ADDENDUM NO.5

LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS

MACON WATER AUTHORITY
MACON, GEORGIA

ADDITIONAL INFORMATION DOCUMENTS

The following document:

- Questions and Responses No. 3

is being provided with this addendum for informational purposes only. The documents listed above are not, and will not, be considered as part of the Contract Documents.

SPECIFICATIONS

Replace Section 00 30 00-Bid. 1.23 with 00 30 00-Bid.11.23 attached.

03 11 00 – Concrete Formwork, Paragraph 1.3 A.1
Delete paragraph in its entirety.

26 05 13 – Medium-Voltage Cables, Article 2.2 D,
Change "…Aluminum…"
To "…Copper…"

26 05 33 – Raceways and Boxes For Electrical Systems,

1. Article 3.1 A 1 b,
   Change "…rigid steel…"
   To "…stainless steel rigid…"
2. Article 3.1 A 1 c,
   Change "…rigid steel…"
   To "…stainless steel rigid…"
3. Article 3.1 A 2 a,
   Change "…rigid galvanized steel…"
   To "…stainless steel rigid…"
4. Article 3.1 A 2 b,
   Change "…rigid galvanized steel…"
   To "…stainless steel rigid…"

40 05 19 - Ductile Iron Process Piping, Joints, D.
Change: "…Flanged; Class 250 flat face…."
To "…Flanged: Class 125 flat face…"

40 05 23 - Stainless Steel Process Piping, Flanges, All ,
Forged Stainless Steel, Change "…Class 300…" To "…Class 150…"
Cast Carbon Steel: Change "…Class 300…" To "…Class 150…"

Add Spec Section 40 60 00.01- Control Narrative included with this addendum.

DRAWINGS

01-C101, SITE KEYNOTES, Change Note number 4,
From "…STRUCTURAL SLAB…"
To "…CONCRETE SIDEWALK (SEE DETAIL 4 / 01-C501)…"

02-D105, INFLUENT FORCE MAIN METER VAULT- EQUIPMENT PLAN, Change
From "…DMJ, TYP,,,"
To "…DMJ w RFA, TYP…"

02-E101, KEY NOTTES, Change Note number 8,
From "…THE NEW ELECTRICAL BUILINGS A & B SHALL BE SHIPPED AND SET ON PAD AREA AS SHOWN BY E-HOUSE MANUFACTURER…"
To "…THE NEW ELECTRICAL BUILINGS A & B SHALL BE SHIPPED BY E-HOUSE MANUFACTURER. CONTRACTOR TO RECEIVE, STORE, AND INSTALL E-HOUSES ON PAD AREA…"

02-E102, ENLARGED POWER PLAN – EXISTING ELECTRICL BLDG, Change,
From "…EXISTING SCADA CONTROLS CABINET…"
To "…EXISTING RTU-X CABINET…"

04-DI801, Delete ETHERNET connection from RTU-1 to CP0801.

04-DI801, Delete ETHERNET connection from RTU-2 to CP0802.

04-DI901, MOTOR PROTECTION PANEL, Change,
From "…MPP-A…"
To "…MPR-A…"

04-DI902, MOTOR PROTECTION PANEL, Change,
From "…MPR-A…"
To "…MPR-B…"

04-DI902, MOTOR PROTECTION PANEL, Change,
From "…DEVICENET…"
To "…2X TSP…"

09-D102, Delete Note,
"…CLASS B CONCRETE TOPPING SLOPED AT ½" PER FOOT, TYP…"
Replace Note with,
"…APPLY CEMENTITIOUS RESURFACING GROUT TO PROVIDE SLOPE AT ½" PER FOOT AS SHOWN (SEE STRUCTURAL)…"

09-D103, Add Note:

"ARV-9 AND ARV-10 SHALL BE CONNECTED TO THE FM UTILIZING A TRIPLE STRAP DUCTILE IRON SADDLE EQUAL TO SMITH BLAIR MODEL 366. THREADED 2" BST SHALL EXTEND TO THE SURFACE WHERE 2" PV AND ARV SHALL BE MOUNTED. PROVIDE A REINFORCED CONC PAD AT GRADE MEASURING 2 FT SQ X 8" THICK. "

09-E601, PANELBOARD CONDUIT AND WIRE SCHEDULE, Change Note number 1,

From "…4"C…"
To "…5"C…"

09-E601, PANELBOARD CONDUIT AND WIRE SCHEDULE, Change Note number 2,

From "…#2…"
To "…#3/0…"

09-E605, DETAIL 1 - ELECTRICAL RISER DIAGRAM, change FD-1, 2, 3, & 4,

From "…480V/1600A…"
To "…480V/1200A…"

09-ED301, GENERAL NOTES, After note G add,

"H. It is the contractor's responsibility to relocate and maintain temporary equipment and wiring during construction. Final testing and reports are not required for the temporary phase. Test existing equipment and wiring as required to complete scope of work during construction."

09-ED301, GENERAL NOTES, After note H add,

"I. The contractor shall identify any equipment problems prior to relocation and verify performance after relocation. Contractor shall protect equipment from damage during construction and replace if necessary."

99-E702, DETAIL 11 – MEDIUM VOLTAVE (12.4KV) DUCT DETAIL, Change,

From "…4"C (TYP.)…"
To "…5"C (TYP.)…"

99-E702, DETAIL 12 – MEDIUM VOLTAVE (12.4KV) DUCT DETAIL, Change,

From "…4"C (TYP.)…"
To "…5"C (TYP.)…"

99-E703, Delete Detail 1 – STANCHEON MOUNTING.

99-E703, Delete Detail 2 – STANCHEON LIGHTING.

99-E801, LIGHT FIXTURE SCHEDULE, Change fixture S remarks,

From "…REQUIRES POLE MOUNTING…"
To "…POLE HEIGHT TO BE 20 FEET AFG…"

99-E801, LIGHT FIXTURE SCHEDULE, Delete fixture SL1.

99-E851, CONTROL PANEL WIRING DIAGRAM OVERVIEW, Change,

From "…RTU-3…"
To "…HMI-1…"

99-E852, CONDUIT AND WIRE SIZE SCHEDULE, change all
From "…2#18TSP…"
To "…2#16TSP…"

99-E852, CONDUIT AND WIRE SIZE SCHEDULE, Change Note 2,
From "…(1) 3"C, (1) CAT-6A, (2) 2#18TSP…"
To "…(1) 2"C, (2) 2#16 TSP…"

99-E853, CONDUIT AND WIRE SIZE SCHEDULE, change all
From "…2#18TSP…"
To "…2#16TSP…"

99-E853, CONDUIT AND WIRE SIZE SCHEDULE, Change Note 2,
From "…(1) 3"C, (1) CAT-6A, (2) 2#18TSP…"
To "…(1) 2"C, (2) 2#16 TSP…"

9-E853, RTU-2 WIRING DIAGRAM, Change
From "…WET WELL A…"
To "…WET WELL B…"

99-E854, CONDUIT AND WIRE SIZE SCHEDULE, change Note Number 3
From "…8/C #14…"
To "…2#16TSP…"

99-E854, CONTROL PANEL WIRING DIAGRAM OVERVIEW, Change,
From "…RTU-EXISTING…"
To "…EXISTING RTU-X…"

Delete Drawing 09-S001 and replace with Drawing 09-S001 attached

Delete Drawing 09-S100 and replace with Drawing 09-S100 attached

Delete Drawing 09-S102 and replace with Drawing 09-S102 attached.

Delete Drawing 09-S103 and replace with Drawing 09-S103 attached.

Delete Drawing 09-SD102 and replace with Drawing 09-SD102 attached.

Delete Drawing 09-S301 and replace with Drawing 09-S301 attached.

Delete Drawing 09-S302 and replace with Drawing 09-S302 attached.

Bidder Must Acknowledge Receipt of this Addendum on Bid Form

August 21, 2024
Barge Design Solutions, Inc.
6525 The Corners Parkway, Suite 450
Peachtree Corners, Georgia 30092
(678) 515-9411

QUESTIONS AND RESPONSES NO. 3

LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS

MACON WATER AUTHORITY
MACON, GEORGIA

1.	Q:	Pipe supports on 09-S103 and 09-D103 show different orientation and sizes? Which is correct?
	R:	The correct layout is shown on 09-D103
2.	Q:	Detail A 09-D301 and Detail E-09-D304 show the pipe supports being buried approx. 6' below grade. Detail 1/09-S501 shows an above grade structure. Which is correct?
	R:	Detail 01/09-S501 shall be used for pipe support piers above grade. Detail 1 /99-D501 shall be used for pile caps for buried pipe supported on Helical Piers.
3.	Q:	If the pipe supports at south side of pump station are below grade, will the concrete slab above them be poured back? If so, is there a detail for this.? The civil refers to this as a structural slab.
	R:	A new concrete sidewalk shall be poured. See Addendum No. 5
4.	Q:	The geotechnical report recommends "pull down helical piles" that are grout injected for the pipe foundations at the east and west matt foundations for pipe supports. They suggest this because of the roof of the wet well structure below does not allow for deep drilling. Will the pull-down helical piles be required?
	R:	Yes. Max depth 15 ft.
5.	Q:	Will we need to worry about the roof of the wet well when drilling the pipe supports for the south side of pump station?
	R:	No.
6.	Q:	The Geotech report states that they expect helical pile depths at areas other than the wet well to be 15' to 25'. Should we assume this depth when bidding.
	R:	See Addendum 2. Refer to 09-S001 FOUNDATIONS for depth of piles included in the base bid. Actual length of helical torque anchors vs base bid to be adjusted per unit price in the Bid Form.
7.	Q:	Sheet 09-D102 shows a sloping top slab on level 273.7. Sheet 09-D302 and the structural show it on the bottom level. Do both levels receive the sloping topping slab?
	R:	Yes. Both levels receive the sloped topping.
8.	Q	Pile cap foundations (Detail 5/S501) pipe supports at east and west side of pump station are assumed to be 3'-7" above footing. 8" below existing slab per detail and up to elevation 297.83 per B-09-D302. Is this correct?
	R	See Addendum No. 2

9.	Q:	Paragraph 1.3 of Spec section 031100 states that all formwork shall have shop drawings prepared by licensed engineer. Does this apply to all formwork? Does this include the divider wall and pipe supports?
	R:	Requirement deleted. See Addendum 5.
10.	Q:	The drawings show fused disconnects 1-4 as being 1200 amps on Sheet E-601, which should be the correct size since the MCC's are also 1200 amps. However, E-605 shows them as 1600 amps. Just want to make sure 1200 is correct.
	R:	1200 A is correct. See Addendum no.5
11.	Q:	The drawings show N4X enclosures on outdoor equipment, but they don't make that for disconnects that size or medium voltage transformers. Please Confirm.
	R:	Fused Disconnects shall be NEMA3R. Medium voltage transformers shall meet requirements outlined in Spec Section 26 12 19 (2.2) (B) (3) (n).
12.	Q:	Do the disconnects for the AC units in the e-houses come with the units? Please confirm.
	R:	Yes.
13.	Q:	Can you please confirm the size, quantity, location for the checkered plate / armor edge detail 9/09-S301.
	R:	See Addendum 2
14.	Q:	Are the lintels on detail 5/09-S301 supposed to be steel or stainless steel?
	R:	Stainless Steel. See Addendum No.5
15.	Q:	Are the lintels on detail 2/09-S302 supposed to be steel or stainless steel?
	R:	Stainless Steel. See Addendum No. 5
16.	Q:	For the new hatches on detail 1/ 09-S302, are new embed angles in the concrete required?
	R:	No.
17.	Q:	There are multiple places on the drawings that indicate the eHouse MCC's are 1200A. However, on page 09-E605, it shows 1600A. Please clarify.
	R:	Fused Disconnects and MCC's to be 1200A. See Addendum
18.	Q:	The fixture schedule for the "S" fixture does not state any details about the pole required to mount the fixture.
	R:	Pole to be 20 feet AFG. See Addendum 5
19.	Q:	The medium voltage cabling calls out aluminum in the specifications. However, copper is called out on the drawings. Refer to section 26 05 13 Cables, D. Conductor: Aluminum.
	R:	All medium and low voltage cables to be copper only. See Addendum No.5
20.	Q:	Will the cable tray in eHouse be factory installed?
	R:	Yes
21.	Q:	Sheet 09-E601 conduit and wire schedule 2 states 4 sets of (3)#500 kcmil and (1) #2 ground from the pad mount transformer S1A, S1B, ScB and S2A. Normally there would be (4) #500 and no ground from the pad mount to the service fused disconnect. Is this correct?
	R:	See Addendum 5

