

SENTINEL BARRIER - GENERAL INSTALLATION GUIDELINES

Safety Precautions – in the Excavation of a Sentinel Wedge take all necessary steps to make sure the pit is secured. Follow all OSHA requirements for digging a foundation of this depth and size. Make sure traffic control measures are in place and that caution tape be used around the whole foundation.

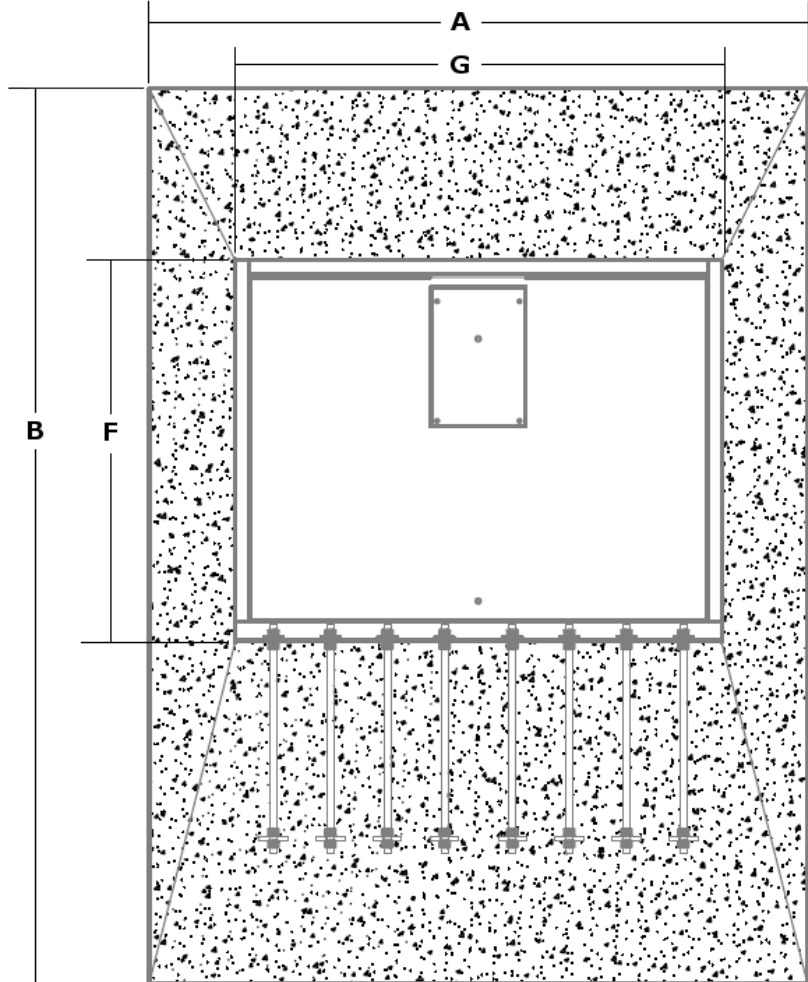
Foundation

Sentinel Wedge Barrier foundation size will vary based on the width of the Wedge barrier purchased. Please refer to the chart below for excavation dimensions

*Note 11x17 drawings are available

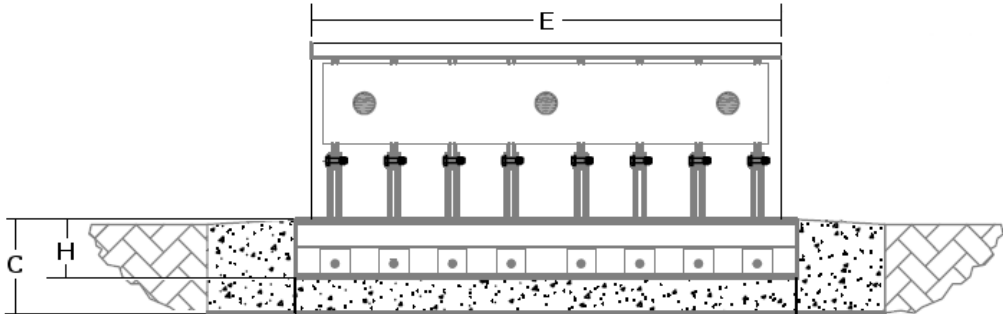
	Dimensi on	A	B	C	D	E	F	G	H
8' Wedge	INCH	138.0	188.0	19.0	38.00	96.0	79.7	102.9	12.0
	MM	3505	4775	483	965	2438	2025	2613	305

