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City of Atlanta
Department of Watershed Management (DWM)

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FLINT RIVER PUMP STATION UPGRADES

Basis of Design Report (BODR)

March 17, 2021

FLINT RIVER PUMP STATION IMPROVEMENTS

Basis of Design Report

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1 INTRODUCTION

The Flint River Pump Station (FRPS) has gone through many phases of repurposing and upgrading over the past 100 years. These phases include repurposing the Flint River Water Reclamation Facility from a wastewater treatment plant to a two-stage multi-pump transfer pump station in 1987, to replacing the 1st stage screw pumps with additional submersible pumps and a hydraulic centrifugal pump in 2005. The current layout of the facility is shown and annotated in **Figure 1** and will be discussed further within the document.

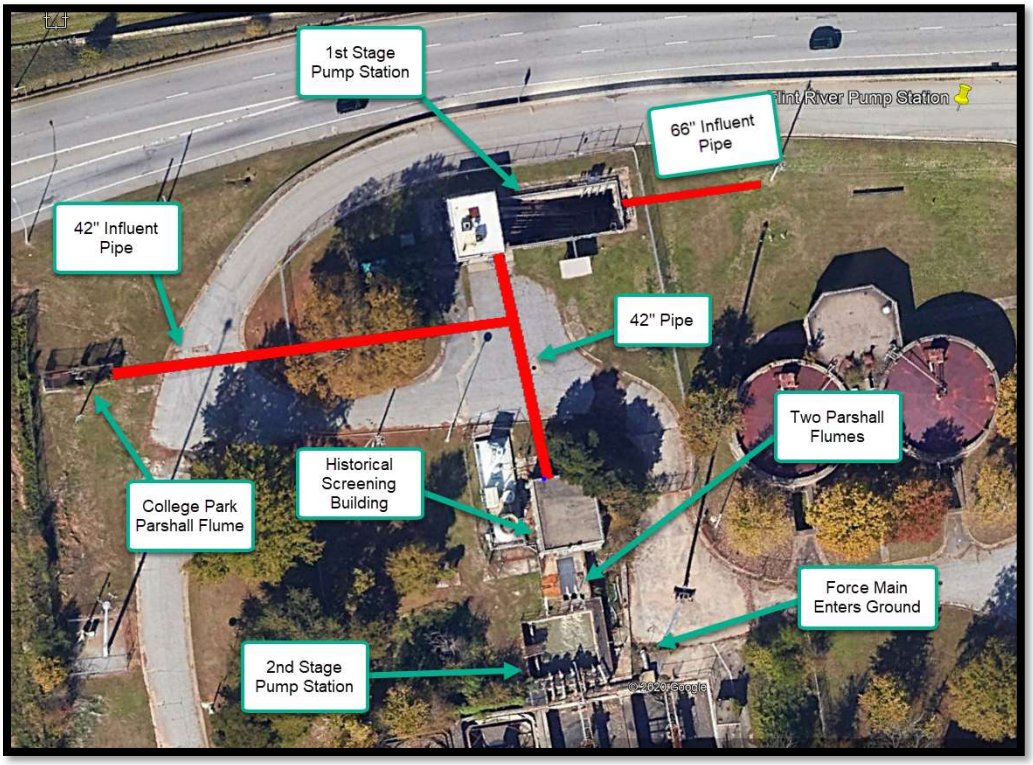

Figure 1: Current Facility Layout

The Flint River Pump Station Improvements project will incorporate recommendations for replacement and addition of facility equipment and site improvements to maintain and keep the pump station operational for the next 15-years. The Basis of Design Report (BODR) is intended to establish the basis of design for the FRPS improvements, which includes:

- Site Improvements and regrading for truck asses to remove screened solids in the screening building.
- Replacing all submersible pumps in the influent pump and effluent pump stations.
- Installing a grinder on the influent wet well and 24-inch College Park influent flume.
- Install two channel bar screens and discharge conveyor system in the screening building.
- Installation of a crane at the influent pump station for pump and grinder removal.
- Installation of two JIB cranes at the effluent pump station for pump removal.

- Upgrade required electrical gear to accommodate the new pumps and meet the National Electrical Code requirements.
- Upgrade and replace all required instrumentation and pump station controls to accommodate the new submersible pumps.
- Replace all deteriorated handrails and grating around each pump station wet well.

A preliminary set of drawings has been developed to illustrate the concepts presented herein and is included as a part of the 30% submittal in **Attachment A**. These drawings include a hydraulic profile, process flow diagram, general civil, mechanical, structural, and electrical layouts, and preliminary process and Instrumentation diagrams (P&IDs). Additional information provided to support the basis of the design at the 30% stage, are the project specific Specification Sections Table of Contents (TOC) in **Attachment B**. The City of Atlanta (COA) 30% Design Checklist is also provided in **Attachment C**, detailing which items are included and not included at this stage in the design.

2 EXISTING FACILITIES

Based on record drawings, personnel interviews, and multiple site visits the process flow diagram presented in **Figure 2** was developed for the Flint River Pump Station.

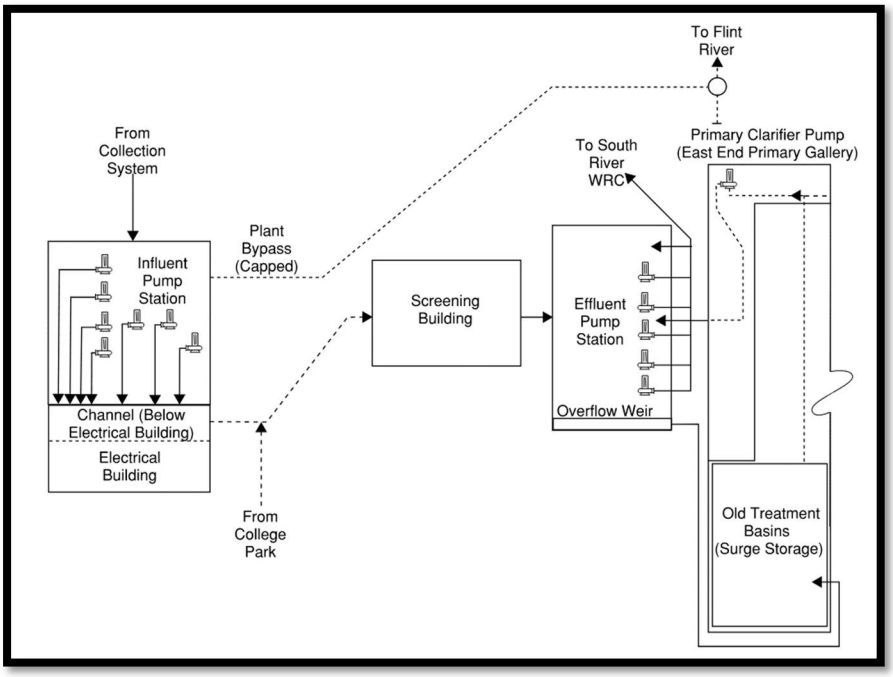

Figure 2: Process Flow Diagram

The influent pump station is position at a lower elevation than surrounding grade to receive gravity flow from the collection system. Water is then lifted and flows by gravity to the existing screening building with three rectangular channels. Screens are currently not installed in the building and water continues the effluent station. Additional flow is received from College Park from the west and joins the flow from the influent pump station. The flow from college park is monitored using a parshall flume, and two parshall flumes are used to measure flow entering the effluent pump station. The effluent pump station pumps flow

to the South River Water Reclamation Facility (WRF). The force main for the effluent pump station is currently undersized to handle peak flows to the facility, so the effluent pump station is equipped with an overflow weir which sends water, via a rectangular channel to the historical wastewater treatment facility basins. Once flow reduce into the effluent pump station, the clarifier pump is used to route flow back to the effluent pump station. There is a historical by-pass line which connects the influent pump station to the historical wastewater treatment facility. From site investigations, this line was capped at the influent station and existing the historical wastewater treatment facility. It is believed that this line may have been associated with the previous combined sewer overflow of the facility.

2.1 Influent Pump Station (Spiral Pump Station)

The Influent Pump Station was converted from a spiral pump station to a submersible pump station in 1987. The Influent Pump Station collects wastewater gravity flow from the Hartsfield-Jackson Airport property. The approximate location of the 66-inch influent pipe is shown below in **Figure 3**. The manhole shown in the drawing is the control overflow point for the project and the RIM elevation of this manhole is set at 950' of elevation.

Figure 3: Influent Line Location

The FRPS influent flowrate is on the weather, with an average daily flow of 1.7 MGD and a peak 15-minute flow of 17 MGD. **Table 1** summaries the influent flow conditions based on the 2020 flow data summarized by DWM and included was included in the task order request. It is important to note that this flow rate is measure downstream of the influent pump station and is dependent on what the pump can move downstream. These influent flow rates could potentially be higher than shown in the data.

Table 1. Influent Flow Conditions

		Design Condition			
Parameter	Unit	Minimum Daily Flow	Average Daily Flow	Peak Hourly Flow	Peak 15-Minute Flow
Flowrate	MGD	0.26	1.7	13.4	17.0
Flowrate	GPM	180.6	1,180.6	9,305.6	11,805.6

Once flow enters the influent pump station there are three areas of potential pumping at three different levels.

- Bottom Pumps (Pumps 1.1-1.4); Finished Floor Elevation (FF): 923.44'
- Middle Pumps (Pumps 1.5-1.6); FF Elevation: ~ 925.5'
- Top Pump (Pump. 1.7); FF Elevation: 930.47'

The flow is split between the bottom two levels by two slide gates and the highest pump is located on a concrete bench (area and flow path shown in **Figure 4**).

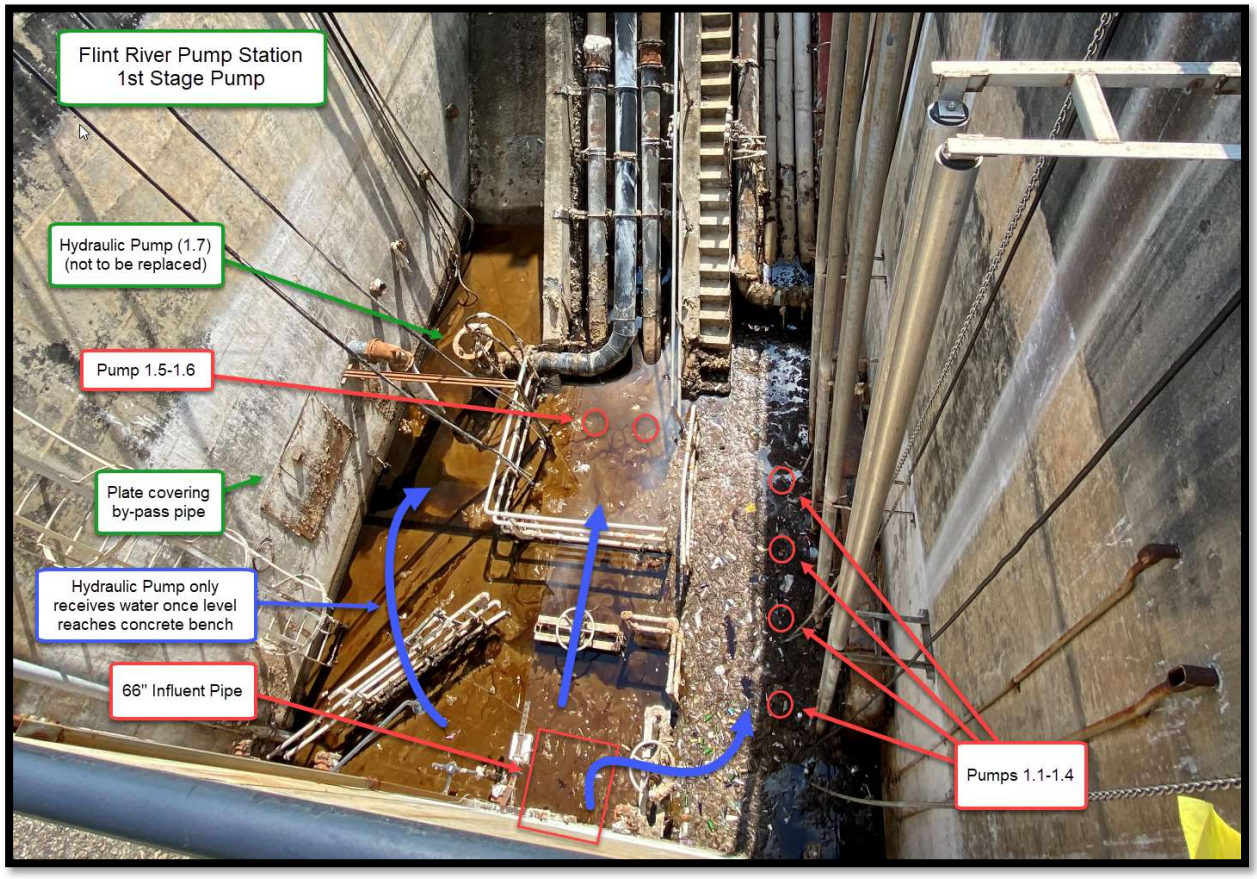

Figure 4: Influent Wet Well

The highest pump is used for emergency situations and is not included in our project scope. The two slide gates are no longer operated and remain open. Pumps 1.1-1.4 have wall mounted pumps rails which extend to grade. Pumps 1.5 and 1.6 have shorter rails that extend to grating above the splitter gate located within the wet well. All area of pump mounting are retrofits and dropped in place and present hydraulic issues with flow entering the pumps.

The pumps lift water into a rectangular concrete channel located under the electrical building. A 42" ductile iron pipe then collects the flow and diverts to the solids handling building which is discussed in the next section.

Table 2 below provides detailed information the existing influent pumps and their associated piping.

Table 2. Existing Influent Flint River Pumps

Parameter	Unit	Pump 1.1-1.2	Pump 1.3-1.4	Pump 1.5-1.6	Pump 1.7
Manufacturer and Model	-	Flygt DP N150-5850	Flygt CP 3201	Fairbanks Morse 5434MV	Heidra 250
Number of Pumps	-	2	2	2	1
Pump Type	-	Concertor Submersible Smart Pump	Constant Speed Submersible	Constant Speed Submersible	Constant Speed Diesel Driven Hydraulic Centrifugal
Impeller Diameter	inch	8.35	14.6	Unknown	Unknown
Suction/ Discharge	inch	6 / 6	8/8	8/10	10/10
Motor Size	HP	7.5	35	60	147
BEP	-	79.8%	76.7%	XX%	XX%
Flowrate at BEP	gpm	830	1,951	3,800	Unknown
Head at BEP	ft	24.5	49.4	XX	XX

2.2 Electrical Building

The Electrical Building is located west of the influent pump station, directly above the influent pump station discharge channel. The building houses the Flint River Pump Station Motor Control Center (MCC) which powers all equipment on site. The Electrical Building houses separate control panels for pumps 1.1-1.3, 1.4, 1.5, and 1.6. The Flint River Allen Bradley supervisory control and data acquisition (SCADA) system control panel and operator interface terminal (OIT) are inside the Electric Building. The SCADA system provides wet well level readings of the influent and effluent pump stations, pump ON or OFF

status, pump run time, and cycle time. The windows for the building area broken and there are signs of water leakage within the building.

2.3 College Park Influent Flume

The College Park influent wastewater enters the FRPS on the westside of the site, through a 24-inch pipeline. The pipeline connects to an open channel flume where DWM measures the influent College Park flowrate. Table 3 below summaries the College Park Influent flow conditions.

Table 3. College Park Influent Flow Conditions

		Design Condition			
Parameter	Unit	Minimum Daily Flow	Average Daily Flow	Peak Hourly Flow	Peak 15-Minute Flow
Flowrate	MGD	0.65	1.0	5.1	5.4
Flowrate	GPM	451.4	694.4	3,541.7	3,750

After the flume, the College Park influent goes below grade and connects by gravity to the main influent pump station effluent pipeline in a manhole located between the electrical building and the screening building.

2.4 Screening Building

Currently, no screening occurs in the screening building and wastewater passes through the screening building by gravity to the effluent pump station. The screening channel influent isolation gates and both screens have been removed. The screening channel effluent isolation gates are still installed in each channel but are not operational. Downstream of the effluent slide gates are two flumes each with two operating level sensors. DWM uses these level sensors to measure the effluent pump station influent flowrate.

2.5 Effluent Pump Station (Grit Chamber)

The effluent pump station wet well was converted from a grit chamber to a pump station in 1987. The influent flowrate is measured between the screening building and the effluent wet well through two flumes with level sensors. Table 4 summaries the effluent pump station flow conditions.

Table 4. Effluent Flow Conditions

		Design Condition			
Parameter	Unit	Minimum Daily Flow	Average Daily Flow	Peak Hourly Flow	Peak 15-Minute Flow
Flowrate	MGD	1.4	2.8	16.2	19.5
Flowrate	GPM	972.2	1,944.4	12,847.2	13,541.7

The station is made up of five parallel pumps, two single stage and three two stage pumps. **Table 5** Table 5 summarizes the existing pumps in the effluent FRPS.

Table 5. Effluent Flint River Pumps

Parameter	Unit	Pump 5.1-5.2	Pump 5.3-5.5
Manufacturer and Model	-	Flygt CP 3201	Flygt CP 3311
Number of Pumps	-	2	2
Pump Type	-	Constant Speed 1-Stage Submersible	Constant Speed 2-Stage Submersible
Impeller Diameter	inch	14.6	19
Suction/ Discharge	inch	8/8	14/12
Motor Size	HP	35	230
BEP	-	76.7%	81.9%/81.9%
Flowrate at BEP	gpm	1,951	3,900/6,100
Head at BEP	ft	49.4	89.5/105

After each pump discharge is a check valve and knife gate valve, before connecting to the main 24-inch header on the southside of the wet well. Downstream of the pump discharge manifold, is a 12-inch tee with a surge relief valve. Downstream of the surge relief valve is a pressure sensor. After the sensor, the 24-inch force main goes underground and travels in a northeast direction towards South River. The forcemain travels approximately 2.8 miles under pressure and discharges into a manhole on the northeast side of Highway 41. The forcemain continues the remaining 3 miles by gravity to the South River Water Reclamation Facility. **Figure** below is the FRPS effluent pipeline hydraulic profile.

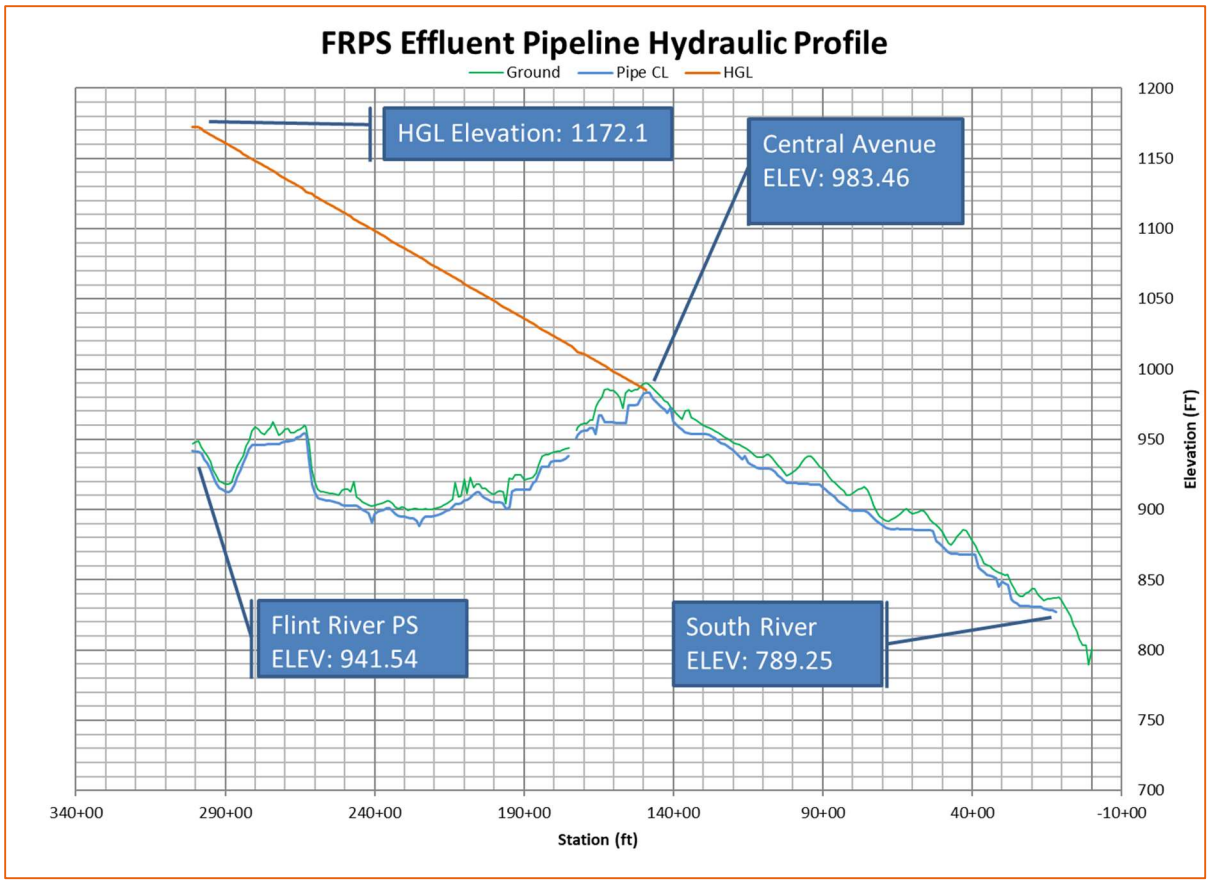

Figure 5. FRPS Effluent Pipeline Hydraulic Profile

The hydraulic profile was developed using the 1983 City of Atlanta Public Works Task No. 8 Flint River WPCP Transmission Main record drawings. The forcemain distance is approximately 2.8 miles with a static lift of 42 ft. The hydraulic grade line is based on the peak hourly flow rate of 16.2 MGD.

The effluent wet well has an overflow weir on the westside of the wet well. The overflow weir conveys wastewater to the old Flint River Water Pollution Control Plant primary clarifiers and biological basins.

2.6 Clarifier Pump Station

The clarifiers and all biological treatment basins at the FRPS are used as storage during wet weather flow conditions. During wet weather events, wastewater in the effluent pump station overtops a weir on the westside of the wet well and flows by gravity around to the plant basins. After wet weather events the clarifier pump located in the east end primary gallery basement, pump out the wastewater in the basins back into the effluent pump station wet well. Based on review of the existing drawings and site visits, the clarifier pump is connected to the low point of the old plant drain system. When the Flint River Water Pollution Control Plant was operational, the plant drain system converged in the northeast end of the primary gallery. The main 30-inch drain line continued outside the gallery to a manhole east of the primary clarifiers. The plant drain system continued around the plant through a series of manholes until discharging into Flint River. The 30-inch plant drain line was capped when the plant was converted to a

transfer station. The single submersible pump is located at the plant drain system low point, with the ability to drain all the basins after wet weather events. The primary gallery also has a sump pump continuously pumping water out of the gallery basement and into the clarifiers.

3 PROPOSED IMPROVEMENTS

3.1 Site/Civil

3.1.1 Existing Conditions

The existing Flint River Pump Station is located on the Southeast portion of Hartsfield-Jackson International Airport at 860 Lake Mirror Road. There are no existing state waters or associated stream buffers on the site on site. There is no floodplain from a watercourse in excess of 100-acres on the property per FEA flood panel 13063C0018F. The national wetland inventory maps were consulted, confirming there are no existing wetlands onsite. Stormwater runoff from the site flows offsite to the south east toward the Flint River which are the receiving waters for the site.

Existing facilities on the site include a Bar Screen Building, A Spiral Pump Station Wet Well and Electrical Building, and Effluent Pump Station Wet Well and an Anaerobic Digestion Tank and above ground ventilators.

The pump station was constructed in the 1989's and has since received minor site improvements. The driveway is a mix of asphalt and concrete paving, both of which are in fair condition. There is a total of seven significant trees on site ranging in diameter from 15 to 40-inches.

Onsite utilities include large diameter (24-inch to 42-inch) ductile iron pipe (DIP) and 15-inch Vitrified Clay pipe (VCP) sanitary sewer. The onsite stormwater collection system ranges from 12-inch to 42-inch Reinforced Concrete Pipe (RCP). And 15-inch DIP potable water traverses the site.

3.1.2 Sitework

Civil site impacts for the proposed improvements will be minimal as the project just aims to make improvements on the existing facilities without erecting new buildings and therefore, no grading is proposed. The site work will not require installing additional yard piping but, includes only making connections to the existing utilities at the building interfaces.

Proposed improvements to the bar screen building will require clearing the area adjacent to the building which will require the removal of a 15-inch tree. As part of the improvements to this building will also require providing drive up access to the existing bay for dump trucks. Providing this access will require asphalt rehabilitation northeast of the bar screen facility and installing additional asphalt to the bay and associated curb and gutter. The existing drive isles provide sufficient turning radii to allow for dump truck access through the site.

3.1.3 Site Access and Construction Staging

The existing site access is from Lake Mirror Road to the northwest and along the eastern side of the property. The Flint River Pump Station facility provides adequate open space for the staging of construction materials in the vicinity of the Bar Screen building.

3.1.4 Erosion and Sedimentation Control

Due to the lack of grade disturbance, on-site erosion control measures shall be limited to silt fence, inlet protection and tree fence.

3.1.5 Permitting

Civil permitting for the project can include but not be limited to a Tree removal permit for the 15-inch DBH tree and possibly a land disturbance permit (LDP) with the local jurisdictional Authority (Clayton County). Though, the disturbance is so minimal and only minor site improvements are proposed in the scope of the project, it is unlikely a LDP will be required.

3.2 Process Mechanical

3.2.1 General Design Approach

During Phase 2 of the project, DWM selected Design Alternative 2 as the basis of design for the FRPS improvements project. The alternative 2 Infographic is provided below in **Figure 6**.

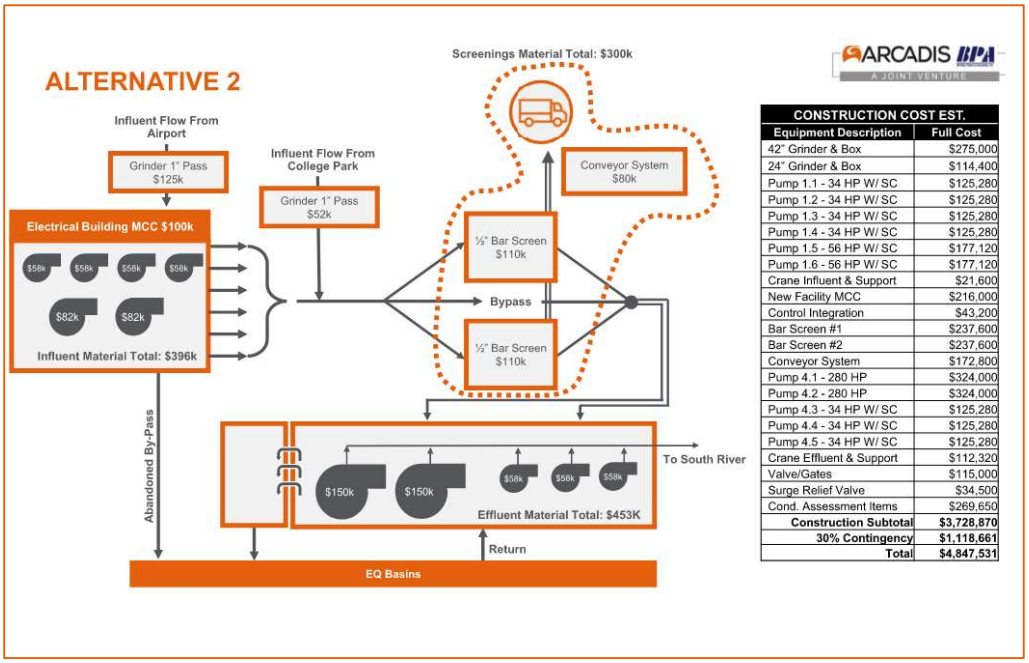

Figure 6. FRPS Improvements Design Alternative 2 Infographic

The Mechanical equipment associated Alternative 2 includes replacement of the existing influent and effluent submersible pumps, installing a grinder on the influent pipe and 24-inch College Park influent channel, new slide gates and bar screens and solids conveyor system in the screening building, and new valves and piping on the effluent pump station discharge.

3.2.2 Influent Pump Station

The goal of the proposed influent pump station improvements is to prevent any backups to the upstream sanitary sewer system. This goal is accomplished by two methods, installing a channel grinder on the influent of the pump station, to protect the influent pumps, and replacing and upsizing the pumps in the influent station to allow for a higher pumping capacity and additional redundancy.

3.2.2.1 Influent Pumps

The proposed influent pumps will increase the capacity of the influent station and will be provided with variable frequency drives (VFDs) providing more control over the pumps and providing reverse flow capabilities to help with unclogging. **Table 6** summaries the proposed replacement pumps.

Table 6. Proposed Influent Pumps

Parameter	Unit	Pump 1.1-1.4	Pump 1.5-1.6	[1]Pump 1.7
Manufacturer and Model	-	Flygt NP 3202	Flygt NP 3202	Heidra 250
Number of Pumps	-	4	2	1
Pump Type	-	Variable Speed Submersible	Constant Speed Submersible	Constant Speed Diesel Driven Hydraulic Centrifugal
Impeller Diameter	inch	12.4	13.46	-
Suction/ Discharge	inch	10/8	8/10	10/10
Motor Size	HP	34	54	147
Flowrate at Design Point (DP)	gpm	1,947	3,700	-
Head at DP	Ft.	42	44	-
Efficiency at DP	-	79.4%	81.2%	

Notes: 1. Pump 1.7 is not included in the project scope of work.

Pumps 1.1 through 1.4 will replace the existing pumps along the wet well north wall. These pumps have a higher pumping capacity than the smaller existing 7.5 Hp pumps. **Figure 7** below is the pumps 1.1 through 1.4 system curve plotted with the 34 Hp pump curve.

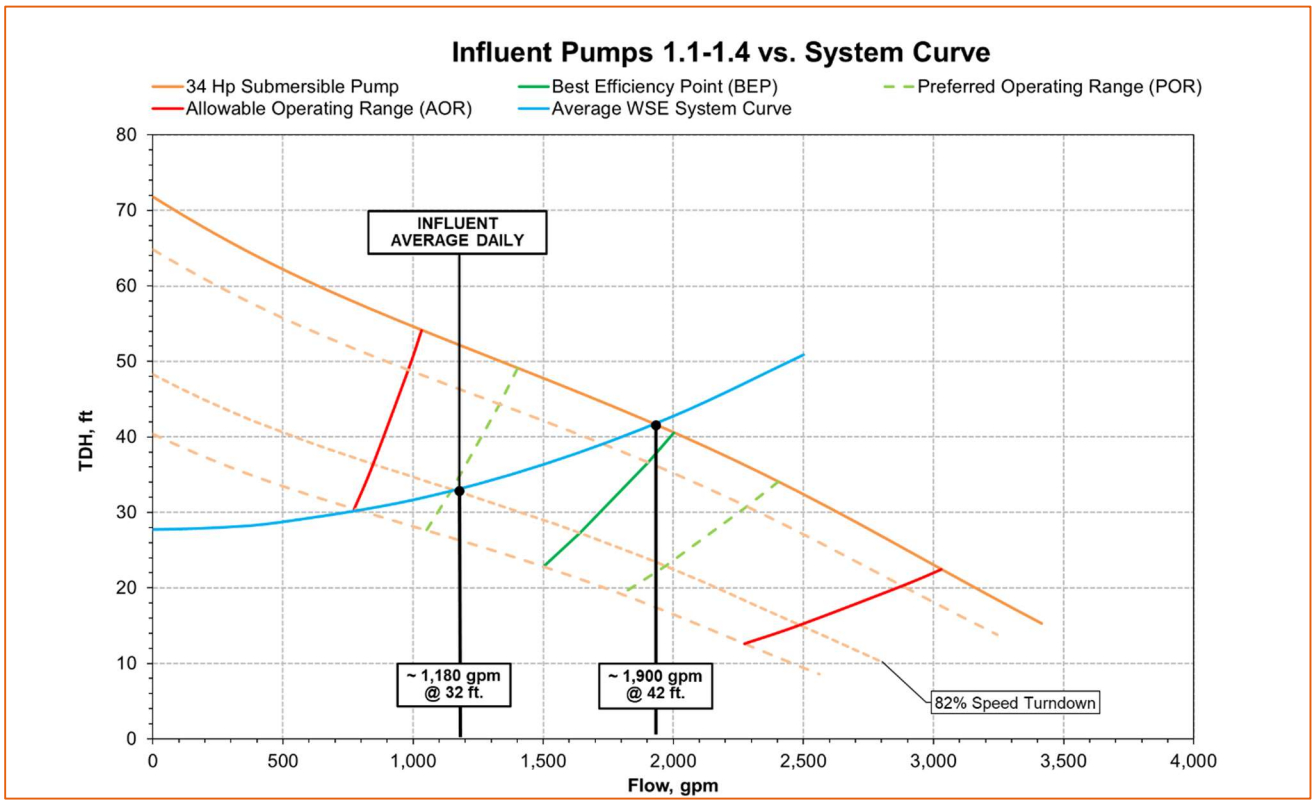

Figure 7. Influent Pumps 1.1-1.4 vs. System Curve

The system curve for pumps 1.1 through 1.4 was calculated using Hazen Williams, with a C factor of 110 and K value coefficients found in Cameron Hydraulics. The system curve was calculated for each pump discharge and averaged together to create a blended system curve to use for the pump 1.1 through 1.4 discharge. The max pumping capacity of one 34 Hp pump is 1,900 gpm. These pumps will be installed with variable frequency drives (VFDs), allowing operations more functionality with the influent pumps. At approximately an 85% speed turndown one 34 Hp pump can pump the average influent flowrate. With three pumps operational, and one standby, pumps 1.1 through 1.4 will have a total pumping capacity of 5,700 gpm. The pump 1.1 through 1.4 discharge piping will not be replaced or upsized. The discharge piping is in good condition and at the max flowrate of 1,900 gpm, the velocity is 12.77 ft/s which is below the Hydraulic Institute (HI) 9.6.6 Pumps for Pump Piping Standard maximum discharge pumping velocity of 15 ft/s.

Pumps 1.5 and 1.6 will replace the existing pumps in the middle of the wet well. These pumps will have a similar pumping capacity as the existing Fairbanks Morse Pumps. **Figure 8** below is the pumps 1.5 and 1.6 system curve plotted with the 54 Hp pump curve.

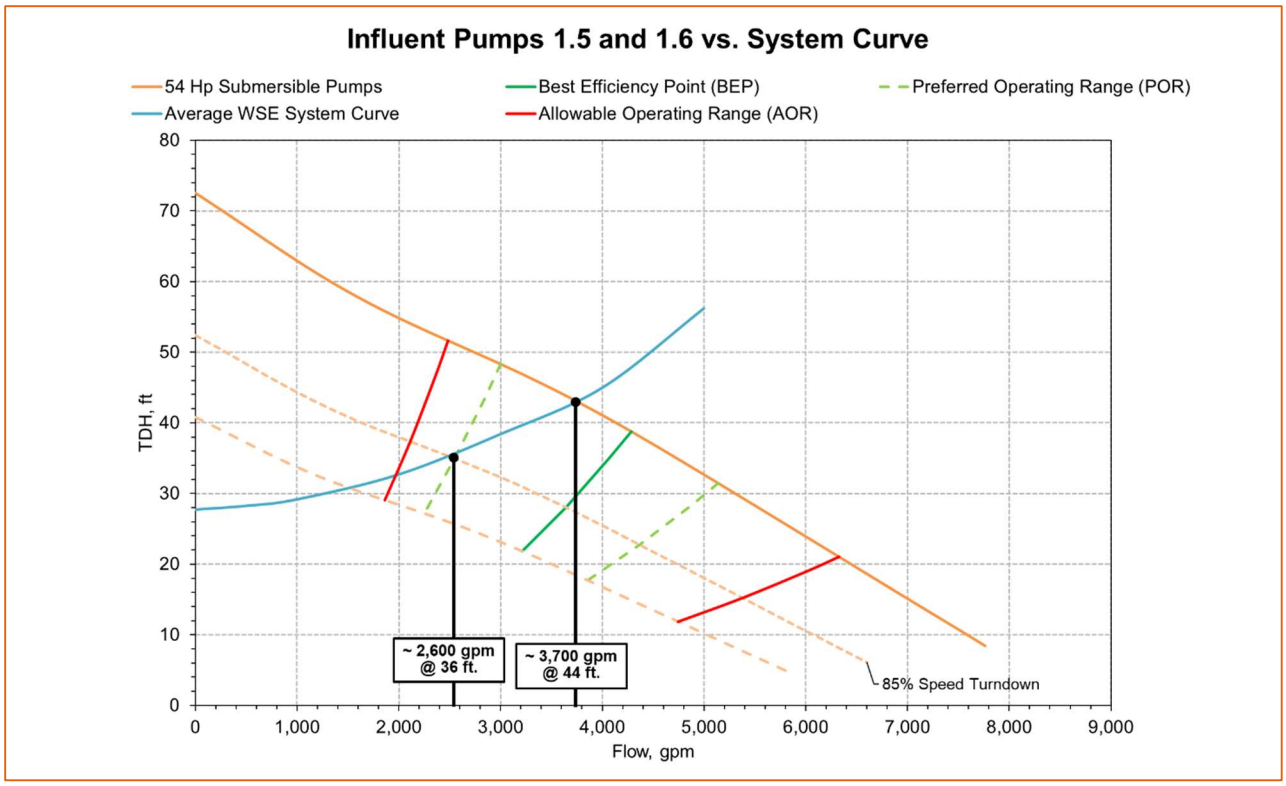

Figure 8. Influent Pumps 1.5 and 1.6 vs. System Curve

The system curve for pumps 1.5 and 1.6 were calculated like pumps 1.1 through 1.4, with the head loss for each averaged together to create and average system curve. The 54 Hp pumps have a total pumping capacity of 3,700 gpm with one pump running and one on standby. The pump 1.5 through 1.6 discharge piping will not be replaced or upsized. The discharge piping is in good condition. At the max flowrate of 3,700 gpm, the velocity is 15 ft/s which equals the HI 9.6.6 Pumps for Pump Piping Standard maximum discharge velocity of 15 ft/s.

Since all the influent pumps have individual discharge piping, there is no hydraulic limitation to the number of pumps that can run at a time. Our proposed design is to always have a standby 34 Hp pump and standby 54 Hp pump. The peak 15-minute influent flow condition can be pumped with 3 34 Hp pumps and 1 54 Hp pump.

Table 7 below summarizes the influent flow conditions and how many pumps are required to pump each condition.

Table 7. Influent Flow Conditions and Number of Pumps Required

Parameter	Unit	Influent Pumps					
	Each	1.1	1.2	1.3	1.4 (Standby)	1.5	1.6 (Standby)
Power Demand	HP	34	34	34	34	54	54
Total Flowrate	GPM	1,900	3,800	5,700	-	9,400	-
Total Flowrate	MGD	2.74	5.47	8.21	-	13.54	-
Total Power Demand	HP	34	68	102	-	190	-
[1]Pump Runtime	-	86.2%	11.2%	1.9%	-	0.77%	-

Notes: 1. Pump runtime is based on the provided COA FRPS 2020 influent flowrate data.

One 34 Hp can handle 86.2% of the influent average daily flowrate. The total pumping capacity of the proposed pumps with a standby 34 and 54 hp pump is 9,400 gpm more than the peak hourly flow condition. During the peak 15-min condition the emergency hydraulic centrifugal pump may be required to keep up with the high flow condition.

3.2.2.2 Influent Grinder

To help chop up the incoming solids, a Channel Monster will be installed on the influent pump station wet wall in front of the 42-inch influent pipe. The grinder will be mounted to the wall and include a lifting bail assembly with a lifting hook to pull the grinder out of the wet well if required. A local control panel will be included with the grinder and connected to the existing SCADA system. The grinder is designed to handle the peak 15-minute influent flowrate of 17.0 mgd. The grinder will also have openings at the top and along the side of the unit to allow flow to overtop the grinder if necessary. See **Figure 9** below for a view of a similar Channel Monster installation for reference.