22.	Q:	Regarding the cabling between the pump VFD's and the pump motors, bid documents call out for this to be VFD cable, as in a shielded 3 conductor cable with ground conductors. Bid documents also show this to be a parallel set of cables with only one conductor shown.
	R:	See Detail 14 and 15 on Sheet 99-E702 for all conduits required. Conduits are labelled P-1 through P-10 (Power 1 through Power 10) this does not correspond to equipment labels.
23.	Q:	Sheet 99-E702. Ductbank detail shows only one 3" conduit for each Pump P1, P2, P4, P5 Is it the intent to install both 3 conductor VFD cables in one conduit?
	R:	See Q 22 above.
24.	Q:	Can a site light pole height and material be provided?
	R:	See Q 18 above.
25.	Q:	Will testing be required on existing equipment that is relocated to temporary electrical buildings?
	R:	See Addendum 5
26.	Q:	When moving electrical equipment there is a chance of failure of some of the equipment. Who will be responsible for repair and replacement of equipment if after relocation it fails?
	R:	See Addendum 5
27.	Q:	Will disconnect switches be required to be added to existing pumps for temporary connection of them?
	R:	See Addendum 5
28.	Q:	What demolished equipment and materials are to be returned to the owner.
	R:	Unless specified as salvage dispose of all demolished materials.
29.	Q:	MWA has only allowed 16/2 TSC in the past. The bid documents call out 18/2 TSC please clarify?
	R:	See Addendum 5. Provide 16/2 TSC per MWA requirements
30.	Q:	Sheet 99-D854 Conduit and wire schedule indicated installing 8- #14 conductors to FIT-9003 and FIT -9004. Please confirm this is correct and not to be shielded cable?
	R:	See Addendum 5 . Shielded Cable
31.	Q:	Some 120-volt circuits are called out to be #10. Others do not indicate conductor size. Are 20 amp 120v circuits to be #12 unless shown a different size?
	R:	Yes.
32.	Q:	SL! Is a stanchion mounted fixture on the schedule. Can you confirm the location of any of these fixtures?
	R:	None. See Addendum 5

33.	Q:	Sheet 09-E601 Panel Schedule shows (1) set of (3) 500 KCMIL, 15KV,CU and (1) 1/0 AWG CU Ground to be installed in a 4" conduit. Please confirm this conduit size is correct to install all cables.
	R:	Medium Voltage Ductbank Conduits revised to be 5". See Addendum 5.
34.	Q:	Please confirm the new 1500 KVA transformer T-12 is to have copper windings and housing is to be made of Painted Stainless Steel.
	R:	Transformer T-12 to have copper windings per Spec Section 26 12 19 (2.2) (B) (3)(c). Transformer T-12 shall meet requirements of specification 26 12 19 (2.2)(B) (3) (n).
35.	Q:	Are concrete encased ductbanks to be died RED?
	R:	No. See 99-E702
36.	Q:	Where duct banks are to cross roads are they to be re-enforced with Rebar? If so, can some details be provided?
	R:	No
37.	Q:	Sheet 99-D855 block diagram for the temporary RTU wiring does not indicate size or quantity of cable or conduit sizing. Is this the contractor's responsibility to investigate and provide?
	R:	Yes.
38.	Q:	Please verify that all temporary conductors are to be copper and installed in conduit?
	R:	Yes.
39.	Q:	Will fiber connection be required for the temporary RTU panel, or will it be Radio?
	R:	Radio
40.	Q:	What are the temperature limits of the temporary electrical buildings?
	R:	85° F
41.	Q:	What is the size of the personal door in the temporary electrical buildings?
	R:	As required to install equipment.
42.	Q:	What is the material for above ground and below ground permanent conduit?
	R:	
43.	Q:	Specification section 40 05 19 for Ductile Iron Process Pipe calls for Class 250 flanges. The BOM for the Plug Valves are to have Class 125 flanges. Please clarify what flanges are to be provided.
	R:	Class 125. See Addendum 5
44.	Q:	The interior process piping for the Pump Station Force Main is indicated as "DI/SSTL" on the process drawings. What does this indicate? Piping can be either all DI or all SSTL? Or is there a transition point where some of the piping is SSTL and some is DI?
	R:	Where the pipe is labelled DI/SSTL either material may be used.

45.	Q:	At Flow Meter FE-903 of the influent force main meter on Drawing 02-D105, is there an existing flange that the dismantling joint is connected to? Or should a flange adapter or another solid sleeve and flange spool piece (similar to the other side of flow meter) be considered?
	R:	A flange adapter will be required. See addendum No 5.

August 21, 2024

Barge Design Solutions, Inc.
6525 The Corners Parkway, Suite 450
Peachtree Corners, Georgia 30092
(678) 515-9411

SECTION 00300

BID

TO: MACON WATER AUTHORITY

FROM:_____
(Bidder's Name)

FOR: Lower Poplar Water Reclamation Facility Influent Pump Station Improvements

Submitted: _____, 2024

The undersigned Bidder, in compliance with your Invitation to Bid for the construction of this Project, having examined the Contract Documents and the site of the proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to construct the Project in accordance with the Contract Documents.

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Macon Water Authority, in the form of Contract Agreement specified, and to furnish all necessary products, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the Work in full and complete accordance with the reasonably intended requirements of the Contract Documents to the full and entire satisfaction of the Macon Water Authority with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents, for the following prices:

Item No.	Description	Estimated Qty.	Unit	Unit Price	Total Price
1.	Furnishing all products, materials and equipment and performing all labor necessary to complete and put into operation the Repairs to the Lower Poplar Water Reclamation Facility Influent Pump Station (36181-21) including all work shown on the Drawings and/or specified and not included in the bid Items below, the total amount of:	Lump Sum			$_____
2.	Cash Allowances				
a.	Owner's Contingency	ALLOWANCE			$50,000.00
b.	Fuel Allowance - Bypass Pumping	ALLOWANCE			$50,000.00
3.	Equipment Allowances				
a.	Flow Meters	ALLOWANCE			$45,850.00
b.	Plug Valves and Actuators	ALLOWANCE			$407,008.00
c.	Submersible Centrifugal Pumps & Variable Frequency Drives	ALLOWANCE			$2,535,500.00
d.	Pre-Engineered Buildings	ALLOWANCE			$1,060,000.00
e.	SCADA System Upgrades	ALLOWANCE			$675,000.00
*** * * Additional Work If Ordered By The Engineer * * ***					
4.	Existing Pump Station Concrete Repairs				
a.	Concrete Surface Repair, prior to coating	1,000	SF	$	$
b.	Concrete Crack Injection	100	LF	$	$
c.	Additional Surface Prep and Asphaltic Coating per Section 09 90 15	1,000	SF	$	$
d.	Expansion Joint Repair	200	LF	$	$
5.	Removal of Unsuitable Material and Replacement with				
a.	Crushed Stone	100	CY	$	$
b.	Suitable Earth Material	100	CY	$	$
6.	Helical Torque Anchors, adjustment for actual length installed vs. Base Bid	100	VF	$	$

Total Bid for Items 1 through 6, inclusive, in the amount of _____

_____ Dollars ($_____)

which sum hereinafter is called the "Base Bid".

The Bidder agrees hereby to commence Work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order of the Engineer, and to fully complete all Work under this Contract within five hundred fifty (550) consecutive calendar days from and including said date specified in the written order of the Engineer. Bidder further agrees to pay as liquidated damages, the sum of $1,000.00 for each calendar day thereafter required to achieve substantial completion of all Work.

The Bidder declares an understanding that the quantities shown for unit price items are subject to either increase or decrease, and that should the quantities of any of the items of Work be increased, the Bidder proposes to do the additional Work at the unit prices stated herein; and should the quantities be decreased, the Bidder also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for additional costs or anticipated profits for any decrease in quantities; and that actual quantities will be determined upon completion of Work, at which time adjustment will be made to the Contract Price by direct increase or decrease.

In case of discrepancies between the figures shown in the unit prices and the totals, the unit prices shall apply and the totals shall be corrected to agree with the unit prices. In case of discrepancies between written amounts and figures, written amounts shall take precedence over figures and the sum of all Bid extensions (of unit prices) plus lump sum items shall take precedence over the Bidder's represented BID TOTAL.

The Bidder furthermore agrees that, in the case of a failure to execute the Contract Agreement and Bonds within ten days after receipt of conformed Contract Documents for execution, the attached Bid Bond accompanying this Bid and the monies payable thereon shall be paid into the funds of the Macon Water Authority as liquidated damages for such failure.

Attached hereto is a Bid Bond for the sum of _____

_____ Dollars ($_____) according to the conditions of "Instructions to Bidders" and provisions thereof.

Bidder acknowledges receipt of the Following Addenda:

Addendum No. 1, dated:_____

Addendum No. 2, dated:_____

Addendum No. 3, dated:_____

Addendum No. 4, dated:_____

Remainder of Page Left Blank
[Signatures, attestations, and seal on following page]

BIDDER: _____

By: _____

Name: _____
(Print or Type)

Title: _____

Address: _____

_____

Phone: _____

Attest: _____

Name: _____
(Print or Type)

Title: _____

(SEAL)

Note: Attest for a corporation must be by the secretary of record for the corporation, as reflected in the records of the Georgia Secretary of State; for a partnership by another partner; for an individual by a notary.

Note: If the Bidder is a corporation, the Bid shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

The full names and addresses of persons or parties interested in the foregoing Bid, as principals, are as follows:

Name	Address

END OF SECTION

CONTROL NARRATIVE
LOWER POPLAR
WATER RECLAMATION FACILITY
INFLUENT PUMP STATION

Prepared For: Macon Water Authority

36181-21
August , 2024

CONTENTS

1.0 INTRODUCTION

This document is intended to describe the general operation and control of the equipment provided as part of the Influent Pump Station project. The control narrative is used in conjunction with the Process and Instrumentation Diagrams (P&IDs) to describe operation and control of the pump station.

1.1 Associated P&IDs

04-DI001, 04-DI002, 04-DI003, 04-DI801, 04-DI901, 04-DI902, & 04-DI903

2.0 PLANT CONTROL SYSTEM

This section describes the existing general plant control system architecture and the expansion to accommodate the new pump equipment and removal of obsolete pumping controls.

2.1 SCADA System Infrastructure

Macon Water Authority Lower Poplar currently utilizes a facility wide SCADA system. This system is linked to the MWA overall SCADA system via radio. The existing radio system at the Lower Poplar Influent Pump Station shall be relocated to one of the new RTU panels (RTU-1/RTU-2). A new RTU panel will be installed in each new E House and connected using a new fiber optic cable in underground raceway. Each RTU panel shall include an HMI screen on the front panel. One HMI panel (HMI-1) shall be provided for the canopy area. The HMI-1 panel shall be connected to each new RTU panel via fiber. The Existing control panel CP-200 at the Grit Structure shall be used for connection of new flow meters.

2.2 SCADA System Software

Any existing relevant pumping input/output (I/O), graphics and database parameters not reused shall be removed. New graphics, alarms, and data archiving added to the new HMI panels as indicated from the contract documents. Existing SCADA screens available to operators at all relevant workstations shall be updated to reflect the new pumping system.

HMI status indications and alarms indicated herein are minimum requirements. Reference the applicable P&ID drawings for each system for detailed HMI status indication and alarm requirements.

Alarms shall be annunciated at the local HMI on a pop-up message with red flashing border. The operator will need to go to a separate alarm graphic to acknowledge the alarm. The plant SCADA system will indicate alarms, acknowledging and reset will occur at the HMI. The separate alarm graphic at the local HMI will log all alarms and provide all pertinent data as to what the alarm was, the parameters of normal, and the parameters that were not in conformance.

2.3 Sampler

Existing sampler to remain and shall be connected to new RTU-1. The sampler shall be paced with an analog output. Pacing is currently calculated based on influent plant flow. The existing programming logic shall be moved to new RTU-1 plc. The influent plant flow rate shall be determined by the new flow meters (FE-9003 & FE-9004).

2.4 Screen Control Panels

Existing Screen Control Panels (CP0801 & CP-0802) shall be relocated from existing IPS electrical room to the Canopy. All existing I/O outlined in contract documents is to be reconnected to existing Screen Control Panels at new locations. The Screen Control Panels are local only and do not connect back to SCADA.

2.5 Wet Well and Pumps

The Wet Well is divided into two trains (Wet Well A & Wet Well B). During normal operation, the two trains operate as a singular wet well. Manually operated gates not connected to SCADA exist at the pump station to separate the two wet wells for Maintenance.

There are two large pumps (14 MGD) and one small pump (7 MGD) in each wet well.

Table 2.5.1 Pump Station

Equipment Tag	Description
WET WELL A	Pump Station Wetwell
WET WELL B	Pump Station Wetwell
P-1,2,4,5	(4) each 14 MGD Pumps
P-3,6	(2) each 7 MGD Pump
VFD-P-1,2,3,4,5,6	Pump Variable Frequency Drives

2.5.1 Pumps (P-1, 2, 3, 4, 5 & 6)

Pump Station VFDs are to be connected to the PCS via ethernet connection in addition to hard-wired signals specified in the contract documents. Pumps shall be protected by motor protection relay provided with the pumps. Protection shall include temperature and moisture detection. In the case of a fault, the pump shall shut down and an alarm will be sent to SCADA.

