HEARTLAND OF AMERICA PARK AT THE RIVERFRONT

HOA Lake Fountain Notes – Normal Operation, Winterization, and De-Winterization

MECA Tri-Park
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There are three (3) total water features within Heartland of America Park. The features are the **Lake Fountain** that sits in the middle of the lake, the **MUD Fountain** that was moved to Heartland of America Park from the Florence Minne Lusa Pumping Station (donated by MUD in the 1990's), and the **Waterfall** that sits just south of the MUD Fountain. These water features were installed as a part of the original park design in the 1990's, however, some upgrades to them were made as a part of the Omaha Riverfront Revitalization in 2022.

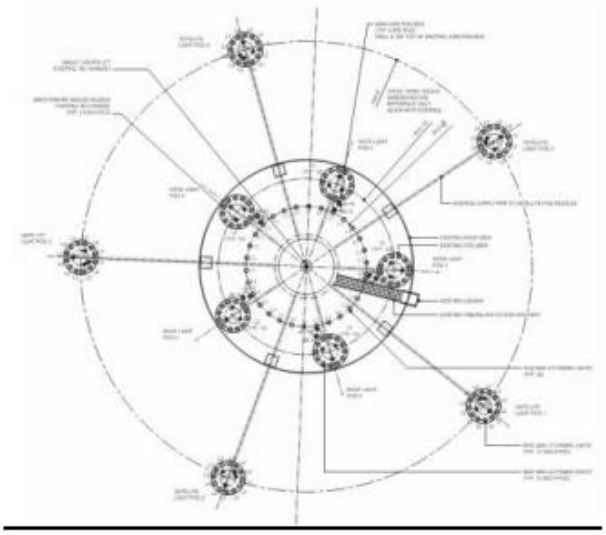
This document aims to serve as the main point of context for how to winterize and de-winterize each fountain as well as provide information on the necessary lake components.

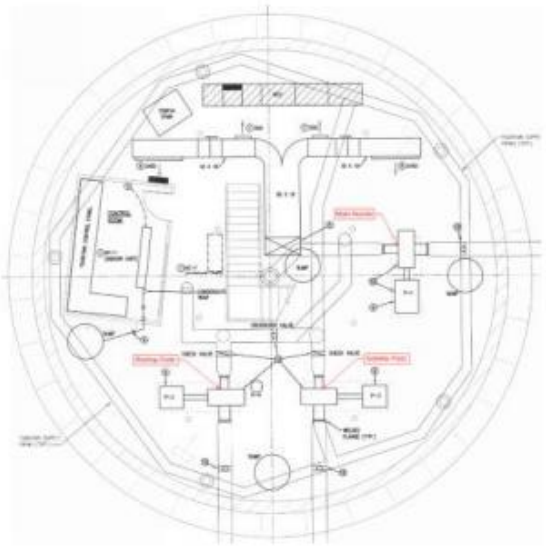
General Information

Normal Operation Notes:

- All fountains set to run 5am – 10pm
- Keep the lake level at 3" below the lake overflow (elevation 979.65)
- Lake Fill Waterline is located at the intersection of the Farnam Promenade and the East Mercantile property line. Open the line to add water to the lake as needed.
- MUD Fountain: Adjust valve on top of the gargoyle heads to change the overflow from the upper bowl.
- MUD Fountain: The bowl needs to be overflowing enough to get water on the lights at the base on the fountain, so they don't overheat.
- The Lake Fountain is controlled from an iPad mounted in the Skate Support Building IT closet.
    - OFF Button: will turn the fountain off and it will not turn back on.
    - AUTO Button: Runs static fountain condition until 6pm, then runs show until 10pm.
    - HAND Button: will run shows on repeated loop anytime it is selected.

Lake Fountain:





Fall Shutdown:

Hit E-Stop button on panel by the railroad tracks:

Next go to the fountain and put the VFD's in the OFF position.

Clear the fountain deck of any large debris.

Check drains from electrical boxes on the roof to ensure there are no leaks and also check white PVC line from main feed to ensure no water is present.


