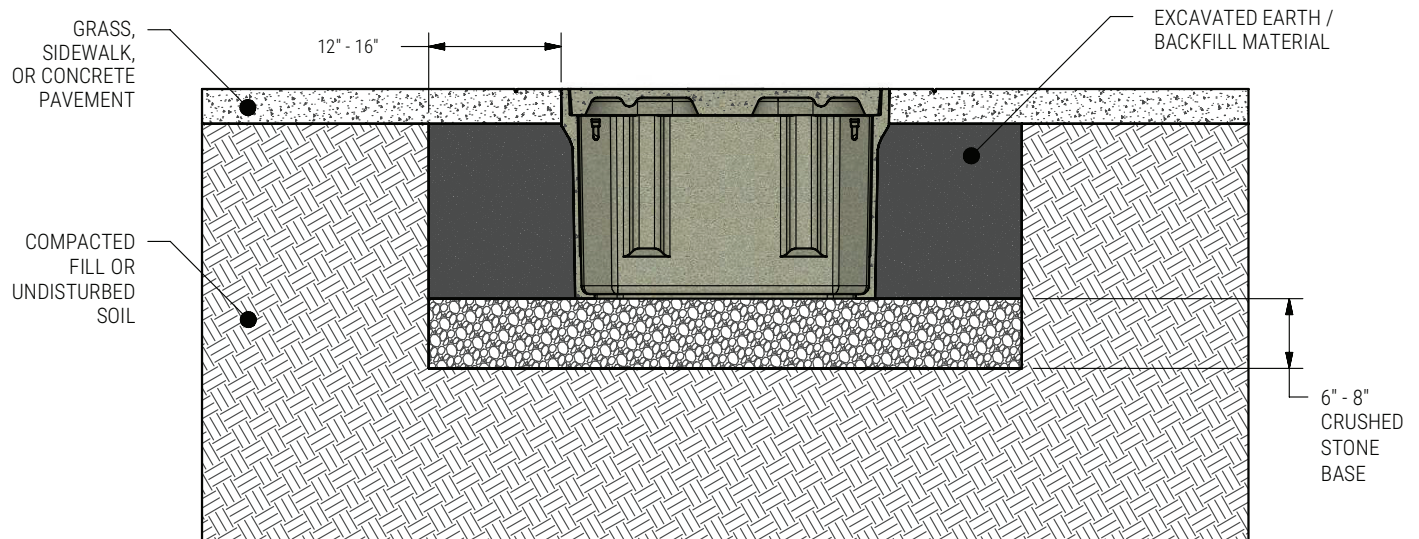
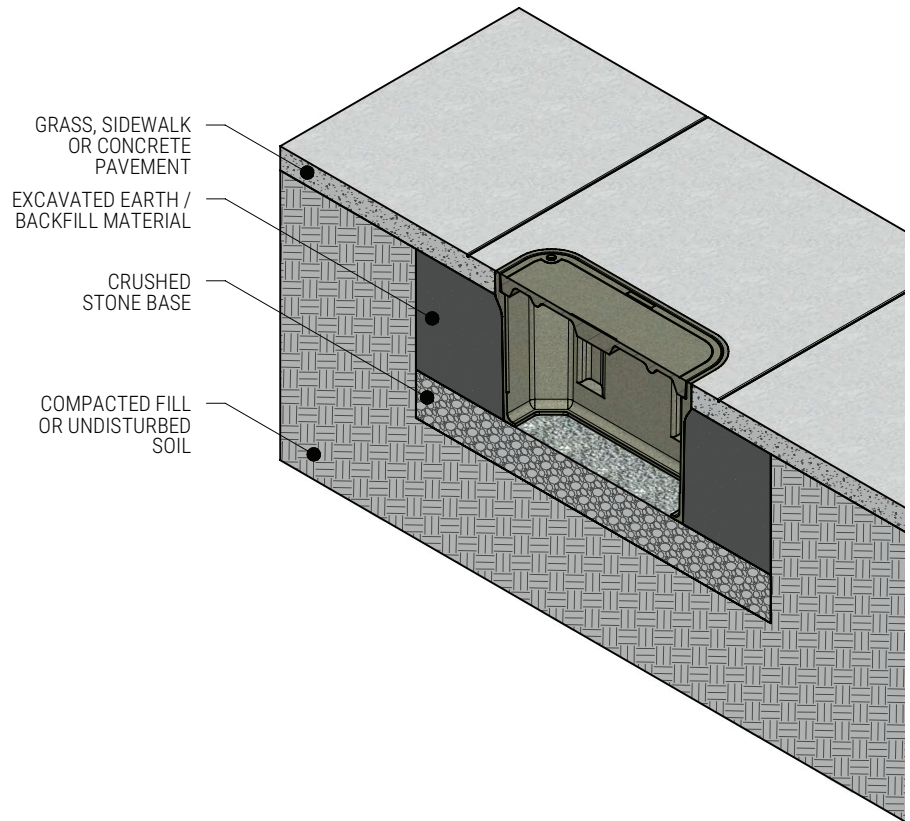
Installation