Pumps shall be designed for automatic and manual control. Manual operations for the small pumps are located on the VFDs in each E House. Automatic control shall be via SCADA and local HMI control panels. Pumping shall be fully controlled in automatic and remote manual modes via the SCADA system.

Pump Station VFDs are provided with a soft start bypass. During operation in bypass mode, the pumps will be controlled manually.

2.5.2 Seven MGD Pumps and Flow Meter (P-3 & P-6) (FE-9100 & FE-9200)

Each seven MGD pump shall have a flow meter on the discharge. The flow meter will be displayed on the SCADA screen. The seven MGD Pumps are designed to run at a minimum of 60%. If the flow meter on the discharge of the small pump is detected to be less than 60% of the small pump's capacity, then the pump will shut down and an alarm sent to SCADA. This will also initiate a local horn and strobe located at HMI-1.

2.5.3 Wet Well Level Switches and Transmitters

Each wet well will include a level transmitter to continuously report the wet well's water level to SCADA. The SCADA system will have a selection to choose a primary and secondary transmitter or average the two transmitters' readings.

Each wet well will include a low-level switch and high level switch. The low-level switch will report back to SCADA and shut down all 6 pumps. The high-level switch will report back to SCADA and an alarm displayed.

2.5.4 Pump Sequence of Operations (Hand/Off/Auto)

The VFD for each pump will have a Hand-Off-Auto on the front panel. When the pump is placed in "Local/Hand" at the VFD, it shall be possible to start/stop and control the speed of the pump at the VFD interface.

When the pump is placed in "Auto/Remote" at the VFD, it shall be possible to run in fully automatic mode or for the operator to start, stop, or adjust speed (if applicable) of the pump from the Operator Workstation or HMI Interface.

2.5.5 Pump Sequence of Operations (Fully Automatic)

When the pump is placed in "Auto/Remote" at the VFD and placed in Fully Automatic at the HMI or Operator workstation, then the pumps shall run the following sequence to maintain the wet well level at water level set point and within a one-foot band from the set point. The initial water level shall be 5 feet AFF and shall be adjustable by the operator.

One small pump shall run first to maintain the wet well level within the one foot band. If the water level continues to trend higher beyond the capacity of the small pump, then the second small pump shall turn on at 60% speed and the first pumps speed reduced to match. If the water continues to trend higher, the small pumps speed will ramp up accordingly. The two 7 MGD pump operations shall be designed to have equal run time.

If the level continues to trend high beyond the capacity of both small pumps, a large 14 MGD pump will turn on and the small pumps speed adjusted by SCADA. Similarly, additional 14 MGD pumps will turn on as the level continues to trend upward. The 14 MGD pump operations shall be designed to have equal run time.

When the low end of the wet well set point is reached, the last pump to turn on will turn off and the remaining pumps speeds adjusted by SCADA. If the water level continues to trend downward, an additional pump will turn off and the remaining pumps speeds adjusted.

All large pumps should run at matching speeds. The large pumps do not have flow meters on the discharge piping. The large pump rates are to be calculated by SCADA using the total flow output (FE-9003 & FE-9004) minus the small pump flows (FE-9100 & 9200) and diving by the total number of large pumps running.

All setpoints are to be displayed on SCADA and adjustable by Operators.

2.5.5 Control Valves (PV-1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11)

Electrically operated control valves on the discharge pumping of the wet well shall be locally controlled only. Control Valves are not connected to SCADA. Valves in the discharge piping and force mains shall remain normally open.

2.6 Plant Influent Flow Meters (FE-9003, FE-9004)

The value of these two meters shall be combined and reported as the Plant Influent flow. Currently, the plant flow is measured at Parshall flumes in the Grit Area. The Parshall flume flow rate shall be monitored by SCADA only. The current calculation by SCADA will be updated to utilize the new Flow Meters readings.

I-O LIST

The I-O list shall be implemented into the respective DCS remote I-O panels

Lower Poplar Water Reclamation Facility
Influent Pump Station Improvements
Macon Water Authority
August 6, 2024

TAG ID	LOCATION	DEVICE	DESCRIPTION	I/O TAG	I/O TYPE	PLC CABINET	P&ID DWG #	WIRING DIA DWG #
AKB-0815	CANOPY	AIR KNIFE BLOWER	RUNNING STATUS	YI0815	DI	RTU-1	04-DI801	99-E852
AKB-0825	CANOPY	AIR KNIFE BLOWER	RUNNING STATUS	YI0825	DI	RTU-2	04-DI801	99-E853
SAMP-0801	SAMPLER MH	SAMPLER	PACING	FC0801	AO	RTU-1	04-DI801	99-E852
FIT-9100	PUMP STATION	FLOW ELEMENT	FLOW RATE	FI9100	AI	RTU-1	04-DI901	99-E852
GCD-9001	CANOPY	COMBUSTIBLE GAS DETECTOR	GAS LEVEL		AI	RTU-1	04-DI901	99-E852
LIT-9001	PUMP STATION	RADAR LEVEL SENSOR	LEVEL VALUE	LT9001	AI	RTU-1	04-DI901	99-E852
LSL-9003	WET WELL A	FLOAT SWITCH	LOW LEVEL STATE	LAL9003	DI	RTU-1	04-DI901	99-E852
LSH-9002	WET WELL A	FLOAT SWITCH	HIGH LEVEL STATE	LAH9002	DI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-1 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9010	AI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-1 MOISTURE ELEMENT	MOISTURE VALUE	MAH9010	AI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-2 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9020	AI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-2 MOISTURE ELEMENT	MOISTURE VALUE	MAH9020	AI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-3 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9030	AI	RTU-1	04-DI901	99-E852
MPR-A	ELECTRICAL BUILDING A	P-3 MOISTURE ELEMENT	MOISTURE VALUE	MAH9030	AI	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD HAND SWITCH	BYPASS STATUS	YI9010A	DI	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	RUN COMMAND	JC9010	DO	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	IN-AUTO STATUS	YI9010B	DI	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	RUNNING STATUS	YI9010C	DI	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	COMMON FAULT STATUS	YA9010	DI	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	COMMAND SPEED	SC9010	AO	RTU-1	04-DI901	99-E852
VFD-P-1	ELECTRICAL BUILDING A	P-1 VFD	INDICATED SPEED	SI9010	AI	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD HAND SWITCH	BYPASS STATUS	YI9020A	DI	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	RUN COMMAND	JC9020	DO	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	IN-AUTO STATUS	YI9020B	DI	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	RUNNING STATUS	YI9020C	DI	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	COMMON FAULT STATUS	YA9020	DI	RTU-1	04-DI901	99-E852
VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	COMMAND SPEED	SC9020	AO	RTU-1	04-DI901	99-E852

VFD-P-2	ELECTRICAL BUILDING A	P-2 VFD	INDICATED SPEED	SI9020	AI	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD HAND SWITCH	BYPASS STATUS	YI9030A	DI	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	RUN COMMAND	JC9030	DO	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	IN-AUTO STATUS	YI9030B	DI	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	RUNNING STATUS	YI9030C	DI	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	COMMON FAULT STATUS	YA9030	DI	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	COMMAND SPEED	SC9030	AO	RTU-1	04-DI901	99-E852
VFD-P-3	ELECTRICAL BUILDING A	P-3 VFD	INDICATED SPEED	SI9030	AI	RTU-1	04-DI901	99-E852
FIT-9200	PUMP STATION	FLOW ELEMENT	FLOW RATE	FI9200	AI	RTU-2	04-DI902	99-E853
LIT-9004	PUMP STATION	RADAR LEVEL SENSOR	LEVEL VALUE	LT9004	AI	RTU-2	04-DI902	99-E853
LSL-9006	WET WELL B	FLOAT SWITCH	LOW LEVEL STATE	LAL9005	DI	RTU-2	04-DI902	99-E853
LSH-9005	WET WELL B	FLOAT SWITCH	HIGH LEVEL STATE	LAH9006	DI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-4 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9040	AI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-4 MOISTURE ELEMENT	MOISTURE VALUE	MAH9040	AI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-5 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9050	AI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-5 MOISTURE ELEMENT	MOISTURE VALUE	MAH9050	AI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-6 TEMPERATURE ELEMENT	TEMPERATURE VALUE	TAH9060	AI	RTU-2	04-DI902	99-E853
MPR-B	ELECTRICAL BUILDING B	P-6 MOISTURE ELEMENT	MOISTURE VALUE	MAH9060	AI	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD HAND SWITCH	BYPASS STATUS	YI9040A	DI	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	RUN COMMAND	JC9040	DO	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	IN-AUTO STATUS	YI9040B	DI	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	RUNNING STATUS	YI9040C	DI	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	COMMON FAULT STATUS	YA9040	DI	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	COMMAND SPEED	SC9040	AO	RTU-2	04-DI902	99-E853
VFD-P-4	ELECTRICAL BUILDING B	P-4 VFD	INDICATED SPEED	SI9040	AI	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD HAND SWITCH	BYPASS STATUS	YI9050A	DI	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	RUN COMMAND	JC9050	DO	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	IN-AUTO STATUS	YI9050B	DI	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	RUNNING STATUS	YI9050C	DI	RTU-2	04-DI902	99-E853

VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	COMMON FAULT STATUS	YA9050	DI	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	COMMAND SPEED	SC9050	AO	RTU-2	04-DI902	99-E853
VFD-P-5	ELECTRICAL BUILDING B	P-5 VFD	INDICATED SPEED	SI9050	AI	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD HAND SWITCH	BYPASS STATUS	YI9060A	DI	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	RUN COMMAND	JC9060	DO	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	IN-AUTO STATUS	YI9060B	DI	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	RUNNING STATUS	YI9060C	DI	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	COMMON FAULT STATUS	YA9060	DI	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	COMMAND SPEED	SC9060	AO	RTU-2	04-DI902	99-E853
VFD-P-6	ELECTRICAL BUILDING B	P-6 VFD	INDICATED SPEED	SI9060	AI	RTU-2	04-DI902	99-E853
FIT-9003	INFLUENT FORCE MAIN MV	FLOW ELEMENT	FLOW RATE	FI9002	AI	RTU-X (CP-200)	04-DI903	99-E854
FIT-9004	INFLUENT FORCE MAIN MV	FLOW ELEMENT	FLOW RATE	FI9003	AI	RTU-X (CP-200)	04-DI903	99-E854

CODES AND STANDARDS

THE FOLLOWING CODES AND STANDARDS HAVE BEEN USED AS THE BASIS FOR DESIGN AND/OR SHALL BE UTILIZED BY THE CONTRACTOR TO ESTABLISH MINIMUM LEVELS OF QUALITY AND CONSTRUCTION TECHNIQUES.

1. GENERAL
   A. INTERNATIONAL BUILDING CODE (IBC 2018) WITH GEORGIA STATE AMENDMENTS.
   B. AMERICAN SOCIETY OF CIVIL ENGINEERS, "MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES," (ASCE 7-16).
2. CONCRETE
   A. AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" (ACI 318-14).
   B. AMERICAN CONCRETE INSTITUTE, "SPECIFICATIONS FOR STRUCTURAL CONCRETE," (ACI 301-16).
   C. AMERICAN CONCRETE INSTITUTE, "GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION" (ACI 302.1R-15).
   D. AMERICAN CONCRETE INSTITUTE, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" (ACI 350-06).
3. STRUCTURAL STEEL
   A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "STEEL CONSTRUCTION MANUAL," FIFTEENTH EDITION.
   B. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," (ANSI/AISC 360-16).
   C. AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE-STEEL" (AWS D1.1-2018).

DESIGN CRITERIA

THE STRUCTURE HAS BEEN DESIGNED FOR THE FOLLOWING LOADS.