x5

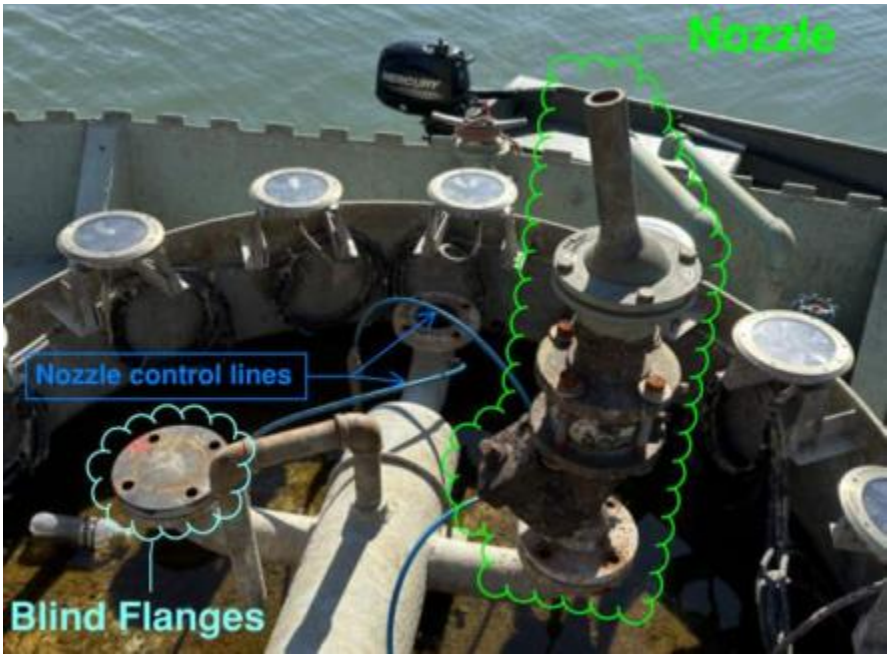
x1

Grease motors and pumps for main nozzle, rooftop pods, and satellite pods. Only use Mobil grease for this operation.

Test sump pumps in all four (4) pits to ensure functionality by adding water. You cannot test the pumps by pulling the switches up by hand, you must manually fill the pits with water to ensure water will turn the pumps on. **We have found that after prolonged periods of no use of a switch, they can become less sensitive and must be tested with water**.


Shut down the nozzle breaker. This is in the south panel within the control room.

Remove all **nozzle control lines** and **nozzles** from pods and note direction of nozzles and locations.



Install **bland flanges**.

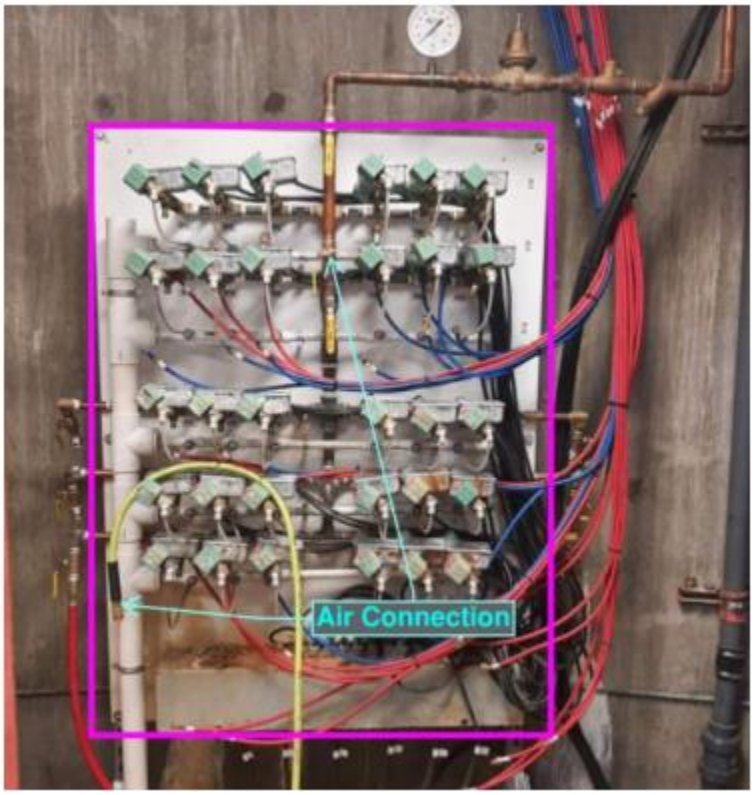
Disassemble nozzles and mark how the fittings are orientated, clean strainers and remove debris if present. Remove diaphragm from **control valves** and clean valves.

Inspect **rubber diaphragms** from control valves to look for damage and make sure the material is still pliable and not dried out or cracked.

Lubricate **rubber diaphragm** with glycerin lubricant and reassemble **nozzles**.

Blow water out of nozzle **control lines** while disconnecting them from the **solenoid rack**.

- It is best with two people, one inside and one outside, to ensure the lines are clear. We do this to ensure they do not freeze in the winter.



Blow out nozzle solenoid rack first using water from the fountain (by opening top valve) to remove sludge then use air to blow out the water near second valve.

Test solenoids with air using relays inside the control room to ensure functionality, you may have to take apart some solenoids and clean them. Remove as much water as possible or it will turn into sludge.

Remove control valve heads on suction inlet valves and manually close valves all the way. Do this when you are done using water inside the fountain to clean and exc.

Open drains on lines to empty lines of water. The lines inside the fountain should all get empty, but do not forget about the **½" drains** on the satellite pod lines. You will not get those lines all the way empty of water, but the goal is to get it below the lake level of 980.5.