Figure 9. Channel Monster Example Installation

The grinder can grind solids to particle sizes between 1”-1/2” in size. The grinder will help protect the influent pumps from clogging due to large solids entering the wet well.

3.2.3 College Park Influent Flume

A grinder will be installed on the College Park influent and the approximate location is shown on the 30% design drawings. The grinder tooth size will be similar to the influent pump station.

3.2.3.1 College Park Influent Grinder

The College Park grinder location is still to be determined. With the bar screens in the screening building a grinder may not even be needed on the College Park Influent.

3.2.4 Screening Building

The screening building will be reverted to its original design and house two bar screens in the existing screening building channels. The screening building influent splits into three channels, the two outer channels will be used for screening and the inner channel will be used as a bypass. At the beginning of each channel a stainless-steel slide gate will be installed with manual actuators to easily isolate each channel for maintenance purposes. At one point slide gates were installed at the beginning of each channel so the concrete should easily accommodate new slide gates with very minor concrete modification.

The proposed bar screens will be ½" spaced tapered chain and rake bar screens. One screen will be able to handle the peak 15-minute flowrate of 17 mgd.

3.2.5 Effluent Pump Station

3.2.5.1 Effluent Pumps

The proposed smaller effluent pumps will have variable frequency drives (VFDs) providing more control over the pumps and providing reverse flow capabilities to help with unclogging. The large replacement pumps will provide more pumping capacity. **Table 8** summaries the proposed replacement pumps.

Table 8. Proposed Effluent Pumps

Parameter	Unit	Pump 5.1-5.3	Pump 5.4-5.5
Manufacturer and Model	-	Flygt NP 3202	Flygt NP 3202
Number of Pumps	-	3	2
Pump Type	-	Variable Speed Submersible	Constant Speed Submersible
Impeller Diameter	inch	12.4	18.9
Suction/ Discharge	inch	10/8	14/12
Motor Size	HP	34	280
Flowrate at Design Point (DP)	gpm	2,050	7,100
Head at DP	Ft	47	120
Efficiency at DP	-	79.4%	80.6%

Pumps 5.1-5.3 will be replaced with similar 34 Hp pumps with VFDs. **Figure 10** below represents the FRPS effluent system curve plotted with two 34 Hp pumps running concurrently.

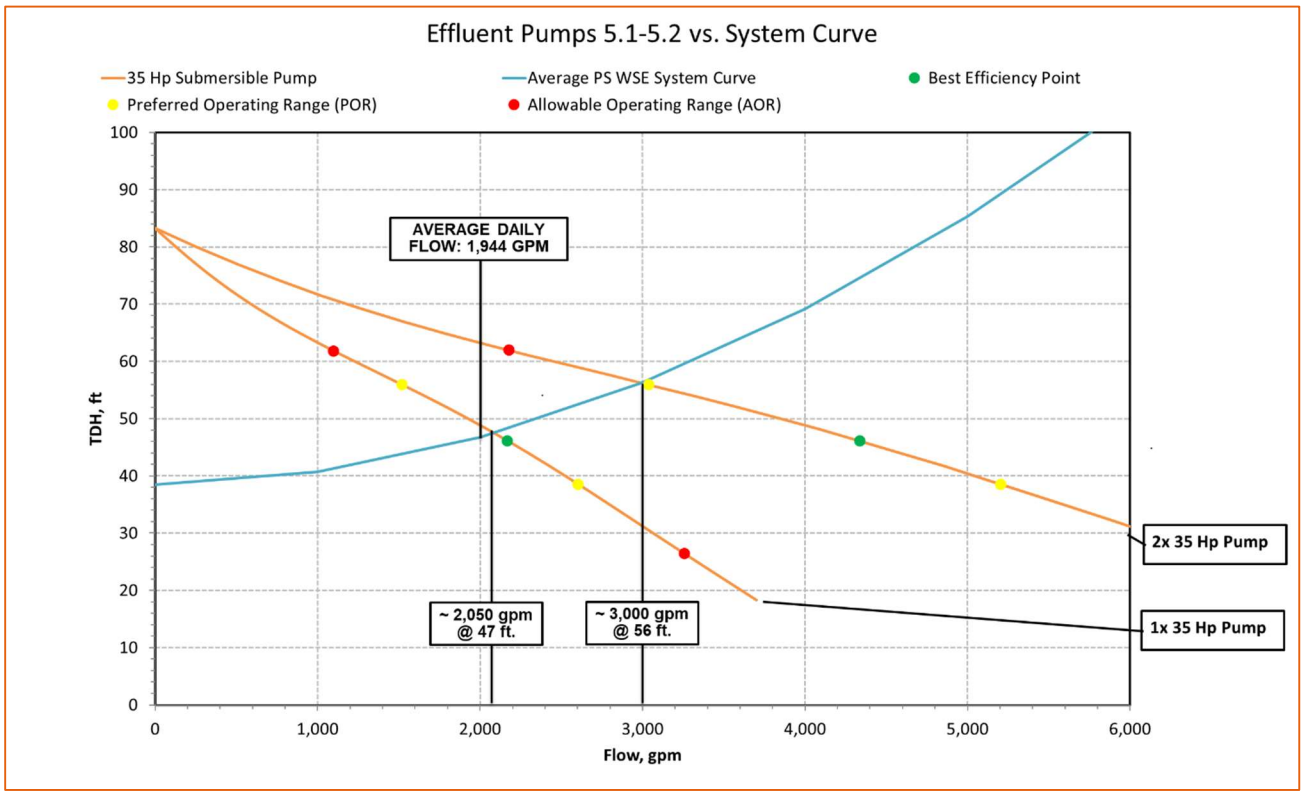

Figure 10. Effluent Pumps 5.1-5.2 vs. System Curve

One effluent pump can handle the effluent pump station average daily flow of 1,944 gpm. The pumping capacity of the smaller 35 Hp pumps with one standby is 3,000 gpm. The pump 5.1-5.3 discharge piping will remain in place, but the flapper check valve and ball check valves on the discharge will be replaced. The 5.3 discharge piping will be replaced with 10-inch piping to keep consistent with the pump 5.1 and 5.2 discharge pipe diameter. Both the 5.3 discharge check valve and knife gate valve will be replaced with a swing check valve and plug valve.

Pumps 5.4 and 5.5 will be replaced with 280 Hp constant speed submersible pumps. These pumps will handle the higher wet weather flow conditions, with only one pump running at a time. **Figure 11** is the FRPS effluent system curve plotted with two 280 Hp pumps.

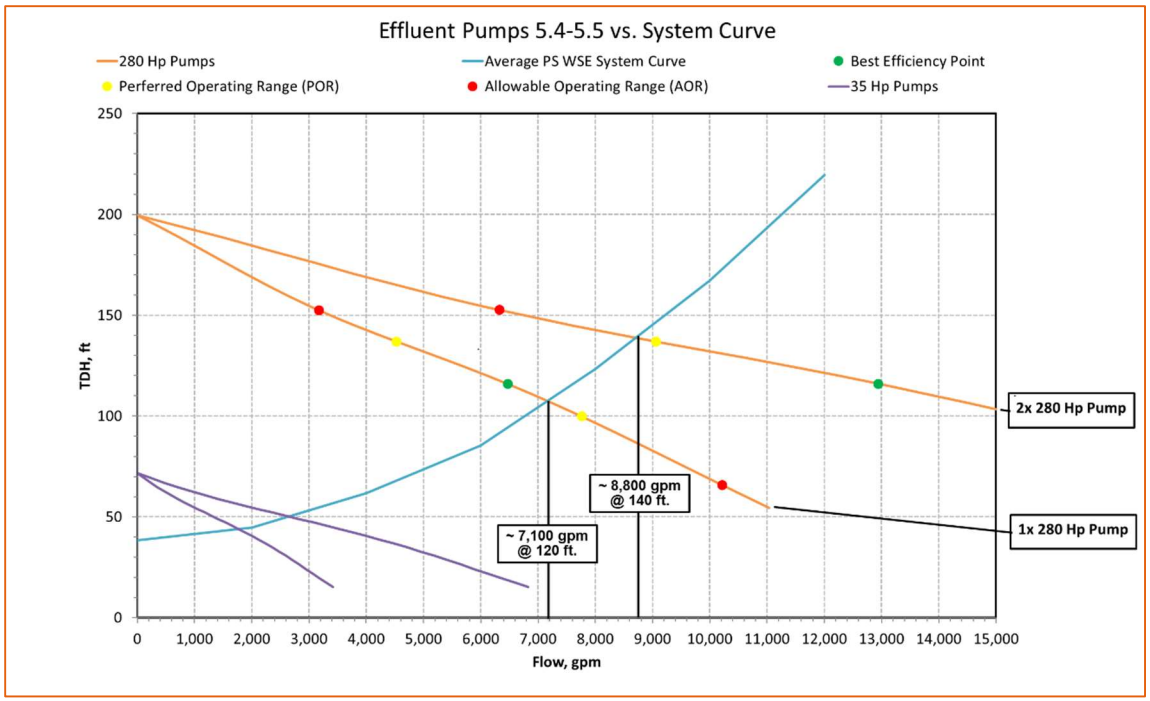

Figure 11. Effluent Pumps 5.4-5.5 vs. System Curve

The larger 280 Hp pump has a max pumping capacity of 7,100 gpm. The discharge velocity out of pump 5.4 and 5.4 at 7,000 gpm is 19.9 ft/s. Due to the high discharge velocity pump 5.4 and 5.5 discharge piping will be upsized to 14-inch diameter. With a 14-inch diameter discharge, the velocity is 14.59 ft/s, below the recommended HI 9.6.6 standard maximum recommended discharge velocity. Both discharge piping check valves and knife gate valves will be replaced with swing check and plug valves.

Like the FRPS influent pump station, the flow conditions in the effluent station are very dependent on weather. The table below summarizes the estimated percent of pump run time based on the provided 2020 influent flume data.

Table 9. Estimated Pump Run-Time Percentages

Parameter	Unit	Effluent Pumps					
	Each	5.1	5.2	5.3 (Standby)	5.4	5.5 (Standby)	Greater than Pump 5.5
Power Demand	HP	35	35	35	280	280	
Total Flowrate	GPM	2050	3,000	-	7,100	-	-
Total Flowrate	MGD	2.95	4.32	-	10.08	-	-
Total Power Demand	HP	34	68	-	280	-	-
[1]Pump Runtime	-	62.1%	23.1%	-	8.4%	-	0.8%

Notes: 1. Pump runtime is based on the provided 2020 COA influent flowrate data.

During 2020 with the proposed effluent pump station design one 35 Hp pump will handle approximately 62% of the incoming flowrate. Two larger pumps are included in the design, but it is recommended to only run one larger 280 Hp pump at a time, the additional pump capacity is not worth the additional energy demand. During conditions were Pump 5.4 cannot keep up with the incoming flowrate, the existing primary clarifier storage will need to be utilized. Based on the 2020 influent data, with the proposed pump selection the EQ storage would have needed to be used less than 1% of the time.

3.2.6 Primary Clarifier Storage

To calculate the needed volume for primary clarifier storage, flow data from both the east and west Flint River pump station were collected in 15-minute intervals from 1/1/2020 to 12/31/2020 (35,115 total data points throughout the year). This 15-min interval data was then averaged per hour. To calculate the flow to EQ, a 10 MGD maximum flow limit was assumed. Therefore, the calculated flow to EQ represented any influent flow (per hour) that was above the maximum flow limit.

If flow is being sent to EQ, EQ volume was calculated by adding the hourly contribution to EQ to the existing EQ volume. If flow is not being sent to EQ in that hourly interval, then EQ volume was calculated by subtracting the volume sent to the wet well from the existing EQ volume.

If the hourly influent flow is less than the 10 MGD maximum flow limit, then 0.042 MGD (1 MGD return pump/24 hours) was the excess capacity liquid train flow. In hourly intervals where the influent flow exceeds the 10 MGD flow limit, there was no excess capacity liquid train flow. The EQ volume that is sent to the effluent wet well was calculated with consideration of this 1 MGD pump limit.

Using the calculations discussed above, the maximum EQ volume in any hourly interval is 1.54 MG.

3.3 Structural Design

3.3.1 General

Structural design will be performed to provide structures that will remain in the elastic stress range to limit the potential for cracking. Loading conditions shall be based on the worst operating scenario to design for static conditions and for the impact loads for cranes as required in the 2018 International Building Code. The Influent Pump Station will be provided with a 2 Ton capacity Jib Crane to lift the pumps and the proposed grinder inside the basin. The Effluent Pump Station will be provided with a 2 Ton capacity Jib Crane at the east side for the lighter pumps and with a 3 Ton capacity Jib Crane at the west side for the heavier pumps located in the basin. In addition, all the structures will be conservatively designed in accordance with below load criteria.

3.3.1.1 Dead Loads

Design will be in accordance with the requirements of the 2018 International Building Code. See **Figure 12** below for reference.

Components	Loads
Concrete	150 pcf
Steel	490 pcf
Fiberglass	100 to 115 pcf
Wood	40 pcf
Aluminum	169 pcf
Solid Clay Brick	120 pcf
Fill Unit weights: (When Considered as Dead Load)	
Soil	125 pcf
Gravel	135 pcf

Figure 12. International Building Code – Dead Loads

3.3.1.2 Live Loads

Design will be in accordance with the requirements of the 2018 International Building Code. This includes an additional a 20% vertical impact load and a 25% horizontal impact load. See **Figure 13** for reference.

Components	Loads
Roof	20 psf (non-working roof)
	100 psf (working roof)
Electrical/Mechanical rooms	100 psf
Area with heavy equipment	300 psf
Electrical control rooms	250 psf
Walkways, platforms, stairs	100 psf
Raw Sewage	62.5 pcf
Digested sludge, aerobic	65 pcf
Traffic Loads	Use AASHTO H-20 loading requirements for all vehicle access areas
Handrails (at top rail)	50 lbs/liner feet and 200lb. concentrated load
Access Grating	150 psf
Covered FRP	150 psf

Figure 13. International Building Code – Live Loads

3.3.1.3 Wind Loads

Design will be in accordance with the requirements of the 2018 International Building Code and ASCE 7-16. See **Figure 14** for reference.

Components	Load
Ultimate Wind Speed	114 mph
Wind Exposure	C
Risk Category	III

Figure 14. International Building Code – Wind Loads

3.3.1.4 Seismic Loads

Design will be in accordance with the requirements of the 2018 International Building Code and ASCE 7-16. See **Figure 15** for reference.

Components	Parameters
Soil Site Class	D
Risk Category	III
Mapped Spectral Response Acceleration at Short Period, S_s	0.173
Mapped Spectral Response Acceleration at 1 sec Period, S_1	0.083
Seismic Importance Factor	1.25
Design Spectral Acceleration Parameter at Short Period, S_{ds}	0.184
Design Spectral Acceleration Parameter at 1 sec Period , S_{d1}	0.133
Seimic Design Category	C

Figure 15. International Building Code – Seismic Criteria

Special inspection for structures as well as for installation of mechanical and electrical components shall be required. Component manufacturer shall submit certificates of compliance for review and acceptance by the Engineer.

3.3.1.5 Safety Factors and Soil Properties

The safety factors shown below are recommended with respect to soil loading criteria for conservative design purposes. See **Figure 16** for reference.

Components	Factor
Overturning	1.5
Sliding	1.5
Buoyancy:	
For design ground water	1.5
For 100- year flood elevation	1.25
For Maximum Flood elevation	1.10
Soil Weight to be used in resisting uplift	
Soil above groundwater	105 pcf
Soil below groundwater	50 pcf

Figure 16. Soil Loading Criteria

3.3.2 Design Approach

3.3.2.1 Concrete

Concrete foundation design for support of cranes shall meet the requirements of ACI 318 and the impact loads considered in the IBC 2018 for crane loads for allowable soil bearing capacity, overturning and sliding.

3.3.2.2 Steel

Structural steel design should meet the requirements of AISC for Allowable Stress Design.

3.3.2.3 Seismic Design of Non-Structural Components

Non-structural components refer to architectural, process related mechanical, mechanical (HVAC, plumbing, fire protection), electrical and instrumentation equipment and appurtenances. A term called the seismic design category is a classification assigned to a structure based on its use and severity of the design earthquake ground motion at this site. Depending on the seismic design categories (A-F) assigned to the structures, the building code provides specific requirements for bracing non-structural components in the structures. As part of this project the seismic design categories of new and existing buildings requiring work will be determined based on-site accelerations assigned in the code, building use and site geotechnical data. Seismic design of non-structural components will be incorporated into the project in accordance with the building code requirements based on site specific geotechnical and building usage category information gathered during design.

Level of seismic design required for architectural components:

1. Seismic design category B = Required only if Ip = 1.5

Level of seismic design required for mechanical and electrical components:

1. Seismic design category A and B = None
2. Seismic design is not required where Ip = 1.0 and the component is mounted 4 ft. or less above floor
1. and weighs 400 lbs. or less.
2. Seismic design is not required where Ip = 1.0 and the component weighs 20 lbs or less.

Based on ASCE 7-16 Section 13.1.3, the importance factor (Ip) is as follows:

1. Ip = 1.5 Component is required to function for life-safety purposes after an earthquake, including fire protection sprinkler systems and egress stairways.
2. Ip = 1.5 Component conveys, supports, or otherwise contains toxic, highly toxic, or explosive substances where the quantity of the material exceeds a threshold quantity established by the authority having jurisdiction and is sufficient to pose a threat to the public if released.
3. Ip = 1.5 Component is in or attached to a Risk Category IV structure and it is needed for continued operation of the facility or its failure could impair the continued operation of the facility.
4. Ip = 1.5 Component conveys, supports, or otherwise contains hazardous substances and is attached to a structure or portion thereof classified by the authority having jurisdiction as a hazardous occupancy.
5. Ip = 1.0 All other components.

In addition, for structures in Risk Category IV:

1. Ip = 1.5 All components needed for continued operation of the facility or whose failure could impair the continued operation of the facility.

3.3.3 Codes and Standards

The governing code for the City of Atlanta, with amendments, is as follows:

- 2018 International Building Code

3.3.3.1 2018 IBC

The 2018 International Building Code (IBC), including local amendments to Chapter 10, Building-related codes (effective October 1, 2018) will be used to establish the building code criteria (occupancy classification.

Structures will be designed in accordance with the following relevant documents:

- ACI 318-14, Building Code Requirements for Structural Concrete
- ACI 350-06, Code Requirements for Environmental Engineering Concrete Structures
- AISC 360-16, Specification for Structural Steel Buildings
- ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- AISC/ASD. Manual of Steel Construction.
- AWS, American Welding Society D1.1, Structural Welding for Steel
- Aluminum Construction Manual, Section 1

3.4 Electrical Design

3.4.1 Existing Distribution

Service to the site is 277/480V, 3 Phase, 4 Wire and is derived from a Georgia Power pad-mounted transformer. The existing service lateral (3 Run 600kcmil Copper) runs underground to a service entrance automatic transfer switch (SE ATS). The SE ATS is Eaton ATVIMGC31200XRU NEMA 3R, 480V, 3P, 1200A SE ATS which includes a main 2000A Magnus DS (MDSC20) power breaker with Digitrip 520 (L/S/I/G) protection set for 1200A. The SE ATS also includes an emergency Magnus DS (MDS820) 2000A with no overcurrent protection which is connected to the main breaker on the generator.

The emergency generator is a 500kW / 625 kVA Cummins Model 500DFED diesel generator rated for 277/480V, 3 PH, 4W, 752 FLA.

The load side of the SE ATS feeds an outdated Motor Control Center (MCC) which includes feeder breakers, starters, integral transformers, and integral panelboards that distribute power throughout the facility. The MCC will be demolished and replaced with new.

3.4.2 Proposed Distribution

The proposed distribution will keep the existing SE ATS and Emergency Generator. The existing Motor Control Center (MCC) will be demolished and replaced with new. The new MCC will be an arc-resistant type MCC and be rated 277/480V, 3 Phase, 4 Wire, 1200A. The MCC will include feeder breakers, integral transformers, integral panelboards, and starters.

The existing Flint River Pump Station is existing and will need to remain in service at all times. To facilitate the downtime associated with installing the new MCC and associated distribution equipment, the City of Atlanta will provide bypass pumping for approximately 30 days at both the effluent and influent wet well. The 30 days will allow the contractor to install, test, and commission the new MCC and associated distribution equipment.

The existing 500kW emergency generator is adequately sized to handle peak flow conditions which include the building lighting and HVAC loads plus the required peak flow influent pumps (2 – 54HP & 2 – 34HP) and required peak flow effluent pumps (1 – 280HP).

3.4.3 Design Approach

The MCC will include feeder breakers for new standalone variable frequency drives (VFD) and reduced voltage solid state starters (RVSS).

The new VFDs (6 influent pumps / 3 effluent pumps) will be housed in a either a NEMA 4X or NEMA 12 enclosure and may located outside or in the existing air-conditioned electrical room. Spacing requirement and layout are still be investigated. The VFDs will include a smart logic controller, built-in DC-link reactors to reduce harmonic distortion currents, and a proactive pump protection that periodically reverses the pump to ensure a clean pump (de-ragging). If the cable distance between the VFD and pump is excessive, an output dv/dt filter will be provided.

The new RVSS (2 effluent pumps) will be housed in NEMA 4X or NEMA 12 enclosures and be in ether outside or in the existing electrical room. The RVSS will include adaptive acceleration control to employ the best starting and stopping profiles.

3.4.4 Codes and Standards

The design and construction will conform to all local, state, and national electrical codes, including, but not limited to the latest versions of:

- National Electrical Code
- Life Safety Code 101
- NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities
- NFPA 70E, Standard for Electrical Safety in the Workplace
- NECA Standard of Installation

3.4.5 Conductors

All conductors will be rated 600V and be solid or Class B concentric stranded, soft or annealed, uncoated copper free and be in accordance with ASTM B 3 or B 8. All control circuit wiring and all wiring No. 8 AWG and larger shall be stranded. Lighting branch circuits No. 12 and No. 10 AWG may be solid. XHHW insulation will be used for service entrance, motor branch, and feeder circuits operating at 208, 240, and 480V. THWN-2 insulation will be used for general lighting and receptacle branch circuits operating at 120V. For control circuits, the conductors may be single or multi-conductor rated 600V.

3.4.6 Surge Protection

The new motor control center will include an integral surge protection device (SPD) and integral disconnect. The SPD will include lights, filter, counter, and be rated for 250kA / phase.

3.4.7 Identification and Marking

Each cable will be identified with a permanent labeling system (Brady Catalog Number B-292 with printed legends or approved equal). Instrumentation cables shall be labeled with the appropriate instrument number of the originating signal (Ex. FT-2020-1). Multiplex cables, power and control cables shall be labeled with the appropriate cable number per the conduit and cable schedules.

All electrical equipment, including, but not limited to, MCC, power panels, lighting panels, control cabinets, VFDs, RVSS, disconnect switches will be identified with permanently mounted phenolic labels.

3.4.8 Fault and Coordination Analysis

An electrical system analysis will be performed by the contractor. The analysis will include:

- A short circuit coordination study of new and existing electrical distribution equipment
- A relay coordination study of new and existing electrical distribution equipment
- An arc flash hazard analysis study for new and existing electrical distribution equipment
- Arc flash labels for all electrical equipment such as switchboards, panelboards, industrial control panels, motor control centers, 480V disconnect switches, and VFDs.

3.4.9 Lighting System

The lighting system is existing and will remain in service. Each fixture will be re-lamped and re-placed if not in working condition.

3.5 Instrumentation and Controls Design

3.5.1 General

The existing Flint River PLC Panel is a PLC based control panel and networking gear will remain and be re-purposed to control and monitor the new influent pumps, grinders, bar screens, and effluent pumps. The existing PLC is an Allen Bradley Contrologix 5571 PLC which is a top-of-the-line PLC and additional I/O will be provided as required to support new equipment. The pump station process if visually displayed via an Allen-Bradley PanelView Plus 1250 touchscreen which will remain and be re-purposed to depict the new process, including grinders, influent pumps, screens, and effluent pumps.

The existing UPS which powers the Flint River PLC Panel is adequate and will remain in service.

3.5.2 Design Approach

The design approach will include re-programming the existing PLC to match the new design, including, but not limited to, 6 influent pumps, 2 grinders, 2 bar screens, and 5 effluent pumps. The influent pumps and effluent pumps will be controlled automatically or manually from the Allen-Bradley PanelView Plus 1250 touchscreen. In auto mode, the pumps (influent & effluent) will ramp up and down to maintain an operated adjustable level setpoint. In manual mode, the pumps (influent & effluent) will be turned on and off locally from the touchscreen. The grinders and screens will be monitored only. See I&C sheets in **Attachment A** for additional features.

3.5.3 Codes and Standards

All panels will conform to UL-508A, Industrial Control Panels.

3.5.4 Instrumentation

In general, the existing instruments are in good condition and will be re-calibrated and cleaned per manufacturer's preventive maintenance recommendations. The instruments to remain include:

- Influent wet well Siemens Ultrasonic level transmitter and Echomax XRS sensor
- Influent wet well Polysoincs Poly-Level flow transmitter and sensor
- ISCO 2105Gi parshall flume flow monitoring system for the West and East flow into the effluent wet well
- Effluent wet well Milltronics Hydroranger Ultrasonic level transmitter and sensor

New instruments will include a gas monitoring (LEL) system at the influent wet well and float switches at the influent and effluent wet well.

Several instruments are no longer in use and will be removed from the site. These instruments include the Milltronics HydroRanger and MultiRanger that monitor West and East flow into the effluent wet well. These instruments were replaced with the ISCO flow monitoring system. The Foxboro I/A series pH/ORP controller has also been abandoned and will be removed from the site.

3.6 HVAC Design

3.6.1 General

The HVAC design covers plant assets inside the Electrical Building. The system design will be arranged primarily for protection of electrical and process control equipment within the facility.

3.6.2 Design Approach

Temperature and humidity will be controlled to ensure the indoor environment remains within ranges specified by electrical equipment and control system suppliers. Although optimal human comfort conditions will not be maintained, the space will remain habitable year-round.

3.6.3 Materials, Equipment and Systems

The provided HVAC systems will be Industrial and/or data center grade to ensure higher reliability for space conditioning than normally provided by general commercial heating and cooling systems. High reliability and improved energy performance is achieved by selecting HVAC equipment that can withstand more extreme indoor and outdoor temperature conditions through the use of more robust refrigeration system and economizer cooling systems. Reliability is critical given VFD's may trip offline when room temperature exceeds their maximum rated environmental temperature limitations. Consequently, any trip of this kind could jeopardize the pumping system's ability to process flow through the plant – possibly resulting in wastewater spills at the plant or upstream manholes.

All ductwork shall be constructed in accordance with SMACNA standards. The ductwork in the Electrical Building shall be of galvanized steel construction.

All the HVAC controls shall be digital and capable of remote reporting of alarm signals.

3.6.4 Codes and Standards

- 2018 International Mechanical Code with Georgia Amendments
- 2015 International Energy Code with Georgia Amendments

3.6.5 Design Criteria

Outdoor Design Conditions:

Winter	12° F dry bulb (db)
Summer	94° F db / 74° F wet bulb (wb)

Indoor Design Conditions (Air-conditioned Spaces)

Cooling Mode	85° F
Heating Mode	55° F

4 COST ESTIMATE

See **Figure 5** for cost estimate included during design selection.

ATTACHMENT A: 30% DESIGN DRAWINGS

CITY OF ATLANTA

FLINT RIVER PUMP STATION IMPROVEMENTS PROJECT

FC-7383A, TASK ORDER NO. 142

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OWNER

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT
72 MARIETTA STREET, NW
ATLANTA, GEORGIA 30303

LOCATION MAP

PROJECT MANAGER: XXXXXXX, PE
GEORGIA REGISTRATION NO. : XXXXXX

CITY OF ATLANTA
MAYOR
KEISHA LANCE BOTTOMS

WATERSHED MANAGEMENT
COMMISSIONER
MIKITA BROWNING

DESIGN COORDINATOR: XXXXXXX, PE
GEORGIA REGISTRATION NO. : XXXXX

CSS MANAGER
DEREK STEWART

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DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS
600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE:	MARCH 2021
PROJECT NO.:	30049010
FILE NAME:	G0-01
DESIGNED BY:	TRAVIS THOMAS
DRAWN BY:	SANDESH PATIL
CHECKED BY:	BENJAMIN L. MOSS

SHEET TITLE

GENERAL

COVER SHEET

SCALE: N.T.S

G0-01

SHEET _____ OF 100

Flint River Pump Station Improvements

LIST OF DRAWINGS

DISCIPLINE	SHEET	TITLE
General	G0-01	COVER SHEET
	G0-02	DRAWING INDEX
	G0-03	PROCESS FLOW DIAGRAM
	G0-04	HYDRAULIC PROFILE 1
	G0-05	AREA KEY PLAN
Civil	C0-01	NOTES
	C0-02	EXISTING SITE PLAN
	C0-03	DEMOLITION PLAN
	C0-04	PROPOSED SITE PLAN
	C0-05	TRUCK ROUTING PLAN
	C0-06	INITIAL EROSION AND SEDIMENTATION CONTROL PLAN
	C0-07	INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN
	C0-08	FINAL EROSION AND SEDIMENTATION CONTROL PLAN
	C0-09	TREE PROTECTION PLAN
	C0-10	DETAILS
	C0-11	DETAILS
Process Mechanical	M0-01	LEGENDS, SYMBOLS AND ABBREVIATIONS
	M0-02	EQUIPMENT AND PIPING DETAILS
	M0-03	MISCELLANEOUS DETAILS
	M1-01	INFLUENT PUMP STATION - EXISTING CONDITIONS
	M1-02	INFLUENT PUMP STATION - DEMOLITION
	M1-03	INFLUENT PUMP STATION - PROPOSED PLAN
	M1-04	INFLUENT PUMP STATION - PROPOSED SECTIONS
	M2-01	ELECTRICAL BUILDING.- EXISTING CONDITIONS
	M2-02	ELECTRICAL BUILDING - DEMOLITION
	M2-03	ELECTRICAL BUILDING - PROPOSED PLAN
	M3-01	COLLEGE PARK INFLUENT - EXISTING CONDITIONS
	M3-02	COLLEGE PARK INFLUENT - DEMOLITION
	M3-03	COLLEGE PARK INFLUENT - PROPOSED PLAN
	M3-04	COLLEGE PARK INFLUENT - PROPOSED SECTIONS
	M4-01	SCREENING BUILDING - EXISTING CONDITIONS
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	M5-01	EFFLUENTPUMP STATION - EXISTING CONDITIONS
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	M5-03	EFFLUENT PUMP STATION - PROPOSED PLAN
	M5-04	EFFLUENT PUMP STATION - PROPOSED SECTIONS
	M6-01	PRIMARY CLARIFIERS - EXISTING CONDITIONS
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	S0-02	SPECIAL INSPECTIONS
	S0-03	MISCELLANEOUS DETAILS
	S1-02	INFLUENT PUMP STATION - DEMOLITION PLAN
	S1-03	INFLUENT PUMP STATION - PROPOSED PLAN VIEW
	S4-01	SCREENING BUILDING - DEMOLITION PLAN
	S4-02	SCREENING BUILDING - PROPOSED PLAN VIEW
	S4-03	SCREENING BUILDING - PROPOSED SECTIONS
	S5-01	EFFLUENT PUMP STATION - DEMOLITION PLAN
	S5-02	EFFLUENT PUMP STATION - PROPOSED PLAN VIEW
	S5-03	EFFLUENT PUMP STATION - PROPOSED SECTIONS
Architectural	A0-01	ABBREVIATIONS, LEGEND AND NOTES
	A0-02	CODE PLAN FOR ELECTRICAL BUILDING AND PUMP STATION SHEET 1
	A0-03	CODE PLAN FOR ELECTRICAL BUILDING AND PUMP STATION SHEET 2
	A2-01	ELECTRICAL BUILDING FLOOR PLAN AND ROOF PLAN
	A2-02	ELECTRICAL BUILDING EXTERIOR ELEVATIONS
	A2-03	ELECTRICAL BUILDING SECTIONS
	A2-04	ELECTRICAL BUILDING SECTIONS

Discipline	Sheet	Title
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	E0-02	DEMOLITION SITE PLAN
	E0-03	DEMOLITION ONE LINE DIAGRAM
	E0-04	SITE PLAN
	E0-05	ONE LINE DIAGRAM
	E0-06	EQUIPMENT ELEVATION
	E0-07	SCHEMATICS
	E0-08	INTERCONNECT DIAGRAM
	E0-09	PANELBOARD SCHEDULE
	E0-10	CONDUIT AND CABLE SCHEDULE - I
	E0-11	CONDUIT AND CABLE SCHEDULE - II
	E0-12	DETAIL SHEETS - I
	E0-13	DETAIL SHEETS - II
	E1-01	INFLUENT PUMP STATION - PLAN
	E2-01	ELECTRICAL BUILDING - PLAN AND SECTIONS
	E3-01	COLLEGE PARK INFLUENT - PLAN
	E4-01	SCREENING BUILDING - PLAN
	E5-01	EFFLUENT PUMP STATION - PLAN
HVAC	H0-01	ABBREVIATIONS, SYMBOLS AND GENERAL NOTES
	H2-01	ELECTRICAL BUILDING FLOOR PLAN
	H2-02	ELECTRICAL BUILDING SECTIONS
	H2-03	SCHEDULES AND DETAILS
Instrumentation & Control	I0-01	SYMBOLS AND GENERAL NOTES
	I0-02	LEGENDS AND ABBREVIATIONS
	I0-03	INSTRUMENT INSTALLATION DETAILS
	I0-04	NETWORK BLOCK DIAGRAM DETAILS
	I1-01	INFLUENT PUMP STATION P&ID
	I4-01	SCREENING BUILDING P&ID
	I5-01	EFFLUENT PUMP STATION P&ID

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FLINT RIVER
PUMP STATION
IMPROVEMENTS

600 LAKE MIRROR
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30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: G0-02
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

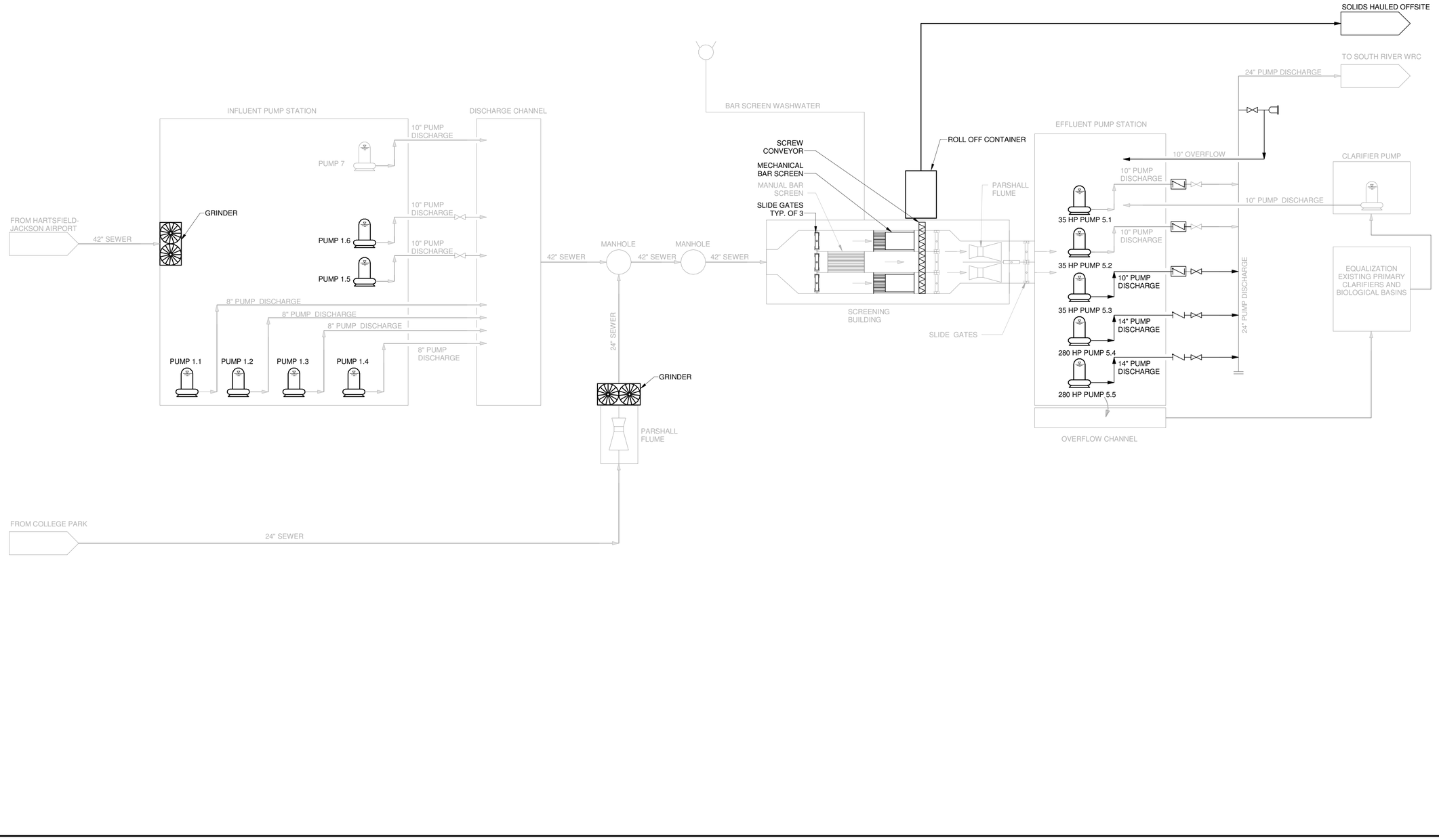
GENERAL

DRAWING INDEX

SCALE: N.T.S

G0-02

SHEET ____ OF 100



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FLINT RIVER PUMP STATION IMPROVEMENTS

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NO.	DATE	ISSUED FOR	BY
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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: G0-03
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

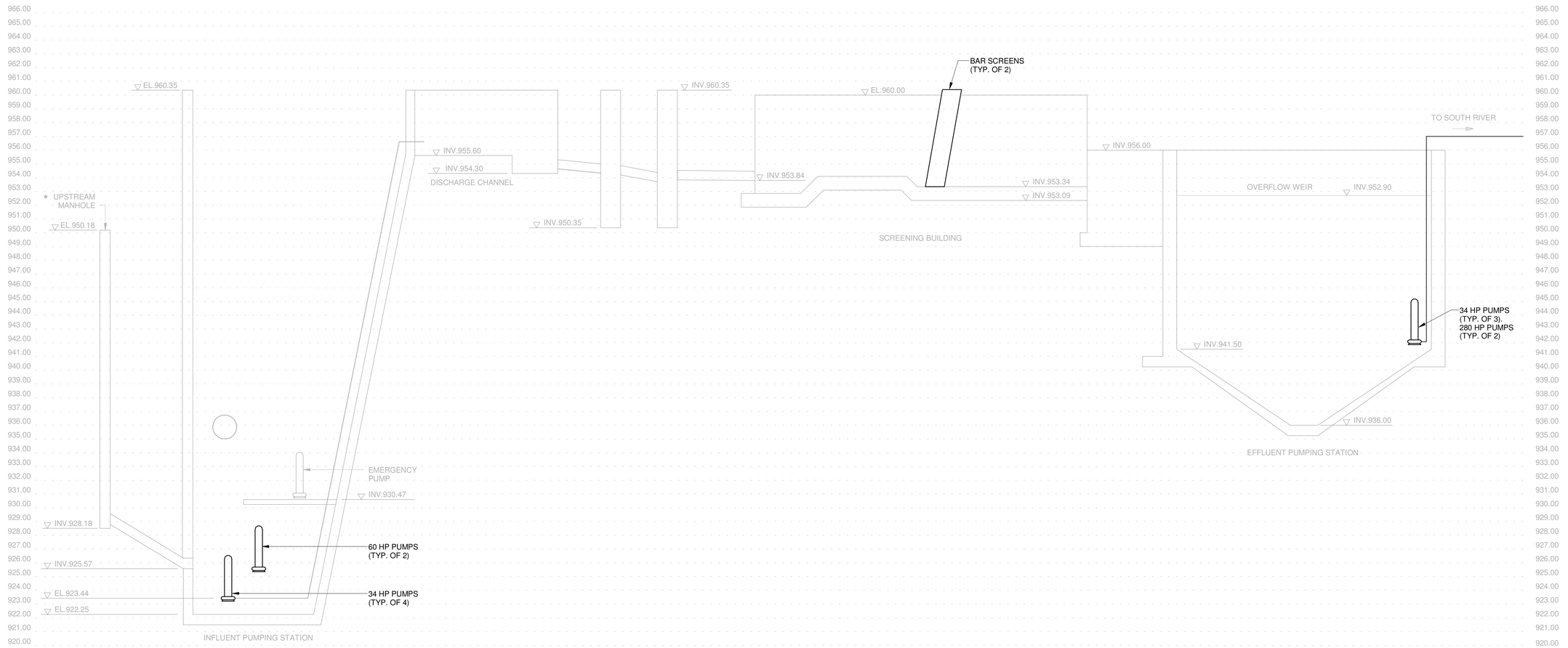
GENERAL

PROCESS FLOW DIAGRAM

SCALE: N.T.S

G0-03

SHEET ____ OF 100



* UPSTREAM MANHOLE SHOWN ON PROFILE IS LOCATED ACROSS I-285 NEXT TO HARTSFIELD - JACKSON AIRPORT

HYDRAULIC PROFILE

NOT TO SCALE

BIM 360://AUS-30049010-Flint River Pump Station Upgrade/M-3D-PS2_R21.rvt

3/11/2021 6:38:10 PM

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CONSTRUCTION

ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED
MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR
ROAD, ATLANTA, GA
30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE:	MARCH 2021
PROJECT NO.:	30049010
FILE NAME:	G0-04
DESIGNED BY:	TRAVIS THOMAS
DRAWN BY:	SANDESH PATIL
CHECKED BY:	BENJAMIN L. MOSS