1. DEAD LOADS: ACTUAL WEIGHTS OF BUILDING MATERIALS, STRUCTURAL COMPONENTS, AND EQUIPMENT.
   A. ROOF DEAD LOADS (PEMB CANOPY)
      1. PEMB SUPERSTRUCTURE — ACTUAL
      2. MPE UTILITIES / COLLATERAL — 8 PSF
   B. PUMP STATION SLAB LOAD
      1. EXISTING — CONCRETE SELF-WEIGHT
      2. NEW 4" LW TOPPING — 32 PSF
2. LIVE LOADS
   A. ROOF LIVE LOADS (PEMB CANOPY) — 20 PSF (REDUCIBLE)
   B. FLOOR LIVE LOADS
      1. PUMP STATION SLAB LOAD (ALL LEVELS) — 60 PSF
   C. MISCELLANEOUS LIVE LOADS
      1. GUARDRAILS/HANDRAILS
         a. 50 PLF FOR AREAS W/OCCUPANT LOAD GREATER THAN OR EQUAL TO 50.
         b. OR 20 PLF FOR AREAS W/OCCUPANT LOAD LESS THAN 50.
         c. OR 200 LB CONCENTRATED LOAD APPLIED IN ANY DIRECTION AT ANY POINT.
      2. LADDERS (FIXED): 300 LB CONCENTRATED LOAD FOR EVERY 10 FT OF HEIGHT.
3. SNOW LOADS
   A. GROUND SNOW LOAD (P_g) — 10 PSF
   B. THERMAL FACTOR (Ct) — 1.2
   C. EXPOSURE FACTOR (Ce) — 0.9
   D. IMPORTANCE FACTOR (Is) — 1.1
   E. SLOPE FACTOR (Cs) — 1.0
   F. BALANCED SNOW LOAD — 8.3 PSF
   G. RAIN-ON-SNOW SURCHARGE — 0.0 PSF
   H. DESIGN UNIFORM SNOW LOAD (Pd) — 11.0 PSF
4. WIND LOADS
   A. BUILDING
      1. ULTIMATE DESIGN WIND SPEED (V_{ult}) — 120 MPH
      2. ALLOWABLE STRESS DESIGN WIND SPEED (V_{asd}) — 93 MPH
      3. RISK CATEGORY — III
      4. EXPOSURE CATEGORY — C
      5. INTERNAL PRESSURE COEFF. (GC_{pi}) — +/- 0.18
5. SEISMIC LOADS
   A. BUILDING
      1. RISK CATEGORY — III
      2. SEISMIC IMPORTANCE FACTOR (I_e) — 1.25
      3. 0.2 SEC MAPPED SPECTRAL ACCELERATION (S_S) — 0.185
      4. 1.0 SEC MAPPED SPECTRAL ACCELERATION (S_1) — 0.077
      5. SITE CLASS — E
      6. 0.2 SEC DESIGN SPECTRAL ACCELERATION (S_{DS}) — 0.297
      7. 1.0 SEC DESIGN SPECTRAL ACCELERATION (S_{D1}) — 0.216
      8. SEISMIC DESIGN CATEGORY — D
      9. BASIC SEISMIC FORCE RESISTING SYSTEM — INTERMEDIATE STEEL MOMENT FRAMES (CANOPY)
      10. DESIGN BASE SHEAR — 0.01xW
      11. SEISMIC RESPONSE COEFFICIENT (C_s) — 0.01
      12. RESPONSE MODIFICATION COEFFICIENT (R) — 4.5
      13. ANALYSIS PROCEDURE USED — EQUIVALENT LATERAL FORCE PROCEDURE
6. RAIN LOADS
   A. RAINFALL INTENSITY RATE (100-YEAR) — 3.9 IN/HR

FOUNDATIONS

1. DEEP FOUNDATION AND SPECIALTY FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS REPORTED IN THE SITE SPECIFIC GEOTECHNICAL EXPLORATION REPORT PREPARED BY TERRACON, DATED OCTOVER 4, 2023. THE CONTRACTOR SHALL OBTAIN A COPY OF THE REPORT FOR REVIEW AND REFERENCE.

2. PER THE GEOTECHNICAL REPORT, ESTIMATED HELICAL ANCHOR DEPTH ASSUMED TO BE 25 FEET BELOW GRADE. GROUT FILLED PULL-DOWN PILES MAY BE REQUIRED FOR THE PIPE VALVE SUPPORT FOUNDATIONS DIRECTLY ADJACENT TO THE EXISTING PUMP STATION (15 FEET MAX DEPTH BELOW GRADE). SEE DETAIL 5/09-S501. FINAL ANCHOR LENGTHS TO BE DETERMINED BY THE HELICAL ANCHOR INSTALLER'S ENGINEER OF RECORD. (1) (2)

3. A MINIMUM OF SIX (6) COMPRESSION LOAD TESTS SHALL BE CONDUCTED PER ASTM D1143 SPECIFICATIONS. CONTRACTOR TO PROVIDE A LOAD TEST PLAN PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD. TEST RESULTS SHALL BE PROVIDED TO THE ENGINEER OF RECORD.

4. CONTRACTOR SHALL KEEP ALL FREE STANDING WATER OUT OF EXCAVATION. CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS NECESSARY PRIOR TO PLACING CONCRETE.

5. EXISTING SOIL WHICH IS DEEMED NON-USABLE BY THE GEOTECHNICAL ENGINEER DUE TO FAILURE OF THE CONTRACTOR TO PROMPTLY DE-WATER THE SITE SHALL BE REMOVED AND REPLACED WITH SUITABLE FILL AT THE CONTRACTOR'S EXPENSE.
6. DESIGN OF TEMPORARY AND PERMANENT SHORING FOR EXCAVATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

7. FOR WALLS OR GRADE WALLS HAVING FILL ON EACH SIDE, PROCEED WITH BACKFILLING OPERATIONS SIMULTANEOUSLY IN UNIFORM LIFTS. DIFFERENTIAL ELEVATION OF TOP OF LIFTS BETWEEN EACH SIDE SHALL NOT EXCEED 18 INCHES.

CONCRETE

1. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH SHALL BE AS FOLLOWS:
   A. MAT FOUNDATIONS — 4,500 PSI
   B. PIPE SUPPORTS — 4,500 PSI
   C. ELECTRICAL ROOM FLOOR SLABS — 4,500 PSI
   D. PUMPHOUSE TOPPING SLAB & WALLS — 4,500 PSI
2. CONCRETE SHALL BE PROPORTIONED, BATCHED, MIXED, PLACED, CONSOLIDATED, AND CURED IN ACCORDANCE WITH ACI 301, 304, 308, 309 AND 318.
3. ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED.
4. PUMPHOUSE TOPPING SLAB SHALL MEET THE FOLLOWING SPECIFICATIONS:
   A. TYPE K CEMENT
   B. FORTA MACRO SYNTHETHIC FIBERS AT A DOSAGE RATE OF 7.5 POUNDS PER CUBIC YARD. COORDINATE WITH FIBER MANUFACTUER PRIOR TO PLACEMENT OF CONCRETE
5. WHERE STRIP/GRADE FOOTINGS OR WALLS INTERSECT COLUMN FOUNDATIONS, LONGITUDINAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH THE COLUMN FOUNDATION.
6. UNLESS OTHERWISE SHOWN, THE CONCRETE CLEAR COVER AT ALL REINFORCING STEEL SHALL BE:
   A. CONCRETE CAST AGAINST EARTH — 3"
   B. CONCRETE EXPOSED TO EARTH OR WEATHER — 2"
   C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER — 2"
7. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED IN ACCORDANCE WITH ACI 304 AND ACI 309.
8. PROVIDE 3/4"x3/4"x 45 DEGREE CHAMFERED CORNERS AT ALL EXPOSED CONCRETE CORNERS UNO.

SLAB ON GRADE

1. THE GEOTECHNICAL ENGINEER SHALL REVIEW THE AGGREGATE BASE AND VERIFY A MINIMUM MODULUS OF SUBGRADE REACTION OF 100 PCI HAS BEEN ACHIEVED.
2. FLOOR SLABS TO BE SUPPORTED BY A MINIMUM OF 12 INCHES OF APPROVED ON-SITE OR IMPORTED SOILS PLACED AND COMPACTED AS SPECIFIED IN THE GEOTECHNICAL EXPLORATION REPORT.
3. PROVIDE A 6" COMPACTED GRANULAR SUB-BASE ON TOP OF COMPACTED FILL.
4. EXCAVATED / STRIPPED AREAS SHALL BE PROOF-ROLLED WITH APPROPRIATE EQUIPMENT AS APPROVED BY THE GEOTECHNICAL ENGINEER. SOFT AREAS SHALL BE REMOVED AND REPLACED WITH APPROVED BACKFILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
5. SAWED CONTROL JOINTS SHALL BE CUT AS SOON AS SLAB CAN BE WALKED ON, BUT STARTED NO LATER THAN 8 HOURS AFTER POURING. CONTROL JOINTS SHALL BE COMPLETED NO LATER THAN 16 HOURS AFTER POURING. THESE TIME LIMITS SHALL APPLY REGARDLESS OF THE TIME OF DAY. AN EARLY ENTRY DRY CUT SAW SUCH AS THE SOFF-CUT SYSTEM SHALL BE USED.
6. PROVIDE ADDITIONAL REINFORCING IN TOP FACE OF SLAB AT ALL RE-ENTRANT CORNERS AND DOOR OPENINGS.
7. ADEQUATE MEASURE TO PREVENT PLASTIC SHRINKAGE OF SLAB SHALL BE TAKEN BY THE CONTRACTOR AS OUTLINED IN ACI 302.1R.

CONCRETE/CMU ANCHORS

1. REFER TO SPEC SECTION 05 50 00 METAL FABICATIONS FOR ADDITIONAL REQUIREMENTS AND MATERIAL TYPE.
2. SUBSTITUTION OF EXPANSION OR DRILLED AND GROUTED-IN ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER.
3. CARE SHALL BE TAKEN WHEN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH REINFORCING WHERE POSSIBLE. HOLES SHALL BE DRY, HAMMER DRILLED AND CLEANED PER THE MANUFACTURER'S INSTRUCTIONS. ALTERNATIVE DRILLING METHODS AND INSTALLATION CONDITIONS MAY BE ACCEPTABLE PROVIDED INSTALLER HAS RECEIVED WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER OR RECORD.
4. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AT NOT LESS THAN MINIMUM EDGE DISTANCES AND/OR SPACINGS INDICATED IN THE MANUFACTURER'S LITERATURE.
5. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL ARRANGE FOR A MANUFACTURER'S FIELD REPRESENTATIVE TO PROVIDE INSTALLATION TRAINING FOR ALL PRODUCTS TO BE USED. ONLY TRAINED INSTALLERS SHALL PERFORM POST INSTALLED ANCHOR INSTALLATION. A RECORD OF TRAINING SHALL BE KEPT ON SITE AND BE MADE AVAILABLE TO THE EOR AS REQUESTED.
6. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES AS PROVIDED BY HILTI, INC.
   A. ANCHORAGE TO CONCRETE
      a. ADHESIVE (EPOXY) ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
         1. HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HIT-Z-R 316 SS ROD.
         2. HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT SYSTEM WITH HAS-316 SS THREADED ROD PER ICC ESR-4868.
      b. MECHANICAL (EXPANSION) ANCHORS FOR CRACKED AND UNCRACKED CONCRETE
         1. HILTI KWIK BOLT-TZ2 SS 316 EXPANSION ANCHORS PER ICC ESR-4266
         2. HILTI KWIK HUS-EZ SS 316 SCREW ANCHORS PER ICC ESR-3027
   B. REBAR DOWELING INTO CONCRETE
      a. ADHESIVE FOR CRACKED AND UNCRACKED CONCRETE USE:
         1. HILTI HIT-HY 500 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT SYSTEM.
   C. ANCHORAGE TO SOLID GROUTED MASONRY
      a. ADHESIVE (EPOXY) ANCHORS USE:
         1. HILTI HIT-HY 270 MASONRY ADHESIVE ANCHORING SYSTEM WITH HAS 316 SS THREADED ROD.
         2. MECHANICAL (EXPANSION) ANCHORS USE:
         3. HILTI KWIK BOLT-TZ2 SS 316 EXPANSION ANCHORS PER ICC ESR-4561
         4. HILTI KWIK HUS-EZ SS 316 SCREW ANCHORS PER ICC ESR-3056
   D. ANCHORAGE TO HOLLOW / MULTI-WYTHE MASONRY
      a. ADHESIVE ANCHORS USE:
         1. HILTI HIT-HY 270 MASONRY ADHESIVE ANCHORING SYSTEM WITH HAS 316 SS THREADED ROD.
         2. THE APPROPRIATE SIZE SCREEN TUBE SHALL BE USED PER ADHESIVE MANUFACTURER'S RECOMMENDATION.
7. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR OTHER SUCH METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OR RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS THAT HAVE BEEN SEALED BY ANOTHER LICENSED ENGINEER DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE TO MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WITLL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.

REINFORCING STEEL FOR CONCRETE

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 (DEFORMED).
2. WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A1064 AND SHALL BE PROVIDED IN FLAT SHEETS ONLY. FABRIC SHALL LAP TWO FULL MESHES AND BE SECURELY FASTENED AT EACH SIDE AND EACH END.
3. DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL, UNLESS OTHERWISE NOTED, SHALL CONFORM TO ACI MNL-66, THE CRSI, "MANUAL OF STANDARD PRACTICE," AND ACI 318.
4. REINFORCING STEEL SHALL BE CONTINUOUS ACROSS ALL CONSTRUCTION JOINTS UNO.
5. REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
6. ALL BAR SPLICES SHALL BE CLASS B TENSION SPLICES IN ACCORDANCE WITH ACI 318.

