CLAYTON COUNTY Water AUTHORITY 1600 Battle Creek Road Morrow, GA 30260	JONESBORO RPS IMPROVEMENTS	
	ADDENDUM 1	
	Date	Friday, April 19, 2024
	Bid Number	2024-WP-12
	Pre-Bid Meeting	Tuesday, April 23, 2024 at 2:00 p.m. local time
	Bid Opening	Tuesday, May 7, 2024 at 2:00 p.m. local time
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR BID SUBMITTAL		

SECTION 00 91 13.01

ADDENDUM 1

PART 1 – REVISIONS TO THE PROJECT MANUAL

The following REVISIONS shall be incorporated into the PROJECT MANUAL for the above-referenced project:

A. Section 01 14 00, Coordination with Owner's Operations

1. Part 1.06-B(5) shall be revised as follows: "Draining and Cleaning of Tanks and Water Mains: Unless otherwise specified, Owner will drain the existing ground storage tanks ~~**at beginning of**~~ **prior to** shutdowns that require tank draining..."

2. Shutdown 7 described in Table 01 14 00-B shall be removed from the contract.

3. For Shutdown 8, Temporary Systems Required to Perform Shutdown column, remove "One 30-inch line stop" from the contract.

4. Add the following row to Table 01 14 00-B:

9	Noah's Ark RPS	To install the proposed surge anticipator valves and gate valves	• GST #1 • All pumps in Building #1	• GST #2 • All pumps in Building #2	-	8 hours

B. Section 01 75 00, Checkout and Startup Procedures

1. Part 1.02-C(2)c(2) shall be revised as follows: "Equipment and material shall be operated for a minimum ~~**30-day**~~ **14-day** operational period to verify performance. In addition to specific requirements specified in the individual specification sections, process data that is recorded in the PLC shall be submitted to the Engineer in tabular format showing hourly process performance data. A log of all alarms shall also be submitted, along with notes describing corrective measures applied in response to alarm condition."

C. Section 32 31 13, Steel Fencing

1. Part 2.09-B shall be revised as follows: “The main entrance gate shall be a ~~**double**~~ **single** slide cantilever type gate with electric gate operators and vehicle detector loops for automatic operation.”

2. Add Part 2.09-F: “Gate operator system shall be as manufactured by Customline, Inc.; Crusader Division of McKinney Electronics, or equal.”

D. Section 00 73 00, Supplementary Conditions

1. Part 5.03-SC-5.03, the following drawings shall be added to the list:

a. Tank Drawings: Jonesboro Tanks, CROM, 1991

b. Tank Drawings: Noah’s Ark Tank, CROM, September 1971

E. Section 40 66 54, Cellular Communication System, shall be added to the contract.

All other terms and conditions of the PROJECT MANUAL remain unchanged.

PART 2 – REVISIONS TO THE DRAWINGS

A. Drawing C053

1. Add the following note: “4. Where BFV-400E connects to existing flanges or piping, Contractor shall completely remove the existing coating from the existing flanges or existing piping for a distance of 6-inches and apply new coating in accordance with Section 09 90 00.”

B. Drawing CD001

1. Add Detail C-01-0100

C. Drawing M102 shall be removed from the contract.

D. Drawing M103

1. Add the following note: “2. Where proposed valves, fittings, and/or piping connects to existing flange or piping, Contractor shall completely remove the existing coating from the existing flange or existing piping for a distance of 6-inches and apply new coating in accordance with Section 09 90 00.”

E. Drawing M104

1. Revise Note 1 to read: “1. Tap ~~**30-inch**~~ **24-inch** discharge header and install 3/4 inch Sch 40 PVC remote sensing line from tap to 6-inch surge anticipator valve per manufacturer’s guidelines.”

F. Drawing M400

1. Revise callout at Pump 3 suction to read: 18"x10" ECC. RED.~~**, DEMO.**~~

G. Drawing S3 shall be added to the contract.

PART 3 – QUESTIONS AND ANSWERS

Q1: **Regarding drawing C050, please provide details for the existing tower being demolished.**

A1: Drawings for the existing tower are not available. A picture of the tower is included as Attachment A to this addendum.

Q2: **The demolition shown on drawing M102 conflicts with the work to be performed in Section 01 11 00 Part 1.02 B. 2. Please clarify.**

A2: Refer to PART 2 – C of this Addendum.

Q3: **Please provide more information and details on the alternate item shown in Section 01 23 00 Part 3.01 A. 1.**

A3: Jonesboro RPS construction drawings (Finished Water Pumping Station, Robert and Company, May 1991) are included as Attachment D to this addendum. No other drawings or details on the existing natural gas engine are available.

Q4: **Please provide copies of the lead-based paint surveys referenced in Section 02 83 00 Part 1.01 A. 1.**

A4: The asbestos and lead based paint survey reports are included as Attachments B and C to this addendum.

Q5: **Drawing E102 shows power to the new valves at Noah’s Ark. Are any control circuits required?**

A5: No. Remote control circuit wiring is not required to be installed for these valve actuators.

Q6: **Does the American Iron and Steel Act apply to the project?**

A6: No.

Q7: **Item 7 in the shutdown schedule in Section 01 14 00 references replacement of MOV-010A through MOV-010D. Please confirm whether these valves and this shutdown is applicable to the project.**

A7: Shutdown 7 described in Table 01 14 00-B shall be removed from the project. Refer to PART 1 – A.2 in this Addendum.

Q8: Please provide as-built information for all electrical duct banks shown on E050.

A8: Jonesboro RPS construction drawings (Finished Water Pumping Station, Robert and Company, May 1991) are included as Attachment D to this addendum.

Q9: Regarding Article 7.08 of the Supplementary Conditions, what fees are waived by the Owner and what permits or fees are required from other agencies/entities other than the Owner?

A9: **CCWA**: No permits are required from the Owner.
Clayton County Community Development: The project requires building and trade permits from Clayton County Community Development which the Contractor shall pay for. Drawings have been reviewed and are ready for the Contractor to pickup.
Clayton County Transportation and Development: Land disturbance activity and grading permits from Clayton County Transportation and Development have been received and will be provided to the Contractor.
Lead-based Abatement: The Contractor shall be responsible for any permits and fees associated with lead-based paint abatement.
Georgia Environmental Protection Division: The project has been approved by GA EPD; copies of the GA EPD permit approval will be provided to the Contractor.
Contractor is responsible for all fees associated with the project; none of the fees for the above-mentioned permits shall be waived.

Q10: Can the existing duct banks shown on E050 be abandoned in place rather than removed? If not, we assume that temporary feeds will need to be provided to/from the existing Tank 2 Aeration Control Panel. Please clarify.

A10: Existing duct banks identified for demolition shall be removed, not abandoned. See Section 01 14 00 for requirements for maintaining Owner operations. Specifically for the Tank 2 Aeration Control Panel, additional site investigation is recommended.

Q11: Drawings C050 and M402 show the location of the existing gas meter in conflict with proposed DB52 shown on E051 and E401. If the gas service is demolished to facilitate the construction of the proposed ductbank, does a temporary generator need to be supplied to provide backup power to existing Pump No. 3 and/or Pumps No. 1 & 4?

A11: Existing Pump No. 3 shall maintain backup power until JB-P-1, JB-P-2 and the proposed generator are put into service. Contractor shall route duct bank around existing gas meter/gas service or temporarily relocate gas meter/gas service to maintain the existing gas generator in service until the above criteria is met.

Q12: **The Building Code Analysis on A501 appears to indicate that a Fire Alarm is not required. Note 1 on E500 indicates that a Fire Alarm System is required. Please clarify.**

A12: The fire alarm system is not a Code requirement, but it is a Project requirement. Provide a fire alarm system for the new Electrical Building per Section 28 46 20.

Q13: **Section 01 91 13 Part 3.02 references a 14-day operating test period. Section 01 75 00 Part 1.02 C. references a 30-day operational period. Please clarify which is required.**

A13: Section 01 75 00 Part 1.02 C shall be revised to a 14-day operational period. Refer to PART 1 – B.1 of this Addendum.

Q14: **Stage 1 of the Suggested Sequence of Work (00 14 00) shows replacing the yard valves at the Jonesboro RPS. Is the intent for the Owner to temporarily operate these valves manually or does the Contractor need to provide temporary power to each valve?**

A14: The yard valves at Jonesboro RPS shall be manually operable temporarily until the proposed electrical systems are installed and the electric actuators can be installed.

Q15: **Please provide drawing details of the existing Meter Vault shown on C050.**

A15: Jonesboro RPS construction drawings (Finished Water Pumping Station, Robert and Company, May 1991) are included as Attachment D to this addendum.

Q16: **Please provide details on the double check valve, box, and sample station assemblies referenced in Note 3 on drawing C053.**

A16: Drawings for the existing double check valve, box, and sample station are not available.

Q17: **Regarding Section 01 14 00 Part 1.06 B. 6. b., is the intent to provide a 14-day period between each shutdown listed in Table 01 14 00-B?**

A17: Section 01 14 00 Part 1.06-B(6)b refers to SCADA outages which are separate from pump outages. The 14-day period referenced in this paragraph only applies to shutdowns in Table 01 14 00-B if they require a SCADA shutdown.

Q18: **Drawings M403 (JP-P-2) and M404 (Section E) have leaders to see equipment pad detail 1 on S3. Drawing S3 does not appear to be included in the documents. Please clarify or provide the detail as necessary.**

A18: Drawing S3 is added to the Drawings, see PART 2 – F in this Addendum and Attachment G of this addendum.

Q19: **To which structures do you expect Note 3 on drawing C052 apply?**

A19: Water Tank #1, Water Tank #2, and Jonesboro RPS pump building.

Q20: **Regarding Note 3 on M403, please provide details on the components necessary for the seal water system.**

A20: Refer to API Standard 682, standard seal piping plan 11.

Q21: **Does Note 5 on M403 apply to the existing Meter and Altitude Valve Vaults? If so, please provide existing vault details.**

A21: Jonesboro RPS construction drawings (Finished Water Pumping Station, Robert and Company, May 1991) are included as Attachment D to this addendum. No other drawings/details of the Jonesboro RPS are available.

Q22: **Regarding M401 Section C and M404 Section F, please confirm that the existing concrete supports should be reused for the new 12" SAV installation.**

A22: It is the intent for the existing concrete supports to be reused for the new 12-inch SAV installation.

Q23: **Regarding E051, what are the depths of the existing gas line and water line (in particular in front of Tank 2 where DB-51 crosses it twice) that run parallel to Old Morrow Rd.?**

A23: The depth of the gas main is unknown. Cover over the existing 24-inch water main varies from 3 to 4 feet.

Q24: **Regarding Section 32 31 13 Part 2.09 B & C, please clarify whether proposed cantilevered sliding gate is intended to be a double or single sliding gate.**

A24: Refer to PART 1 – C.1 of this Addendum.

Q25: **We assume that the proposed sliding and swing gates should be ornamental as shown on CD002 and not chain link as specified in 32 31 13.**

A25: The proposed sliding and swing gates at Jonesboro RPS shall be ornamental as shown on CD002.

Q26: **Regarding Section 32 31 13 Part 2.09 C, please provide manufacturer(s) and model(s) for the proposed gate operator(s).**

A26: Refer to PART 1 – C.2 of this Addendum.

Q27: **Is the entire fence intended to be ornamental? If not, please indicate where fence transitions to chain link.**

A27: All fencing at Jonesboro RPS shall be ornamental.

Q28: **Provide elevations for depths of the six buried 24" BFVs with EMOs (two at Noah's Ark RPS, four at Jonesboro RPS) for figuring length of stem & bonnet tube.**

A28: Jonesboro RPS construction drawings (Finished Water Pumping Station, Robert and Company, May 1991), Jonesboro RPS tank drawings (Jonesboro Tanks, CROM, 1991), and Noah's Ark RPS tank drawings (Noah's Ark Tank, CROM, September 1971) are included as Attachments D, E, and F to this addendum. No other depth information is available.

Q29: **The seventh BFV (BFV-400E) at the Jonesboro RPS is inside a meter vault. Please provide dimensions of vault and/or orientation and location of the EMO (inside vault or outside vault).**

A29: Electric motor operator for BFV-400E shall be mounted to the top of the meter vault slab above the valve.

Q30: **'Table 01 14 00-B Schedule of Shutdowns' indicates replacement of yard valves MOV-010A through MOV-010D at Noah's Ark RPS. These valves are not mentioned on the Drawings or elsewhere. Please clarify.**

A30: Refer to PART 1 – A.2 of this Addendum, which removes reference to MOV-010A through MOV-010D at Noah's Ark RPS from the project scope of work.

Q31: **Drawing M102 'Noah's Ark RPS Demolition Photos' details removal of Pumps No. 2 & No. 4. This is not indicated on the other demolition drawings (M100, M101) and no provisions for replacement of pumps or piping is mentioned elsewhere. Please clarify.**

A31: Refer to PART 2 – C of this Addendum, which removes drawing M102 from the project scope of work.

Q32: **Is AMTECH Drives approved for Supply?**

A32: Approved VFD manufacturers are listed in Section 26 29 23.

Q33: **Drawing E051 shows a security camera provided by others. Please confirm whether the Contractor needs to provide a pole for mounting the camera.**

A33: No, the pole for the security camera is by others.

Q34: **Is lightning protection required for the generator?**

A34: No, the standby generator set is excluded from the lightning protection provisions in Section 26 41 00.

Q35: **Drawing l002 shows an antenna for LCP-500, is this integral to the control panel or does this need to be routed to the exterior of the building?**

A35: Cellular antenna shall be integral to the control panel similar to existing RTU panel.

Q36: **Regarding Section 01 14 00 Table 01 14 00-B, please provide explanation and/or detail of the 30" line stop required in Shutdown No. 8.**

A36: Refer to PART 1 – A.3 of this Addendum; the 30-inch linestop is not required to install MOV-100A and MOV-100B and shall be removed as a requirement to perform Shutdown No. 8.

Q37: **Regarding the SAV replacement for the Noah's Ark RPS shown on M100-M104, will an additional shutdown be required or should the Contractor plan to perform the work during Shutdown No. 8?**

A37: Refer to PART 1 – A.4 in this Addendum; an additional shutdown (Shutdown No. 9) shall be added to Table 01 14 00-B as a part of this addendum.

Q38: **C-32-0510 on drawing CD002 shows the slide gate as 4' tall. C-32-0512 shows the swing gate as 8' tall. Please clarify what height the fence should be.**

A38: Detail C-32-0510 identifies a 4-inch post, but does not identify height. The ornamental fence and gates shall be 8-feet tall.

Q39: **Please confirm that no lead-based paint abatement is required for the Noah Ark Repump Station Improvements.**

A39: Lead-based paint abatement may be required for Noah's Ark RSP. Asbestos and Lead Based Paint Survey for Noah's Ark RPS, ECS Southeast, LLP, November 2022 has been included as Attachment B to this addendum. In addition, Refer to Section 02 83 00 Lead-Based Paint Abatement.

Q40: **Please provide the locations and quantities of the lead base abatement at the Jonesboro Repump Station Improvements.**

A40: Asbestos and Lead Based Paint Survey for Jonesboro RSP, ECS Southeast, LLP, November 2022 has been included as Attachment C to this addendum.

Q41: **Please provide the survey and test report for the lead base abatement for Jonesboro Repump Station Improvements.**

A41: See responses to Q40: and Q41:.

Q42: **Please clarify if this project requires AIS (American Iron and Steel act) requirements.**

A42: This project does not require compliance with the American Iron and Steel Act.

Q43: **Please confirm that SECTION 01 45 33 SPECIAL INSPECTIONS is the owner or the engineer of record scope of work.**

A43: Contractor shall comply with Section 01 45 33. Refer to Part 1.01 The Requirement and 3.05 Contractor Responsibilities.

Q44: **Under specification section 02 83 00 (LBP) Lead Base Paint section 1.01 the contractor shall provide all labor, equipment, tools, materials and permit required to test for, remove and dispose of lead-based paint materials required to complete the work. Results of a lead base paint survey for each site are included. But the documents received do not include a survey. Please provide an Asbestos and Lead Based Paint Survey.**

A44: See responses to Q40: and Q41:.

Q45: **Has the Owner obtained the necessary right of way permits for installation of new utilities shown on plan C053 the Electrical Ductbank?**

A45: Clayton County Transportation and Development reviewed and approved the Work as shown.

Q46: **This project we are replacing a minimal number of spools and fittings that are tied into an existing line. The layout is not designed to isolate the new piping from the existing piping. If testing against the existing line could**

cause a failed test. Consideration should be given to this. Minimal testing should be considered under these conditions. Please clarify.

A46: No pressure testing of proposed piping against existing piping, fittings, or valves shall be required. Acceptance of the proposed piping, fittings, and valves installation shall be based on their performance and functionality during the 14-Day Operating Test Period described in Section 01 91 13 – General Commissioning Requirements.

Q47: If a Bidder has been previously approved by the CCWA as a Responsible Bidder per section 00 45 13, do we have to resubmit this information again?

A47: Bidder must submit all required information listed in Section 00 21 13 – Instructions to Bidders and Section 00 45 13 – Bidders Qualifications.

Q48: Drawing M404, Section C details the equipment pads has a note to see drawing S3. But there is no drawing S3 supplied in the documents. Please provide sheet S3.

A48: Drawing S3 is added to the Drawings, see PART 2 – F in this Addendum and attachments.

Q49: Please clarify why drawing M102 showing demolition of Noah's Ark RPS pumps was included in these documents?

A49: Refer to PART 2 – C of this Addendum.

Q50: Specification 40 05 00, 3.01, S. states, "ALL PIPING SHALL HAVE TYPE "A" BEDDING AS SHOWN ON THE DRAWINGS, UNLESS OTHERWISE SPECIFIED HEREIN OR INDICATED ON THE DRAWINGS.", however there is not a Type A bedding detail shown, please provide.

A50: See Type A bedding detail in PART 4 – H of this Addendum.

Q51: Specification 40 05 00, 3.04, A. states "All piping shall be properly flushed and tested unless specifically exempted elsewhere in the Specifications or otherwise approved by the Engineer." However, this job requires replacing a limited amount of spools and/or valves which doesn't allow for testing. In the original bid Addendum #4, Q&A #13 addressed this item, which the response stated, "No pressure testing of proposed piping against existing piping, fittings, or valves will be required.". Please reconfirm your response for this bid.

A51: Refer to Q46: response.

Q52: Specification 01 14 00-B Schedule of Shutdowns doesn't list replacement of the 6" SAV's at Noah's Ark RPS. There is not an isolation valve on the downstream side, so its likely two partial shutdowns would need to occur (#1 = Pumps #1 & #2 are off and pump #4 is on, #2= Pump #4 is off and pumps #1 & #2 are on). Please confirm if the two shutdowns are acceptable or if another means is available/acceptable.

A52: An additional shutdown (Shutdown No. 9) shall be added to Table 01 14 00-B. Refer to PART 1 – A.4 in this Addendum. Surge anticipator valves and associated gate valves, fittings, and piping shall be installed during Shutdown No. 9.

Q53: Drawing M104, note 1 states, "Tap 30-inch discharge header and install 3/4-inch SCH 40 PVC remote sensing line from tap to 6-inch surge anticipator valve per manufacturer's guidelines". Please respond to the following questions:
A. It appears the discharge header is 24" according to drawing M103 and not 30", please confirm.
B. Is there an existing tap that can be utilized for the new line (existing SAV sensing line tap)?
C. If an existing tap cannot be used a direct wet tap into the header maybe be required since it is unclear if the existing tie rods will interfere with a tapping saddle. Please confirm if any objection or other intentions for the tap.

A53: A. Refer to PART 2 – E of this Addendum; the existing discharge header at Noah's Ark Building 1 is 24-inch.
B. There is not an existing tap on the 24-inch header for the existing surge relief valves.
C. Direct tapping of the 24-inch discharge header is allowable.

Q54: Drawing M102 Photos 1, 2, & 3 show and call for demolition of pumps, engines, ductile iron piping, and natural gas piping. However, this appears to be scope from the original bid (when the natural gas engines and pumps were to be replaced), but this scope was removed in the rebid. Please confirm all work shown on this drawing is incorrect and provide updated sheet or remove sheet from documents.

A54: Refer to PART 2 – C of this Addendum.

Q55: Specification 01 14 00, 1.06, B, 5. states "Owner will drain the existing ground storage tanks at beginning of shutdowns that require tank draining." The sentence implies that the duration of time it takes to drain the tanks is part of the maximum duration allowed for the shutdown (8 hours). Although the amount of time to drain the tanks is not stated (likely several hours), further reducing the amount of time the contractor can work during the shutdown will likely not allow enough time for the contractor to complete the required work. Please confirm that the Owner will drain the existing GST's immediately prior to the shutdown allowing the contractor a full 8 hours to perform the work. We assume the Owner will close the GST fill line(s) and pump down the water as low as possible while not creating any potential issues for the pumps, then the remaining water will be drained by the tank drain line (single 12" pipe for both GST's at Jonesboro). Once the remaining water is drained from the tanks the contractor's

shutdown duration starts. Please confirm these assumptions and clarify anything inaccurate or missing.

A55: See PART 1 – A.1 of this Addendum. Contractor shall have the full time listed in Table 01 14 00-B for each individual shutdown. The tank draining process described in the above question is generally correct.

Q56: Drawing M400 at Pump 3 suction calls out "18"x10" ECC. RED., DEMO." However, the fitting is drawn as existing, and on M403 it is also drawn as existing. Please confirm this fitting does not get replaced.

A56: See PART 2 – F of this Addendum; the existing 18" x 10" reducer on Pump 3 suction piping at Jonesboro RPS is existing and shall not be demolished or replaced.

Q57: Drawing M402, photo 2 appears to show cooling water supply and return/discharge for the engine. Does the return/discharge pipe extend below the grating and then stop a few inches above the concrete slab, or does it continue somewhere else?

A57: Yes, the return pipe extends below the grating and terminates above the discharge header trench slab.

Q58: Drawing M403, Note 5 states "ALL EXISTING FINISHED WATER PIPING AND VALVES INSIDE THE PUMP ROOM AND OUTSIDE OF THE BUILDING EXTENDING TO 12-INCHES BELOW GRADE SHALL BE COATED PER SPECIFICATION 09 90 00". A few questions/clarifications on this note:
A. Does this note apply to both Jonesboro and Noah's Ark?
B. If it applies to Noah's Ark, only Building 1 piping?
C. We assume the only "buried" piping that will need to be uncovered to be painted to 12" below grade are the pump suction pipes & surge pipes that are partially exposed, please confirm.
D. Does any of the piping in vaults get painted? If so, please be specific to which vaults.

A58: A. Note 5 on Drawing M403 applies only to Jonesboro RPS.
B. N/A
C. Pipe coating shall extend 12-inches below grade where pipe transitions from above grade to below grade without passing through a structural element (like a building or vault wall). The above grade pump suction piping outside of the building extending to 12-inches below grade shall comply with the note.
D. Note on drawing M403 does not apply to vaults; however, refer to PART 2 – A.1 of this Addendum for required coating for BFV-400E installation.

PART 4 – ATTACHMENTS

A. Jonesboro RPS antenna photograph

B. Asbestos and Lead Based Paint Survey for Noah's Ark RPS, ECS Southeast, LLP, November 2022

C. Asbestos and Lead Based Paint Survey for Jonesboro RPS, ECS Southeast, LLP, November 2022

D. Finished Water Pumping Station, Robert and Company, May 1991

E. Jonesboro Tanks, CROM, 1991

F. Noah's Ark Tank, CROM, September 1971

G. Drawing S3

H. Detail C-01-0100

I. Section 40 66 54, Cellular Communication System

END OF SECTION

Acknowledgment of receipt of this addendum must be signed and included in your bid submittal.	
Company Name	
Signature	
Date	

ASBESTOS AND LEAD BASED PAINT SURVEY

NOAH'S ARK RSP

1865 NOAH'S ARK ROAD
JONESBORO, GEORGIA 30236

ECS PROJECT NO. 49:18720

FOR: HAZEN AND SAWYER

NOVEMBER 30, 2022

November 30, 2022

Mr. Chas Goblisch
Hazen and Sawyer
1300 Altmore Avenue
Suite D-520
Atlanta, Georgia 30342
CGoblisch@hazenandsawyer.com

ECS Project No. 49:18720

Reference: Asbestos and Lead Based Paint Survey, Noah's Ark RSP, 1865 Noah's Ark Road, Jonesboro, Georgia

Dear Mr. Goblisch:

ECS Southeast, LLP (ECS) is pleased to provide Hazen and Sawyer with the results of the above referenced Asbestos and Lead Based Paint Survey performed at Noah's Ark RSP located at 1865 Noah's Ark Road in Jonesboro, Georgia. This report summarizes our observations, analytical results, findings, and recommendations related to the work performed. The work described in this report was performed by ECS in general accordance with the Scope of Services described in ECS Proposal Number 49:33782P and the terms and conditions of the agreement authorizing those services.

ECS appreciates this opportunity to provide Hazen and Sawyer with our services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS Southeast, LLP

Jenny Clark, REM
Environmental Department Manager
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Environmental Principal
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EXECUTIVE SUMMARY

The subject property is developed with a water treatment facility located at 1865 Noah's Ark Road in Jonesboro, Clayton County, Georgia. The two pump station buildings consist of approximately 5,800 square feet of space in total. The buildings were reportedly constructed in 1974 and 1996 respectively. ECS understands the buildings are scheduled for demolition.

The purpose of the Asbestos and Lead Based Paint Survey was to identify asbestos-containing materials (ACMs) and lead-paint that may be present within the building materials scheduled to be impacted by the planned demolition activities.

Asbestos Survey

On November 18, 2022, Ms. Jenny Clark, REM, an accredited inspector, performed the asbestos assessment. Bulk samples were submitted to EMSL Analytical, Inc. (EMSL) in Smyrna, Georgia for analysis via Polarized Light Microscopy (PLM) in accordance with the current EPA-600 methodology.

A total of 22 bulk samples from nine homogeneous areas were submitted to the laboratory of which 28 layers were analyzed. Based on the laboratory analysis of the bulk samples collected during the survey, one of the materials were reported to contain asbestos above the regulatory limit.

The following material was reported as asbestos-containing:

- Roofing Mastic - Building #1 / Upper Roof

The following materials were reported as non-asbestos containing:

- Window Glass and Glazing;
- Exterior Stucco Window Sill;
- Gasket Material;
- Tank Insulation Material;
- Exterior Wall Panel;
- Built-up Roofing - Upper and Lower Roof; and
- Exterior Window Caulk.

Due to inaccessibility or the destructive means that asbestos sampling requires, unseen ACMs may remain within the building hidden behind inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities, etc.

If suspect materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or be sampled immediately upon discovery and prior to disturbance for asbestos content by a certified asbestos inspector in accordance with 29 Code of Federal Regulations (CFR) 1926.1101.

Lead Paint Survey

On November 18, 2022, Ms. Jenny Clark, REM, an accredited inspector, performed the Lead Paint Survey. Paint chip samples were submitted to EMSL Analytical, Inc. (EMSL) in Kernersville, North Carolina for analysis via Flame Atomic Absorption Spectroscopy (AAS) in accordance with EPA Method SW 3050B/7000B.

A total of nine paint chips were collected. Based on the findings of the lead survey, detectable concentrations of lead were identified on some paints and surface coatings.

The executive summary is an integral portion of this report, however, ECS recommends the report be read in its entirety.

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TABLE OF APPENDICES

1.0 SITE DESCRIPTION

The subject property is developed with a water treatment facility located at 1865 Noah's Ark Road in Jonesboro, Clayton County, Georgia. The two pump station buildings consist of approximately 5,800 square feet of space in total. The buildings were reportedly constructed in 1974 and 1996 respectively. The interior finishes include concrete floors, walls and ceilings. The exteriors are brick. Building #1 has a built-up roof on two roofing systems, upper and lower and Building #2 has a membrane roof.

2.0 PURPOSE

The purpose of the Asbestos and Lead Based Paint Survey was to identify asbestos-containing materials (ACMs) and lead-containing paint (LCP) which require special handling and/or disposal if disturbed during construction activities. The identification of ACMs require trained labor, regulated work practices, and special disposal. The identification of LCP requires disclosure to contractors and monitoring of lead exposure.

3.0 METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practice(s) and methods specified by regulation(s) for the identification of ACMs and LCP.

3.1 Asbestos-Containing Materials

On November 18, 2022, Ms. Jenny Clark, REM, an EPA accredited inspector, performed the asbestos survey. The survey consisted of observing the accessible areas of the building for the presence of suspect materials which may contain asbestos. The survey involved detecting both friable materials (materials which can be pulverized or reduced to a powder by hand pressure when dry) and non-friable materials (materials which pose a hazard when sawn, sanded, drilled or pulverized). Homogeneous materials (based on material type, color, texture, etc.) were identified in during the survey.

The EPA National Emissions Standard for Hazardous Air Pollutants (NESHAP) requires a survey for asbestos prior to renovation or demolition. Renovation or demolition is defined under NESHAP as the removal of a load-bearing structure or member. On the basis of requirements under NESHAP for renovation activities, ECS conducted a limited survey for potential ACM. The ACM survey was limited in that we did not conduct demolition such as jack/sledge hammering to expose potentially concealed materials.

Samples were collected in general accordance with EPA Standard 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act (AHERA) and OSHA Standard 29 CFR 1926.1101 Inspection Protocol. Multiple samples of each unique material were submitted. Samples were analyzed using "Positive Stop" methodology. If one sample of a homogeneous material is reported to contain asbestos, the remaining samples of that material are not analyzed. If one sample of a material from a homogeneous area was reported to contain greater than 1% asbestos, then by EPA definition, it was characterized as asbestos-containing material.

As per the regulations, samples were collected from random locations of each homogeneous area, with the material's number of samples based upon the following criteria:

- Thermal Insulation Materials (piping, breeching, boiler insulation, etc.) – A minimum of two (2) samples are required. Patch areas (less than 6 square or linear feet) may have one (1) sample collected.
- Surfacing Materials (plaster, fireproofing, etc.) – A minimum of seven (7) samples are to be taken for areas greater than 5,000 square feet; five (5) for areas greater than 1,000 square feet, but less than 5,000 square feet; three (3) for areas less than 1,000 square feet.
- Miscellaneous Materials (flooring, adhesives, roofing, wallboard, etc.) – A minimum of two (2) samples are required.

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Samples were collected during the survey and submitted to EMSL for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-020-82, Dec. 1982). EMSL participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 101048-1. Several of the samples were layered and analyzed as multiple samples. EPA regulations require that multiple samples of each homogeneous area be collected for laboratory analysis. The material type, sample location, and analytical results of each bulk sample are also summarized in the attached Asbestos Bulk Analysis report in **Appendices**.

During the survey, ECS attempted to identify suspect ACMs in readily accessible areas. However, due to the destructive means required to identify some materials, certain areas were deemed inaccessible (i.e. behind walls or sub grade materials) and were not surveyed for suspect ACMs. Unidentified suspect ACMs may be located in these and/or other inaccessible areas.

3.2 Lead in Paint and Surface Coatings

The lead paint survey was performed by collection of suspect lead paint chips to identify lead concentrations in painted surfaces.

The lead paint assessment was conducted utilizing the U.S. EPA definition of lead-based paint (LBP). Under this definition, painted surfaces which contain lead in concentrations equal to or greater than 0.5% lead by weight are classified as coated with LBP. Paints with concentrations of detectable levels of paint are considered LCPs. Activities which disturb LCPs and glazing (while not LBPs by the U.S. EPA definition) are regulated by OSHA (29 CFR 1926.62).

Because the current or proposed use of the property is not residential or child-occupied, the scope of the lead paint survey was not conducted in accordance with HUD Chapter 7 requirements. This representative survey included collecting paint chips from walls, windows, doors, and miscellaneous components.

4.0 RESULTS

The following is a summary of laboratory results, findings and observations.

4.1 Asbestos-Containing Materials

In total, 22 bulk samples from nine homogeneous areas were submitted to the laboratory of which 28 layers were analyzed. An Asbestos-Containing Material (ACM) is defined as any material containing more than one percent (>1%) asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, PLM. Materials are categorized by the U.S. EPA in the following categories:

- Friable ACMs are defined as any ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Non-friable ACMs are defined as any ACM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I non-friable ACM are listed as following: packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than one percent (>1%) asbestos.
- Category II non-friable ACM are listed as any material, excluding Category I non-friable ACM, containing more than one percent (>1%) asbestos.

Regulated Asbestos Containing Materials (RACM) are friable ACM or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or has crumbled, been pulverized, or reduced to powder in the course of renovation and/or demolition operations.

EMSL submitted a signed final laboratory report to ECS on November 22, 2022. One of the bulk samples submitted for analysis were reported to contain asbestos in detectable concentrations. A complete list of the sampled materials submitted for analysis and sample locations are located in the Appendix of this report. Representative photographs of collected samples are also located in the Appendix of this report.

Summary of Asbestos-Containing Materials Identified

Sample ID	Location	Material Description	Analytical Results	Category
RM-2	Building #1 - Upper Roof	Roofing Mastic	3% Chrysotile	Category I non-friable

4.2 Suspect or Assumed Asbestos-Containing Materials

Due to the inaccessibility or the destructive means that asbestos sampling requires, additional suspect ACMs may remain within the building hidden behind inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities, etc. These areas were deemed inaccessible and were not assessed.

If these materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or be sampled immediately upon discovery and prior to disturbance for asbestos content by a certified asbestos inspector in accordance with 29 CFR 1926.1101.

Based upon our past experience in the identification of ACMs in similarly constructed buildings, the following additional suspect ACMs may also be located in inaccessible areas of the structure:

- Within the piping systems or equipment not accessed below grade.

4.3 Lead in Paint and Surface Coatings

Paint and surface coatings which contain detectable concentrations of lead considered "lead-containing paints". Since OSHA has no specific action level for lead in paint, all paint on the site found to have a measurable concentration of lead should be assumed to be lead containing. Work performed which may disturb lead-containing paint is regulated under OSHA as referenced under 29 CFR 1926.62. A total of 164 readings were collected during the survey, including calibration readings. Paint and other surface coatings which are defined by applicable regulation as lead-based paints are summarized in the table below and photographs of lead-based paint identified are located in the Appendix.

Paint and surface coatings which contain detectable concentrations of lead are considered LCPs. Since OSHA has no specific action level for lead in paint, all paint on the site found to have a measurable concentration of lead should be assumed to be lead-containing. Work performed which may disturb LCP is regulated under OSHA as referenced under 29 CFR 1926.62. A total of nine paint chip samples were collected during the survey. Paint and other surface coatings that were sampled are summarized in the table below and photographs of sampling locations are located in the Appendix.

Summary of Paint Chip Results

Sample ID	Color	Substrate	Component	Lead Concentration (%) by Weight
PC-1 / Bldg #1	Yellow	Concrete	Wall	<0.0080%
PC-2 / Bldg #1	Light Blue	Metal	Equipment - Base	<0.0080%
PC-3 / Bldg #1	Brown	Concrete	Floor	0.026%
PC-4 / Bldg #1	Yellow	Concrete	Ceiling	<0.0080%
PC-5 / Bldg #1	Light Blue	Metal	Equipment - Piping	0.015%
PC-6 / Bldg #2	Gray	Metal	Equipment - Base	0.017%
PC-7 / Bldg #2	Light Blue	Metal	Equipment - Base	<0.0080%

Sample ID	Color	Substrate	Component	Lead Concentration (%) by Weight
PC-8 / Bldg #2	Yellow	Concrete	Wall	<0.0080%
PC-9 / Bldg #2	Light Blue	Metal	Equipment - Piping	<0.0080%

5.0 RECOMMENDATIONS AND REGULATORY REQUIREMENTS

Based on our understanding of the purpose of the Asbestos and Lead Based Paint Survey, the results of laboratory analysis, and our findings and observations, ECS presents the following recommendations.

5.1 Asbestos-Containing Materials

ECS recommends where a material type has been identified as asbestos-containing that other materials with similar color, texture, age and size throughout the building's interior and exterior be assumed to contain asbestos. Please refer to Section 4.1 for a complete list of building materials that were reported positive for asbestos and to Section 4.2 for materials that were assumed to contain asbestos.

Suspect ACMs not observed due to inaccessibility or not sampled due to the destructive means that sampling would require may also be encountered during construction activities. At the time of the survey, only limited destructive means were used to locate or sample suspect ACMs; therefore, additional suspect ACMs may remain within inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, exterior areas, sub-grade sealants, flooring located below underlayments, vapor barriers, pipe trenches and other subsurface utilities, etc. If additional suspect ACMs are uncovered which were not accessible during this survey, it is recommended that these materials either be assumed to contain asbestos or be sampled prior to disturbance upon discovery for asbestos content by an asbestos inspector in accordance with 29 CFR 1926.1101.

5.2 Lead in Paint and Surface Coatings

Based on the findings of the lead survey, detectable concentrations of lead were identified on some paints and surface coatings.

The presence of lead is a concern primarily when conditions exist where it may be inhaled or ingested. Regardless of the analytical results of a material, all painted and/or glazed surfaces may still contain concentrations of lead in the paint, which when disturbed, may generate lead dust greater than the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter (ug/m3) as an 8-hour Time Weighted Average (TWA) established by the OSHA "Lead Exposure in Construction Rule (29 CFR 1926.62)."

The OSHA standard gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the PEL of 50 µg/m^3 as an 8-hour TWA. Under OSHA requirements, the contractor performing renovation work will be required to conduct this monitoring and follow applicable requirements under 29 CFR 1926.62 if disturbing LCP.

Destructive actions to paint containing detectable levels of lead (e.g. component removal, demolition, sanding, grinding, burning, paint preparation, etc.) will require the contractor comply with the standards of the OSHA regulation 29 CFR 1926.62, including but not limited to training, initial exposure monitoring, the use of personal protective equipment, and medical surveillance. The OSHA standard gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the PEL as an 8-hour TWA.

6.0 LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

Appendix I: Site Photographs

1 - View of Noah's Ark Building 1

2 - View of Noah's Ark Building 2

3 - View of the interior of Noah's Ark - Building 1

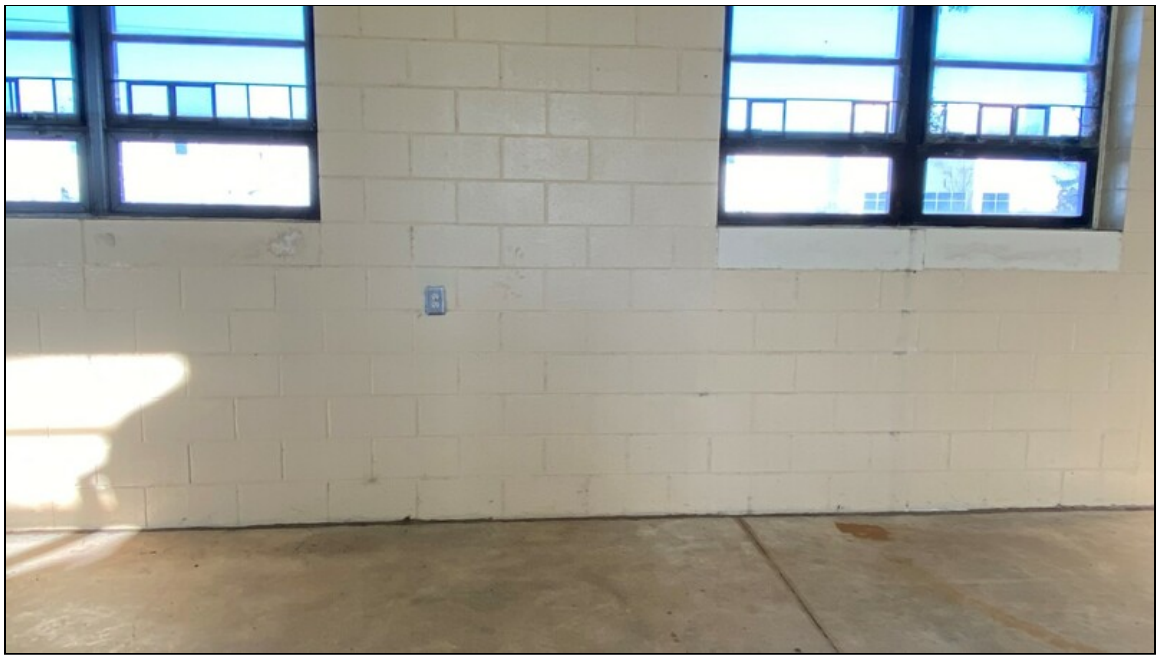
4 - View of the interior of Noah's Ark - Building 2

5 - View of the wall panels

6 - View of the tank insulation

7 - View of the roof of Building 1

8 - View of the roof of Building 2



9 - View of yellow paint on CMU wall

Appendix II: Asbestos Bulk Sample Results

EMSL Analytical, Inc.