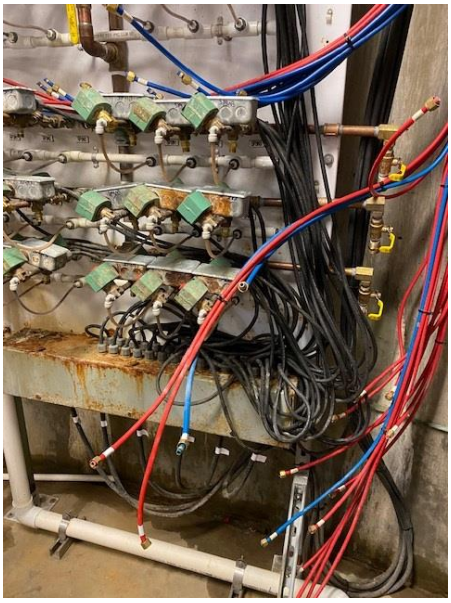
Test operation of exhaust blower grease motor and check belt.

Blow out heaters of dust (2 locations)

Turn off power for nozzle solenoids.

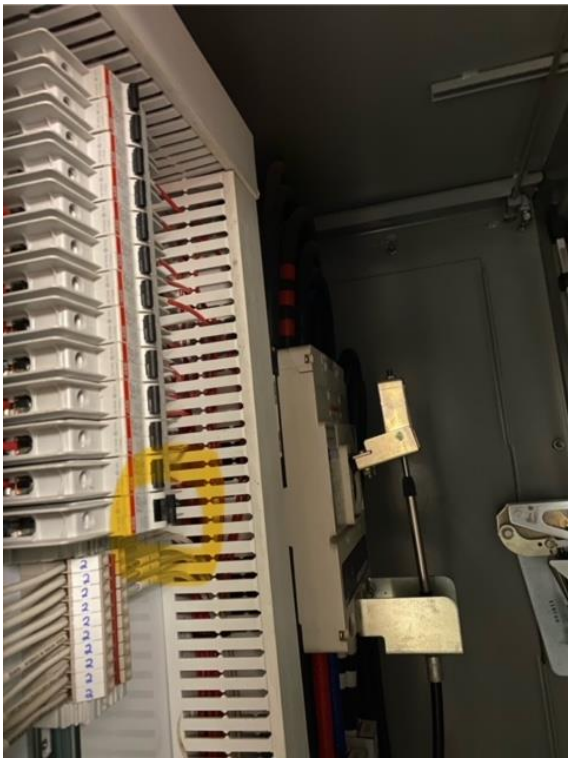
Install all five (5) bubblers halfway between the pod and the main fountain approximately 3’ from the bottom of the lake. Then ensure operation. Recommended bubblers are Kasco Model 3400D.

The pneumatic system should be fully detached for blowout and left detached for the duration of the winter.



The pump valves need to be closed only to the point of no water coming through. You can confirm that they are properly closed by bleeding the line with the yellow handle underneath.

Power to the lighting control computer must be shut off at the breaker. Breaker is outlined in yellow below.



Summer Start-Up:

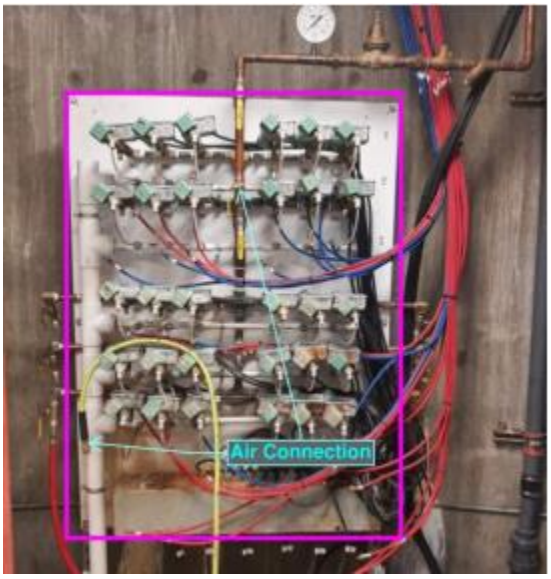
Re-install heads on the suction control valves after exercising valves.

Remove bubblers from the lake.

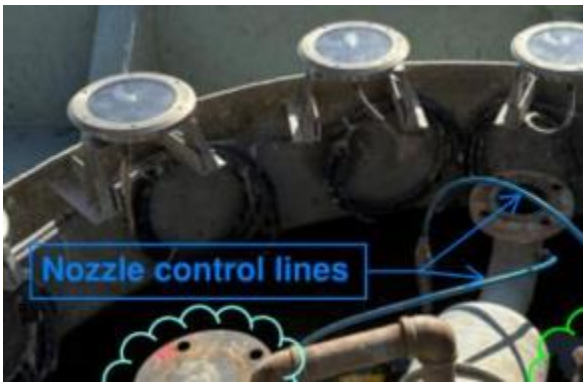
Remove **blind flanges** from pods.

Test sump pumps in all pits to ensure functionality. You cannot test the pumps by pulling the switches up by hand, you must manually fill the pits with water to ensure water will turn the pumps on. **We have found that after prolonged periods of no use of a switch, they can become less sensitive and must be tested with water**.

Test nozzle solenoids to ensure they are not sticking using compressed air.