MISCELLANEOUS

1. GENERAL NOTES AND TYPICAL DETAILS DESCRIBE GENERAL CRITERIA APPLICABLE TO ALL SIMILAR CONDITIONS THROUGHOUT THE PROJECT REGARDLESS OF WHETHER OR NOT THEY ARE SPECIFICALLY REFERENCED IN THE PLANS OR DETAILS.
2. DO NOT SCALE DRAWINGS. IF DIMENSIONS ARE IN QUESTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE STRUCTURAL ENGINEER BEFORE CONTINUING WITH CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE THE STRUCTURAL DOCUMENTS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION AND CIVIL DOCUMENTS. ARCHITECT/STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY.
4. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, FOR DIMENSIONS TO BE CONFIRMED AT THE JOBSITE, FOR FABRICATION PROCESSES, AND FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION.
5. NO SUBSTITUTIONS OF MATERIAL WILL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, MILL CERTIFICATES, AND PRODUCT DATA FOR ALL MATERIALS AND PRODUCTS SHOWN IN THE CONSTRUCTION DOCUMENTS, INCLUDING BUT NOT LIMITED TO, CONCRETE MIX DESIGNS, STEEL REINFORCEMENT, AND CAST-IN-PLACE AND POST-INSTALLED ANCHORS. THE SHOP DRAWINGS SHALL INCLUDE BOTH FABRICATION AND ERECTION DRAWINGS AND SHALL CONTAIN PLANS, ELEVATIONS, AND DETAILS. REPRODUCTION OF THE CONSTRUCTION DRAWINGS IS NOT AN ACCEPTABLE SHOP DRAWING SUBMITTAL.
7. SHOP DRAWINGS SHALL NOT BE REVIEWED FOR APPROVAL UNLESS CHECKED BY THE FABRICATOR AND APPROVED BY THE CONTRACTOR. REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL REQUIREMENTS SET FORTH IN THE CONSTRUCTION DOCUMENTS.
8. CONTRACTOR SHALL COMPLY WITH LOCAL, STATE, FEDERAL AND OWNER'S SAFETY REGULATIONS WHILE WORKING. STRUCTURAL ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.
9. CONTRACTOR SHALL REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
10. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS BEFORE STARTING WORK. NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCY. NOTIFY STRUCTURAL ENGINEER IN WRITING OF CONDITIONS ENCOUNTERED IN THE FIELD CONTRADICTORY TO THOSE SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS.

PRE-ENGINEERED METAL BUILDING

1. DESIGN OF STRUCTURE SHALL BE IN ACCORDANCE WITH THE "CODES AND STANDARDS" AND "DESIGN CRITERIA" AS LISTED ON THIS DRAWING.
2. THE METAL BUILDING MANUFACTURER SHALL BE SOLELY RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE SUPERSTRUCTURE INCLUDING PURLINS, RIGID FRAMES, COLUMNS, GIRTS, BASEPLATES, X-BRACES, AND ANCHOR BOLTS (EXCLUDING EMBEDMENT). A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF GEORGIA SHALL DESIGN THE MEMBERS OR DIRECTLY SUPERVISE THE DESIGN AND AFFIX HIS SEAL TO ALL DRAWINGS AND DESIGN CALCULATIONS.
3. THE METAL BUILDING MANUFACTURER SHALL BE RESPONSIBLE FOR THE ANCHOR BOLT DESIGN, INCLUDING QUANTITY, DIAMETER, AND MATERIAL TYPE TO ADEQUATELY TRANSFER BUILDING COLUMN REACTIONS TO THE FOUNDATION. MINIMUM EMBEDMENT LENGTHS SHALL BE AS SHOWN ON THE FOUNDATION DRAWINGS. THE GENERAL CONTRACTOR SHALL PROVIDE THE ANCHOR BOLTS SPECIFIED.
4. CONTRACTOR SHALL VERIFY QUANTITY AND PLACEMENT LOCATIONS OF ANCHOR BOLTS WITH METAL BUILDING MANUFACTURER. ANCHOR BOLTS MUST BE LOCATED BY MEANS OF A TEMPLATE. DO NOT HAND SET ANCHOR BOLTS. ANCHOR BOLT LAYOUT, DIAMETER, PROJECTION, AND MATERIAL SHALL BE AS SHOWN ON THE METAL BUILDING DRAWINGS.
5. ANCHOR BOLT EMBEDMENT SHALL BE AS INDICATED ON THE FOUNDATION DRAWINGS.
6. THE METAL BUILDING COLUMNS SHALL HAVE PINNED BASES AND SHALL TRANSFER NO MOMENTS TO THE FOUNDATIONS.
7. HORIZONTAL DEFLECTION OF THE RIGID FRAMES AND BRACED FRAMES SHALL NOT EXCEED H/120 UNDER ALL LOAD COMBINATIONS USING SERVICE LEVEL WIND LOADS.
8. REFER TO MECHANICAL DRAWINGS, ELECTRICAL DRAWINGS, AND EQUIPMENT VENDOR DRAWINGS FOR EQUIPMENT TO BE SUPPORTED BY PRE-ENGINEERED COMPONENTS AND OPENINGS WHICH REQUIRE SPECIAL FRAMING. PROVIDE ANY ADDITIONAL PURLINS, GIRTS, ETC. AS REQUIRED FOR THESE ITEMS.
9. ALL BOLTED CONNECTIONS SHALL HAVE AT LEAST TWO BOLTS.
10. NO FIELD MODIFICATIONS SHALL BE MADE TO ANY PRIMARY OR SECONDARY STRUCTURAL MEMBER EXCEPT AS AUTHORIZED IN WRITING BY BUILDING MANUFACTURER DESIGN ENGINEER AND APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
11. THE FOUNDATIONS HAVE BEEN DESIGNED FOR ESTIMATED COLUMN AND FRAME REACTIONS. PRIOR TO FABRICATION AND PRIOR TO ANY FOUNDATION WORK, THE ACTUAL COLUMN AND FRAME REACTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. IF, IN THE OPINION OF THE ENGINEER, THE ACTUAL REACTIONS DIFFER APPRECIABLY FROM THE ESTIMATED, THE ENGINEER SHALL REDESIGN THE FOUNDATION FOR THE ACTUAL REACTIONS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:
   WIDE FLANGE AND WT SHAPES — ASTM A992, UNO
   S SHAPES, CHANNELS, ANGLES, & PLATES — ASTM A36, UNO
   SMOOTH ROD — ASTM A36
   THREADED ROD — ASTM A36
   HSS, RECTANGULAR OR SQUARE — ASTM A500 GR. C, 50 KSI
   STEEL PIPE — ASTM A53, GR. B
   ANCHOR RODS — ASTM F1554, GR AS INDICATED
   HIGH STRENGTH BOLTS — ASTM A325 OR ASTM 490
   TWIST OFF TENSION CONTROL BOLTS — ASTM F1852 FOR A325 BOLTS AND F2280 FOR A490 BOLTS
   HARDENED WASHERS — ASTM F436
   DIRECT TENSION INDICATOR WASHERS — ASTM F959
   HEAVY HEX NUTS — ASTM A563
   ROLLED STEEL FLOOR PLATE — ASTM A786
   STAINLESS STEEL SHAPES AND PLATE — ASTM A276
   STAINLESS STEEL BOLTS — ASTM F593, TYPE 316
   WELDING ELECTRODES — AWS A5.1 OR A5.5 E-70XX
   ELECTRODES WITH CHARPY V-NOTCH (CVN) TEST VALUES OF A MINIMUM 20 FOOT-POUNDS AT -20 DEGREES FAHRENHEIT ARE TO BE USED AT THE FOLLOWING LOCATIONS:
      i. COMPLETE JOINT PENETRATION WELDS
      ii. BEAM TO COLUMN MOMENT CONNECTIONS – INCLUDING FLANGE, WEB AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS
      iii. BRACE CONNECTIONS – INCLUDING BRACE, GUSSET, BASE PLATES, BEAM STIFFENER PLATES, AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS
      iv. WELD NOTED "CVN" ON THE DRAWINGS
2. STRUCTURAL STEEL DESIGN, DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO:
   1. AISC, "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
   2. AISC, "CODE OF STANDARD PRACTICE", INCLUDING COMMENTARY
   3. AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 AND A490 BOLTS"
3. WELDING SHALL CONFORM TO AWS D1.1 "STRUCTURAL WELDING CODE" AND BE PERFORMED BY CERTIFIED WELDERS USING E70XX WELDING ELECTRODES.
4. REMOVE RUST, DIRT, PAINT AND GALVANIZING FROM STEEL PRIOR TO WELDING.
5. WELDS SHOWN ON STRUCTURAL DRAWINGS ARE MINIMUM DESIGN REQUIREMENTS. USE THE MINIMUM WELD SIZE PER AISC WHERE WELD SIZE IS NOT INDICATED. THE FABRICATOR 'S SHOP DRAWINGS SHALL REFLECT WELDS IN ACCORDANCE WITH AWS / AISC REQUIREMENTS.
6. ALL GROOVE WELDS SHALL BE COMPLETE PENETRATION.
7. CONNECTIONS NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE PROJECT STATE. SUBMIT SIGNED AND SEALED CALCULATIONS AS A FORMAL SUBMITTAL TO THE STRUCTURAL ENGINEER OF RECORD. PER THE AISC CODE OF STANDARD PRACTICE, PROVIDE CORRELATION BETWEEN CALCULATIONS AND CONNECTIONS SHOWN ON THE STRUCTURAL STEEL SHOP DRAWINGS.
8. BOLTED CONNECTIONS SHALL BE BEARING TYPE WITH THREADS INCLUDED IN THE SHEAR PLANE.
9. UNLESS NOTED OTHERWISE, MINIMUM BOLT SIZE IS 3/4" DIAMETER STAINLESS STEEL GRADE F593, TYPE 316. INSTALL HIGH STRENGTH BEARING BOLTS TO A SNUG TIGHT CONDITION AS DEFINED BY AISC. LOCK WASHERS AND LOCK NUTS ARE STRICTLY PROHIBITED.
10. SEQUENCE DRIVEN SHARED CONNECTIONS WILL NOT BE PERMITTED AND MAY BE UNSAFE DURING THE CONNECTION PROCESS UNDER CERTAIN CONDITIONS. PROVIDE STAGGERED CLIP ANGLES, ERECTION SEATS ON BOTH SIDES OF COLUMN WEBS, OR SHEAR TAB TYPE CONNECTIONS IN COMPLIANCE WITH OSHA 1926 SUBPART R TO ALLOW FOR MEMBERS TO BE INSTALLED FROM EITHER DIRECTION REGARDLESS OF SEQUENCE.
11. BEAM CONNECTIONS SHALL BE STANDARD, SIMPLE SHEAR CONNECTIONS WITH DOUBLE FRAMING ANGLES UNO. IN NO CASE SHALL THE LENGTH OF THE FRAMED CONNECTION BE LESS THAN ONE-HALF OF THE "T" DIMENSION OF THE BEAM WEB.
12. CONNECTION ANGLES SHALL BE 5/16" MINIMUM THICKNESS.
13. MINIMUM BOLTED CONNECTION SHALL BE AS FOLLOWS:
   1. DEPTH:6" - 10" — USE 2 ROWS OF BOLTS
   2. DEPTH: 12" - 18" — USE 3 ROWS OF BOLTS
   3. DEPTH: 21" - 24" — USE 4 ROWS OF BOLTS
   4. DEPTH: 27" - 30" — USE 5 ROWS OF BOLTS
   5. DEPTH: 33" - 40" — USE 6 ROWS OF BOLTS
14. BEAM REACTIONS ARE SHOWN ON THE DRAWINGS IN LRFD FORMAT. IN CASES WHERE NO REACTIONS ARE PROVIDED, THE CONNECTION SHALL BE DESIGNED FOR A MINIMUM FORCE OF 15 KIPS, UNO.
15. ALL BOLTED CONNECTION HOLES ARE TO BE STANDARD HOLES. SHORT SLOTTED HOLES ARE PERMITTED AS LONG AS THERE IS NO FORCE IN THE DIRECTION OF THE SLOT (I.E. HOLE DIA. = BOLT DIA. + 1/16").
16. BRACING CONNECTIONS SHALL BE DESIGNED AND DETAILED SO THAT ALL FORCE COMPONENTS ARE DELIVERED DIRECTLY TO THE INTERSECTION OF THE WORKLINES OF THE MEMBERS. WHERE THIS IS NOT POSSIBLE OR PRACTICAL, CONNECTIONS SHALL BE DESIGNED TO ACCOUNT FOR THE RESULTING ECCENTRICITIES.
17. SWAY FRAMES, X-BRACING, LACING AND SIMILAR TYPE MEMBERS SHALL EITHER DEVELOP THE AXIAL FORCE INDICATED ON THE DRAWINGS OR THE ALLOWABLE TENSION FORCE IN THE MEMBER WHERE NO FORCES ARE SHOWN. THERE SHALL BE A MINIMUM OF TWO BOLTS PER CONNECTION.
18. AXIAL FORCES IN MEMBERS ARE SHOWN AS FOLLOWS:
   1. (+) INDICATES TENSION IN MEMBER.
   2. (-) INDICATES COMPRESSION IN MEMBER.
19. BUILT UP MEMBERS SHALL HAVE STITCH PLATES COMPLYING WITH AISC REQUIREMENTS. TENSION MEMBERS SHALL HAVE AT LEAST ONE STITCH PLATE LOCATED AT MID-LENGTH AND BUILT UP COMPRESSION MEMBERS SHALL HAVE AT LEAST TWO STITCH PLATES LOCATED AT THIRD POINTS OR A MAXIMUM OF 5'-0" OC SPACING, WHICHEVER IS LESS. ASSUME BUILT UP MEMBERS ARE COMPRESSION MEMBERS UNLESS NOTED OTHERWISE ON DRAWINGS.
20. STEEL SURFACES THAT ARE TO RECEIVE SPRAYED ON FIREPROOFING, SCHEDULED TO RECEIVE SHEAR STUDS OR WILL BE WELDED/BOLTED SHALL NOT BE PAINTED.
21. NO OPENINGS SHALL BE CUT IN STRUCTURAL MEMBERS UNLESS SPECIFICALLY DETAILED IN THE STRUCTURAL DRAWINGS.
22. THE STRUCTURE IS DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT TO MAINTAIN STABILITY BEFORE COMPLETION.
23. ALL EXTERIOR STEEL FOR THE CANOPY STRUCTURE, INCLUDING BOLTS AND GUARDRAIL SHALL BE HOT-DIPPED GALVINIZED. ANCHOR BOLTS SHALL BE STAINLESS STEEL. REPAIR DAMAGED GALVANIZING AND FIELD WELDS WITH GALVANIZING REPAIR PAINT (ZRC GALVILITE, OR EQUAL).
24. STAIRS SHOWN ON PLAN AND ARCH SHALL BE A DELEGATED DESIGN WITH EXCEPTION OF LATERAL FORCE RESISTING SYSTEM AND POSTS. CALCULATIONS SEALED BY AN ENGINEER REGISTERED IN THE PROJECT STATE SHALL BE SUBMITTED WITH THE SHOP DRAWINGS.