SHEET TITLE

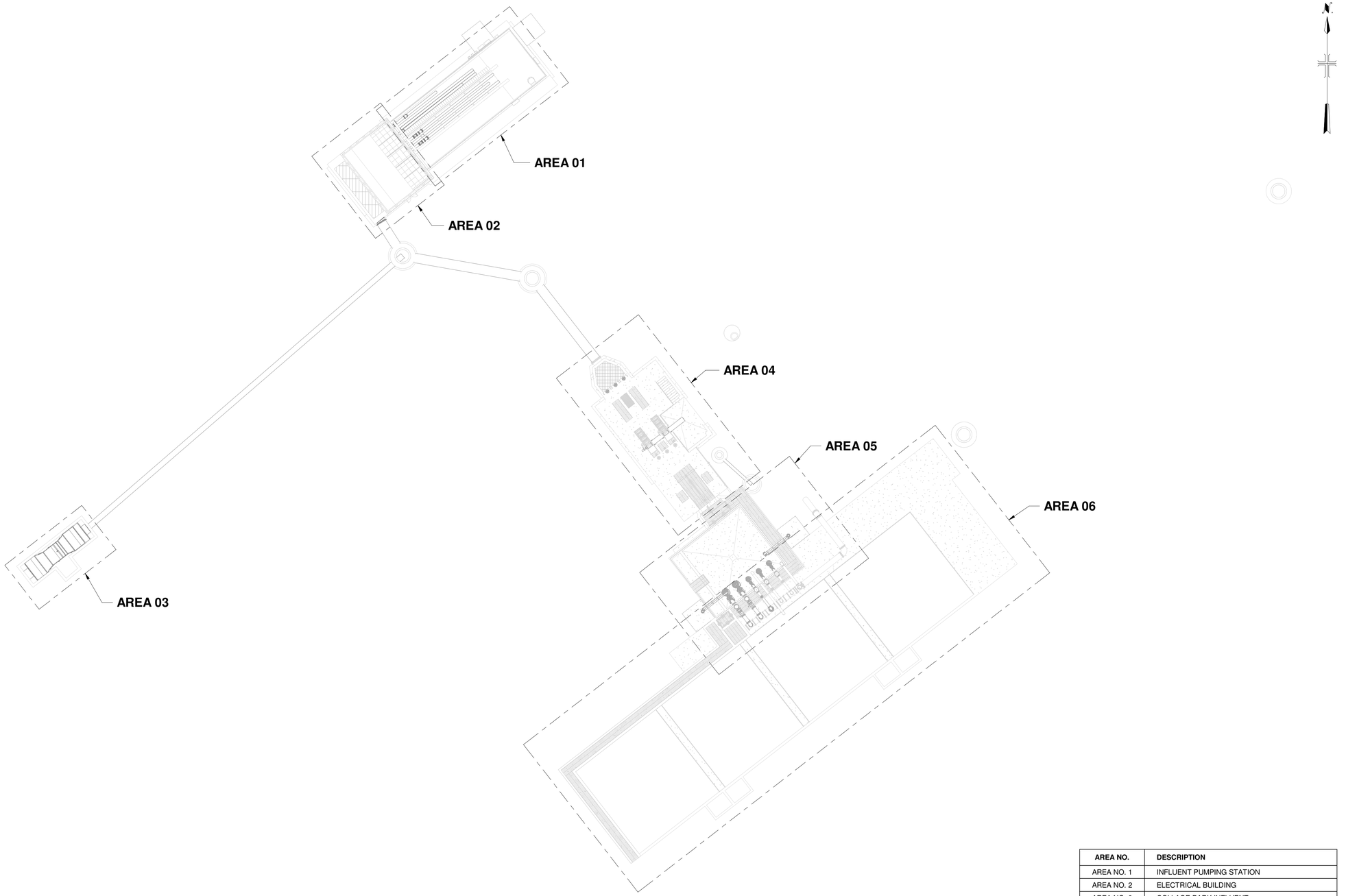
GENERAL

HYDRAULIC PROFILE

SCALE: N.T.S

G0-04

SHEET ____ OF 100



KEY PLAN

SCALE: 1" = 20'-0" 0 10' 20' 40'

AREA NO.	DESCRIPTION
AREA NO. 1	INFLUENT PUMPING STATION
AREA NO. 2	ELECTRICAL BUILDING
AREA NO. 3	COLLAGE PARK INFLUENT
AREA NO. 4	SCREEN BUILDING
AREA NO. 5	EFFLUENT PUMPING STATION
AREA NO. 6	PRIMARY CLARIFIERS

ARCADIS BPA Brindley Peters & Associates, Inc.
A JOINT VENTURE
LEGAL ENTITY: ARCADIS U.S., INC.
2839 PACES FERRY ROAD
SUITE 900 ATLANTA, GA 30339
PHONE : 770.431.8666
WWW.ARCADIS.COM

SEALS

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CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

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SHEET TITLE

GENERAL

AREA KEY PLAN

SCALE: As indicated

G0-05

SHEET ____ OF 100

BIM 360://AUS-30049010-Flint River Pump Station Upgrade/M-3D-PS2_R21.rvt
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PROJECT INFORMATION

PROJECT:
CITY OF ATLANTA -
FLINT RIVER PUMP
STATION UPGRADES

SITE LOCATION:
860 LAKE MIRROR ROAD ,
LAND LOT 042
PARCEL ID 13041 055001
13TH DISTRICT
CLAYTON COUNTY, GEORGIA

CONSTRUCTION DATES:

CONTACT INFORMATION

OWNER INFORMATION:
CITY OF ATLANTA -
DEPT. OF ENTERPRISE AND
ASSET MANAGEMENT (DEAM)
55 TRINITY AVE, SW
ATLANTA, GA 30303
TEL: (404)330-6089

CIVIL ENGINEER:
BRINDLEY PIETERS & ASSOCIATES
1104 INTERNATIONAL TOWERS
229 PEACHTREE ST NE,
ATLANTA, GA 30303
CONTACT: IRA BATTLE, P.E.
TEL: (404)224-9260
ibattle@bpa-engineers.com

24-HOUR CONTACT:
CITY OF ATLANTA
55 TRINITY AVE, SW
ATLANTA, GA 30303
CONTACT: TBD
TEL: TBD
EMAIL: TBD

SURVEYOR INFORMATION

SURVEYOR:
SEI ENGINEERING, INC.
2470 SANDY PLAINS ROAD
MARIETTA, GA 30066
CONTACT: GREG KAREL, RLS
TEL: (678) 777-8537

SURVEY DATES:
SITE SURVEY DATE =
11/2020

SURVEY NOTES:
THE UTILITY INFORMATION SHOWN HAS BEEN LOCATED FROM FIELD INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR HAS NOT PHYSICALLY LOCATED ALL UNDERGROUND UTLIITIES.

DEMOLITION

1. THE CONTRACTOR SHALL NOTIFY THE OWNER AND INSPECTOR(S) 24-HOURS PRIOR TO ANY DEMOLITION.
2. ALL DEBRIS RESULTING FROM DEMOLITION SHALL BE REMOVED AND DISPOSED OF LEGALLY BY THE CONTRACTOR.
3. DEMOLITION INCLUDES THE REMOVAL OF ALL SURFACE VEGETATION, ORGANIC-LADEN SOILS, TOPSOIL, ASPHALT AND ANY OTHER DELETERIOUS MATERIALS WITHIN CONSTRUCTION AREA AS REQUIRED TO PREPARE SUBGRADE.
4. ALL DEMOLISHED MATERIALS BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE NOTED TO BE REMOVED, REUSED, AND/OR PRESERVED, IN WHICH CASE THE MATERIALS WILL BE PROTECTED AND PROMPTLY HANDED OVER TO THE OWNER.
5. ALL TRENCHING AND EXCAVATION RESULTING FROM DEMOLITION SHALL BE BACKFILLED BY CONTRACTOR.

TRAFFIC

1. CONTRACTOR MUST CALL CITY OF ATLANA TRAFFIC ENGINEERING FOR SIGNAL LOCATIONS BEFORE ANY CONSTRUCTION BEGINS.
2. SIGNING, STRIPING, MARKING AND ALL HIGH-LEVEL WARNING DEVICES SHALL BE PLACED PRIOR TO THE COMMENCEMENT OF ALL WORK IMPACTING ANY ROADWAY ON CITY/STATE ROADS AND SHALL REMAIN IN PLACE UNIL THE CONCLUSION OF WORK.
3. ALL WARNING DEVICES SHALL BE EITHER TYPE I BARRICADES OR DRUMS WITH WARNING LIGHTS ON EVERY OTHER DEVICE, AND SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS FOR COLOR, SIZE, REFLECTIVITY, HEIGHT, AND PLACEMENT.
4. SPACING OF WARNING DEVICES IN FEET SHALL BE EQUAL TO THE POSTED SPEED OF THE ROAD ON MPH. (I.E. 35 SPACING FOR 35 MPH SPEED LIMIT.)
5. CONTACT THE CITY OF ATLANTA TRAFFIC ENGINEER ONE WEEK PRIOR TO COMMENCEMENT OF ANY WORK WITHIN THE ROW.
6. SEE SHEET C 8.0 & C 8.1 FOR STANDARD TRAFFIC CONTROL DETAILS.

PAVEMENT

1. ALL MATERIALS, EQUIPMENT, METHODS OF CONSTRUCTION AND WORKMANSHIP SHALL CONFORM TO THE DEPARTMENT OF TRANSPORTATION, STATE OF GEORGIA, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES, CURRENT EDITION, UNLESS OTHERWISE NOTED.
2. SEE PAVEMENT DETAILS WITHIN CONSTRUCTION DOCUMENTS FOR SPECIFIC DESIGN INFORMATION AND REQUIREMENTS.
3. ALL RECONSTRUCTION OF PAVEMENT, DRIVEWAYS, OR ROADWAYS SHALL BE REPLACED IN KIND. DRIVEWAY RELOCATIONS ARE SHOWN FROM THE BEST AVAILABLE DATA. THE CONTRACTOR SHALL CONSTRUCT NEW DRIVEWAYS TO MATCH THE ACTUAL FIELD LOCATION OF EXISTING DRIVEWAYS OR AS LOCATED IN THE PLANS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO MAKING ANY REVISIONS TO LOCATION, WIDTH, AND/OR NUMBER OF DRIVES TO BE CONSTRUCTED. REQUIRED DRIVEWAY EASEMENTS NOT SHOWN ON THE PLANS SHALL BE ACQUIRED.

PAVING AND STRIPING

1. SIGNAGE AND STRIPING TO BE INSTALLED BY THE CONTRACTOR ACCORDING TO THE DRAWINGS AND SPECIFICATIONS.
2. ALL SIGNAGE AND STRIPING WITHIN ROW WILL ADHERE TO MUTCD STANDARDS.

PRIOR TO CONSTRUCTION

1. BEFORE STARTING CONSTRUCTION THE NAME AND TELEPHONE NUMBER OF A PERSON WHO IS AVAILABLE 24-HOURS A DAY TO CONTACT IN CASE OF AN EMERGENCY SHALL BE PROVIDED TO THE ENGINEER.
2. THE CONTRACTOR SHALL VERIFY ALL PROPOSED AND EXISTING CONDITIONS, INCLUDING UTILITIES (INVERTS, CONNECTIONS, MATERIALS, ETC.) PRIOR TO STARTING CONSTRUCTION.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL NOTIFICATIONS AND LIASONS WITH UTILITY COMPANIES DURING THE PROCESS OF LOCATING, RELOCATING, AND TYING INTO PUBLIC UTILITIES.
4. PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITIES, THE LIMITS OF CONSTRUCTION/LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITIES SHALL OCCUR WITHIN THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS.
5. ALL RELATIVE PERMITS SHALL BE ACQUIRED BY THE CONTRACTOR (INCLUDING LAND DISTURBANCE, MAINTENANCE OF TRAFFIC, EROSION AND SEDIMENT CONTROL, DRIVEWAY CONNECTION, RADIUS ENCROACHMENT, ETC.)
6. PRIOR TO STARTING CONSTRUCTION, CALL THE UTILITIES PROTECTION CENTER (GEORGIA 811).

DURING CONSTRUCTION

1. ANY DEVIATIONS FROM THE APPROVED/PERMITTED PLANS AND/OR SPECIFICATIONS WITHOUT EXPRESS WRITTEN CONSENT AND DOCUMENTATION FROM THE ENGINEER AND/OR OWNER(S) OR THEIR REPRESENTATIVE MAY DEEM CONSTRUCTION MATERIALS UNACCEPTABLE.
2. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
3. ALL APPLICABLE CONSTRUCTION ITEMS WILL MEET ALL STANDARDS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT (ADA).
4. A FIRE DEPARTMENT ACCESSIBLE ROUTE THROUGH CONSTRUCTION GROUNDS SHALL BE MAINTAINED AT ALL TIMES.
5. CONTRACTOR SHALL SHORE AND BRACE ALL EARTH, FORMS, CONCRETE, STEEL, WOOD, AND MASONRY TO RESIST GRAVITY, EARTH, WIND, THERMAL, CONSTRUCTION, AND MISCELLANEOUS LOADS.
6. ON-SITE BURIAL OF DEBRIS IS PROHIBITED.
7. CONTRACTOR SHALL MAINTAIN CONTINUOUS UTILITY SERVICE TO ALL EXISTING BUILDINGS UNLESS APPROVAL FOR UTILITIES INTERRUPTION IS OBTAINED IN ADVANCE BY THE OWNER(S).
8. THE CONTRACTOR WILL BE RESPONSIBLE FOR FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, AND WATER REQUIRED FOR LEAKAGE TESTING AND PRESSURE TESTING; AND PERFORMING THE TESTING IN ACCORDANCE WITH THE SPECIFICATIONS.
9. ALL MATERIALS AND STANDARDS FOR CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE REGULATORY CODE REQUIREMENTS. IN CASE OF ANY DISCREPANCY BETWEEN THE REFERENCED CODES AND THESE DRAWINGS, THE MORE STRINGENT REQUIREMENTS WILL GOVERN.
10. ALL EXISTING PIPES, OR OTHER FACILITIES ON, ABOVE, OR BELOW GROUND IN THE CONSTRUCTION AREA SHALL BE CAREFULLY SUPPORTED AND PROTECTED FROM DAMAGE BY THE CONTRACTOR, UNLESS SPECIFIED FOR REMOVAL. IF DAMAGED, THE FACILITIES SHALL BE RESTORED TO EQUAL OR BETTER CONDITION IN A SATISFACTORY MANNER BY AND AT THE EXPENSE OF THE CONTRACTOR.
11. ANY SOIL OR OTHER RESIDUES TRACKED ON THE ROAD OR OUTSIDE OF THE CONSTRUCTION AREA SHALL BE REMOVED DAILY AND PRIOR TO SCHEDULED RAIN EVENTS.
12. THE CONTRACTOR SHALL MAINTAIN APPLICABLE EROSION CONTROL MEASURES AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION AND SEDIMENT CONTROL, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL EROSION CONTROL MEASURES AS OUTLINED IN THE BEST MANAGEMENT PRACTICES OF THE EROSIOIN AND SEDIMENT CONTROL MANUAL IN GEORGIA OR TREAT THE SEDIMENT SOURCE. COSTS FOR DUST, EROSION AND SEDIMENT CONTROL AND WATER SHALL BE INCLUDED IN THE APPROPRIATE BID ITEM.
13. IF CONSTRUCTION ENCROACHES THE ROW, THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN AND LOCAL VEHICULAR TRAFFIC AT ALL TIMES AND PROVIDE ALTERNATE ROUTING COMPLIANT WITH MUTCD AND GDOT GUIDELINES. THE CONTRACTOR SHALL PROVIDE SAFETY DEVICES AND FLAG MEN WHERE REQUIRED. THE CONTRACTOR MUST OBTAIN WRITTEN PERMISSION FROM CITY OF ATLANTA PRIOR TO CLOSING AREAS TO PEDESTRIAN AND LOCAL VEHICULAR TRAFFIC WITHIN THE ROW.
14. IN CASE OF UNFORSEEN CONSTRUCTION COMPLICATIONS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER, IN WRITING.
15. ALL TEMPORARY EXCAVATIONS SHOULD BE IN ACCORDANCE WITH O.S.H.A. REGULATIONS FOR OCCUPATIONAL SAFETY AND HEALTH STANDARDS-EXCAVATIONS (29 CFR PART 1926).
16. STATE AND LOCAL WATER RESTRICTIONS, IF APPLICABLE, SHALL BE OBSERVED DURING THE TIME OF CONSTRUCTION.
17. THE CONTRACTOR SHALL OBTAIN COPIES OF ALL REFERENCED PUBLICATIONS NOTED HEREIN.
18. PAYMENT FOR WORK PERFORMED BY THIRD PARTY UTILITY AGENCIES/OWNERS WILL BE PAID BY CONTRACTOR IN ACCORDANCE WITH SPECIFICATION OF THIS PROJECT.
19. ALL MATERIALS AND LABOR SHALL BE PROVIDED BY THE CONTRACTOR, OR HIS/HER SUBCONTRACTOR, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.
20. THE CONTRACTOR WILL BE RESPONSIBLE FOR STAKING AND GRADE CONTROL OF ALL ELEMENTS OF THE CONSTRUCTION.
21. CUT AND FILL SLOPES SHALL NOT EXCEED 2:1.
22. UNLESS OTHERWISE NOTED IN THE PLANS, SPECIFICATIONS OR GEOTECHNICAL REPORT, ALL FILL AREAS MUST BE COMPACTED TO MINIMUM 95% PROCTOR DENSITY.
23. ALL REQUIRED TESTING REPORTS SHALL BE AVAILABLE ON-SITE AT ALL TIMES.
24. REQUIRED PRODUCT DATA AND SHOP DRAWING SUBMITTALS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW IN A TIMELY MANNER. ADEQUATE TIME SHALL BE INCLUDED IN THE CONTRACTOR'S SCHEDULE TO ACCOMODATE FABRICATION OR PROCUREMENT LEAD TIMES AND FOR THE VENDOR TO REVISE AND/OR RESUBMIT INFORMATION AS REQUIRED BY THE ENGINEER.
25. THE CONTRACTOR SHALL MAINTAIN A MARKED-UP SET OF DESIGN DOCUMENTS SHOWING ALL "AS-BUILT" CONDITIONS. THESE "AS-BUILT DRAWINGS" SHALL BE MADE AVAILABLE TO THE OWNER AND/OR ENGINEER UPON REQUEST. CURRENT MARK-UPS SHALL BE ON SITE AT ALL TIMES. ASSOCIATED COSTS SHALL BE INCLUDED UNDER THE APPROPRIATE BID ITEM.

EROSION CONTROL

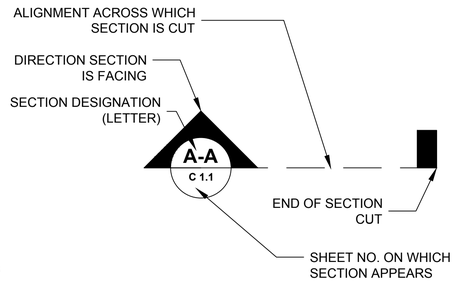
1. SILT FENCE (SD1-B) PLACEMENT MUST BE MAINTAINED DOWNSTREAM OF CONSTRUCTION DEBRIS. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED AT ALL TIMES. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED, IF DETERMINED NECESSARY BY THE INSPECTING ENGINEER. THE CONTRACTOR MUST STOP ALL WORK AND RESTORE SITE AREAS TO COMPLIANCY IMMEDIATELY UPON NOTIFICATION BY THE CITY OF ATLANTA INSPECTOR AND/OR THE PROFESSIONAL ENGINEER.
2. THE DISTURBANCE AREA OF THIS SITE IS LESS THAN 1 AC AND IS NOT PART OF A COMMON PLAN OF DEVELOPMENT, THEREFORE NO ESPC PLAN IS REQUIRED FOR PERMITTING BY NPDES PRIOR TO CONSTRUCTION. HOWEVER, IF IT IS DETERMINED BY THE CITY OF ATLANTA AND/OR THE INSPECTING ENGINEER THAT ONE BE PROVIDED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP AND PROVIDE A PLAN COMPLIANT WITH THE EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES OUTLINED IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL FOR THE STATE OF GEORGIA.
3. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES.
4. EXCAVATED MATERIALS MUST BE REMOVED FROM THE SITE DAILY.
5. NO STOCKPILING OF EXCAVATED MATERIAL OR BACKFILL ON ANY PAVED SURFACE.
6. ANY STOCKPILED MATERIAL MUST BE APPROPRIATELY PROTECTED FROM EROSION.
7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AFTER EACH RAIN, AND REPAIRED AS NECESSARY.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION CONTROL ACTIVITIES INCLUDING INSTALLATION, MAINTENANCE, ADDITIONS, AND REMOVAL.
9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN QUALIFIED PROFESSIONAL ADVICE WHEN/IF QUESTIONS ARISE CONCERNING DESIGN AND EFFECTIVENESS OF EROSION CONTROL DEVICES.
10. WHERE ATTAINABLE, LOCATE WASTE COLLECTION AREAS, DUMPSTERS, TRASH CANS AND PORTABLE TOILETS AT LEAST 50 FEET AWAY FROM STREETS, GUTTERS, WATERCOURSES AND STORM DRAINS. SECONDARY CONTAINMENT SHALL BE PROVIDED AROUND LIQUID WASTE COLLECTION AREAS TO MINIMIZE THE LIKELIHOOD OF CONTAMINATED DISCHARGES. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE STORAGE AND DISPOSAL REGULATIONS AND OBTAIN ALL NECESSARY PERMITS. SOLID MATERIALS, INCLUDING BUILDING MATERIAL, SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, UNLESS AUTHORIZED BY A SECTION 404 PERMIT.

GEORGIA811 Utilities Protection Center, Inc.
Know what's below. Call before you dig.

ABBREVIATIONS

DIP	DUCTILE IRON PIPE
RCP	REINFORCED CONCRETE PIPE
HDPE	HIGH-DENSITY POLYETHYLENE
SY	SQUARE YARDS
CUYD	CUBIC YARDS
LF	LINEAR FEET
TYP.	TYPICAL
EXIST.	EXISTING
PROP.	PROPOSED
N.T.S.	NOT TO SCALE

SYMBOLS



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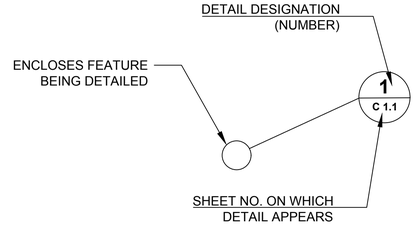

SYMBOL FOR DETAIL

ARCADIS BPA Brindley Pieters & Associates, Inc.
A JOINT VENTURE
LEGAL ENTITY: ARCADIS U.S., INC.
2839 PACES FERRY ROAD
SUITE 900 ATLANTA, GA 30339
PHONE : 770.431.8666
WWW.ARCADIS.COM

CONSULTANTS

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DRAWN BY:
CHECKED BY:

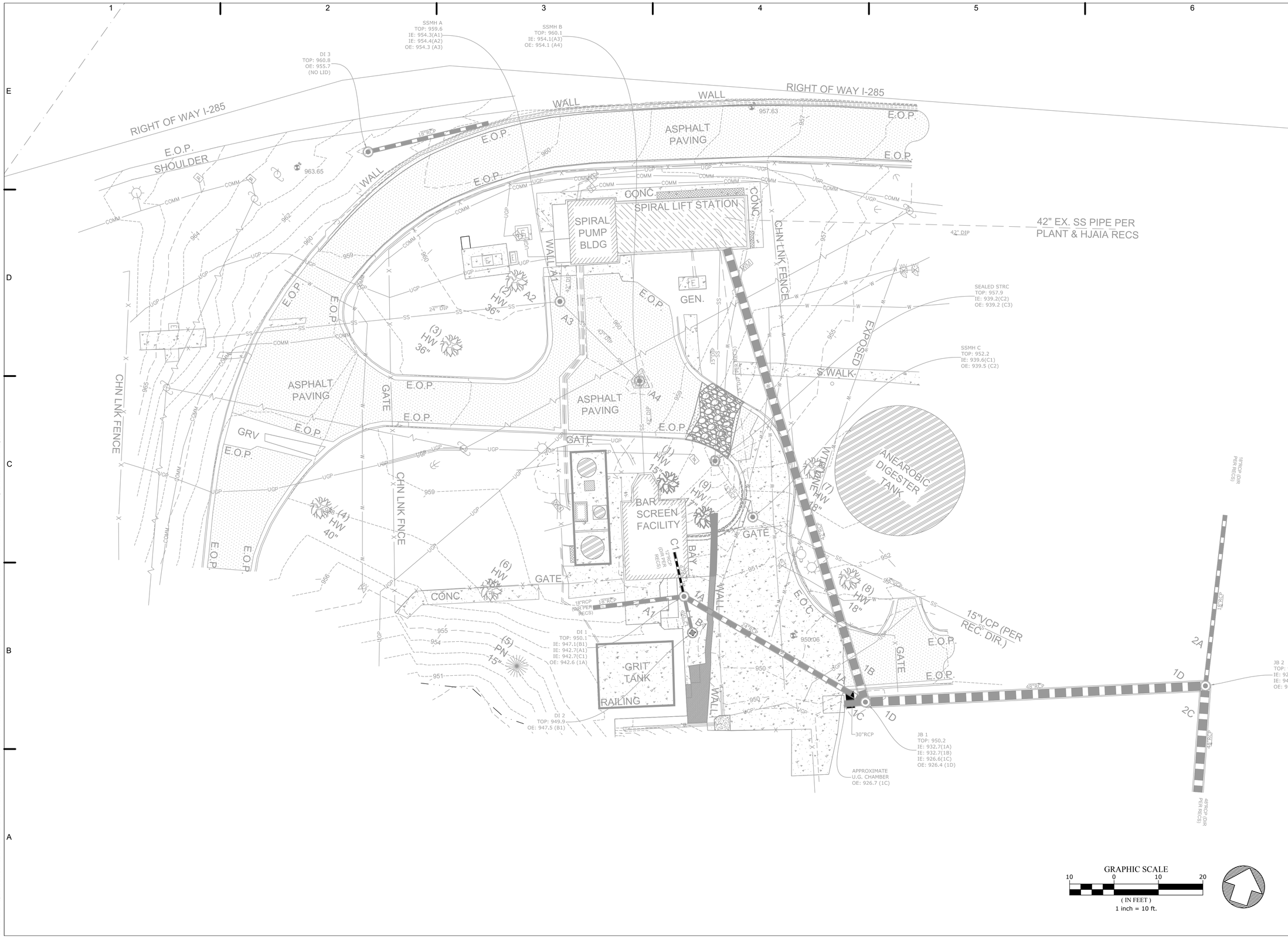
SHEET TITLE

CIVIL NOTES

SCALE:

C0-01

SHEET ____ OF 100



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SHEET TITLE

EXISTING CONDITIONS PLAN

SCALE:

C0-02

SHEET ____ OF 100

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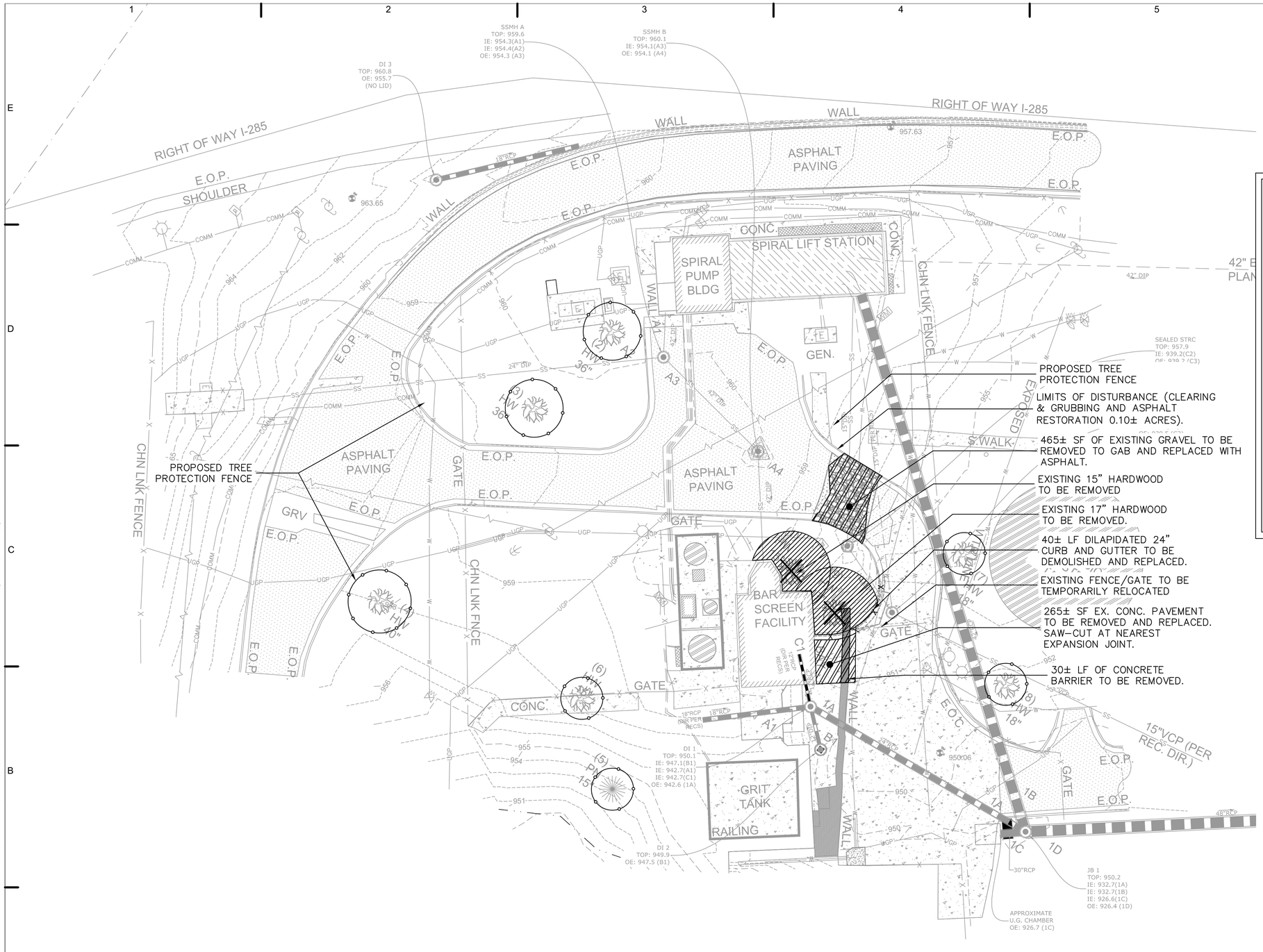

LEGEND

- ABANDON EXIST. CULVERT
- REMOVE EXIST. CULVERT
- REMOVE EXIST. WATER MAIN
- REMOVE EXIST FENCE OR CURB
- EXISTING ASPHALT TO BE MILLED AND RESURFACED
- EXISTING ASPHALT TO BE FULL DEPTH REMOVED
- CRITICAL ROOT ZONE DISTURBANCE
- CRZ — CRITICAL ROOT ZONE
- SRP — STRUCTURAL ROOT PLATE
- EXISTING TREES TO BE DEMOLISHED
- TREE PROTECTION FENCE

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 inch = 10 ft.

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DEMOLITION PLAN

SCALE:

C0-03

SHEET ____ OF 100

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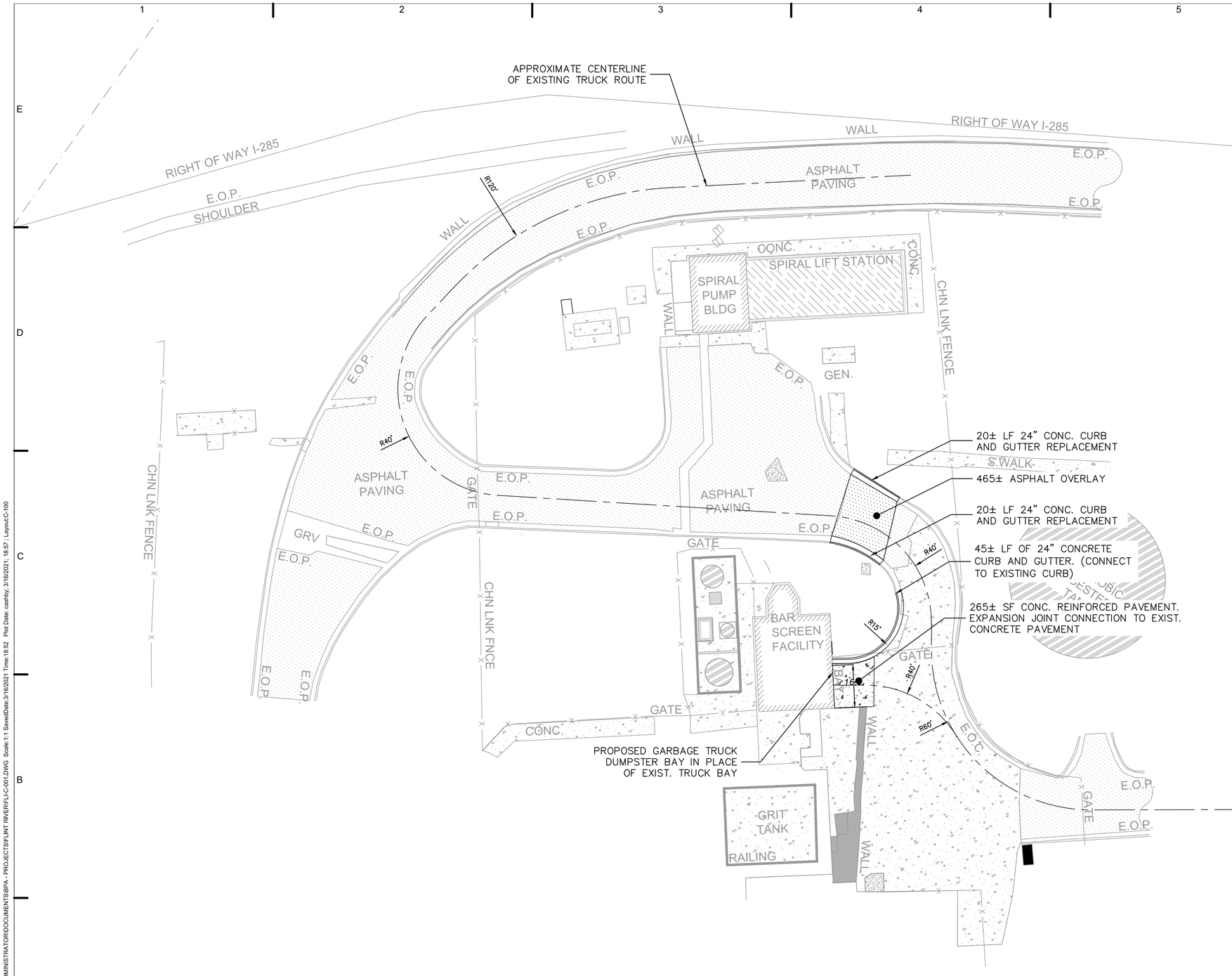

LEGEND

PROPOSED MILLED AND RESURFACED ASPHALT

PROPOSED CONC. ASPHALT REPLACEMENT

GRAPHIC SCALE
20 0 20 40
(IN FEET)
1 inch = 20 ft.