Reinstall nozzle control lines.



Turn shafts on pumps to ensure that they are not stuck.

Blow out mini spit condenser and clean filters.

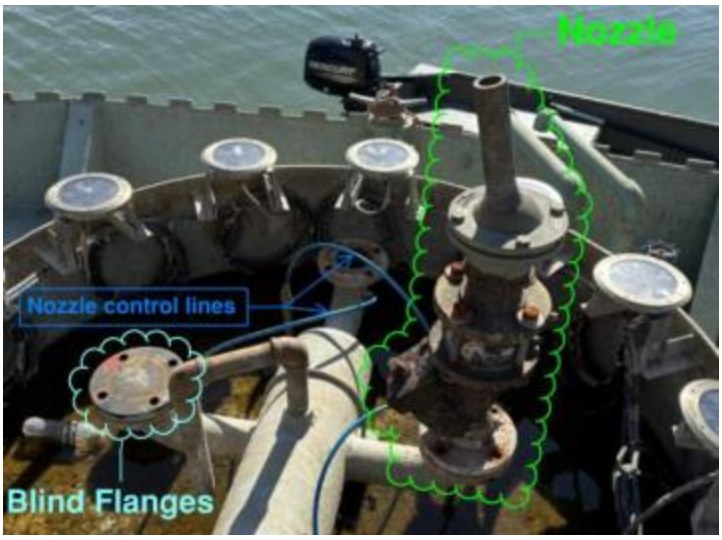
Grease exhaust fan motor and check belt.

Clean and test pressure transducers. Take off and hook up to air. Verify air pressure and transducer match.

Test the safety floats in the pits. Lift manually. Alarm should sound.

After doing all of the above, run the pumps manually using the HMI (contact MECA's Director of Operations) to blow debris out of the piping and/or sediment in front of the inlets of the pumps. It is only necessary to take the pumps up to 70%.

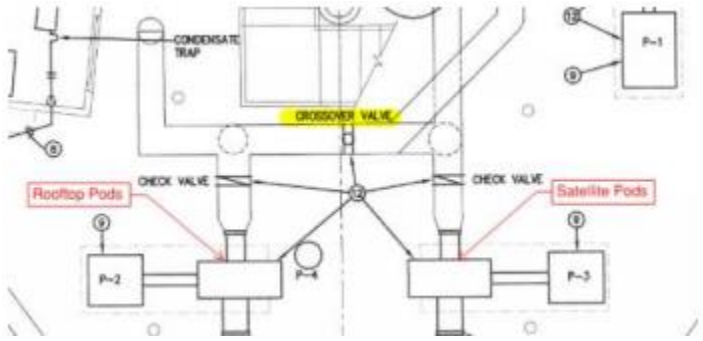
Install nozzles in their correct location and direction.



Install control lines to nozzle controls.

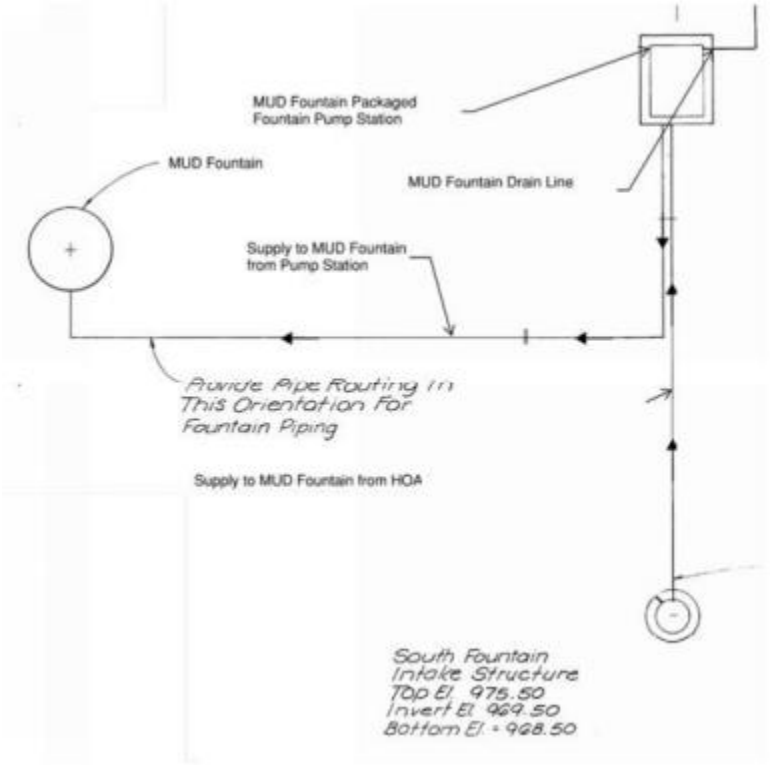
Turn on the power to the nozzle solenoids.