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GEORGIA REGISTERED No. SE000550 STRUCTURAL ENGINEER BRIAN H. WOOD
8/21/2024

GENERAL NOTES

LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS
MACON WATER AUTHOURITY

REVISION INFORMATION

REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/14/2024	ADDENDUM 3
2	MRD	JBA	08/21/2024	ADDENDUM 5

SHEET
09-S001
FILE NO.: 3618121

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Time / Date: 8/21/2024 11:34:44 AM

Discipline Sort: 8.3
Drawing: 09-S100
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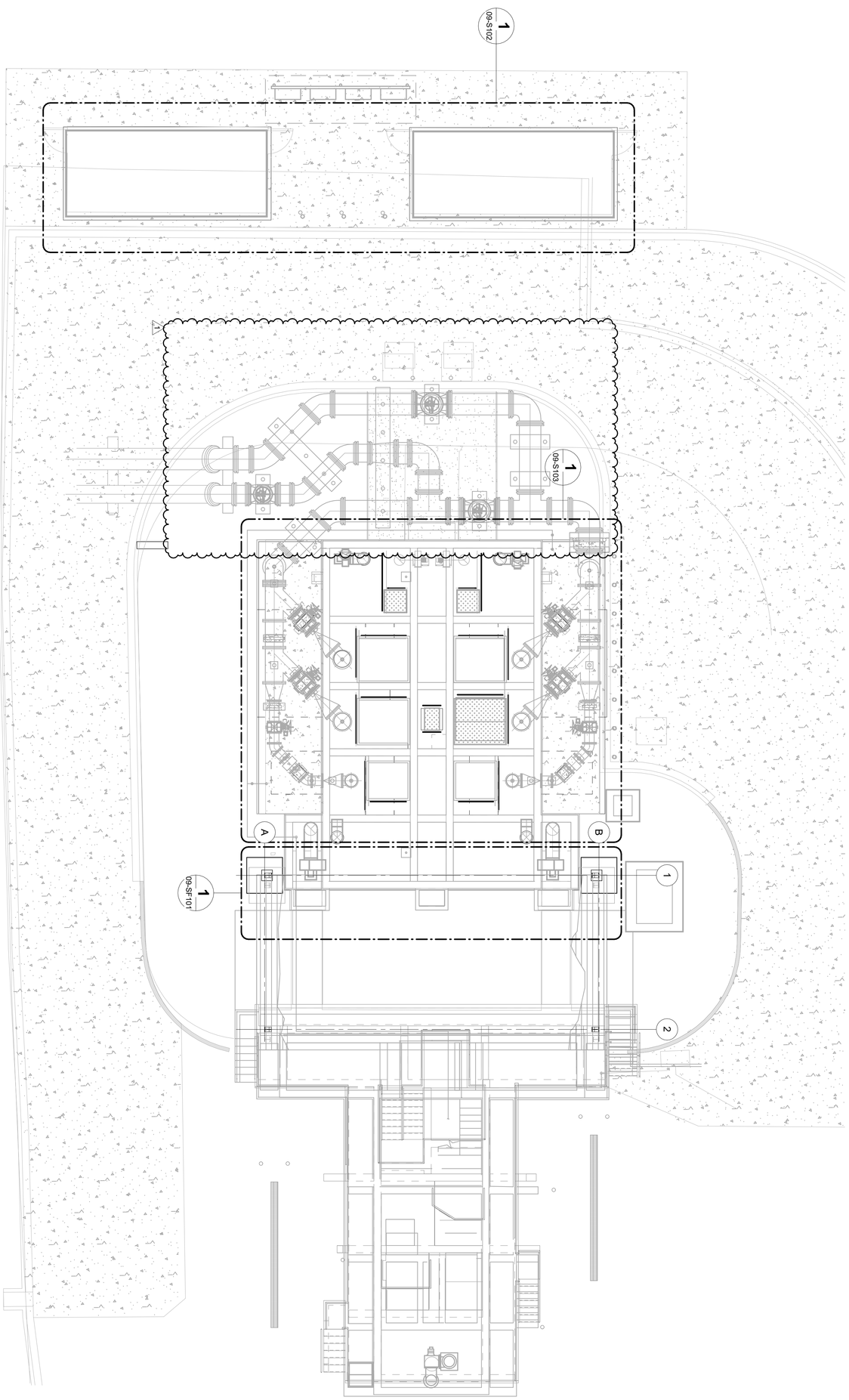

TRUE NORTH

1 / 09-S100 OVERALL SITE PLAN

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

REVISION INFORMATION				
REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/21/2024	ADDENDUM 5

09-S100

FILE NO.: 3618121

OVERALL SITE PLAN

LOWER POPLAR WATER RECLAMATION FACILITY

INFLUENT PUMP STATION IMPROVEMENTS

MACON WATER AUTHOURITY

GEORGIA REGISTERED No. SEE005550 STRUCTURAL ENGINEER JOSHUA H. WOOD 8/21/2024

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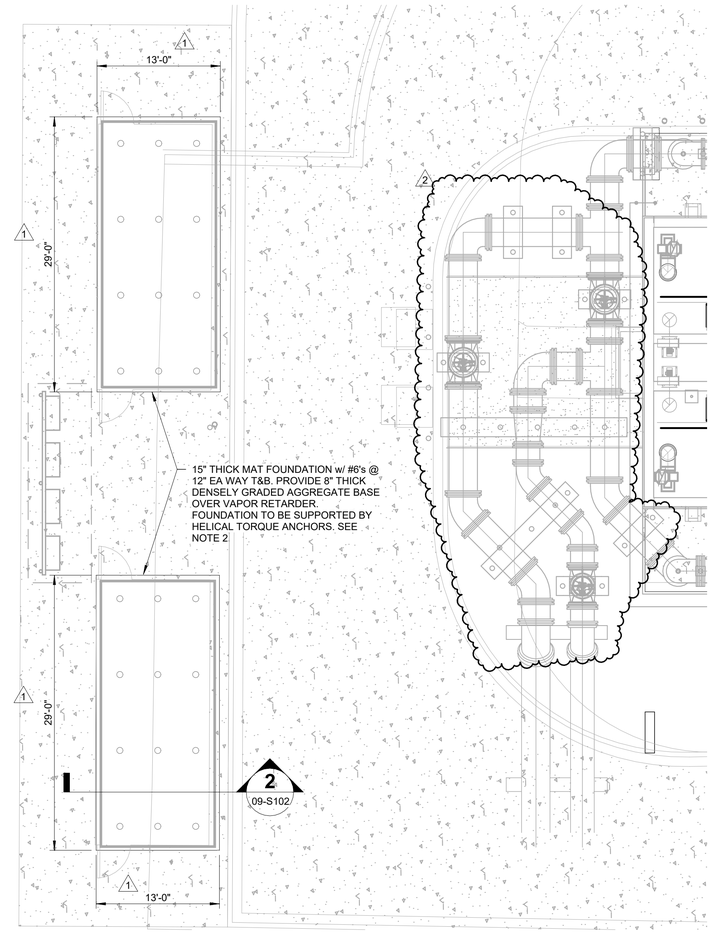
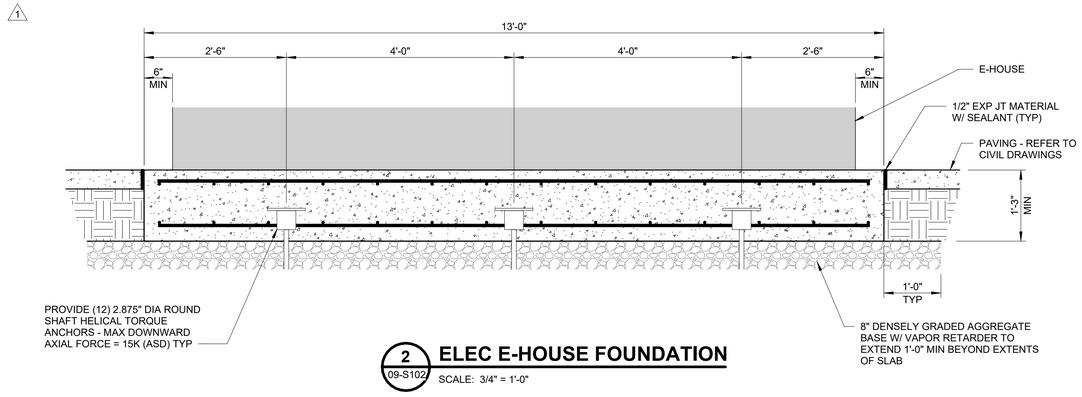


N
TRUE NORTH

1 ELECTRICAL E-HOUSE - FOUNDATION PLAN
1 / 09-S102

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



2 ELEC E-HOUSE FOUNDATION
2 / 09-S102

SCALE: 3/4" = 1'-0"

PLAN NOTES

1. FOR GENERAL NOTES SEE SHEET 09-S001
2. COORDINATE LOCATION AND SIZE OF E-HOUSE FOUNDATIONS WITH ELECTRICAL AND PROCESS PRIOR TO CONSTRUCTION.
3. ELECTRICAL E-HOUSE BUILDING STRUCTURE TO BE DESIGNED PER THE DESIGN CRITERIA LISTED ON SHEET 09-S001

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8/21/2024

ELECTRICAL E-HOUSE - FOUNDATION PLAN

LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS

MACON WATER AUTHOURITY

REVISION INFORMATION

REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/14/2024	ADDENDUM 3
2	MRD	JBA	08/21/2024	ADDENDUM 5