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DRAWN BY:
CHECKED BY:

SHEET TITLE

PROPOSED SITE PLAN

SCALE:

C0-04
SHEET ____ OF 100

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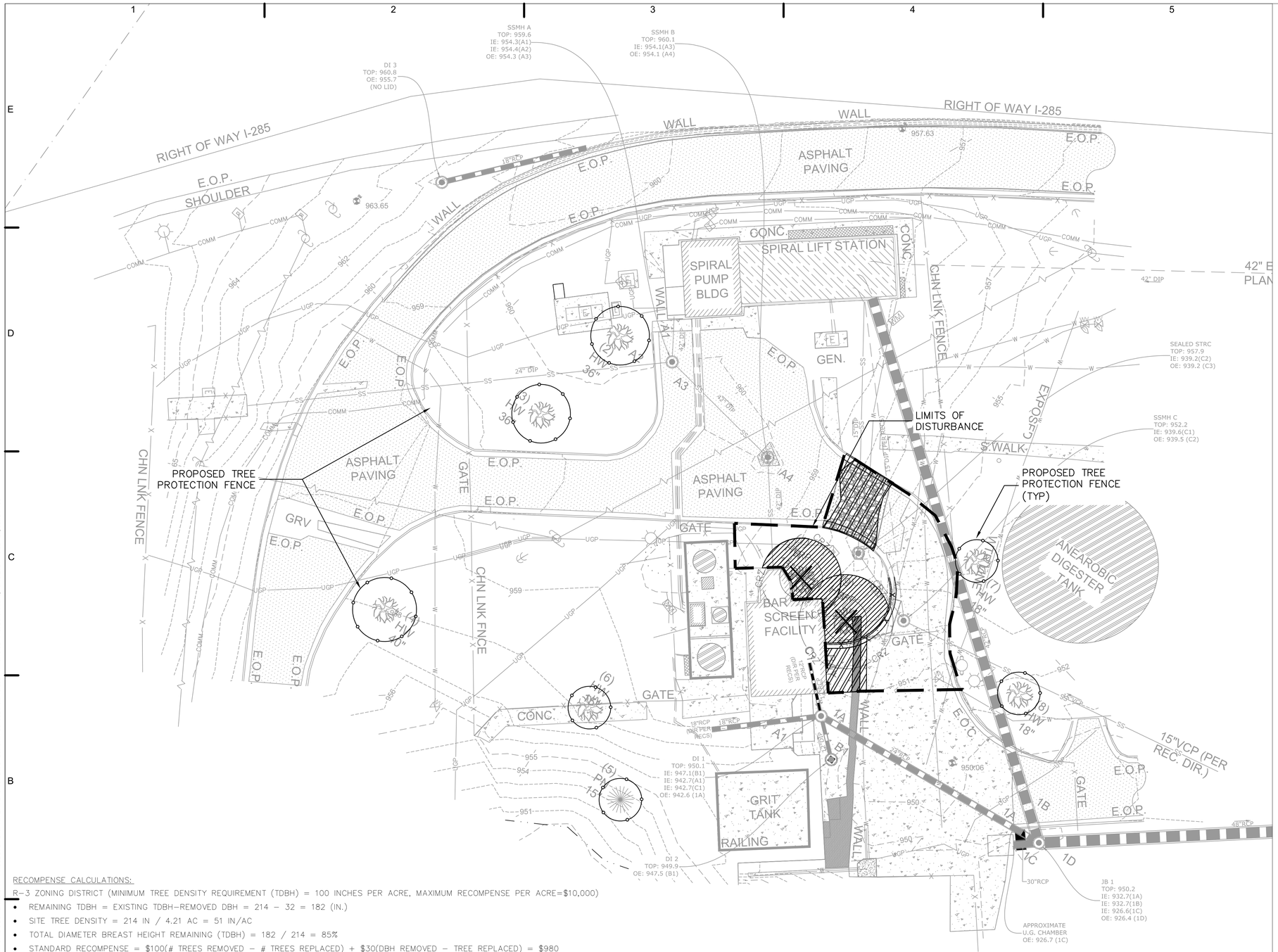

RECOMPENSE CALCULATIONS:

R–3 ZONING DISTRICT (MINIMUM TREE DENSITY REQUIREMENT (TDBH) = 100 INCHES PER ACRE, MAXIMUM RECOMPENSE PER ACRE=$10,000)

- REMAINING TDBH = EXISTING TDBH–REMOVED DBH = 214 – 32 = 182 (IN.)
- SITE TREE DENSITY = 214 IN / 4.21 AC = 51 IN/AC
- TOTAL DIAMETER BREAST HEIGHT REMAINING (TDBH) = 182 / 214 = 85%
- STANDARD RECOMPENSE = $100(# TREES REMOVED – # TREES REPLACED) + $30(DBH REMOVED – TREE REPLACED) = $980

ON-SITE TREE IMPACTS

Tree on Site	Species	Diameter Breast Height, DBH (in)	CRZ Dia. (ft)	SRP Rad. (ft)	CRZ Area (sqft)	Disturbed Area CRZ (sqft)	Impacted CRZ (%)	SRP IMPACTED	Tree Status
(1)	Hardwood	15	30	8	707	707	100	YES	Removed
(2)	Hardwood	36	72	11	4071	0	0	NO	Saved
(3)	Hardwood	36	72	11	4071	0	0	NO	Saved
(4)	Hardwood	40	80	12	5026	0	0	NO	Saved
(5)	Pine	15	30	8	707	0	0	NO	Saved
(6)	Hardwood	15	30	8	707	0	0	NO	Saved
(7)	Hardwood	18	36	8	1018	0	0	NO	Saved
(8)	Hardwood	18	36	8	1018	0	0	NO	Saved
(9)	Hardwood	17	34	8	908	845	93	YES	Removed
TOTAL EXISTING DBH (in)		214							

LEGEND

- ABANDON EXIST. CULVERT
- REMOVE EXIST. CULVERT
- REMOVE EXIST. WATER MAIN
- REMOVE EXIST FENCE OR CURB
- EXISTING ASPHALT TO BE MILLED AND RESURFACED
- EXISTING ASPHALT TO BE FULL DEPTH REMOVED
- CRITICAL ROOT ZONE DISTURBANCE
- CRITICAL ROOT ZONE
- STRUCTURAL ROOT PLATE
- EXISTING TREES TO BE DEMOLISHED
- TREE PROTECTION FENCE

TREE PROTECTION NOTES

1. TREE PROTECTION FENCE SHALL BE STANDARD 4–FT TALL, ORANGE, MESH FENCE OR APPROVED EQUAL SUBJECT TO THE DISCRETION OF THE ARBORIST.
2. NO PROPOSED BUILDING. ONLY SITE IMPROVEMENTS PROPOSED UNDER THE SCOPE OF THIS CONTRACT.
3. EXISTING TREES FOUND ON SITE SURVEY. CONTOURS SHOWN AT 1–FT INTERVALS.
4. NO ADDITIONAL TREES ARE PROPOSED FOR THIS SITE.
5. ALL TREES IMPACTED OR DESTROYED MUST BE DONE SO IN A MANNER COMPLIANT WITH THE REGULATIONS OUTLINED IN THE CITY OF ATLANTA TREE ORDINANCE, DIVISION 3.
6. NON–TRENCHING EROSION CONTROL MEASURES WILL BE USED WHERE WORK IS DONE WITHIN CRZ/SRP TO PRESERVE THE IMPACTED TREES.
7. WORK WITHIN CRZ/SRP AREAS SHALL BE HAND LABOR/MACHINERY ONLY. NO HEAVY EQUIPMENT SHALL BE USED TO PERFORM WORK WITHIN THESE EXTENTS. THE CONTRACTOR SHALL TAKE CARE NOT TO COMPACT EXISTING SOILS NOR SEVER ROOTS OVER 2" IN DIAMETER.
8. THOUGH ALL TREES IN THE PROJECT AREA, ALONG WITH THEIR CRITICAL ROOT ZONES ARE SHOWN ONLY TREES WITH CRZs WHICH ENCROACH THE LIMITS OF DISTURBANCE ARE INCLUDED IN THE TABLE AND HAVE STRUCTURAL ROOT PLATES ARE SHOWN.

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 inch = 10 ft.

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CONSULTANTS

SEALS

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ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: FLI–C–001
DESIGNED BY:
DRAWN BY:
CHECKED BY:

SHEET TITLE

TREE REMOVAL/ PROTECTION PLAN

SCALE:

C0-09

SHEET ____ OF 100

User:CASHBY Spec:AUS-NCSMOD File:C:\USERS\ADMINISTRATOR\DOCUMENTS\BPA - PROJECTS\FLINT RIVER\FLI-C-001.DWG Scale:1:1 SavedDate:3/16/2021 Time:18:52 Plot Date: cashby, 3/16/2021, 18:52 - Layout:C1-100

PIPING SYMBOLS

- WELD NECK FLANGE
- FLANGED
- MECHANICAL JOINT
- GROOVED END
- WELDED
- CONCRETE BELL & SPIGOT
- CPVC/PVC/COPPER
- FASTITE (RESTRAINED JOINT)
- FORGED STEEL SOCKET/THREADED
- HDPE IPS (FLANGED)
- HDPE IPS
- CAST IRON HUBLESS
- FLANGED FLARE
- BLIND FLANGE
- EXPANSION JOINT
- FLEXIBLE COUPLING
- FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER
- DISMANTLING JOINT
- HARNESSED DISMANTLING JOINT

SCHEMATIC VALVE LEGEND

SYM	PLAN	ELEV	
			AIR RELEASE VALVE (AR)
			AIR/VACUUM VALVE (AV) COMBINATION AIR VALVE (CA)
			BALL VALVE (BA)
			BALL CHECK VALVE (BC)
			BUTTERFLY VALVE (BV)
			BUTTERFLY DAMPER (BD)
			CHECK VALVE (CH)
			TELESCOPING VALVE (TV)
			DIAPHRAGM VALVE (DV)
			SUCTION FOOT VALVE (FV)
			THREE-WAY PLUG VALVE (TW)
			FOUR-WAY VALVE (FW)
			GLOBE VALVE (GL)
			GATE VALVE (GV) CURB STOP (CS)
			KNIFE GATE VALVE (KV)
			MUD VALVE (MD)
			NEEDLE VALVE (NV)
			PINCH VALVE (PI)
			AUTOMATIC PRESSURE REDUCING VALVES (PR)
			AUTOMATIC PRESSURE SUSTAINING VALVES (PS)
			ECCENTRIC PLUG VALVE (PV)
			RELIEF VALVE (RV)
			SLUICE GATE (SL)
			SLIDE GATE (SG) SLIDE PLATE (SP)
			SOLENOID VALVE (SV) FO=FAIL OPEN FC=FAIL CLOSED

NOTES:

1. PIPELINES, VALVES AND EQUIPMENT SHALL BE FURNISHED, FABRICATED, ERECTED AND OTHERWISE INSTALLED TO LINES, ELEVATIONS LOCATIONS, AND DIMENSIONS AS SHOWN, SPECIFIED OR REQUIRED FOR A COMPLETE INSTALLATION. THE CONTRACTOR SHALL MEASURE ALL DIMENSIONS SHOWN PROPERLY AND SHALL TAKE SUCH FIELD DIMENSIONS AS MAY BE NECESSARY TO PROPERLY INSTALL ALL PIPELINES, VALVES AND EQUIPMENT.
2. ALL PIPELINES, VALVES AND EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND MANUFACTURER'S SPECIFICATIONS, IN A NEAT WORKMANLIKE MANNER, AND IN ACCORDANCE WITH APPROVED SHOP AND WORKING DRAWINGS.
3. ALL CONSTRUCTION MATERIALS REQUIRING STORAGE SHALL BE STORED IN STRICT CONFORMANCE WITH CONTRACT DOCUMENTS, MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS AND INSTRUCTIONS.
4. ALL PIPING 4 IN DIAMETER AND SMALLER IS SHOWN SCHEMATICALLY; CONTRACTOR SHALL PROVIDE ALL PIPE, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION.
5. CONTRACTOR SHALL DESIGN ALL PIPE HANGERS AND SUPPORTS. SEE SECTION 40 05 07.
6. SEE INSTRUMENTATION DRAWINGS FOR ALL EQUIPMENT TAG NUMBERS.

VALVE SYMBOLS

- DIAPHRAGM VALVE
- PLUG VALVE
- 3-WAY VALVE
- CHECK VALVE
- BACKFLOW PREVENTER
- DRAIN
- FEMALE QUICK COUPLING CONNECTION
- ELECTRIC MOTOR ACTUATOR (M)
- SOLENOID ACTUATOR (S)
- HYDRAULIC CYLINDER ACTUATOR (H)
- PNEUMATIC CYLINDER ACTUATOR (P)
- HANDWHEEL OPERATOR
- PRESSURE RELIEF VALVE
- PRESSURE / VACUUM RELIEF VALVE (P/V)
- AIR RELEASE VALVE (ARV)
- ANGLE GLOBE VALVE
- ANTI-SYPHON VALVE
- BACK PRESSURE VALVE
- PRESSURE REDUCING VALVE
- GATE VALVE
- GLOBE VALVE
- NEEDLE VALVE
- BALL VALVE
- BUTTERFLY VALVE OR DAMPER
- CONE VALVE

PIPING SYMBOLS

- EXISTING PIPING, EQUIPMENT & STRUCTURES
- NEW PIPING, EQUIPMENT & STRUCTURES
- FLEXIBLE CONNECTION
- REDUCER
- BLIND FLANGE
- CAP OR PLUG
- UNION
- FLANGE
- BELL & SPIGOT
- MECHANICAL JOINT
- WELDED
- FLEXIBLE COUPLING
- HARNESSED FLEXIBLE COUPLING
- FLANGE COUPLING ADAPTER
- HARNESSED FLANGE COUPLING ADAPTER
- EXPANSION JOINT
- HARNESSED EXPANSION JOINT
- BLIND FLANGE

ABBREVIATIONS

PIPE SERVICE

AB	AIR BURST
CA	COMPRESSED AIR
DR	DRAIN
HO	HYDRAULIC OIL
LS	LEVEL SENSOR
OF	OVERFLOW
QD	QUARRY DRAIN
QF	QUARRY FILL
QR	QUARRY RECIRCULATION
RW	RAW WATER
SAM	SAMPLE
SAN	SANITARY
SP	SODIUM PERMANGANATE
SW	SERVICE WATER
W	POTABLE WATER
VT	VENT

VALVE TYPES

AECV	AUTOMATIC ELECTRONIC CONTROL VALVES
ARV	AIR RELEASE VALVE
AVV	AIR VACUUM VALVE
BFV	BUTTERFLY VALVE
CV	CHECK VALVE
GV	GATE VALVE
GBV	GLOVE VALVE
KGV	KNIFE GATE VALVE
SG	SLUICE GATE
SV	SLEEVE VALVE
PRV	PRESSURE REDUCING VALVE VALVE
PSV	PRESSURE SUSTAINING VALVE

PIPE MATERIALS

BS	BLACK STEEL
CU	COPPER
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
DI	DUCTILE IRON
PVC	POLYVINYL CHLORIDE
RPVC	REINFORCED PVC FLEXIBLE HOSE
SS	STAINLESS STEEL
ST	STEEL

EXAMPLE: NEW PIPE LABEL

36" - RW - DI

36" = DIAMETER (INCHES); RW = PIPE SERVICE; DI = PIPE MATERIAL

EXAMPLE: VALVE LABEL

16" - BFV

16" = DIAMETER (INCHES); BFV = VALVE TYPE

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FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M0-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

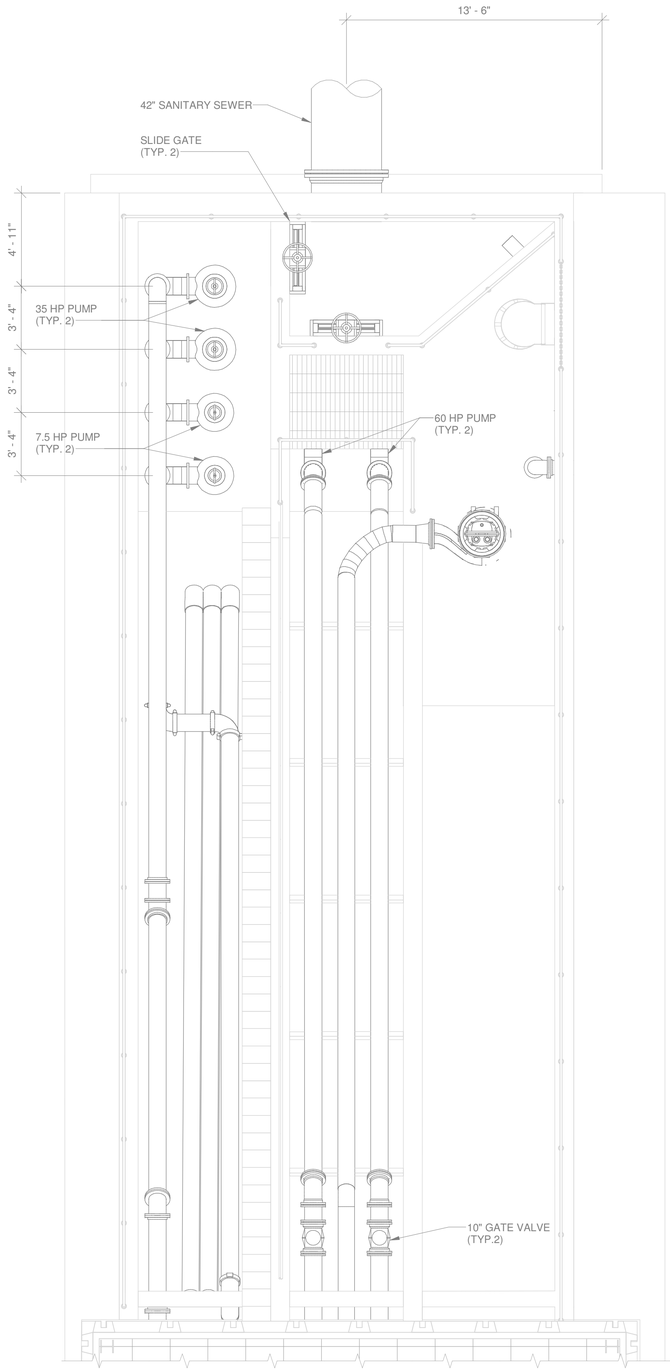
GENERAL

LEGENDS, SYMBOLS, AND ABBREVIATIONS

SCALE: N.T.S

M0-01

SHEET ____ OF 100



INFLUENT PUMP STATION - EXISTING CONDITIONS

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M1-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

INFULENT PUMP STATION - EXISTING CONDITIONS

SCALE: 1/4" = 1'-0"

M1-01

SHEET ____ OF 100

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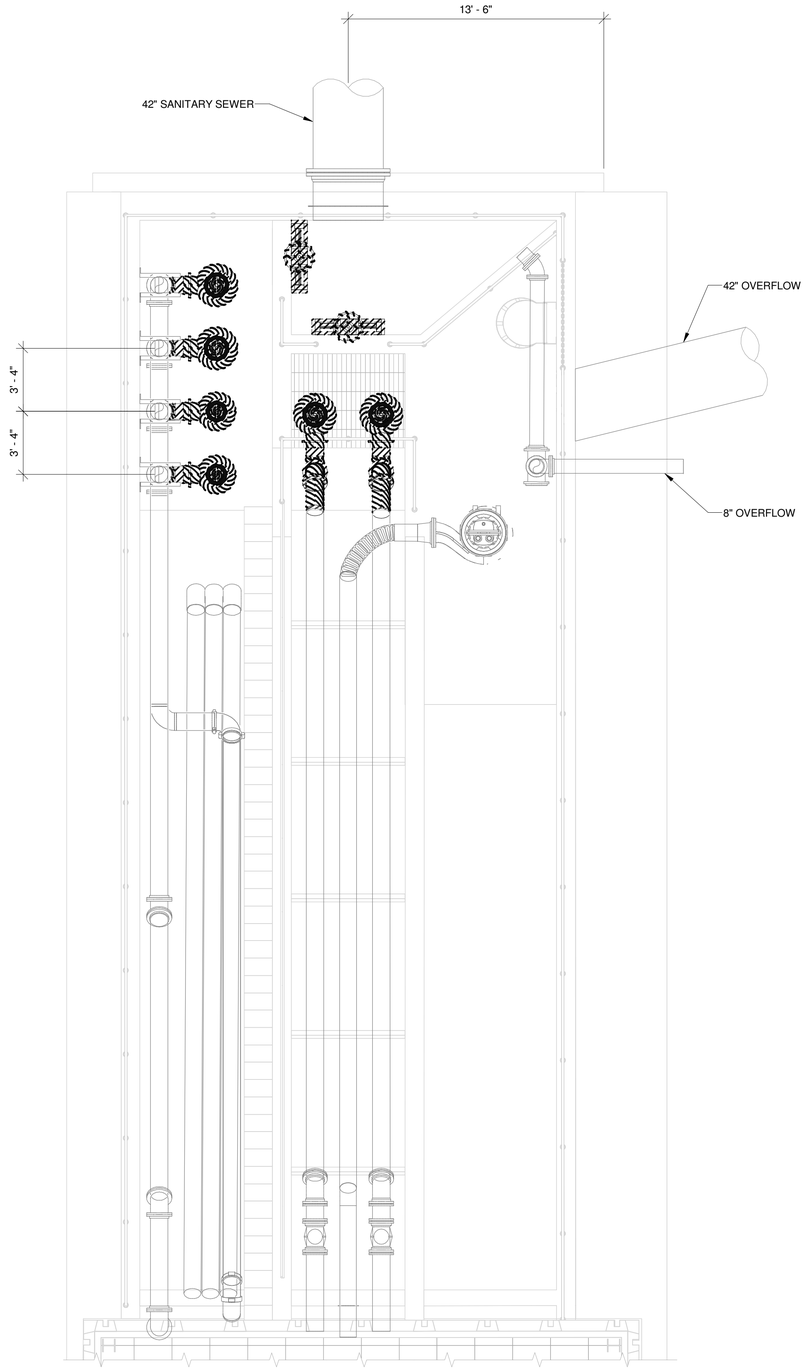

INFLUENT PUMP STATION - DEMOLITION

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M1-02
DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker

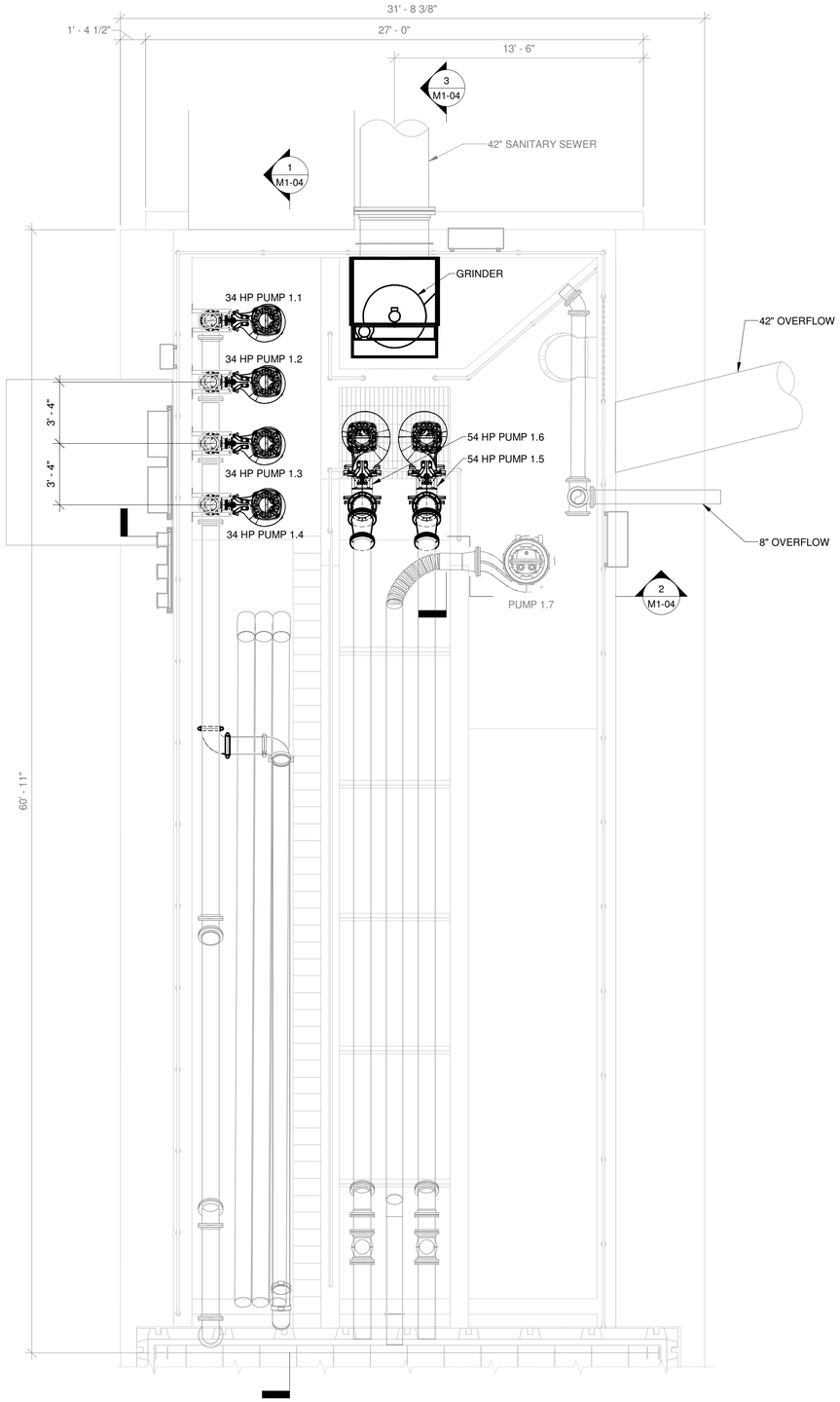
SHEET TITLE

INFLUENT PUMP STATION - DEMOLITION

SCALE: 1/4" = 1'-0"

M1-02

SHEET ____ OF 100



INFLUENT PUMP STATION - PROPOSED PLAN

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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FLINT RIVER PUMP STATION IMPROVEMENTS

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ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M1-03
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

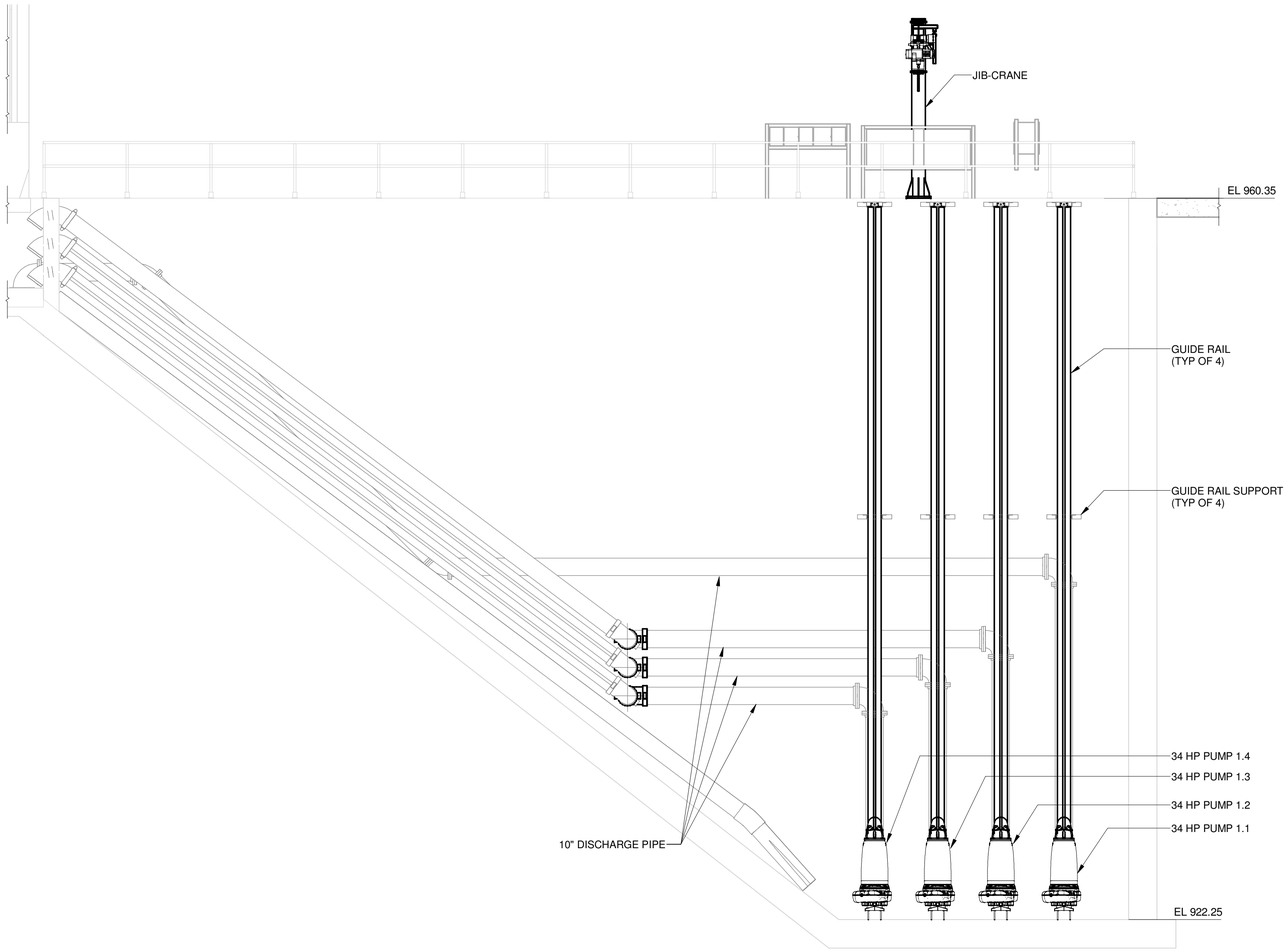
MECHANICAL

INFLUENT PUMP STATION - PROPOSED PLAN

SCALE: 1/4" = 1'-0"

M1-03

SHEET ____ OF 100



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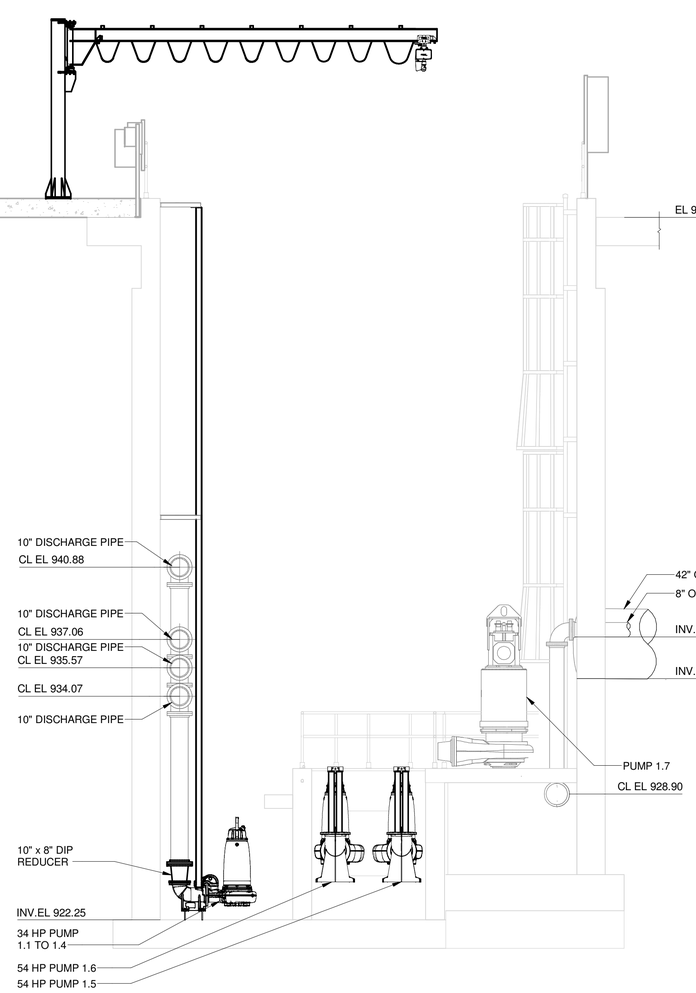
SCALE: 1/4" = 1'-0"



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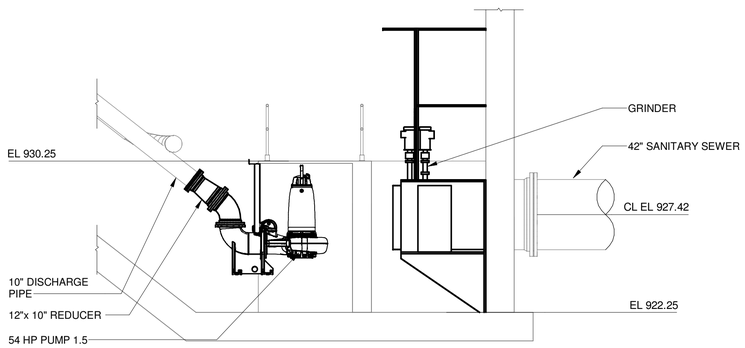

3 M1-03 SECTION
SCALE: 1/4" = 1'-0"

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600 LAKE MIRROR
ROAD, ATLANTA, GA
30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY

DATE:	MARCH 2021
PROJECT NO.:	30049010
FILE NAME:	M1-04
DESIGNED BY:	Designer
DRAWN BY:	Author
CHECKED BY:	Checker

SHEET TITLE

Mechanical

INFLUENT PUMP STATION - PROPOSED SECTIONS

SCALE: 1/4" = 1'-0"

M1-04

SHEET ____ OF 100

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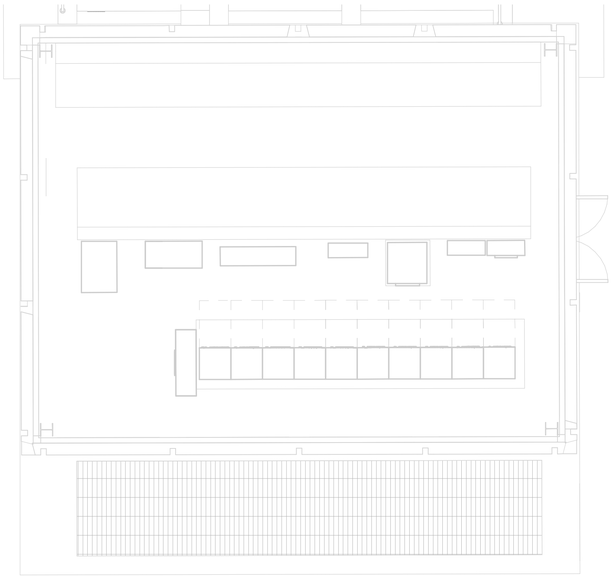

FLOOR PLAN ELECTRICAL BUILDING

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M2-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

Mechanical

ELECTRICAL BUILDING.- EXISTING CONDITIONS

SCALE: 1/4"=1'-0"

M2-01

SHEET ____ OF 100

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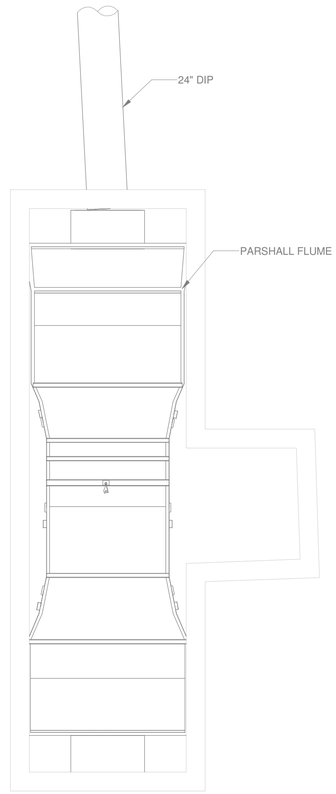

COLLEGE PARK INFLUENT - EXISTING CONDITION

SCALE: 1/4" = 1'-0"

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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M3-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

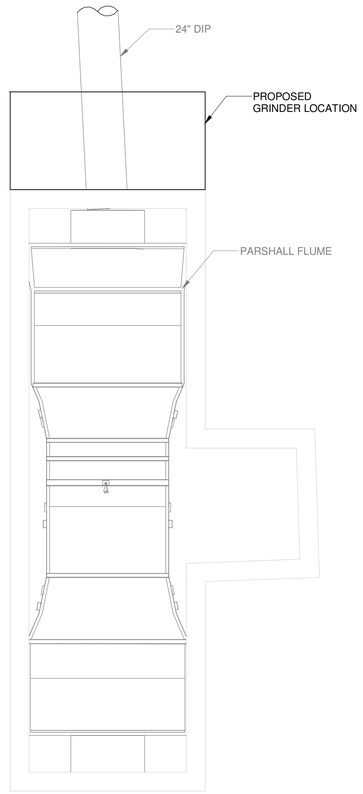
MECHANICAL

COLLEGE PARK INFLUENT - EXISTING CONDITION

SCALE: 1/4" = 1'-0"

M3-01

SHEET ____ OF 100



COLLEGE PARK INFLUENT - PROPOSED CONDITION

SCALE: 1/4" = 1'-0"

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FILE NAME: M3-02
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

COLLEGE PARK
INFLUENT - PROPOSED
CONDITION

SCALE: 1/4" = 1'-0"

M3-03

SHEET _____ OF 100

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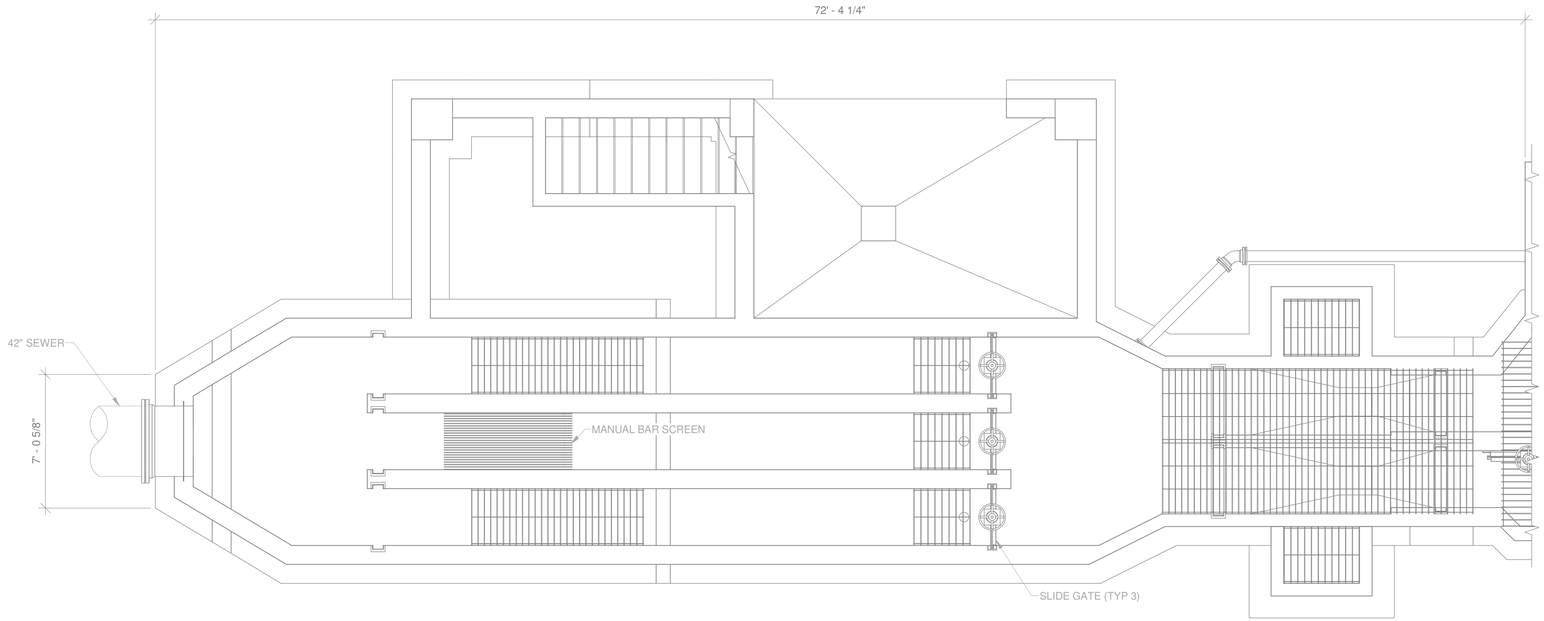

SCREENING BUILDING - EXISTING CONDITION

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M4-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

SCREENING BUILDING - EXISTING CONDITION

SCALE: 1/4" = 1'-0"

M4-01

SHEET ____ OF 100

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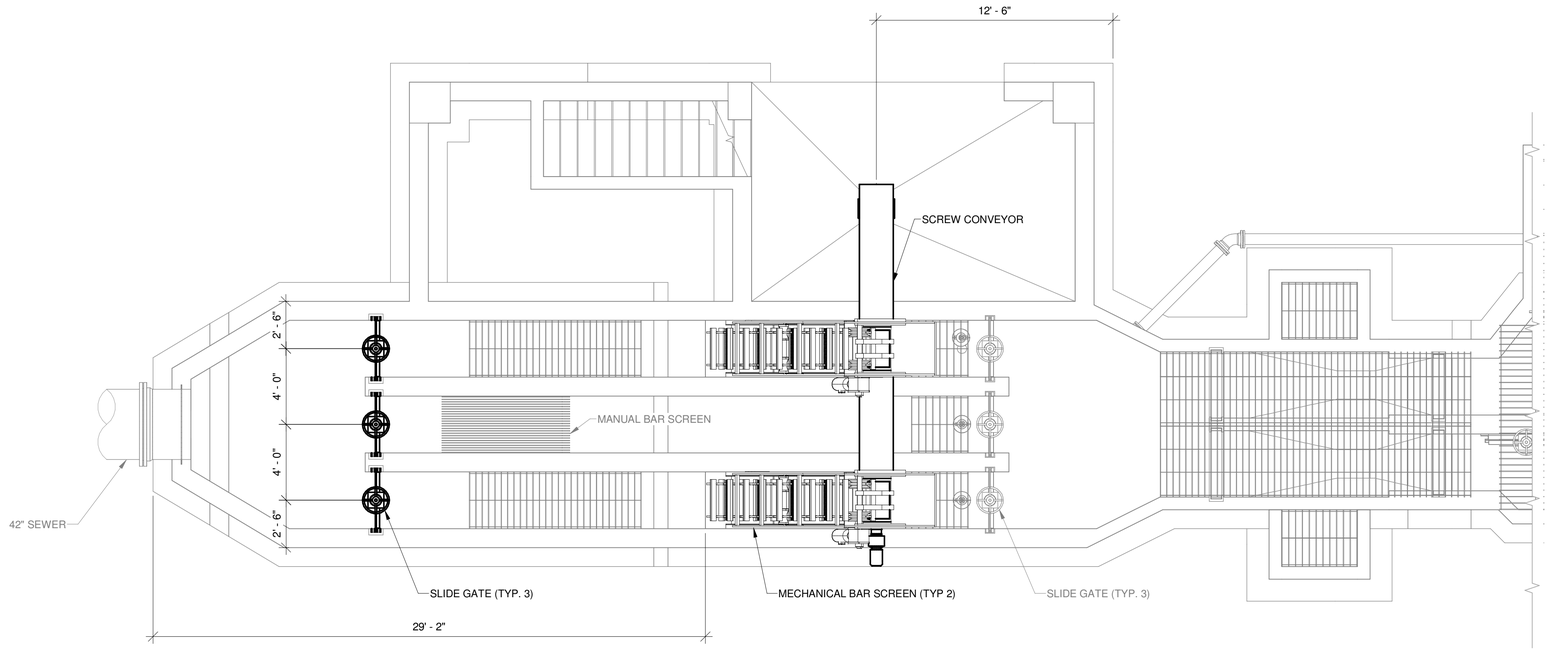