2205 Corporate Plaza Parkway SE, Suite 200 Smyrna, GA 30080
Tel/Fax: (770) 956-9150 / (770) 956-9181
http://www.EMSL.com / atlantalab@emsl.com

EMSL Order:	072208277
Customer ID:	ENCS55
Customer PO:	
Project ID:	

Attention:	Jenny Clark	**Phone:**	(864) 987-1610
	ECS Southeast, LLP	**Fax:**	(864) 987-1615
	1200 Woodruff Road	**Received Date:**	11/18/2022 12:05 PM
	Suite H-12	**Analysis Date:**	11/21/2022
	Greenville, SC 29607	**Collected Date:**	
Project:	18720		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
WG-1 *072208277-0001*	Window Glazing - Bldg. #1 - Window	Clear Non-Fibrous Homogeneous	HA: 1	100% Non-fibrous (Other)	None Detected
WG-2 *072208277-0002*	Window Glazing - Bldg. #1 - Window	Clear Non-Fibrous Homogeneous	HA: 1	100% Non-fibrous (Other)	None Detected
WS-1 *072208277-0003*	Window Sill - Bldg. #1 - Exterior Window	Gray Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected
WS-2 *072208277-0004*	Window Sill - Bldg. #1 - Exterior Window	Gray Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected
G-1 *072208277-0005*	Gasket - Bldg. #1 - Blue Equip	Brown Fibrous Homogeneous	90% Cellulose HA: 3	10% Non-fibrous (Other)	None Detected
G-2 *072208277-0006*	Gasket - Bldg. #1 - Blue Equip	Brown Fibrous Homogeneous	90% Cellulose HA: 3	10% Non-fibrous (Other)	None Detected
TI-1-Layer 1 *072208277-0007*	Tank Insulation - Bldg. #1 - Tank 1	Blue Non-Fibrous Homogeneous	5% Min. Wool HA: 4	95% Non-fibrous (Other)	None Detected
TI-1-Layer 2 *072208277-0007A*	Tank Insulation - Bldg. #1 - Tank 1	Tan Non-Fibrous Homogeneous	20% Min. Wool HA: 4	80% Non-fibrous (Other)	None Detected
TI-2-Layer 1 *072208277-0008*	Tank Insulation - Bldg. #1 - Tank2	Blue Non-Fibrous Homogeneous	5% Min. Wool HA: 4	95% Non-fibrous (Other)	None Detected
TI-2-Layer 2 *072208277-0008A*	Tank Insulation - Bldg. #1 - Tank2	Tan Non-Fibrous Homogeneous	20% Min. Wool HA: 4	80% Non-fibrous (Other)	None Detected
WP-1 *072208277-0009*	Wall Panel - Bldg. #1 - Ext.- Under Windows	White Non-Fibrous Homogeneous	HA: 5	100% Non-fibrous (Other)	None Detected
WP-2 *072208277-0010*	Wall Panel - Bldg. #1 - Ext.- Under Windows	White Non-Fibrous Homogeneous	HA: 5	100% Non-fibrous (Other)	None Detected

Initial report from: 11/21/2022 11:52:10

EMSL Analytical, Inc.
2205 Corporate Plaza Parkway SE, Suite 200 Smyrna, GA 30080
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http://www.EMSL.com / atlantalab@emsl.com

EMSL Order: 072208277
Customer ID: ENCS55
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
RM-1 *072208277-0011*	Roof Mastic - Bldg. #1 - Upper Roof	Black Non-Fibrous Homogeneous	5% Cellulose HA: 6	95% Non-fibrous (Other)	None Detected
RM-2 *072208277-0012*	Roof Mastic - Bldg. #1 - Upper Roof	Black Non-Fibrous Homogeneous	HA: 6	97% Non-fibrous (Other)	3% Chrysotile
BUR-1-Mastic *072208277-0013*	Built-Up Roofing - Bldg. #1 - Upper Roof	Black Non-Fibrous Homogeneous	HA: 7	100% Non-fibrous (Other)	None Detected
BUR-1-Felt *072208277-0013A*	Built-Up Roofing - Bldg. #1 - Upper Roof	Black Fibrous Homogeneous	80% Cellulose HA: 7	20% Non-fibrous (Other)	None Detected
BUR-2-Mastic *072208277-0014*	Built-Up Roofing - Bldg. #1 - Upper Roof	Black Non-Fibrous Homogeneous	HA: 7	100% Non-fibrous (Other)	None Detected
BUR-2-Felt *072208277-0014A*	Built-Up Roofing - Bldg. #1 - Upper Roof	Black Fibrous Homogeneous	80% Cellulose HA: 7	20% Non-fibrous (Other)	None Detected
BUR-3-Mastic *072208277-0015*	Built-Up Roofing - Bldg. #1 - Lower Roof	Black Non-Fibrous Homogeneous	HA: 7	100% Non-fibrous (Other)	None Detected
BUR-3-Felt *072208277-0015A*	Built-Up Roofing - Bldg. #1 - Lower Roof	Black Fibrous Homogeneous	80% Cellulose HA: 7	20% Non-fibrous (Other)	None Detected
BUR-4-Mastic *072208277-0016*	Built-Up Roofing - Bldg. #1 - Lower Roof	Black Non-Fibrous Homogeneous	HA: 7	100% Non-fibrous (Other)	None Detected
BUR-4-Felt *072208277-0016A*	Built-Up Roofing - Bldg. #1 - Lower Roof	Black Fibrous Homogeneous	80% Cellulose HA: 7	20% Non-fibrous (Other)	None Detected
GM-1 *072208277-0017*	Gasket Material - Bldg. #2 - Equip	Red Non-Fibrous Homogeneous	HA: 8	100% Non-fibrous (Other)	None Detected
GM-2 *072208277-0018*	Gasket Material - Bldg. #2 - Equip	Red Non-Fibrous Homogeneous	HA: 8	100% Non-fibrous (Other)	None Detected
WS-3 *072208277-0019*	Window Sill - Bldg. #2 - Exteroir Window	Gray Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected
WS-4 *072208277-0020*	Window Sill - Bldg. #2 - Exteroir Window	Gray Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected

Initial report from: 11/21/2022 11:52:10

EMSL Analytical, Inc.
2205 Corporate Plaza Parkway SE, Suite 200 Smyrna, GA 30080
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http://www.EMSL.com / atlantalab@emsl.com

EMSL Order:	072208277
Customer ID:	ENCS55
Customer PO:	
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
WC-1 *072208277-0021*	Window Caulk - Bldg. #2 - Exteroir	Brown Non-Fibrous Homogeneous	HA: 9	100% Non-fibrous (Other)	None Detected
WC-2 *072208277-0022*	Window Caulk - Bldg. #2 - Exteroir	Brown Non-Fibrous Homogeneous	HA: 9	100% Non-fibrous (Other)	None Detected

Analyst(s)
Violedah Richardson (28)

Violedah Melissa Richardson
Violedah Richardson, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from: 11/21/2022 11:52:10

OrderID: 072208277

Asbestos Bulk Building Materials - Chain of Custody

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Order Number / Lab Use Only: 072208277

EMSL Analytical, Inc.
2205 Corporate Plaza Southeast
Suite 200
Smyrna, GA 30080
PHONE: (770) 956-9150
EMAIL: atlantalab@emsl.com

Customer Information		Billing Information	
Customer ID:	ENCS55	Billing ID:	
Company Name:	ECS Southeast LLP	Company Name:	ECS Southeast LLP
Contact Name:	Jenny Clark	Billing Contact:	Jenny Clark
Street Address:	1200 Woodruff Road, Suite H-12	Street Address:	1200 Woodruff Road, Suite H-12
City, State, Zip:	Greenville SC 29607	Country: US	City, State, Zip: Greenville SC Country:
Phone:	4046409257		Phone: 4046409257
Email(s) for Report:	jclark@ecslimited.com		Email(s) for Invoice: jclark@ecslimited.com

Project Information

Project Name/No:	18720	Purchase Order:	
EMSL LIMS Project ID: (If applicable, EMSL will provide)		US State where samples collected: GA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Jenny Clark	Sampled By Signature:	No. of Samples in Shipment: 22

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☒ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11.30am.

Test Selection

PLM - Bulk (reporting limit)

- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Bulk

- ☐ TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable-NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Tests (please specify)

☒ Positive Stop - Clearly Identified Homogeneous Areas (HA)

Sample Number	HA Number	Sample Location	Material Description
WG-1	1	Bldg #1 - window	Window Glazing
WG-2	1	↓ ↓	↓
WS-1	2	Bldg #1 exterior window	window sill
WS-2	2	↓ ↓	↓
G-1	3	Bldg #1 - blue equip.	Gasket
G-2	3	↓ - ↓	↓
T1-1	4	Bldg #1 - Tank 1	Tank Insulation
T1-2	4	↓ Tank 2	↓
WP-1	5	Bldg #1 - ext - under	- Wall panel
WP-2	5	↓ Windows	↓

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

After Thanksgiving is fine

Method of Shipment:	drop-off	Sample Condition Upon Receipt:	
Relinquished by:	Jenny Clark	Date/Time: 11/19/2022 12:00pm	Received by: [signature] Date/Time: 11/18/22 12:05 WI
Relinquished by:		Date/Time:	Received by: Date/Time

Controlled Document - Asbestos Bulk R5 03/18/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

OrderID: 072208277

Asbestos Bulk Building Materials - Chain of Custody

EMSL Order Number / Lab Use Only

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Analytical, Inc.
2205 Corporate Plaza Southeast
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PHONE: (770) 956-9150
EMAIL: atlantalab@emsl.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc)

Sample Number	HA Number	Sample Location	Material Description
RM-1	6	Bldg #1 - Upper Roof	Roof Mastic
RM-2	6	↓ ↓	↓
BUR-1	7	Bldg #1 Upper Roof	Built-up Roofing
BUR-2	7	↓	↓
BUR-3	7	Lower Roof	↓
BUR-4	7	↓ ↓	↓
GM-1	8	Bldg #2 equip	gasket material
GM-2	8	↓ ↓	↓
WS-3	2	Bldg #2 exterior window	window sill
WS-4	2	↓ ↓	↓
WC-1	9	exterior	window caulk
WC-2	9	↓ ↓	↓

Method of Shipment		Sample Condition Upon Receipt	
Relinquished by:	Date/Time:	Received by:	Date/Time
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - Asbestos Bulk R5 03/18/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

Appendix III: Lead Laboratory Analytical Results

EMSL Analytical, Inc.
706 Gralin Street, Kernersville, NC 27284
Phone/Fax: (336) 992-1025 / (336) 992-4175
http://www.EMSL.com greensborolab@emsl.com

EMSL Order:	022208685
CustomerID:	ENCS55
CustomerPO:	
ProjectID:	

Attn: **Jenny Clark**
ECS Southeast, LLP
1200 Woodruff Road
Suite H-12
Greenville, SC 29607

Phone:	(864) 987-1610
Fax:	(864) 987-1615
Received:	11/21/2022 09:00 AM
Collected:	11/18/2022

Project: **18720**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Weight*	*Lead Concentration*
PC-1	*022208685-0001*	11/18/2022	11/22/2022	.377 g	<0.0080 % wt
PC-2	*022208685-0002*	11/18/2022	11/22/2022	.251 g	<0.0080 % wt
PC-3	*022208685-0003*	11/18/2022	11/22/2022	.2722 g	0.026 % wt
PC-4	*022208685-0004*	11/18/2022	11/22/2022	.2952 g	<0.0080 % wt
PC-5	*022208685-0005*	11/18/2022	11/22/2022	.2628 g	0.015 % wt
PC-6	*022208685-0006*	11/18/2022	11/22/2022	.1146 g	<0.017 % wt
PC-7	*022208685-0007*	11/18/2022	11/22/2022	.2578 g	<0.0080 % wt
PC-8	*022208685-0008*	11/18/2022	11/22/2022	.3082 g	<0.0080 % wt
PC-9	*022208685-0009*	11/18/2022	11/22/2022	.3113 g	<0.0080 % wt

James Cole

James Cole, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC AIHA LAP, LLC-ELLAP Accredited #102564

Initial report from 11/23/2022 08:42:38

OrderID: 022208685

Lead Chain of Custody

EMSL Order Number / Lab Use Only: 8185

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Analytical, Inc.
706 Gralin Street
Kernersville, NC 27284
PHONE: (336) 992-1025
EMAIL: greensborolab@emsl.com

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	ECS Southeast LLP	Company Name:	ECS Southeast LLP
Contact Name:	Jenny Clark	Billing Contact:	Jenny Clark
Street Address:	1200 Woodruff Road Suite H-12	Street Address:	1200 Woodruff Road, Suite H-12
City, State, Zip:	Greenville SC 29607	City, State, Zip:	Greenville SC 29607
Country:	US	Country:	US
Phone:	4046409257	Phone:	4046409257
Email(s) for Report:	jclark@ecslimited.com	Email(s) for Invoice:	

Project Information

Project Name/No:	18720	Purchase Order:	
EMSL LIMS Project ID: (If applicable, EMSL will provide)		US State where samples collected: GA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Jenny Clark	Sampled By Signature:	No. of Samples in Shipment: 5

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☒ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS ☒ % by wt. ☐ ppm (mg/kg) ☐ mg/cm²	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	☒
*Reporting Limit based on a minimum 0.25g sample weight	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	☐
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-OES	0.5µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-MS	0.05µg/filter	☐
WIPE ☐ ASTM ☐ NON-ASTM	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	☐
*If no box is checked, non-ASTM Wipe is assumed	SW 846-6010D*	ICP-OES	10µg/wipe	☐
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	☐
Drinking Water	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	☐
TSP/SPM Filter	40 CFR Part 50	ICP-OES	12 µg/filter	☐
Other:				☐

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
PC-1	Bldg #1 Wall	Yellow	11/18/2022
PC-2	Equip. Base	Light blue	
PC-3	Floor	Brown	
PC-4	Ceiling	Yellow	
PC-5	Pipe	Light blue	

Method of Shipment: drop off @ EMSL FX

Sample Condition Upon Receipt:

Relinquished by: Jenny Clark	Date/Time: 11/18/2022 1700pm	Received by: NS	Date/Time: 11/18/22 12:05 MS
Relinquished by:	Date/Time:	Received by:	Date/Time: 11/21/22 9:00

Controlled Document - COC-25 Lead R18 4/19/2021

*6010C Available Upon Request

☐ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

OrderID: 022208685

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Lead Chain of Custody

EMSL Order Number / Lab Use Only

8485

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
EMAIL: greensborolab@emsl.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
PC-6	Bldg #2 base	gray	11/19/2022
PC-7	Equip	Light blue	
PC-8	Wall	Yellow	
PC-9	Pipe	light blue	

Method of Shipment: Drop Off		Sample Condition Upon Receipt:	
Relinquished by: Ryan Clark	Date/Time: 11/19/2022 12:00pm	Received by:	Date/Time
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-25 Lead R18 4/19/2021

☐ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

Appendix IV: Certifications/ Licenses

The Environmental Institute

Jennifer Clark

Social Security Number - XXX-XX-4341
ECS Souteast LLP - 1281 Kennestone Circle, Suite 200, Marietta, GA 30066

Has completed 8 hours of coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation

Asbestos in Buildings: Inspector & Management Planner Refresher

January 18, 2022
Course Date

18780
Certificate Number

January 18, 2022
Examination Date

January 17, 2023
Expiration Date

Darryl L. Watson - Principal Instructor

(Approved by the ABIH Certification Maintenance Committee for 1 CM point - Approval #11-583)

(FL Provider Registration #FL49-0001342 - Inspector Ref. Course #0002805 - Mgmt. Plan Ref. Course #0002806)

TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124- Marietta, GA 30067
Phone: 770-427-3600 - Website: www.tei-atl.com

The Environmental Institute

Jennifer Clark

Social Security Number - XXX-XX-4341
ECS Southeast LLP - 1281 Kenneston Circle, Suite 200 - Marietta, Georgia 30066

Has completed 8 hours of coursework and satisfactorily passed the hands-on skills assessment and an examination that meets training criteria in accordance with requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities as regulated by Georgia DNR/EPD Chapter 391-3-24 and U. S. EPA TSCA 40 CFR Part 745 for the refresher course titled

Lead Inspector Refresher

August 18, 2021
Course Date

1986
Certificate Number

August 18, 2021
Examination Date

August 17, 2023
Georgia Expiration Date

August 17, 2024
EPA Expiration Date

Bonnie B. Maurras - Principal Instructor

David W. Hogue - Training Manager

(Approved by the ABIH Certification Maintenance Committee for 1 CM point - Approval #11-584)
TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124 - Marietta, GA 30067
Phone: 770-427-3600 - Website: www.tei-atl.com
(State of Georgia Accredited - Certification No. 20-0799-006SR - September 21, 1999)

ASBESTOS AND LEAD PAINT SURVEY

JONESBORO RSP

7700 OLD MORROW ROAD
JONESBORO, GEORGIA 30236

ECS PROJECT NO. 49:18721

FOR: HAZEN AND SAWYER

NOVEMBER 30, 2022

November 30, 2022

Mr. Chas Goblisch
Hazen and Sawyer
1300 Altmore Avenue
Suite D-520
Atlanta, Georgia 30342
CGoblisch@hazenandsawyer.com

ECS Project No. 49:18721

Reference: Asbestos and Lead Paint Survey, Jonesboro RSP, 7700 Old Morrow Road, Jonesboro, Georgia

Dear Mr. Goblisch:

ECS Southeast, LLP (ECS) is pleased to provide Hazen and Sawyer with the results of the above referenced Asbestos and Lead Paint Survey performed at Jonesboro RSP located at 7700 Old Morrow Road in Jonesboro, Clayton County, Georgia. This report summarizes our observations, analytical results, findings, and recommendations related to the work performed. The work described in this report was performed by ECS in general accordance with the Scope of Services described in ECS Proposal Number 49:33783P and the terms and conditions of the agreement authorizing those services.

ECS appreciates this opportunity to provide Hazen and Sawyer with our services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS Southeast, LLP

Jenny Clark, REM
Environmental Department Manager
jclark@ecslimited.com
404-640-9257

Justin Roth, CHMM
Environmental Principal
jroth@ecslimited.com
843-654-4448

EXECUTIVE SUMMARY

The subject property is developed with a water treatment facility located at 7700 Old Morrow Road in Jonesboro, Clayton County, Georgia. The pump station building consists of approximately 2,800 square feet of space and was reportedly constructed in 1991. ECS understands the building is scheduled for demolition.

The purpose of the Asbestos and Lead Paint Survey was to identify asbestos-containing materials (ACMs) and lead-paint that may be present within the building materials scheduled to be impacted by the planned demolition activities.

Asbestos Survey

On November 18, 2022, Ms. Jenny Clark, REM, an accredited inspector, performed the asbestos assessment. Bulk samples were submitted to EMSL Analytical, Inc. (EMSL) in Smyrna, Georgia for analysis via Polarized Light Microscopy (PLM) in accordance with the current EPA-600 methodology.

A total of eight bulk samples from four homogeneous areas were submitted to the laboratory of which eight layers were analyzed. Based on the laboratory analysis of the bulk samples collected during the survey, none of the materials were reported to contain asbestos above the regulatory limit.

The following materials were reported as non asbestos containing:

- Exterior window caulk;
- Exterior sealant;
- Roofing mastic; and
- Built-up roofing material.

Due to inaccessibility or the destructive means that asbestos sampling requires, unseen ACMs may remain within the building hidden behind inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities, etc.

If suspect materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or be sampled immediately upon discovery and prior to disturbance for asbestos content by a certified asbestos inspector in accordance with 29 Code of Federal Regulations (CFR) 1926.1101.

Lead Paint Survey

On November 18, 2022, Ms. Jenny Clark, REM, an accredited inspector, performed the Lead Paint Survey. Paint chip samples were submitted to EMSL Analytical, Inc. (EMSL) in Kernersville, North Carolina for analysis via Flame Atomic Absorption Spectroscopy (AAS) in accordance with EPA Method SW 3050B/7000B.

A total of six paint chips were collected. Based on the findings of the lead survey, detectable concentrations of lead were identified on some paints and surface coatings.

The executive summary is an integral portion of this report, however, ECS recommends the report be read in its entirety.

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TABLE OF APPENDICES

1.0 SITE DESCRIPTION

The property is developed with a water treatment facility located at 7700 Old Morrow Road in Jonesboro, Clayton County, Georgia. The pump station building consists of approximately 2,800 square feet of space and was reportedly constructed in 1991. The interior finishes include concrete floors, walls and ceilings. The exterior is brick with a built-up roof.

2.0 PURPOSE

The purpose of the Asbestos and Lead Paint Survey was to identify asbestos-containing materials (ACMs) and lead-containing paint (LCP) which require special handling and/or disposal if disturbed during construction activities. The identification of ACMs require trained labor, regulated work practices, and special disposal. The identification of LCP requires disclosure to contractors and monitoring of lead exposure.

3.0 METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practice(s) and methods specified by regulation(s) for the identification of ACMs and LCP.

3.1 Asbestos-Containing Materials

On November 18, 2022, Ms. Jenny Clark, REM, an EPA accredited inspector, performed the asbestos survey. The survey consisted of observing the accessible areas of the building for the presence of suspect materials which may contain asbestos. The survey involved detecting both friable materials (materials which can be pulverized or reduced to a powder by hand pressure when dry) and non-friable materials (materials which pose a hazard when sawn, sanded, drilled or pulverized). Homogeneous materials (based on material type, color, texture, etc.) were identified in during the survey.

The EPA National Emissions Standard for Hazardous Air Pollutants (NESHAP) requires a survey for asbestos prior to renovation or demolition. Renovation or demolition is defined under NESHAP as the removal of a load-bearing structure or member. On the basis of requirements under NESHAP for renovation activities, ECS conducted a limited survey for potential ACM. The ACM survey was limited in that we did not conduct demolition such as jack/sledge hammering to expose potentially concealed materials.

Samples were collected in general accordance with EPA Standard 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act (AHERA) and OSHA Standard 29 CFR 1926.1101 Inspection Protocol. Multiple samples of each unique material were submitted. Samples were analyzed using “Positive Stop” methodology. If one sample of a homogeneous material is reported to contain asbestos, the remaining samples of that material are not analyzed. If one sample of a material from a homogeneous area was reported to contain greater than 1% asbestos, then by EPA definition, it was characterized as asbestos-containing material.

As per the regulations, samples were collected from random locations of each homogeneous area, with the material’s number of samples based upon the following criteria:

- Thermal Insulation Materials (piping, breeching, boiler insulation, etc.) – A minimum of two (2) samples are required. Patch areas (less than 6 square or linear feet) may have one (1) sample collected.
- Surfacing Materials (plaster, fireproofing, etc.) – A minimum of seven (7) samples are to be taken for areas greater than 5,000 square feet; five (5) for areas greater than 1,000 square feet, but less than 5,000 square feet; three (3) for areas less than 1,000 square feet.
- Miscellaneous Materials (flooring, adhesives, roofing, wallboard, etc.) – A minimum of two (2) samples are required.

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Samples were collected during the survey and submitted to EMSL for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-020-82, Dec. 1982). EMSL participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 101048-1. Several of the samples were layered and analyzed as multiple samples. EPA regulations require that multiple samples of each homogeneous area be collected for laboratory analysis. The material type, sample location, and analytical results of each bulk sample are also summarized in the attached Asbestos Bulk Analysis report in **Appendices**.

During the survey, ECS attempted to identify suspect ACMs in readily accessible areas. However, due to the destructive means required to identify some materials, certain areas were deemed inaccessible (i.e. behind walls or sub grade materials) and were not surveyed for suspect ACMs. Unidentified suspect ACMs may be located in these and/or other inaccessible areas.

3.2 Lead in Paint and Surface Coatings

The lead paint survey was performed by collection of suspect lead paint chips to identify lead concentrations in painted surfaces.

The lead paint assessment was conducted utilizing the U.S. EPA definition of lead-based paint (LBP). Under this definition, painted surfaces which contain lead in concentrations equal to or greater than 0.5% lead by weight are classified as coated with LBP. Paints with concentrations of detectable levels of paint are considered LCPs. Activities which disturb LCPs and glazing (while not LBPs by the U.S. EPA definition) are regulated by OSHA (29 CFR 1926.62).

Because the current or proposed use of the property is not residential or child-occupied, the scope of the lead paint survey was not conducted in accordance with HUD Chapter 7 requirements. This representative survey included collecting paint chips from walls, windows, doors, and miscellaneous components.

4.0 RESULTS

The following is a summary of laboratory results, findings and observations.

4.1 Asbestos-Containing Materials

In total, eight bulk samples from four homogeneous areas were submitted to the laboratory of which eight layers were analyzed. An Asbestos-Containing Material (ACM) is defined as any material containing more than one percent (>1%) asbestos as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, PLM. Materials are categorized by the U.S. EPA in the following categories:

- Friable ACMs are defined as any ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Non-friable ACMs are defined as any ACM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I non-friable ACM are listed as following: packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than one percent (>1%) asbestos.
- Category II non-friable ACM are listed as any material, excluding Category I non-friable ACM, containing more than one percent (>1%) asbestos.

Regulated Asbestos Containing Materials (RACM) are friable ACM or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or has crumbled, been pulverized, or reduced to powder in the course of renovation and/or demolition operations.

EMSL submitted a signed final laboratory report to ECS on November 22, 2022. None of the bulk samples submitted for analysis were reported to contain asbestos in detectable concentrations. A complete list of the sampled materials submitted for analysis and sample locations are located in the Appendix of this report. Representative photographs of collected samples are also located in the Appendix of this report.

4.2 Suspect or Assumed Asbestos-Containing Materials

Due to the inaccessibility or the destructive means that asbestos sampling requires, additional suspect ACMs may remain within the building hidden behind inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, sub-grade sealants, flooring located below underlayments, areas behind exterior walls, pipe trenches, and subsurface utilities, etc. These areas were deemed inaccessible and were not assessed.

If these materials are discovered during construction activities, they should be presumed to contain asbestos and be treated as ACMs or be sampled immediately upon discovery and prior to disturbance for asbestos content by a certified asbestos inspector in accordance with 29 CFR 1926.1101.

Based upon our past experience in the identification of ACMs in similarly constructed buildings, the following additional suspect ACMs may also be located in inaccessible areas of the structure:

- Within the piping systems or equipment not accessed below grade.

4.3 Lead in Paint and Surface Coatings

Paint and surface coatings which contain detectable concentrations of lead considered “lead-containing paints”. Since OSHA has no specific action level for lead in paint, all paint on the site found to have a measurable concentration of lead should be assumed to be lead containing. Work

performed which may disturb lead-containing paint is regulated under OSHA as referenced under 29 CFR 1926.62. A total of [164] readings were collected during the survey, including calibration readings. Paint and other surface coatings which are defined by applicable regulation as lead-based paints are summarized in the table below and photographs of lead-based paint identified are located in the Appendix.

Paint and surface coatings which contain detectable concentrations of lead are considered LCPs. Since OSHA has no specific action level for lead in paint, all paint on the site found to have a measurable concentration of lead should be assumed to be lead-containing. Work performed which may disturb LCP is regulated under OSHA as referenced under 29 CFR 1926.62. A total of six paint chip samples were collected during the survey. Paint and other surface coatings that were sampled are summarized in the table below and photographs of sampling locations are located in the Appendix.

Summary of Paint Chip Results

Sample ID	Color	Substrate	Component	Lead Concentration (%) by Weight
PC-1	Light Blue	Metal	Equipment - Piping	0.035%
PC-2	Yellow	Concrete/ CMU	Wall	<0.010%
PC-3	Red	Metal	Pipe	<0.020%
PC-4	Light Blue	Metal	Equipment - Base	<0.0080%
PC-5	Brown	Metal	Door Components	<0.039%
PC-6	Dark Yellow	Metal	CAT Equipment	<0.021%

5.0 RECOMMENDATIONS AND REGULATORY REQUIREMENTS

Based on our understanding of the purpose of the Asbestos and Lead Paint Survey, the results of laboratory analysis, and our findings and observations, ECS presents the following recommendations.

5.1 Asbestos-Containing Materials

None of the bulk samples submitted to EMSL were reported to contain detectable concentrations of asbestos. If additional suspect asbestos-containing materials are uncovered which were not accessible during this sampling event, it is recommended that these materials be sampled or tested immediately upon discovery for asbestos content by an asbestos inspector in accordance with 29 CFR 1926.1101.

5.2 Lead in Paint and Surface Coatings

Based on the findings of the lead survey, detectable concentrations of lead were identified on some paints and surface coatings.

The presence of lead is a concern primarily when conditions exist where it may be inhaled or ingested. Regardless of the analytical results of a material, all painted and/or glazed surfaces may still contain concentrations of lead in the paint, which when disturbed, may generate lead dust greater than the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter (ug/m3) as an 8-hour Time Weighted Average (TWA) established by the OSHA "Lead Exposure in Construction Rule (29 CFR 1926.62)."

The OSHA standard gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the PEL of 50 µg/m^3 as an 8-hour TWA. Under OSHA requirements, the contractor performing renovation work will be required to conduct this monitoring and follow applicable requirements under 29 CFR 1926.62 if disturbing LCP.

Destructive actions to paint containing detectable levels of lead (e.g. component removal, demolition, sanding, grinding, burning, paint preparation, etc.) will require the contractor comply with the standards of the OSHA regulation 29 CFR 1926.62, including but not limited to training, initial exposure monitoring, the use of personal protective equipment, and medical surveillance. The OSHA standard gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the PEL as an 8-hour TWA.

6.0 LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

Appendix I: Site Photographs

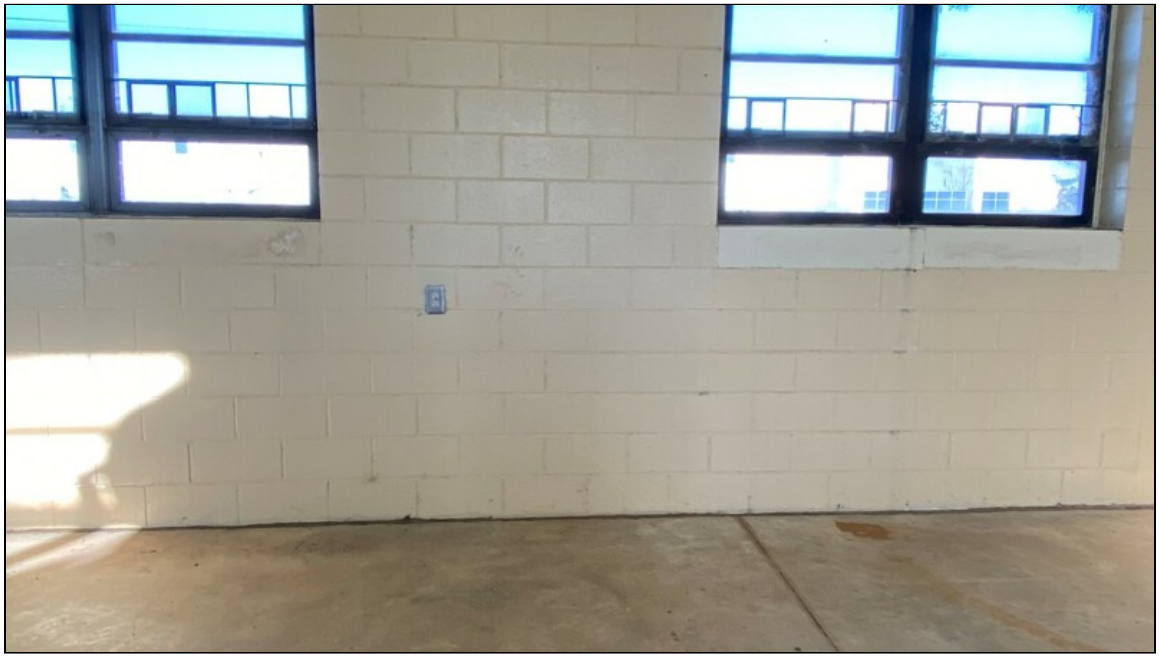
1 - View of Jonesboro RSP

2 - View of dark yellow paint on CAT equipment

3 - View of blue paint on pipes

4 - View of red paint on pipes and blue paint on base of equipment

5 - View of the interior of the building



6 - View of yellow paint on CMU wall

7 - View of the roof

Appendix II: Asbestos Bulk Sample Results

EMSL Analytical, Inc.

2205 Corporate Plaza Parkway SE, Suite 200 Smyrna, GA 30080
Tel/Fax: (770) 956-9150 / (770) 956-9181
http://www.EMSL.com / atlantalab@emsl.com

EMSL Order:	072208305
Customer ID:	ENCS55
Customer PO:	
Project ID:	

Attention:	Jenny Clark	**Phone:**	(864) 987-1610
	ECS Southeast, LLP	**Fax:**	(864) 987-1615
	1200 Woodruff Road	**Received Date:**	11/21/2022 8:00 AM
	Suite H-12	**Analysis Date:**	11/22/2022
	Greenville, SC 29607	**Collected Date:**	
Project:	18721		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
WC-1 *072208305-0001*	Caulk - Exterior Windows	White Non-Fibrous Homogeneous	HA: 1	100% Non-fibrous (Other)	None Detected
WC-2 *072208305-0002*	Caulk - Exterior Windows	White Non-Fibrous Homogeneous	HA: 1	100% Non-fibrous (Other)	None Detected
S-1 *072208305-0003*	Sealant - Exterior	White Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected
S-2 *072208305-0004*	Sealant - Exterior	White Non-Fibrous Homogeneous	HA: 2	100% Non-fibrous (Other)	None Detected
RM-1 *072208305-0005*	Black Mastic - Roof	Black Non-Fibrous Homogeneous	20% Cellulose HA: 3	80% Non-fibrous (Other)	None Detected
RM-2 *072208305-0006*	Black Mastic - Roof	Black Non-Fibrous Homogeneous	20% Cellulose HA: 3	80% Non-fibrous (Other)	None Detected
BUR-1 *072208305-0007*	Built-Up Roofing - Roof	Black Non-Fibrous Homogeneous	3% Synthetic HA: 4	97% Non-fibrous (Other)	None Detected
BUR-2 *072208305-0008*	Built-Up Roofing - Roof	Black Non-Fibrous Homogeneous	5% Synthetic HA: 4	95% Non-fibrous (Other)	None Detected

Analyst(s)

Anthony Sanaie (4)
Kyle Rich (4)

Violedah Melissa Richardson

Violedah Richardson, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from: 11/22/2022 09:34:30

OrderID: 072208305

Asbestos Bulk Building Materials - Chain of Custody

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL [illegible]/Lab Use Only
072208305

EMSL Analytical, Inc.
2205 Corporate Plaza Southeast
Suite 200
Smyrna, GA 30080
PHONE: (770) 956-9150
EMAIL: atlantalab@emsl.com

Customer Information		Billing Information	
Customer ID:	ENCS55	Billing ID:	
Company Name:	ECS Southeast LLP	Company Name:	ECS Southeast LLP
Contact Name:	Jenny Clark	Billing Contact:	Jenny Clark
Street Address:	1200 Woodruff Road, Suite H-12	Street Address:	1200 Woodruff Road, Suite H-12
City, State, Zip:	Greenville SC 29607	Country: US	City, State, Zip: Greenville SC Country:
Phone:	4046409257		Phone: 4046409257
Email(s) for Report:	jclark@ecslimited.com		Email(s) for Invoice: jclark@ecslimited.com

Project Information

Project Name/No	10721	Purchase Order:	
EMSL LIMS Project ID. (If applicable, EMSL will provide)		US State where samples collected: GA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Jenny Clark	Sampled By Signature: Jenny Clark	No. of Samples in Shipment: 8

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☒ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

Test Selection

PLM - Bulk (reporting limit)

- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Bulk

- ☐ TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable-NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Tests (please specify)

☒ Positive Stop - Clearly Identified Homogeneous Areas (HA)

Sample Number	HA Number	Sample Location	Material Description
WC-1	1	Exterior Windows	caulk
WC-2	1	↓	↓
S-1	2	Exterior	sealant
S-2	2	↓	↓
RM-1	3	Roof	Black Mastic
RM-2	3	↓	↓
BUR-1	4	Roof	Built-up roofing
BUR-2	4	↓	↓

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: Drop-box		Sample Condition Upon Receipt:	
Relinquished by: Jenny Clark	Date/Time: 11/20/22 11:18am	Received by:	Date/Time: 11/21/22 8:00 DB
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - Asbestos Bulk R5 03/18/2021

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

Appendix III: Lead Laboratory Analytical Results

EMSL Analytical, Inc.
706 Gralin Street, Kernersville, NC 27284
Phone/Fax: (336) 992-1025 / (336) 992-4175
http://www.EMSL.com greensborolab@emsl.com

EMSL Order:	022208684
CustomerID:	ENCS55
CustomerPO:	
ProjectID:	

Attn: **Jenny Clark**
ECS Southeast, LLP
1200 Woodruff Road
Suite H-12
Greenville, SC 29607

Phone:	(864) 987-1610
Fax:	(864) 987-1615
Received:	11/21/2022 09:00 AM
Collected:	11/18/2022

Project: **18721**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	***Analyzed***	*Weight*	*Lead* ***Concentration***
PC-1	*022208684-0001*	11/18/2022	11/22/2022	.2823 g	0.035 % wt
PC-2	*022208684-0002*	11/18/2022	11/22/2022	.1941 g	<0.010 % wt
PC-3	*022208684-0003*	11/18/2022	11/22/2022	.102 g	<0.020 % wt
PC-4	*022208684-0004*	11/18/2022	11/22/2022	.2605 g	<0.0080 % wt
PC-5	*022208684-0005*	11/18/2022	11/22/2022	.0509 g	<0.039 % wt
PC-6	*022208684-0006*	11/18/2022	11/22/2022	.0959 g	<0.021 % wt

James Cole

James Cole, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Analytical, Inc. Kernersville, NC AIHA LAP, LLC-ELLAP Accredited #102564

Initial report from 11/23/2022 08:44:19

OrderID: 022208684

Lead Chain of Custody

EMSL Order Number / Lab Use Only

8484

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Analytical, Inc.
706 Gralin Street
Kernersville, NC 27284
PHONE: (336) 992-1025
EMAIL: greensborolab@emsl.com

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	ECS Southeast LLP	Company Name:	ECS Southeast LLP
Contact Name:	Jenny Clark	Billing Contact:	Jenny Clark
Street Address:	1200 Woodruff Road Suite H-12	Street Address:	1200 Woodruff Road, Suite H-12
City, State, Zip:	Greenville SC 29607	City, State, Zip:	Greenville SC 29607
Country:	US	Country:	US
Phone:	4046409257	Phone:	4046409257
Email(s) for Report:	jclark@ecslimited.com	Email(s) for Invoice:	

Project Information

Project Name/No:	18721	Purchase Order:	
EMSL LIMS Project ID: (If applicable, EMSL will provide)		US State where samples collected: GA	State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name:	Jenny Clark	Sampled By Signature:	No. of Samples In Shipment: 6

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☒ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS ☒ % by wt. ☐ ppm (mg/kg) ☐ mg/cm²	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	☒
*Reporting Limit based on a minimum 0.25g sample weight	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	☐
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-OES	0.5µg/filter	☐
	NIOSH 7300M / NIOSH 7303M	ICP-MS	0.05µg/filter	☐
WIPE ☐ ASTM ☐ NON-ASTM	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	☐
*If no box is checked, non-ASTM Wipe is assumed	SW 846-6010D*	ICP-OES	1.0µg/wipe	☐
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	☐
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	☐
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	☐
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	☐
Drinking Water	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	☐
Unpreserved ☐ / Preserved with HNO3 ☐ PH<2	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	☐
TSP/SPM Filter	40 CFR Part 50	ICP-OES	12 µg/filter	☐
Other:				☐

Sample Number	Sample Location	~~Volume / Area~~	Date / Time Sampled
PC-1	PIPE	LIGHT BLUE	11/10/2022
PC-2	WALL	YELLOW	
PC-3	PIPE	RED	
PC-4	EQUIPMENT BASE	LIGHT BLUE	
PC-5	DOOR FRAME	BROWN	