SHEET

09-S102

FILE NO.: 3618121

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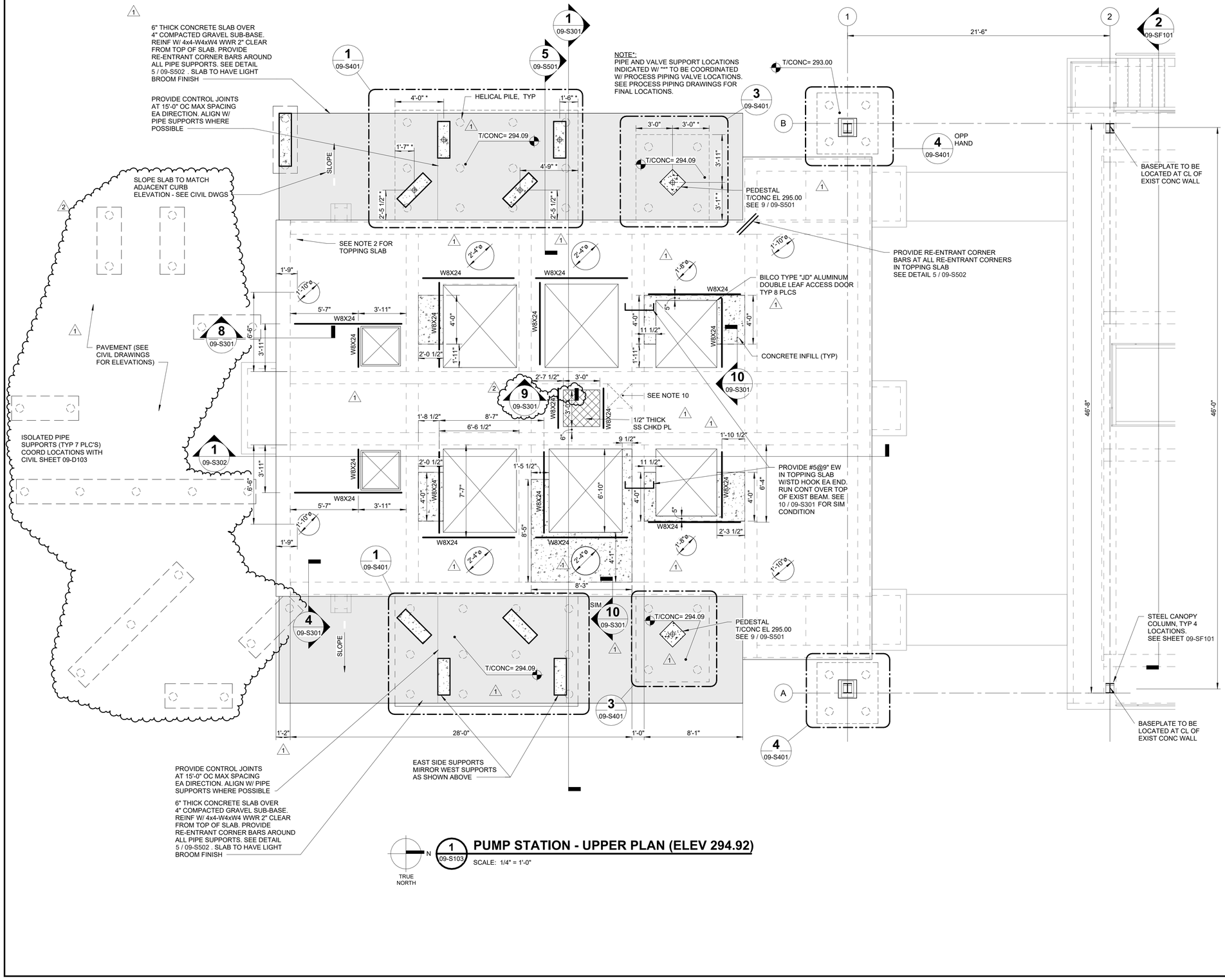

PUMP STATION - UPPER PLAN (ELEV 294.92)

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

PLAN NOTES

1. FOR GENERAL NOTES SEE SHEET 09-S001
2. 4" THICK LW CONCRETE TOPPING SLAB SHALL ADHERE TO THE FOLLOWING SPECIFICATIONS
   a.) 4,500PSI COMPRESSIVE STRENGTH w/ CTS TYPE K CEMENT
   b.) FORTA MACRO-SYNTHEIC FIBERS (7.5 LB/CY DOSAGE)
   c.) LIGHT BROOM FINISH
3. COORDINATE SIZE AND LOCATIONS OF HATCHES AND OPENINGS PRIOR TO DEMOLITION OF CONCRETE OR FABRICATION OF STEEL.
4. ALL T/STL = 294.34' UNO.
5. INDICATES AREAS OF CONCRETE INFILL TO BE POURED MONOLITHICALLY WITH TOPPING SLAB. SEE DET 10/09-S301 FOR REINFORCING.
6. SEE SHEET 09-S501 FOR PILE CAP SECTIONS AND DETAILS.
7. TIGHTLY PACK 1" NON-SHRINK GROUT BETWEEN TOP OF BEAM AND BOTTOM OF SLAB.
8. ALL NEW BEAMS TO BE STAINLESS STEEL.
9. CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES AND POTENTIAL INTERFERENCES PRIOR TO INSTALLING HELICAL ANCHORS.
10. EXISTING OPENING - CLEAN AS REQ'D TO WELD EXISTING LID CLOSED PRIOR TO POURING TOPPING SLAB.

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8/21/2024

PUMP STATION - UPPER LEVEL PLAN

LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS
MACON WATER AUTHOURITY

REVISION INFORMATION

REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/14/2024	ADDENDUM 3
2	MRD	JBA	08/21/2024	ADDENDUM 5

SHEET
09-S103
FILE NO.: 3618121

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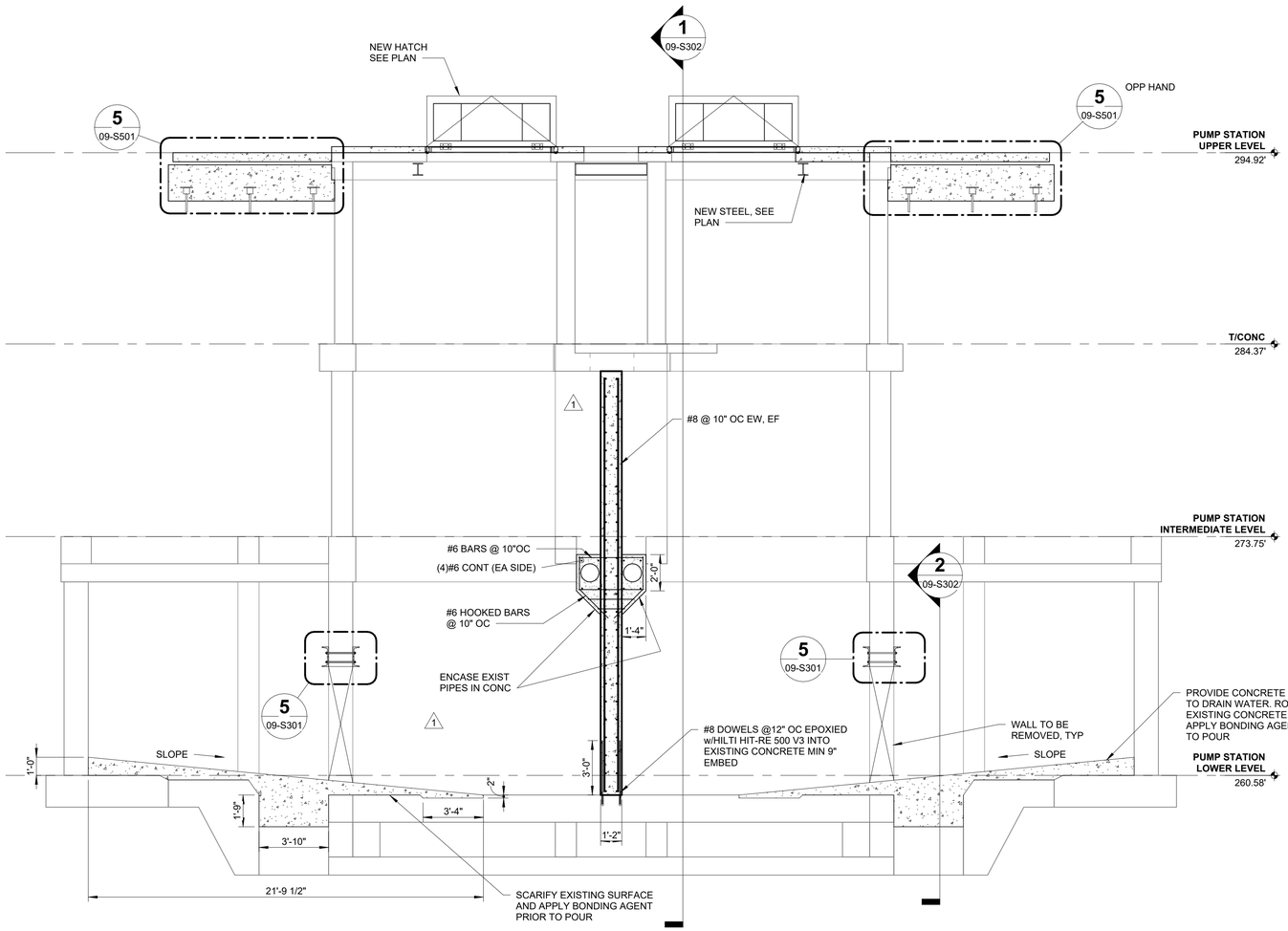
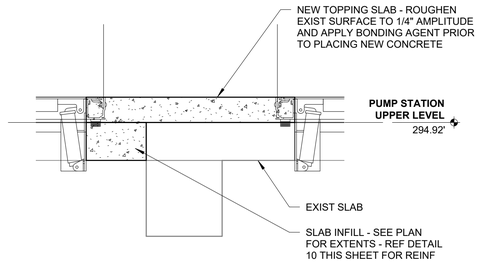
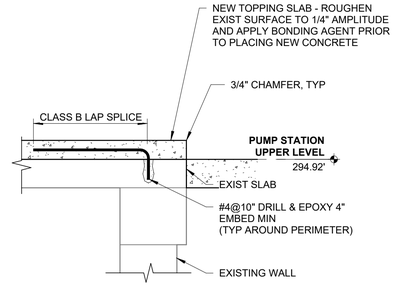


1 SECTION
1 / 09-S101
SCALE: 1/4" = 1'-0"

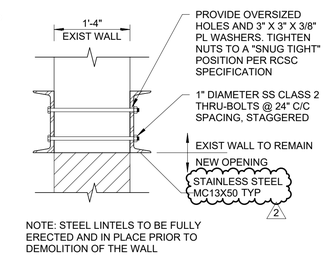
SECTION 2 NOT USED



3 BETWEEN HATCHES
3 / 09-S302
SCALE: 1" = 1'-0"

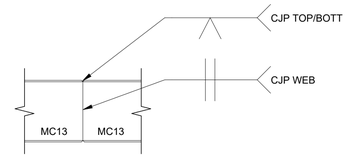


4 TOPPING SLAB TO EXIST SLAB
4 / 09-S301
SCALE: 3/4" = 1'-0"



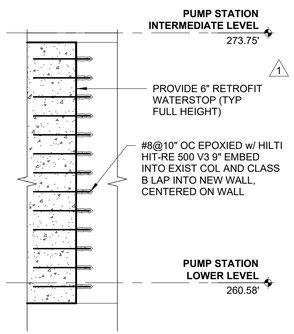
NOTE: STEEL LINTELS TO BE FULLY ERECTED AND IN PLACE PRIOR TO DEMOLITION OF THE WALL

5 STEEL LINTEL
5 / 09-S301
SCALE: 3/4" = 1'-0"

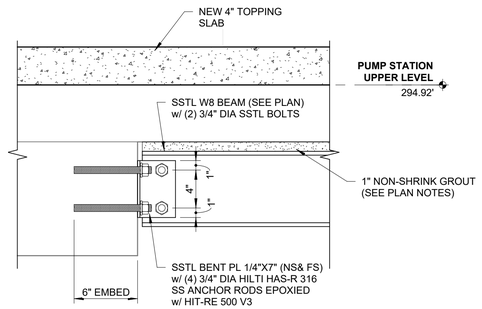


NOTE: SEE PLAN FOR SPLICE LOCATIONS

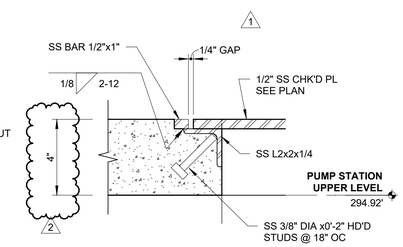
6 CHANNEL SPLICE
6 / 09-S301
SCALE: 3/4" = 1'-0"



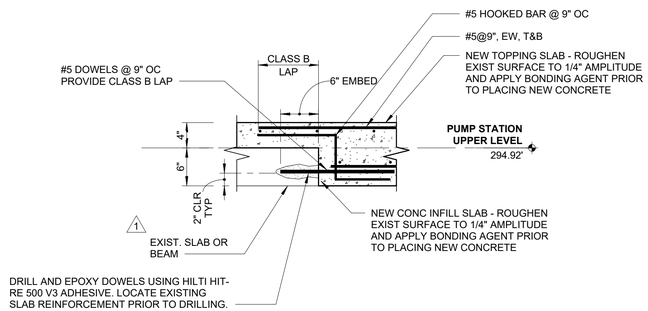
7 EXISTING COL INTERFACE
7 / 09-S301
SCALE: 1/4" = 1'-0"