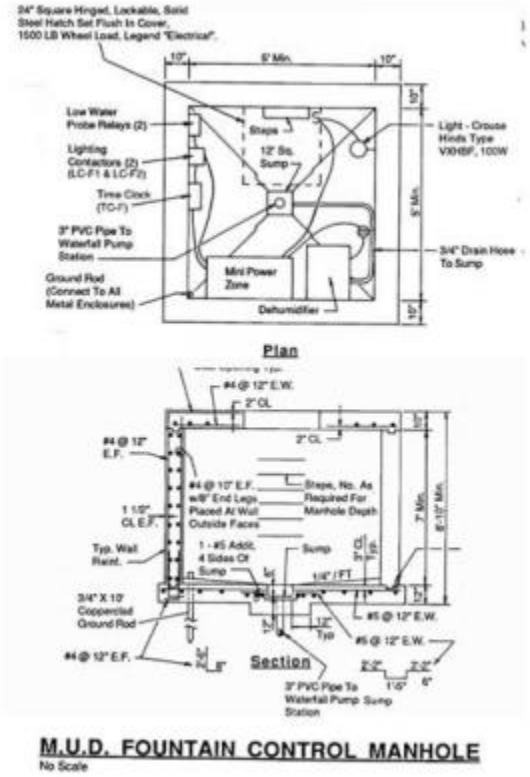
While using a spotter on the deck, open the crossover valve to 100% and turn one of the pod pumps on just enough to get about 1 foot of water out of each nozzle and test each nozzle using the relays in the control room.



Test lights to ensure they are all turning on.

MUD Fountain

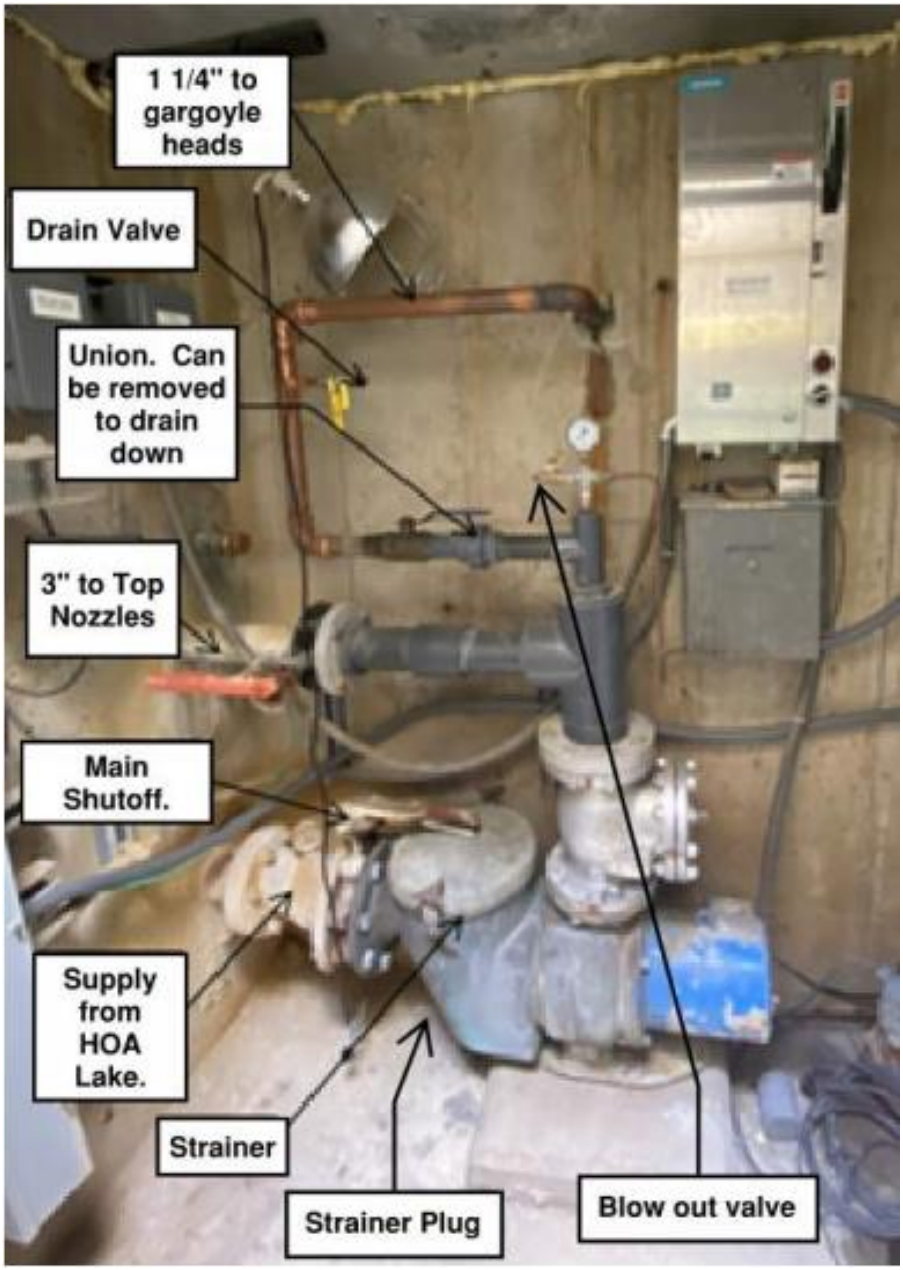




Fall Shutdown

Enter the MUD Fountain controls vault and turn off breakers feeding the lights. Turn fountain switch to the off position and turn off the breaker feeding the pump.