Method of Shipment: drop-off @EMSL FX 794515787194

Sample Condition Upon Receipt:

Relinquished by: Jenny Clark	Date/Time: 11/10/2022 12:00pm	Received by:	Date/Time: 11/18/22 12:05 MI
Relinquished by:	Date/Time:	Received by: NS	Date/Time: 11/21/22 9:00

Controlled Document - COC-25 Lead R16 4/19/2021

*6010C Available Upon Request

☐ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

OrderID: 022208684

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Lead Chain of Custody

EMSL Order Number / Lab Use Only

8284

EMSL Analytical, Inc.
706 Gralin Street

Kernersville, NC 27284
PHONE: (336) 992-1025
EMAIL: greensborolab@emsl.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
PC-6	CAT EQUIPMENT	DARK YELLOW	11/18/2022

Method of Shipment: drop-off		Sample Condition Upon Receipt:	
Relinquished by: Jennifer Clark	Date/Time: 11/18/2022 12:00PM	Received by:	Date/Time
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-25 Lead R16 4/19/2021

☐ **AGREE TO ELECTRONIC SIGNATURE** (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

Appendix IV: Certifications/ Licenses

The Environmental Institute

Jennifer Clark

Social Security Number - XXX-XX-4341
ECS Souteast LLP - 1281 Kennestone Circle, Suite 200, Marietta, GA 30066

Has completed 8 hours of coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation

Asbestos in Buildings: Inspector & Management Planner Refresher

January 18, 2022
Course Date

18780
Certificate Number

January 18, 2022
Examination Date

January 17, 2023
Expiration Date

Darryl L. Watson - Principal Instructor

(Approved by the ABIH Certification Maintenance Committee for 1 CM point - Approval #11-583)

(FL Provider Registration #FL49-0001342 - Inspector Ref. Course #0002805 - Mgmt. Plan Ref. Course #0002806)

TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124- Marietta, GA 30067
Phone: 770-427-3600 - Website: www.tei-atl.com

The Environmental Institute

Jennifer Clark

Social Security Number - XXX-XX-4341
ECS Southeast LLP - 1281 Kenneston Circle, Suite 200 - Marietta, Georgia 30066

Has completed 8 hours of coursework and satisfactorily passed the hands-on skills assessment and an examination that meets training criteria in accordance with requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities as regulated by Georgia DNR/EPD Chapter 391-3-24 and U. S. EPA TSCA 40 CFR Part 745 for the refresher course titled

Lead Inspector Refresher

August 18, 2021
Course Date

1986
Certificate Number

August 18, 2021
Examination Date

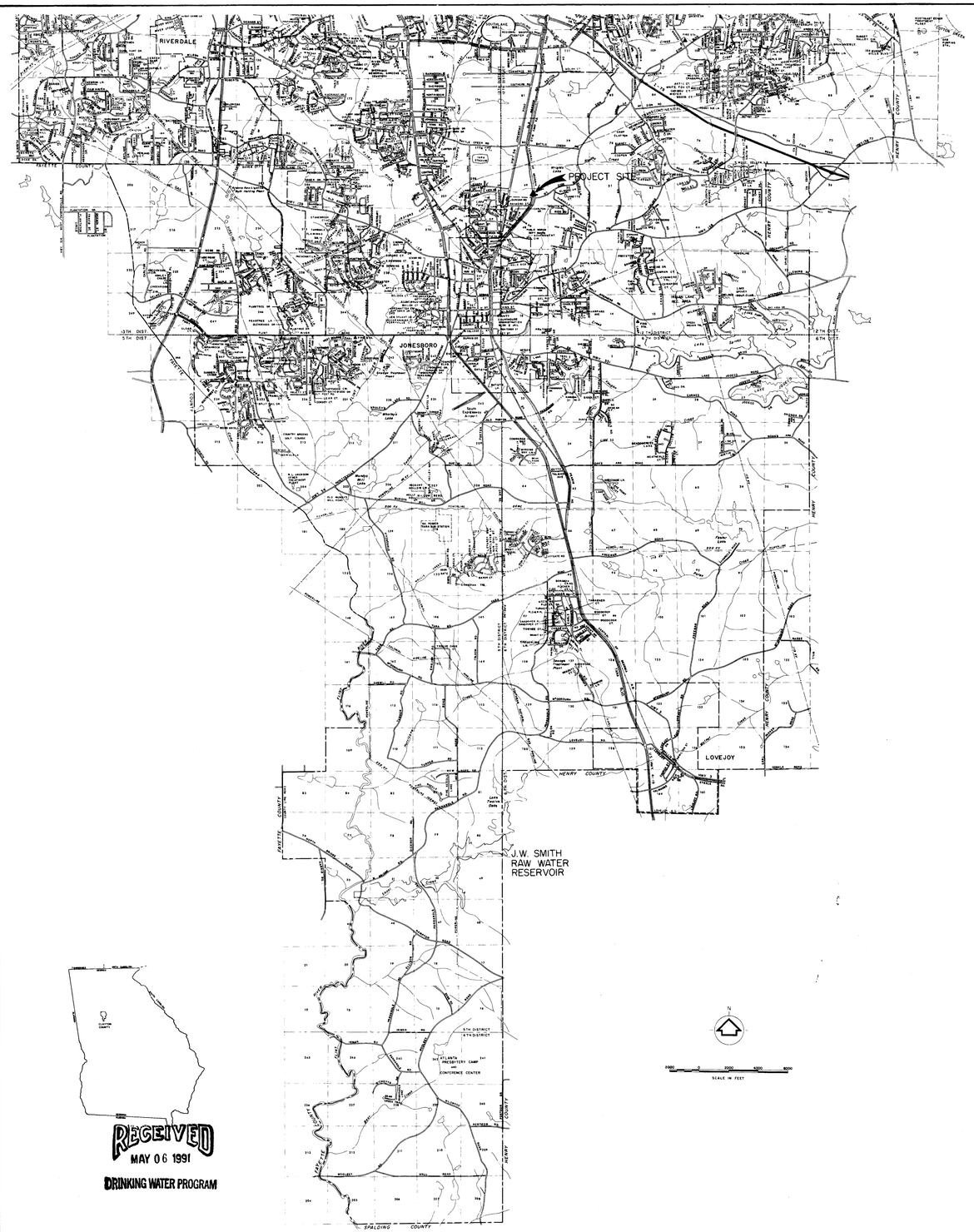
August 17, 2023
Georgia Expiration Date

August 17, 2024
EPA Expiration Date

Bonnie B. Maurras - Principal Instructor

David W. Hogue - Training Manager

(Approved by the ABIH Certification Maintenance Committee for 1 CM point - Approval #11-584)
TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124 - Marietta, GA 30067
Phone: 770-427-3600 - Website: www.tei-atl.com
(State of Georgia Accredited - Certification No. 20-0799-006SR - September 21, 1999)



RECEIVED
MAY 06 1991
DRINKING WATER PROGRAM

FINISHED WATER PUMPING STATION

FOR CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

JOB NO. 91016-00
CONTRACT 2
MAY 3, 1991

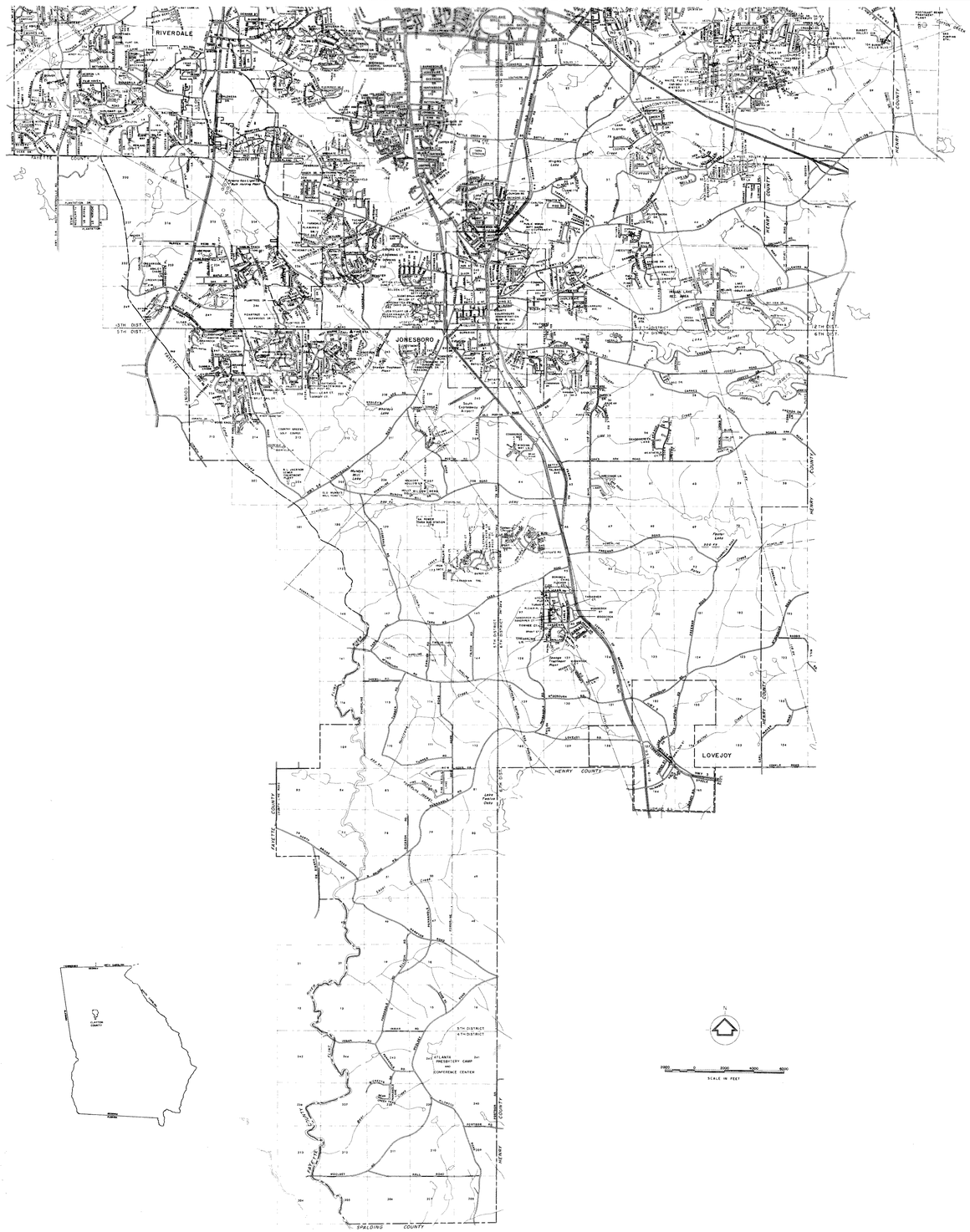
INDEX OF DRAWINGS

SHEET NO.	DRAWING NO.	DESCRIPTION
ENVIRONMENTAL		
1	91016-C2-01	COVER SHEET, LOCATION MAP AND INDEX OF DRAWINGS
2	91016-C2-02	PROCESS FLOW AND INSTRUMENTATION
3	91016-C2-03	SITE PLAN, OUTSIDE PIPING AND NOTES
4	91016-C2-04	PUMP STATION, VALVE VAULT AND METER PIT-PLAN
5	91016-C2-05	PUMP STATION - PARTIAL PLAN
6	91016-C2-06	SECTIONS
7	91016-C2-07	SECTIONS
8	91016-C2-08	PUMP STATION - SECTIONS; VALVE VAULT AND METER PIT-PLANS
9	91016-C2-09	TYPICAL DETAILS
10	91016-C2-10	TYPICAL DETAILS
11	91016-C2-A01	ARCHITECTURAL PLANS AND SECTIONS
12	91016-C2-A02	ELEVATIONS
13	91016-C2-A03	DOOR SCHEDULE; DOOR, WINDOW AND LOUVER DETAILS
STRUCTURAL		
14	91016-C2-S01	FOUNDATION PLAN
15	91016-C2-S02	ROOF FRAMING PLAN
16	91016-C2-S03	SECTIONS AND DETAILS
17	91016-C2-S04	SECTIONS AND DETAILS
18	91016-C2-S05	PITS-PLANS, SECTIONS AND DETAILS
MECHANICAL		
19	91016-C2-M01	MECHANICAL PLAN, SECTION, SCHEDULES AND NOTES
ELECTRICAL		
20	91016-C2-E01	LEGEND, ABBREVIATIONS, GENERAL NOTES AND GROUNDING LAYOUT
21	91016-C2-E02	LIGHTING AND RECEPTACLE LAYOUT AND DETAILS
22	91016-C2-E03	HEATING AND VENTILATION LAYOUT AND DIAGRAMS
23	91016-C2-E04	POWER LAYOUT AND DETAILS
24	91016-C2-E05	SINGLE LINE DIAGRAM
25	91016-C2-E06	MOTOR CONTROL CENTER, WIRING DIAGRAMS AND DETAILS
26	91016-C2-E07	LIGHTING FIXTURE SCHEDULE, LIGHTING PANELBOARD AND EXISTING FILTER BUILDING
27	91016-C2-E08	TELEMETERING AND INSTRUMENTATION
28	91016-C2-E09	ELECTRICAL DETAILS

APPROVED
STATE OF GEORGIA
WATER SUPPLY SECTION
AUG 29 1991
ENVIRONMENTAL PROTECTION DIVISION
By Charles B Addison
APPROVED FOR WATER SECTION ONLY

RECEIVED
MAY 07 1991
DRINKING WATER PROGRAM

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia



FINISHED WATER PUMPING STATION

FOR CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

JOB NO. 91016-00
CONTRACT 2

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia

SOUTHLAKE PARKWAY

R/W

275 MILE MARKER No. 275

CENTRAL OF GEORGIA RAILROAD

IPF 3.37'E
(NOT @ PROP CNR)

EXCAVATION SPOIL AREA

R/W

940

941

942

943

944

938

CONSTRUCTION ACCESS RAMP
@ 4:1 SLOPE

PUMP STATION
FIN FLR 941.00

92.0'

15.0'

46.0'

NEW 2.70 MG
(90'ø I.D.)

GROUND STORAGE TANK

92'ØOD

47.49'

S74°03'48"E

122'

STORAGE AREA
FOR TANK
CONTRACTOR

1:1 SLOPE

97.59'

N70°27'W

77.0'

IPF 3.36'E
(NOT @ PROP CNR)

110.00'

N15°45'42"E

IP

B.m. nail edge Pav.
(938.14)

50' R/W

OLD MORROW ROAD

PROVIDE TEMPORARY TRAFFIC BARRIERS
AND SHORING AS REQUIRED

1
02 | 02
SITE PLAN
1" = 20'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

DEPARTMENT
ENVIRONMENTAL

SITE PLAN
CONSTRUCTION
GRADING

SCALE: 1' =20'-0"

DWG. NO.
91016-C1-01A

DATE 17 APR 1991

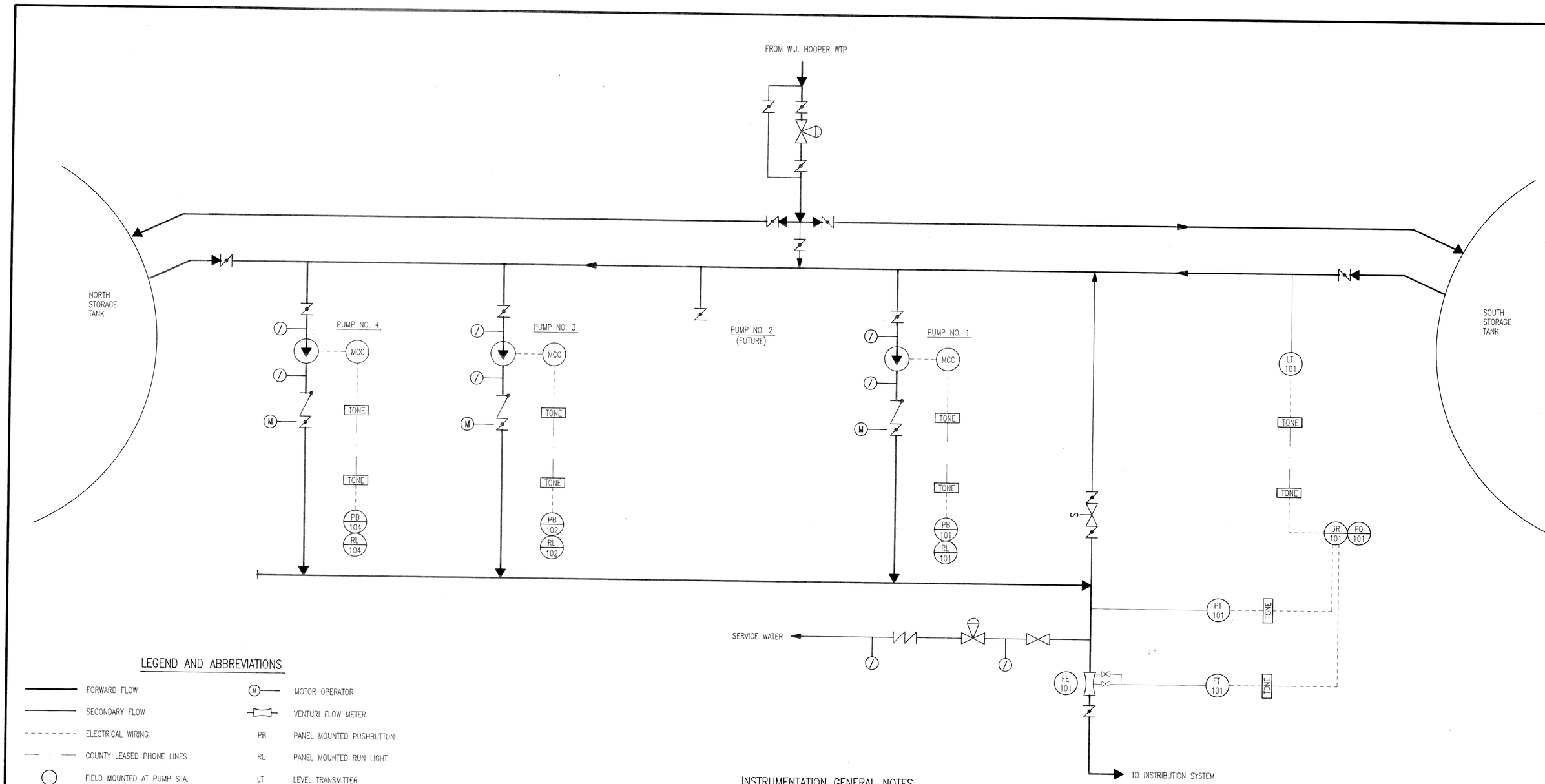
SHEET 1 OF 1 SHEETS

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: SDB | DRAWN: | CHECKED: PWW

91016/03

NOT Released For Construction



LEGEND AND ABBREVIATIONS

FORWARD FLOW	MOTOR OPERATOR
SECONDARY FLOW	VENTURI FLOW METER
ELECTRICAL WIRING	PB — PANEL MOUNTED PUSHBUTTON
COUNTY LEASED PHONE LINES	RL — PANEL MOUNTED RUN LIGHT
FIELD MOUNTED AT PUMP STA.	LT — LEVEL TRANSMITTER
PANEL MOUNTED AT W.J. HOOPER WTP	PT — SYSTEM PRESSURE TRANSMITTER
MCC — MOTOR CONTROL CENTER	FT — FLOW TRANSMITTER
TONE — TONE EQUIPMENT	3R — 3-PEN RECORDER-FLOW, PRESSURE TANK LEVEL
BUTTERFLY VALVE	FQ — FLOW TOTALIZER
CHECK VALVE	BACKFLOW PREVENTER
ALTITUDE VALVE (SINGLE ACTING)	PRESSURE REDUCING VALVE
S — SURGE RELIEF VALVE	GATE VALVE
PRESSURE GAUGE	

INSTRUMENTATION GENERAL NOTES

1. ALL ELECTRICAL WIRING SHOWN DASHED ON FLOW SCHEMATIC DRAWINGS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER SIZE, TYPE, AND NUMBER OF CONDUCTORS BETWEEN ALL ITEMS OF INSTRUMENTATION INSTALLED.
2. SEE ELECTRICAL DRAWINGS FOR CONTROL WIRING LOCATION AND DETAILS
3. RUN ALL WIRING IN PROPERLY SIZED STEEL CONDUITS.
4. ALL SHIELDED CABLES SHALL BE INSTALLED SEPARATELY IN STEEL CONDUIT. DO NOT INSTALL ANY OTHER CIRCUITS IN SAME CONDUIT WITH SHIELDED INSTRUMENTATION CIRCUITS.
5. SEE DETAIL DRAWINGS FOR EXACT LOCATION AND SIZE OF ALL PIPING, VALVES, AND EQUIPMENT.
6. SEE INSTRUMENTATION AND CONTROL SPECIFICATIONS FOR INSTRUMENT SCHEDULE AND DETAILS.
7. RECORDER, TOTALIZER, PUMP START-STOP PUSH BUTTONS AND RUN LIGHTS SHALL BE INSTALLED ON EXISTING PANEL AT W. J. HOOPER WTP, STOCKBRIDGE, GEORGIA. SEE ELECTRICAL DRAWING E7, DETAIL 1/E7 FOR LAYOUT.
8. TRANSMITTERS SHALL BE MOUNTED ON WALL OF NEW PUMPING STATION.

SYMBOL DATE BY REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: ENVIRONMENTAL

PROCESS FLOW AND INSTRUMENTATION

SCALE: NONE

DWG. NO. 91016-C2-02

DATE MAY 3, 1991

SHEET 2 OF SHEETS

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: K.M.B. DRAWN: F.G.H. CHECKED:

91016602

NOT Released For Construction

SOUTHLAKE PARKWAY

R/W

CENTRAL OF GEORGIA RAILROAD

MILE MARKER
No. 275

275

NORTH
2.7 MG (90'ø I D)
PRE-STRESSED CONCRETE
GROUND STORAGE TANK
BOTTOM ELEVATION 938.0
(UNDER CONSTRUCTION)

PUMP STATION

FIN FLR 941.00

SOUTH
2.7 MG (90'ø I D)
PRE-STRESSED CONCRETE
GROUND STORAGE TANK
BOTTOM ELEVATION 938.0
(UNDER CONSTRUCTION)

90' x 57' HIGH

STORAGE AREA
FOR TANK
CONTRACTOR

46.0'

15.0'

92.0'

47.49'

S74°03'48"E

97.59'

N77°09'27"W

110.00'

N15°45'42"E

50'-R/W

OLD MORROW ROAD

938 936 934 932 930 940 942 944 946

53' 57'

1 SITE PLAN
02 | 02
1" = 20'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT
ENVIRONMENTAL

SITE PLAN
CONSTRUCTION
GRADING

SCALE: 1" =20'-0"

DWG. NO.
91016-C2-03

DATE MAY 3, 1991

SHEET 3 OF 28 SHEETS

91016W03

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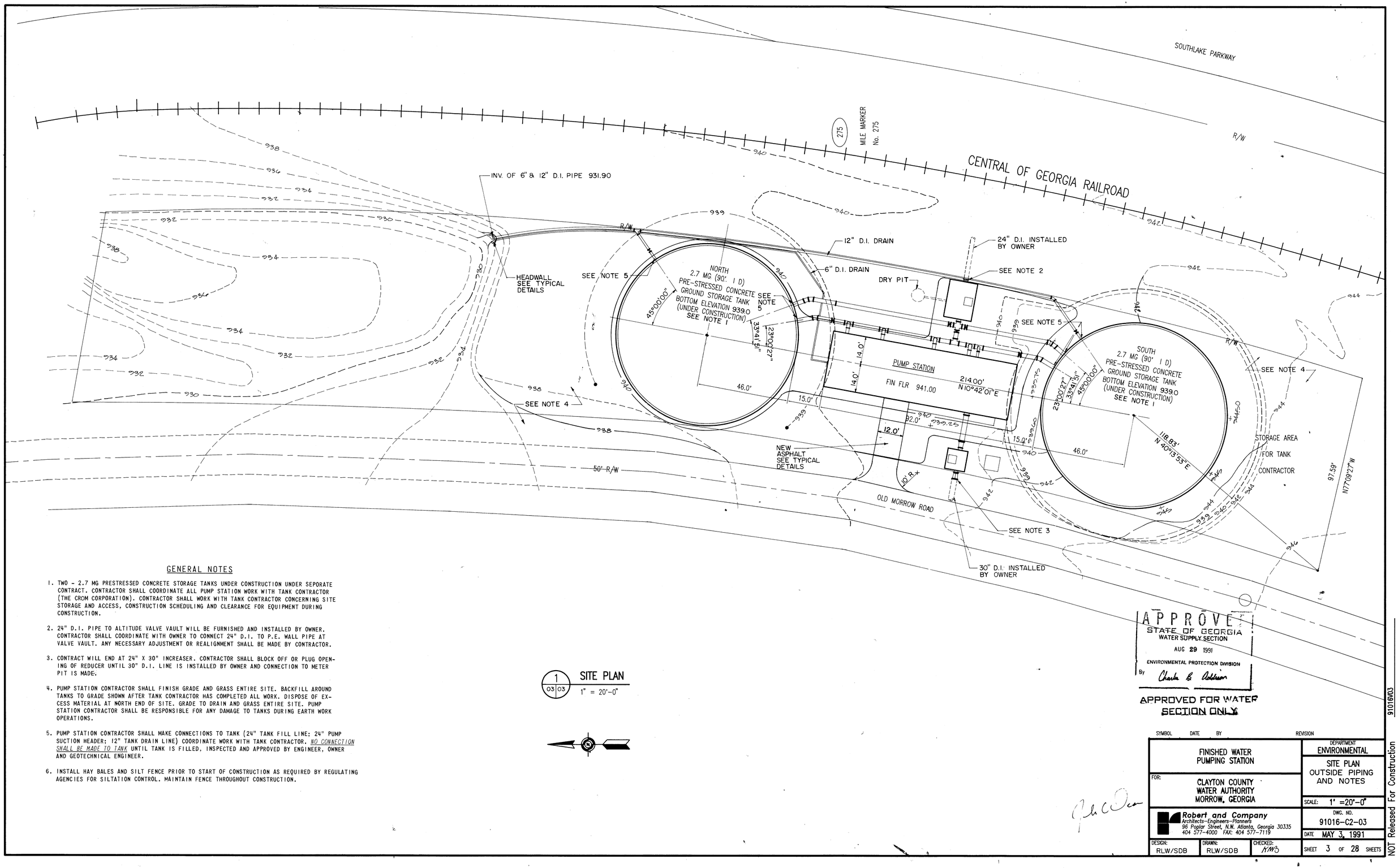

GENERAL NOTES

1. TWO - 2.7 MG PRESTRESSED CONCRETE STORAGE TANKS UNDER CONSTRUCTION UNDER SEPORATE CONTRACT. CONTRACTOR SHALL COORDINATE ALL PUMP STATION WORK WITH TANK CONTRACTOR (THE CROM CORPORATION). CONTRACTOR SHALL WORK WITH TANK CONTRACTOR CONCERNING SITE STORAGE AND ACCESS, CONSTRUCTION SCHEDULING AND CLEARANCE FOR EQUIPMENT DURING CONSTRUCTION.

2. 24" D.I. PIPE TO ALTITUDE VALVE VAULT WILL BE FURNISHED AND INSTALLED BY OWNER. CONTRACTOR SHALL COORDINATE WITH OWNER TO CONNECT 24" D.I. TO P.E. WALL PIPE AT VALVE VAULT. ANY NECESSARY ADJUSTMENT OR REALIGNMENT SHALL BE MADE BY CONTRACTOR.

3. CONTRACT WILL END AT 24" X 30" INCREASER. CONTRACTOR SHALL BLOCK OFF OR PLUG OPENING OF REDUCER UNTIL 30" D.I. LINE IS INSTALLED BY OWNER AND CONNECTION TO METER PIT IS MADE.

4. PUMP STATION CONTRACTOR SHALL FINISH GRADE AND GRASS ENTIRE SITE. BACKFILL AROUND TANKS TO GRADE SHOWN AFTER TANK CONTRACTOR HAS COMPLETED ALL WORK. DISPOSE OF EXCESS MATERIAL AT NORTH END OF SITE. GRADE TO DRAIN AND GRASS ENTIRE SITE. PUMP STATION CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO TANKS DURING EARTH WORK OPERATIONS.

5. PUMP STATION CONTRACTOR SHALL MAKE CONNECTIONS TO TANK (24" TANK FILL LINE; 24" PUMP SUCTION HEADER; 12" TANK DRAIN LINE) COORDINATE WORK WITH TANK CONTRACTOR. *NO CONNECTION SHALL BE MADE TO TANK* UNTIL TANK IS FILLED, INSPECTED AND APPROVED BY ENGINEER, OWNER AND GEOTECHNICAL ENGINEER.

6. INSTALL HAY BALES AND SILT FENCE PRIOR TO START OF CONSTRUCTION AS REQUIRED BY REGULATING AGENCIES FOR SILTATION CONTROL. MAINTAIN FENCE THROUGHOUT CONSTRUCTION.

1 / 03|03 SITE PLAN
1" = 20'-0"

APPROVED
STATE OF GEORGIA
WATER SUPPLY SECTION
AUG 29 1991
ENVIRONMENTAL PROTECTION DIVISION
By Charles B Addison
APPROVED FOR WATER SECTION ONLY

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DEPARTMENT: ENVIRONMENTAL

SITE PLAN OUTSIDE PIPING AND NOTES

SCALE: 1" =20'-0"

DWG. NO. 91016-C2-03

DATE MAY 3, 1991

DESIGN: RLW/SDB | DRAWN: RLW/SDB | CHECKED: RMO

SHEET 3 OF 28 SHEETS

91016003

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R/W

R/W

CO

CO

CO

6'-0"ø x 5'-0"
BOTTOM EL 925.00
FILL W/ GRAVEL
LINE BOTTOM, SIDES,
& TOP W/ FILTER
FABRIC

DRYPIT

4"ø DIP

ALTITUDE
VALVE
VAULT

(SEE SHEET 08)

2'-0" 4'-9" 5'-0"

2'-10" 6'-6" 4'-6" 2'-10" 4'-4"

24" ALV

22 1/2"
11 1/4"

22 1/2"
11 1/4"

24"ø DIP C 933.67

24"ø DIP C 933.67

24" MJ BFV
OPR-4(TYP x 3)

9'-7" 7'-11" 4'-4" 20'-2"

22 1/2"

22 1/2"

24"ø DIP PUMP SUPPLY HEADER

24"ø DIP C 933.67

24" MJ BFV
OPR-4

24" MJ BFV
OPR-4

CO-ORDINATE PIPING CONNECTIONS W/
TANK CONTRACTOR. CONNECTIONS SHALL
NOT BE MADE UNTIL AFTER TANK IS
FILLED AND APPROVED BY ENGINEER
AND TESTING LABORATORY.

CO-ORDINATE PIPING CONNECTIONS W/
TANK CONTRACTOR. CONNECTIONS SHALL
NOT BE MADE UNTIL AFTER TANK IS
FILLED AND APPROVED BY ENGINEER
AND TESTING LABORATORY.

NORTH
STORAGE
TANK

SOUTH
STORAGE
TANK

8'-7"

5'-0"

6'-9"

6"ø DIP TRENCH DRAIN

SLOPE @ 0.005

LOUVER

28'-0"

10'-4"

10'-11"

PUMP 4 MOTOR

MOTOR PUMP 3 ENGINE

FUTURE
ENGINE PUMP 2 MOTOR

MOTOR PUMP 1

12"
SRV

STORAGE

14'-0"

28'-0"

14'-0"

C TANKS & BUILDING

C TANKS & BUILDING

24"
BL. FL.

ELECTRICAL

PRE-STRESSED CONCRETE
GROUND STORAGE TANK
(UNDER CONSTRUCTION)

PRE-STRESSED CONCRETE
GROUND STORAGE TANK
(UNDER CONSTRUCTION)

5'-8" 17'-6" 25'-10" 17'-6" 4'-4" 4'-6"

FINISH FLOOR EL 941.0

46'-0"

TO C OF TANK

15'-0"

37'-4" 34'-6" 20'-2"

92'-0"

15'-0"

46'-0"

TO C OF TANK

18'-9"

ASPHALT DRIVE

30"ø DIP C 936.17

FE
101

METERING
PIT

(SEE SHEET 08)

R/W

R/W

1
04 | 04
PLAN
3/16" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

DEPARTMENT
ENVIRONMENTAL

GENERAL
FLOOR PLAN

SCALE: AS SHOWN

DWG. NO.
91016-C2-04

DATE MAY 3, 1991

SHEET 4 OF SHEETS

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: DRAWN: CHECKED:

91016V04

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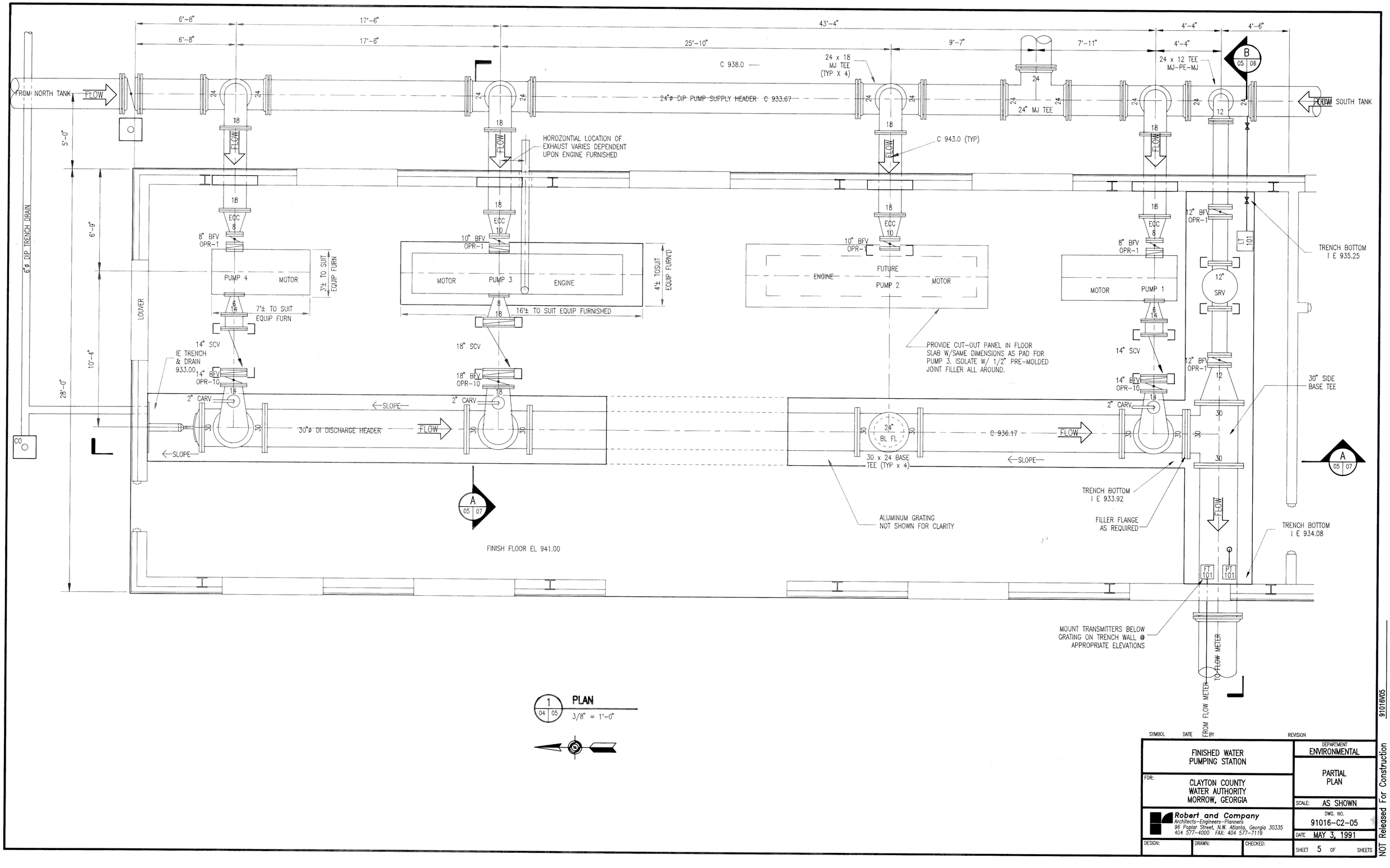

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: ENVIRONMENTAL

PARTIAL PLAN

SCALE: AS SHOWN

DWG. NO. 91016-C2-05

DATE MAY 3, 1991

SHEET 5 OF SHEETS

DESIGN: DRAWN: CHECKED:

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Architects–Engineers–Planners
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91016V05

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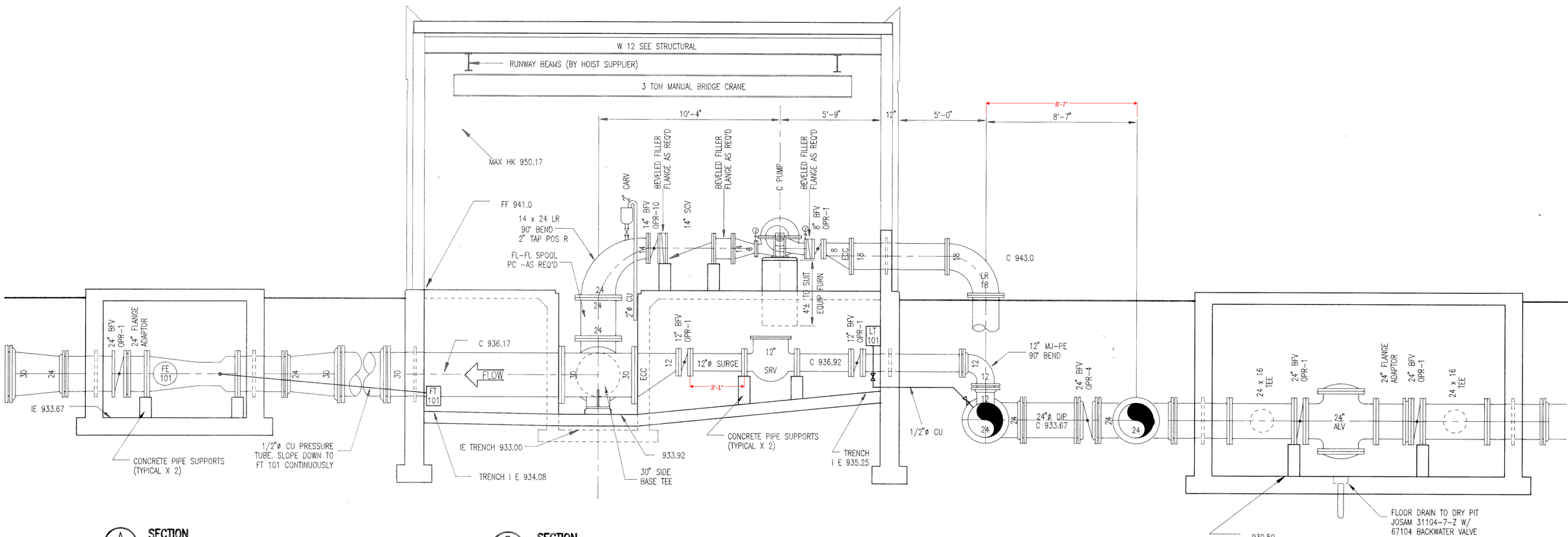

A 08 06 **SECTION**
3/8" = 1'-0"

B 04 06 05 **SECTION**
3/8" = 1'-0"

C 08 06 **SECTION**
3/8" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT ENVIRONMENTAL