Greenbelt, Sidewalk & Right of Way Applications

Typical installations are greenbelt spaces, sidewalks and right of ways and other occasional non-deliberate traffic locations.

Always ensure the product load rating matches the anticipated load rating of the application.

This product should not be installed in roadways or parking lots or other areas subject to deliberate traffic.



Instructions

1. General

- 1.1 Refer to the General Information section on pages 4-6 for guidelines applicable to most site applications.

2. Site preparation

- 2.1. Follow local guidelines and job requirements

3. Excavation and preparation of enclosure hole (fig 1)

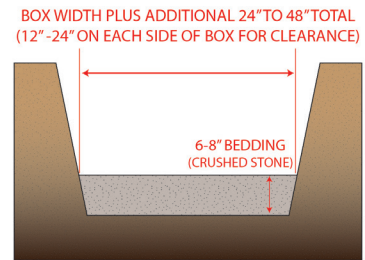
- 3.1 Remove material to provide 1 – 2' of clearance all around the enclosure and 6" – 8" in additional depth allowing for bedding and rodent barrier
- 3.2 Place a suitable bedding material such as crushed stone at the base of the excavated hole.

4. Removing enclosure from delivery vehicle and pallet

- 4.1 Remove shipping band from enclosure.
- 4.2 Use proper hook to remove lid from the enclosure base (fig 2).
- 4.3 Using proper lifting techniques, secure and remove box from truck. Lifting bolts are provided for boxes 2424 and larger (fig 3).
- 4.4 The angle of the lifting lines should not exceed 65°.
- 4.5 Install temporary brace supports (wood is acceptable) in the interior of the enclosure to provide additional lateral rigidity if 95% compaction is required or if large equipment will be nearby. (fig 4).

5. Enclosure placement into prepared hole

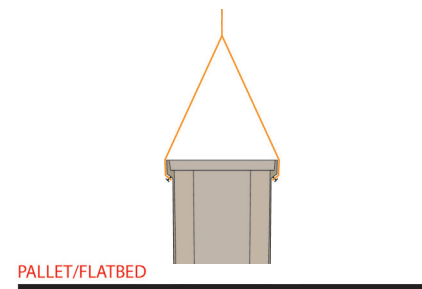
- 5.1 Reinstall the lid to the base of the enclosure prior to uniformly backfilling on all four sides. Nut, bolt threads, and cover seat should always be free of dirt and debris before tightening down the bolt.
- 5.2 Bed the base of the hole with crushed stone. Then lift and place the enclosure into the bedded hole.
- 5.3 Place crushed stone around the sides (fig 7 & 8).
- 5.4 Position the enclosure to the proper grade level and check.
- 5.5 Remove lid with proper lifting-eye tool.
- 5.6 Make the necessary elevation adjustments and recheck the elevation.



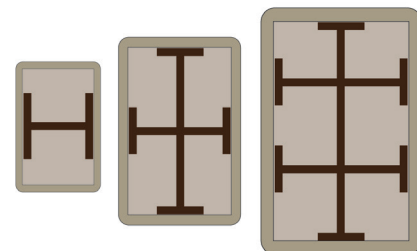
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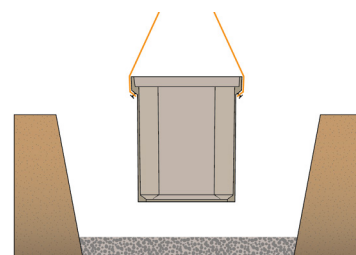
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4