Enter the MUD Fountain pump station, and turn the butterfly valve at the main shutoff.



Drain strainer section by removing plug and clean, if needed.

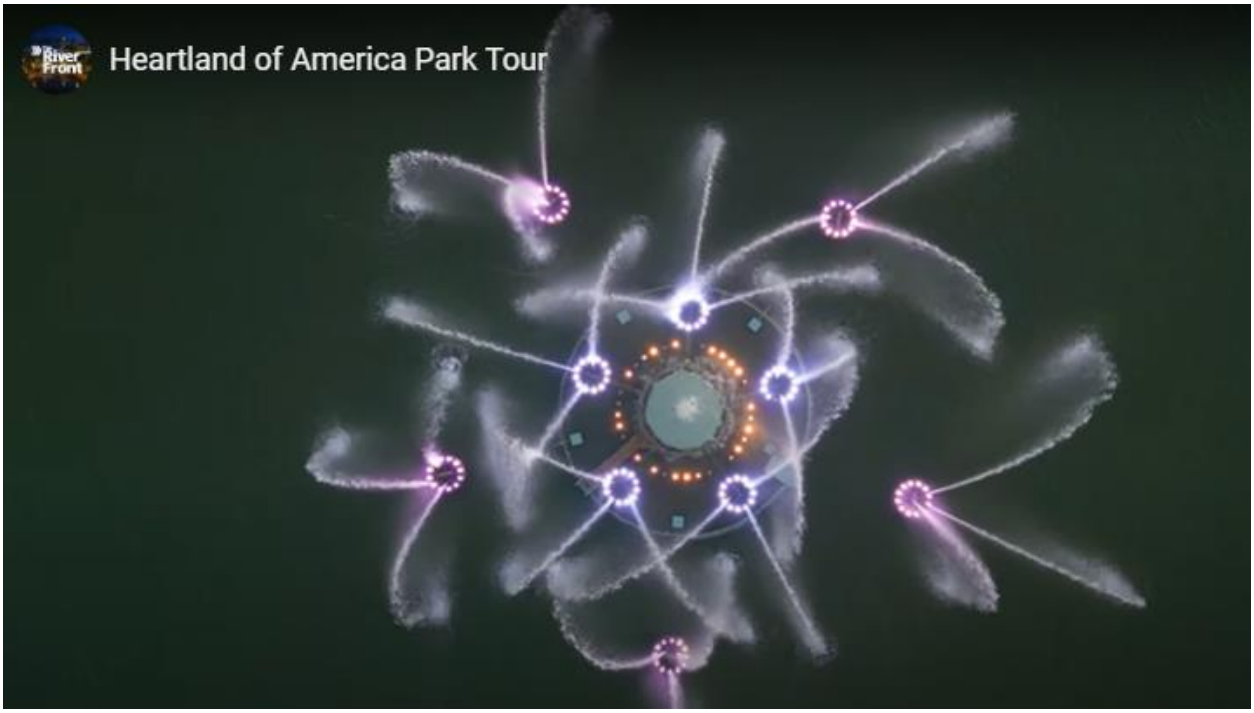
Drain lines to MUD Fountain after the check valve. This can be done by opening the drain valve and/or removing the union before the 1 ¼” ball valve.

Use a compressor to blow out lines from the blowout valve to the 1 ¼” line feeding the gargoyle mouths on the fountain.

If possible, from under the bowl use a pump to remove water from the 3” line from inside the fountain. Using a pump with a ¼” line that will run off a 12v battery and stick it down in the piping in the fountain piping outside and removing enough water to get below the waterline.

Install/turn on heat lamp over piping inside the vault.

Test sump pumps in MUD control valve to ensure functionality. You cannot test the pumps by pulling the switches up by hand, you have to manually fill the pits with water to ensure water will turn the pumps on. **We have found that after prolonged periods of no use of a switch they can become less sensitive and must be tested with water**.



Summer Start-Up

Install strainer in suction side of the pump by opening the lid on the strainer and plug basin.

Inspect the rubber o-ring on the cap and replace it if needed (spares are under the light panel) and install cap strainer basin as shown above.

Close all valves on piping that were opened for winterization.

Turn off heat lamp.