SECTIONS

SCALE: AS SHOWN

DWG. NO. 91016-C2-06

DATE MAY 3, 1991

SHEET 6 OF SHEETS

91016/06

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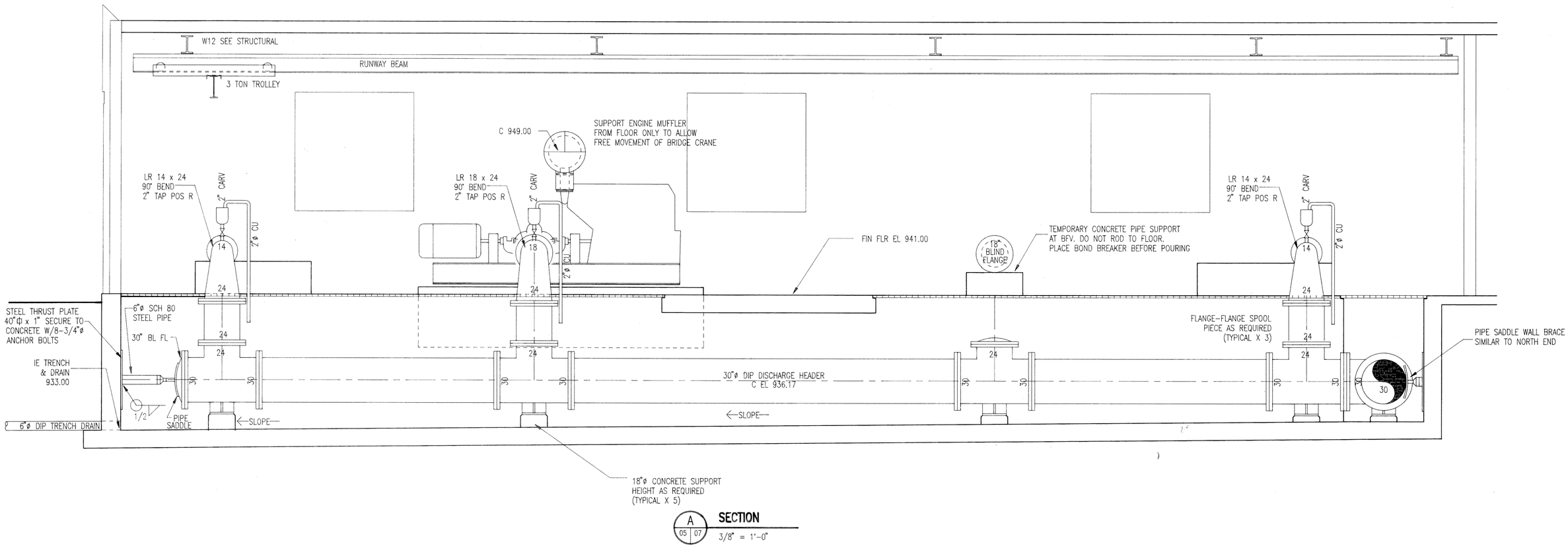

A / 05 | 07 **SECTION**

3/8" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT: ENVIRONMENTAL

SECTIONS

SCALE: AS SHOWN

DWG. NO. 91016-C2-07

DATE MAY 3, 1991

SHEET 7 OF SHEETS

91016W07

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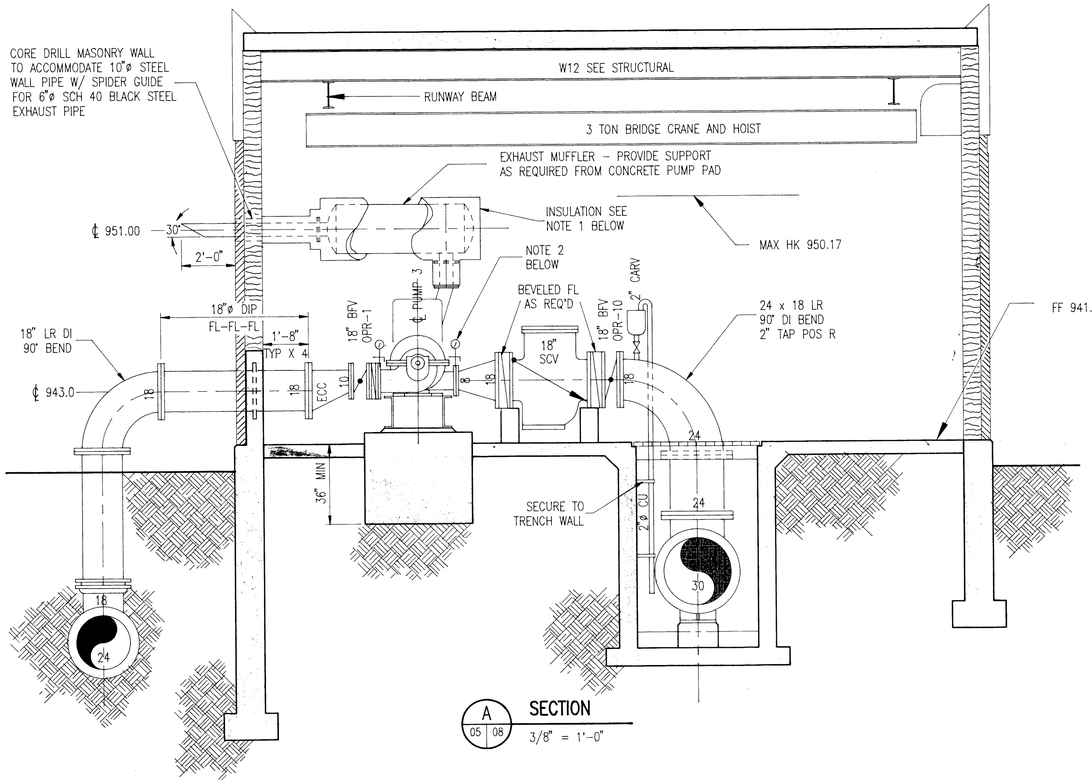

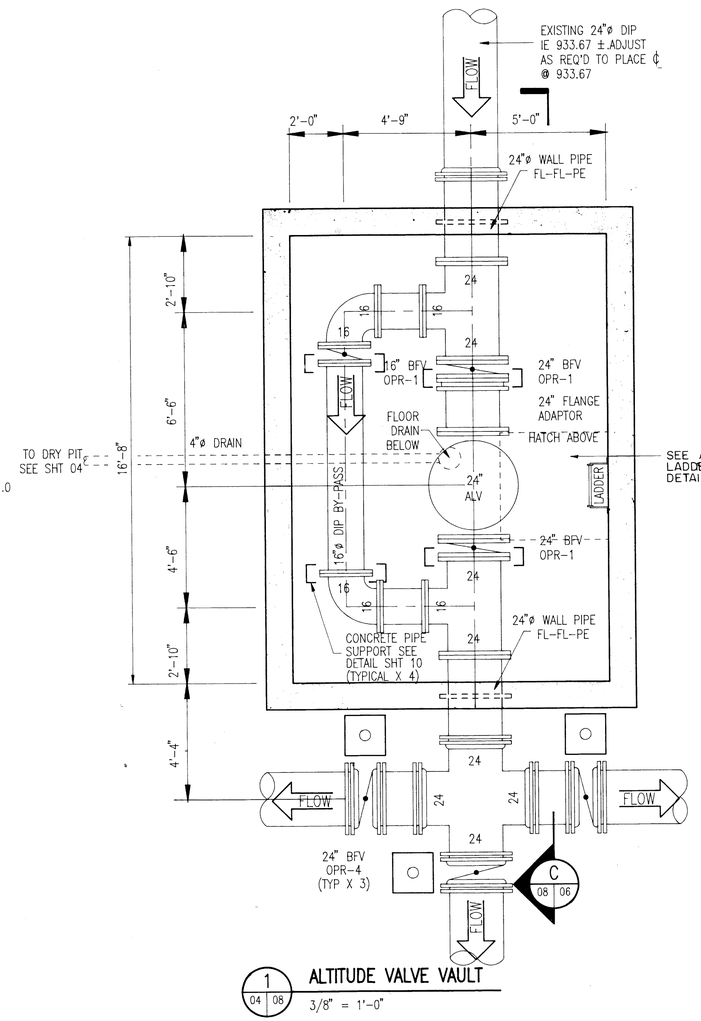

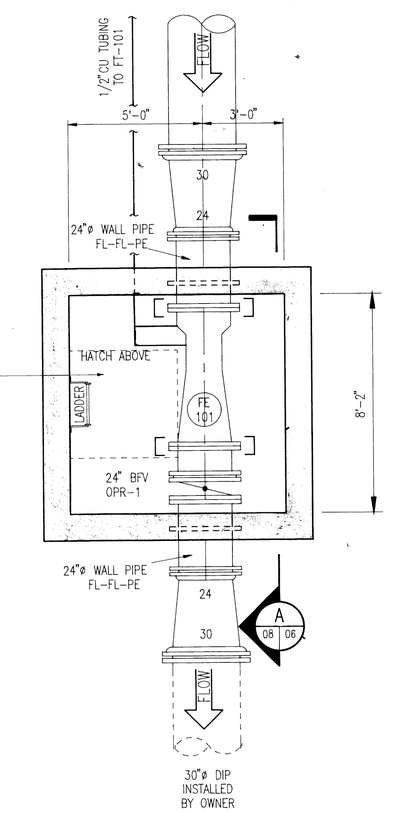

SEE ALUMINUM LADDER AND HATCH DETAIL SHT 10

GENERAL NOTES :

1. INSULATE ENGINE EXHAUST SYSTEM FROM FLEXIBLE CONNECTOR TO BUILDING WALL (INCLUDING MUFFLER) WITH 3" OF CALCIUM SILICATE. BAND IN PLACE WITH STAINLESS STEEL BANDS ON 9" CENTERS. COVER INSULATION WITH 0.016" ALUMINUM JACKET BANDED WITH 3/8" X 0.2" ALUMINUM BANDS.
2. PROVIDE SUCTION AND DISCHARGE GAUGES WITH GAUGE COCK ON EACH PUMP. EACH GAUGE SHALL BE ASHCROFT MODEL NO 4 1/2 - 1009-A OR EQUAL. GAUGES SHALL HAVE POLISHED STAINLESS STEEL CASES. SUCTION GAUGE SHALL BE 0-50 PSI; DISCHARGE GAUGE SHALL BE 0-150 PSI.
3. WATER PIPING AND VALVES FROM PUMP TO ENGINE SHALL BE FACTORY PRE-PIPED. SEE MECHANICAL DWG SHEET 19 FOR NATURAL GAS SUPPLY PIPING TO ENGINE.

APPROVED
STATE OF GEORGIA
WATER SUPPLY SECTION
AUG 29 1991
ENVIRONMENTAL PROTECTION DIVISION
By Charles B Addison
APPROVED FOR WATER SECTION ONLY

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: RWC DRAWN: RWC CHECKED: KMB

DEPARTMENT: ENVIRONMENTAL

PUMP STATION - SECTION; VALVE VAULT. METER PIT PLANS

SCALE: AS SHOWN

DWG. NO. 91016-C2-08

DATE MAY 3, 1991

SHEET 8 OF 28 SHEETS

91016\08

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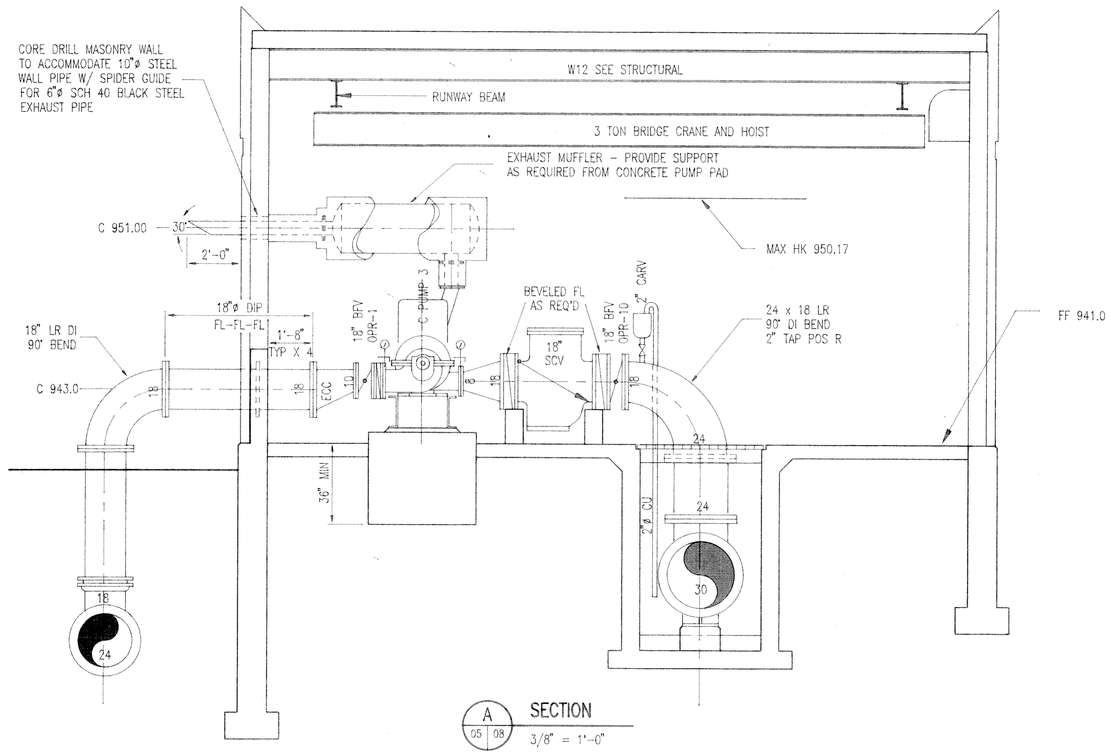
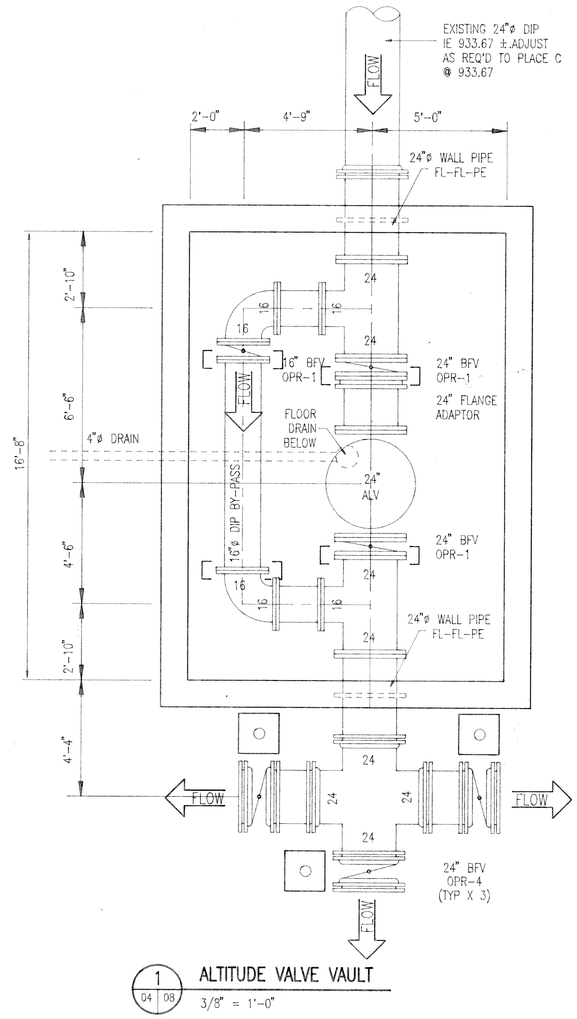


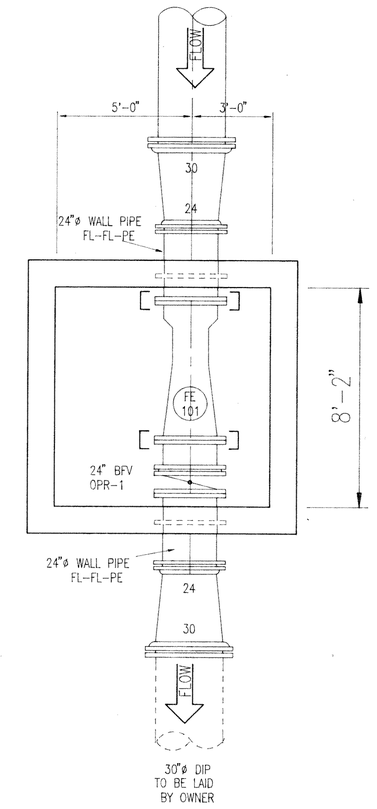
A | 05 | 08 SECTION

3/8" = 1'-0"



1 | 04 | 08 ALTITUDE VALVE VAULT

3/8" = 1'-0"



2 | 04 | 08 METER PIT

3/8" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: ENVIRONMENTAL

PLANS AND SECTION

SCALE: AS SHOWN

DWG. NO. 91016-C2-08

DATE MAY 3, 1991

SHEET 8 OF SHEETS

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

91016/08

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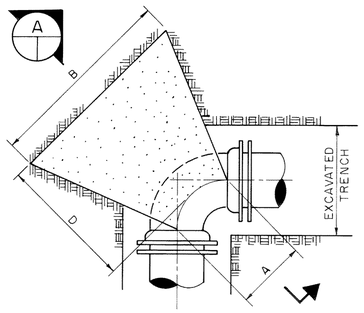
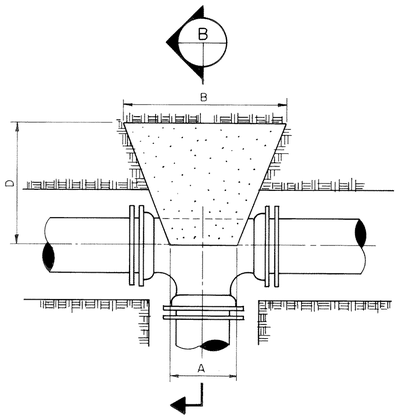
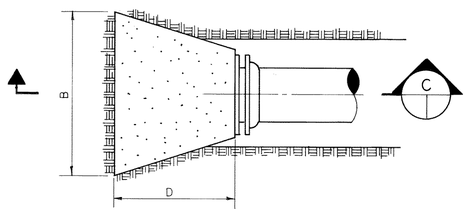


PLAN



PLAN

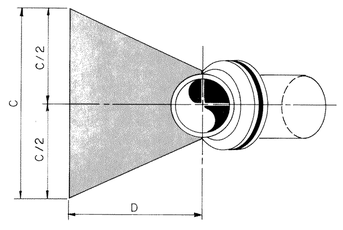


PLAN

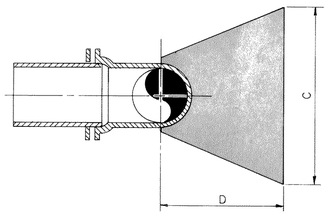
MINIMUM THRUST BLOCK DIMENSIONS																				
PIPE	90° BEND				45° BEND				22½° BEND				11¼° BEND				TEE OR PLUG			
SIZE	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
36"	3'-0"	10'-6"	10'-4"	6'-6"	2'-0"	7'-8"	7'-8"	5'-0"	3'-7"	5'-0"	6'-0"	2'-9"	3'-7"	4'-0"	3'-9"	2'-6"	3'-0"	8'-9"	8'-9"	5'-0"
30"	2'-9"	9'-0"	9'-3"	5'-9"	1'-6"	6'-9"	6'-9"	3'-9"	1'-10"	4'-9"	5'-0"	2'-6"	1'-11"	3'-6"	3'-6"	2'-6"	2'-9"	7'-6"	7'-9"	4'-9"
24"	2'-7"	7'-3"	7'-3"	4'-6"	1'-3"	5'-3"	5'-6"	3'-3"	1'-8"	3'-9"	4'-0"	2'-0"	1'-9"	2'-9"	2'-9"	2'-3"	2'-6"	6'-0"	6'-3"	3'-9"
20"	2'-1"	6'-0"	6'-3"	3'-9"	1'-0"	4'-6"	4'-6"	2'-6"	1'-5"	3'-3"	3'-3"	1'-6"	1'-6"	2'-3"	2'-6"	2'-0"	2'-4"	5'-0"	5'-3"	3'-3"
18"	1'-11"	5'-6"	5'-6"	3'-6"	1'-0"	4'-0"	4'-3"	2'-6"	1'-3"	2'-9"	3'-0"	1'-6"	1'-4"	2'-0"	2'-3"	1'-9"	1'-2"	4'-6"	4'-9"	3'-0"
16"	1'-9"	5'-0"	5'-0"	3'-3"	0'-11"	3'-6"	3'-9"	2'-3"	1'-2"	2'-6"	2'-9"	1'-3"	1'-3"	1'-9"	2'-0"	1'-6"	1'-6"	4'-0"	4'-6"	3'-0"
14"	1'-7"	4'-3"	4'-3"	2'-8"	0'-10"	3'-0"	2'-6"	2'-0"	1'-1"	2'-3"	2'-6"	1'-3"	1'-2"	1'-6"	1'-9"	1'-3"	1'-6"	3'-6"	3'-9"	2'-6"
12"	1'-4"	3'-6"	3'-9"	2'-6"	0'-10"	2'-6"	3'-0"	2'-0"	1'-1"	2'-0"	2'-0"	1'-0"	1'-2"	1'-6"	1'-6"	1'-3"	1'-3"	3'-0"	3'-3"	2'-3"

NOTES:

1. THRUST BLOCKING TO BE 4000 PSI CONCRETE.
2. DIMENSIONS CALCULATED USING A SOIL LOAD BEARING CAPACITY OF 2000 PSF. IF SOIL BEARING CAPACITY IS FOUND TO BE LESS THAN 2000 PSF, THE ENGINEER CAN INCREASE THESE DIMENSIONS.
3. THRUST BLOCKING SHALL BEAR AGAINST UNDISTURBED SOIL.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR POSITIVE BLOCKING OF ALL PRESSURE LINES AS REQUIRED BY ACTUAL CONDITIONS. ABOVE REQUIREMENTS ARE MINIMUM.
5. ALL BLOCKING SHALL BE FURNISHED AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.



SECTION A



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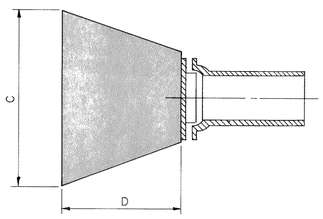
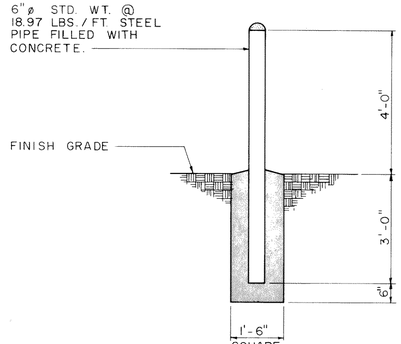


SECTION C

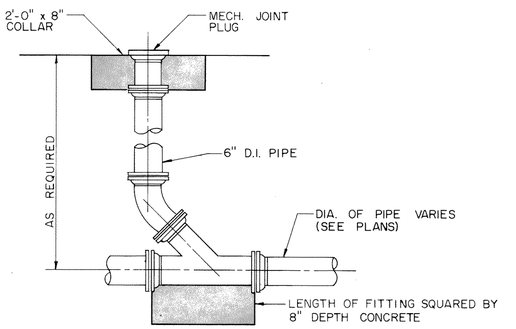
THRUST BLOCKING — BENDS

THRUST BLOCKING — TEES

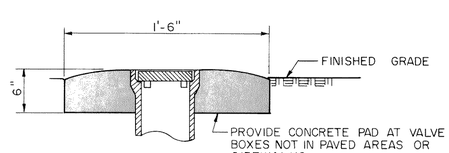
THRUST BLOCKING — PLUGS



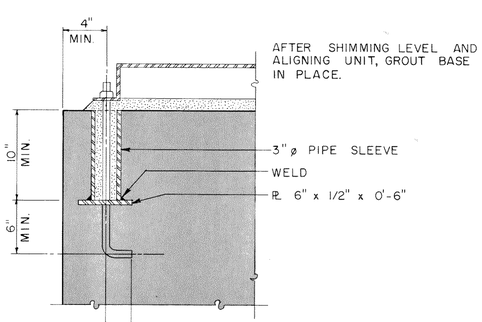
TYPICAL GUARD POST DETAIL
SCALE: 1/2"=1'-0"



YARD CLEAN-OUT DETAIL
N.T.S.



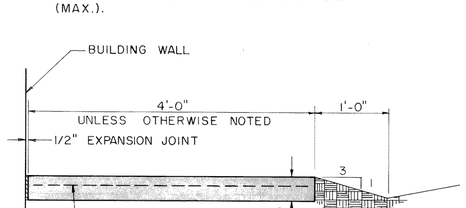
VALVE BOX DETAIL
N.T.S.



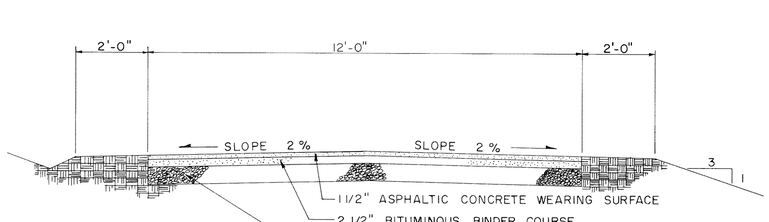
NOTE
NUMBER, SIZE, PROJECTION, AND SPACING OF BOLTS SHALL BE AS INDICATED ON EQUIPMENT SHOP DRAWINGS APPROVED BY ENGINEERS.

TYPICAL ANCHOR BOLT DETAIL
N.T.S.

NOTE
ALL WALKWAYS SHALL HAVE EXPANSION JOINTS SPACED 30'-0" O.C. (MAX.) AND CONTRACTION JOINTS SPACED 6'-0" O.C. (MAX.).



CONCRETE WALKWAY DETAIL
SCALE: 1"=1'-0"



TYPICAL PAVING DETAIL
N.T.S.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT: ENVIRONMENTAL

DETAILS AND SECTIONS

SCALE: AS SHOWN

DWG. NO. 91016-C2-09

DATE:

SHEET 9 OF 28 SHEETS

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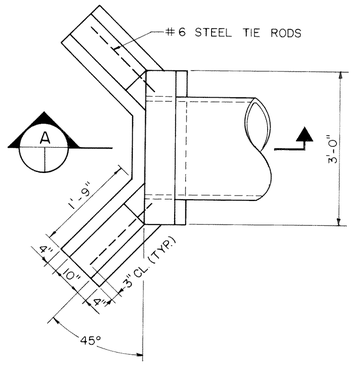
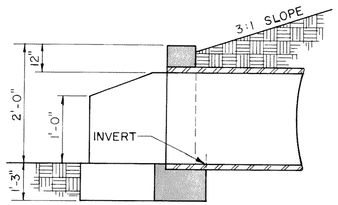
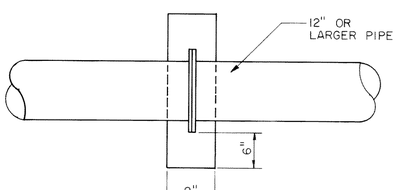
BROWNS 44-242 303178



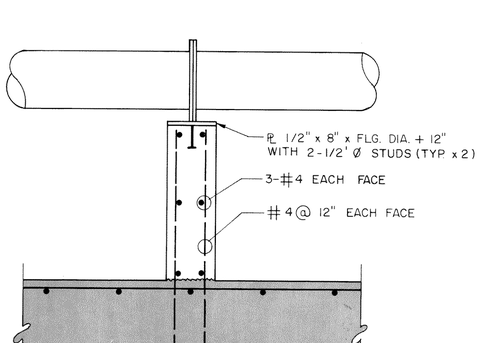
PLAN



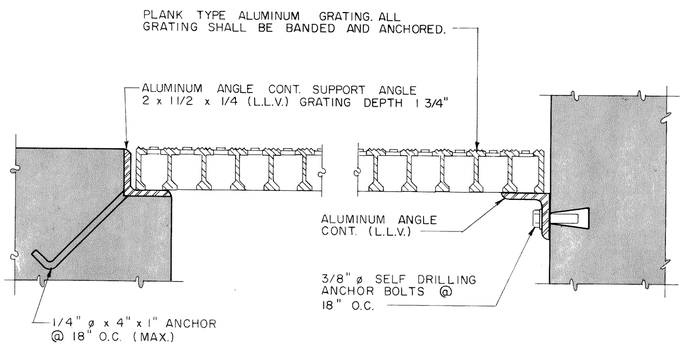
SECTION A



PLAN



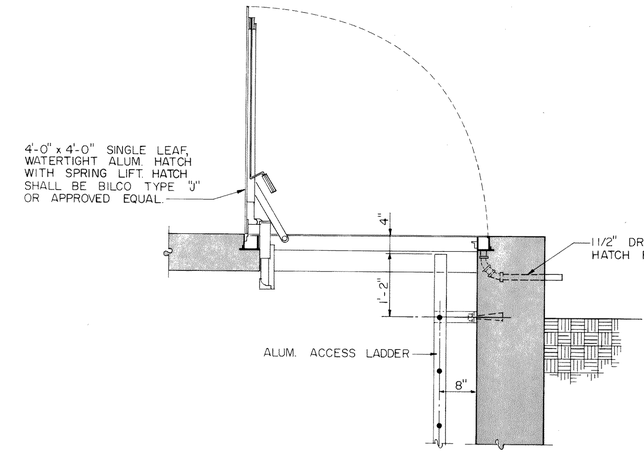
TYP. CONCRETE
PIPING SUPPORT
N.T.S.



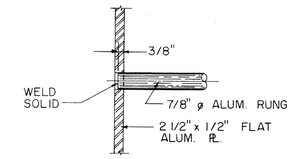
NOTE

OPENINGS IN GRATING SHALL BE SHOP CUT AND BANDED. NO FIELD CUTTING WILL BE ALLOWED.

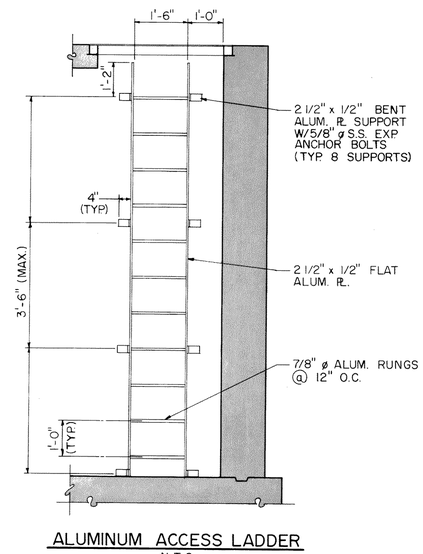
TYPICAL GRATING DETAILS
N.T.S.



PIT ACCESS HATCH SECTION B
N.T.S.



RUNG FASTENING DETAIL
SCALE: 3"=1'-0"



ALUMINUM ACCESS LADDER
N.T.S.

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR: CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT
ENVIRONMENTAL

DETAILS
AND
SECTIONS

SCALE: AS SHOWN

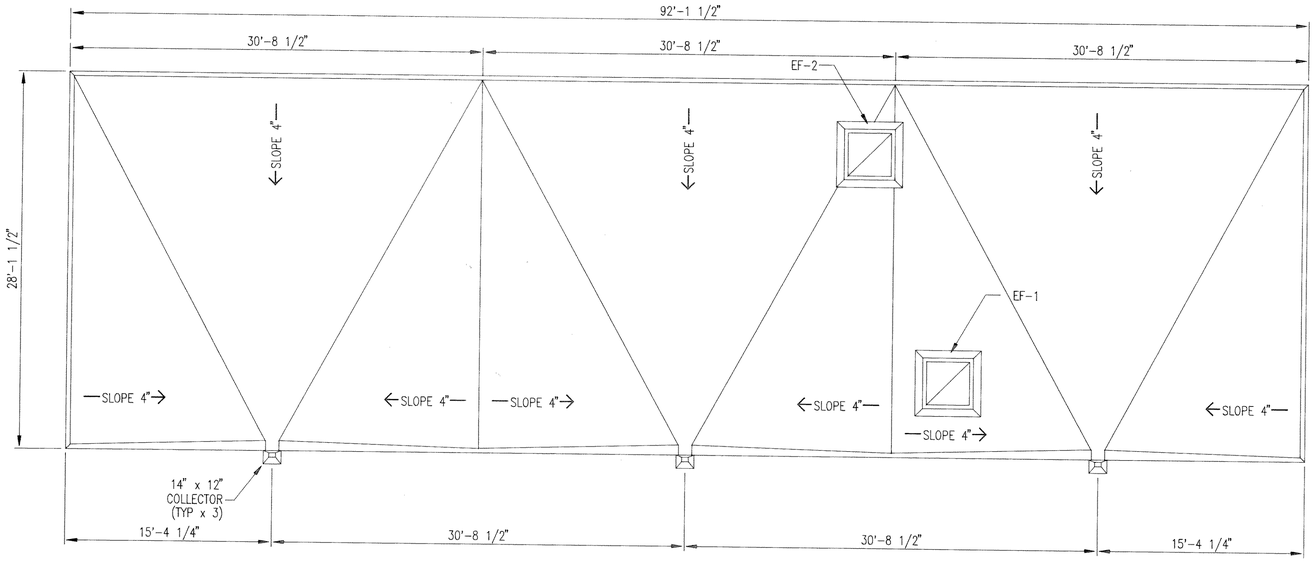
DWG. NO.
91016-C2-10

DATE:

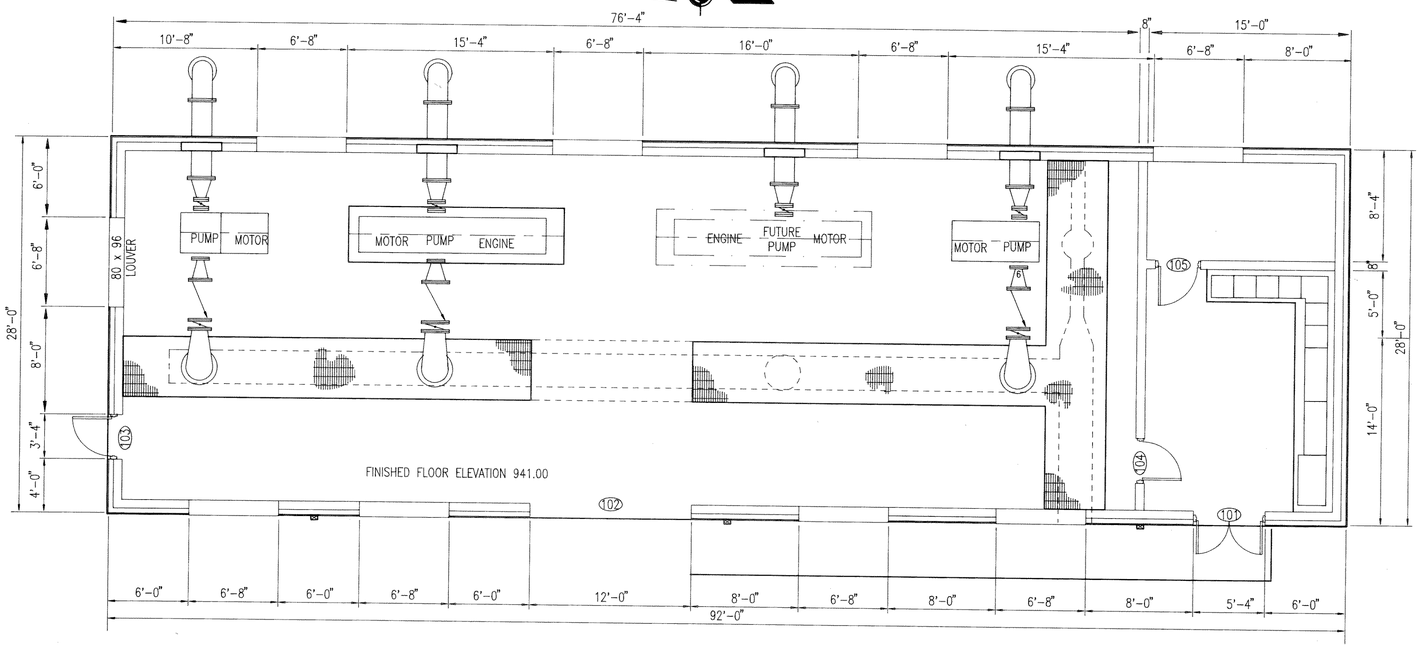
SHEET 10 OF 28 SHEETS

BRUNING 44-242 203178

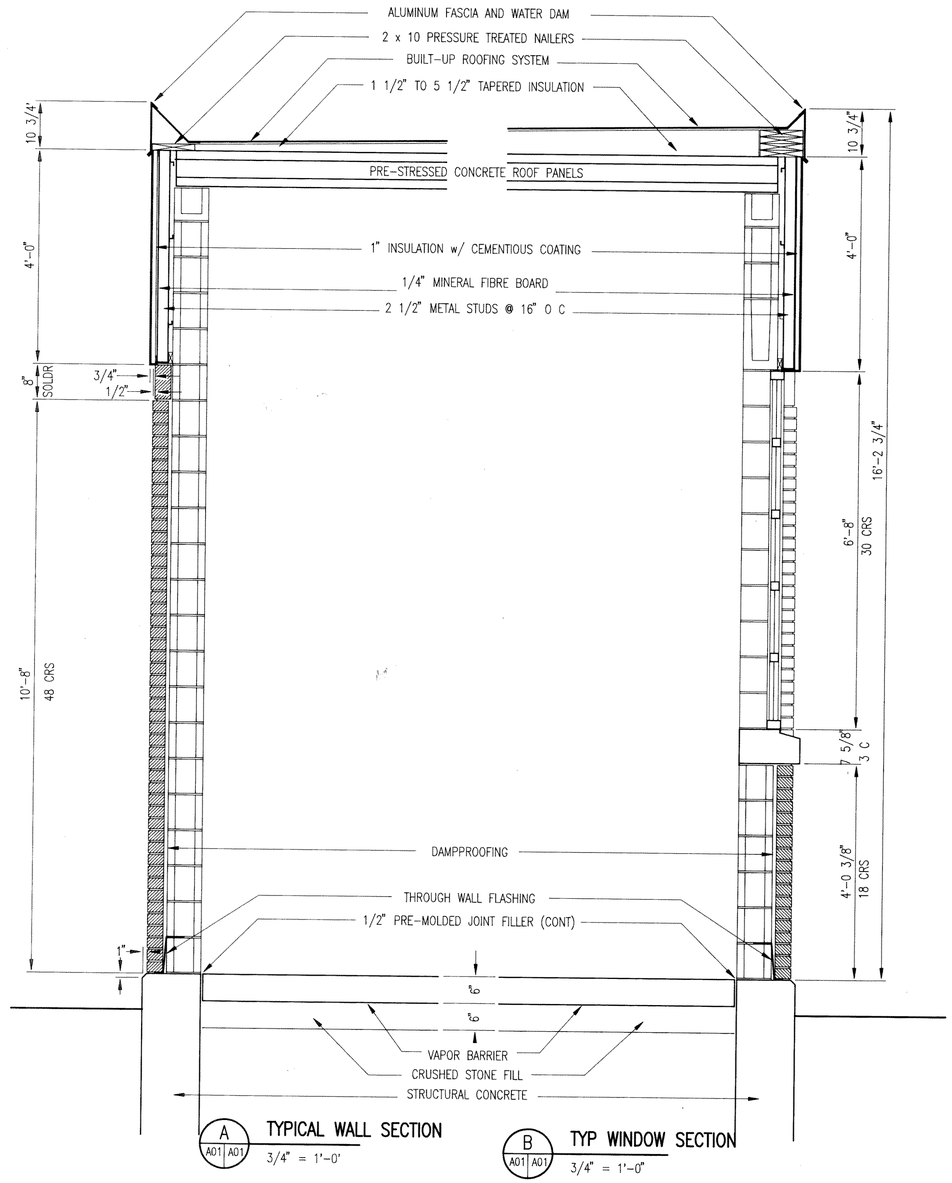
NOT Released For Construction



1 A01 A01 **ROOF PLAN**
3/16" = 1'-0"



2 A01 A01 **FLOOR PLAN**
3/16" = 1'-0"



A A01 A01 **TYPICAL WALL SECTION**
3/4" = 1'-0"

B A01 A01 **TYP WINDOW SECTION**
3/4" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT: ENVIRONMENTAL