SCREENING BUILDING - PROPOSED CONDITION

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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A JOINT VENTURE

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FILE NAME: M4-03
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

SCREENING BUILDING - PROPOSED CONDITION

SCALE: 1/4" = 1'-0"

M4-03

SHEET ____ OF 100

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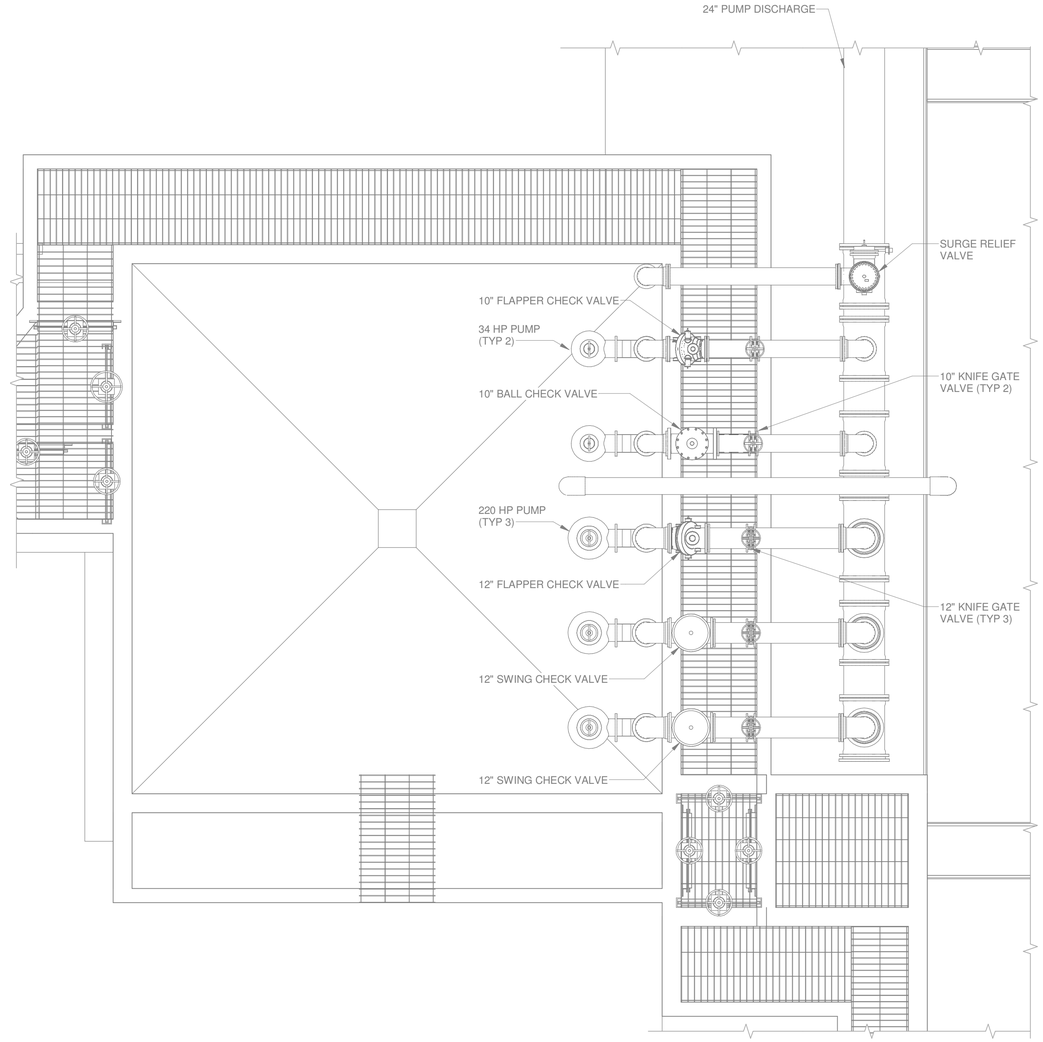

EFFLUENT PUMP STATION - EXISTING CONDITIONS

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M5-01
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

EFFLUENT PUMP STATION - EXISTING CONDITIONS

SCALE: 1/4" = 1'-0"

M5-01

SHEET ____ OF 100

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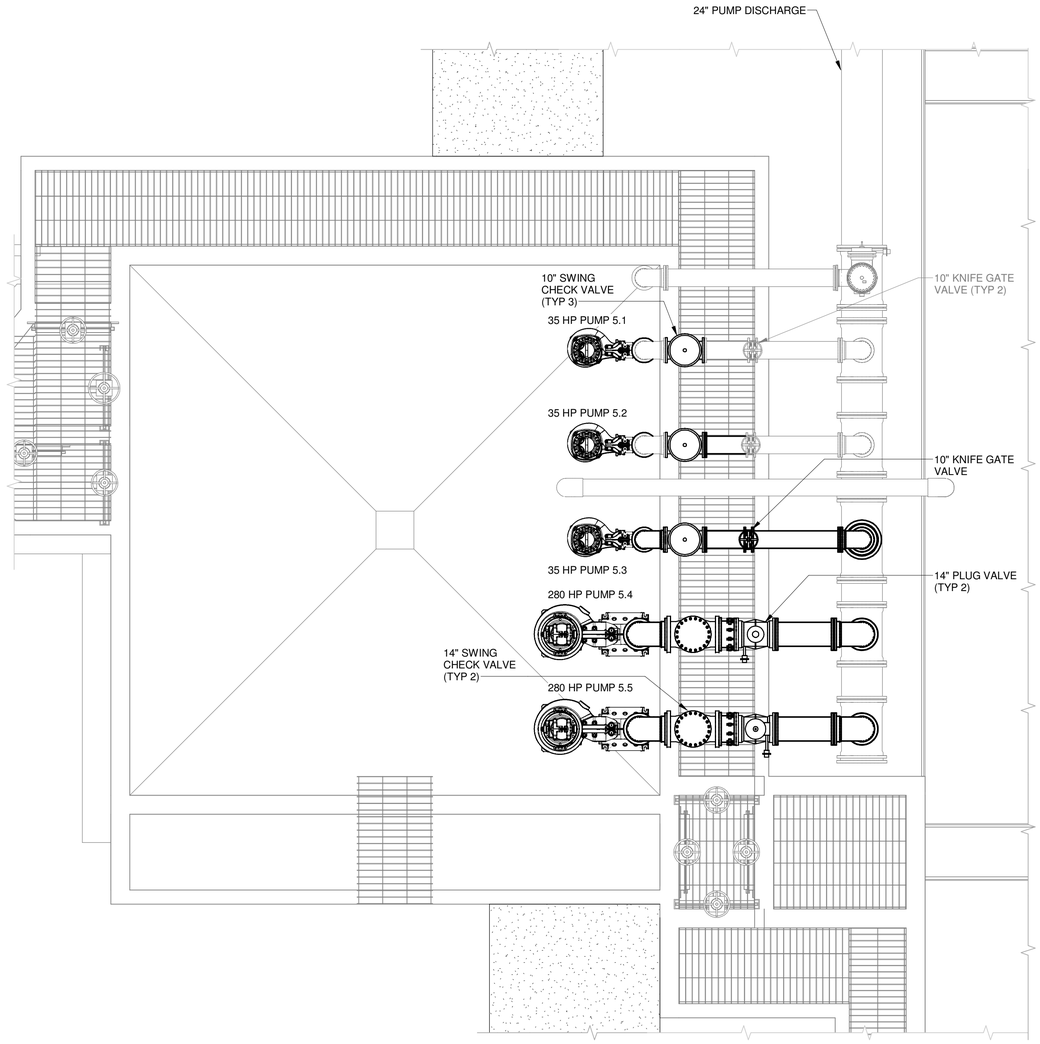

EFFLUENT PUMP STATION - PROPOSED CONDITIONS

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M5-03
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

EFFLUENT PUMP STATION - PROPOSED CONDITIONS

SCALE: 1/4" = 1'-0"

M5-03

SHEET ____ OF 100

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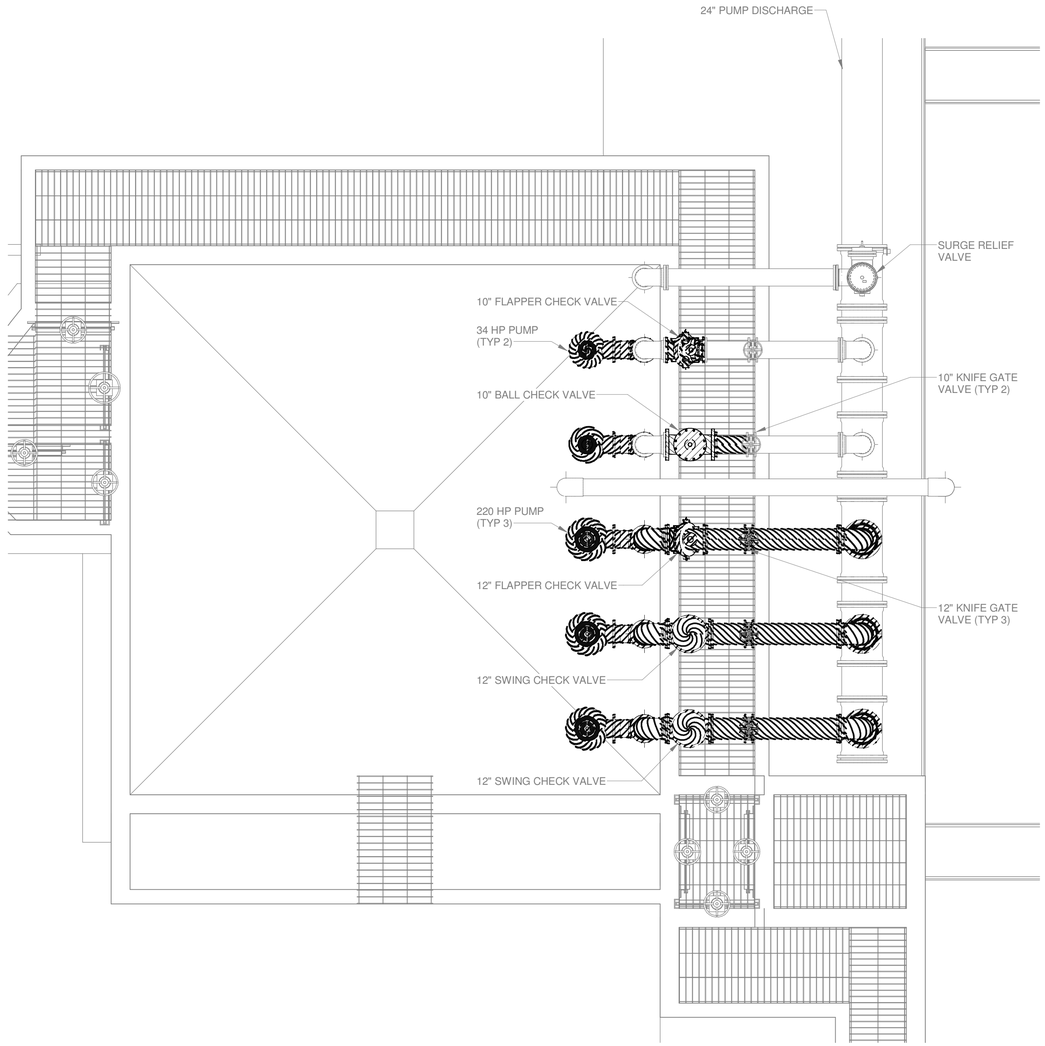

EFFLUENT PUMP STATION - DEMOLITION

SCALE: 1/4" = 1'-0"

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FLINT RIVER PUMP STATION IMPROVEMENTS

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME:
DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE

EFFLUENT PUMP STATION - DEMOLITION

SCALE: 1/4" = 1'-0"

M5-02

SHEET ____ OF 100

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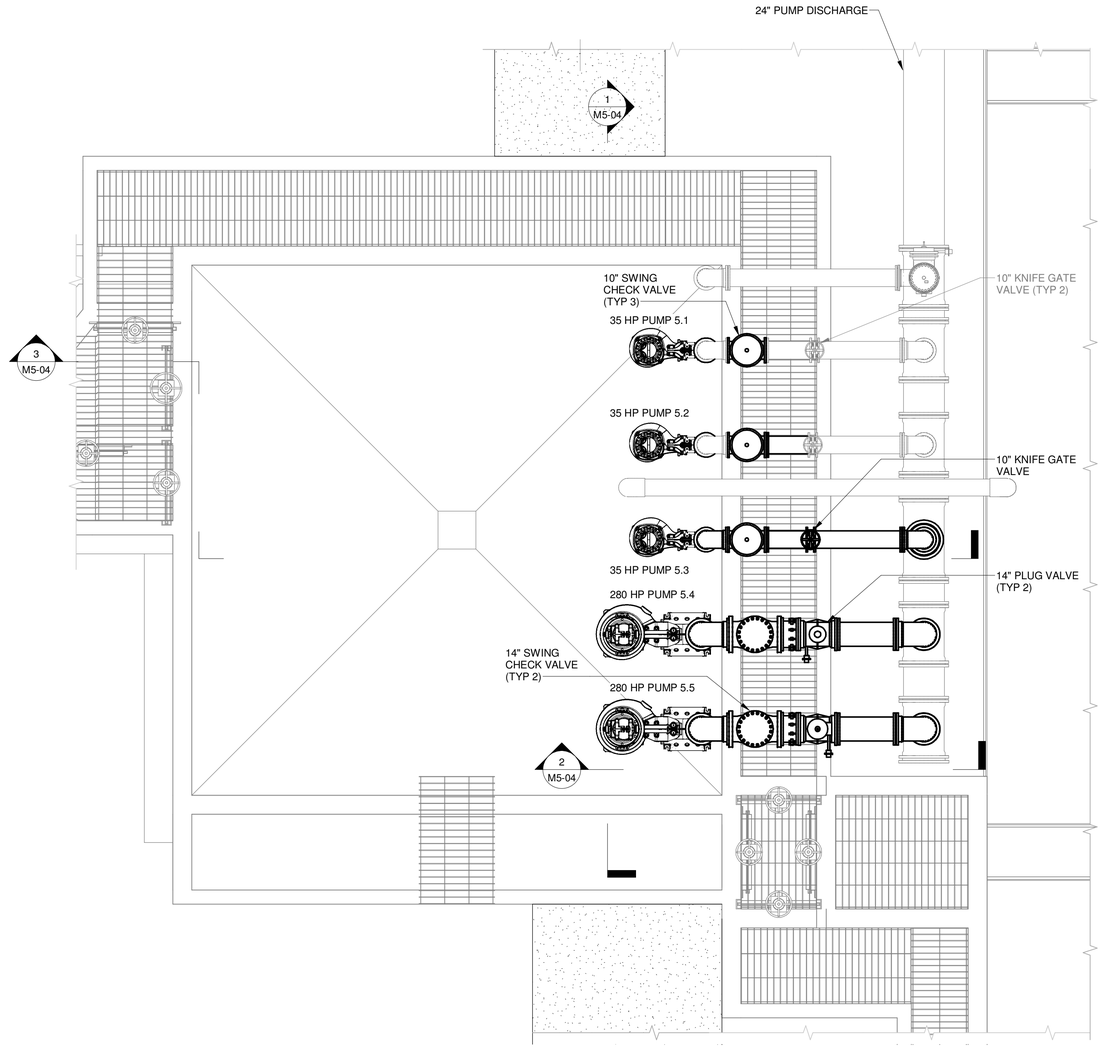

EFFLUENT PUMP STATION - PROPOSED CONDITIONS

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR
ROAD, ATLANTA, GA
30349

ARCADIS PROJ. NO. 30049010

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1	03/11/21	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: M5-03
DESIGNED BY: TRAVIS THOMAS
DRAWN BY: SANDESH PATIL
CHECKED BY: BENJAMIN L. MOSS

SHEET TITLE

MECHANICAL

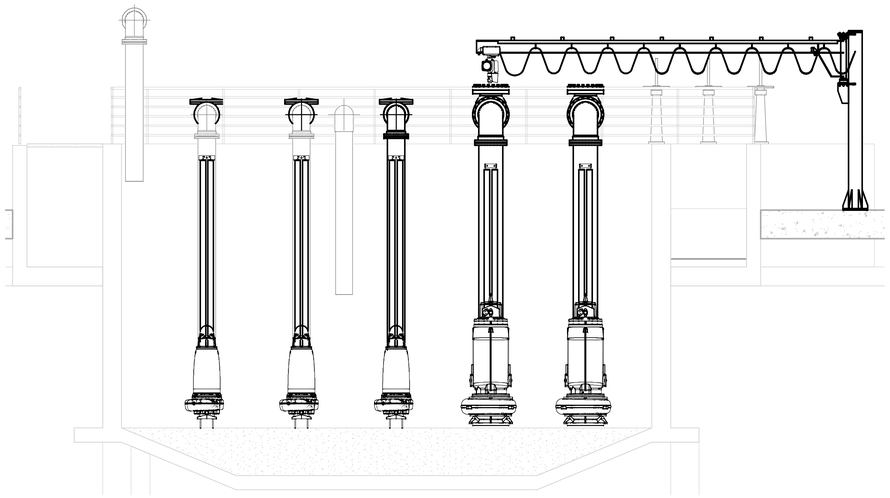
EFFLUENT PUMP
STATION - PROPOSED
CONDITIONS

SCALE: 1/4"=1'-0"

M5-03

SHEET ____ OF 100

3/16/2021 6:38:46 PM BIM 360://AUS-30049010-Flint River Pump Station Upgrade/M-3D-PS1_R21.rvt



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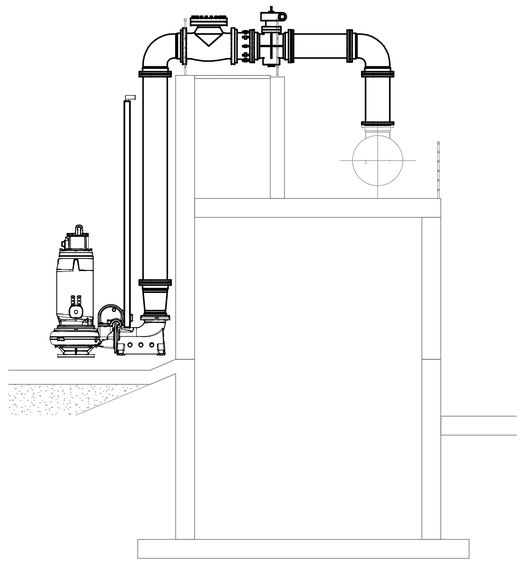

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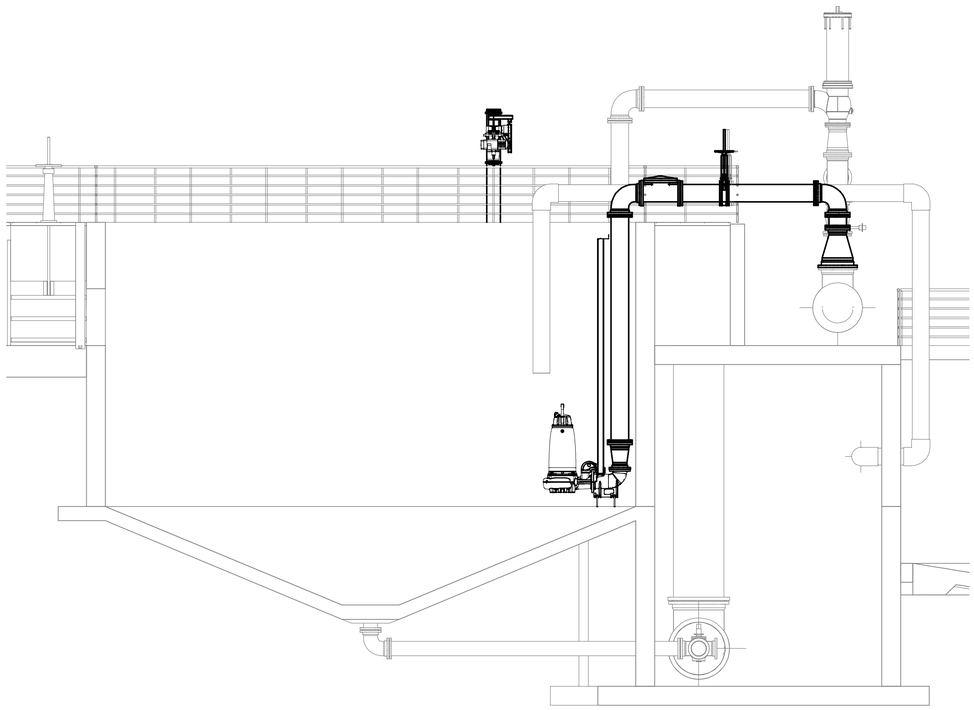
SCALE: 1/4" = 1'-0"



3 M4-01 **SECTION**
SCALE: 1/4" = 1'-0"

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FLINT RIVER PUMP STATION IMPROVEMENTS

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME:
DESIGNED BY: Designer
DRAWN BY: Author
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SHEET TITLE

EFFLUENT PUMP STATION - PROPOSED SECTIONS

SCALE: 1/4" = 1'-0"

M5-04

SHEET ____ OF 100

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GENERAL

1. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
2. DESIGN IS IN ACCORDANCE WITH AND CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF 2018 INTERNATIONAL BUILDING CODE, EXCEPT WHERE OTHER APPLICABLE CODES AND THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.
3. FACILITIES HAVE BEEN DESIGNED FOR DESIGN LOADS SHOWN OR SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FACILITIES SUBJECT TO CONSTRUCTION LOADS EXCEEDING THE DESIGN LOADS AND SHALL NOTIFY THE ENGINEER OF ANY SUCH ADDITIONAL LOADS.
4. ALL DIMENSIONS AND ELEVATIONS NOTED THUS (*) SHALL BE VERIFIED BY CONTRACTOR IN THE FIELD OR WITH THE MONUMENT MANUFACTURER APPROVED SHOP DRAWINGS PRIOR TO FABRICATION. NOTIFY ENGINEER IN WRITING OF DEVIATIONS FROM WHAT IS SHOWN ON THE CONTRACT DRAWINGS.
5. CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL SHOP DRAWINGS AND PRODUCT DATA, INCLUDING CONCRETE LABORATORY TEST REPORTS FOR MATERIALS AND MIXES, STEEL REINFORCING MATERIALS, BENDING AND FABRICATING, PIER INSTALLATION PROCEDURES, REPORTS OF FIELD TESTING, ETC.
6. EQUIPMENT ANCHOR BOLTS SIZES, TYPES AND PATTERN SHALL BE AS REQUIRED BY APPROVED EQUIPMENT MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO INSURE ACCURACY OF PLACEMENT.
7. ALL EQUIPMENT SHALL BE PROPERLY ANCHORED INTO THE CONCRETE FOUNDATION SLAB TO MEET ALL APPLICABLE LOADS PER CODE. EQUIPMENT CONNECTION TO CONCRETE FOUNDATION SHALL BE BY MANUFACTURER.
8. STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH DRAWINGS OF ALL OTHER DISCIPLINES AND MANUFACTURER'S SHOP DRAWINGS.
9. DESIGN LOAD: BASED ON 2018 INTERNATIONAL BUILDING CODE WITH LOCAL AMENDMENTS.
   - RISK CATEGORY = III
     WIND DESIGN DATA:
   - ULTIMATE DESIGN WIND SPEED = 120 MPH
   - WIND EXPOSURE = C
     EARTHQUAKE DESIGN DATA:
   - SPECTRAL RESPONSE
     ACCELERATION, (Ss) = 0.173
     ACCELERATION, (S1) = 0.083
   - SITE CLASS = D
   - DESIGN SPECTRAL RESPONSE
     SEISMIC COEFFICIENT, (SDS) = 0.184
     SEISMIC COEFFICIENT, (SD1) = 0.133
   - SEISMIC DESIGN CATEGORY = C
   - ANALYSIS PROCEDURE = ASCE 7-16,

FOUNDATIONS

1. ASSUMED ALLOWABLE BEARING PRESSURE TO BE DETERMINED BY GEOTECHNICAL REPORT TO BE PROVIDED BY MC2 GEOTECHNICAL ENGINEERS.

CAST-IN-PLACE CONCRETE

1. CONCRETE SHALL BE PROPORTIONED TO HAVE A 4,500 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS WITH 5% TO 7% AIR ENTRAINMENT AND TYPE II CEMENT. W/C RATIO SHALL BE 0.42. CEMENT SHALL BE PER ASTM C150, CEMENTITIOUS MATERIAL SHALL BE FLY ASH PER ASTM C618 CLASS F OR SLAG PER ASTM C989 GRADE 120, 25% MAX CONTENT BY WEIGHT.
2. CONCRETE WORK SHALL BE IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318. TOLERANCES SHALL BE IN ACCORDANCE WITH ACI 347, SECTION 3.3.1, TOLERANCES FOR REINFORCED CONCRETE BUILDINGS.
3. ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A-615 GRADE 60.
4. ALL REINFORCING DETAILS SHALL CONFORM TO "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
5. CONTRACTOR SHALL PROVIDE 3/4 INCH CHAMFER USING WOOD CHAMFER STRIPS ON ALL EXPOSED CORNERS.
6. COVER FOR REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING:
   TYPICAL REINFORCING BAR COVER TABLE
   CONCRETE CAST AGAINST EARTH . . . . . 3"
   ALL OTHER SURFACES . . . . . .2"
7. WELDING OF REINFORCING STEEL IS NOT ALLOWED.
8. PROVIDE STANDARD REINFORCING LAPS PLACING BARS IN CONTACT AND TYING TIGHTLY WITH WIRE. COMPLY WITH THE REQUIREMENTS FOR MINIMUM LAPS IN ACCORDANCE WITH ACI 318.
9. CALCIUM CHLORIDE SHALL NOT BE PERMITTED NOR SHALL ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE BE PERMITTED THAT RESULTS IN A TOTAL CONCRETE MIX IN WHICH THE PRESENCE OF CHLORIDE IONS EXCEED 0.10 PERCENT BY WEIGHT OF CEMENT.
10. DOWEL, ANCHORS, BOLTS, PIPES AND OTHER EMBEDDED ITEMS SHALL HELD SECURELY IN POSITION WHEN CONCRETE IS BEING PLACED.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION.
2. ALL WELDING SHALL BE DONE BY WELDERS CURRENTLY CERTIFIED BY THE AMERICAN WELDING SOCIETY (AWS) AS HAVING PASSED AWS QUALIFICATION TESTS FOR THE WELDING THEY ARE TO PERFORM. ALL WELDERS SHALL USE E70XX ELECTRODES AND SHALL CONFORM TO AWS STANDARDS.
3. ALL PLATES, ANGLES, AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 STEEL. W-SHAPES SHALL BE A992 WITH MINIMUM YIELD STRENGTH 50KSI.
4. ANCHORS BOLTS SHALL CONFORM TO ASTM F1554, GRADE 36 UNLESS OTHERWISE NOTED. HEAVY NUTS SHALL CONFORM TO ASTM A563A.

5. NON-SHRINK LEVELING GROUT: PRE-MIXED NON-SHRINK GROUT COMPOUND CONSISTING OF NON-METALLIC AGGREGATE, CEMENT, WATER-REDUCING AND PLASTICIZING AGENTS; CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI IN 28 DAYS.

   MANUFACTURERS:
   1. EUCLID CHEMICAL COMPANY, NS GROUT.
   2. OR AS APPROVED.

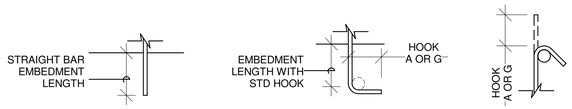
6. ADHESIVE ANCHORS FOR ANCHORAGE INTO CONCRETE

   MANUFACTURERS:
   1. HILTI HIT-RE 500 V3 EPOXY ADHESIVE ANCHORS.
   2. OR AS APPROVED.

   A. INJECTABLE TWO-COMPONENT EPOXY ADHESIVE.
   B. HILTI ANCHOR ROD HAS-R 316 STAINLESS STEEL THREADED ROD COMPLYING WITH ASTM F593 CONDITION CW.
   C. ADHESIVE ANCHORAGE SYSTEM SHALL BE SEISMIC QUALIFIED PER IBC 2015 WITH CURRENT ICC-ES ESR REPORT (ICC-ES-ESR 3814).
   D. INSTALLERS TO BE TRAINED BY ANCHOR MANUFACTURER.
   E. 10% OF ALL ADHESIVE ANCHORS TO BE LOAS TESTED, AS INSTALLED IN FIELD, TO ENSURE ALLOWABLE MANUFACTURER LOADS ARE ACHIEVED.

REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS [IN]

BAR SIZE	MIN LAP LENGTHS FOR				MIN EMBEDMENT LENGTHS					MIN STD. HOOKS		
	BEAMS AND COLUMNS* CLASS B		SLABS AND WALLS ** CLASS B		FOR BEAMS AND COLUMNS *		FOR SLABS AND WALLS **		WITH STD HOOKS	90°	135°	
	TOP***	OTHERS	TOP***	OTHERS	TOP***	OTHERS	TOP***	OTHERS		A OR G	A OR G	H
#3	25	19	16	16	19	15	12	12	5	6	4	2.5
#4	33	25	20	16	25	19	15	12	7	8	4.5	3
#5	41	31	25	19	31	24	19	15	9	10	5.5	3.75
#6	49	37	29	23	37	29	23	18	10	12	8	4.5
#7	71	54	43	33	54	42	33	25	12	14	9	5.25
#8	81	62	49	37	62	48	37	29	14	16	10.5	6
#9	91	70	60	46	70	54	46	36	15	19	-	-
#10	102	79	74	57	79	61	57	44	17	22	-	-
#11	114	87	89	69	87	67	68	53	19	24	-	-



NOTES:

1. REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS TABLE IS BASED ON A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4000 PSI AND 60000 PSI REINFORCEMENT (WITH NO EPOXY COATING).

2. ALL LAP SPLICES SHALL BE CLASS B SPLICES.

   * THE MINIMUM LAP LENGTH FOR BEAMS, COLUMNS, AND STRAIGHT EMBEDMENTS ARE BASED ON A 3 BAR DIAMETER MINIMUM CENTER TO CENTER BAR SPACING AND A 2 INCH BAR COVER. IF THE SPLICE AND/OR EMBEDMENT DOES NOT CONFORM TO THESE REQUIREMENTS, THEN CONTRACTOR SHALL APPLY APPROPRIATE FACTORS IN COMPLIANCE WITH ACI 318 WITH APPROVAL BY ENGINEER.

   ** THE MINIMUM LAP LENGTH FOR SLABS, WALLS, AND STRAIGHT EMBEDMENTS ARE BASED ON A 6 INCH BAR SPACING AND A 2 INCH BAR COVER. IF THE LAP CONDITION DOES NOTE CONFORM TO THESE REQUIREMENTS, THEN USE BEAM LAP LENGTHS; OR COMPLY WITH LAP REQUIREMENTS OF ACI 318 WITH APPROVAL BY ENGINEER.

   *** TOP BARS ARE DEFINED AS ALL HORIZONTAL BARS, WITH 12" OR MORE FRESH CONCRETE BENEATH.

   WHERE SPLICES ARE REQUIRED BETWEEN BARS OF DIFFERENT SIZES, THE LAP LENGTH SHALL BE NO LESS THAN THE EMBEDMENT LENGTH OF THE LARGER BAR OR THE LAP LENGTH OF THE SMALLER BAR, WHICHEVER IS GREATER.

STRUCTURAL METALS

S1 DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST EDITION.

S2 STEEL MATERIAL:
   A) STRUCTURAL TUBING, ASTM A 500, GRADE B
   B) STRUCTURAL PIPE, ASTM A 53, GRADE B
   C) W SHAPES, ASTM A992.
   D) STRUCTURAL CHANNELS, ASTM A 572.
   E) ALL OTHER SHAPES AND PLATES, ASTM A 36 (UON)

S3 PROVIDE TYPICAL STEEL BEAM CONNECTIONS FOR A CAPACITY OF NOT LESS THAN THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE AISC TABLES FOR ALLOWABLE LOADS OF BEAMS.

S4 DO NOT PAINT STEEL SURFACES WHICH ARE TO BE WELDED OR ENCASED IN CONCRETE.

S5 ALL GROOVE AND BUTT WELDS SHALL BE FULL PENETRATION.

S6 FILLET WELD SIZES SHALL BE THE MINIMUM SIZE REQUIRED BY AISC CODE FOR PLATE SIZES TO BE CONNECTED BUT NOT LESS THAN 3/16 INCH AND SHALL BE APPLIED TO THE ENTIRE JOINT CONTACT LENGTH.

S7 STAINLESS STEEL SHALL BE TYPE 316L-ASTM A276.

S8. STAINLESS STEEL TYPE 316L SHALL BE USED IN ALL AREAS TO BE SUBMERGED AND AS SHOWN ON DWGS.

S9 ALL BOLTS, ANCHOR BOLTS, AND CONCRETE ANCHORS CONNECTING GALVANIZED STEEL SHALL BE SS 316.

S10 WHENEVER ONE MEMBER IS FASTENED TO ANOTHER WITH FASTENINGS (BOLTS, WELDS, ETC.) SET AT A UNIFORM SPACING, THERE SHALL BE A MINIMUM OF TWO FASTENINGS PER PIECE CONNECTED AND THE FIRST AND LAST FASTENINGS SHALL BE LOCATED NOT TO EXCEED 1/4 SPACE FROM EACH END.

S11 ALL EXTERIOR EXPOSED STEEL SHALL BE HOT DIPPED GALVANIZED.