Foundation Dimension Table

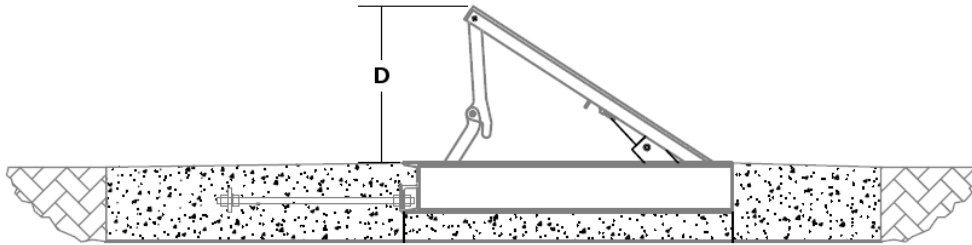


ATTACK SIDE

Foundation Top View



Front Elevation Drawing



Side Elevation Drawing

Installing the first layer of rebar

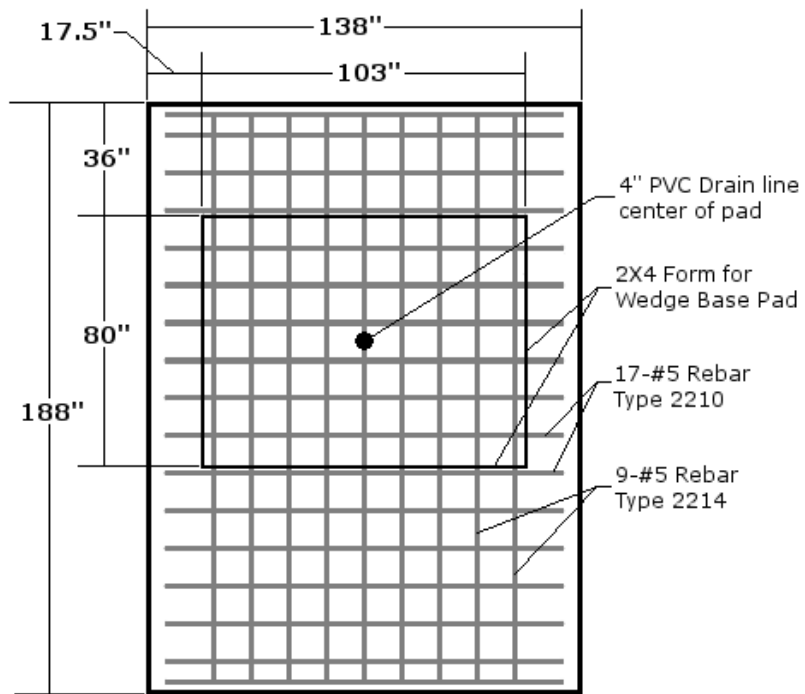
First layer of Rebar and Concrete forms.

- A. After you have the foundation excavated to the required depth and dimensions you install the first layer of rebar
- B. Form the pit for the first concrete pour (Barrier base pad), the form should be 103" wide and 80" deep and placed 36" from the back of the foundation and 17.5" from the right side of the foundation.
- C. Install a 4" drain pipe in the center of the base pad, allowing for 1" of slope from the outside of the form to the drain in all directions. Plumb the drain line towards the sump pit or storm drain location. Allow for adequate fall on the drain.
- D. Pour 3000psi concrete 7" in depth in the formed Barrier base Pad.
- E. Allow to cure for a minimum of 12 hours before proceeding to the next step.