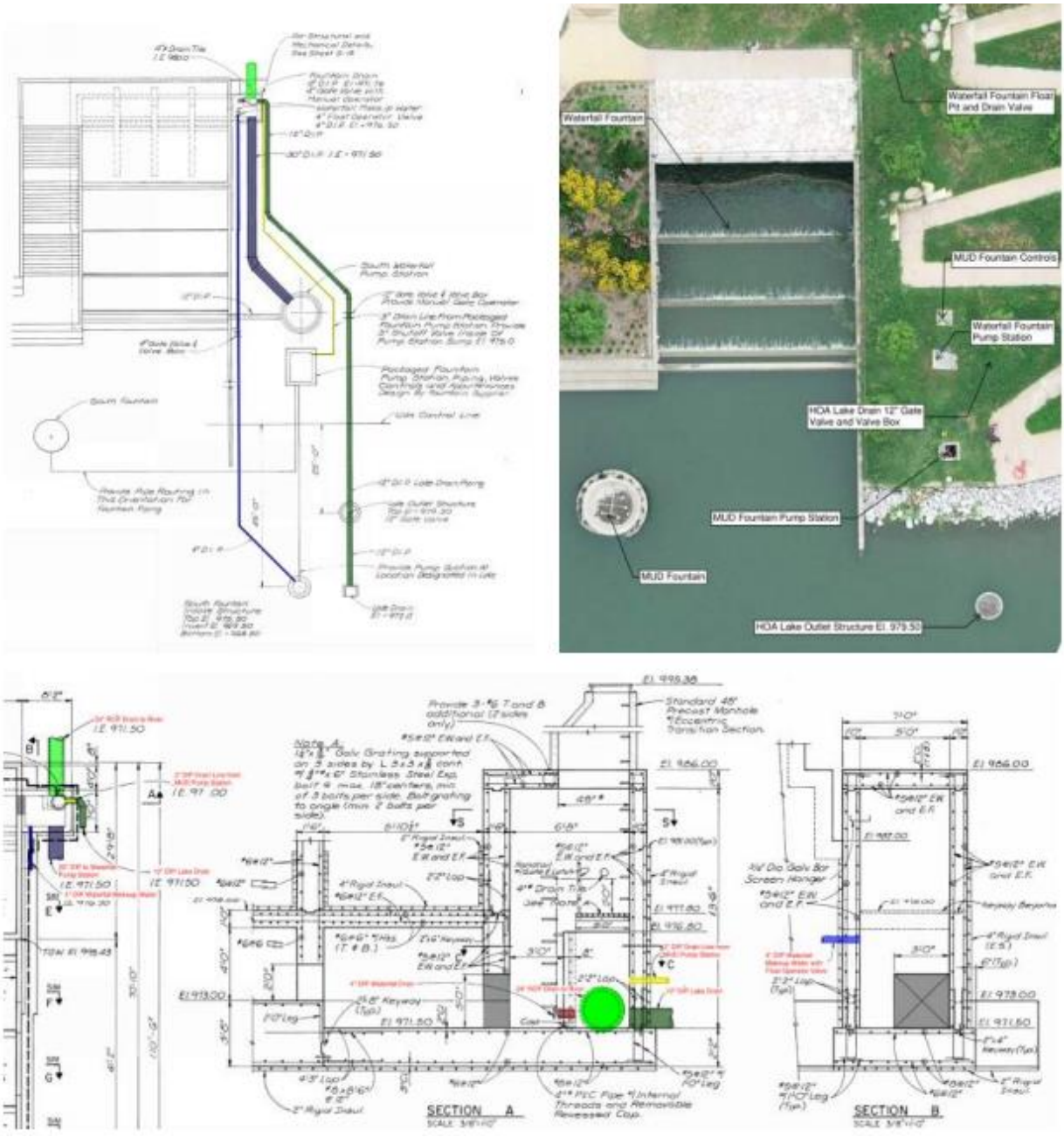
Open butterfly on suction side of the pump.

Turn the power on for lights and pump.

Turn on the pump, check the nozzles on the fountain to ensure none are plugged, leave in auto.

Test lights to make sure they are working properly.

The Waterfall



Fall Shutdown

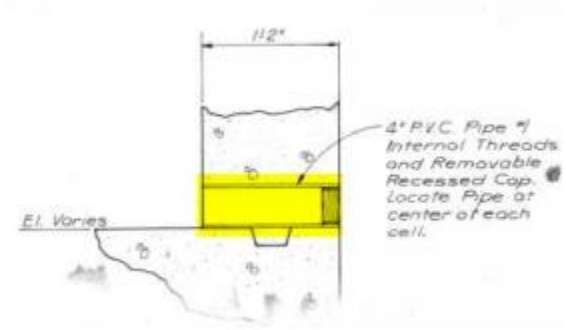
Turn switch to the off position on the panel at the railroad tracks, disable power.

Pull up float switch controlling motor inside waterfall fountain pump station.

Pull up float or auto fill from the lake.

Use water key to open drain valve and empty bottom section. Drain remains open through the winter.

Remove plugs from midpoint of each weir as the water feature drains down, total of 3 other sections.



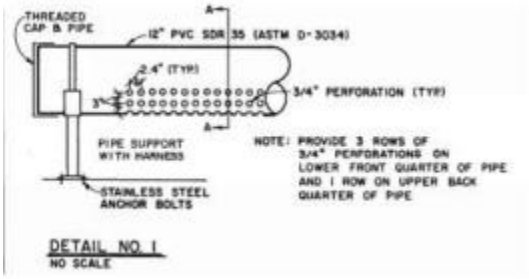
Inspect grates and bottom of vault to determine if they need cleaning.