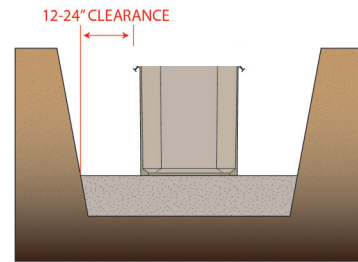


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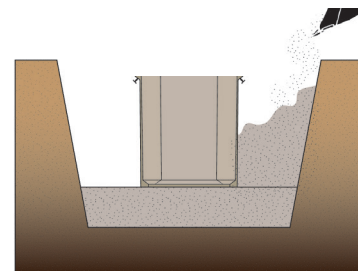
- 5.7 After the enclosure is set to the proper elevation, reinstall the cover.
- 5.8 Compact backfill per engineering specifications
- 5.9 Proper tamping tools such as a mechanical tamping device or hand operated device should be used (fig 9).
- 5.10 A hand shovel or backhoe should never be used for tamping as damage will occur. Remove temporary bracing prior to placing equipment.

6. Cover mounted assembly instructions (if applicable) EV dispenser, charger, cabinet, etc.

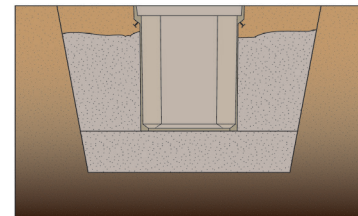
- 6.1 Verify assembly does not exceed 2500 lb. weight limit.
- 6.2 Arrange penetration template on the polymer concrete cover.
- 6.3 Core or drill completely through the cover.
- 6.4 Bolt the assembly through the cover.
- 6.5 Proceed using the dispenser manufactures installation instructions.



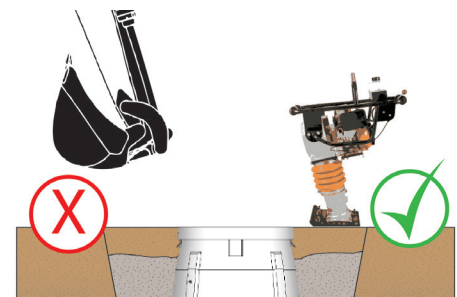
6



7



8



Vibrator plate may also be used.

9

Oldcastle Polymer

Polymer Concrete Underground Enclosures

Product Modifications

Product modifications, including but not limited to, cutting holes for conduit access, or cutting in “Mouse-Holes” may alter tier rating or product performance in any underground enclosure. Please contact Oldcastle Infrastructure for any questions regarding product modifications.

Required Items

- 1/4" carbide tipped masonry drill bit
- Corded drill with handle
- Diamond tipped masonry hole saw
- Tape measure
- Pen/Pencil
- Cordless drill (optional)
- Appropriate PPE

Instructions

1. Using the tape measure find where you want your hole to be and mark it with a Pen/Pencil.
2. Once your hole is marked take your drill with a 1/4" carbide tipped masonry bit and drill at the center of where you want your hole.
3. Using the corded drill with a handle and a diamond tipped masonry hole saw attached make your cut with the guide in the pilot hole.
4. Use the diagram on the following page for acceptable hole cutting areas.



Required Items

- Safety Glasses
- Dust Mask
- Leather Gloves
- Grounded, 14 Gauge Drop Cord
- 18"-24" Straight Edge
- 1/2" Drill Motor or Rotary Hammer with 1/4" Carbide Bit
- 4.75" Tungsten Carbide hole saw
(Grainger part #'s 54HP04 with 53WM35 5/8-18 arbor)
- 4.5" side grinder with 4" Concrete & Asphalt-Cutting Diamond Saw Blade
- Sharpie or Wax Pencil