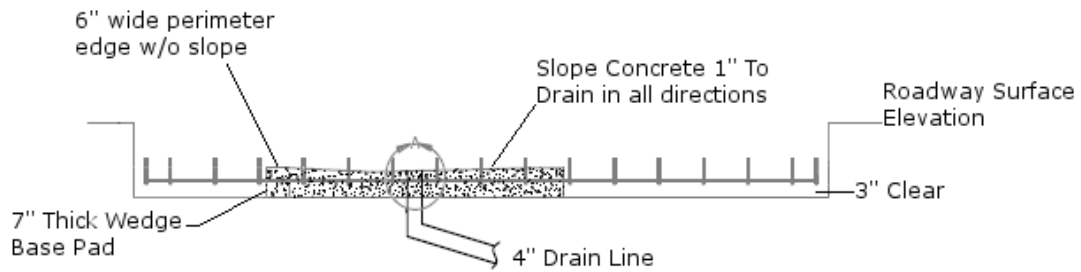
Base Pad Pour

- A. A Seven Inch (7") concrete base pad is required in a Sentinel Wedge installation.
- B. Verify all Forms are level and that you have 12" from the top of the forms to the final grade.
 - *Note Final Grade should be a minimum of 1/2" higher than finished roadway, to allow for water to fall away from the barrier.
- C. Before concrete pour insure all rebar hooks are vertically aligned and in line with each other so the second level of rebar (side beam reinforcing) fits properly.
 - *Refer to Figure 5 – 17-#5 Rebar Type 2210 for location.
 - *As shown in Picture 2 – Barrier Base Pad

*Note 11x17 drawings are available



First Rebar Cage / Base Pad Form



Side View Wedge Base Pad



Picture 1 - First Rebar Layer / Barrier Pad Form Pad



Picture 2 - Barrier Base

Setting Wedge Barrier

After the Concrete has set – place the Sentinel wedge on the Barrier Base pad

- A. At this time check for the check for the final grade of the barrier – should be .5 – 1 inch above final roadway grade.
- B. Also insure that the wedge barrier is set so that the wedge is facing the proper direction

*The wedge opens to the attack side.