PLANS AND SECTIONS

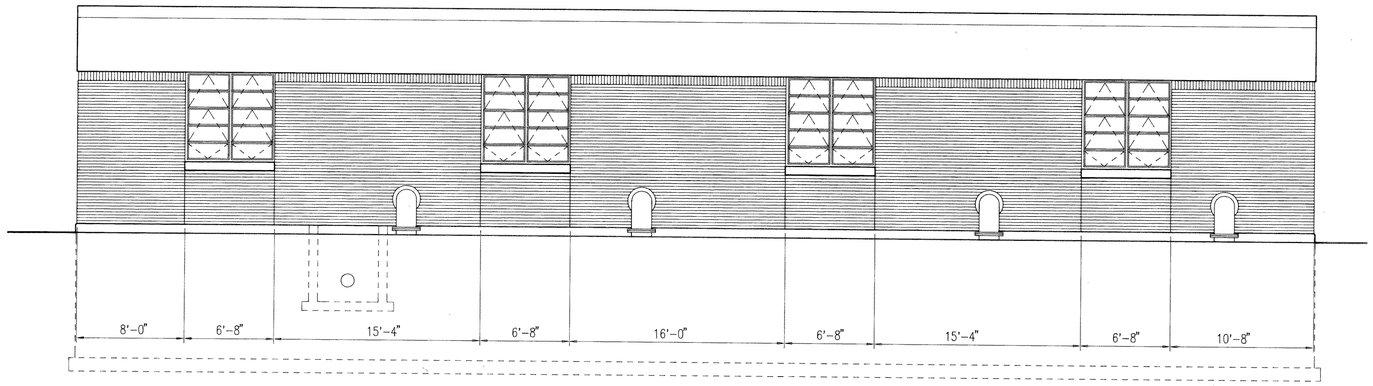
SCALE: AS SHOWN

DWG. NO. 91016-C2-A01

DATE MAY 3, 1991

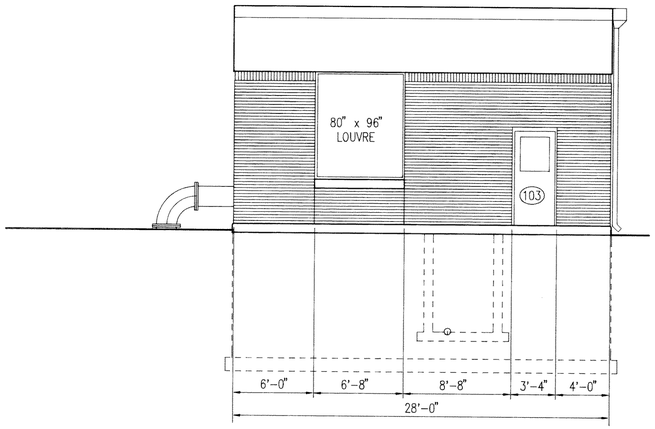
SHEET // OF SHEETS

NOT Released For Construction



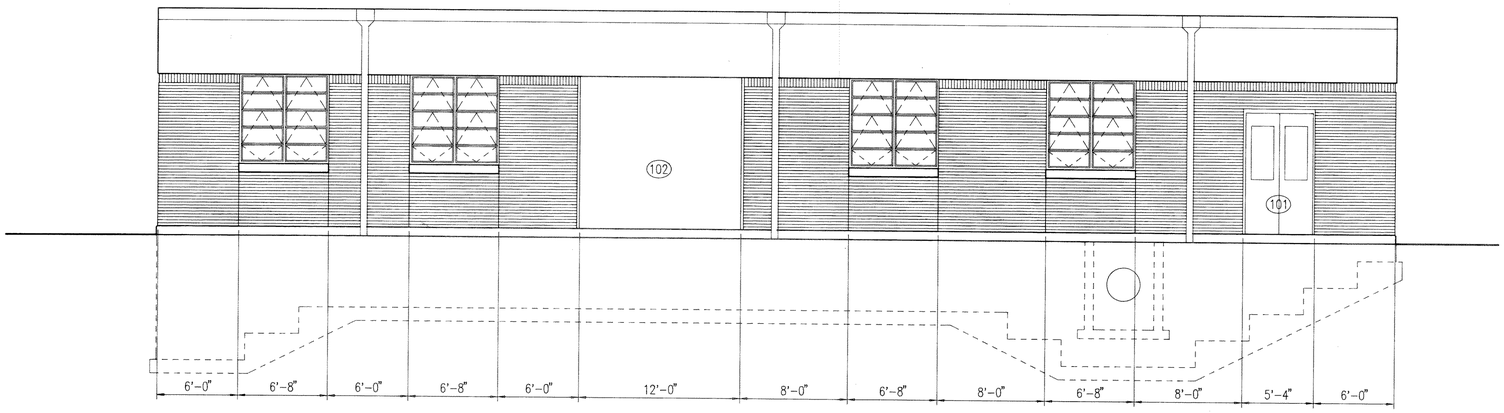
1 / A02 | A02 **WEST ELEVATION**

3/16" = 1'-0"



2 / A02 | A02 **NORTH ELEVATION**

3/16" = 1'-0"



3 / A02 | A02 **EAST ELEVATION**

3/16" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT: ENVIRONMENTAL

ELEVATIONS
AND DETAILS

SCALE: AS SHOWN

DWG. NO.
91016-C2-A02

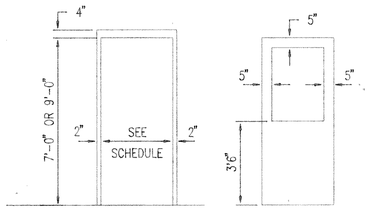
DATE: MAY 3, 1991

SHEET 12 OF SHEETS

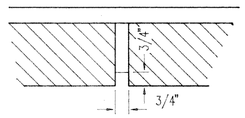
NOT Released For Construction

DOOR SCHEDULE

DOOR NO.	DOOR DATA SIZE	MATL.	TYPE	GLASS	FRAME DATA MATL.	TYPE	HEAD	JAMB	SILL	LABEL	HDWE. SET	REMARKS
101	PR 2'-6"x9'-0"x1 3/4"	H.M.	A	WIRE	H.M.	A	3/A03	4/A03	5/A03	NONE	0	
102	12'-0"x11'-4"	STL	OH	NONE	MC	–	1/A03	2/A03	N/A	NONE	0	COILING ROLL-UP
103	3'-0"x7'-0"x1 3/4"	H.M.	A	WIRE	H.M.	A	3/A03	4/A03	5/A03	NONE	0	
104	3'-0"x7'-0"x1 3/4"	H.M.	A	WIRE	H.M.	A	3/A03	4/A03	5/A03	NONE	0	
105	3'-0"x7'-0"x1 3/4"	H.M.	A	WIRE	H.M.	A	3/A03	4/A03	5/A03	NONE	0	



FRAME TYPE A DOOR TYPE A

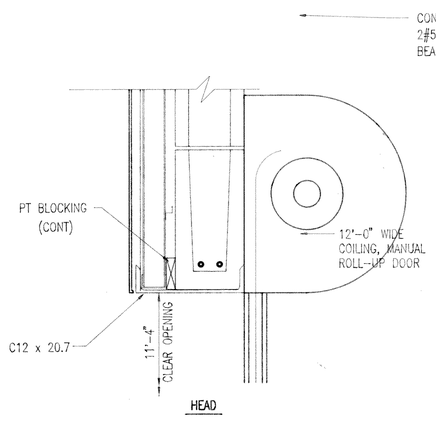


9 / A02 | A03 — CONTROL JOINT DTL

N.T.S.

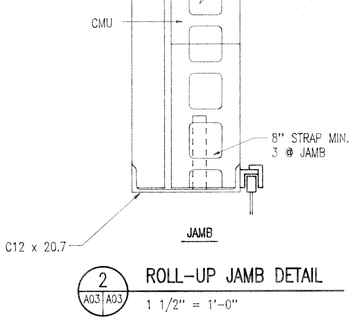
DOOR AND FRAME ELEVATIONS

NO SCALE



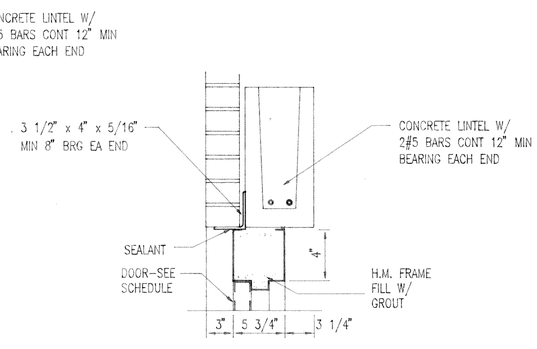
1 / A03 | A03 — ROLL-UP HEAD DETAIL

1 1/2" = 1'-0"



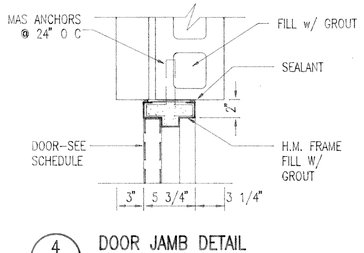
2 / A03 | A03 — ROLL-UP JAMB DETAIL

1 1/2" = 1'-0"



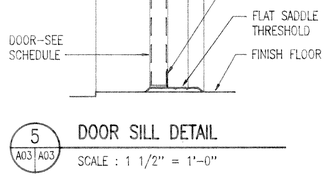
3 / A03 | A03 — DOOR HEAD DETAIL

SCALE : 1 1/2" = 1'-0"



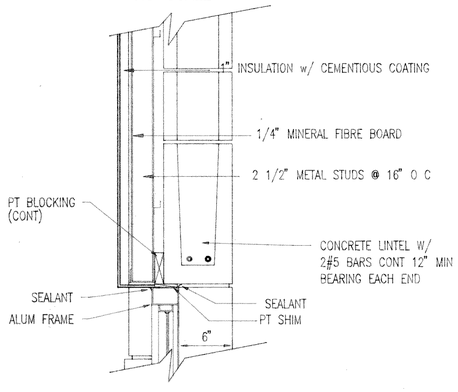
4 / A03 | A03 — DOOR JAMB DETAIL

SCALE : 1 1/2" = 1'-0"



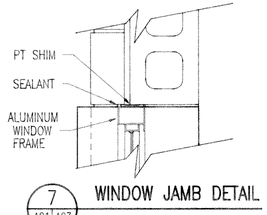
5 / A03 | A03 — DOOR SILL DETAIL

SCALE : 1 1/2" = 1'-0"



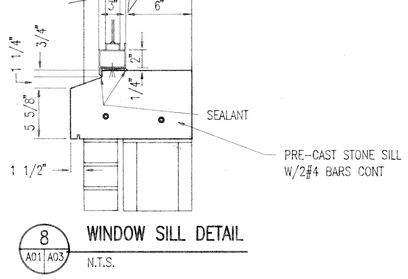
6 / A01 | A03 — WINDOW HEAD DETAIL

N.T.S.



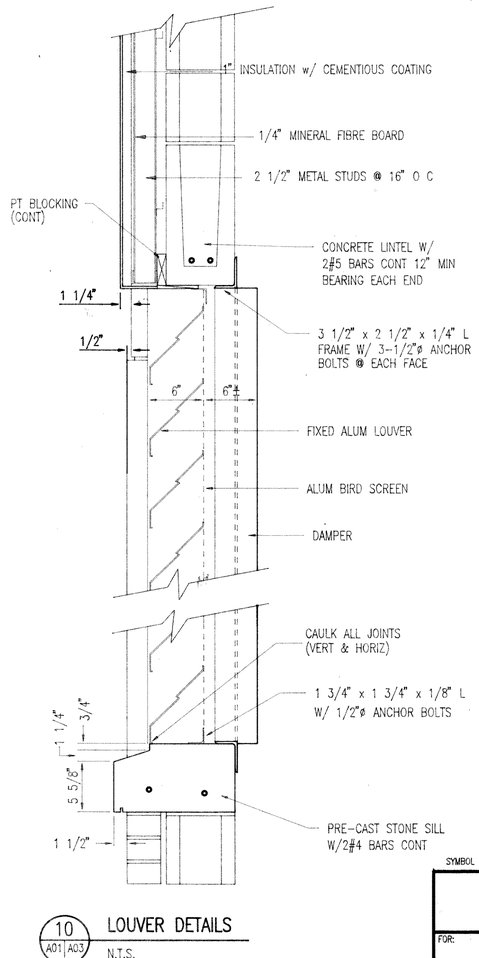
7 / A01 | A03 — WINDOW JAMB DETAIL

N.T.S.



8 / A01 | A03 — WINDOW SILL DETAIL

N.T.S.



10 / A01 | A03 — LOUVER DETAILS

N.T.S.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: | DRAWN: | CHECKED:

DEPARTMENT: ENVIRONMENTAL

DOOR SCHEDULE DOOR, WINDOW & LOUVRE DETAILS

SCALE: FULL

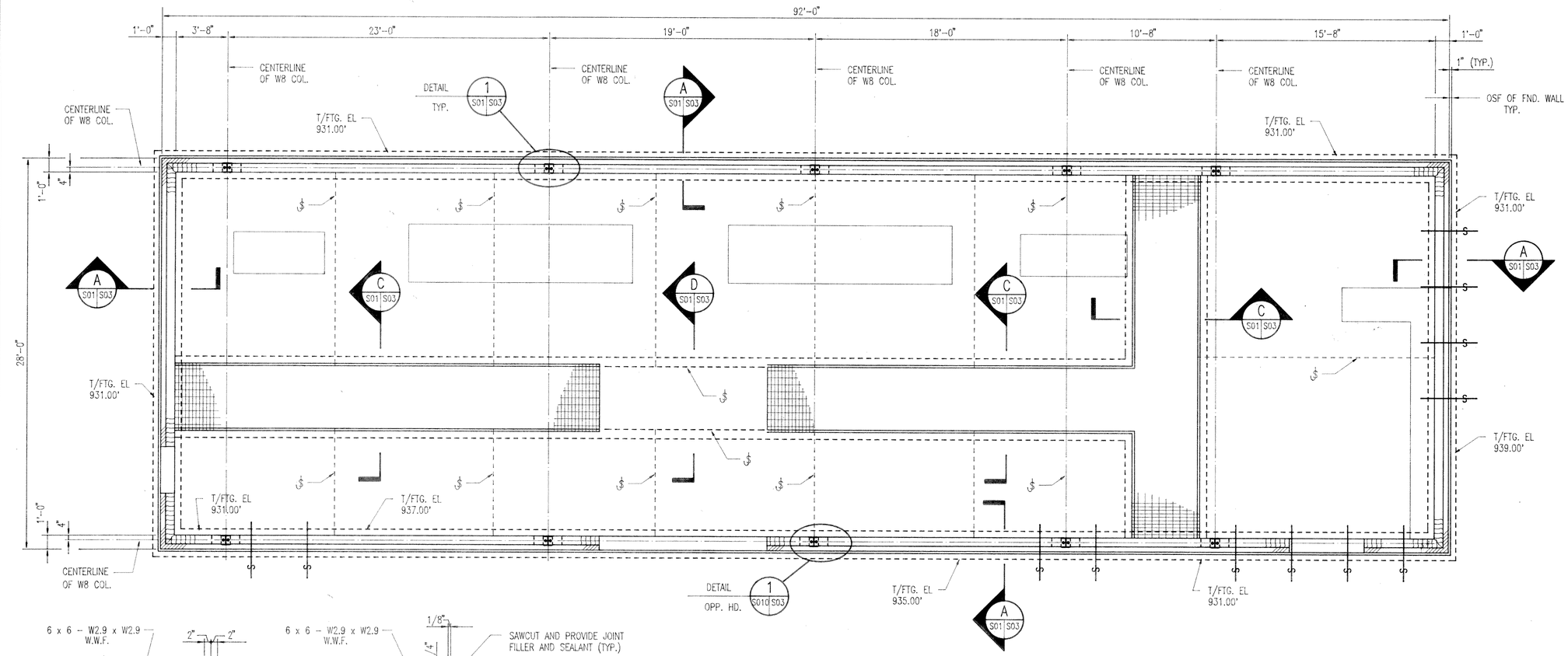
DWG. NO. 91016-C2-A03

DATE 16 APR 91

SHEET 13 OF SHEETS

91016A03

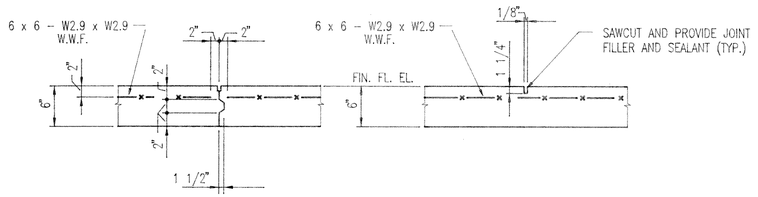
NOT Released For Construction



FINISH FLOOR EL. 941.00'

1 S01 S01 FOUNDATIOIN PLAN

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

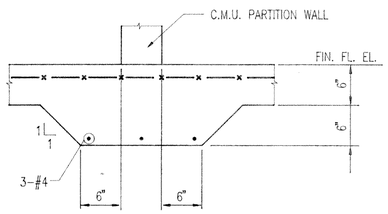


(INDICATED ⌐$ ON PLAN)

CONSTRUCTION JOINT (OPTIONAL) CONTROL JOINT

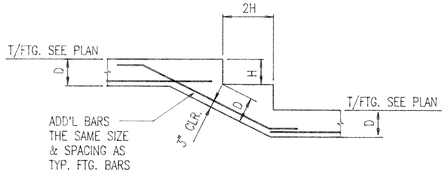
2 S01 S01 TYPICAL SLAB ON GRADE JOINT DETAILS

NOT TO SCALE



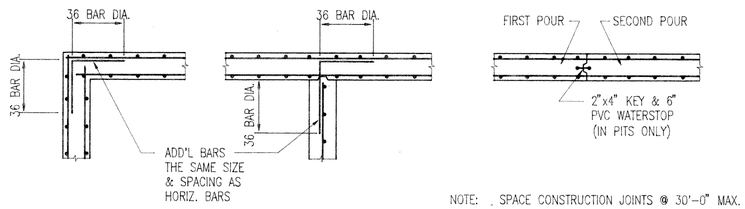
3 S01 S01 TYPICAL SLAB ON GRADE DETAIL FOR PARTITION WALLS

NOT TO SCALE



5 S01 S01 TYPICAL STEPPED FOOTING DETAIL

NOT TO SCALE



@ CORNER @ INTERSECTION @ CONSTRUCTION JOINT

NOTE: . SPACE CONSTRUCTION JOINTS @ 30'-0" MAX.

3 S-2 S-2 TYPICAL WALL DETAILS

NOT TO SCALE

NOTES:

1. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED STATE. TEMPORARY SUPPORTS, SUCH AS TEMPORARY GUYS, BRACES, FALSEWORK, CRIBBING OR OTHER ELEMENTS REQUIRED TO STABILIZE THE STRUCTURE DURING ERECTION UNDER ALL LOADING CONDITIONS SHALL BE DESIGNED, FURNISHED AND INSTALLED BY CONTRACTOR.
2. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE 1988 STANDARD BUILDING CODE.
3. DESIGN LOADS ARE AS FOLLOWS:
   ROOF LOADS:
   DEAD LOAD = STRUCTURE WEIGHT
   LIVE LOAD = 20 PSF
4. UNLESS NOTED OTHERWISE, MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:
   CONCRETE CAST AGAINST EARTH _ _ _ _ 3"
   FORMED CONCRETE EXPOSED TO EARTH OR WEATHER _ _ _ _ _ _ _ _ _ 1 1/2"
   INTERIOR SLABS, WALLS _ _ _ _ _ _ _ 3/4"
5. UNLESS NOTED OTHERWISE LONGITUDINAL REINFORCING IN FOOTINGS SHALL BE PLACED CONTINUOUS AT CORNERS AND INTERSECTIONS.
6. UNLESS NOTED OTHERWISE, CONCRETE SLAB ON GRADE SHALL BE 6" THICK, REINFORCED WITH 6 x 6 – W 2.9 x W 2.9 WELDED WIRE FABRIC, CAST ON COMPACTED SUBGRADE APPROVED BY A QUALIFIED SOILS ENGINEER. MAXIMUM OUTSIDE DIAMETER OF CONDUIT PLACED IN SLAB ON GRADE SHALL NOT EXCEED 1/4 OF THE SLAB THICKNESS. ALL CONDUITS SHALL BE CENTERED IN THE SLAB.
7. WELDING OR TACK WELDING OF REINFORCING STEEL SHALL NOT PERMITTED EXCEPT AS AUTHORIZED OR DIRECTED BY STRUCTURAL ENGINEER OR HIS REPRESENTATIVE.
8. FOUNDATIONS ARE DESIGNED FOR AN ALLOWABLE SOIL BEARING CAPACITY OF 3.0 KSF, TO BE VERIFIED BY A QUALIFIED SOILS ENGINEER BEFORE PLACING CONCRETE (SEE SOIL REPORT).
9. MASONRY WALLS MUST BE BRACED DURING ERECTION FOR WIND AND CONSTUCTION LOADS. BRACES MUST BE DESIGNED, CONSTRUCTED AND ERECTED IN A FASHION AS TO PREVENT PERMANENT SCARRING OF MASONRY SURFACES AT EXPOSED CONDITIONS.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: STRUCTURAL

FOUNDATION PLAN

SCALE: AS SHOWN

DWG. NO. 91016–C2–S01

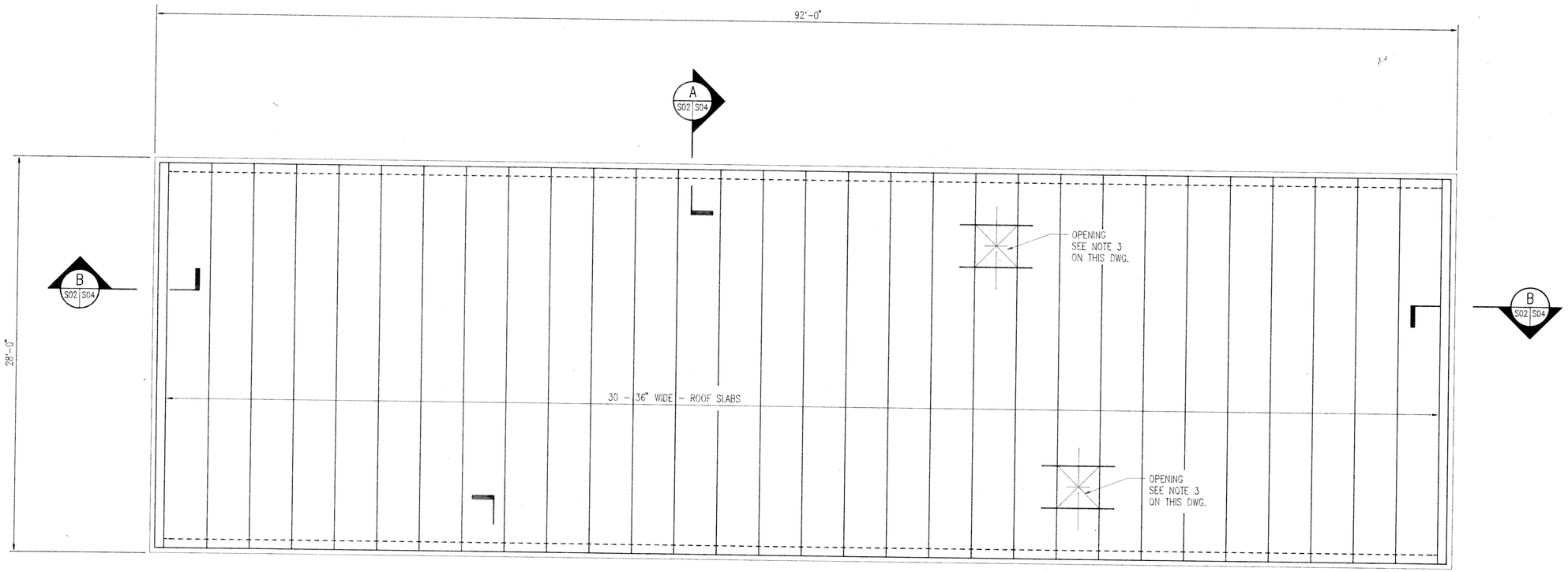
DATE MAY 3, 1991

SHEET 14 OF SHEETS

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577–4000 FAX: 404 577–7119

DESIGN: A.O. DRAWN: F.K. CHECKED: A.O.

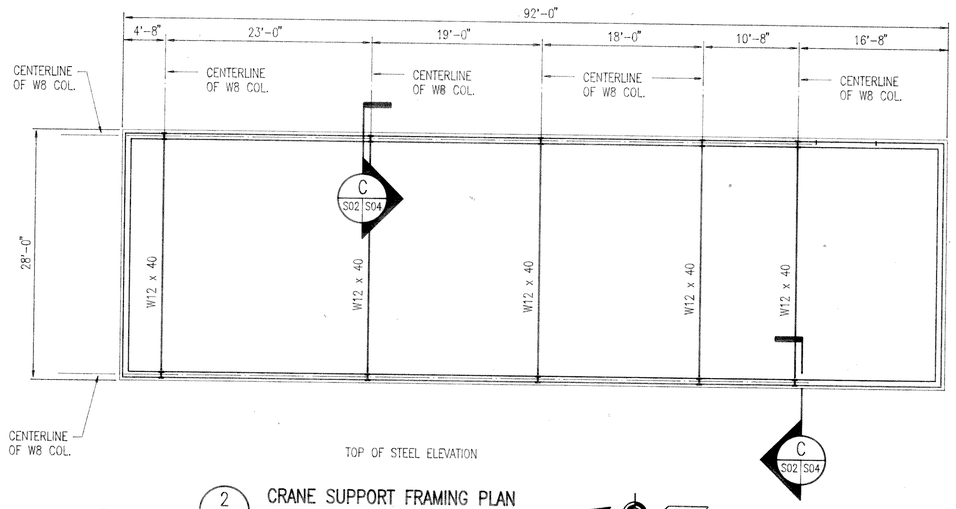
NOT Released For Construction



A S02 S04

1 S02 S02 **ROOF FRAMING PLAN**

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



2 S02 S02 **CRANE SUPPORT FRAMING PLAN**

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

NOTES.

1. ROOF LIVE LOAD = 20 PSF
2. 8" PRECAST ROOF SLABS (SEE SPECIFICATION SECTION 03431).
3. PROVIDE OPENING AND NECESSARY DETAILS FOR AN EQUIPMENT WEIGHING 750 lbs. FOR EXACT SIZE AND LOCATION SEE APPROVED EQUIPMENT SHOP DRAWINGS.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: A.O. | DRAWN: F.K. | CHECKED: A.O.

DEPARTMENT: STRUCTURAL

ROOF FRAMING PLAN

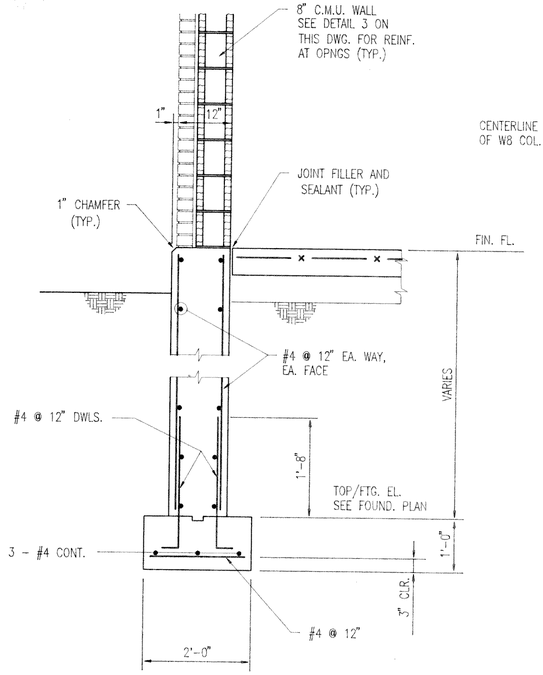
SCALE: AS SHOWN

DWG. NO. 91016-C2-S02

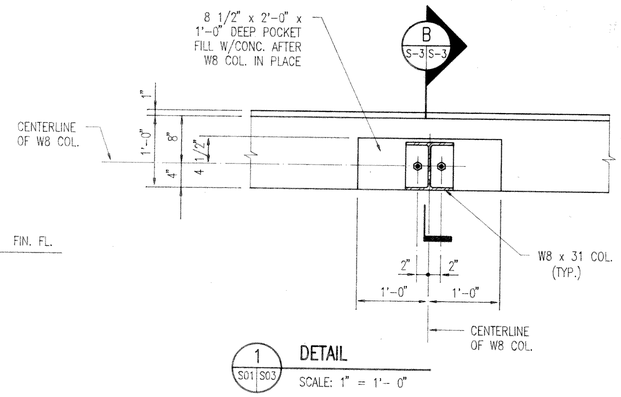
DATE MAY 3, 1991

SHEET 13 OF SHEETS

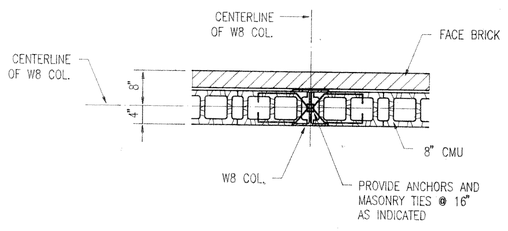
NOT Released For Construction



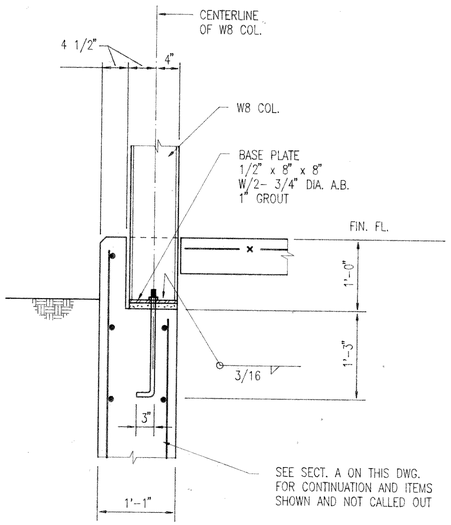
A S01 S03 SECTION
3/4" = 1'-0"



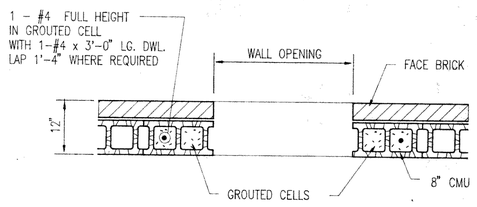
1 S01 S03 DETAIL
SCALE: 1" = 1'-0"



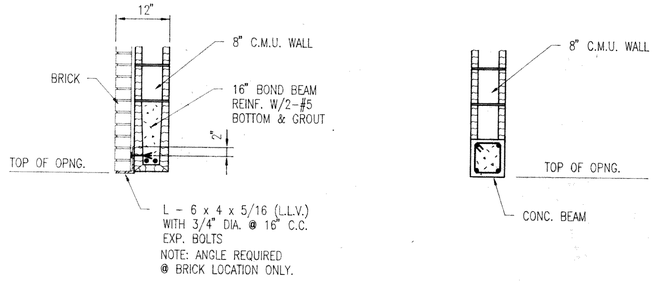
2 S03 S03 TYPICAL MASONRY WALL ANCHOR DETAIL AT COLUMN
SCALE: 3/4" = 1'-0"



B S03 S03 SECTION
SCALE: 1" = 1'-0"



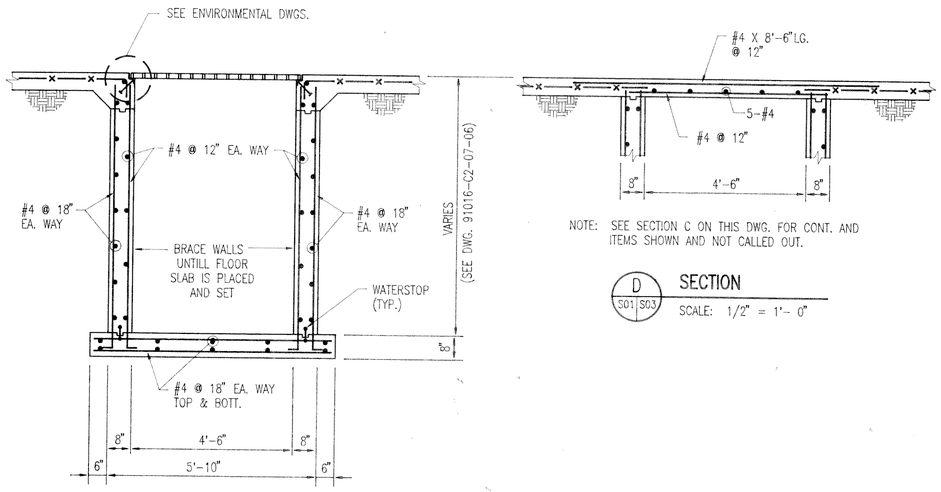
3 S03 S03 TYPICAL PLAN DETAIL OF WALL REINFORCING AT OPENING
SCALE: 3/4" = 1'-0"



AT 7'-0" WIDE AND SMALLER OPENINGS

AT 12'-0" WIDE OPENING

4 S03 S03 TYPICAL LINTEL DETAILS AT WALLS
SCALE: 3/4" = 1'-0"



C S01 S03 SECTION
SCALE: 1/2" = 1'-0"

NOTE: SEE SECTION C ON THIS DWG. FOR CONT. AND ITEMS SHOWN AND NOT CALLED OUT.

D S01 S03 SECTION
SCALE: 1/2" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: STRUCTURAL

SECTIONS AND DETAILS

SCALE: AS SHOWN

DWG. NO. 91016-C2-S03

DATE: MAY 3, 1991

SHEET 16 OF SHEETS

Robert and Company
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404 577-4000 FAX: 404 577-7119

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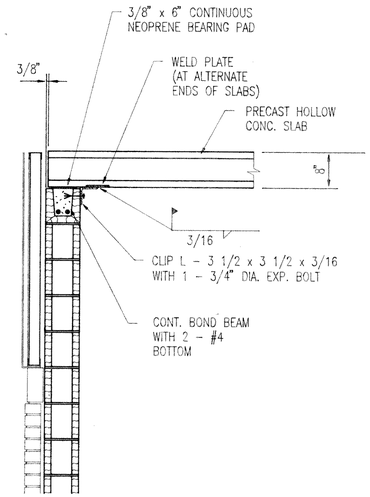
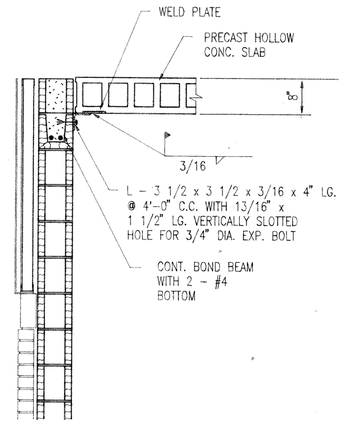


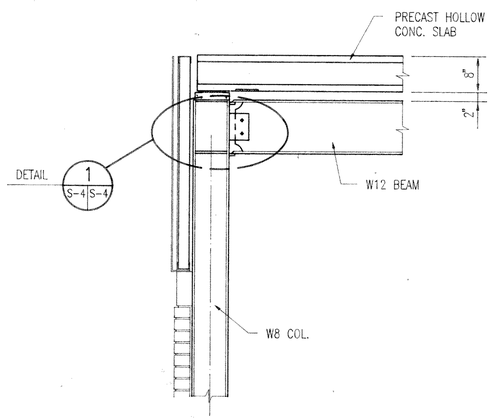
A S02 | S04 **SECTION**

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



B S02 | S04 **SECTION**

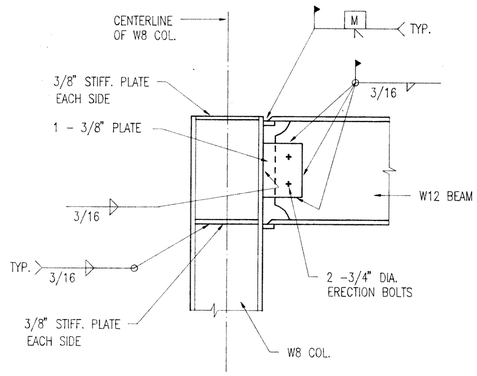
SCALE: 3/4"= 1'- 0"



NOTE: SEE SECTION A ON THIS DWG. FOR ITEMS SHOWN AND NOT CALLED OUT.

C S02 | S04 **SECTION**

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



1 S04 | S04 **DETAIL**

SCALE: 1 1/2"= 1'- 0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: STRUCTURAL

SECTIONS AND DETAILS

SCALE: AS SHOWN

DWG. NO. 91016-C2-S04

DATE MAY 3, 1991

Robert and Company
Architects-Engineers-Planners
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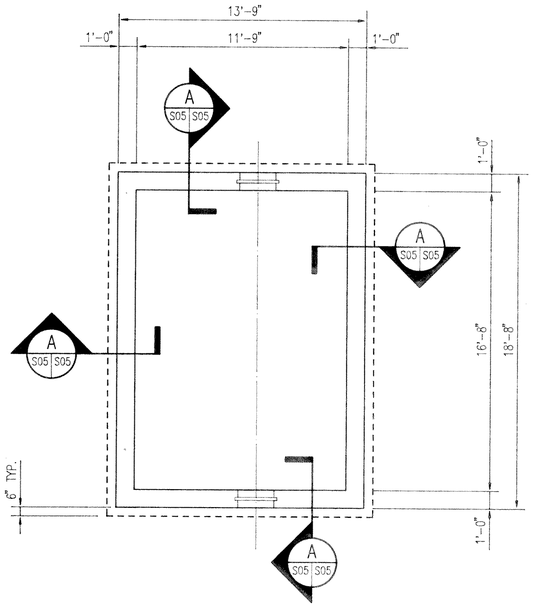
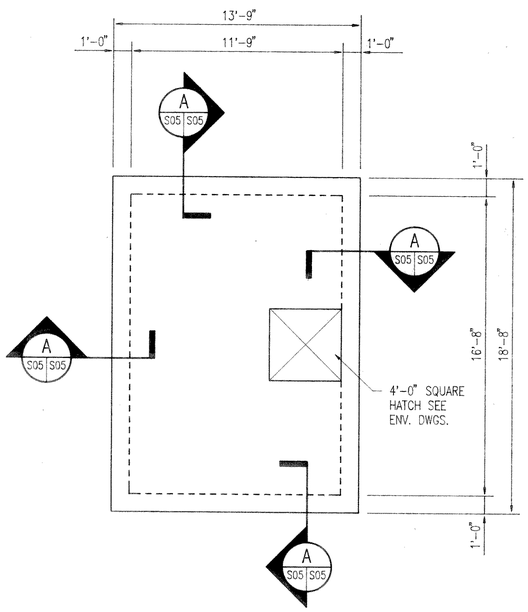


TOP OF SLAB ELEVATION 930.50'.

1 S05 S05 PLAN AT BOTTOM SLAB – ALTITUDE VALVE VAULT

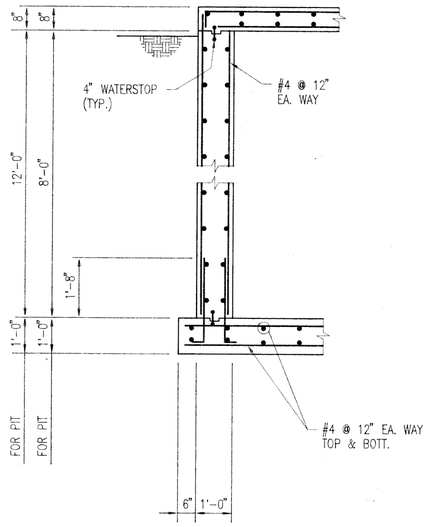
SCALE: 1/4" = 1'- 0"



TOP OF SLAB ELEVATION 930.50'.

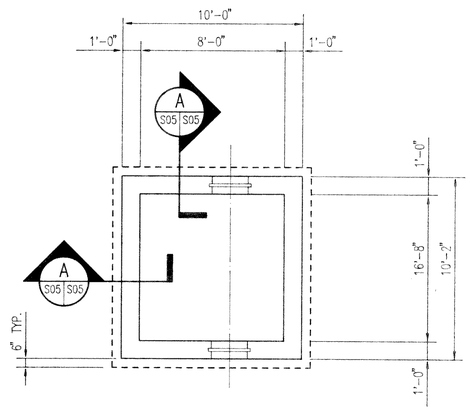
2 S05 S05 TOP SLAB REINFORCING PLAN – ALTITUDE VALVE VAULT

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



A S05 S05 SECTION

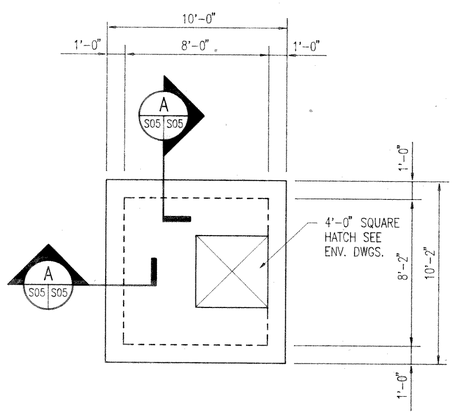
SCALE: 1/2" = 1'- 0"



TOP OF SLAB ELEVATION 935.75'.