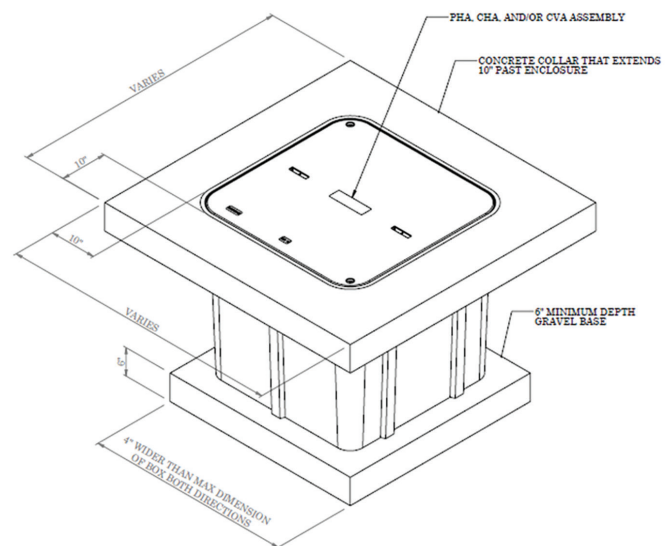
Excavation And Installation

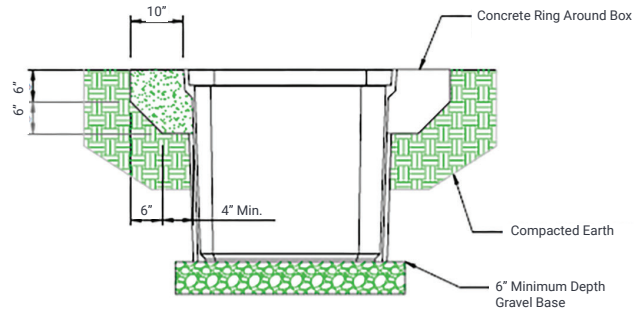
1. Excavate the existing enclosure body and take center-to-center and vertical measurements of the existing conduits. Transfer this information to the new body that will be installed. Mark center dimensions of the conduits and drill pilot holes. Measure both ends; the dimensions may be different on each end.
2. Using the 4.75" hole saw, drill through the body and remove the material on each end. Once the material is removed, use a straight edge and mark the lines across the top of the holes and from the sides of the holes down to the bottom of the body. Verify that the total amount of material that was removed did not exceed 25% of the end wall excluding the corners in the calculation. If the removed area exceeds 25% of the end wall, then a concrete collar is required to maintain the load rating.
3. Set the body into the excavation and make sure that it clears the conduits.
4. Install temporary bracing and replace the cover and back fill around the enclosure. Manually compact the soil with a hand tamper in 10"-12" lifts.

Do not use a mechanical compactor.

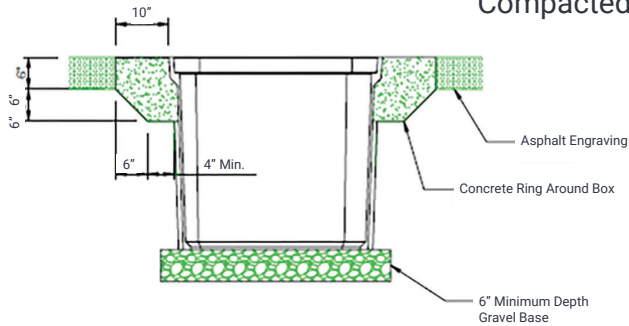
Concrete Collar Notes

- Concrete to be 3000 PSI minimum.
- Soil compaction as indicated on the original scope of work for the project.
- Concrete encased collar dimension "D" to be equal to design pavement depth.
- Pavement and subgrade to be as per indicated on the engineering plans.

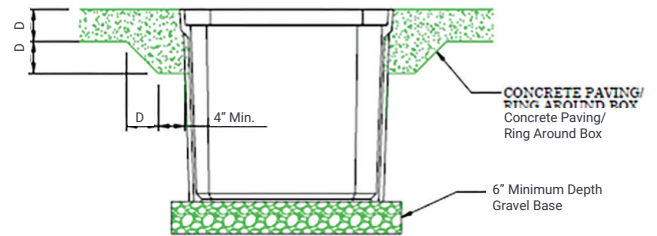




Compacted Earth Installation



Asphalt Installation



Concrete Installation

Installation Methods

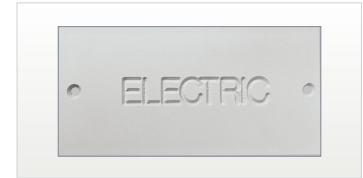
2x8

- Adhesive



4x8

- Adhesive
- Bolt Down
- Adhesive + Bolt Down



Required Items

- Cover
- Marking Plate
- Equipment and Materials for Your Install Method
- Compressed Air for Debris Removal

Equipment and Materials

Adhesive Installation

- Latex/Silicone Gloves
- Caulk Gun
- Adhesive: Seamer Mate or Geocel 2320 ONLY
- 3-5 lb weight
- Safety Glasses
- Clean rags
- Cleaner: Xylene/Acetone/Mineral Spirits

Bolt Down Installation

- Spanner Bit Head Screwdriver
- (2) 10-24 X 1/2 Flat Head Spanner Bolts

Preparation and Installation

For optimal results, cover and marking plate should be clean and dry. If possible, allow the parts to come to the same temperature. Room temperature is preferred but not absolutely necessary. Remove any large foreign debris from the cover (i.e., dust, water, ice, mud) and allow it to dry before installation. Use clean rags to wipe the recessed area with cleaner and use compressed air to remove any small remaining debris.