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CONSULTANTS

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CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

ARCADIS PROJ. NO. 3004910

NO.	DATE	ISSUED FOR	BY

DATE: MARCH 2021
PROJECT NO.: 3004910
FILE NAME:
DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE

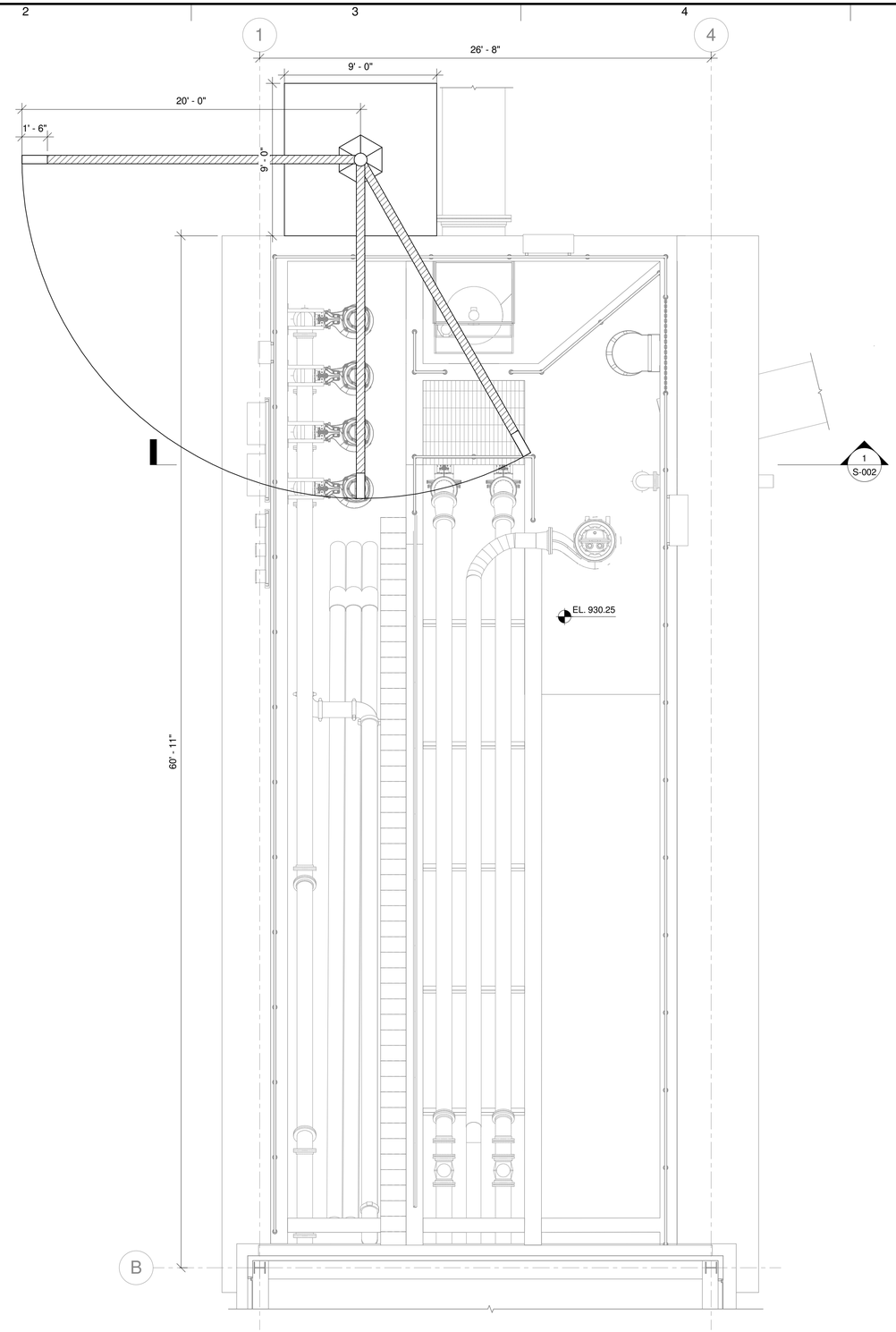
STRUCTURAL

GENERAL STRUCTURAL NOTES

SCALE: As indicated

S0-01

SHEET _____ OF _____



INFLUENT PUMP STATION - PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE

STRUCTURAL

INFLUENT PUMP STATION - PROPOSED PLAN VIEW JIB CRANE LOCATION OPTION A

SCALE: 1/4" = 1'-0"

S1-02A

SHEET _____ OF _____

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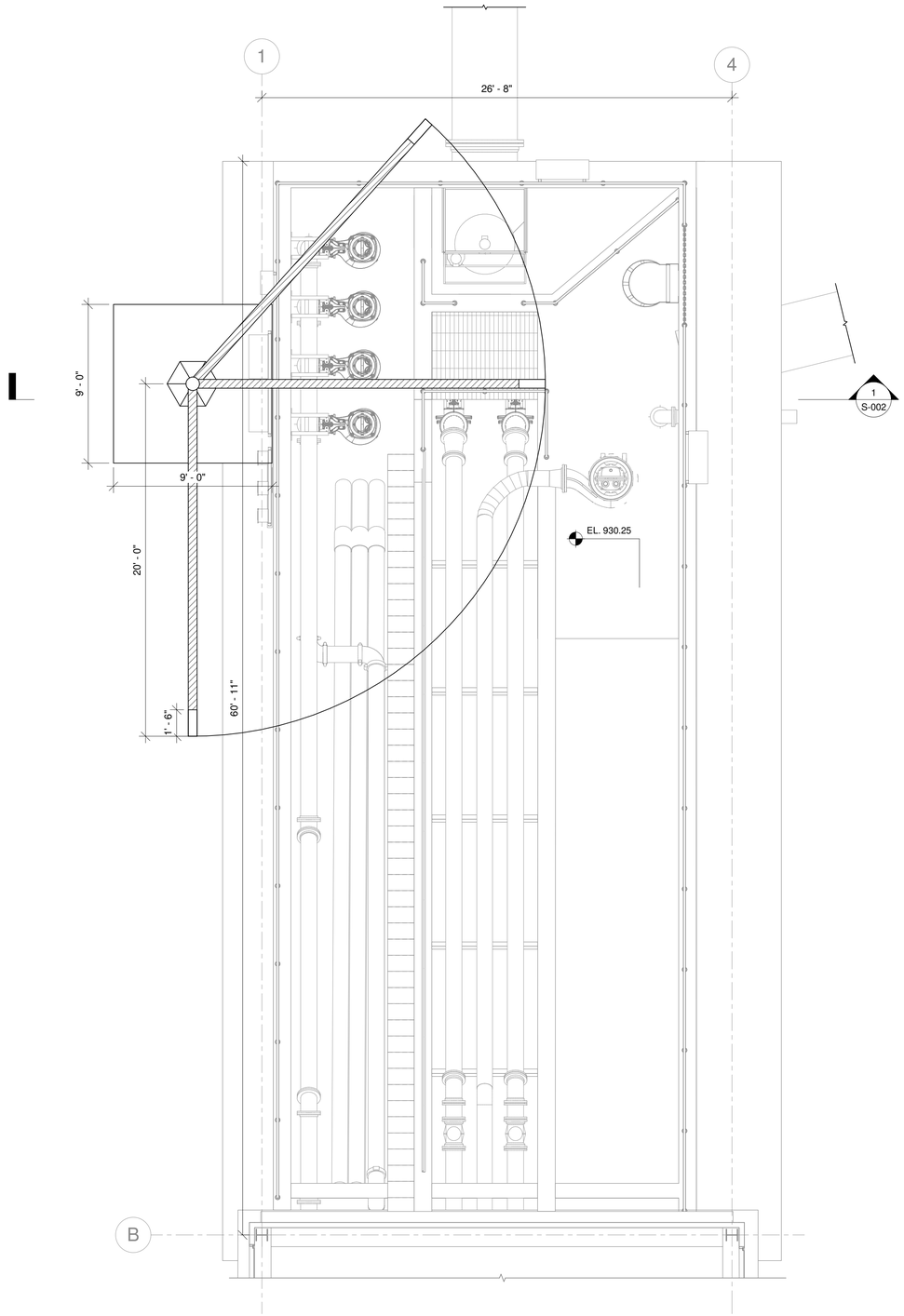

INFLUENT PUMP STATION - PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

16-03-2021 17:58:35

BIM 360://AUS-30049010-Flint River Pump Station Upgrade/S-3D-PS2-R21.rvt

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CHECKED BY: Checker

SHEET TITLE

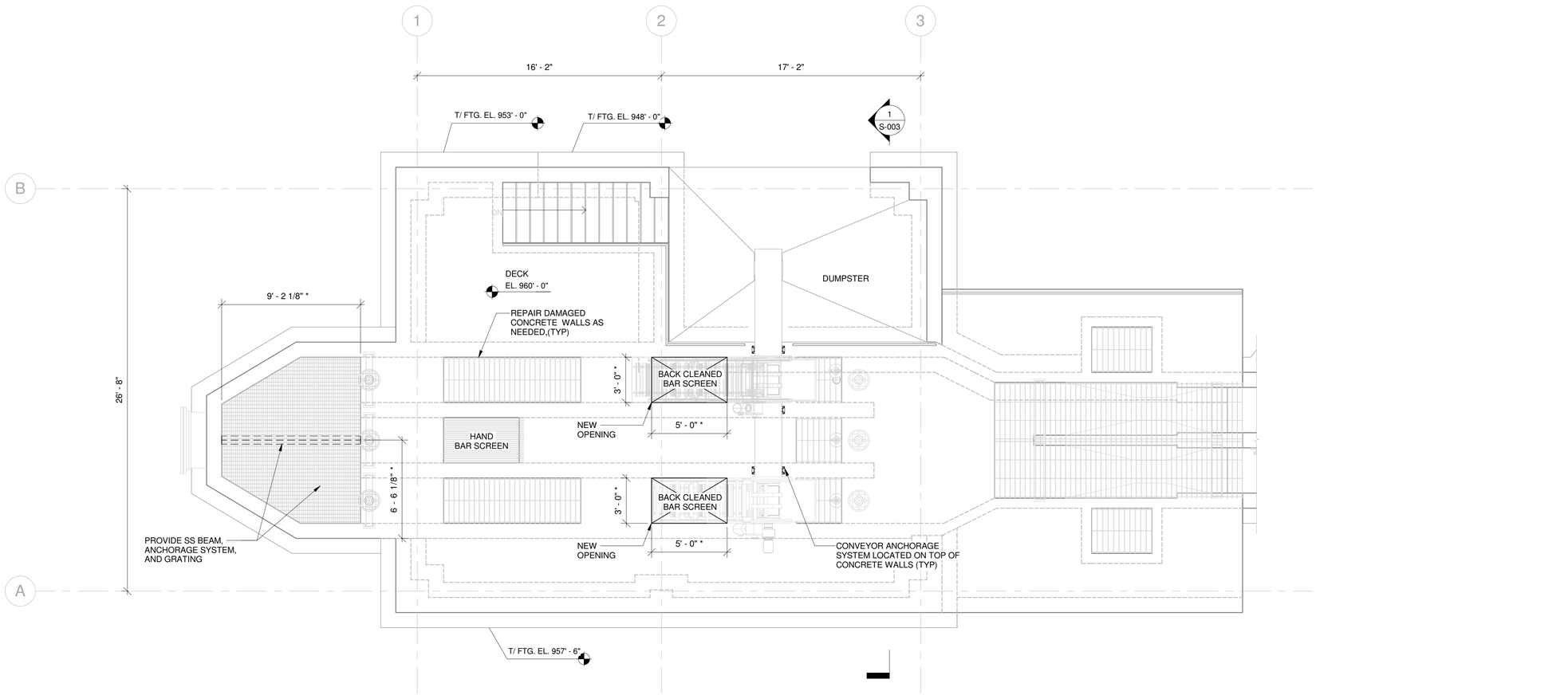
STRUCTURAL

INFLUENT PUMP STATION - PROPOSED PLAN VIEW JIB CRANE LOCATION OPTION B

SCALE: 1/4" = 1'-0"

S1-02B

SHEET _____ OF _____



SCREENING BUILDING - PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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A JOINT VENTURE
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FLINT RIVER PUMP STATION IMPROVEMENTS

ARCADIS PROJ. NO. 3004910

NO.	DATE	ISSUED FOR	BY

DATE: MARCH 2021
PROJECT NO.: 3004910
FILE NAME:
DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE

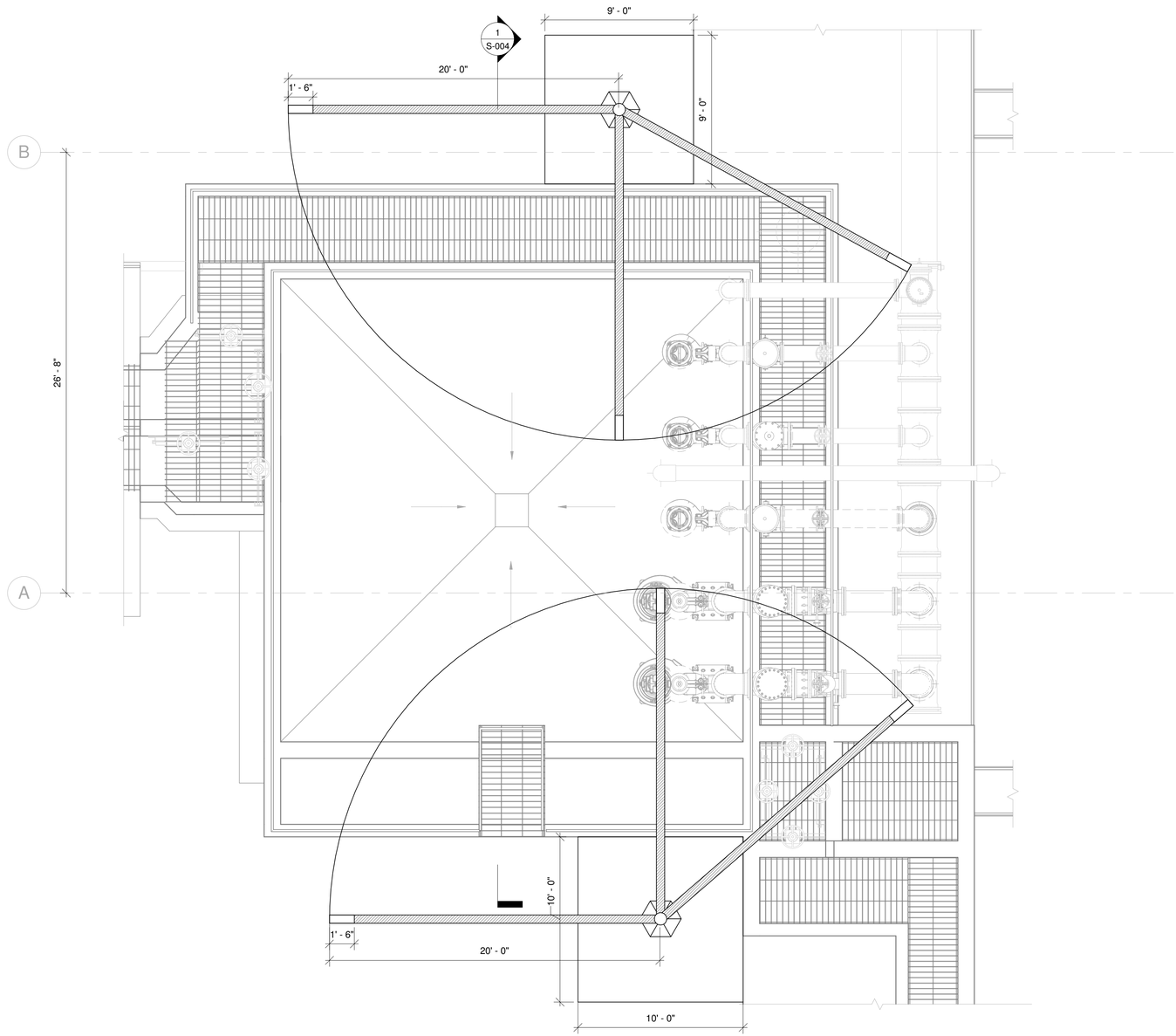
STRUCTURAL

SCREENING BUILDING PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

S4-02

SHEET _____ OF _____



EFFLUENT PUMP STATION - PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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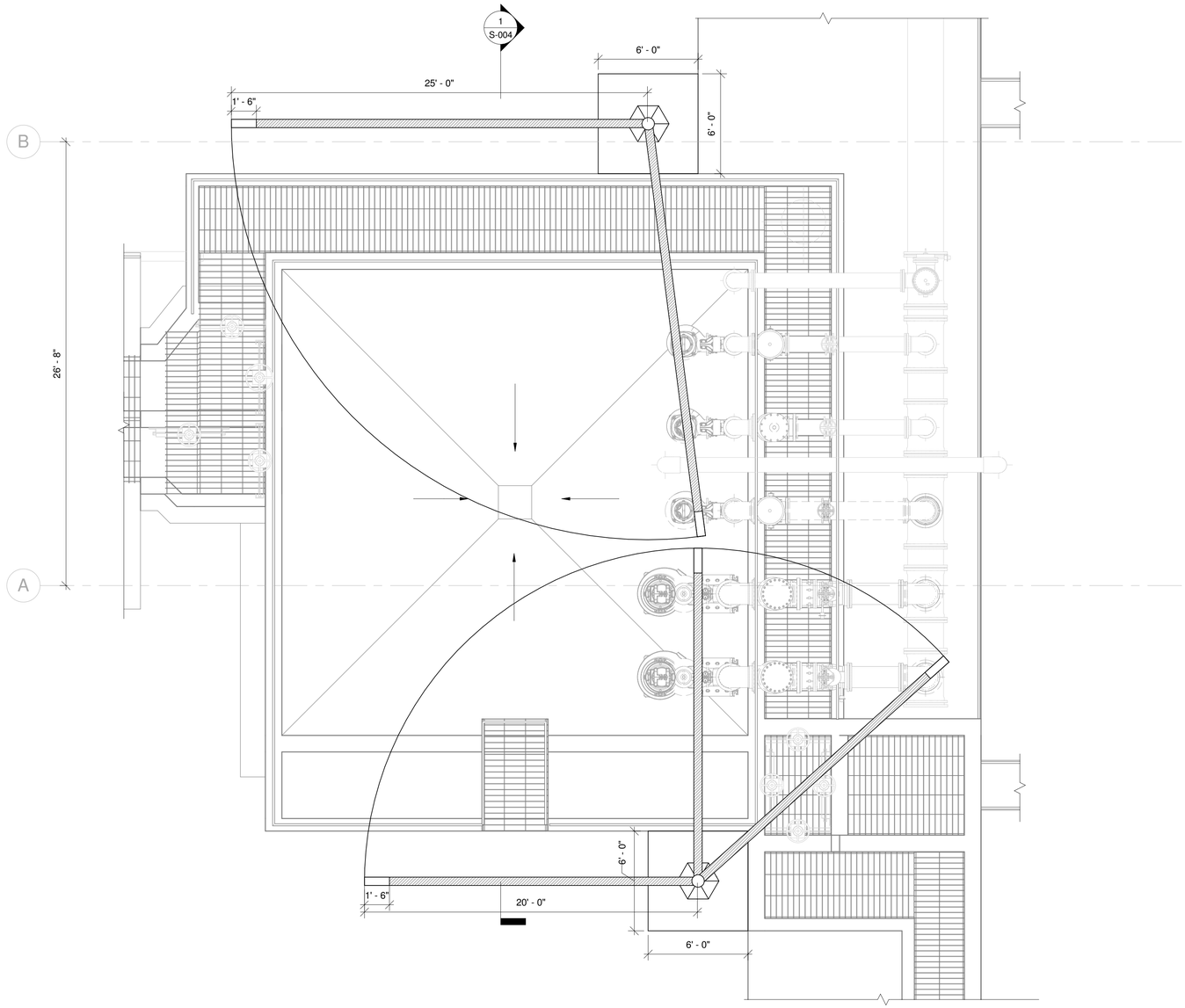
STRUCTURAL

EFFLUENT PUMP STATION - PROPOSED PLAN VIEW JIB CRANE LOCATIONS OPTION A

SCALE: 1/4" = 1'-0"

S5-02A

SHEET _____ OF _____



EFFLUENT PUMP STATION - PROPOSED PLAN VIEW

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

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NO.	DATE	ISSUED FOR	BY

DATE: MARCH 2021
PROJECT NO.: 3004910
FILE NAME:
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SHEET TITLE

STRUCTURAL

EFFLUENT PUMP STATION - PROPOSED PLAN VIEW JIB CRANE LOCATIONS OPTION B

SCALE: 1/4" = 1'-0"

S5-02B

SHEET _____ OF _____

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16-03-2021 17:59:10

SYMBOLS FOR PLANS

A 3 a	SURFACE, RECESSED OR PENDANT MOUNTED INCANDESCENT OR HIGH INTENSITY DISCHARGE LIGHTING FIXTURE
A 3 a	SURFACE, RECESSED OR PENDANT MOUNTED LED 4- FOOT LIGHT FIXTURE
A 3 a	SURFACE, RECESSED OR PENDANT MOUNTED LED 4- FOOT EMERGENCY LIGHT FIXTURE
B 3 a	LED 2- FOOT LIGHT FIXTURE, WALL MOUNTED
A 3 a	WALL MOUNTED INCANDESCENT OR HIGH INTENSITY DISCHARGE LIGHTING FIXTURE
A/P 3	EXISTING LIGHT POLE OR POST-TOP MOUNTED
A/P 3	PROPOSED NEW POLE
A/P 3	RELOCATED EXISTING LIGHT POLE
A/P 3 b	CEILING MOUNTED LIGHTING UNIT FOR CANOPY
3	WALL MOUNTED EXIT LIGHT
3	CEILING OR PENDANT MOUNTED EXIT LIGHT
A 3 a	LED WALL PACK LIGHT FIXTURE WITH FULLCUTOFF LENS, SUITABLE FOR WET AND CORROSIVE LOCATIONS

LETTER "A" DENOTES TYPE OF FIXTURE:

"3" DENOTES PANELBOARD BRANCH CIRCUIT NO. 3:

"a" DENOTES CONTROLLED BY LOCAL SWITCH "a".

"P" DENOTES FURNISHED WITH POLE.

	DUPLEX RECEPTACLE (GROUND TYPE)
	SINGLE RECEPTACLE (GROUND TYPE)
S_2	TWO WAY SWITCH
S_3	THREE WAY SWITCH
S_m	MANUAL MOTOR STARTER SWITCH
	SPECIAL PURPOSE RECEPTACLE, TYPE AND AMPERE RATING AS INDICATED ON PLAN
	DISCONNECT SWITCH
	STARTER DISCONNECT SWITCH
T	WALL MOUNTED THERMOSTAT - MOUNTED 5'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
	PANELBOARD
	DEMOLITION
UH	UH = UNIT HEATER - FOR FAN HORSEPOWER, SEE PANELBOARD SCHEDULE EUH = ELECTRIC UNIT HEATER - FOR KW RATING, SEE SINGLE LINE DIAGRAM
DC	MOTOR - FOR HORSEPOWER RATING, SEE PANELBOARD SCHEDULE OR SINGLE LINE DIAGRAM DC = DC MOTOR
D	D = DAMPER MOTOR M = MOTORIZED VALVE
	TELEPHONE TERMINAL CABINET, TTB
	TELEPHONE OUTLET, WALL MOUNTED
J	JUNCTION BOX
	GROUND ROD
	TEST WELL GROUND ROD
	EXOTHERMIC WELDED CONNECTION
	BOLTED CONNECTION
	CONTROL STATION

SYMBOLS FOR PLANS

P-1547-61	CONDUIT RUNS CONCEALED IN FLOOR, WALL AND UNDERGROUND

H- HIGH VOLTAGE POWER CONDUIT
P- POWER CONDUIT
C- CONTROL CONDUIT
TP- TEMPORARY POWER CONDUIT
IC- INSTRUMENT CONDUIT
M- MEDIUM VOLTAGE POWER CONDUIT
T- TELEPHONE CONDUIT

	CONDUIT RUNS CONCEALED ABOVE HUNG CEILING
	CONDUIT RUNS EXPOSED
	CONDUIT TURNING UP OR TOWARD OBSERVER
	CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
	FLEXIBLE CONDUIT
	DIRECT BURIAL CABLE
G	GROUNDING CABLE
W	WATER PIPE
P-1587L2	HOMERUN TO PANELBOARD, CONDUIT AND WIRE - LETTERS AND NUMERALS DENOTE CIRCUIT OR PANELBOARD AND CIRCUIT NUMBERS (GENERAL NOTE 4).
	DENOTES SHEET NO. ON WHICH SECTIONS OR DETAIL IS
	CONDUIT NUMBER FOR WIRING - SEE SCHEDULE
	DENOTES SECTION NO. OR DETAIL LETTER EITHER SHOWN AND/OR TAKEN
C-1568-2	CONDUIT NUMBER FOR WIRING - SEE SCHEDULE
W	DENOTES WATERTIGHT EQUIPMENT
WP	DENOTES WEATHERPROOF EQUIPMENT
XP	DENOTES EXPLOSIONPROOF EQUIPMENT
SV	SOLENOID VALVE
TG	TACHOMETER GENERATOR
CWS	CONDUIT WALL ENTRANCE SEAL
EWC	ELECTRIC WATER COOLER
CTB	TERMINAL BOX CTB = CONTROL WIRING TERMINAL BOX STB = SIGNAL WIRING TERMINAL BOX
HH	HH = HANDHOLE
MH	MH = MANHOLE

SYMBOLS FOR PLANS

FIRE ALARM SYSTEM

FAP	FIRE ALARM PANEL
B	FIRE ALARM BELL
FC	MANUAL FIRE ALARM CALL STATION PULL TYPE
F	FIRE ALARM HORN
SD	SMOKE DETECTOR
ST	STROBE LIGHT

DOOR ALARM

	DOOR ALARM DOOR SWITCH
K	DOOR ALARM KEY BYPASS SWITCH

SYMBOLS FOR ONE LINE DIAGRAMS

	LIGHTNING ARRESTER
2PT	PT = POTENTIAL TRANSFORMER, DRAWOUT TYPE NUMERAL DENOTES QUANTITY. CPT = CONTROL POWER TRANSFORMER, DRAWOUT TYPE WITH FUSE.
2PT	PT = POTENTIAL TRANSFORMER, NUMERAL DENOTES QUANTITY. CPT = CONTROL POWER TRANSFORMER WITH FUSE.
	FUSED DISCONNECT SWITCH DRAWOUT TYPE
	TRANSFORMER, SIZE AS NOTED
	DELTA/WYE TRANSFORMER CONNECTION WITH GROUND
100/15	MOLDED CASE CIRCUIT BREAKER, THERMAL MAGNETIC TRIP, WITH CURRENT LIMITING FUSES, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING.
100/15	3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING.
MCP/15	MOTOR CIRCUIT PROTECTOR. NUMERAL INDICATES CONTINUOUS CURRENT RATING. MCPL = WITH CURRENT LIMITING FUSES.
1600/800	LOW VOLTAGE POWER CIRCUIT BREAKER, DRAWOUT TYPE, UPPER NUMERAL INDICATES FRAME SIZE, LOWER NUMERAL INDICATES TRIP SETTING.
100	UNFUSED DISCONNECT SWITCH. NUMERAL DENOTES AMPERE RATING.
100/70	FUSED DISCONNECT SWITCH, 3-POLE UNLESS OTHERWISE NOTED. UPPER NUMERAL INDICATES FUSE CLIP AMPERE SIZE. LOWER NUMERAL INDICATES FUSE RATING.
3	CT = CURRENT TRANSFORMER, NUMERAL DENOTES QUANTITY.
1	GROUND FAULT CURRENT TRANSFORMER, NUMERAL DENOTES QUANTITY.
	EQUIPMENT BUS
900	SYNCHRONOUS MOTOR. NUMERAL DENOTES HORSEPOWER.
5	SQUIRREL CAGE INDUCTION MOTOR, NUMERAL DENOTES HORSEPOWER.
1250	INDUCTION MOTOR, NUMERAL DENOTES HORSEPOWER.
A	A = AMMETER V = VOLTMETER W = WATTMETER WH = WATTHOUR METER D = DEMAND METER EX = EXCITER FM = FREQUENCY METER RT = RUNNING TIME METER TA = TACHOMETER TG = TACHOMETER GENERATOR PF = POWER FACTOR METER VAR = VARMETER VR = VOLTAGE REGULATOR KWH = KILOWATTHOUR METER
CLF	FUSE-CLF DENOTES CURRENT LIMITING TYPE
R	INDICATING LIGHTS: R=RED, B=BLUE, G=GREEN, A=AMBER
E	ELECTRICALLY INTERLOCKED
K	MECHANICALLY INTERLOCKED
K	KEY INTERLOCK
EI	ELECTRICAL INTERLOCK
	NORMALLY OPEN CONTACT (DEENERGIZED POSITION)
	NORMALLY CLOSED CONTACT (DEENERGIZED POSITION)
VS	VOLTMETER SELECTOR SWITCH
AS	AMMETER SELECTOR SWITCH
CS	CIRCUIT BREAKER CONTROL SWITCH
CTB	CURRENT TEST BLOCK
PTB	POTENTIAL TEST BLOCK
TS	TEST SWITCH

SYMBOLS FOR ONE LINE DIAGRAMS (CONT.)

	MANUAL TRANSFER SWITCH (MTS)
52	MEDIUM VOLTAGE VACUUM CIRCUIT BREAKER, DRAWOUT TYPE, ELECTRICALLY OPERATED, STORED-ENERGY TYPE, 125 VOLT D.C. CLOSE AND TRIP.
	MEDIUM VOLTAGE TERMINATION. (FOR TYPE OF TERMINATION, CABLE OR BUS DUCT, SEE ONE LINE DIAGRAMS)
G	MEDIUM VOLTAGE TERMINATION WITH GROUND STUD. (FOR TYPE OF TERMINATION, CABLE OR BUS DUCT, SEE ONE LINE DIAGRAMS)
	LIVE FEEDER INDICATOR, NEON TUBES, 2 PER PHASE
Y	PHASING RECEPTACLE
MPR	MICROPROCESSOR-BASED PROTECTION RELAY
MPM	MICROPROCESSOR-BASED POWER MONITOR
MSR	MICROPROCESSOR-BASED STATUS RELAY
MPD	MICROPROCESSOR-BASED POWER DISPLAY
	MEDIUM VOLTAGE FLEXIBLE POWER CONNECTIONS
MPA	MICROPROCESSOR-BASED POWER MONITOR & ANALYZER
MPC	MICROPROCESSOR-BASED POWER MONITOR & CONTROL
MTU	MICROPROCESSOR-BASED TRIP UNIT (PROTECTION, MONITORING & COMMUNICATION)
ZSIM	ZONE SELECTIVE INTERLOCK MODULE (MICROPROCESSOR - BASED)
GOR	GROUND OVERCURRENT RELAY (MICROPROCESSOR - BASED)
MMD	MULTI FUNCTIONAL METERING DEVICE
SPD	SURGE PROTECTIVE DEVICE
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
LSIG TRIP FRAME	CIRCUIT BREAKER WITH ADJUSTABLE ELECTRONIC TRIP OVER BREAKER FRAME SIZE. SOLID STATE TRIP FEATURES SHOWN: LSIG TRIP L = LONG DELAY S = SHORT DELAY I = INSTANTANEOUS G = GROUND FAULT

ABBREVIATIONS

A	AMBER LIGHT (BKR. TRIPPED), AMPS
AA	AUTOMATIC ALTERNATOR
AFL	ABOVE FLOOR LEVEL
AM	AMMETER
ATS	AUTOMATIC TRANSFER SWITCH
DCU	DISTRIBUTED CONTROL UNIT
EMS	ELECTRICAL MONITORING SYSTEM
EOV	ELECTRICALLY OPERATED VALVE
ESPB	EMERGENCY STOP PUSH BUTTON
ET	VOLTAGE TRANSDUCER
EUH	ELECTRIC UNIT HEATER
FM1	FREQUENCY METER-INCOMING
FM2	FREQUENCY METER-RUNNING
FS	FLOAT SWITCH
FSR	FORWARD-STOP-REVERSE PUSHBUTTON, MOMENTARY-CONTACT TYPE
FT	FREQUENCY TRANSDUCER
G	GREEN LIGHT (BREAKER OPEN), GROUND
GCS	GENERATOR MONITORING & CONTROL SYSTEM
GFP	GROUND FAULT PROTECTION
H	HORN
HA	HAND-AUTOMATIC SELECTOR SWITCH
HH	HANDHOLE
HOA	HAND-OFF-AUTOMATIC SELECTOR SWITCH
HOS	HAND-OFF-STANDBY SELECTOR SWITCH
HS	HORN SILENCE PUSH BUTTON
IT	CURRENT TRANSDUCER
JOC	JOG-OPEN-CLOSE PUSHBUTTON, MOMENTARY-CONTACT TYPE
JT	WATT TRANSDUCER
KS	KEY SWITCH
LCP	LOCAL CONTROL PANEL
LOR	LOCAL-OFF-REMOTE SELECTOR SWITCH
LR	LOCAL-REMOTE SELECTOR SWITCH
LS	LIMIT SWITCH
LTS	LIGHT TEST PUSH BUTTON
MCC	MOTOR CONTROL CENTER
MHC	MECHANICALLY HELD LIGHTING CONTACTOR
MH	MANHOLE
MOV	MOTOR OPERATED VALVE
MS	MASTER CONTROL SWITCH
MSD	MOISTURE SENSING DETECTION PANEL
MSH	MOTOR SPACE HEATER
MTP	MOTOR THERMAL PROTECTOR (BUILT-IN)
N.O.	NORMALLY OPEN
OC	OPEN-CLOSE SWITCH
OIP	OPERATOR INTERFACE PANEL
OSC	OPEN-STOP-CLOSE PUSHBUTTON
PFCC	POWER FACTOR CORRECTION CAPACITOR (HARMONIC FILTER)
PFT	POWER FACTOR TRANSDUCER
PHL	PHOTOELECTRIC SWITCH
PNLBD	PANELBOARD
PS	PRESSURE SWITCH
R	RED LIGHT (BREAKER CLOSED)
RESET	RESET BUTTON
RO	RUN-OFF SWITCH
RSFS	REMOTE-SLOW-FAST-STOP SELECTOR SWITCH
RTM	RUNNING TIME METER
RTU	RETURN TO UTILITY PUSH BUTTON
SC	SPEED CONTROLLER
SCV	SURGE CONTROL VALVE
SCR	SILICON CONTROLLED RECTIFIER DRIVE
SEL	SELECTOR SWITCH
SF	SLOW-FAST PUSHBUTTON, MOMENTARY-CONTACT TYPE
SFS	SLOW-FAST-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE
SH	SPACE HEATER
SI	SPEED INDICATOR
SL	SYNCHRONIZING LIGHT
SLR	SLIP LOSS RECOVERY VARIABLE SPEED DRIVE CONTROLLER
SQ	SEQUENCE SELECTOR SWITCH
SS	SYNCHROSCOPE
SSI	START-STOP PUSHBUTTON, MOMENTARY-CONTACT TYPE WITH RED (RUN) AND GREEN (OFF) INDICATING LIGHTS
SSM	START-STOP PUSHBUTTON, MAINTAINED-CONTACT TYPE
SSS	SOLID STATE STARTER
ST1	SERVICE TRANSFORMER NO.1
SV	SOLENOID VALVE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SWSV	SEAL WATER SOLENOID VALVE
T	THERMOSTAT
T/C	THERMOCOUPLE
TG	TACHOMETER GENERATOR
TI	TIMER
TQ	TORQUE ALARM SWITCH
TS	TEST SWITCH
TT	TEMPERATURE TRANSDUCER
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VMI	VOLT METER-INCOMING
VMR	VOLT METER-RUNNING
ZS	POSITION SWITCH

HAZARDOUS & CORROSIVE AREA CLASSIFICATION

INSTALLATION SHALL MEET NFPA 820 AND NEC ART 500. EXTENT OF HARZARDOUS AREAS IS BASED ON THESE STANDARDS. HAZARD IS FROM METHANE AND GASOLINE (CLASS 1 GROUP D MATERIALS PER NEC).

AREA	CLASSIFICATION	COMMENT
WET WELL	CLASS 1, DIVISION 1, GROUP D ALL SPACES BELOW GRADE	
GRINDER CHANNEL	CLASS 1, DIVISION 1, GROUP D ALL SPACES BELOW GRADE	

GENERAL NOTES

1. ALL CONDUIT AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE, AND APPLICABLE LOCAL CODES.
2. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL TO BEAMS AND WALLS.
3. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO MOTORS AND OTHER EQUIPMENT.
4. NO CONDUIT SMALLER THAN 3/4" PIPE SIZE NOR WIRE SMALLER THAN NO.12 A.W.G. SHALL BE USED UNLESS OTHERWISE NOTED.
5. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
6. SWITCHES SHALL BE MOUNTED 4'-6" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED, RECEPTACLES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED, EXCEPT RECEPTACLES IN OFFICES OR AREAS WITH HUNG CEILINGS SHALL BE MOUNTED 1'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
7. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INSIDE OF THE EXTERIOR WALLS ABOVE GRADE, OR IN OTHER LOCATIONS CONSIDERED AS DAMP, SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4" AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
8. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6".
9. IN GENERAL, PULL BOXES OR JUNCTION BOXES ARE NOT SHOWN ON THE DRAWINGS. BOXES SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS, NEC AND NYCEC.
10. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.
11. CONDUIT AND WIRE (NOT SHOWN) FOR SWITCHES AND/OR RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND SHALL BE:
    a. MINIMUM 3/4" CONDUIT, TYPE AS SPECIFIED,
        1. EXPOSED IN UNFINISHED AREAS.
        2. CONCEALED ABOVE HUNG CEILINGS AND IN WALLS IN FINISHED AREAS.
    b. MINIMUM NO.12 COPPER WIRE, TYPE AS SPECIFIED, QUANTITY OF WIRES AS REQUIRED, PROVIDE SEPARATE NEUTRAL FOR EACH CIRCUIT.
12. ABOVE GRADE, JUNCTION, PULL AND TERMINAL BOXES SHALL BE OF STAINLESS STEEL CONSTRUCTION
13. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS AS REQUIRED. FOR EXACT LOCATIONS OF EXPANSION JOINTS SEE STRUCTURAL DRAWINGS.
14. SWITCHGEAR AND MCC COMPARTMENT DESIGNATIONS AS INDICATED BELOW:

    BLANK - NOT INTENDED FOR USE-PLATE ONLY
    SPACE - CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS WITHIN SIZE RANGE SHOWN.
    SPARE - CONTAINS A COMPLETE BREAKER OR STARTER INSTALLED, SIZE AS INDICATED, AVAILABLE FOR FUTURE USE.

15. ALL UNDERGROUND CONDUIT SHALL BE ENCASED IN REINFORCED CONCRETE.
16. EXISTING CONDITIONS ARE REPRESENTED BY NOTES, SCREENING, OR
17. EACH HOMERUN SHOWN ON DRAWINGS AND WHICH IS NOT DEFINED IN CONDUIT AND WIRE SCHEDULE SHALL CONSIST OF CONDUIT AND WIRE AS REQUIRED BY GENERAL NOTE 11.

19. DEMOLITION NOTE:
DISCONNECT AND REMOVE EXISTING CONDUIT, WIRING, POWER AND CONTROL DEVICES ASSOCIATED WITH EQUIPMENT TO BE DEMOLISHED EXCEPT WHERE OTHERWISE INDICATED TO BE REUSED. REMOVE ALL WIRE AND EXPOSED CONDUIT. CUT CONDUIT FLUSH WITH FLOOR OR WALL SLAB AND SEAL OPENINGS.

20. RELOCATION NOTE:
WHERE INDICATED, EXTEND AND RESTORE POWER AND CONTROL CIRCUITS ASSOCIATED WITH EQUIPMENT TO BE RELOCATED, PROVIDE NECESSARY CONDUIT AND WIRE.

21. THE FACILITY LOADS AT DISTRIBUTION EQUIPMENT SHALL BE MAINTAINED IN AN ENERGIZED CONDITION DURING THE WORK PERFORMED UNDER THIS CONTRACT WITH THE EXCEPTION OF PLANNED OUTAGES OF DURATIONS NO LONGER THAN 4 HOURS AND WITH APPROVAL OF THE OWNER. WHERE THE DURATION OF THE OUTAGES ARE IDENTIFIED TO BE LONGER THAN 4 HOURS, PROVIDE TEMPORARY POWER TO THESE FACILITY LOADS.

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FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: E0-01
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

SHEET TITLE

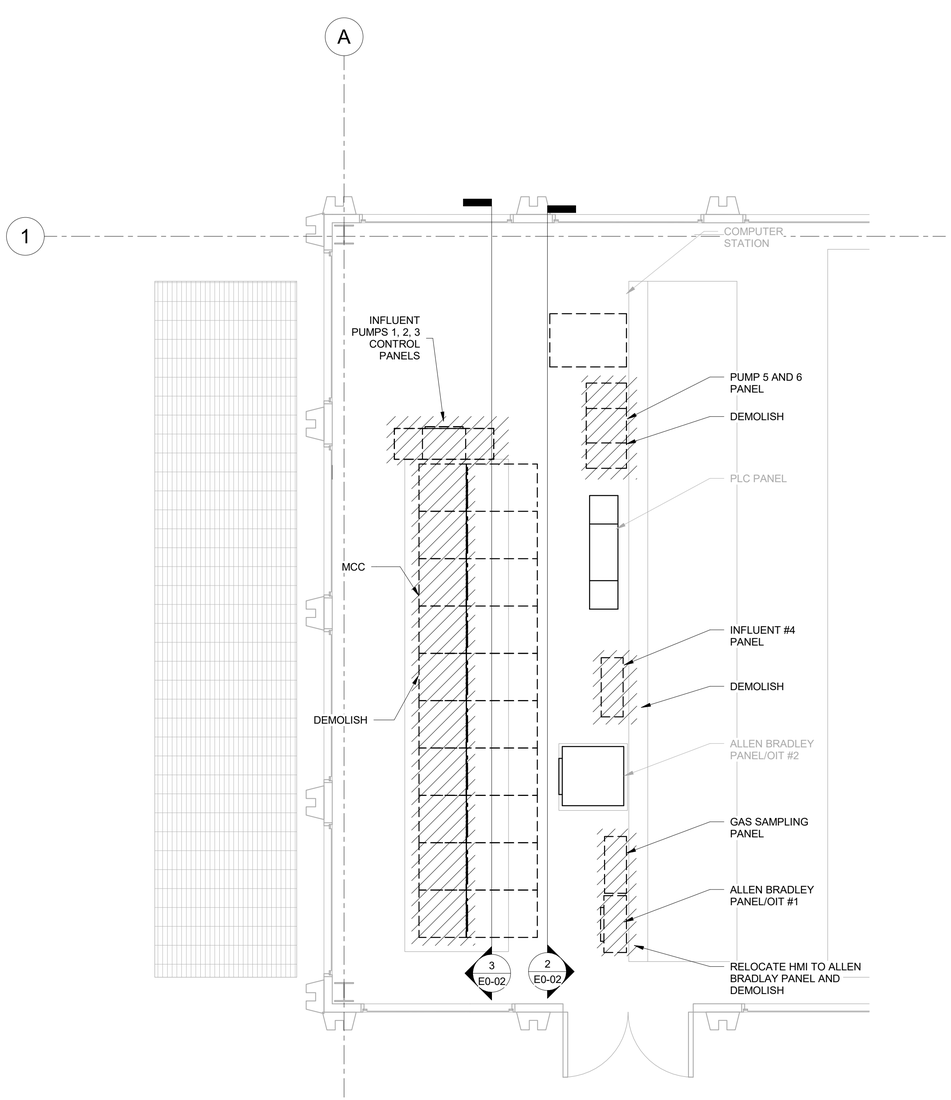
ELECTRICAL

ABBREVIATION, SYMBOLS AND GENERAL NOTES

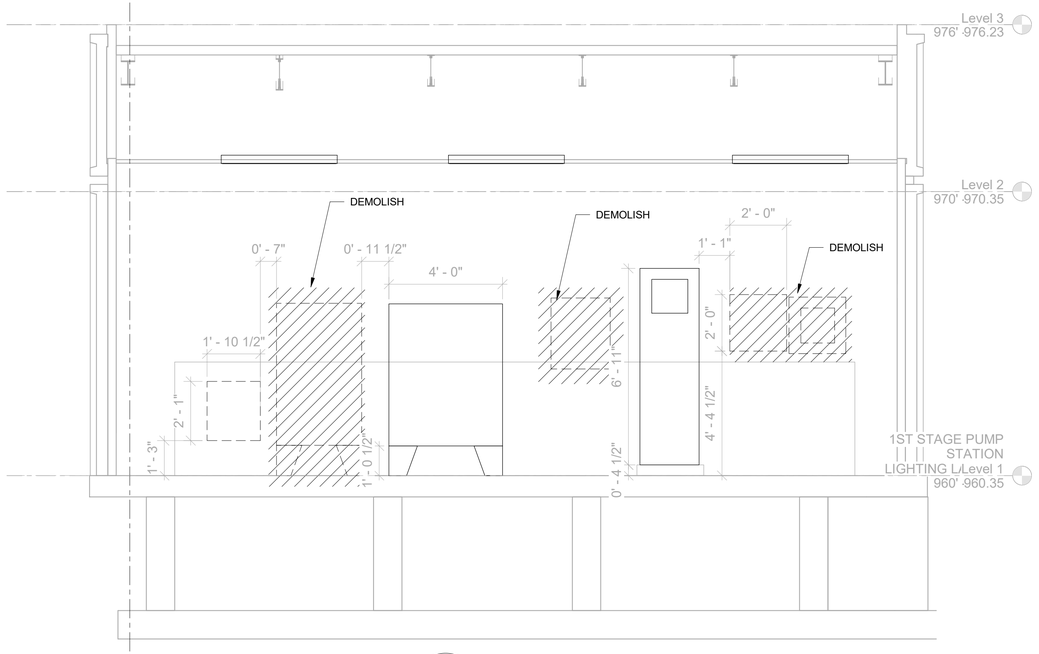
SCALE: N.T.S

E0-01

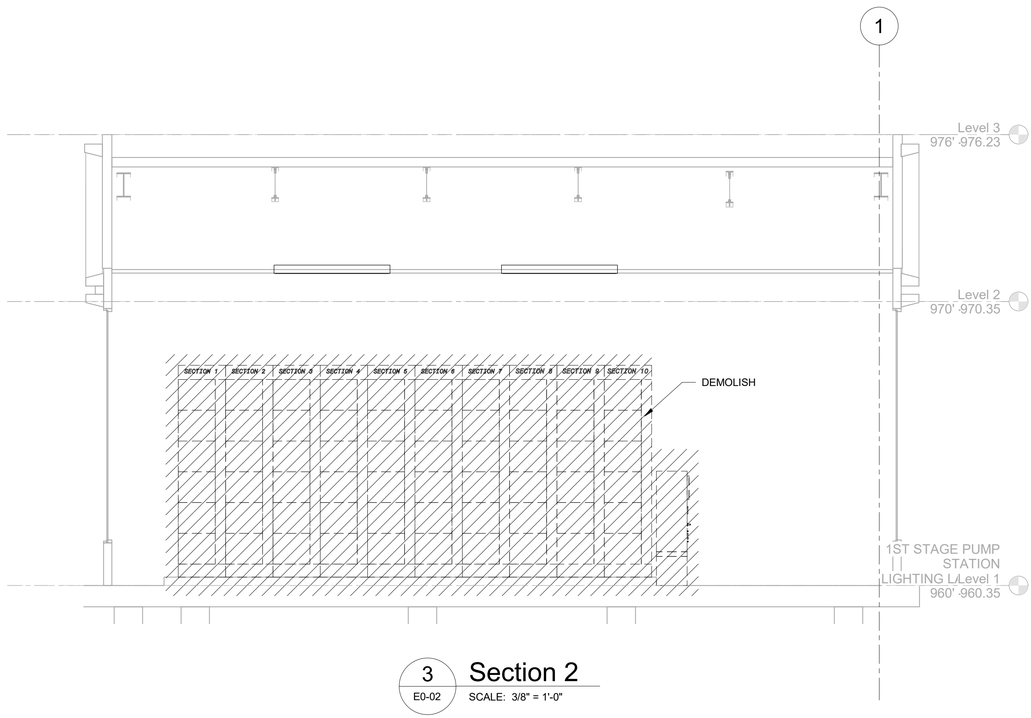
SHEET _____ OF _____



1 ELECTRICAL ROOM
E0-02 SCALE: 3/8" = 1'-0"



2 Section 1
E0-02 SCALE: 3/8" = 1'-0"



3 Section 2
E0-02 SCALE: 3/8" = 1'-0"

NOTES:
1. SEE SPECIFICATIONS FOR DEMOLITION NOTES.