Summer Start-Up

Make sure all sections are cleaned, and screens are cleaned (see above).

Clean out all mud and muck that had built up in the waterfall the previous season and over the winter. This cleaning will require shovels and several man hours.

Check pump outlet piping and remove the plugs from the end of the line. Remove any debris that accumulated from last year's service.



Grease and clean autofill float arms to ensure proper operation.

Use water key to close the drain.

Install plugs in the three sections drain piping.

Make sure the auto float is opening and closing correctly.

Drop the arm of the auto fill and start filling the bottom section.

Turn the pump to auto on the panel by the train track and turn on breaker.

Drop the float in the waterfall fountain pump station above the pump and allow the pump to cycle on and off to fill the top sections. If the float is working correctly, the pump should turn on and off until the whole feature is full, and the pump will then stay on.

Make sure the auto float is shutting off like it should – restrain as needed with the bar, see picture below, or you will drain the whole lake.

Heartland of America Park Lake Operation

Filling

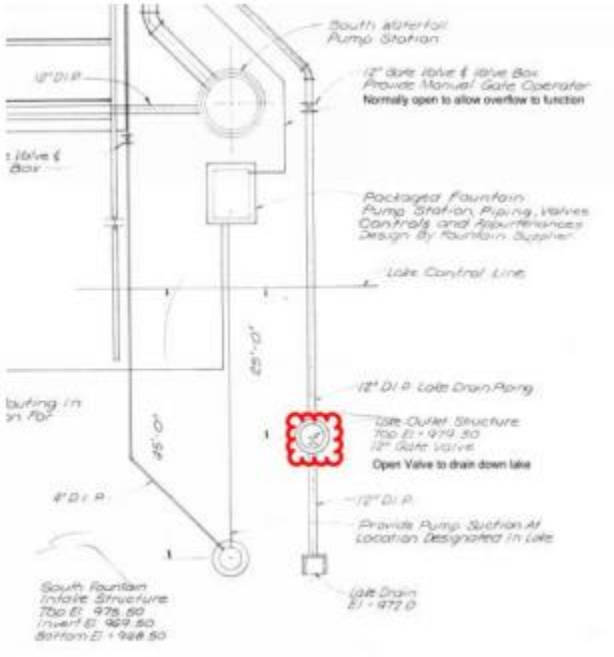
Lake level is to be maintained at 3” below the lake overflow (elevation 979.65).

Water can be added to the lake by opening the water stop located directly south of the Farnam Promenade with a standard water key.

Lake fill water discharges from the outlet manhole southwest of the Amphitheater. Fill the lake to the desired level, then close the water stop at the top of the hill.

Draining

To drain the lake, use the john boat to access the lake outlet structure and open the 12” gate valve (clouded below).

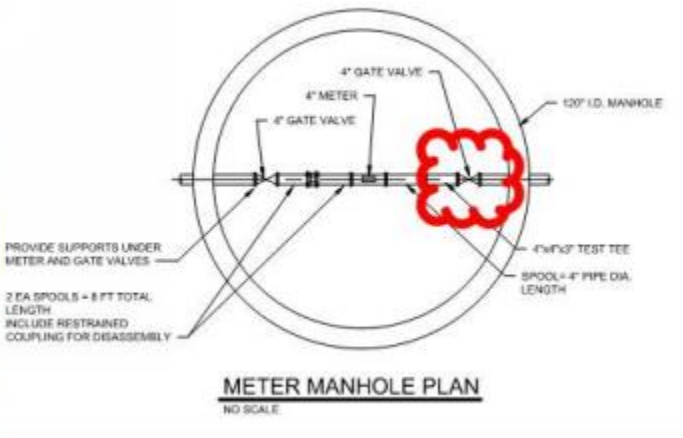


When the lake is to the desired level, close the 12” gate valve.

Winterization of Lake Fill Line

Prior to winter the RPZ backflow preventer will need to be either purged until completely dry or removed for the winter months. Vincentini advises removal.

Close the valve on the outlet side of the Meter Vault clouded in red below. All valves may be closed for this but only the outlet valve is necessary to close.



Release residual water pressure from the test ports on the RPZ.

After bleeding off the residual pressure, introduce air through test port one on the inlet side (north side) of the RPZ. Leave the valves on the RPZ open and push all water out through the RPZ into the lake fill manhole. This should also purge all water in the vertical riser that turns into the lakefill manhole.

When water has been completely purged from the fitting and riser, air may be removed. If leaving the RPZ in place, leave inlet and outlet valves open to allow room for expansion of any remaining in the system.

If removing the RPZ, remove the bolts from where the RPZ ties onto the 90-degree bend that turns the line from the ground to the RPZ and from the RPZ back into the ground.

Carefully remove the RPZ – this is very heavy, multiple men or machinery will be necessary.