1. Adhesive Installation

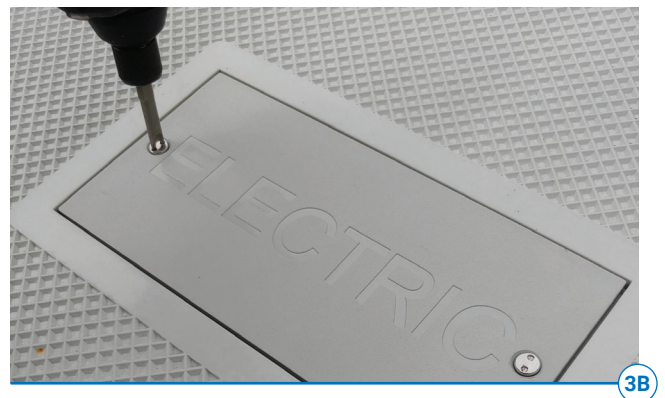
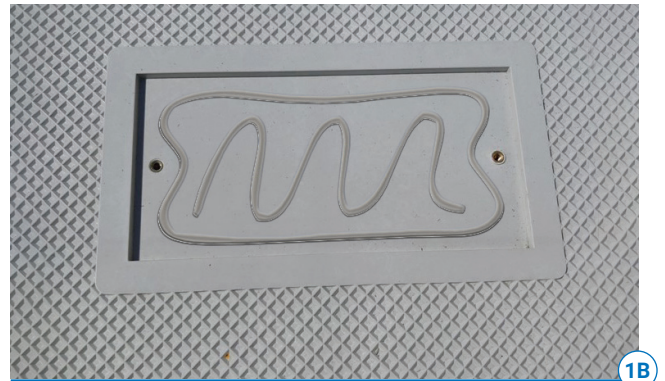
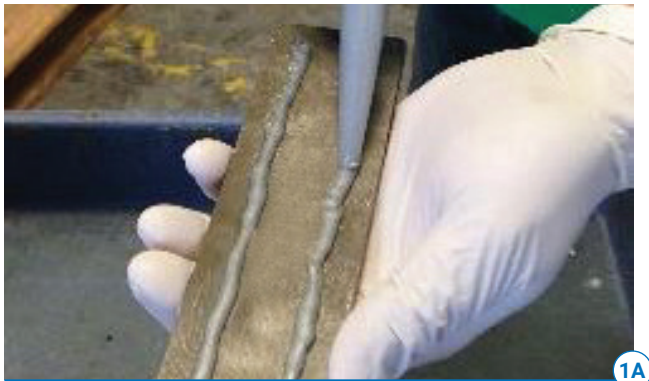
1.1 Apply a moderate amount of adhesive to the back of the marking plate in a 1/8" bead so that it runs the full length of the plate at an equal distance from the edge and between each bead (2"x8") or in a wave-like pattern with a border (4"x8"). Using excessive adhesive will slow curing process. (Figure 1A/1B and 2A/2B)

1.2 Wipe any excess adhesive off using a rag and cleaner. Apply a 3-5 lb. weight and let it sit for 30 minutes to ensure that the adhesive sets to form a permanent bond.

2. Bolt Down Installation

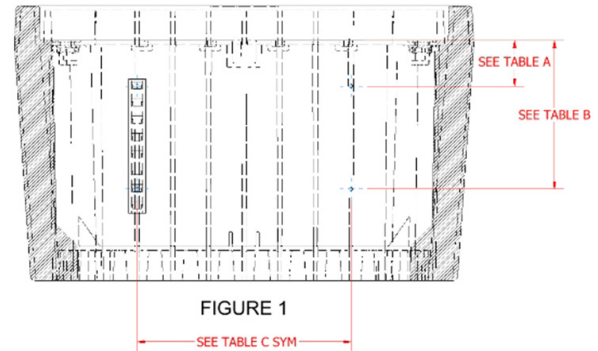
2.1 Using the spanner bit, hand-tighten the two spanner bolts into the pre-drilled holes of the marking plate (Figure 3A/3B) securing it to the cover.