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DATE:	MARCH 2021
PROJECT NO.:	30049010
FILE NAME:	E0-02
DESIGNED BY:	J.RUCKER
DRAWN BY:	N.MAHILIOUTSAVA
CHECKED BY:	J.RUCKER

SHEET TITLE

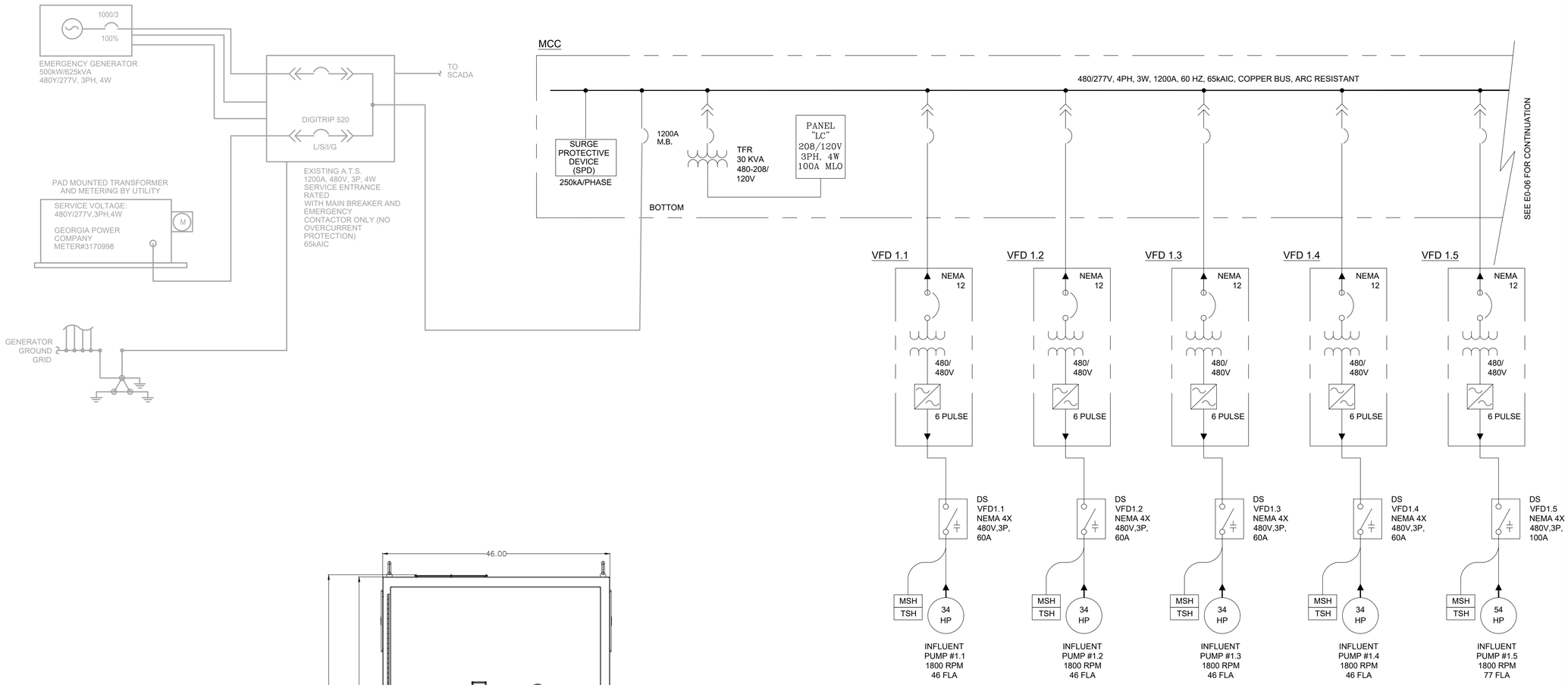
ELECTRICAL

ELECTRICAL ROOM DEMOLITION PLAN AND SECTIONS

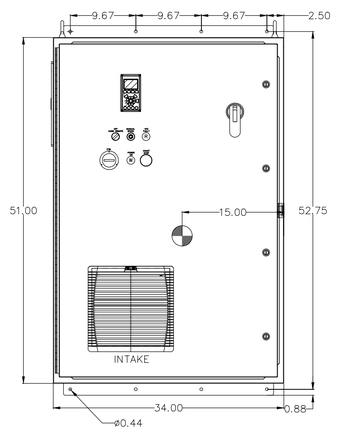
SCALE: 3/8" = 1'-0"

E0-02

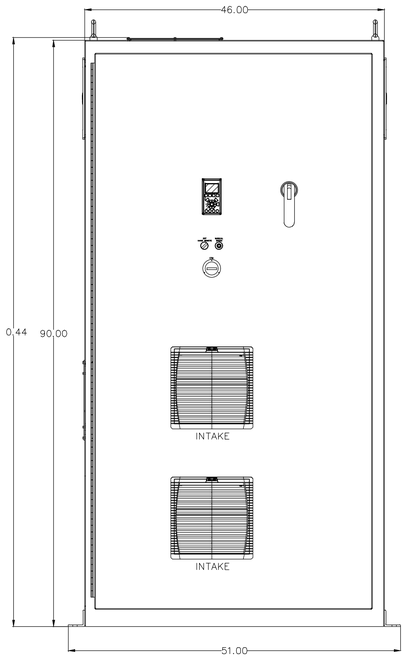
SHEET _____ OF _____



480V ONE LINE DIAGRAM



35HP AND 60HP VFD ELEVATIONS



280HP RVSS ELEVATIONS

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Phone: 770-810-5700

SEALS

30% SUBMITTAL DO NOT USE FOR CONSTRUCTION

ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: E0-05
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

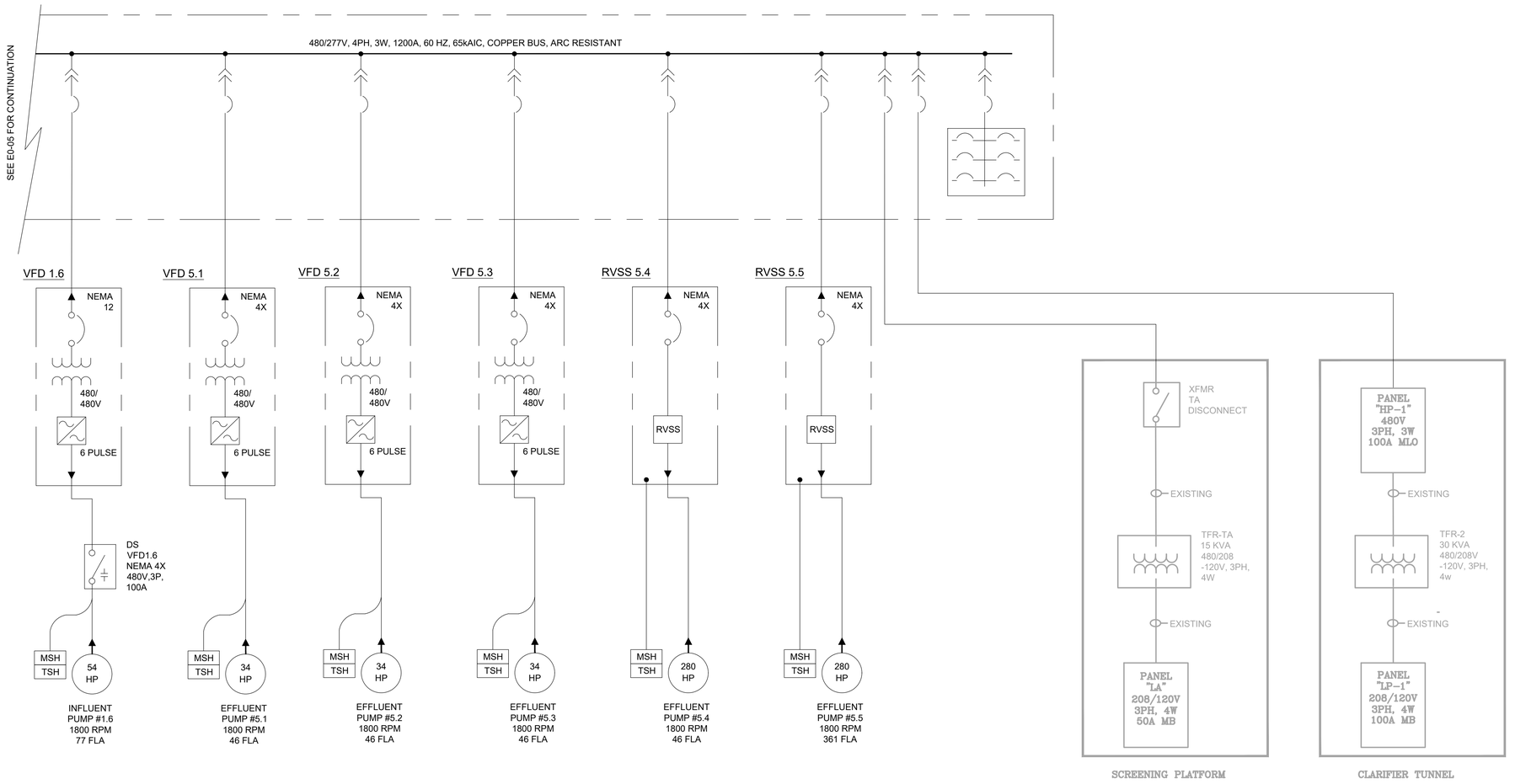
SHEET TITLE

ELECTRICAL

ONE LINE DIAGRAM
SHEET 1 OF 2

SCALE: N.T.S

E0-05
SHEET ____ OF ____



480V ONE LINE DIAGRAM

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DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: E0-06
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

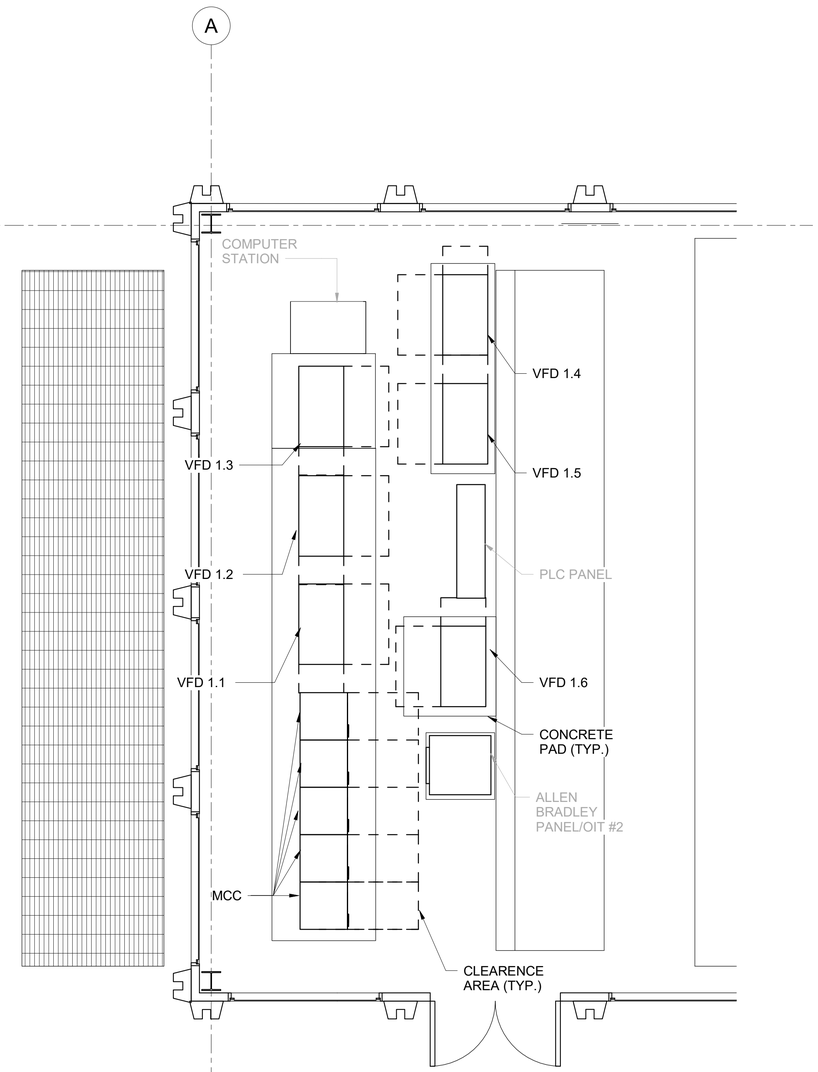
SHEET TITLE

ELECTRICAL

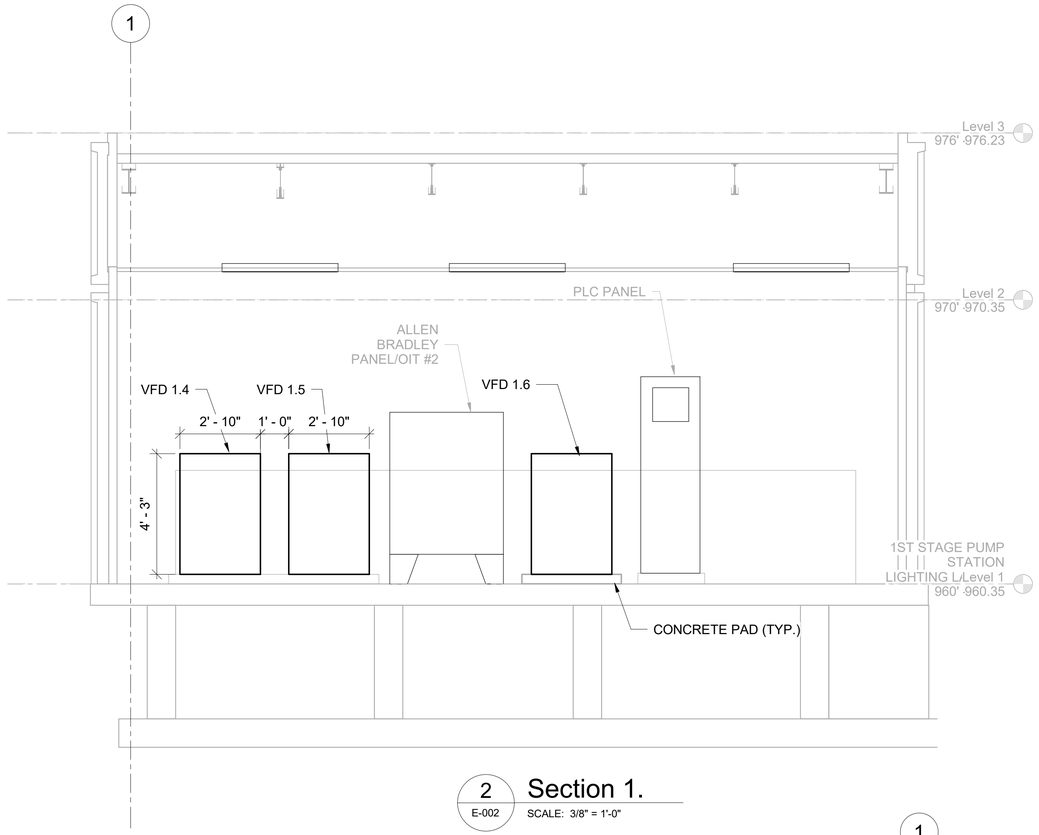
ONE LINE DIAGRAM
SHEET 2 OF 2

SCALE: N.T.S

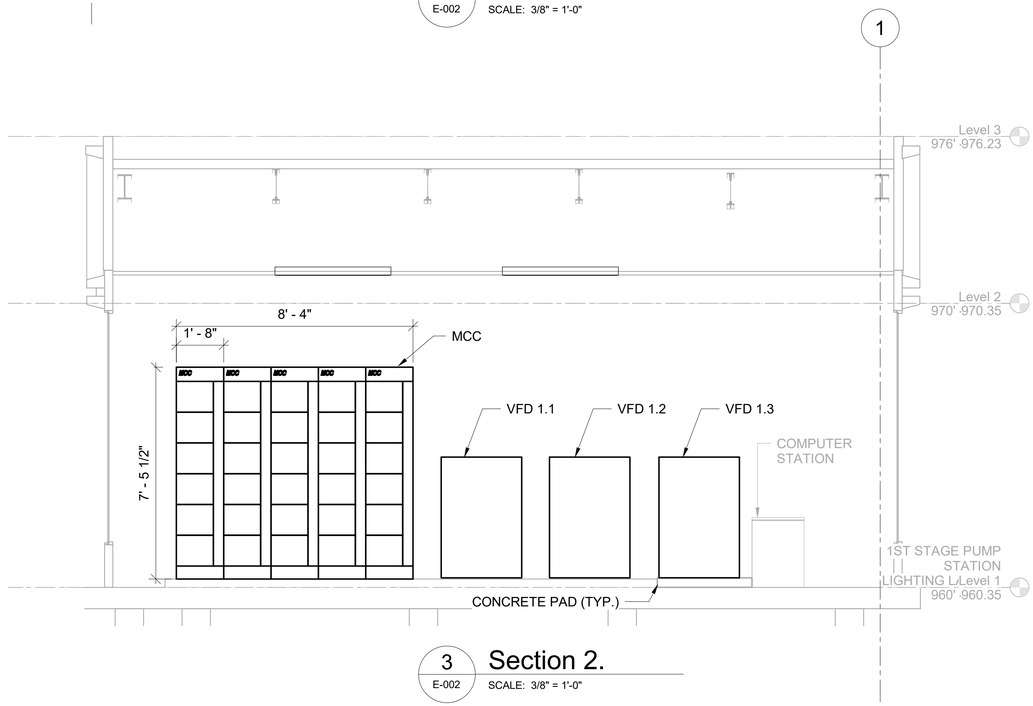
E0-06
SHEET _____ OF _____



1 E0-02 ELECTRICAL ROOM.
SCALE: 3/8" = 1'-0"



2 E-002 Section 1.
SCALE: 3/8" = 1'-0"



3 E-002 Section 2.
SCALE: 3/8" = 1'-0"

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DATE:	MARCH 2021
PROJECT NO.:	30049010
FILE NAME:	E2-01
DESIGNED BY:	J.RUCKER
DRAWN BY:	N.MAHILIOUTSAVA
CHECKED BY:	J.RUCKER

SHEET TITLE

ELECTRICAL

ELECTRICAL ROOM PLAN AND SECTIONS

SCALE: 3/8" = 1'-0"

E2-01

SHEET _____ OF _____

C:\Users\NastassiaMahilioutsa\Documents\E-3D-PS2_R21_Nastassiam@essengineers.com.rvt
3/10/2021 12:52:17 PM

ABBREVIATIONS

HVAC

ACH	AIR CHANGES PER HOUR
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
AL	ALUMINUM
AMB	AMBIENT
APPROX	APPROXIMATE
ATC	AUTOMATIC TEMPERATURE CONTROL
AUTO	AUTOMATIC
BBO	BATTERY BACK UP OPEN
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSE POWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOT EL	BOTTOM ELEVATION
BOU	BOTTOM OF UNIT
BTU/HR	BRITISH THERMAL UNITS PER HOUR
BTUH	BRITISH THERMAL UNITS PER HOUR
℄	CENTER LINE
CD	CEILING DIFFUSER
CFM	CUBIC FEET OF AIR PER MINUTE
CGD	COMBUSTION GAS DETECTOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
COP	CENTER OF PIPE
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECAV	EXHAUST CONSTANT AIR VOLUME
EG	EXHAUST GRILLE
EL	ELEVATION
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EQUIP	EQUIPMENT
EWT	ENTERING WATER TEMPERATURE
EVAV	EXHAUST VARIABLE AIR VOLUME
EXH	EXHAUST
EXIST	EXISTING
F&B	FACE & BYPASS
FD	FIRE DAMPER
FLR	FLOOR
FO	FUEL OIL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOPR	FUEL OIL PRESSURE RELIEF
FPM	FEET PER MINUTE
FT	FEET
GAL	GALVANIZED
GBD	GRAVITY BACKDRAFT DAMPER
GPM	GALLONS PER MINUTE
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HMCS	HVAC MONITORING AND CONTROL SYSTEM
HG	HOT GAS
HP	HORSEPOWER OR HEAT PUMP
HVAC	HEATING, VENTILATION & AIR CONDITIONING
KW	KILOWATT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LBG	LINEAR BAR GRILLE
LCD	LIQUID CRYSTAL DISPLAY
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MCA	MINIMUM CIRCUIT AMPACITY
MD	MOTORIZED DAMPER
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MECH	MECHANICAL
MIN	MINIMUM
MFR	MANUFACTURER
MOP	MAX OVERCURRENT PROTECTION
MTD	MOUNTED
NA	NOT APPLICABLE
NK	NECK
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NFA	NET FREE AREA
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OPNG	OPENING
PD	PRESSURE DROP
PE	PNEUMATIC/ELECTRIC
PVC	POLYVINYL CHLORIDE
RECIP	RECIPROCATING
RG	RETURN GRILLE
RL	REFRIGERANT LIQUID
RM	ROOM
RR	RETURN REGISTER
RO	ROOF OPENING
RS	REFRIGERANT SUCTION
RV	RELIEF VENT
SC	SPRING CLOSE
SCAV	SUPPLY CONSTANT AIR VOLUME
SCH	SCHEDULE
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SG	SUPPLY GRILLE
SMD	SMOKE DAMPER
SO	SPRING OPEN
SP	STATIC PRESSURE
SRV	SAFETY RELIEF VALVE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SVAV	SUPPLY VARIABLE AIR VOLUME
TOD	TOP OF DUCT
TS	TOTAL STATIC
TSP	TOTAL STATIC PRESSURE
TVS	TEMPORARY VENTILATION STATION
TYP	TYPICAL
VAS	VENTILATION ALARM STATION
VD	MANUAL VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VH	VALVE HEATING
VMS	VENTILATION MONITORING STATION
WB	WET BULB
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
W/	WITH

EQUIPMENT

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
BSU	BRANCH SELECTOR UNIT
CF	CIRCULATION FAN
CH	CHILLER
CRAC	COMPUTER ROOM AIR CONDITIONER
CWH	CABINET WALL HEATER
DDC	DIRECT DIGITAL CONTROL
DH	DEHUMIDIFICATION UNIT
EBH	ELECTRIC BASEBOARD HEATER
ECH	ELECTRIC CABINET HEATER
EF	EXHAUST FAN
ERV	ENERGY RECOVERY VENTILATOR
EUH	ELECTRIC UNIT HEATER
FACP	FIRE ALARM CONTROL PANEL
FBP	FIBER BRANCH PANEL
FPP	FIBER PATCH PANEL
GDC	GLYCOL DRY COOLER
HMCS	HVAC MONITORING AND CONTROL SYSTEM
HP	HEAT PUMP
HUH	HOT WATER UNIT HEATER
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING, VENTILATING, AIR CONDITIONING UNIT
HWB	HOT WATER BOILER
HWP	HOT WATER PUMP
HWPP	HOT WATER PRIMARY PUMP
HWSP	HOT WATER SECONDARY PUMP
MAU	MAKE-UP AIR UNIT
PSP	PURGE STATION PANEL
PTAC	PACKAGED TERMINAL AC UNIT
RHP	RADIANT HEATING PANEL
SF	SUPPLY FAN
SPP	SMOKE PURGE PANEL
VRFU	VARIABLE REFRIGERANT FLOW UNIT

EF-1 — QUANTITY DESIGNATION; EQUIPMENT DESIGNATION (EXHAUST FAN)

24X24 CDA / 10-200 — LOUVER FACE SIZE; CEILING DIFFUSER TYPE (TYPE A SHOWN); CFM; NECK SIZE

PIPING SYMBOLS

HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
CA	COMPRESSED AIR
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
DG	DIGESTER GAS
EFWS	EFFLUENT WATER SUPPLY
EFWR	EFFLUENT WATER RETURN
D	DRAIN
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
V	VENT
FOV	FUEL OIL VENT
FOG	FUEL OIL GAUGE
NG	NATURAL GAS
CW	COLD WATER
MU	MAKE-UP WATER
	EXPANSION JOINT
	DIRECTION OF PITCH
	ELBOW UP
	ELBOW DOWN
	TEE DOWN
	TEE UP
	PIPE CAP
	CONNECTION UP
	CONNECTION DOWN
	ALIGNMENT GUIDE
X	ANCHOR
M	CONTROL VALVE, (2-WAY) ELECTRIC MOTOR OPERATED
M	CONTROL VALVE, (3-WAY) ELECTRIC MOTOR OPERATED
V	ISOLATION VALVE TYPE DESIGNATED IN SPECIFICATION
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	TRIPLE DUTY VALVE (STRAIGHT, ANGLE PATTERN)
	BALANCING VALVE
	BALL VALVE
S	SOLENOID VALVE
	Y STRAINER
FS	FLOW SWITCH
	REDUCER (CONCENTRIC)
	REDUCER (ECCENTRIC)
	UNION
	THERMOMETER
	PRESSURE GAUGE
	FLEXIBLE CONNECTION
RL	REFRIGERANT LIQUID LINE
HG	HOT GAS LINE
RS	REFRIGERANT SUCTION LINE
S	CONTROL SWITCH
PS	PRESSURE SWITCH
	EXISTING PIPING/EQUIPMENT
	NEW PIPING/EQUIPMENT
	HIDDEN PIPING/EQUIPMENT

MISCELLANEOUS SYMBOLS

T	THERMOSTAT/TEMPERATURE SENSOR
	PUMP OR FAN
CB	CIRCUIT BREAKER
M	VENTILATION ALARM OR MONITORING STATION

XXX-HV1-MD-1 — DAMPER NUMBER; MOTORIZED DAMPER; EQUIPMENT DAMPER IS ASSOCIATED WITH; BUILDING DESIGNATION

EXISTING TO NEW WORK INTERFACE

DUCTWORK SYMBOLS

	SUPPLY AIR
	RETURN OR EXHAUST AIR
12" X 12"	DUCT, DIRECTION OF FLOW, SIZE
	DUCT SECTION, SUPPLY
	DUCT SECTION, EXHAUST
	DUCT SECTION, RETURN
	DROP (D) CHANGE OF ELEVATION RISE (R),
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
	MITERED ELBOW W/ TURNING VANES
	DUCT ELBOW DOWN, SUPPLY SHOWN
	DUCT ELBOW UP, SUPPLY SHOWN
	VOLUME DAMPER
	SUPPLY REGISTER OR GRILLE
	EXHAUST REGISTER OR GRILLE
	RETURN REGISTER OR GRILLE
	FOUR WAY BLOW SUPPLY DIFFUSER / REGISTER
	THREE WAY BLOW SUPPLY DIFFUSER / REGISTER
1.0 B.F. 100 CFM	DOOR LOUVER, SIZE
	DOOR UNDERCUT
	DUCTWORK WITH INTERNAL INSULATION
M	MOTORIZED DAMPER (ELECTRIC)
M SMD	SMOKE DAMPER
GBD	GRAVITY BACKDRAFT DAMPER
FD #	FIRE DAMPER W/ ACCESS DOOR (#) DESIGNATES FIRE WALL RATING
	TWO WAY BLOW SUPPLY DIFFUSER
	ONE WAY BLOW SUPPLY DIFFUSER
	LINEAR DIFFUSER
	EXISTING DUCTWORK/EQUIPMENT
	NEW DUCTWORK/EQUIPMENT
	HIDDEN DUCTWORK/EQUIPMENT

GENERAL NOTES

1. THE SYMBOLS AND ABBREVIATIONS LIST ON THIS SHEET IS A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON ALL PROJECTS. NOT ALL THE SYMBOLS AND ABBREVIATIONS CONTAINED ARE NECESSARILY USED.
2. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO BEGINNING WORK SHOWN.
3. ALL DUCT DIMENSIONS ARE CLEAR DIMENSIONS TO INSIDE OF DUCT. DIMENSIONS TO DUCTS FROM FLOOR OR WALL SHALL BE TO THE OUTSIDE OF DUCT. WHERE INTERNAL INSULATION IS REQUIRED, THE DUCT SIZE SHALL BE INCREASED TO GIVE CLEAR INSIDE DIMENSIONS.
4. EQUIPMENT SIZES AND LOCATIONS ARE APPROXIMATE. ACTUAL DIMENSIONS TO BE DETERMINED BY EQUIPMENT FURNISHED.
5. FINAL SIZES OF FLOOR OPENINGS, WALL OPENINGS, ROOF OPENINGS, DUCT PLENUMS, DUCT TRANSITIONS AND PIPING CONNECTIONS TO EQUIPMENT SHALL BE DETERMINED BY EQUIPMENT FURNISHED.
6. FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED.
7. REFER TO CODE GENERAL CRITERIA CHART ON THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DESIGN INFORMATION REQUIRED UNDER THIS CONTRACT.

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DESIGNED BY:	J.RUCKER
DRAWN BY:	N.MAHILIOUTSAVA
CHECKED BY:	J.RUCKER

SHEET TITLE

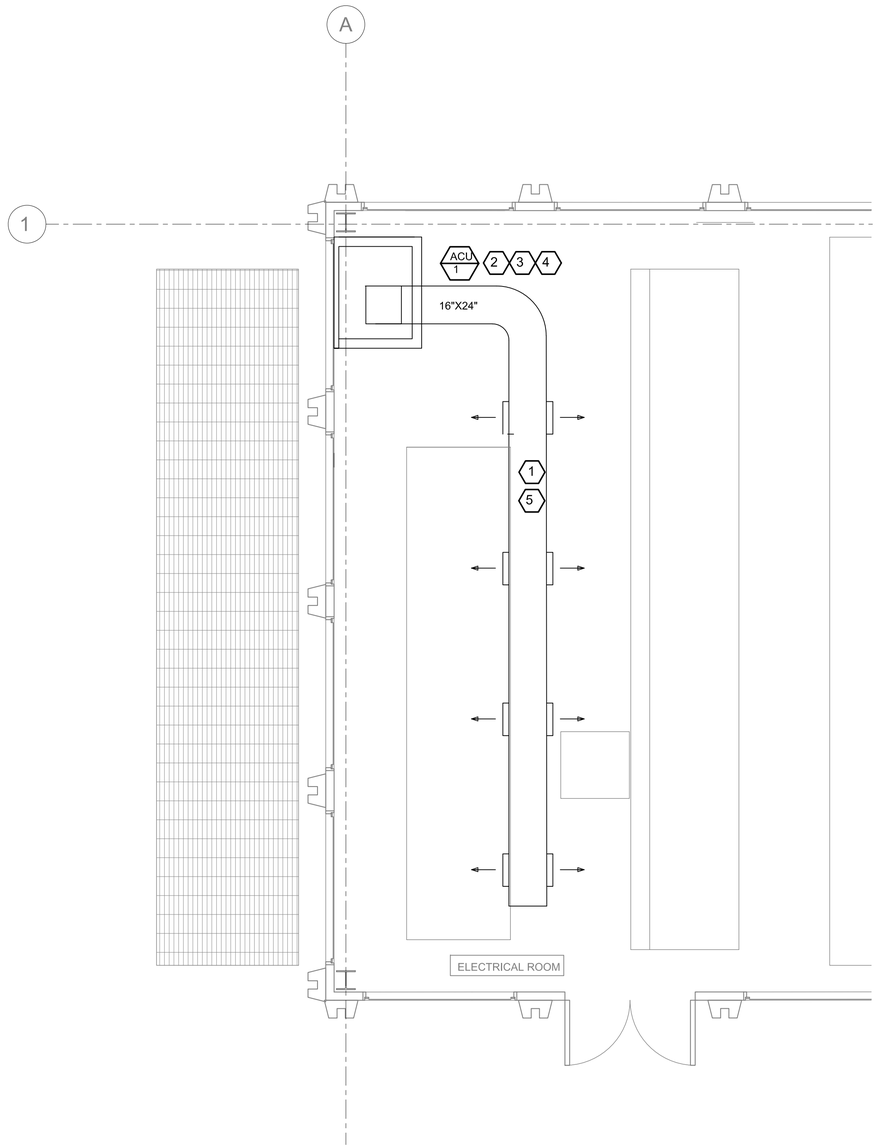
HVAC

ABBREVIATION, SYMBOLS AND GENERAL NOTES

SCALE: N.T.S

H0-01

SHEET ____ OF ____



KEY NOTES:

1. INSTALLING CONTRACTOR TO MAKE SURE NO DUCTWORK, PIPING OR HVAC EQUIPMENT IN DIRECTLY ABOVE ANY ELECTRICAL EQUIPMENT OR BLOCK LIGHTING IN THE SPACE.
2. 7 TON CAPACITY 3,000 CFM CONDENCING UNIT INSULATED DOUBLE WALL CONSTRUCTION AND VERTICAL CONFIGURATION.
3. ROUTE CONDENSATE DRAIN TO OUTDOOR WITH 3/4" INSULATED COPPER PIPE. SLOPE PIPE IN THE DIRECTION OF FLOW. TERMINATE PIPE WITH A CONCRETE SPLASH BLOCK.
4. MOUNT EQUIPMENT ON CONCRETE PAD.
5. ALL DUCTWORK SHALL BE OF G90 GALVANIZED STEEL CONSTRUCTION.

1 / H2-01 ELECTRICAL BUILDING FLOOR PLAN.

SCALE: 3/8" = 1'-0"

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SHEET TITLE

HVAC

ELECTRICAL BUILDING FLOOR PLAN

SCALE: 3/8"=1'-0"

H2-01

SHEET _____ OF _____

INSTRUMENT IDENTIFICATION LEGEND

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE,	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		NOT USED	NOT USED	NOT USED
C	CONDUCTIVITY (ELECTRICAL			CONTROL	CLOSED
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	INTRUSION		GLASS GAGE (UNCALIBRATED)		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTER-MEDIATE
N	SEQUENCE, STRATEGY		NOT USED	NOT USED	NOT USED
O	NOT USED		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)	PULSE	
Q	QUANTITY	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT STATUS	Y AXIS		RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

BASE INSTRUMENTATION SYMBOLS

FIT # — INSTRUMENT FIELD MOUNTED SEE THIS SHEET FOR DETAILS OF INSTRUMENT TAGGING SYSTEM. FULL TAG NUMBER SHOULD BE INCLUDED ON INSTRUMENT INDEX. POWER SUPPLY REQUIRED LOCALLY WHERE SHOWN.

FIR # — INSTRUMENT PANEL FACE MOUNTED

FY # (X / Y) — INSTRUMENT RELAY MOUNTED IN REAR OF PANEL (BROKEN LINE). ACTIVATES AND DEACTIVATES CONTROL AND/OR ALARM SWITCHES AT PRESET VALUE. EQUIPMENT NUMBER (Y) ONLY WHEN NECESSARY. SEE BELOW FOR FUNCTIONS (X).

- △ DIFFERENCE
- > HIGH SELECTOR
- < LOW SELECTOR
- P/I PNEUMATIC/CURRENT CONVERTER
- I/I CURRENT/CURRENT CONVERTER (REPEATER)
- Σ SUMMATION
- AV AVERAGE
- % RATIO

FR # / AR # (DO) — FR & AR ARE TWO FUNCTIONS AS PART OF ONE UNIT. (CIRCLES TOUCH)

SYMBOLS FOR ANALYTICAL DEVICES:

- CH_4METHANE
- Cl_2CHLORINE
- DO-DISSOLVED OXYGEN
- H_2S-HYDROGEN SULFIDE
- H_3PO_4-PHOSPHORIC ACID
- H_2SO_4-SULFURIC ACID
- MeOH-METHANOL
- NaHOCL-SODIUM HYPOCHLORITE
- $Na_2S_2O_5$-SODIUM METHA-BISULFITE
- O_2OXYGEN
- ORP -OXYDATION REDUCTION POTENTIAL
- pH-HYDROGEN ION CONCENTRATION

HSS # — SAFETY PULL CORD

ZS # — BELT ALIGNMENT SWITCH

PROGRAMMABLE LOGIC CONTROLLER (PLC) CONTROL BLOCK

/ # — POINT FOR SHARED VIDEO DISPLAY (FUNCTIONS IN PLC)

— AS ABOVE WITH LIMITED ACCESS

YL ## (RUN) — FOR ALL "RUN" INDICATIONS PROVIDE DISPLAY FOR "OFF"

— INTERLOCK
- INTERLOCK CONTROL STRATEGY

IAS — INSTRUMENT AIR SUPPLY

120V — 120V AC POWER SUPPLY

480V — 480V AC POWER SUPPLY

24V — 24V DC POWER SUPPLY

INPUTS/OUTPUTS

△▽ DISCRETE INPUT/OUTPUT

▲▼ ANALOG INPUT/OUTPUT

▲ DIGITAL COMMUNICATION INPUT/OUTPUT-ETHERNET (E), MODBUS (M), HART (H) OR DEVICENET (D)

BASE INSTRUMENTATION SYMBOLS

FIT # — THERMAL MASS METER

FE # — MAGMETER

FIT # — VENTURI

FE # — ORIFICE PLATE

FI # — ROTAMETER

FE # — ANNUBAR FLOW METER

FLUME

LE XXXX — ULTRASONIC OR RADAR ELEMENT

INSTRUMENT TAGGING SYSTEM

FIT - 0234

INSTRUMENT IDENTIFICATION

LOOP NUMBER

LINE IDENTIFICATION

RWW - 12"

MEDIUM

PIPE SIZE

SEE DRAWING XX FOR PROCESS MEDIUM ABBREVIATIONS

ACTUATOR TYPE

M — ELECTRIC MOTOR ACTUATOR (E)

PNEUMATIC ACTUATOR (P)

HYDRAULIC ACTUATOR (H)

PANEL DEVICE SYMBOLS

HS L/O/R — HAND SWITCH (MANUAL SELECTOR)

FUNCTION SUBSCRIPT

PB ESTOP — PUSHBUTTON

FUNCTION SUBSCRIPTS

FUNCTION SUBSCRIPTS FOR HAND SWITCH AND PUSHBUTTON CONTROLS:

ESTOP	E-STOP
F/O/R	FORWARD-OFF-REVERSE
F/O/JR	FORWARD-OFF-JOG REVERSE
H/O/A	HAND-OFF-AUTO
H/O/R	HAND-OFF-REMOTE
H/O/SBY	HAND-OFF-STANDBY
L/O/R	LOCAL-OFF-REMOTE
M/A	MANUAL-AUTO
M/O/A	MANUAL-OFF-AUTO
O/C	OPEN-CLOSE
O/O	ON-OFF
O/S/C	OPEN-STOP-CLOSE
RS	RESET
R/L	REMOTE-LOCAL
R/O	RUN-OFF
SC	SPEED CONTROL POTENTIOMETER
SCR	SILICON CRYSTAL RECTIFIER
S/S	START-STOP
S/SLO	START-STOP WITH LOCKOUT

PB (G) — INDICATING LIGHT UNIT
G-GREEN (OFF,STOP,CLOSED)
R-RED (RUN,START,OPEN)
W-WHITE (POWER ON)
A-AMBER (ALARM CONDITION)
F-FLASHES ON ELECTRIC OR MECHANICAL MALFUNCTION

1 — INTERLOCK
1 = NOTE NUMBER

ELECTRONIC HORN

— STROBE LIGHT
A - AMBER
W - WHITE
R - RED
B - BLUE

INTERCONNECTING LINES WITH DOT INDICATE ROUTING OF THE SAME SIGNAL.