8 BEAM TO CONCRETE
8 / 09-S301
SCALE: 1 1/2" = 1'-0"



9 ARMORED EDGE
9 / 09-S301
SCALE: 3" = 1'-0"



10 CONCRETE INFILL
10 / 09-S103
SCALE: 1" = 1'-0"

BARGE DESIGN SOLUTIONS
615 3rd Avenue South / Suite 700 // Nashville, Tennessee 37210
Phone: 615.254.1500// Fax:615.255.6572

GEORGIA REGISTERED No. SE000550 STRUCTURAL ENGINEER BRIAN H. WOOD
8/21/2024

SECTIONS

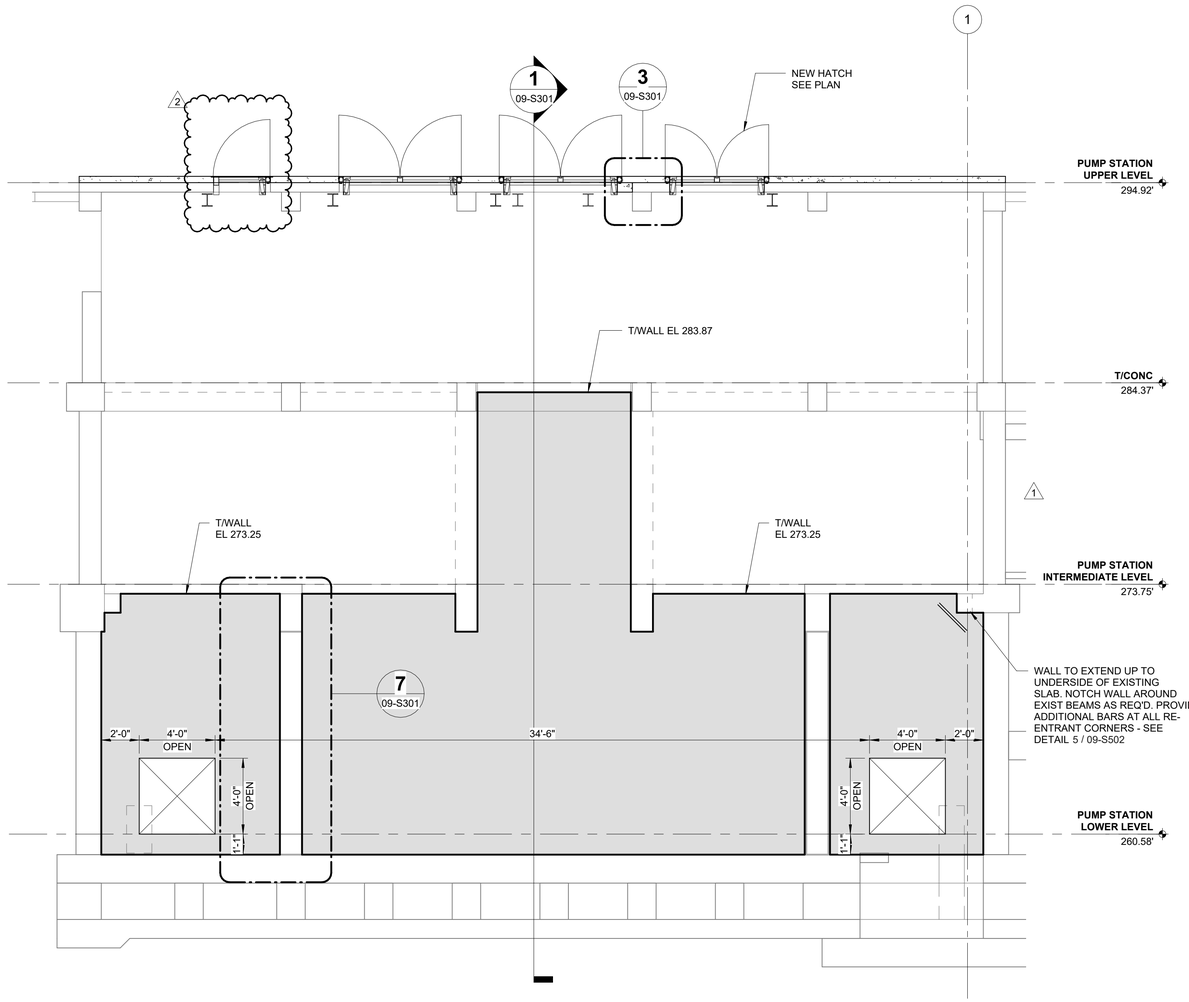
LOWER POPLAR WATER RECLAMATION FACILITY
INFLUENT PUMP STATION IMPROVEMENTS
MACON WATER AUTHOURITY

REVISION INFORMATION

REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/14/2024	ADDENDUM 3
2	MRD	JBA	08/21/2024	ADDENDUM 5

SHEET:
09-S301
FILE NO.: 3618121

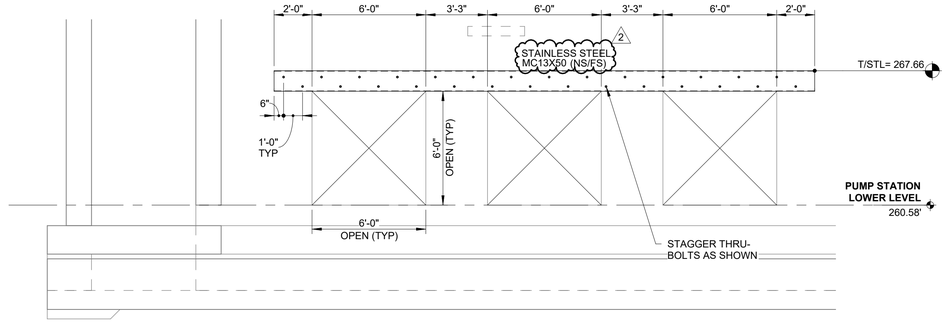
Discipline Sort: 8.3
Publisher: BARGE DESIGN SOLUTIONS
Drawing: 121 Lower Poplar WRF Influent
File Name: 09-S301.dwg
Time / Date: 8/21/2024 11:34:51 AM



1 GATE OPENINGS

09-S302

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



2 SHORING SECTION

09-S302

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

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8/21/2024

SECTIONS

LOWER POPLAR WATER RECLAMATION FACILITY
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REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
1	MRD	JBA	08/14/2024	ADDENDUM 3
2	MRD	JBA	08/21/2024	ADDENDUM 5

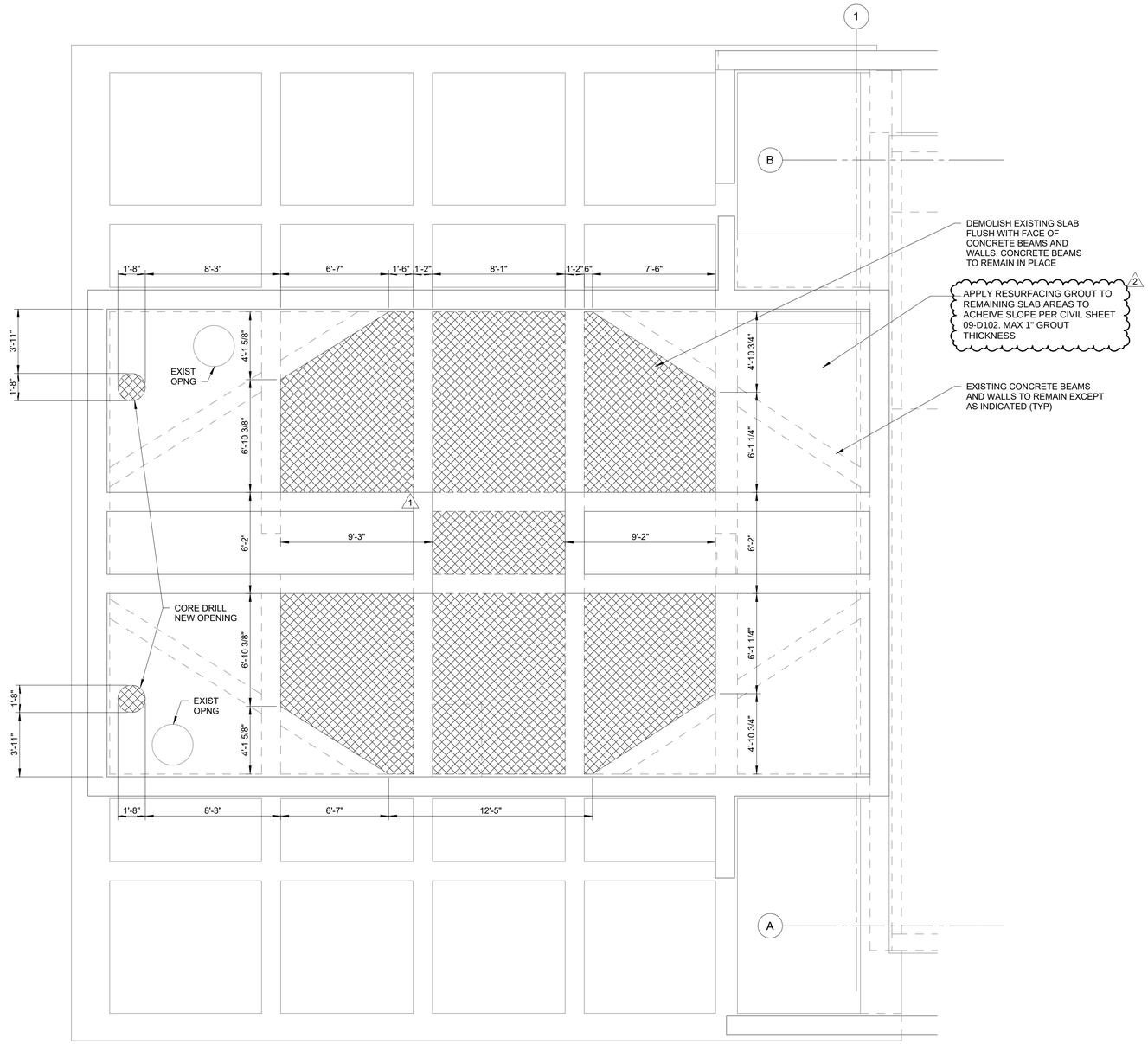
REVISION INFORMATION

SHEET

09-S302

FILE NO.: 3618121

Discipline Sort: 8.3
Batch: 08/21/2024 11:34:52 AM
Drawing: C:\Users\mdavis\Desktop\3618121 - Lower Poplar WRF Influent Pump Station\Revit\09-S302.rvt
Plot By / Date: 8/21/2024 11:34:52 AM



N
TRUE NORTH

1
09-SD102

PUMP STATION - INTERMEDIATE DEMOLITION PLAN (ELEV 273.75)

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

PLAN NOTES

1. REF SHEET 09-S103. BEAMS MUST BE INSTALLED AND IN PLACE PRIOR TO SLAB DEMOLITION.
2. EXISTING HOUSEKEEPING PADS TO BE DEMOLISHED DOWN FLUSH WITH EXISTING TOP OF SLAB ELEVATION.
3. WHERE SAWCUTTING CONCRETE EXPOSES REBAR, CLEAN CONCRETE AND REBAR SURFACE IN ACCORDANCE WITH SIKA WRITTEN REQUIREMENTS FOR INSTALLATION OF SIKAGARD-62. INSTALL TWO COATS OF SIKAGARD-62 (GRAY) OVER EXPOSED REBAR EXTENDING 3" MINIMUM PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. EXISTING STRUCTURAL DRAWINGS WILL BE MADE AVAILABLE TO CONTRACTOR UPON REQUEST.
5. SUBMIT A DETAILED DEMOLITION PLAN FOR REVIEW BEFORE BEGINNING DEMOLTION. COORDINATE ALL OPENING SIZES WITH APPROVED HATCH SHOP DRAWINGS.

△1

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8/21/2024

PUMP STATION - INTERMEDIATE DEMOLITION PLAN

LOWER POPLAR WATER RECLAMATION FACILITY

INFLUENT PUMP STATION IMPROVEMENTS

MACON WATER AUTHOURITY

REVISION INFORMATION

REV.	DR	CHK	DATE:	DESCRIPTION:
0	ACM	JBA	07/10/2024	ISSUED FOR BID
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2	MRD	JBA	08/21/2024	ADDENDUM 5

SHEET
09-SD102
FILE NO.: 3618121

Discipline Sort: 8.1
Drawing: Backup:C:\SHARED\BATCH\Scale\FRAME(ANSI)E1.dwg
Plotted: 8/21/2024 11:54:53 AM
Time / Date: 8/21/2024 11:54:53 AM