*The Small Hydraulic cylinder access cover should be on the secure side

* As shown in picture 3 – Sentinel Placement

Install the Sentinel Anchor Bars on the front of the frame

*As shown in picture 4 – sentinel Anchor Bars



Picture 3 - Sentinel Placement

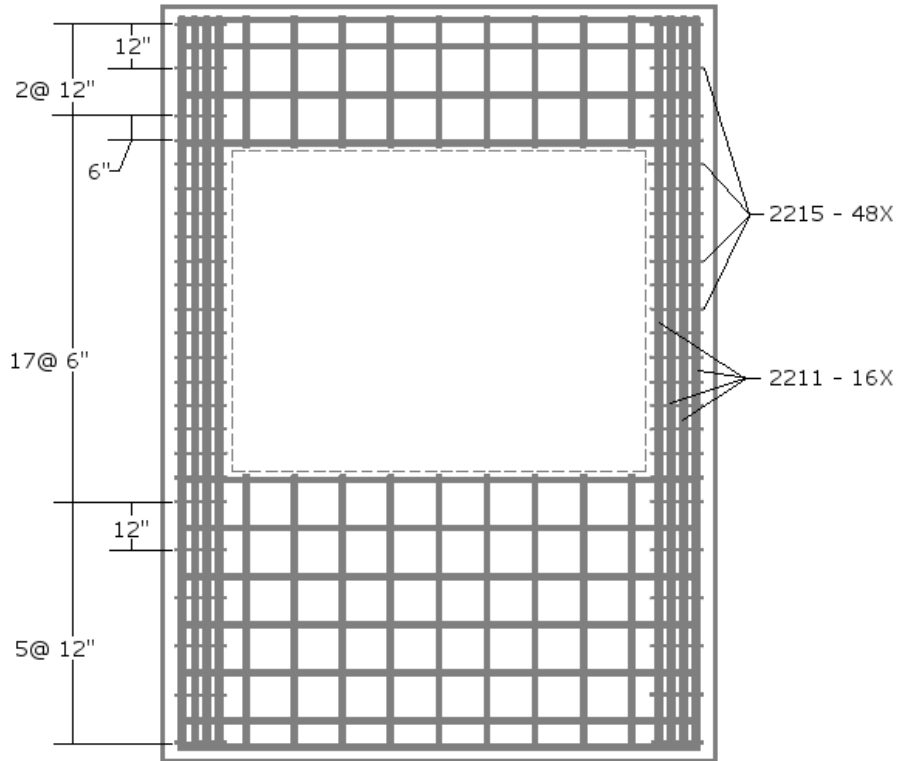


Picture 4 - Sentinel Anchor Bars

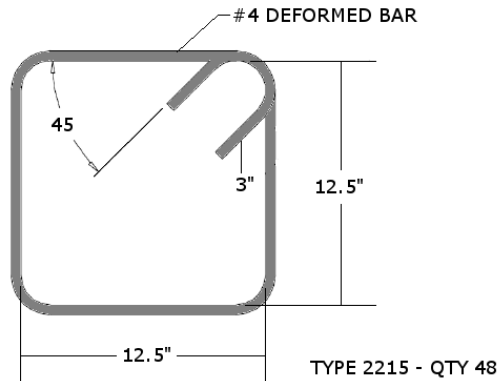
*Note 11x17 drawings are available

Installing Second layer of Rebar

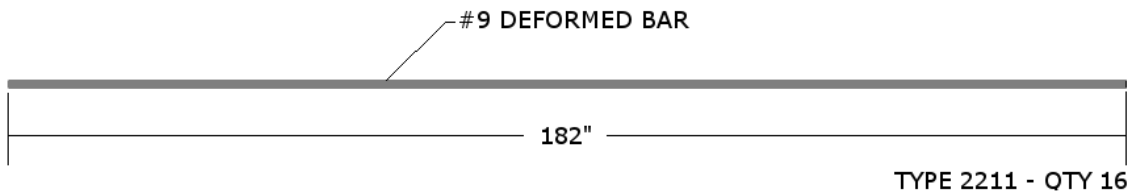
Pre-Assemble Side Beam Reinforcing as a unit before installing, as pre rebar drawings.



Side Beam Reinforcing



Side Beam Reinforcing Stirrup



Side Beam Tie



Picture 5 - Pre-Assembled Side Beam

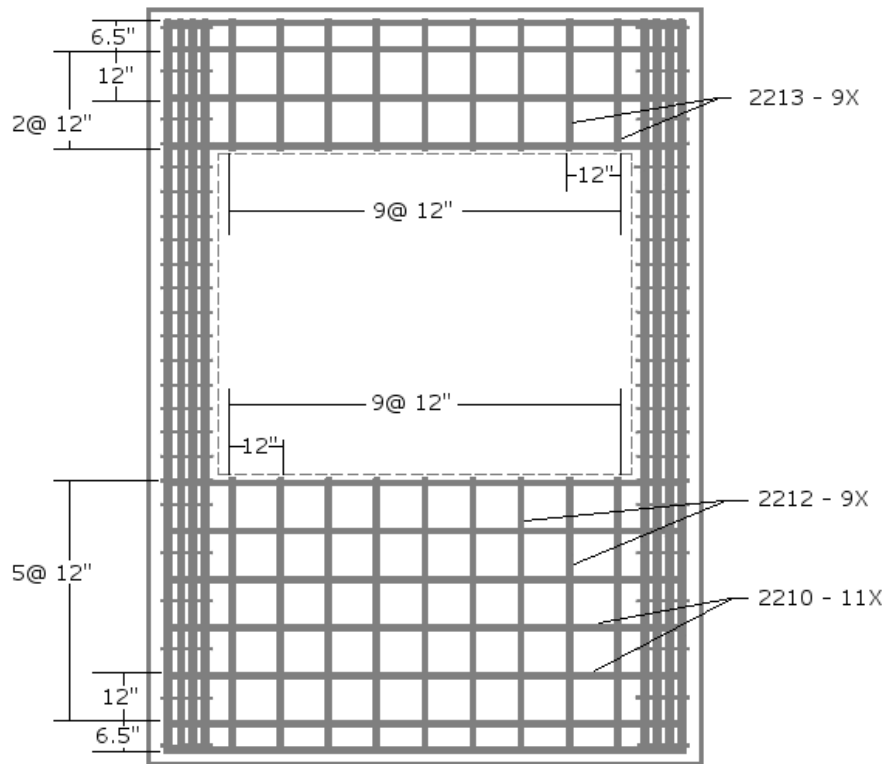
Once installed in the foundation tie the Side Beam Reinforcement unit with the first layer of rebar