2.2 If adhesive is used, apply continual pressure to the top of the marking plate for 10 seconds. Typical tack-free time is 10-20 minutes and full cure is approximately 24 hours.



Required Items

- 1/4" Hex Driver Bit
- Tape Measure or Flat Ruler
- Marker
- Carpenters Square
- Drill
- (2) 34358400 Cable Rack per wall
- (4) HWH-F02 .25" ID 1" OD Washers
- (4) HSC-H24 - #8 x 2" Sheet Metal Screws
- Appropriate PPE



BODY SIZE	A (MIN)	B (RACK*)	C (SYM)
2436-24	4"	13"	15.75"

*rack length 11.75

Instructions

1. Carefully step into the box.
2. Measure and mark 8-1/4" from the edge of the support bar pocket. The screw will attach to the exterior rib at this location. Repeat for both sides of the pocket. (figure 1)
3. Line up the square or straight edge with the rib in the bottom of the box and the mark you made in step 2. Mark this line. (figure 1)
4. Measuring from the lid seat, mark two hole locations; one at 4" down and one at 13" down. (figure 1)
5. Align the top hole of the rack with the intersection of the top two lines. Screw the sheet metal screws and washers into the two intersecting lines using the 1/4" hex driver so it holds the rack tightly in place. (figure 2)
6. Insert arm for completed cable rack. (figure 3) Repeat steps for all remaining cable racks.



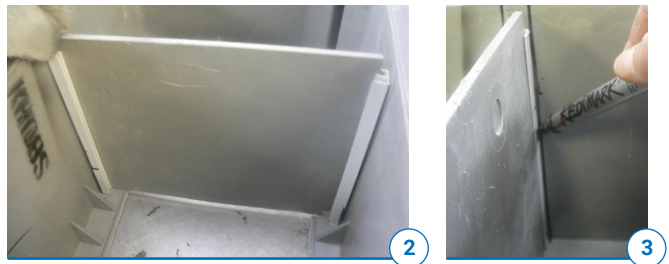
Required Items

- Adhesive or Silicone
- Drill
- Marker
- (2) Plastic Tracks
- (4) Square Recess Screws
- (1) Divider
- Appropriate PPE

Note: For concrete and/or polymer Enclosures, use self-tapping concrete screws and a masonry drill bit.

Instructions

1. Put the divider in the plastic tracks and position it at the desired location in the box. (figure 2)
2. Using the marker, make vertical lines where the tracks will be installed. (figure 3)
3. Apply a bead of adhesive or silicone to the flat side of each track. (figure 4)
4. Line up the track inside the marker lines on the box wall. Secure the track in place with the square recess screws. Use two screws per track. (figure 5)
5. Slide the divider into the tracks to complete the installation. (figure 6)



Required Items

- Latex gloves
- Safety glasses
- Epoxy putty
- Paint stirring stick
- Duct tape
- Superglue gel
- Clean rags
- 180 grit sand paper
- Non-residue brake parts cleaner or acetone

Instructions

1. Preparation and Installation

1.1 Inspect the damaged product and determine if there are any structural defects that can affect the performance of the cover or body. If the cover is cracked through the entire thickness then it must be replaced. If the body is cracked from the top down through where the cover sits then it must be replaced. If you are not sure please take photos and send them to Oldcastle for evaluation. If there is a crack in the sidewall of the body that starts at the bottom and travels up the side more than 25% of the depth then it must either be encased in a minimum of 8" of concrete or replaced. All repairs must be completed when there is no moisture present or they may not perform properly.

2. Repair Instructions

- 2.1** Remove all debris and broken pieces that cannot be reused, parts that can be reused should be cleaned and saved for use later.
- 2.2** Clean the area that is to be patched with either acetone or non-residue brake parts cleaner.
- 2.3** Allow the cleaned area to dry completely.
- 2.4** Mix up some epoxy putty, metal magic or something similar (This is available at your local auto parts store, hardware or box store).
- 2.5** If large pieces are reusable then take the cleaned pieces and apply Superglue Gel and place them in position and hold them until they are set. Be sure to apply enough putty to glue the large pieces back in place.
- 2.6** Once the putty is cured, sand the area to the desired final shape and the repair is complete.

Oldcastle Polymer

Polymer Concrete Underground Enclosures

Notes

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Polymer Concrete Underground Enclosures

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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