3 S05 S05 PLAN AT BOTTOM SLAB – METER PIT

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



TOP OF SLAB ELEVATION 930.50'.

4 S05 S05 TOP SLAB REINFORCING PLAN – METER PIT

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

NOTES.

1. BACKFILL SIMUTANEOUSLY AROUND PITWALLS.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: STRUCTURAL

ALL PITS – PLANS, SECTIONS AND DETAILS

SCALE: AS SHOWN

DWG. NO. 91016-C2-S05

DATE: MAY 3, 1991

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Architects–Engineers–Planners
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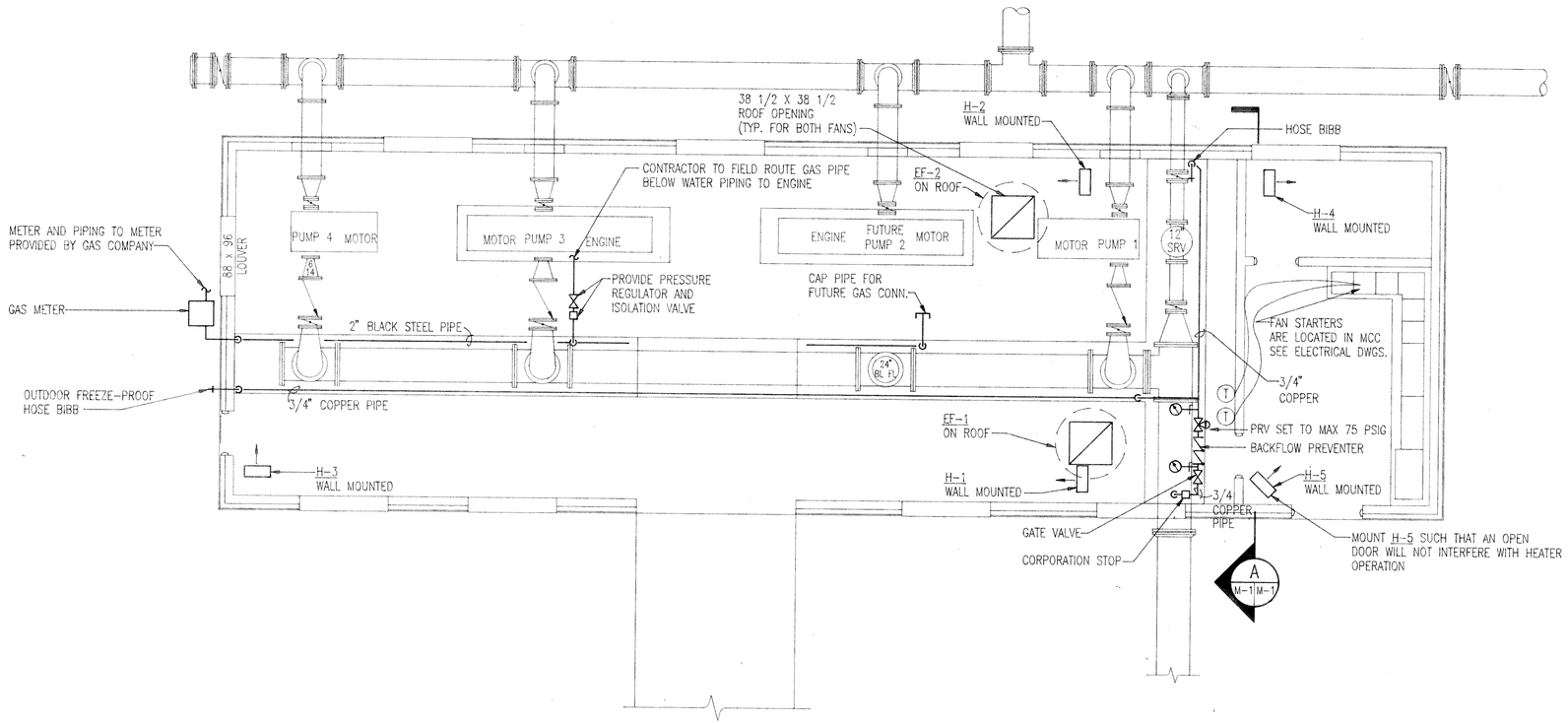
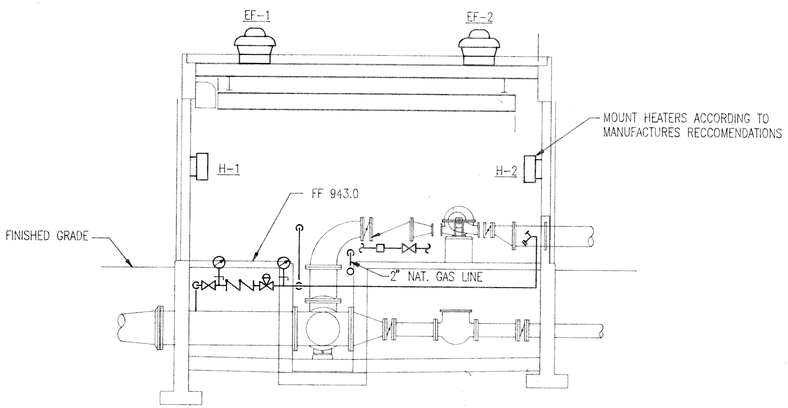


1 M1 M1 PUMP HOUSE – PLAN

3/16" = 1'-0"



A M1 M1 PUMP HOUSE – SECTION

3/16" = 1'-0"

HEATER SCHEDULE

MARK	CFM	ELECTRICAL		HEAT	BASIS OF DESIGN	LOCATION
		KW	V/ø/HZ	MBH		
H-1	670	7.5	480/3/60	25.6	CHROMALOX LUH-07-43	WALL MTD.
H-2	670	7.5	480/3/60	25.6	CHROMALOX LUH-07-43	WALL MTD.
H-3	670	7.5	480/3/60	25.6	CHROMALOX LUH-07-43	WALL MTD.
H-4	310	2.6	208/1/60	8.9	CHROMALOX LUH-02-81	WALL MTD.
H-5	420	5	480/3/60	17.1	CHROMALOX LUH-05-43	WALL MTD.

NOTES: HEATER FANS SHALL HAVE "BUILT-IN" THERMOSTATS

FAN SCHEDULE

MARK	TYPE	CFM	EXT. S.P. IN. W.G.	DRIVE	MOTOR		REMARKS	BASIS OF DESIGN
					H.P.	V/ø/HZ		
EF-1	GREENHECK GB-330H	12250	.25	BELT	3	460/3/60	ROOF MTD.	GREENHECK GB-330H
EF-2	GREENHECK GB-330H	12250	.25	BELT	3	460/3/60	ROOF MTD.	GREENHECK GB-330H

PROVIDE BIRDSCREEN, GRAVITY BACKDRAFT DAMPER, BALANCING DAMPER, AND EXHAUST GRILLE ON INTAKE WITH FANS.

GENERAL NOTES

I. MATERIALS
- A. HEATERS
  1. HEATERS SHALL HAVE A 480 VOLT HEATER AND A 480 VOLT FAN MOTOR. HEATER H-1 SHALL HAVE BUILT IN CONTACTORS, CONTROL POWER TRANSFORMER, RELAYS, THERMOSTAT, AND DISCONNECT SWITCH MADE BY MANUFACTURER OF HEATER.
- B. LOUVERS AND DAMPERS
  1. 88 X 96 LOUVER SHALL BE MADE OF EXTRUDED ALUMINUM AND BE PROVIDED WITH BIRDSCREEN
  2. PROVIDE MOTOR ACTUATED 44 X 96 DAMPERS BEHIND 88 X 96 LOUVER RUSKIN MODEL #CD35
  3. LOUVER SHALL PREVENT WATER PENETRATION AT FACE VELOCITY LESS THAN 900 FEET PER MINUTE. RUSKIN MODEL #ELF6375D OR APPROVED EQUAL
- C. EXHAUST FAN
  1. PROVIDE EXHAUST FAN WITH BIRDSCREEN, BACKDRAFT DAMPER
  2. EXHAUST FAN SHALL BE OF THE DOWNBLAST ROOF MOUNTED CENTRIFUGAL BELT DRIVEN TYPE. THE FAN WHEELS SHALL BE BACKWARD INCLINED CENTRIFUGAL TYPE. WHEELS SHALL BE STATICALLY AND DYNAMICALLY BALANCED TO ASSURE MINIMAL NOISE AND VIBRATION ISOLATION.
  3. PROVIDE ALL NECESSARY RELAYS AND SWITCHES TO ALLOW FAN OPERATION. PROVIDE CONTROL POWER AND TRANSFORMER AND DISCONNECT SWITCH FOR EACH FAN
- D. HOSE BIBB
  1. PROVIDE HOSE BIBB BLD'G W/ NON-REMOVABLE VACUUM BREAKER, WOODFORD MODEL 25CP3-3/4 OR APPROVED EQUAL
  1. PROVIDE FREEZE PROOF HOSE BIBB OUTSIDE BLD'G W/ NON-REMOVABLE VACUUM BREAKER, WOODFORD MODEL 24CP3-3/4 OR APPROVED EQUAL
- E. BACKFLOW PREVENTER
  1. PROVIDE WATTS TYPE 709 BACKFLOW PREVENTER OR APPROVED EQUAL
- F. PRESSURE GUAGE
  1. PROVIDE PRESSURE GUAGE WITH GUAGE COCK AND A RANGE FROM 0-150 PSIG, ASHCROFT MODEL #4 1/2-1009-A
- G. PRESSURE REDUCING VALVE
  1. PROVIDE PRESSURE REDUCING VALVE WATTS #U5 OR APPROVED EQUAL

II. INSTALLATION
- A. HOSE BIBBS
  1. INSTALL OUTSIDE HOSE BIBB 24" ABOVE GRADE. INSTALL INSIDE HOSE BIBB 24" A.F.F.
- B. HEATER
  1. INSTALL HEATERS NO LESS THAN 7'-0" A.F.F. INSTALL HEATERS SUCH THAT AIR FLOW TO EXHAUST FANS IS NOT OBSTRUCTED, AND AIR FLOW TO THE HEATER IS NOT OBSTRUCTED BY SUPPORT BEAM.
- C. THERMOSTATS
  1. INSTALL EXHAUST FAN CONTROLLING THERMOSTATS 5'-0" A.F.F.
  2. LOCATION OF THERMOSTAT ON DRAWING IS APPROXIMATE AND MAY BE MOVED 2'-0" IN THE HORIZONTAL DIRECTION TO COORDINATE WITH OTHER DISCIPLINES EQUIPMENT, LIGHT SWITCHES, ETC...
  3. PROVIDE SEPERATE THERMOSTATS FOR EXHAUST FANS
  4. HEATERS SHALL HAVE FACTORY INSTALLED THERMOSTATS MOUNTED ON EQUIPMENT
- D. EXHAUST FAN
  1. MOUNT EXHAUST FAN ON ROOF. PROVIDE ROOF CURB. FLASH AND COUNTERFLASH TO PREVENT WATER PENETRATION THROUGH ROOF OPENING
- E. LOUVERS
  1. MOUNT BOTTOM OF 88x96" LOUVER APPROX. 24" ABOVE GRADE

III. OPERATION
- A. EXHAUST FAN
  1. THERMOSTAT FOR EF-1 WILL SIGNAL LEFT DAMPER TO OPEN AND ENERGIZE EF-1 AT A READING OF 80°F OR GREATER
  2. THERMOSTAT FOR EF-2 WILL SIGNAL RIGHT DAMPER TO OPEN AND ENERGIZE EF-2 AT A READING OF 85°F OR GREATER
- B. HEATER
  1. HEATER SHALL BE CONTROLLED BY AN ENTERNAL THERMOSTAT. THERMOSTAT SHALL HAVE A RANGE OF SETTINGS, BUT SHALL BE SET AT 55°F.
- C. LOUVERS AND DAMPERS
  1. LEFT 44" X 96" MOTORIZED DAMPER WILL ENERGIZE TO FULLY OPEN WHEN EXHAUST FAN EF-1 IS ENGAGED. RIGHT 44 X 96 MOTORIZED DAMPER WILL WILL ENERGIZE TO FULLY OPEN WHEN EXHAUST FAN EF-2 IS ENGAGED

SYMBOL DATE BY REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects-Engineers-Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DEPARTMENT: MECHANICAL

MECHANICAL PLAN

SCALE: AS SHOWN

DWG. NO. 91016-C2-M1

DATE: MAY 3, 1991

DESIGN: ABL | DRAWN: MAK | CHECKED: THS

SHEET 19 OF SHEETS

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ABBREVIATIONS

–A–

A	AMPERES
AFF	ABOVE FINISHED FLOOR

–B–

BKR	BREAKER
BLDG	BUILDING

–C–

CAT	CATALOG
CAP	CAPACITOR
CKT	CIRCUIT
CB	CIRCUIT BREAKER
CO	COMPANY
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER

–D–

DN	DOWN
DWG	DRAWING
DM	DAMPER MOTOR

–E–

EA	EACH
ELECT	ELECTRICAL
ENG	ENGINE

–F–

FLEX	FLEXIBLE
FVNR	FULL VOLTAGE NON–REVERSING
FVR	FULL VOLTAGE REVERSING

–G–

GND OR G	GROUND

–H–

H	HEATER
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM

–K–

KV	KILOVOLT(S)
KVA	KILOVOLT–AMPERE(S)
KW	KILOWATT(S)
KWH	KILOWATT HOUR(S)
KWHD	KILOWATT HOUR METER W/ DEMAND REGISTER

–L–

LA	LIGHTNING ARRESTER
LS	LIMIT SWITCH

–M–

MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
MTG	MOUNTING
M HT	MOUNTING HEIGHT
MCP	MOTOR CIRCUIT PROTECTOR

ABBREVIATIONS

–N–

NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURE'S ASSOCIATION
NTS	NOT TO SCALE

–O–

OL	OVERLOAD

–P–

P	POLE
PH OR Ø	PHASE
PL	PILOT LIGHT OR PLATE
PE	PNEUMATIC ELECTRIC OR PHOTO–ELECTRIC
PVC	POLYVINYLCHLORIDE

–R–

RVAT	REDUCED VOLTAGE AUTO TRANSFORMER

–S–

SCH	SCHEDULE
SEC	SECONDARY
SW	SWITCH

–T–

TEL	TELEPHONE
T'STAT	THERMOSTAT
TYP	TYPICAL

–U–

UOI	UNLESS OTHERWISE INDICATED

–V–

V	VOLT(S)
VA	VOLT–AMPERE(S)

–W–

W	WATTS OR WIRE
WP	WEATHERPROOF
WT	WATERTIGHT NEMA 4 CONSTRUCTION STAINLESS STEEL
W/	WITH
W/O	WITHOUT

–X–

X'FMR	TRANSFORMER

LEGEND

WALL MTD.	CEIL. MTD.	
		HID LIGHTING FIXTURE AND OUTLET
		FLUORESCENT LIGHTING FIXTURE AND OUTLET
HB		BATTERY POWERED, AUTOMATIC, EMERGENCY LIGHTING UNIT; ARROWS INDICATE NUMBER OF HEADS AND/OR AIMING DIRECTION
J	J	OUTLET BOX WITH BLANK COVER

FLUSH MTD.	SURF. MTD.	
S	S	LOCAL TUMBLER SWITCH, SPST.
		DUPLEX RECEPTACLE, 120V, 20A, 3W WALL OR COLUMN MOUNTED
1/3	1/3	MOTOR, SINGLE PHASE, AC, NUMERAL INDICATES DESIGN HORSEPOWER. SUBSCRIPT: DM = DAMPER MOTOR
300	300	MOTOR, POLYPHASE, AC, NUMERAL INDICATES DESIGN HORSEPOWER
		SINGLE SPEED MANUAL MOTOR CONTROLLER.
	N 30	NON–FUSED SAFETY SWITCH, SIZE AS NOTED OR REQUIRED
	F 30	FUSED SAFETY SWITCH, FUSE SIZE AS NOTED OR REQUIRED
	30	INDIVIDUALLY MTD CIRCUIT BREAKER, TRIP RATING AS NOTED
	NA 600A	NON–AUTOMATIC (WITHOUT OVERLOADS) CIRCUIT BREAKER, FRAME SIZE AS NOTED
		PANELBOARD, LIGHTING TYPE
	T 15	TRANSFORMER, KVA AS NOTED.
	C	CONTACTOR
	T	THERMOSTAT
OR	LS	LIMIT SWITCH
	SV	SOLENOID VALVE

	RACEWAY CONCEALED IN CEILING OR WALL
	RACEWAY CONCEALED IN OR UNDER FLOOR
	RACEWAY EXPOSED ON CEILING OR WALL
J	JUNCTION, TAP OR PULLBOX
	RACEWAY TURNED TOWARD VIEWER
	RACEWAY TURNED AWAY FROM VIEWER
	JUNCTION BY CONDULET OR BOX AS REQUIRED
LA–1	HOMERUN, PANELBOARD AND CIRCUIT NO. AS INDICATED
	MARKS ACROSS RACEWAY INDICATE NUMBER OF #12 AWG CONDUCTORS THEREIN, UNLESS OTHERWISE INDICATED UNMARKED RUNS INDICATE 3 #12 AWG CONDUCTORS INSIDE RACEWAY (1 PH WIRE, 1 NEUT AND 1 GREEN GROUND CONDUCTOR).
MOV	MOTOR OPERATED VALVE
	ELECTRIC UNIT HEATER WITH BUILT–IN CONTACTOR, AND THERMOSTAT.
	3/4" x 10'–0" COPPERCLAD GROUND ROD
	THERMALLY WELDED GROUND CONNECTION
G	GROUND CONDUCTOR, 4/0 A.W.G. BARE COPPER, U.O.I.
	UNDERGROUND DUCT BANK

LEGEND (CONT.)

FOR DIAGRAMS

PT(2000/5)	POTENTIAL TRANSFORMER, QUANTITY AND RATIO AS INDICATED
CT(480–120)	CURRENT TRANSFORMER, QUANTITY AND RATIO AS INDICATED
AM	AMMETER
AS	SELECTOR SWITCH: AS = AMMETER SW, VS = VOLTMETER SW
VM	VOLTMETER
GFS	GROUND FAULT SENSOR
TRIP FRAME	CIRCUIT BREAKER
	TRANSFORMER
LA	LIGHTNING ARRESTER
	SURGE CAPACITOR
H A	"HAND–OFF–AUTOMATIC" SELECTOR SWITCH
	CONTACTS NORMALLY OPEN (N.O.)
	CONTACTS NORMALLY CLOSED (N.C.)
CR	CONTROL RELAY
MI	OPERATING COIL OF MOTOR
	MOTOR SPACE HEATER OR HEATER ELEMENTS
	PILOT LIGHT
TCD	THERMAL CUTOUT DEVICE LOCATED IN MOTOR WINDINGS

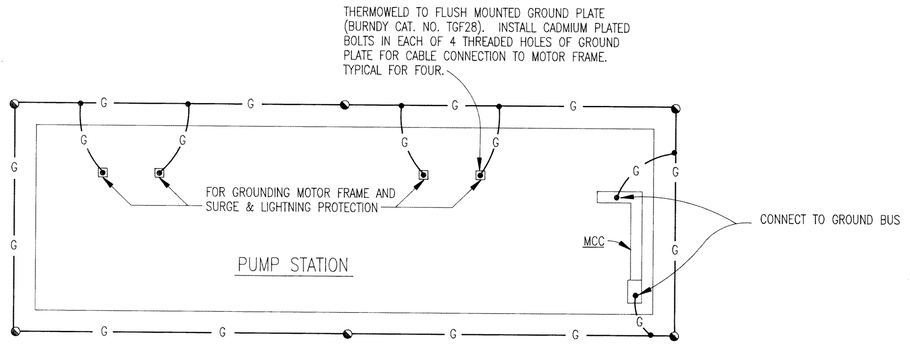
GENERAL NOTES:

A. DRAWINGS SHOWING ELECTRICAL WORK ARE IN PART DIAGRAMMATIC. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL, CIVIL, STRUCTURAL AND MECHANICAL DRAWINGS FOR GUIDANCE AS TO DIMENSIONS, FINISHED GRADES, CEILING HEIGHTS, DOOR SWINGS, STRUCTURAL AND ARCHITECTURAL DETAILS, LOCATION OF DUCTS, PIPES, MECHANICAL SYSTEM EQUIPMENT AND OUTLETS, AND THE LIKE, AND SHALL: (A) INSTALL THE ELECTRICAL SYSTEMS WITHOUT INTERFERENCE WITH DUCTS, PIPES, BEAMS, REINFORCING, AND OTHER OBSTRUCTIONS; (B) LOCATE LIGHTING FIXTURES SYMMETRICALLY, OR AS INDICATED ON PLANS, IN CORRECT RELATION TO FINISHED AREAS; AND (C) PROVIDE ADDITIONAL STEEL SUPPORTS FOR SWITCHES, MOTOR CONTROLLERS, FIXTURES, RACEWAYS, CABINETS, AND , THE LIKE, WHERE THE BUILDING STRUCTURE IS NOT ADAPTED TO MOUNTING SAME DIRECTLY THEREON.

B. SYMBOLS IN THE LEGEND ARE APPLICABLE GENERALLY. FOR EXACT REQUIRMENTS SEE THE APPLICABLE SCHEDULES, LAYOUTS, DETAILS, AND THE SPECIFICATIONS.

C. ON INTERIOR WIRING PLANS A NUMERAL BESIDES A BRANCH CIRCUIT INDICATES THE PANELBOARD CIRCUIT CONNECTION. WHERE OUTLETS ARE LOCALLY SWITCHED, A LOWER CASE LETTER BESIDE THE OUTLET INDICATES THE SWITCH LEG CONNECTION. A NUMERAL WITH INCH (") MARK BESIDE DEVICE INDICATES THE MOUNTING HEIGHT OTHER THAN INDICATED IN SCHEDULE.

D. UPPER CASE LETTER BESIDE LIGHTING FIXTURE INDICATES FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE.



ALL GROUNDING WIRE SHALL BE 4/0 BARE STRANDED COPPER.

GROUNDING LAYOUT

SCALE: 3/32" = 1'–0"

N

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

DEPARTMENT: ELECTRICAL

LEGEND, ABBREVIATIONS, GENERAL NOTES, AND GROUNDING LAYOUT

SCALE: AS SHOWN

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577–4000 FAX: 404 577–7119

DWG. NO. 91016–C2–E1

DATE

DESIGN: BIB | DRAWN: SIV & PRICE | CHECKED:

SHEET OF SHEETS

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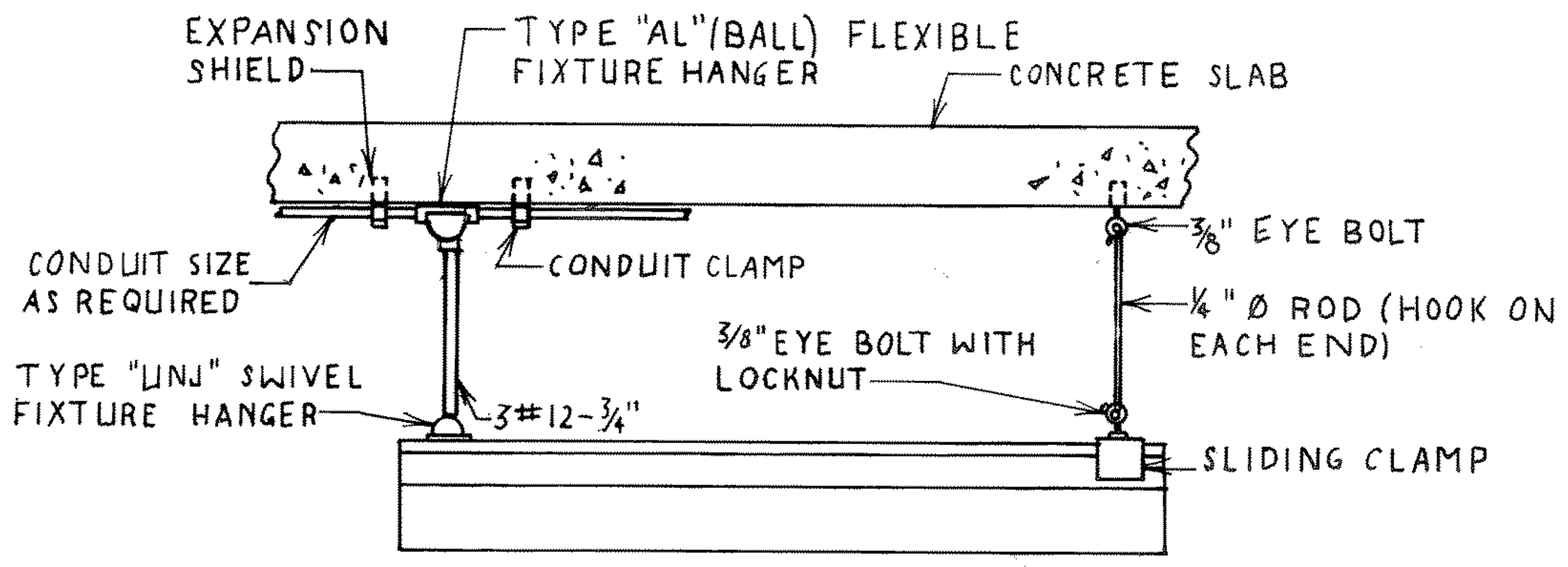
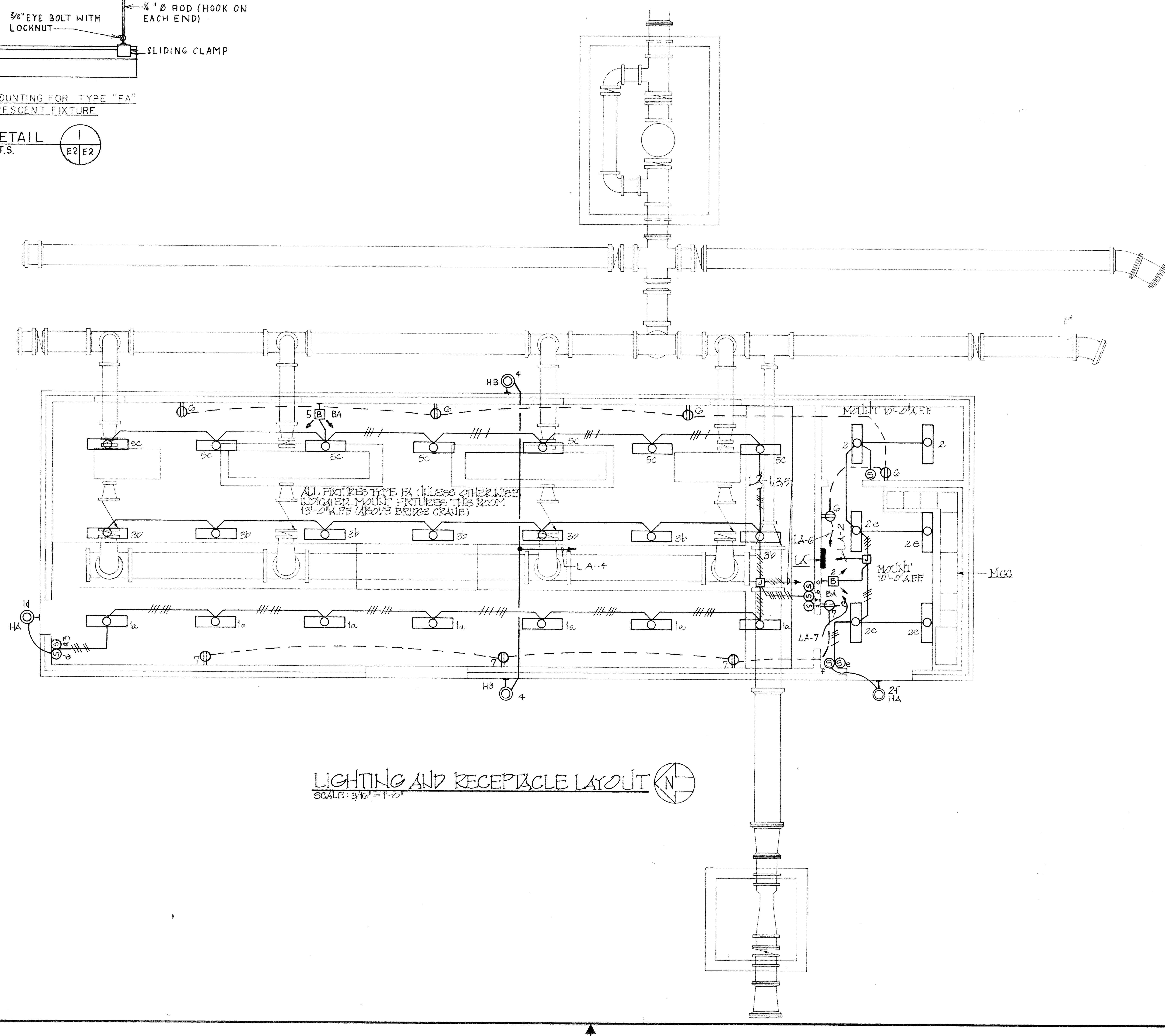


TYPICAL MOUNTING FOR TYPE "FA" FLUORESCENT FIXTURE

DETAIL 1 E2 E2
N.T.S.



LIGHTING AND RECEPTACLE LAYOUT
SCALE: 3/16" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION	DEPARTMENT: ELECTRICAL
	LIGHTING AND RECEPTACLE LAYOUT AND DETAILS
FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA	SCALE: AS SHOWN
Robert and Company Architects – Engineers – Planners 96 Poplar Street, N.W. Atlanta, Georgia 30335	DWG. NO. 91016-C2-E2
	DATE:
DESIGN: BIB / DRAWN: RLP / CHECKED:	SHEET ___ OF ___ SHEETS

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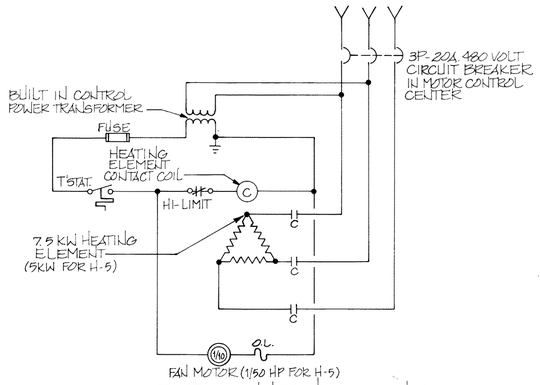
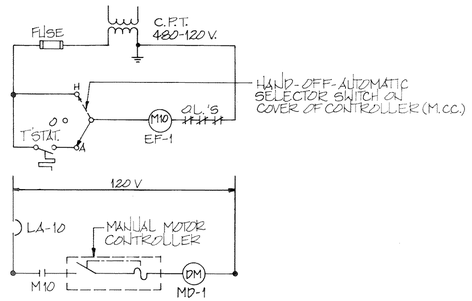
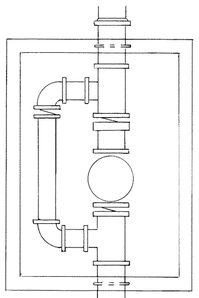
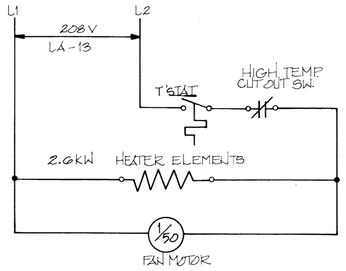


ELECTRIC UNIT HEATER H-1
(TYPICAL FOR H-2, H-3, & H-5)

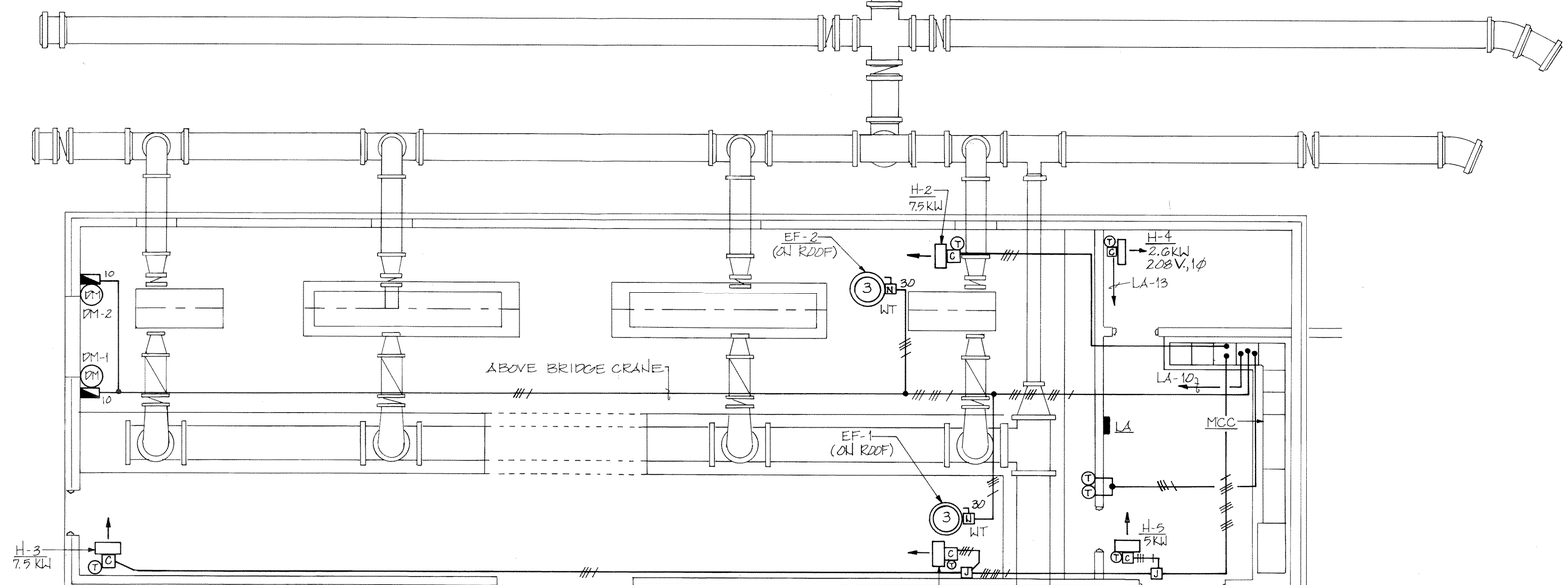


EXHAUST FAN EF-1 & DAMPER MD-1
(TYPICAL FOR EF-2 & DAMPER MD-2)





ELECTRIC UNIT HEATER H-4



HEATING AND VENTILATION LAYOUT
SCALE: 3/16" = 1'-0"

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DEPARTMENT: ELECTRICAL

HEATING & VENTILATION LAYOUT AND DIAGRAMS

SCALE:

DWG. NO. 91016-C2-E3

DATE:

DESIGN: BIB | DRAWN: RLP | CHECKED:

SHEET ____ OF ____ SHEETS

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BRUNING 44-242 108178

	WIRE AND CONDUIT SCHEDULE
(1)	3-750 KCMIL & 1-4/0 NEUTRAL- 4"
(2)	3-350 KCMIL & 1#2G - 3"
(3)	6#14 - 1"
(4)	3#10 & 1#10G ~ 3/4"
(5)	4#6 & 1#10G ~ 1"
(6)	3" EMPTY CONDUIT
(7)	1" EMPTY CONDUIT (STUB UP ABOVE FLOOR AND CAP).
(8)	2#12 & 1#12G.-1"
(9)	40#14 - 1 1/4"
(10)	30#14 - 1"
(11)	20#14 - 1"
(12)	10#14 - 1"
(13)	10#14 - 1/2" FLEX.
(14)	2#14 & 1#14G.-1"
(15)	20#12 & 1#12G.-1 1/4"
(16)	15#12 & 1#12G.-1"

	CONT.
(17)	10#12 & 1#12G.-1"
(18)	5#12 & 1#12G.-1"
(19)	4#2 - 1 1/4"
(20)	2#8 - 1"
(21)	1-3/C#16 SHIELDED ~ 1/2"
(22)	3-3/C#16 SHIELDED ~ 1"
(23)	2-3/C#16 SHIELDED ~ 3/4"
(24)	3#12 & 1#12G.-1/2" FLEX

LEGEND

- (LT 101) LEVEL TRANSMITTER
- (PT 101) PRESSURE TRANSMITTER
- (FT 101) FLOW TRANSMITTER

(SEE SPECIFICATIONS SECTION 13600)

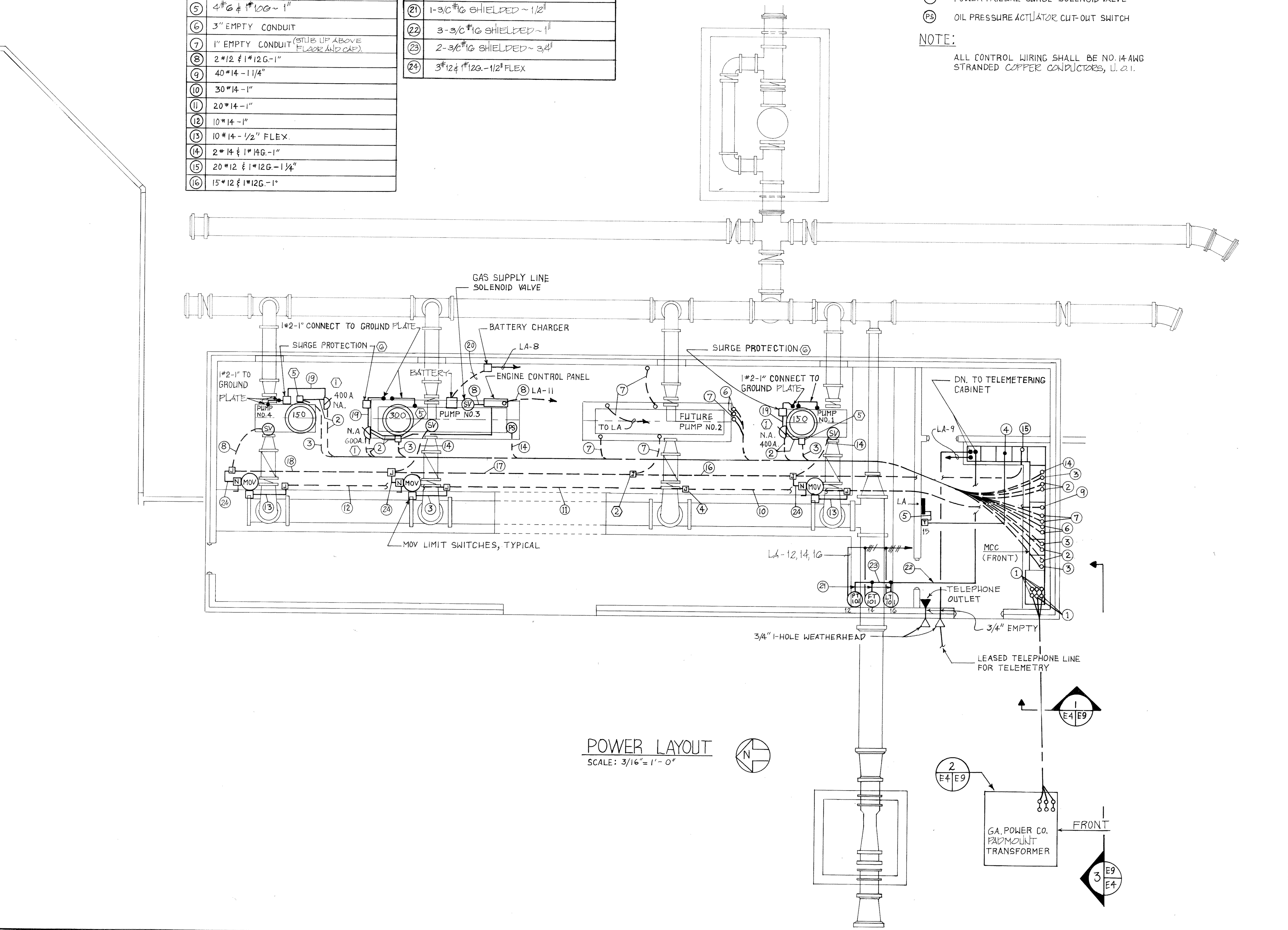
- (SV) POWER FAILURE SURGE SOLENOID VALVE
- (PS) OIL PRESSURE ACTUATOR CUT-OUT SWITCH

NOTE:

ALL CONTROL WIRING SHALL BE NO. 14 AWG STRANDED COPPER CONDUCTORS, U.O.I.