- A. Make sure the first rebar layer Hooks slide between the side beam ties.

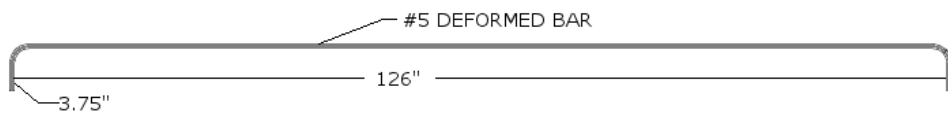


Picture 6 - Tie down Side Beam Reinforcement

After the Side Beam Reinforcement is tied down install top layer of rebar in front and in back of the wedge barrier, tying the rebar off to the side beam reinforcement.

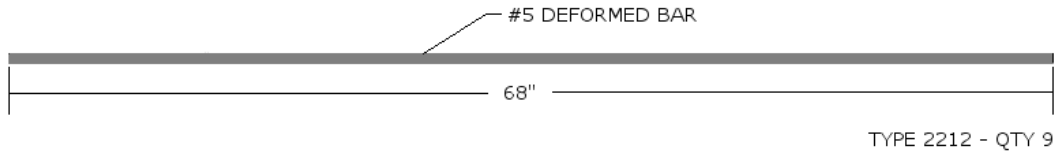


Top Layer Reinforcing

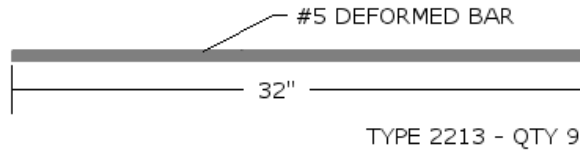


TYPE 2210 - QTY 11

Top Cross Reinforcing Bar



Top Front Cross Tie



Top Back Cross Tie



Picture 7 - Top Layer Rebar

*Note 11x17 drawings are available

Installation of Conduits

Hydraulic line Conduit – install one 3" Schedule 40 PVT conduit to the rear of the Sentinel Barrier.

- A. All conduit bends should avoid 90 degrees, if 90 degree bends are necessary only utilize a long sweep 90.
- B. No more than 3 – 90 degree bends should be made for any sentinel wedge installation.
- C. Make sure all Conduits are capped and stubbed outside of the foundation area before pouring.

Electrical Conduits – install two (2) 1" schedule 40 PVC conduits to the rear of the sentinel barrier.

- A. Make sure all Conduits are capped and stubbed outside of the foundation area before pouring.



Picture 8 - Conduit Connection

*Note 11x17 drawings are available in Appendix A – Installation drawings

Final Concrete pour

The Sentinel barrier requires 3000 psi concrete. Ameristar recommends utilizing a 4000psi or 5000psi mix for the final pour to achieve a 3000psi strength sooner.

- A. 3000psi concrete will achieve 3000psi in strength in 28 days
- B. 4000psi concrete will achieve 3000psi strength in approx. 5 – 7 days
- C. 5000psi concrete will achieve 3000psi strength in approx. 3 – 5 days

Installation contractor should utilize a vibrator when pouring the final concrete pour to insure all air voids are removed from the slab.