INTERCONNECTING LINES WITHOUT DOT INDICATE ROUTING OF MORE THAN ONE SIGNAL

VALVE & GATE TYPE

- AIR RELEASE VALVE (AR)
- BALL VALVE (BA)
- BUTTERFLY VALVE (BV)
- CHECK VALVE (CH)
- GATE VALVE (GV)
- AUTOMATIC PRESSURE REDUCING VALVES (PR)
- AUTOMATIC PRESSURE SUSTAINING VALVES (PS)
- ECCENTRIC PLUG VALVE (PV)
- RELIEF VALVE (RV)
- SLUICE GATE (SL)
- SLIDE GATE (SG) SLIDE PLATE (SP)

EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP
- SUBMERSIBLE PUMP
- GRINDER/MACERATOR
- CENTRIFUGAL FAN
- PERISTALTIC PUMP
- WEIR
- M — MOTOR
- VFD — VARIABLE FREQUENCY DRIVE
- MCC — MOTOR CONTROL CENTER
- RVSS — REDUCED VOLTAGE SOFT STARTER

PIPING SYMBOLS

- Y STRAINER
- VENT
- HOSE BIB
- NOZZLE
- DIAPHRAGM SEAL WITH ISOLATION VALVE
- PULSATION DAMPENER
- FLEXIBLE HOSE
- QUICK-CONNECT
- CALIBRATION COLUMN
- EYE WASH/EMERGENCY SHOWER
- UNION
- BACKFLOW PREVENTOR
- SINGLE BASKET STRAINER
- SW — SEAL WATER
- DRAIN
- REDUCER

GENERAL NOTES

1. COORDINATE WORK WITH OTHER DRAWINGS AND DISCIPLINES.
2. THE SYMBOLS SHOWN ON THIS SHEET ARE STANDARD DESIGNATIONS. NOT ALL SYMBOLS ARE APPLICABLE TO THE INCLUDED DIAGRAMS AND INSTRUMENT TAGGING SYSTEM.
3. NOT ALL PIPING, FITTINGS, AND TANK DETAILS ARE SHOWN. REFER TO PROCESS DRAWINGS FOR ACTUAL DETAILS.
4. INSTRUMENT IDENTIFICATION AND LOOP NUMBERS APPEAR WITH INSTRUMENT SYMBOL.
5. TAG NUMBER DOES NOT CHANGE IF SIGNAL IS BROUGHT TO ANOTHER CONTRACT AREA.
6. FINAL ALPHA CHARACTER IN TAG (E.G. FI-101A) INDICATES DUPLICATE DEVICE EXISTS. FI-101B MAY BE IN A A PANEL.

LINE TYPES

- SOFTWARE LINK, SYSTEM FUNCTION CONNECTION OR COMMUNICATION LINK
- MODBUS COMMUNICATION
- ETHERNET COMMUNICATION
- DEVICENET COMMUNICATION
- MAIN PROCESS LINE
- AUXILIARY SYSTEMS
- EQUIPMENT PACKAGE LIMIT
- ELECTRIC (ELECTRONIC) SIGNAL
- PNEUMATIC SIGNAL
- CAPILLARY LINE
- HYDRAULIC SIGNAL
- SONIC SIGNAL
- HEAT TRACED AND INSULATED
- T — TELEPHONE LINK

DRAWING CONTINUATION LEGEND

PROCESS LINES (ON/OFF PAGE):

PROCESS MEDIUM — CONN — AREA OR EQUIPMENT DRAWING I-XXX

UTILITY LINES (ON/OFF PAGE):

REMARKS 1 — CONN — UTILITY DRAWING NUMBER — REMARKS 2

INSTRUMENT SIGNAL LINES (ON/OFF PAGE):

SIGNAL NAME — CONN DRAWING NUMBER

PROCESS LINE
NOT WITHIN THE BOUNDARY OF THIS SET OF DRAWINGS

PROCESS MEDIUM — PROCESS EQUIPMENT

INSTRUMENT SIGNAL LINE
NOT WITHIN THE BOUNDARY OF THIS SET OF DRAWINGS

SIGNAL NAME

CONN: CONNECTION NUMBER

ARCADIS BPA Brindley Peters & Associates, Inc.
A JOINT VENTURE

LEGAL ENTITY: ARCADIS U.S., INC.
2839 PACES FERRY ROAD
SUITE 900 ATLANTA, GA 30339
PHONE : 770.431.8666
WWW.ARCADIS.COM

ENGINEERED SYSTEMS & SERVICES
2950 Horizon Park Drive
Suite B
Suwanee, GA 30024
Phone: 770-810-5700

SEALS

30% SUBMITTAL DO NOT USE FOR CONSTRUCTION

ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: I0-01
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

SHEET TITLE

INSTRUMENTATION

SYMBOLS AND GENERAL NOTES

SCALE: NOT TO SCALE

I0-01

SHEET I0-01 OF

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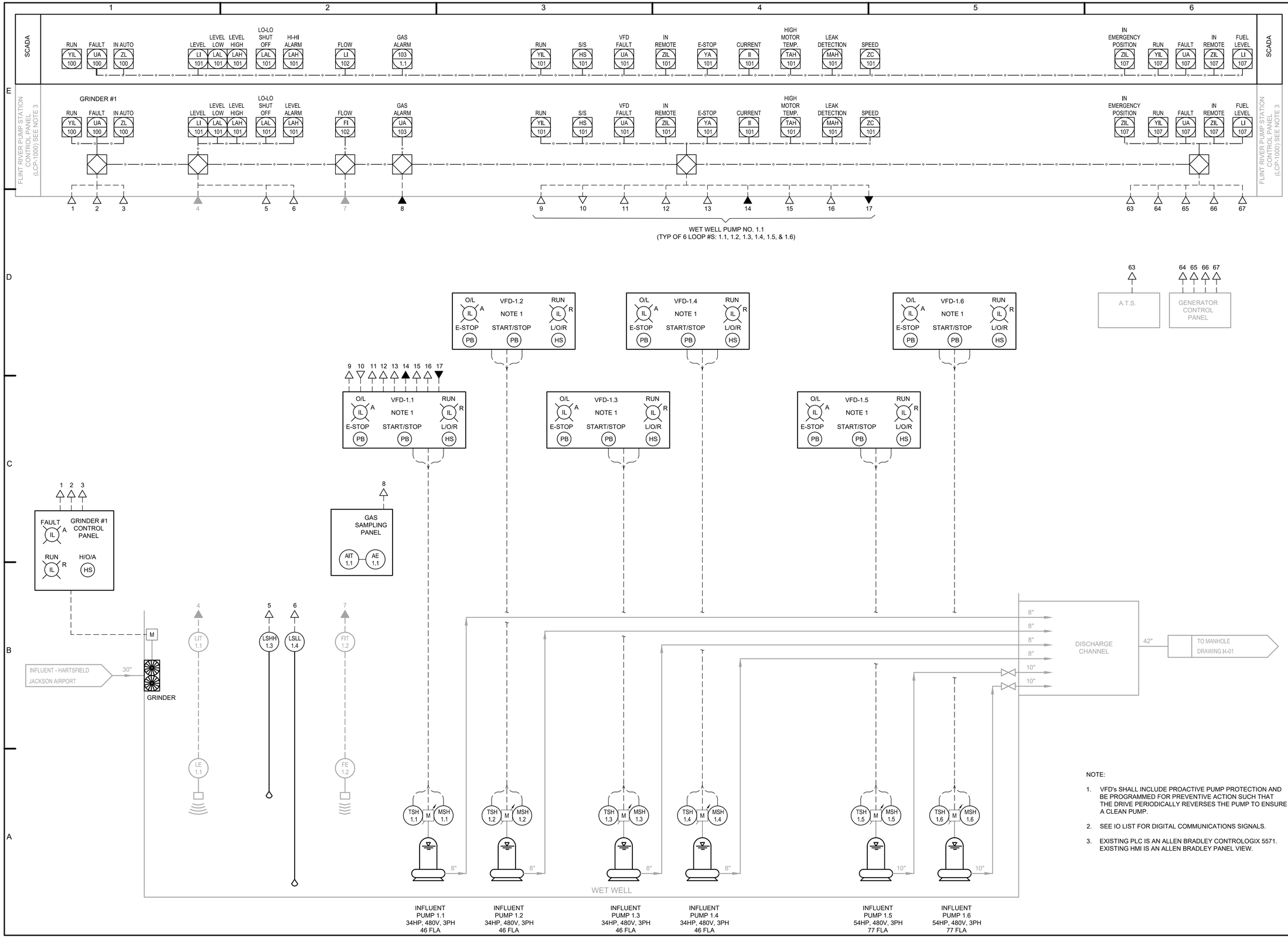

NOTE:

1. VFD's SHALL INCLUDE PROACTIVE PUMP PROTECTION AND BE PROGRAMMED FOR PREVENTIVE ACTION SUCH THAT THE DRIVE PERIODICALLY REVERSES THE PUMP TO ENSURE A CLEAN PUMP.
2. SEE IO LIST FOR DIGITAL COMMUNICATIONS SIGNALS.
3. EXISTING PLC IS AN ALLEN BRADLEY CONTROLOGIX 5571. EXISTING HMI IS AN ALLEN BRADLEY PANEL VIEW.

ARCADIS BPA
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CITY OF ATLANTA
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FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: I1-01
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

SHEET TITLE

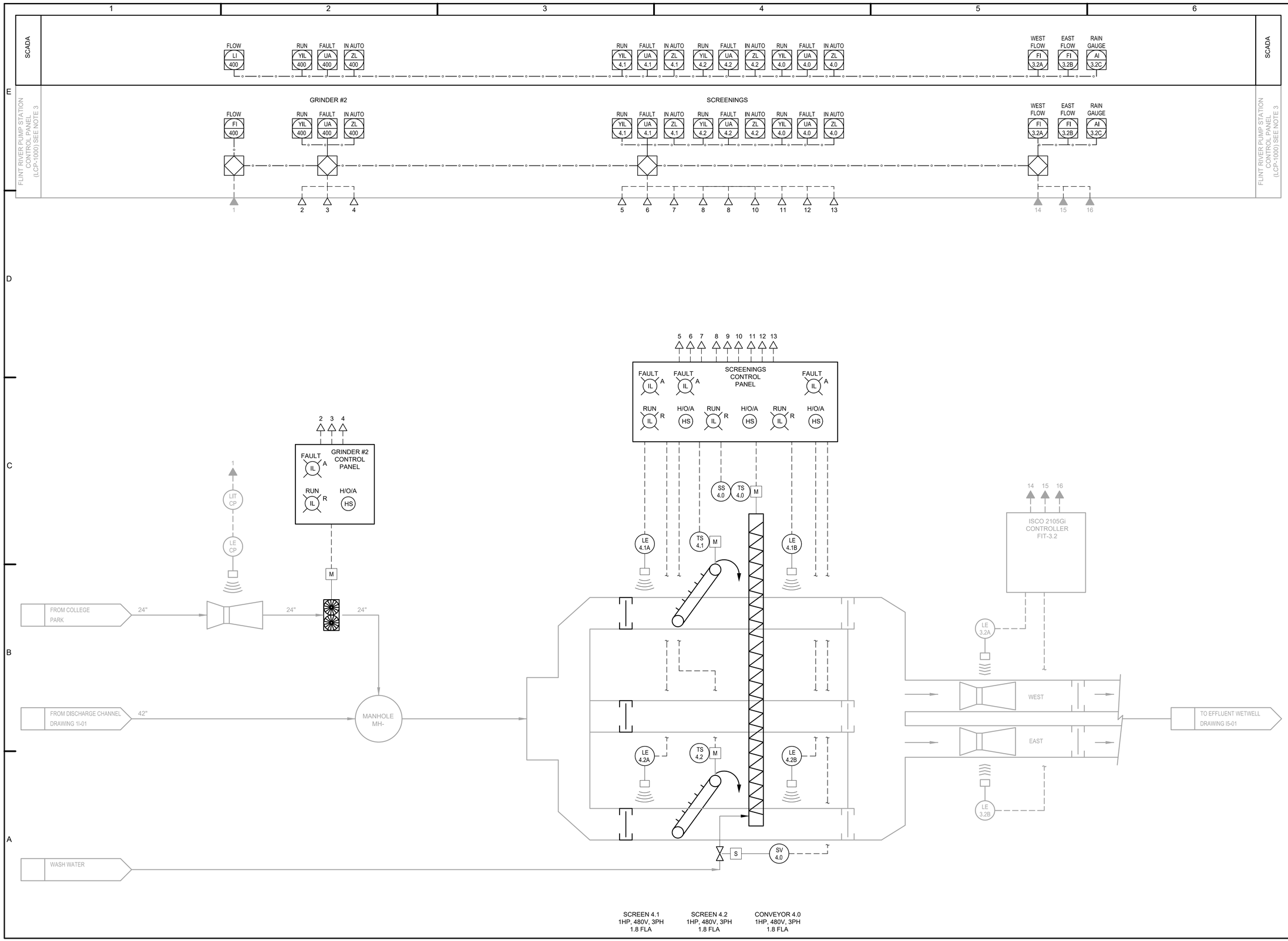
INSTRUMENTATION

INFLUENT PUMP STATION P&ID

SCALE: NOT TO SCALE

I1-01

SHEET I1-01 OF



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ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: I4-01
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

SHEET TITLE

INSTRUMENTATION

SCREENING BUILDING P&ID

SCALE: NOT TO SCALE

I4-01

SHEET I4-01 OF

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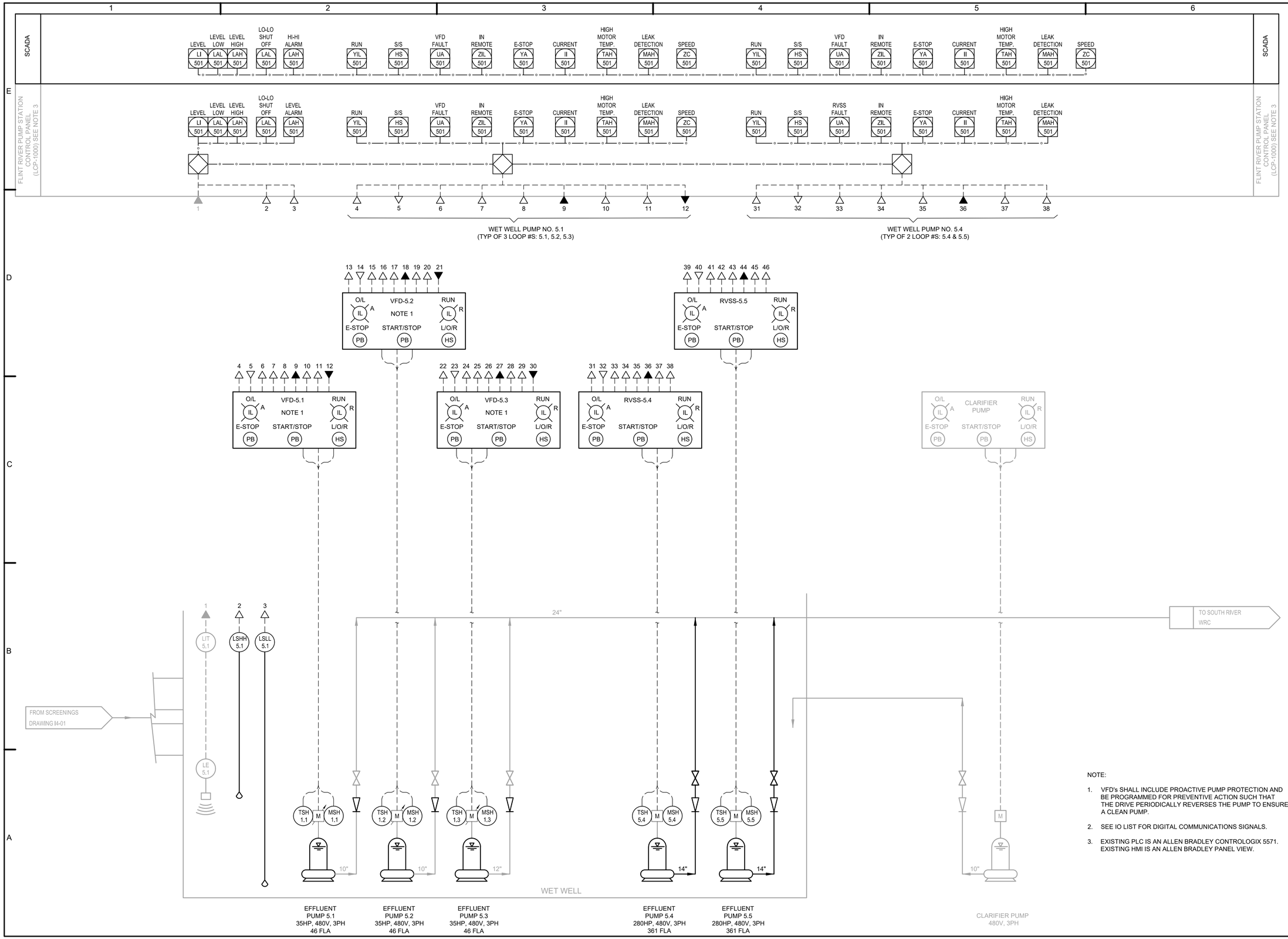

NOTE:

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SEALS

30% SUBMITTAL DO NOT USE FOR CONSTRUCTION

RESURGENS ATLANTA, GA

ATLANTA, GA

CITY OF ATLANTA
DEPARTMENT OF WATERSHED MANAGEMENT

FLINT RIVER PUMP STATION IMPROVEMENTS

600 LAKE MIRROR ROAD, ATLANTA, GA 30349

ARCADIS PROJ. NO. 30049010

NO.	DATE	ISSUED FOR	BY
1	03/11/2021	30% SUBMITTAL	BM

DATE: MARCH 2021
PROJECT NO.: 30049010
FILE NAME: I5-01
DESIGNED BY: D. ZIMMER
DRAWN BY: D. ZIMMER
CHECKED BY: D. ZIMMER

SHEET TITLE

INSTRUMENTATION

EFFLUENT PUMP STATION P&ID

SCALE: NOT TO SCALE

I5-01

SHEET I5-01 OF

ATTACHMENT B: 30% SPECIFICATION TABLE OF CONTENT (TOC)

FLINT RIVER PUMP STATION
FACILITY IMPROVEMENTS

TABLE OF CONTENTS

02200	EARTHWORK
02510	ASPHALT PAVING
02521	CONCRETE CURBS, GUTTERS, AND SIDEWALKS
02575	REMOVING AND REPLACING CONCRETE
02711	CHAIN LINK FENCE AND GATES
02900	TREES, PLANTS, AND GROUND COVERS
02933	SEEDING AND SODDING

DIVISION 3 – CONCRETE WORK

03030	REPAIR AND REHABILITATION OF CAST-IN PLACE CONCRETE
03055	CONCRETE

DIVISION 4 – MASONRY

NOT APPLICABLE

DIVISION 5 – METALS

05051	ANCHOR SYSTEMS
05120	STRUCTURAL STEEL
05130	STRUCTURAL ALUMINUM FRAMING
05500	MISCELLANEOUS METALS
05516	ALUMINUM GRATING
05524	COMPONENT ALUMINUM HANDRAIL

DIVISION 6 – WOOD AND PLASTICS

NOT APPLICABLE

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07900	CAULKING AND SEALANTS

DIVISION 8 – DOORS AND WINDOWS

08110	STEEL DOORS AND FRAMES
08305	ACCESS HATCHES
08710	FINISH HARDWARE
08800	GLASS AND GLAZING

DIVISION 9 – FINISHES

09313	CERAMIC TILING
09900	PAINTING

DIVISION 10 – SPECIALTIES

10440	SIGNS AND IDENTIFYING DEVICES

DIVISION 11 – EQUIPMENT

11000	GENERAL REQUIREMENTS FOR EQUIPMENT
11002	RIGID EQUIPMENT MOUNTS
11113	SCREENS
11243	INLINE GRINDERS
11539	SUBMERSIBLE PUMPS

DIVISION 12 – FURNISHINGS

TO BE ADDED

DIVISION 13 – SPECIAL CONSTRUCTION

TO BE ADDED

DIVISION 14 – CONVEYING SYSTEMS

14300	ELECTRIC JIB CRANE SYSTEMS
14310	HOISTS
14620	SLUDGE CONVEYORS

DIVISION 15 – MECHANICAL

15050	BASIC MECHANICAL MATERIALS AND METHODS
15056	PIPE SUPPORTS
15060	PIPING AND APPURTENANCES
15100	VALVES AND APPURTENANCES
15140	DUCTWORK SUPPORT AND ANCHORS
15250	MECHANICAL INSULATION
15262	STAINLESS STEEL SLIDE GATES

15519	DUCTILE IRON PROCESS PIPE
15891	DUCTWORK
15910	DUCTWORK ACCESSORIES
15950	HVAC CONTROLS
15700	ELECTRICAL UNIT HEATERS
15750	ELECTRICAL MAKE-UP AIR HANDLING UNITS
15990	TESTING, ADJUSTING, AND BALANCING OF HVAC UNITS
15XXX	Heat Tracing

DIVISION 16 – ELECTRICAL

16000	ELECTRICAL POWER AND SYSTEMS
16100	BASIC MATERIALS AND METHODS
16111	CONDUIT
16114	EXPANSION/DEFLECTION FITTINGS
16121	INSTRUMENTATION AND COMMUNICATION CABLE
16123	BUILDING WIRE AND CABLE
16150	LOW-VOLTAGE MOTOR CONTROL CENTER
16155	LOW-VOLTAGE COMBINATION MAGNETIC MOTOR STARTERS
16160	PANELBOARDS
16165	DISCONNECT SWITCHES
16195	IDENTIFICATION OF ELECTRICAL SYSTEMS
16215	ELECTRICAL POWER DISTRIBUTION SYSTEM STUDIES
16289	SURGE PROTECTION DEVICES
16450	GROUNDING
16451	DRY-TYPE LOW-VOLTAGE DISTRIBUTION TRANSFORMERS
16515	ADJUSTABLE FREQUENCY, CONTROLLED SPEED, DRIVE SYSTEMS
16510	INTERIOR LUMINAIRES
16520	EXTERIOR LUMINAIRES
16960	CONTROL CIRCUITS AND PILOT DEVICES
16XXX	ELECTRICAL DEMOLITION

DIVISION 17 – INSTRUMENTATION

17000	INSTRUMENTATION, CONTROL & MONITORING SYSTEM GENERAL REQUIREMENTS
17100	INSTRUMENTATION, CONTROL & MONITORING SYSTEM LOOP DESCRIPTION
17211	PROCESS TAPS AND PRIMARY ELEMENTS
17260	PROCESS CONTROL PANELS AND HARDWARE

17275	MISCELLANEOUS PANEL INSTRUMENTS AND DEVICES
17940	COMMUNICATION LINKS

EXHIBITS

TO BE ADDED

ATTACHMENT C: CITY OF ATLANTA (COA) 30% DESIGN CHECKLIST

CITY OF ATLANTA DEPARTMENT OF WATERSHED MANAGEMENT OFFICE OF ENGINEERING DESIGN SERVICES CHECKLISTS

This checklist has been prepared to provide the Architectural and Engineering Firms (A/E) conducting business with the City of Atlanta Department of Watershed Management (DWM) and internal engineering design staff a clear understanding of requirements of each Design Submittal Phase for New Projects. It also helps the design engineer to look at all the design components in the development of Construction Documents as well as forces the Lead Engineer/Project Architect (or Project Manager used interchangeably in this document) ensure there is coordination between all disciplines and begin the process of evaluating requirements of all regulatory agencies having jurisdiction over the project area much earlier in the design process.

The A/E Firm or the Design Engineer of record shall provide the following submittals at each stage of the design together with adequate responses to review comments of the preceding submittal.

- **Task Proposal**
- **Concept Validation:**
  This is the initial submittal to the Client (City of Atlanta Department of Watershed Management or the representative) and the Senior Engineering Staff for the approval of the design concept.
- **Schematic Design - 30% of the design efforts.**
  This submittal requires responses to review comments.
- **Design Development - 60% of the design efforts.**
  This submittal requires responses to review comments.
- **Construction Document Phase (In Progress) - 90% Completion**
  This submittal requires responses to review comments.
- **Construction Documents Phase (Final Review) - 100% Completion**
  This submittal requires responses to review comments.
- **Final Construction Document Submittal Ready for Bids.**
  This submittal requires responses to the Final Construction Review Comments
- **Conform Set Construction Document Submittal**
  Does not require reviews, comments and responses.

For each design phase the A/E Project Architect/Lead Engineer will be required to complete a Checklist that focuses on the Global aspect of the project. The deliverables shall also include design discipline checklists as well as drawings and other documents called for in the checklist. This checklist attempts to cover many design components, the designer can insert Not Applicable (**N/A**) for items that do not apply to a particular project.

A/E Firms:
It is important that A/E Firms submit the required checklists; a project phase submittal that is not accompanied by the necessary checklists will be deemed incomplete and rejected until the City of Atlanta Department of Watershed Management or representative receives the complete deliverables that includes the checklist. That is "No" phase is complete without the necessary Checklists.

Note that the Conform Set Construction Document Submittal of the project will not require a checklist but must include all addenda and other applicable documents representing the post award situation. Also, after completion of the project, "as-builts" are required in the format specified by the City of Atlanta Department of Water Shed Management.

The following are the checklists' format per project phase and it consists of a cover checklist to be completed and signed by the overall Lead Engineer/Project Architect followed by individual design discipline's checklists. The two sets of checklists shall be packaged with the design drawings and other pertinent documents to complete the submittal:

DESIGN DEVELOPMENT PHASE 30 PERCENT

The Design Development Phase, which includes the Basis of Design Report, is established through meeting coordinated by the Project Manager and attended by the Project Technical Advisory Team. The Design Development Phase and Basis of Design Report are intended to be the building block for subsequent preliminary and final designs.

The following are typical deliverables developed during the **30% Design Phase**:

The items highlighted are not included in the submittal and or will be included or updated after the 30% Submittal.

Site Survey

[X] Set up base drawing in CADD system and confirm the site coordinate system; use NAO 83 State Plane coordinates system. **Completed. Site coordinate system matches existing condition drawings**

[X] Modify drawing to include site utilities and piping taken from record drawings or field investigations. **Completed. 30% civil drawings include site utilities indicated on record drawings, located during utility location, and verified as possible during surveying activities.**

[X] Delineate environmentally sensitive areas such as wetlands and hazardous waste areas. **Completed. The facility is not located in a wetland and we do not believe at this time that hazardous waste areas exist in the construction area. The existing wastewater facility does have a historical service elevator, and these types of elevators at the time construction sometimes used hydraulic oil reservoirs below the elevator shaft. This could potential be a sensitive area in the future if work is conducted in the area.**

[ ] Record boring locations on drawings. **In Progress. Borings were taken, laboratory analyzed and used for analysis. The location of the boring is currently included in the Draft Geotechnical report which is currently being finalized with the Arcadis/BPA structural team. The report will be included in the BODR at completion. The borings are currently in process of being added to the design drawings.**

Site Development Constraints

[X] Determine zoning and local site development requirements. **Completed. There are no zoning or local site development requirements specific to this facility beyond general erosion control and tree ordinance. The disturbance area is minimal. The tree plan drawings have been developed and are included in the civil drawings. We are currently engaging with City of Atlanta tree specialists to coordinate our efforts.**

[X] Determine the limits of the floodplain and evaluate project impacts. **Completed. This facility is not in the floodplain. We have delineated the sub-surface utilities at the site and will use this information going forward to prevent impacts on the surrounding areas.**

[X] Determine storm water management and erosion control requirements and feasible management options. **Completed. Sub-surface stormwater piping will not be modified as a part of the design at this time. Minor re-grading and smoothing outside of the rehabilitated truck bay is planned. The drainage pipes in the area of the truck bay are planned to remain, but the ability to use their current path of flow is still being determined. Currently, efforts have been focused on the tree ordinance requirements and determining jurisdictional authority for the site because it resides at an intersection of multiple players. It was determined that City of Atlanta will have authority even though the site resides in Clayton county. Erosion control requirements have now been established and the drawings are currently in development.**

Vehicular Access Requirements

[ ] Determine traffic requirements, access routes, and maneuvering requirements for project construction vehicles and emergency vehicles. **In Progress. See CO-04 for truck route for dumpster pick-up. Construction vehicles and emergency vehicle access is still in progress.**

[ ] Determine availability of staging areas staging Areas need to be shown on the Site Civil Plans. **In Progress. We have discussed internally. Staging area will be shown in next submittal.**

[X] Observe existing pavement condition, determine pavement requirements, and recommend improvements. **Completed. The roadway does not show signs of major failure. It is recommended to perform minor regrading around the truck bay and resurface the road along the dumpster truck pick-up and delivery route. Sheet CO-04 shows the area of full depth asphalt rehabilitation and the areas of resurface along the dumpster pick-up route.**

Underground Utilities

[X] Locate and confirm all existing and proposed utilities, anticipated potential underground conflicts and easements. **Completed. An area of interest going forward will be running electrical conduit to the screening building. Additionally, if new cable is required for the effluent pump station then the reuse of conduit will have impacts.**

[X] Relocate proposed utilities and easements shown in buffer. **Completed. Not needed.**

[X] Show main sizes. **Completed. See CO-02 for existing utilities. Sizing is not thought to be an issue due to the historical size of the facility and the water requirements of the site at the time of construction.**

[X] Show valve and major appurtenances locations. **Completed. See CO-02 for underground utilities and M sheets for existing and proposed conditions.**

[X] Identify other utilities and owner's criteria for relocation; determine method for relocation. **Currently we do not expect any relocation of utilities. As we work through electrical conduit routing to the screening building, we will update and coordinate accordingly.**

[ ] Provide certification stating that the plan preparer (or his or her) designee has visited the site prior to the creation of the plan. **Craig Ashby and the site civil team have visited the site. This information will be provided on plans in note form once the sheet has been completed.**

[ ] Attach NPDES Level II State Certification number to plans. **Will be included in the ESC sheet plans once completed.**

Schematic Site Plan or Drawings

[X] Delineate the boundaries of site constraints based on legal, master plan, environmental, and regulatory restrictions. **Completed. We are not aware of any known legal issues with the facility. The master plan for the facility was indicated to be operational for**

10-15 additional years. The environmental and regulatory issues have been evaluated and the final tree ordinance/land disturbance is currently being finalized.

[X] Evaluate alternative layouts for adverse impacts and cost implications. **Completed. Alternatives were evaluated earlier in the project. Information can be found in the Design Alternative Meeting Minutes from February 18, 2021.**

[X] Develop a conceptual layout for proposed new buildings, structures, roads, and proposed utilities. **Completed. See entire drawings set for additional details, and specifically, C0-04.**

[X] Identify property acquisition and easement requirements. **Completed. At this time, property acquisition and easement are not required for this project.**

Schematic Mechanical Drawings

[X] Process flow diagram. **Completed. See Sheet G0-03.**

[X] Show valve and gate locations (manual and powered). **Completed. See sheets G0-03, M1-03, M4-03, M5-03, I1-01, I4-01, and I5-01.**

[X] Define packaged control panels and adjustable-speed drives. **Completed. See sheets E0-05 and E2-01 for one-line and electrical equipment locations.**

Process Control Philosophy

[X] Develop an overall control philosophy, including local control, control system , level of automation, and supervisory control. **Completed. See sheets I1-01, I4-01, and I5-01.**

[X] Select flow meters and other process control devices. **Completed. It is the current intention for pumps to be controlled based on wet well level, with existing level sensors.**

Major Process Equipment

[X] Establish level of redundancy required for all pumping and major process equipment. **Completed. The following is an outline and is also included in the BODR.**

Influent Pump Station:

- **Grinder: 1-duty; no standby (overflow weir used, and crane to remove)**
- **Pumps 1.1-1.4: 3-duty; 1-standby**
- **Pumps 1.5-1.6: 1-duty; 1-standby**

College Park Influent:

- **Grinder: 1-duty; no standby (overflow weir used, and crane to remove)**

Screening:

- **Screens: 2 in operation. 1 can handle peak flows for small periods of time. By-pass line available if needed.**

Effluent Pump Station:

- **Pumps 5.1-5.3: 2-duty; 1-standby**
- **Pumps 5.4-5.5: 1-duty; 1-standby**

[X] Review capacity and condition of all existing pumping and process equipment to remain in service where appropriate assign capacity to existing systems. **Completed. This was conducted in Task 3 of this task order.**

[X] Select and size all major pumping and other process equipment and preliminary equipment data sheets. **Completed. Additional information is provided within the Basis of Design Report.**

[X] Prepare equipment list with sizing for major pumping and other process equipment and preliminary equipment data sheets. **Completed. Equipment list provided in Task 2, evaluated in Task 3, and discussed in BODR.**

[X] Provide process equipment motor voltage and horsepower requirements to the electrical engineer. **Completed. Electrical engineer has developed one line drawings, electrical layout, and back checked generator requirements related to all loads for proposed equipment.**

[X] Determine Georgia Power supply constraint and existing conditions. **Completed. Existing power supply was evaluated during Task 2.**

Schematic Layout

[X] Prepare preliminary sketches for equipment arrangements. Completed. **See sheets G0-03, M1-03, M4-03, M5-03, and E2-01.**

[X] Prepare preliminary hydraulic profile, if appropriate. Hydraulic profile is included in general set of drawings, but will be filled out with water elevations after the 30% deliverable. **Completed for 30%, still in development and establishment of grinder overflow height and headloss through the different screen options.**

Project Permitting

Identify Permitting Type:

- Local ROW Utilities Lane Closure, Full Road Closure, Sidewalk Closure, Noise Ordinance.
  - **Not applicable to our project.**
- State ROW Utilities Lane Closure, Sidewalk Closure
  - **Not applicable to our project.**
- Army Corps of Engineers
  - **Not applicable to our project.**
- GA EPD
  - **At this time, we are evaluating whether GA EPD will require any type of submittal or notification for the rehabilitation.**
- MARTA Encroachment Permits
  - **Not applicable to our project.**

- CSX or Norfolk Southern Railroad Encroachment Permits
  - **Not applicable to our project.**

- Fulton County Encroachment
  - **Not applicable to our project. Our project site is located in Clayton County, but staff have indicated they will defer to City of Atlanta requirements.**

- Tree Ordinance Removal Permit.
  - **In Progress. See sheet C0-09 for current sheet for tree protection. We have met with staff and currently working through condemning the two trees that are impacting the screening building structure.**

[X] Meet with or contact governing regulatory agency(ies) to determine permitting requirements
- **Completed. See sheet C0-09 for current sheet for tree protection. We have starting coordination with City of Atlanta staff within the appropriate departments.**

[X] Identify ROW permitting issues and application criteria for related requirements
- **Not applicable to our project.**

[X] Prepare permit application for signature by DWM authorized representative and prepare all supporting documentation.
- **In progress. Working through potential tree ordinance. At this time, this project does not appear to need a permit.**

[X] Permit fees.
- **In progress. Working through potential tree ordinance. At this time, this project does not appear to require a fee.**

[X] Contractor is responsible for identifying both Local and State ROW's to be encroached Upon.
- **Not applicable to our project.**

[X] Contractor is responsible for permit packet preparation.
- **In progress. Working through potential tree ordinance.**

[X] DWM is responsible for reviewing and procuring requested ROW closures from DPW (lane and sidewalk only) and GDOT.
- **Not applicable to our project.**

[X] Contractor is responsible for reviewing and procuring requested local ROW closures (full street closures and Noise Ordinance only) from the City of Atlanta Department of Public Works.
- **Not applicable to our project.**

[X] A/E Firms are responsible for submitting sewer and storm water plans to DWM Site Development.

- **In progress: Currently we do not expect any relocation of utilities. As we work through electrical conduit routing to the screening building, we will update and coordinate accordingly.**

[ ] A/E Firms are responsible for submitting water plans to DWM Reviewers. **To be provided after 30%**

- **In progress: Currently we are working through water requirements for spray down of the different screen and conveyor manufacturers.**

[X] DWM Site Development is responsible for procuring GDOT permits per Developers' request for sewer and/or storm water connections only.

- **Not applicable to our project.**

[X] DWM Engineering Services is responsible for procuring GDOT permits per Developers' requests for water connections only. **Not Applicable**

- **Not applicable to our project.**

[ ] Prepare all design calculations, as required by specific permitting requirements.

- **In progress: working through tree ordinance requirements and the condemning of the two trees impacting the screening building.**

[ ] Address all comments and requests for additional information from to the permitting Authority.

- **In progress: Working through tree ordinance.**

Basis of Design Report to include:

[X] Description of Existing Facilities (where appropriate).

[X] Design Criteria.

[X] Recommended treatment processes (where appropriate)

[X] Preliminary list of major equipment.

[X] Preliminary list of technical specifications

[X] Conceptual site or system layouts

[X] List of required permits.

[ ] Implementation schedule

[X] Project background and problem statement

[X] Preliminary process flow diagrams (detailed) and I or narratives

[X] Flows stream IDs, legends, abbreviations (for 30% design build).

[X] Preliminary hydraulic profiles and / or hydraulic computations; justification for equipment and main sizing

[X] Preliminary equipment list /data sheets for major equipment

[X] Preliminary site plan (s)

[X] Preliminary building plans showing rooms and major equipment

[X] Preliminary building elevations.

[X] Preliminary control system block diagram sketch and control philosophy.

[X] Structural design concepts.

[X] Geotechnical information.

[X] Geotechnical report and final foundation design recommendations

[X] Electrical/Communications/security design concepts

[X] Preliminary construction cost estimate.

[X] Revised engineering cost estimate (if required).

- **No revision required at this time.**

[X] Materials selection

[X] Preliminary list of drawings

[X] Technical specification table of contents

[X] Verify that mechanical equipment and piping model matches P&IDs

[X] Documentation of all workshops and major decisions.

[X] 30% Schedule submittal

[X] 30% Design Development Report submittal

A&E Design Manager: 

Date: 3/17/2021