NOTES:

1. PROVIDE GALVANIZED STEEL SUPPORT STRUCTURE FOR SAFETY SWITCH.
2. EXTEND 5#12 TO PULLBOX, LEAVE 6" EXTRA LENGTH AND TAPE FOR FUTURE MOV AND SOLENOID VALVE
3. STUB-UP EMPTY CONDUITS 6" FROM FLOOR AND CAP.
4. EXTEND 10#14 TO PULLBOX, LEAVE 6" EXTRA LENGTH AND TAPE FOR FUTURE MOV LIMIT SWITHES.
5. OVERSIZED MOTOR TERMINAL BOX. FOR 150HP - 10" X 10" X 6" MIN. FOR 300HP - 14" X 14" X 10" MIN.
6. INSTALL SURGE & LIGHTING PROTECTION AT MOTOR IN A PROPERLY SIZED GALVANIZED SHEET STEEL BOX AND SCREW-ON COVER. MOUNT BOX AT FLOOR LEVEL.



POWER LAYOUT

SCALE: 3/16" = 1'-0"

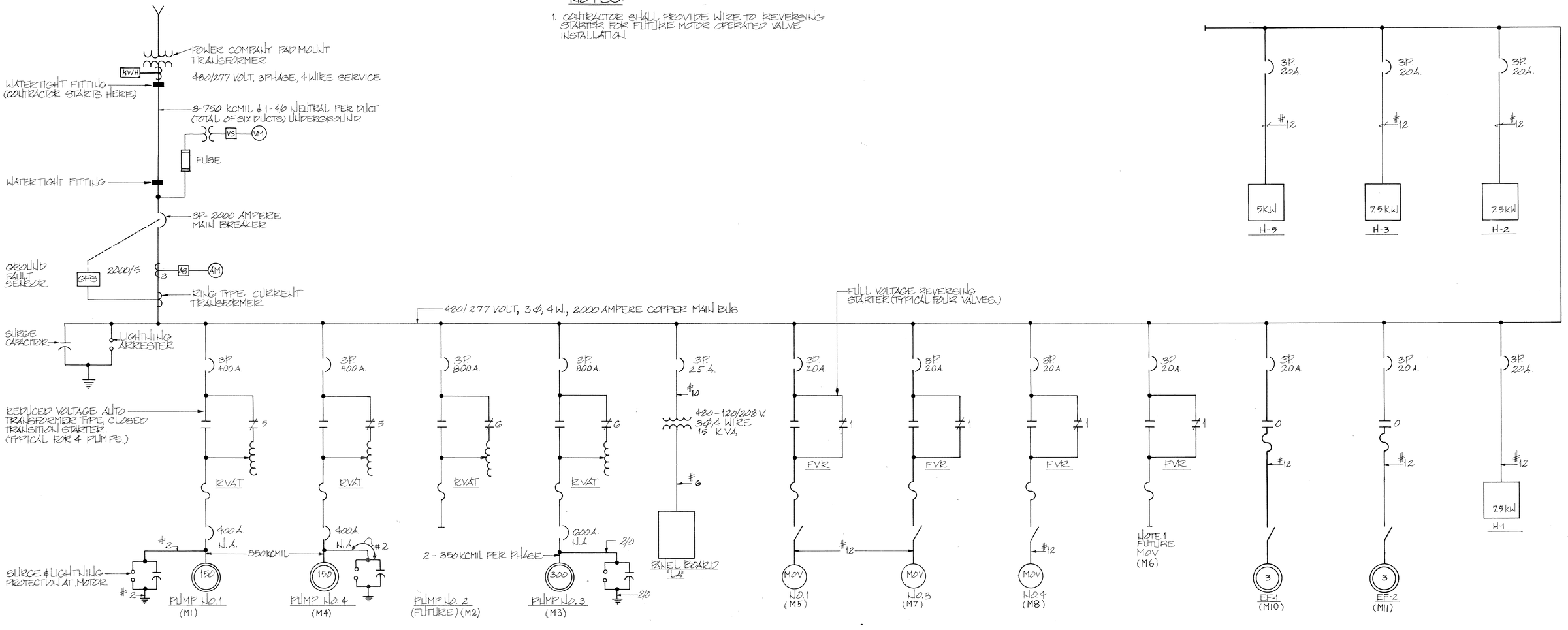
SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION	DEPARTMENT ELECTRICAL
FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA	POWER LAYOUT AND DETAILS
	SCALE: AS SHOWN
Robert and Company *Architects – Engineers – Planners* *96 Poplar Street, N.W. Atlanta, Georgia 30335*	DWG. NO. 91016-C2-E4
	DATE:
DESIGN: BIB / DRAWN: SIV, RLP / CHECKED:	SHEET ____ OF ____ SHEETS

NOT Released For Construction

NOTES:

1. CONTRACTOR SHALL PROVIDE WIRE TO REVERSING STARTER FOR FUTURE MOTOR OPERATED VALVE INSTALLATION



SINGLE LINE DIAGRAM

N.T.S.

SYMBOL	DATE	BY	REVISION

FINISHED WATER
PUMPING STATION

FOR: CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DESIGN: M. S.
DRAWN: R.L.P.
CHECKED:

DEPARTMENT
ELECTRICAL

SINGLE
LINE
DIAGRAM

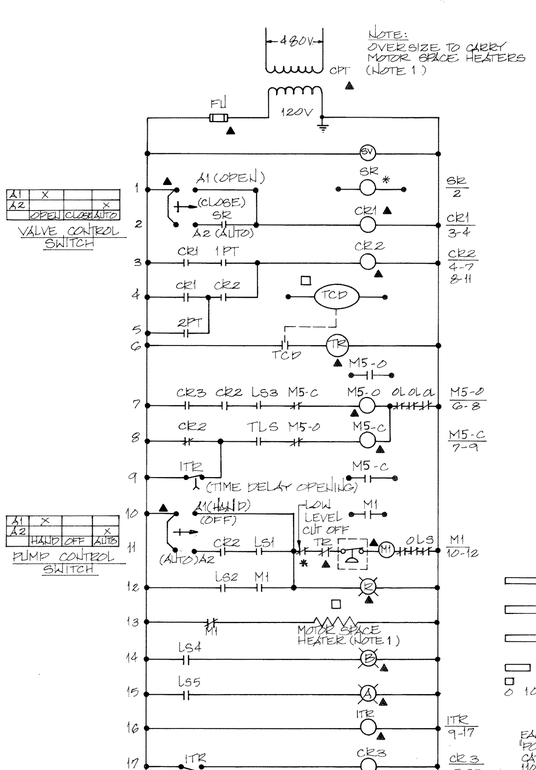
SCALE: AS SHOWN

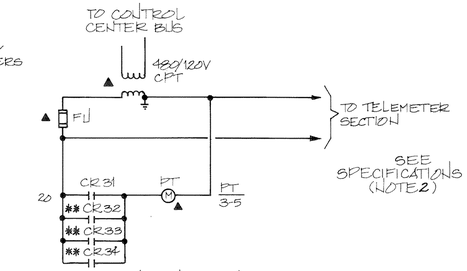
DWG. NO.
91016 - C2 - E5

DATE:

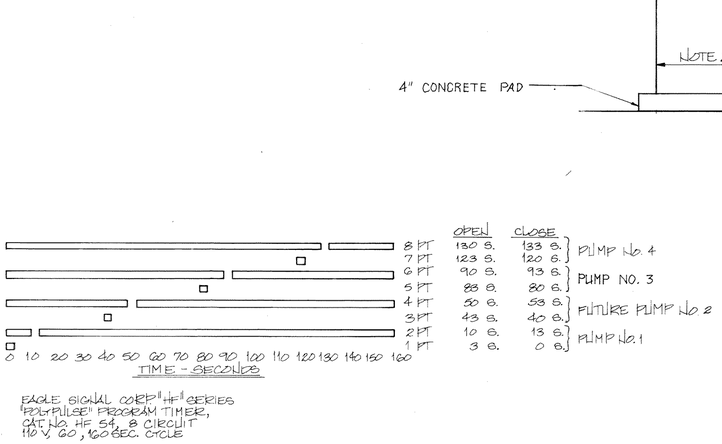
SHEET ____ OF ____ SHEETS

NOT Released For Construction





PROGRAM TIMER



EAGLE SIGNAL CORP "H" SERIES "POLYPULSE" PROGRAM TIMER, CAT NO. HF 54, 8 CIRCUIT 110 V, 60, 160 SEC. CYCLE

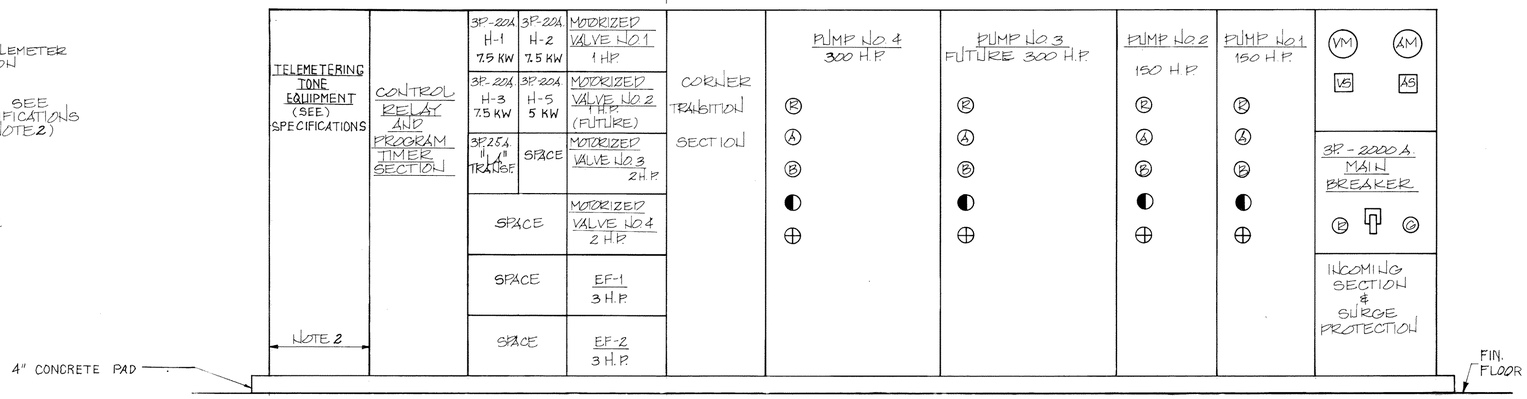
TIMER DIAGRAM

▲ — INDICATES DEVICE MOUNTED IN MOTOR CONTROL CENTER.
✱ — INDICATES DEVICE MOUNTED IN TELEMETER SECTION
□ — INDICATES DEVICE LOCATED IN MOTOR WINDINGS

SCHEMATIC DIAGRAM PUMP AND VALVE NO. 1

(ALL OTHERS SIMILAR)

SR — SUPERVISORY CONTROL RECEIVER RELAY.
CR1, CR2, CR3 — CONTROL RELAYS, COILS, OR CONTACTS
PT — PROGRAM TIMER COIL OR CONTACTS
M5-O — VALVE MOTOR STARTER OPERATING COIL OR AUX. CONTACTS FOR OPEN DIRECTION.
M5-C — SAME AS M4-O EXCEPT FOR CLOSE DIRECTION
ITR — PNEUMATIC TIMING RELAY, T.D. ON ENERGIZATION
TR — TEMPERATURE RELAY CONNECTED TO MOTOR RTD OR OTHER THERMAL CUT-OUT DEVICE TO PROTECT MOTOR WINDINGS, (TCD)
⊠ — PILOT LIGHT, COLOR CAP AS DESIGNATED
LS1 — CLOSES MOMENTARILY AT A PRE-SET POINT BETWEEN 2% AND 10% OF VALVE OPENING ONLY. IT MUST NOT CLOSE DURING VALVE CLOSURE.
LS2 — OPEN MOMENTARILY AT A PRE-SET POINT BETWEEN 90% AND 98% OF VALVE CLOSING ONLY. IT MUST NOT OPEN DURING VALVE OPENING.
LS3 — OPENS ONLY WHEN VALVE IS 100% OPEN.
LS4 — CLOSES ONLY WHEN VALVE IS SEATED.
LS5 — CLOSES ONLY WHEN VALVE IS 100% OPEN.
TLS — STANDARD TORQUE LIMIT SWITCH.
SV — POWER FAILURE SURGE SOLENOID VALVE.
OIL PRESSURE SWITCH LOCATED ON ENGINE TO PREVENT MOTOR START WHEN ENGINE IS RUNNING (PUMP NO. 3 ONLY)



FRONT ELEVATION MOTOR CONTROL CENTER

N.T.S.

NOTES:

1. SPACE HEATER(S) FOR MOTORS SHALL BE SIZED BY MOTOR MANUFACTURER. CONTRACTOR SHALL COORDINATE HEATER SIZE WITH CPT RATING TO INSURE ADEQUATE SIZED CPT FOR TOTAL LOAD.
2. TELEMETERY TONE EQUIPMENT CABINET SHALL BE FURNISHED & INSTALLED COMPLETE BY THE CONTRACTOR. SEE SPECIFICATIONS.

LEGEND

VALVE CONTROL
Ⓐ AMBER LIGHT (VALVE OPEN)
Ⓑ BLUE LIGHT (VALVE CLOSED)
◐ SEL. SW. (OPEN-CLOSED-AUTO)

PUMP CONTROL
Ⓡ RED LIGHT (PUMP RUNNING)
⊕ SEL. SW. WITH KEY OPERATOR ARRANGED FOR KEY REMOVAL IN ALL POSITIONS AND REQUIRING A KEY TO OPERATE. (HAND-OFF-AUTO)

MAIN BREAKER
Ⓡ RED LIGHT (BREAKER CLOSED)
Ⓖ GREEN LIGHT (BREAKER OPEN)

OPERATING SEQUENCE FOR PUMPS AND GATE VALVES:

REMOTE CONTROL STARTING (H.O.A.'S SET AT "AUTO"):

(a) "SR" ENERGIZED VIA TELEPHONE CIRCUIT, PICKING UP "CR1" COIL.

(b) "CR1" CLOSES SO THAT WHEN PULSE TIMER CONTACT "1PT" IS CLOSED, COIL "CR2" IS ENERGIZED. "CR2" COIL IS THEN SEALED IN THROUGH "CR1" & "CR2" CONTACTS.

(c) "CR2" CONTACT ENERGIZES "M5-O" AND STARTS BUTTERFLY VALVE MOTOR OPERATOR TO OPEN.

(d) WHEN GATE VALVE OPENS TO A PRESET POINT, BETWEEN 2% AND 10% OF FULLY OPEN, "LS1" CLOSES, ENERGIZING COIL "M-1" WHICH STARTS PUMP. COIL "M-1" IS SEALED IN THROUGH CONTACT "M-1" AND "LS2".

(e) WHEN VALVE OPENS TO 100% "LS3" OPENS, DE-ENERGIZING "M5-O" AND STOPPING VALVE OPERATOR MOTOR.

REMOTE CONTROL STOPPING (H-O-A-'S SET "AUTO"):

(a) "SR" DE-ENERGIZED VIA TELEPHONE CIRCUIT, DROPPING OUT "CR1" COIL.

(b) WHEN PULSE TIMER CONTACT "2PT" OPENS, "CR2" IS DE-ENERGIZED.

(c) "CR2" CLOSES, ENERGIZING "M5-C" AND STARTING BUTTERFLY VALVE TO CLOSE.

(d) WHEN VALVE CLOSES TO A PRESENT POINT, BETWEEN 90% AND 98% OF FULLY SEALED, "LS2" OPENS AND DE-ENERGIZES "M-1" AND STOPS PUMP MOTOR.

(e) WHEN VALVE IS FULLY SEALED (OR BUTTERFLY VALVE STRIKES AN OBSTRUCTION), "TLS" OPENS AND DE-ENERGIZES "M5-C". STOPPING OPERATOR MOTOR.

INTERRUPTION OF VOLTAGE (INCLUDING MOMENTARY DIPS BELOW DROPOUT VOLTAGE OF "M-1" AND CONTROL RELAYS):

(a) "M-1 DE-ENERGIZED AND OPENS MOTOR STARTER CONTACTS.

(b) "ITR" DE-ENERGIZED AND CLOSES "ITR" IN "M5-C" (LINE 9) CIRCUIT AND OPENS "ITR" IN "CR3" CIRCUIT (LINE 17).

(c) ALL VALVE OPERATOR MOTORS STOP IF RUNNING.

RESTORATION OF NORMAL VOLTAGE:

(a) "SR" COIL HAS BEEN ENERGIZED VIA TELEPHONE CIRCUIT DURING INTERRUPTION.

(b) "ITR" COIL IS ENERGIZED AND BEGINS TIMING CYCLE.

(c) "ITR" IN "M5-C" CIRCUIT HOLDS CLOSED CAUSING "M5-C" TO BE ENERGIZED AND STARTS VALVE OPERATOR MOTOR TO CLOSE VALVE (IF OPEN).

(d) "ITR" IN "CR3" CIRCUIT HOLDS OPEN PREVENTING OPERATION OF "M5-O" AND PULSE TIMER.

(e) AFTER VALVE IS CLOSED AND "ITR" HAS TIMED OUT, "ITR" CLOSES IN "CR3" CIRCUIT, ENERGIZING "CR3" AND RE-STARTING PULSE TIMER.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

MOTOR CONTROL CENTER, WIRING DIAGRAMS, AND DETAILS

DEPARTMENT: ELECTRICAL

SCALE: NOT TO SCALE

DWG. NO. 91016-C2-E6

DATE:

SHEET ____ OF ____ SHEETS

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

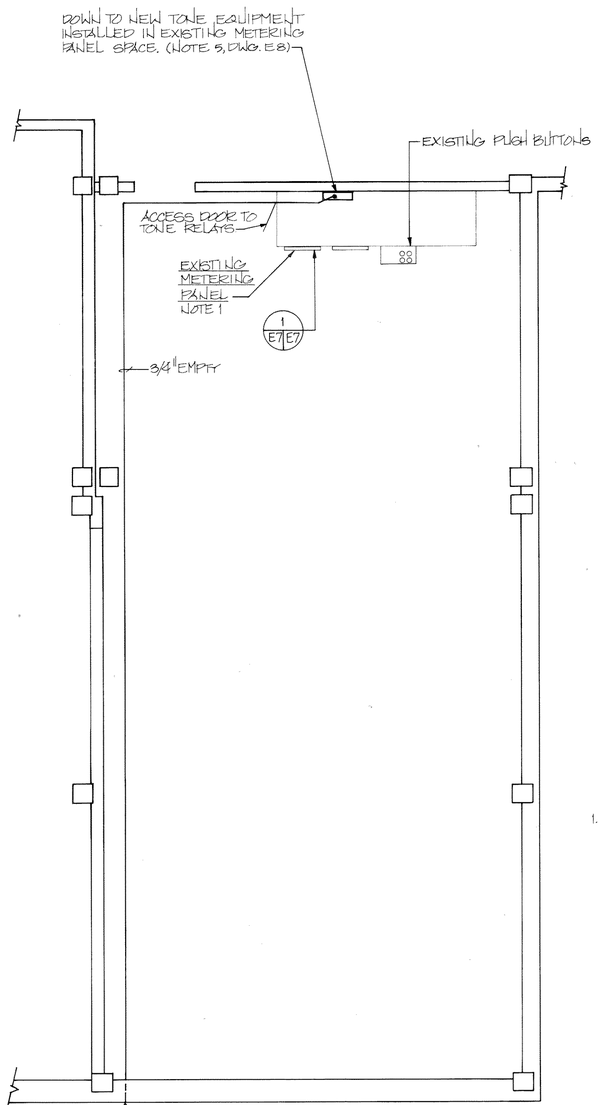
DESIGN: M.S. | DRAWN: R.L.P. | CHECKED:

NOT Released for Construction

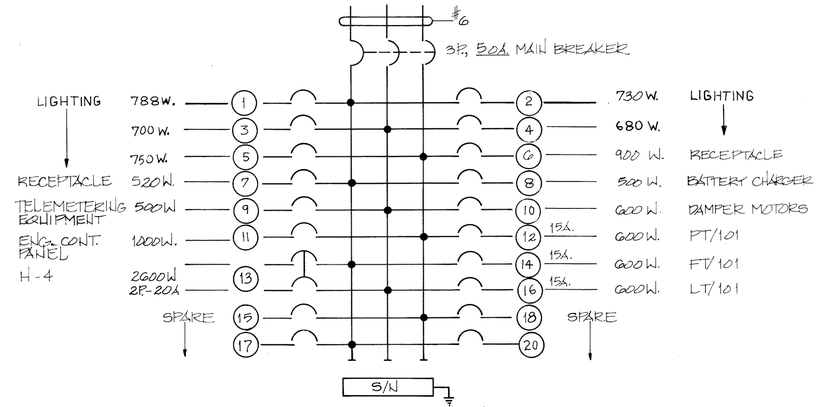
BRUNING 44-242 308178

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER	NO. OF LAMPS, TYPE & WATTAGE	REMARKS
FA	LUMAX CAT. NO. TP 240 048 - BHIBA	2 - F40 T12 CW/RS FOR	4' INDUSTRIAL FLUORESCENT UNIT WITH PORCELAIN REFLECTOR, SNAP-IN PRESSURE SOCKETS, CODE-GAUGE STEEL, BAKED WHITE ENAMEL FINISH. 20% UP LIGHT. 120 VOLT BALLAST.
HA	SYLVANIA CAT. NO. AK-50HPS-120 H	1-50W MEDIUM BASE HPS (LU 50)	SMALL WALL PACK HIGH PRESSURE SODIUM LIGHT FIXTURE, U.L. LISTED FOR WET LOCATIONS WITH TAMPER PROOF FASTNERS INJECTION-MOLDED POLYCARBONATE REFRACTOR AND 120 VOLT HPF BALLAST. MOUNT 10'-0" A.F.F.
HB	SYLVANIA CAT. NO. AK-150 HPS-120 H W/A201 P.E. CELL AND PECR ADAPTOR	1-150 W. MEDIUM BASE HPS. (LU 150)	WALL PACK HIGH PRESSURE SODIUM LIGHT FIXTURE U.L. LISTED FOR WET LOCATIONS WITH IES CUTOFF REFLECTOR STAINLESS STEEL EXTERNAL HARDWARE, INJECTION-MOLDED POLYCARBONATE LENS, PHOTOELECTRIC CONTROL AND 120 VOLT HPF BALLAST. MOUNT 12'-0" A.F.F.
BA	EMERGENCY LIGHTING & SYSTEMS CAT. NO. BLC-2	2-12W. HALOGEN	WALL MOUNTED EMERGENCY LIGHT, WITH 120/277 VAC INPUT, 6 VOLT CALCIUM BATTERY, INDICATOR LIGHTS AND TEST SWITCHES. BRACKET MOUNT 8'-0" A.F.F.

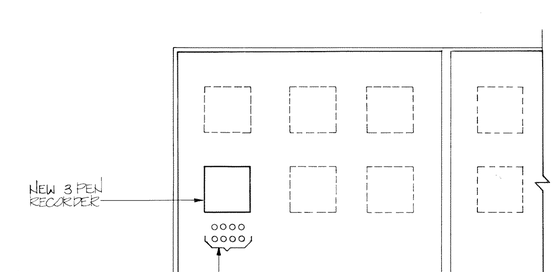


PART PLAN - EXISTING FILTER BUILDING
SCALE: 1/4"=1'-0" (W.J. HOOPER PLANT)



PANEL BOARD "LA"

120/208 V. 3Ø, 4 WIRE, SOLID NEUTRAL. TRIM FOR SURFACE MOUNTING ALL BRANCH CIRCUIT BREAKERS ARE 1 POLE, 20 AMP UNLESS OTHERWISE INDICATED.



1 / E7 E7 ADDITIONS TO EXISTING METERING PANEL
N.T.S.

NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL THE FOLLOWING ITEMS OF EQUIPMENT IN THE EXISTING METERING PANEL:
   (a) ONE (1) 3-PEN RECORDER (SEE SPECIFICATIONS), SECTION 13600.
   (b) FOUR (4) OFF-RUN-PILOT LIGHT SELECTOR SWITCHES FOR NEW PUMPS.
   (c) COORDINATE EXACT LOCATION OF (a) & (b) WITH OWNER AND ENGINEER.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DESIGN: BIB | DRAWN: RLP | CHECKED:

DEPARTMENT: ELECTRICAL

LIGHTING FIXTURE SCHEDULE, LIGHTING PANELBOARD, AND EXIST-FILTER BUILDING

SCALE: AS SHOWN

DWG. NO. 91016-C2-E.7

DATE:

SHEET ____ OF ____ SHEETS

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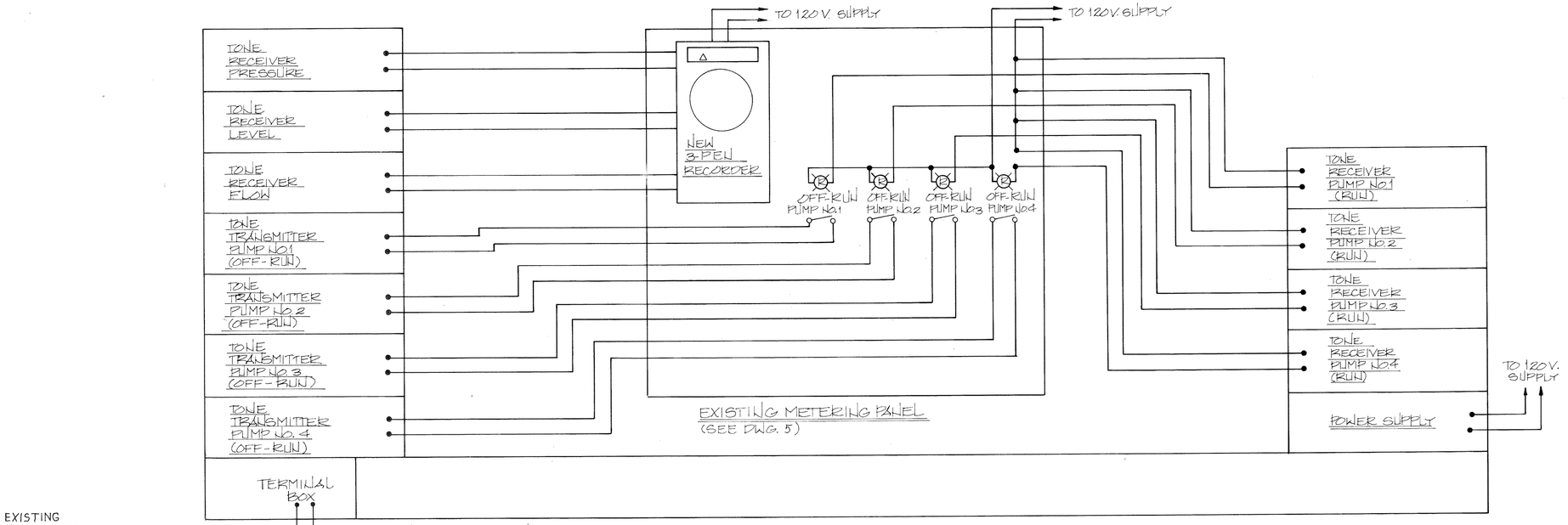
BRUNING 44-242 303478



TELEMENTRY CONTROL WIRING DIAGRAM

N.T.S.

NOTES

1. CONTRACTOR SHALL INSTALL NEW 3 PEN RECORDER IN SPACE PROVIDED IN EXISTING METERING PANEL AT W.J. HOOPER FILTER PLANT. CONTRACTOR SHALL FURNISH AND INSTALL RECORDER SPECIFIED.
2. CONTRACTOR SHALL FURNISH AND INSTALL ALL TELEMETER ITEMS OF EQUIPMENT AS SPECIFIED.
3. ALL INSTRUMENTATION AND ACCESSORIES, SUCH AS TRANSMITTERS, ETC., SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
4. ALL WIRING SHALL BE #14 AWG STRANDED COPPER.
5. CONTRACTOR SHALL INSTALL TONE EQUIPMENT IN SPACE PROVIDED FOR THIS PURPOSE LOCATED IN BACK OF EXISTING METERING PANEL.
6. SIGNAL TO TONE EQUIPMENT IS 4-20 M.A. COORDINATE WITH SPECIFIED TONE EQUIPMENT.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY, MORROW, GEORGIA

DEPARTMENT: ELECTRICAL

TELEMETERING AND INSTRUMENTATION

SCALE: AS SHOWN

DWG. NO. 91016-C2-E8

DATE:

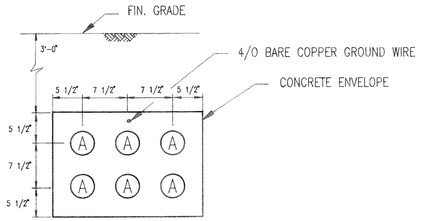
SHEET ____ OF ____ SHEETS

Robert and Company
Architects – Engineers – Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335

DESIGN: M.S. | DRAWN: RLP, SIV | CHECKED:

NOT Released For Construction

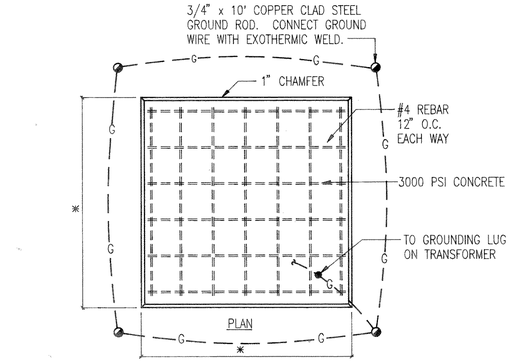
BRUNING 44-242 208178



A = 3-750 KCMIL & 1-4/0 NEUTRAL-4" GALVANIZED RIGID STEEL CONDUIT

1 / E4 | E9 — DUCT BANK SECTION

N.T.S.

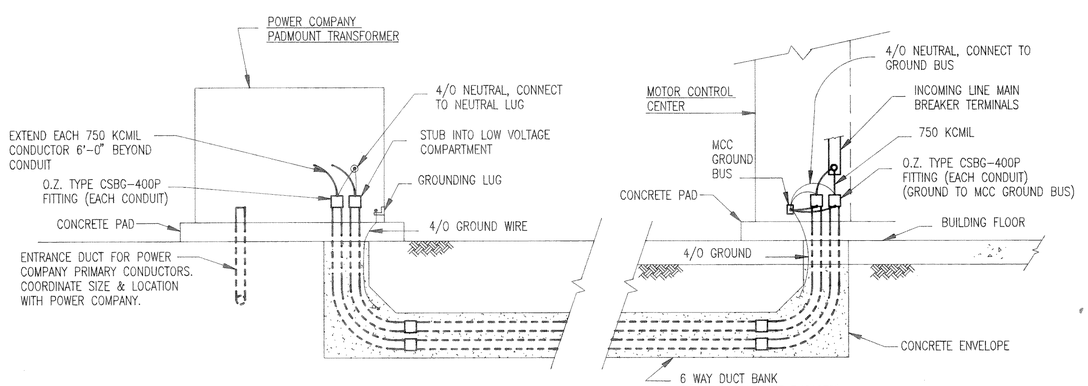


* DIMENSION AS REQUIRED BY POWER COMPANY

** COORDINATE WITH POWER COMPANY FOR LOCATION OF PRIMARY AND SECONDARY SERVICE RACEWAY.

2 / E4 | E9 — DETAIL – TRANSFORMER PAD

N.T.S.



3 / E4 | E9 — ELEVATION – MAIN SERVICE CONDUCTORS INSTALLATION DETAIL

N.T.S.

SYMBOL	DATE	BY	REVISION

FINISHED WATER PUMPING STATION

FOR: CLAYTON COUNTY WATER AUTHORITY MORROW, GEORGIA

Robert and Company
Architects–Engineers–Planners
96 Poplar Street, N.W. Atlanta, Georgia 30335
404 577-4000 FAX: 404 577-7119

DESIGN: BIB | DRAWN: SIV & PRICE | CHECKED:

DEPARTMENT: ELECTRICAL

ELECTRICAL DETAILS

SCALE: AS SHOWN

DWG. NO. 91016-C2-E9

DATE

SHEET OF SHEETS

NOT Released For Construction

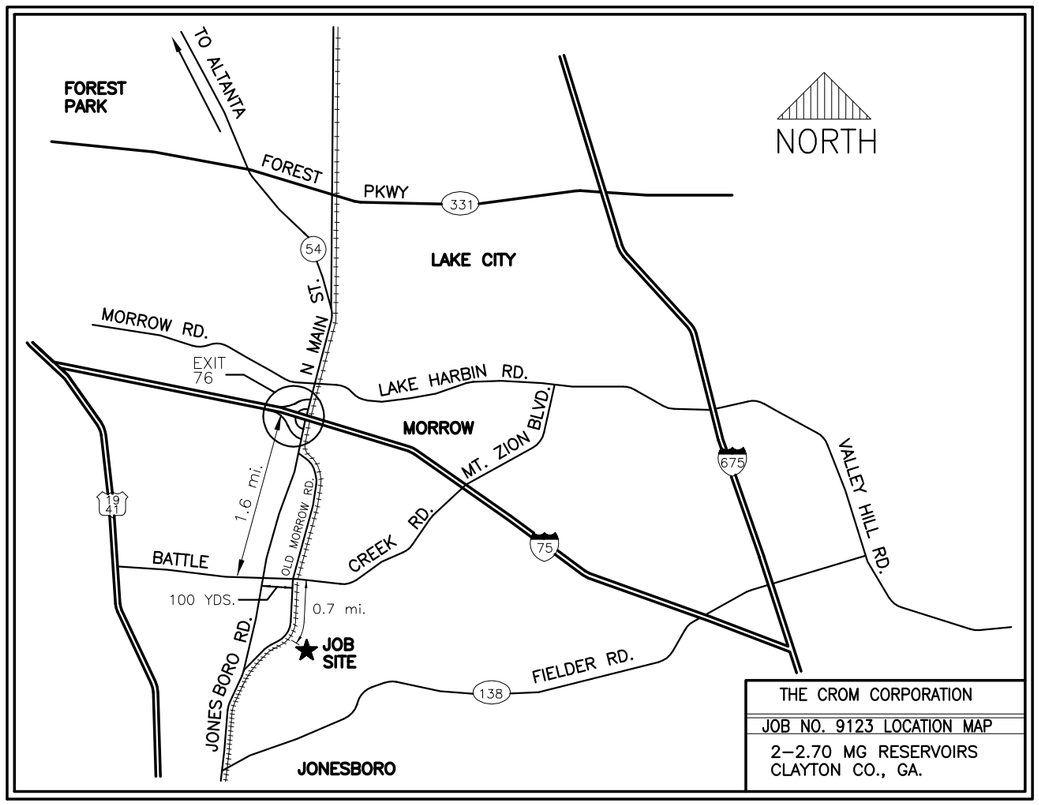


TABLE OF CONTENTS

2–2.70 MG RESERVOIRS

OWNER: CLAYTON COUNTY WATER AUTHORITY
MORROW, GEORGIA

CONSULTING ENGINEERS: ROBERT AND COMPANY
ATLANTA, GEORGIA

THE CROM CORPORATION
Prestressed Composite Tanks

REV	COMMENTS	DATE

Revisions are designated by a letter following the FILE NUMBER . UPPER CASE letters indicate APPROVED distribution.

DATE:
DRAWN:
CHKD:
APPVD:

FILE NUMBER : 9123

SHEET 1 OF 8

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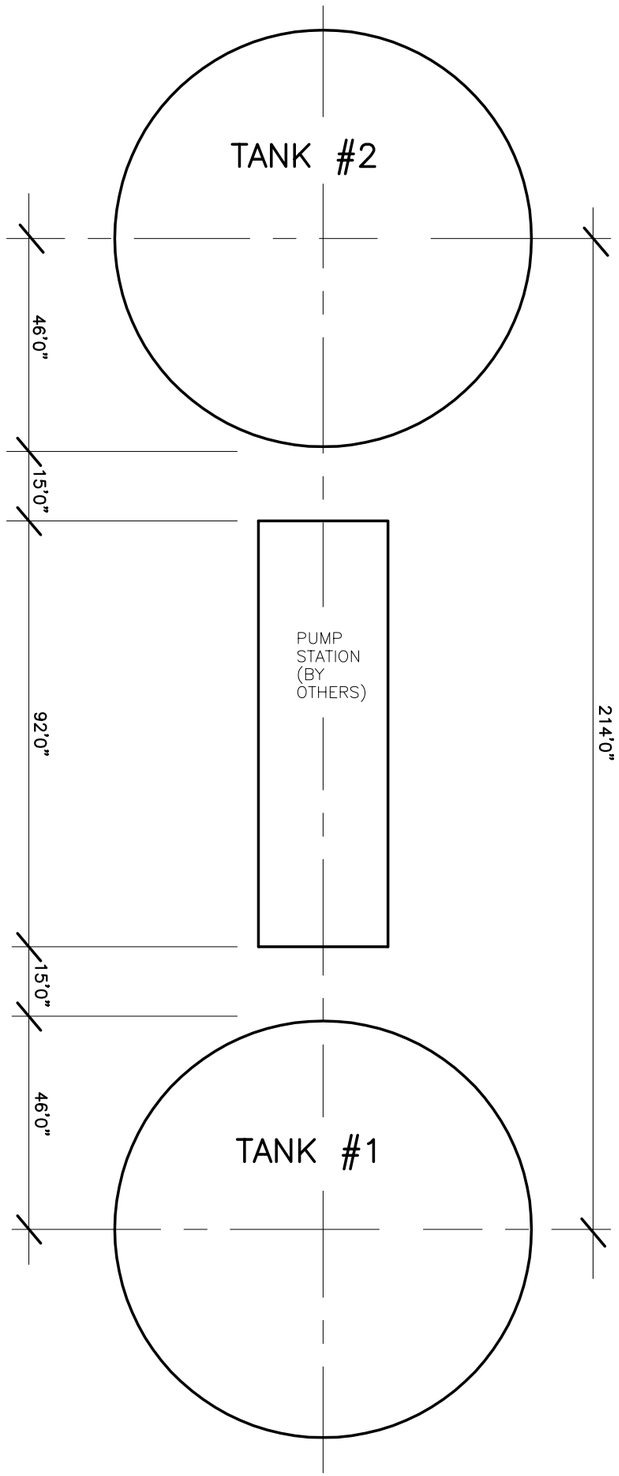
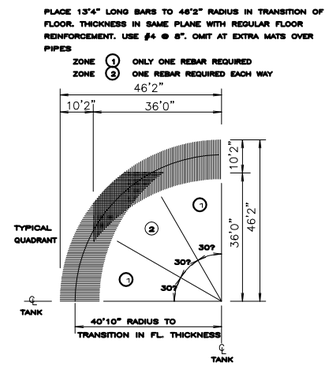


SITE PLAN

NOTES



13 — TRANSITION RESTEEL DETAIL
NTS

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CROM

DATE:
DRAWN:
CHKD:
APPVD:

TANK DESCRIPTION:
2—2.7 MG RESERVOIRS

TANK DIMENSIONS:
90'0" ID x 57'0" SWD

TANK BUILDER:
THE CROM CORPORATION
GAINESVILLE, FLORIDA

OWNER:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

CONSULTING ENGINEER:
ROBERT AND COMPANY
ATLANTA, GEORGIA

REV.	DECRIPTION	DATE	CK.BY

WHERE STANDARD SPECIFICATIONS ARE IN CONFLICT WITH CROM CORPORATION SPECIFICATIONS OR WITH GOOD PRE—STRESSING OR SHOTCRETE PRACTICES THE STANDARD SPECIFICATIONS SHALL BE SUBORDINATED.
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SCALE: 10' 0 20'

FILE NO.
9123

SHEET 2 OF 8

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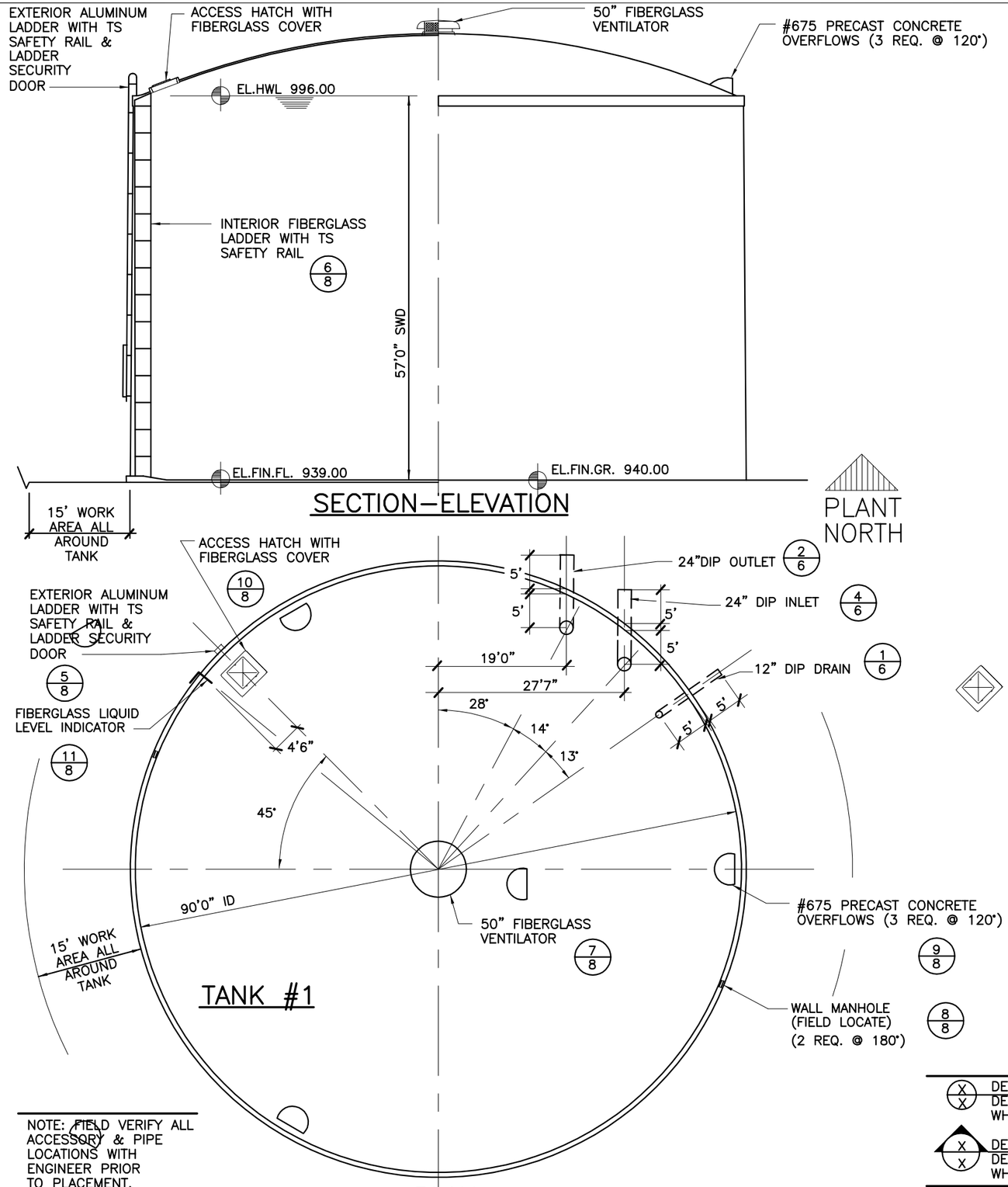

NOTE: FIELD VERIFY ALL ACCESSORY & PIPE LOCATIONS WITH ENGINEER PRIOR TO PLACEMENT.