When finishing the concrete make sure the concrete falls away from the barrier in all directions a minimum of .5 inches on the sides and 1 inch on the front and back.

Broom or trowel finish is acceptable and if two or more barriers are set together side by side a control joint is recommended to be place between the barriers.

Warning – Manufacturer Warranty void if the product is tested prior to reaching 3000psi



Picture 9 - Final Concrete Pour

You should not have to raise the barrier top plate to install the barrier conduits or make any final terminations. However if you do need to raise the top plate always utilize the safety leg that is delivered with the unit. This safety leg is designed to hold the barrier in the open position so you can safely work inside the unit.



Picture 10 - Safety leg

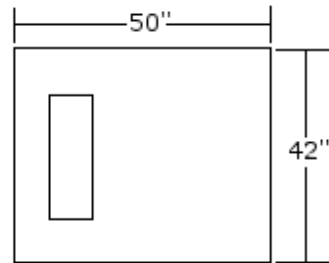
HPU INSTALLATION

Foundation

The HPU shall be installed no further than 100' from the furthest barrier connected to it.

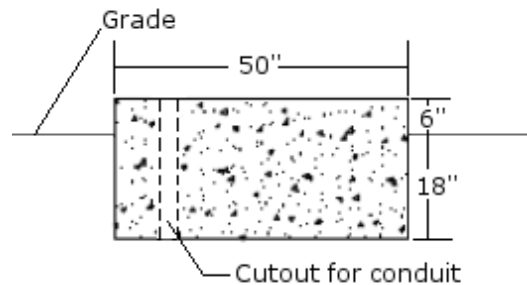
A. If the HPU is further than 100' contact the manufacturer immediately for potential resizing of the, Hoses, Reservoir and Accumulators.

Dimensions of pad are 50" (L) x 42" (W) x 24" (D).



HPU Slab Dimensions

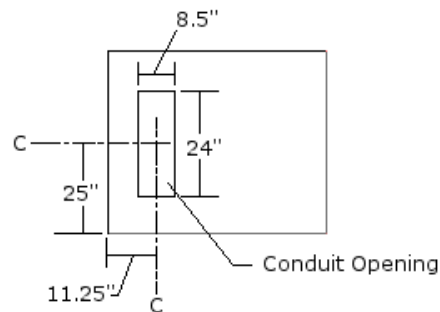
Placed 18" below grade and 6" above grade.



HPU Slab Typical Depth

*note the depth of the foundation could vary based on geographical location.

The HPU Slab shall have a minimum cutout opening of 24"x8.5" for the system conduits. This cutout shall be placed 11.25" X 25" on center from the 42" end of the slab or the 30" side of the HPU that will have the Controls access door.



HPU Conduit Opening

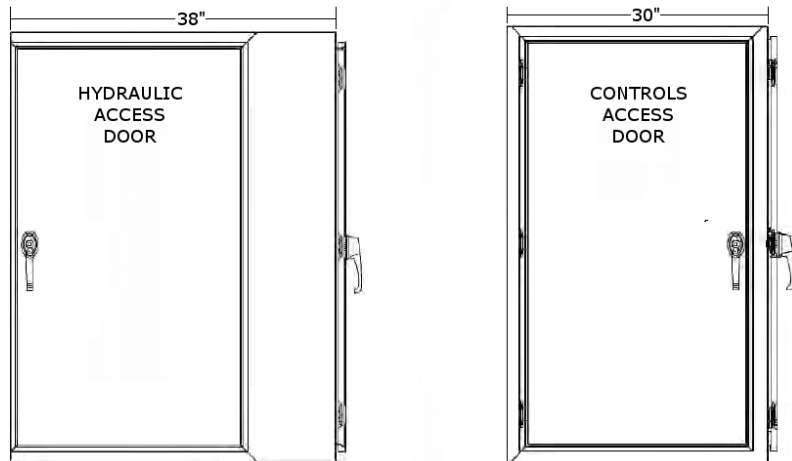
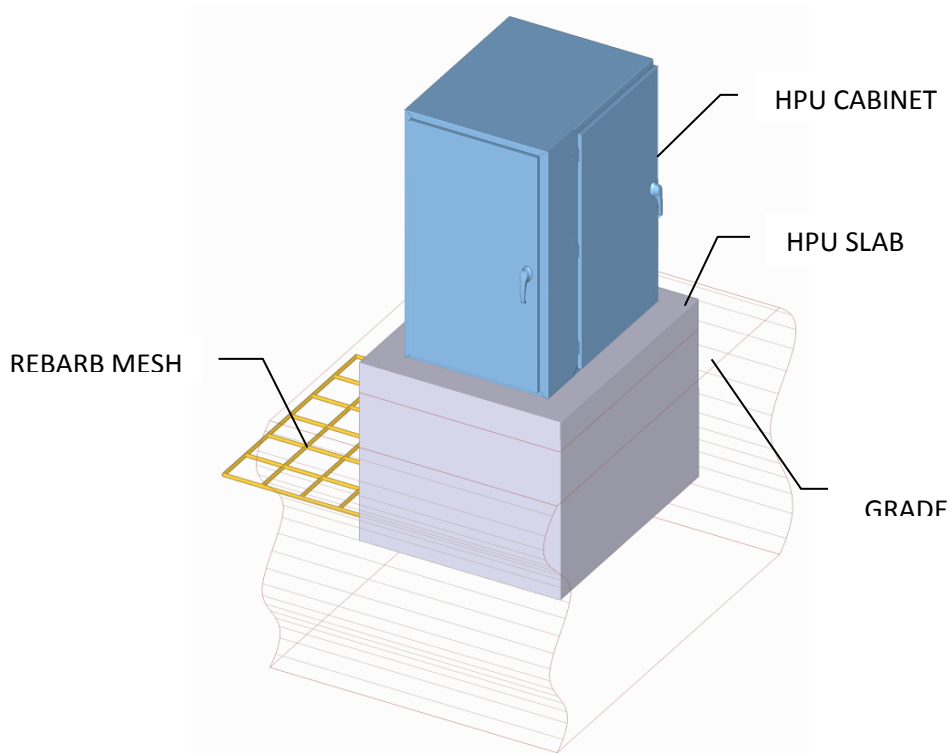


Figure 1 - HPU Access Doors

Setting the HPU

Allow a minimum of 12 - 24 hours to cure before setting the HPU in position

Allow the concrete 48 – 72 hours to cure, before fastening to concrete pad with min. 5/16" x 3-1/2" anchor bolt



HPU General Layout

Conduit connections

Hydraulic conduit connection

- A. All below ground conduits should be PVC type conduits and all turns should utilize long radius elbows. 90 degree bends or greater should be avoided at all times. If you cannot avoid a 90 degree or greater bend a maximum of 3 long radius elbows should be used.
- B. All Hydraulic Conduits should be installed below frost depth to ensure the fluid viscosity remains at an acceptable temperature. If conduit cannot be installed below frost line then Heat trace should be utilized to ensure fluid viscosity.
- C. All Conduits after installation should be blown free of all debris or swept free of all debris before installation of Hydraulic hose. Sharp or jagged debris could damage the hose on installation.

Electric conduit connections

- A. All below ground conduits should be PVC type conduits and all turns should utilize long radius elbows. 90 degree bends or greater should be avoided at all times. If you cannot avoid a 90 degree or greater bend a maximum of 3 long radius elbows should be used.
- B. All Electrical Conduits should be installed below frost depth to ensure the integrity of the wires. After installation both ends of the conduit should be sealed to avoid water, debris and animals from entering the conduit and causing potential harm to the wiring.
- C. All Conduits after installation should be blown free of all debris or swept free of all debris before installation of wire. Sharp or jagged debris could damage the wire on installation.