XX DENOTES DETAIL NUMBER
DENOTES PAGE NUMBER WHERE DETAIL APPEARS

XX DENOTES SECTION LETTER
DENOTES PAGE NUMBER WHERE SECTION APPEARS

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CROM

DATE:
DRAWN:
CHKD:
APPVD:

TANK DESCRIPTION:
2–2.7 MG RESERVOIRS

TANK DIMENSIONS:
90'0" ID x 57'0" SWD

TANK BUILDER:
THE CROM CORPORATION
GAINESVILLE, FLORIDA

OWNER:
CLAYTON COUNTY WATER AUTHORITY
MORROW, GEORGIA

CONSULTING ENGINEER:
ROBERT AND COMPANY
ATLANTA, GEORGIA

REV.	DECRIPTION	DATE	CK.BY

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SCALE: 2'0 5' 10'

FILE NO. 9123

SHEET 3 OF 8

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EXTERIOR ALUMINUM LADDER WITH TS SAFETY RAIL & LADDER SECURITY DOOR

ACCESS HATCH WITH FIBERGLASS COVER

50" FIBERGLASS VENTILATOR

#675 PRECAST CONCRETE OVERFLOWS (3 REQ. @ 120°)

EL.HWL 996.00

INTERIOR FIBERGLASS LADDER WITH TS SAFETY RAIL

6/8

57'0" SWD

EL.FIN.FL. 939.00

EL.FIN.GR. 940.00

15' WORK AREA ALL AROUND TANK

SECTION–ELEVATION

PLANT NORTH

9/8 #675 PRECAST CONCRETE OVERFLOWS (3 REQ. @ 120°)

5'

5'

12" DIP DRAIN 1/6

TANK #2

90'0" ID

45°

45°

15' WORK AREA ALL AROUND TANK

8/8 WALL MANHOLE (FIELD LOCATE) (2 REQ. @ 180°)

4'6"

14°

28°

27'0"

19'0"

11/8 FIBERGLASS LIQUID LEVEL INDICATOR

10/8 ACCESS HATCH WITH FIBERGLASS COVER

5/8 EXTERIOR ALUMINUM LADDER WITH TS SAFETY RAIL & LADDER SECURITY DOOR

5'

5'

5'

5'

24"DIP INLET 4/6

24" DIP OUTLET 2/6

PLAN

NOTE: FIELD VERIFY ALL ACCESSORY & PIPE LOCATIONS WITH ENGINEER PRIOR TO PLACEMENT.

1/1 DENOTES DETAIL NUMBER
DENOTES PAGE NUMBER WHERE DETAIL APPEARS

A/1 DENOTES SECTION LETTER
DENOTES PAGE NUMBER WHERE SECTION APPEARS

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CROM

DATE:
DRAWN:
CHKD:
APPVD:

TANK DESCRIPTION:
2–2.7 MG RESERVOIRS

TANK DIMENSIONS:
90'0" ID x 57'0" SWD

TANK BUILDER:
THE CROM CORPORATION
GAINESVILLE, FLORIDA

OWNER:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

CONSULTING ENGINEER:
ROBERT AND COMPANY
ATLANTA, GEORGIA

REV.	DECRIPTION	DATE	CK.BY

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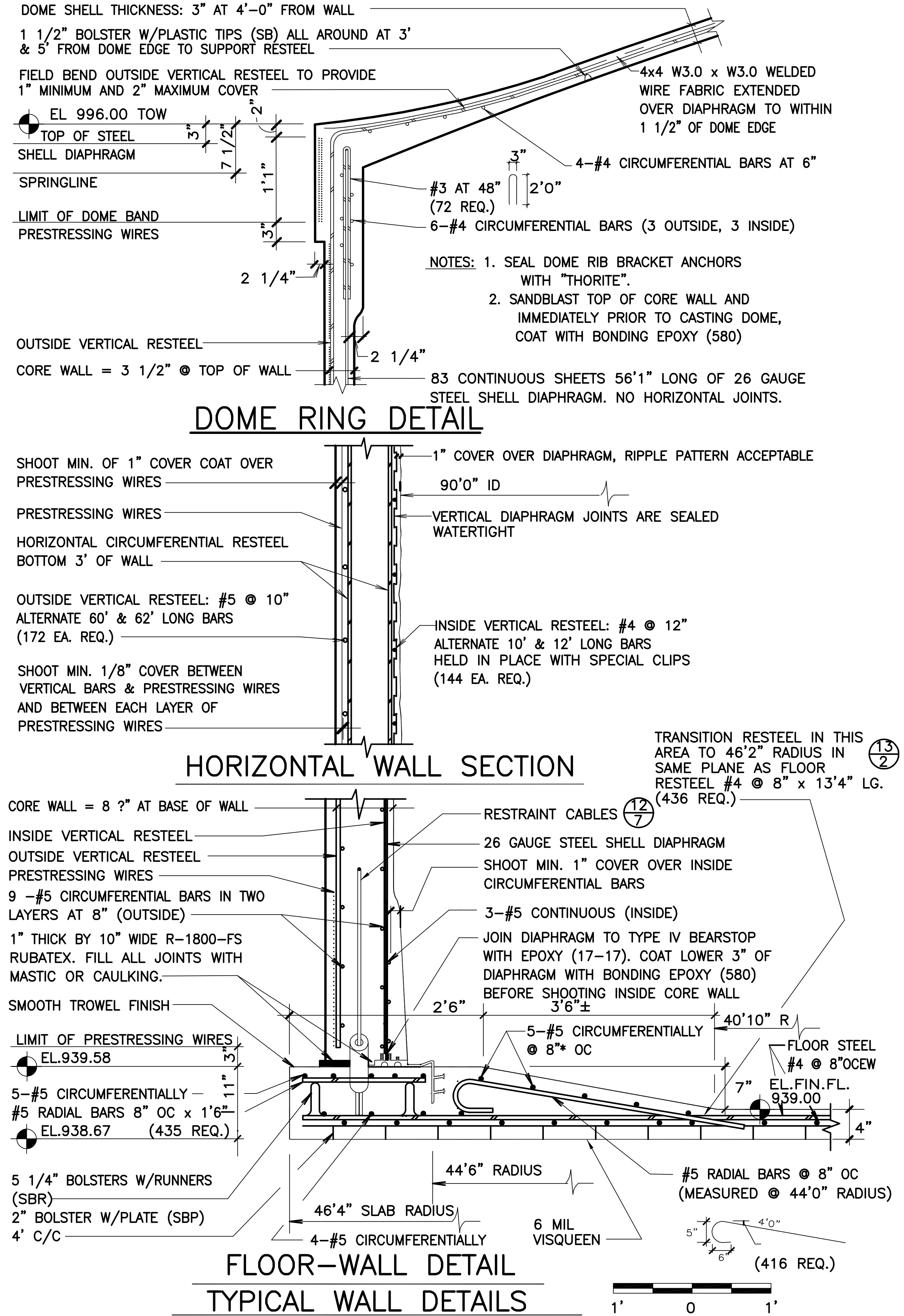
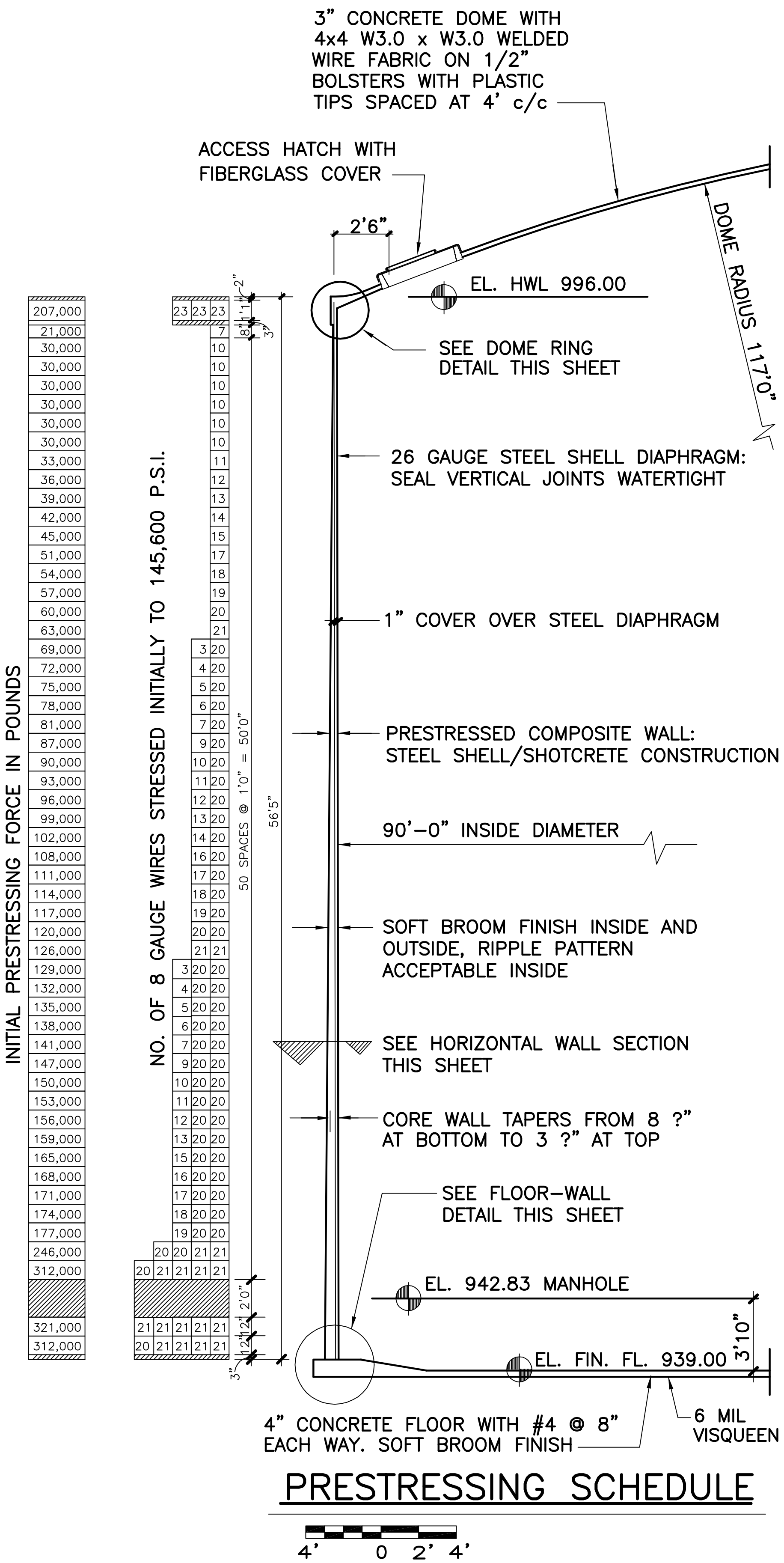
SCALE: 2'0 5' 10'

FILE NO. 9123

SHEET 4 OF 8



DOME SHELL THICKNESS: 3" AT 4'-0" FROM WALL
1 1/2" BOLSTER W/PLASTIC TIPS (SB) ALL AROUND AT 3' & 5' FROM DOME EDGE TO SUPPORT RESTEEL
FIELD BEND OUTSIDE VERTICAL RESTEEL TO PROVIDE 1" MINIMUM AND 2" MAXIMUM COVER
EL 996.00 TOW
TOP OF STEEL
SHELL DIAPHRAGM
SPRINGLINE
LIMIT OF DOME BAND PRESTRESSING WIRES
4x4 W3.0 x W3.0 WELDED WIRE FABRIC EXTENDED OVER DIAPHRAGM TO WITHIN 1 1/2" OF DOME EDGE
4-#4 CIRCUMFERENTIAL BARS AT 6"
#3 AT 48" (72 REQ.)
2'0"
6-#4 CIRCUMFERENTIAL BARS (3 OUTSIDE, 3 INSIDE)
NOTES: 1. SEAL DOME RIB BRACKET ANCHORS WITH "THORITE".
2. SANDBLAST TOP OF CORE WALL AND IMMEDIATELY PRIOR TO CASTING DOME, COAT WITH BONDING EPOXY (580)
2 1/4"
OUTSIDE VERTICAL RESTEEL
CORE WALL = 3 1/2" @ TOP OF WALL
83 CONTINUOUS SHEETS 56'1" LONG OF 26 GAUGE STEEL SHELL DIAPHRAGM. NO HORIZONTAL JOINTS.
DOME RING DETAIL
SHOOT MIN. OF 1" COVER COAT OVER PRESTRESSING WIRES
PRESTRESSING WIRES
HORIZONTAL CIRCUMFERENTIAL RESTEEL BOTTOM 3' OF WALL
OUTSIDE VERTICAL RESTEEL: #5 @ 10" ALTERNATE 60' & 62' LONG BARS (172 EA. REQ.)
SHOOT MIN. 1/8" COVER BETWEEN VERTICAL BARS & PRESTRESSING WIRES AND BETWEEN EACH LAYER OF PRESTRESSING WIRES
1" COVER OVER DIAPHRAGM, RIPPLE PATTERN ACCEPTABLE
90'0" ID
VERTICAL DIAPHRAGM JOINTS ARE SEALED WATERTIGHT
INSIDE VERTICAL RESTEEL: #4 @ 12" ALTERNATE 10' & 12' LONG BARS HELD IN PLACE WITH SPECIAL CLIPS (144 EA. REQ.)
HORIZONTAL WALL SECTION
TRANSITION RESTEEL IN THIS AREA TO 46'2" RADIUS IN SAME PLANE AS FLOOR RESTEEL #4 @ 8" x 13'4" LG. (436 REQ.)
CORE WALL = 8 ?" AT BASE OF WALL
INSIDE VERTICAL RESTEEL
OUTSIDE VERTICAL RESTEEL
PRESTRESSING WIRES
9 -#5 CIRCUMFERENTIAL BARS IN TWO LAYERS AT 8" (OUTSIDE)
1" THICK BY 10" WIDE R-1800-FS RUBATEX. FILL ALL JOINTS WITH MASTIC OR CAULKING.
SMOOTH TROWEL FINISH
LIMIT OF PRESTRESSING WIRES
EL.939.58
5-#5 CIRCUMFERENTIALLY
#5 RADIAL BARS 8" OC x 1'6"
EL.938.67 (435 REQ.)
5 1/4" BOLSTERS W/RUNNERS (SBR)
2" BOLSTER W/PLATE (SBP) 4' C/C
RESTRAINT CABLES 12/7
26 GAUGE STEEL SHELL DIAPHRAGM
SHOOT MIN. 1" COVER OVER INSIDE CIRCUMFERENTIAL BARS
3-#5 CONTINUOUS (INSIDE)
JOIN DIAPHRAGM TO TYPE IV BEARSTOP WITH EPOXY (17-17). COAT LOWER 3" OF DIAPHRAGM WITH BONDING EPOXY (580) BEFORE SHOOTING INSIDE CORE WALL
2'6"
3'6"±
5-#5 CIRCUMFERENTIALLY @ 8"* OC
40'10" R
FLOOR STEEL #4 @ 8"OCEW
EL.FIN.FL. 939.00
7"
4"
44'6" RADIUS
46'4" SLAB RADIUS
4-#5 CIRCUMFERENTIALLY
6 MIL VISQUEEN
#5 RADIAL BARS @ 8" OC (MEASURED @ 44'0" RADIUS)
(416 REQ.)
FLOOR-WALL DETAIL
TYPICAL WALL DETAILS
1' 0 1'



INITIAL PRESTRESSING FORCE IN POUNDS
NO. OF 8 GAUGE WIRES STRESSED INITIALLY TO 145,600 P.S.I.
207,000
21,000
30,000
33,000
36,000
39,000
42,000
45,000
48,000
51,000
54,000
57,000
60,000
63,000
69,000
72,000
75,000
78,000
81,000
87,000
90,000
93,000
96,000
99,000
102,000
108,000
111,000
114,000
117,000
120,000
126,000
129,000
132,000
135,000
138,000
141,000
147,000
150,000
153,000
156,000
159,000
165,000
168,000
171,000
174,000
177,000
246,000
312,000
321,000
312,000
50 SPACES @ 1'0" = 50'0"
56'5"
3" CONCRETE DOME WITH 4x4 W3.0 x W3.0 WELDED WIRE FABRIC ON 1/2" BOLSTERS WITH PLASTIC TIPS SPACED AT 4' c/c
ACCESS HATCH WITH FIBERGLASS COVER
2'6"
EL. HWL 996.00
DOME RADIUS 117'0"
SEE DOME RING DETAIL THIS SHEET
26 GAUGE STEEL SHELL DIAPHRAGM: SEAL VERTICAL JOINTS WATERTIGHT
1" COVER OVER STEEL DIAPHRAGM
PRESTRESSED COMPOSITE WALL: STEEL SHELL/SHOTCRETE CONSTRUCTION
90'-0" INSIDE DIAMETER
SOFT BROOM FINISH INSIDE AND OUTSIDE, RIPPLE PATTERN ACCEPTABLE INSIDE
SEE HORIZONTAL WALL SECTION THIS SHEET
CORE WALL TAPERS FROM 8 ?" AT BOTTOM TO 3 ?" AT TOP
SEE FLOOR-WALL DETAIL THIS SHEET
EL. 942.83 MANHOLE
EL. FIN. FL. 939.00
3'10"
4" CONCRETE FLOOR WITH #4 @ 8" EACH WAY. SOFT BROOM FINISH
6 MIL VISQUEEN
PRESTRESSING SCHEDULE
4' 0 2' 4'

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CROM

DATE:
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CHKD:
APPVD:

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2-2.7 MG RESERVOIRS

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GAINESVILLE, FLORIDA

OWNER:
CLAYTON COUNTY
WATER AUTHORITY
MORROW, GEORGIA

CONSULTING ENGINEER:
ROBERT AND COMPANY
ATLANTA, GEORGIA

REV.	DECRIPTION	DATE	CK.BY

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SCALE: AS NOTED

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SHEET 5 OF 8

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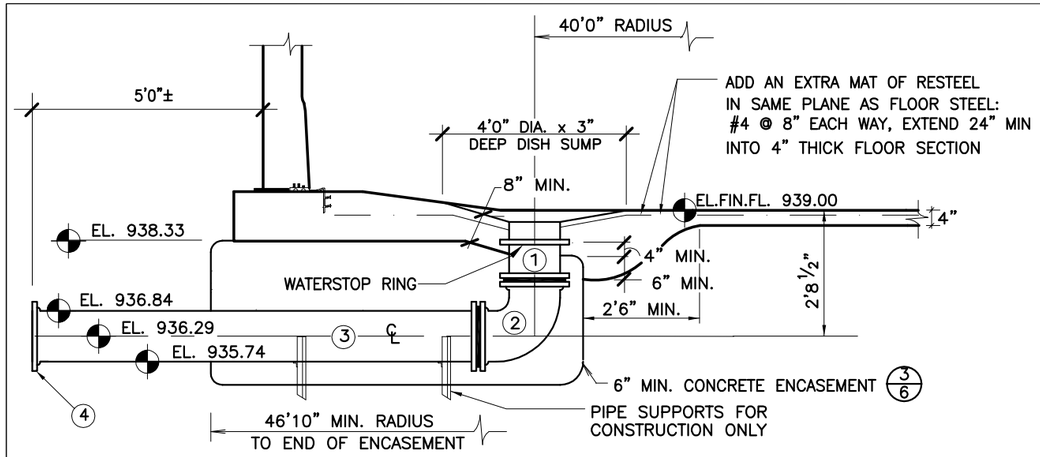


1 12" DIP DRAIN

1' 0 1' 2'

PIPE SCHEDULE FOR 12" DIP DRAIN

① 12" DIP x 1'6 ?" LG., PE–PE W/WATERSTOP RING 4" FROM PE

② 12" DIP x 90° ELBOW, MJ–MJ (COMPACT)

③ 12" DIP x 10'0" LG., PE–PE

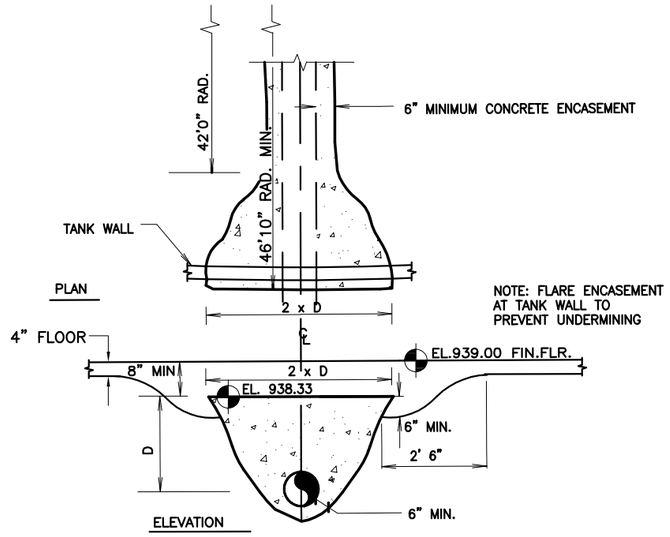
PIPE SCHEDULE FOR 24" DIP INLET

① 24" DIP x 4'2" LG., PE–PE W/WATERSTOP RING 10" FROM PE

② 24" DIP x 90° ELBOW, MJ–MJ (COMPACT)

③ 24" DIP x 9'2" LG., PE–MJ

④ 24" DIP MJ PLUG



3 TYPICAL PIPE ENCASEMENT

NTS

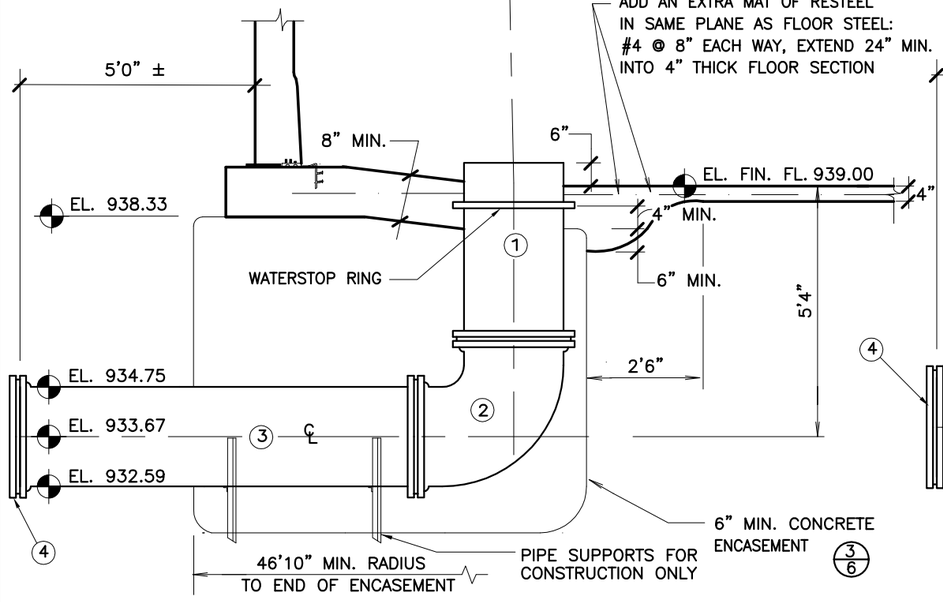
PIPE SCHEDULE FOR 24" DIP OUTLET

① 24" DIP x 4'2" LG., PE–PE W/WATERSTOP RING 10" FROM PE

② 24" DIP x 90° ELBOW, MJ–MJ (COMPACT)

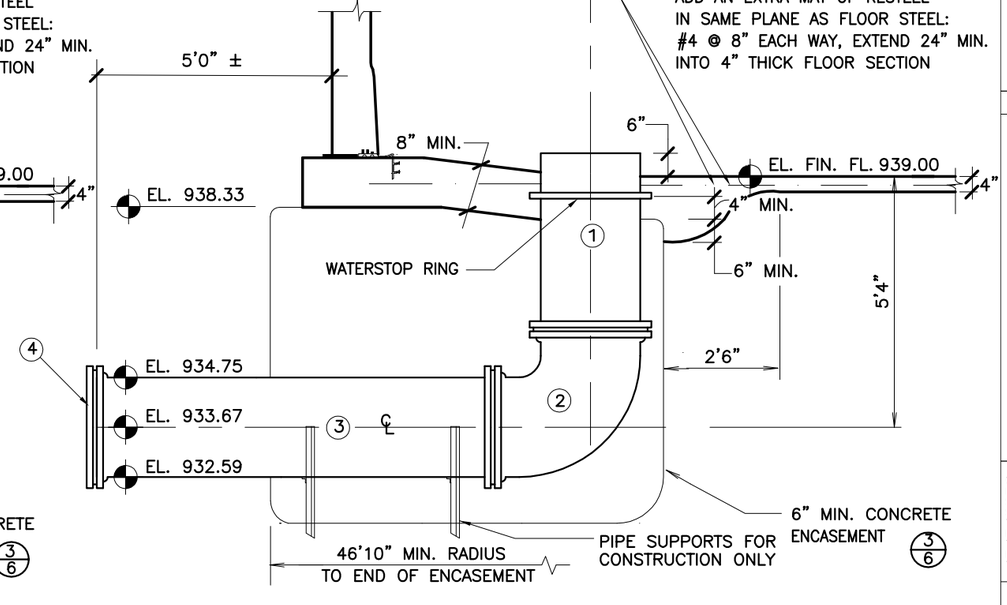
③ 24" DIP x 9'2" LG., PE–MJ

④ 24" DIP MJ PLUG



2 24" DIP INLET

1' 0 1' 2'



4 24" DIP OUTLET

1' 0 1' 2'

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9123

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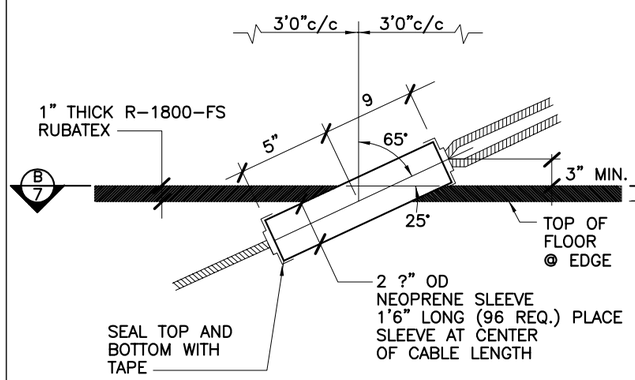
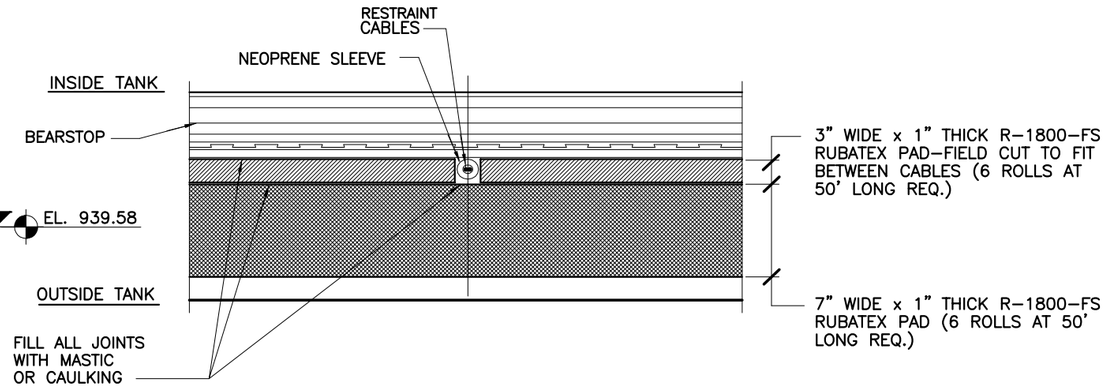


R-180 NEOPRENE SLEEVE DETAIL

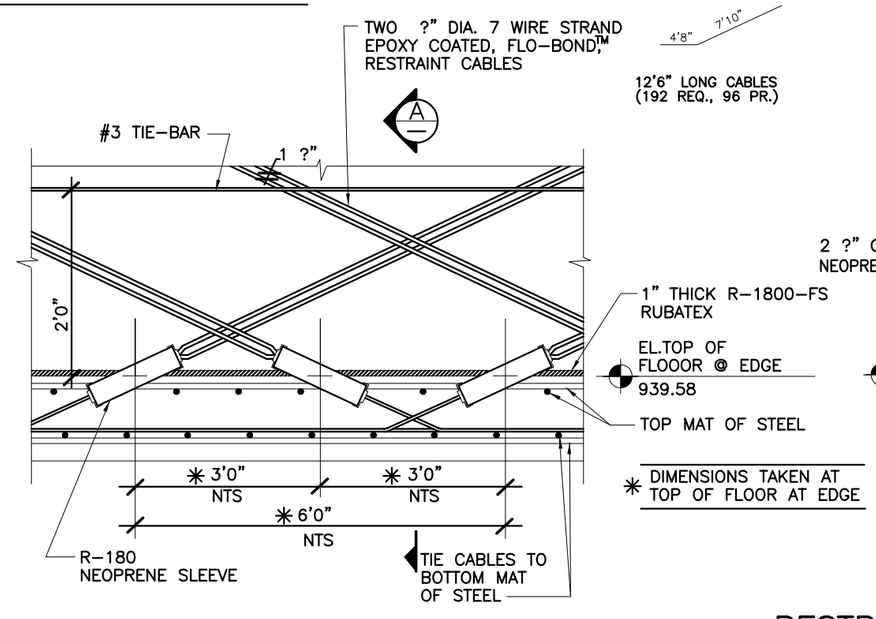
SCALE: 2"=1'0"



B/- SECTION

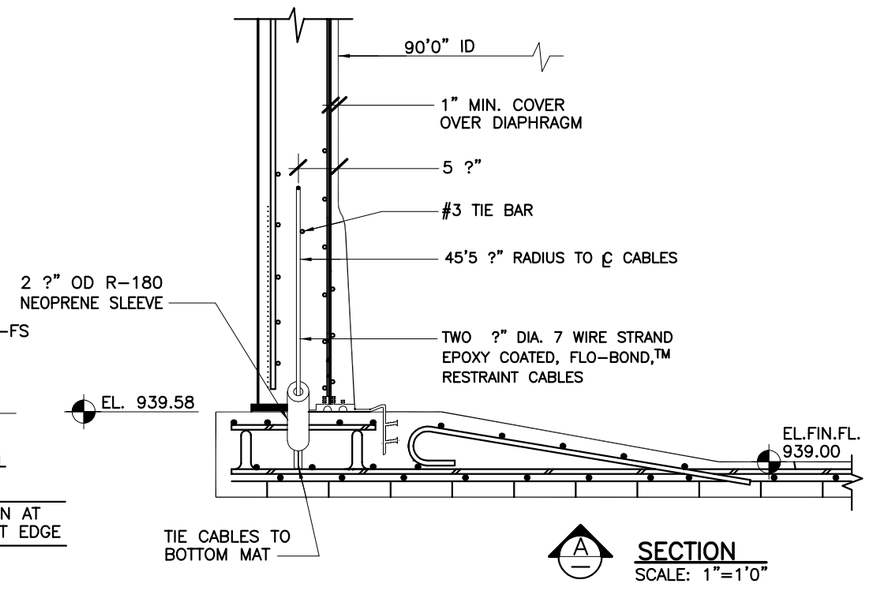
SCALE: 1"=1'0"

NOTE: SPREAD CABLES 1 ?" c/c ALONG FULL LENGTH ON WALL



ELEV. @ RESTRAINT CABLES

SCALE: 1"=1'0"



SECTION

SCALE: 1"=1'0"

12 RESTRAINT CABLE DETAILS

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SHEET 7 OF 8

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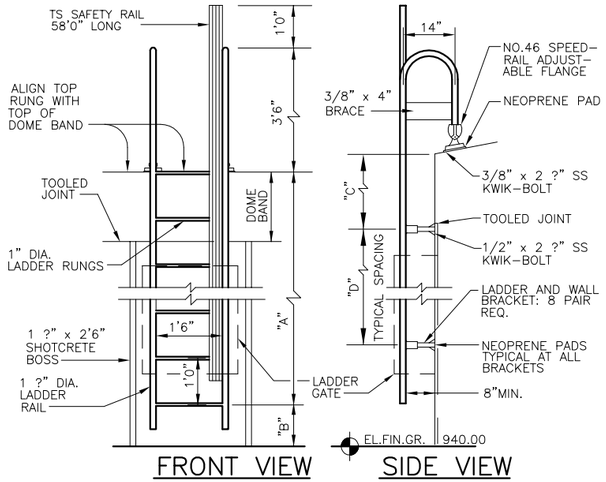
QUANTITIES ARE FOR ONE TANK

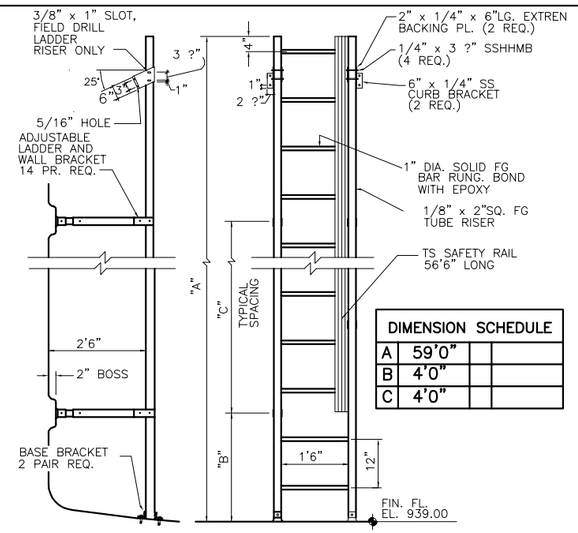


FRONT VIEW SIDE VIEW

DIMENSION SCHEDULE			
A	44'0"	D	7 @ 6'0" 1 @ 5'0"
B	12'0"		
C	2'6"		

NOTES: 1. ALL TUBULAR MATERIAL TO BE NOMINAL DIAMETER SCHEDULE 40 ALUMINUM PIPE 6061-T6.
2. PLATES AND GUSSETS TO BE STRUCTURAL GRADE ALUMINUM 6061-T6.

5 EXTERIOR ALUMINUM LADDER WITH TS SAFETY RAIL & LADDER SECURITY DOOR

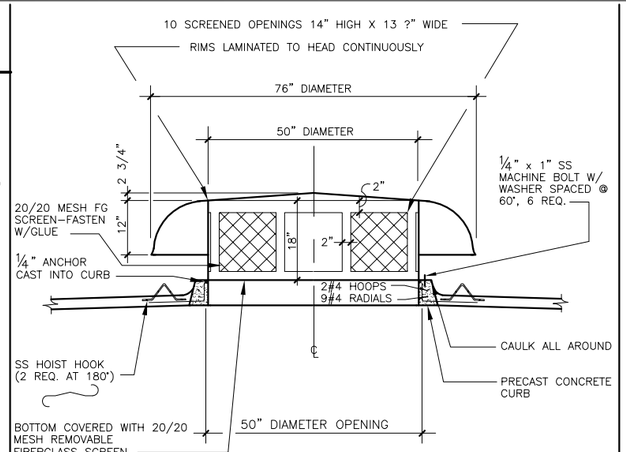


SIDE VIEW FRONT VIEW

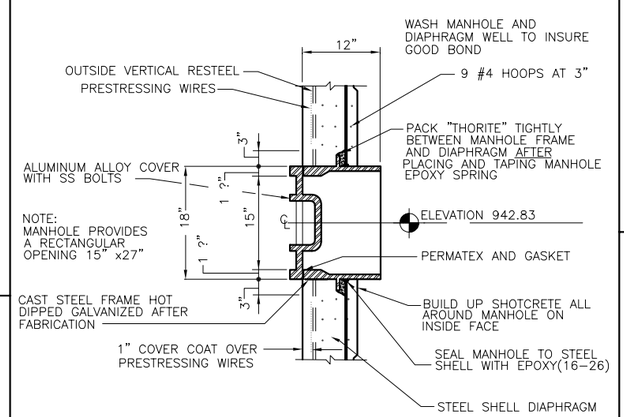
DIMENSION SCHEDULE			
A	59'0"		
B	4'0"		
C	4'0"		

NOTE: 1/4" X 2" FLAT BAR FIBERGLASS CROSS-BRACE TO BE PROVIDED FOR BRACING WALL BRACKET SUPPORTS ON LADDERS OVER 20'0" TALL. INSTALL ON EVERY OTHER BRACKET.

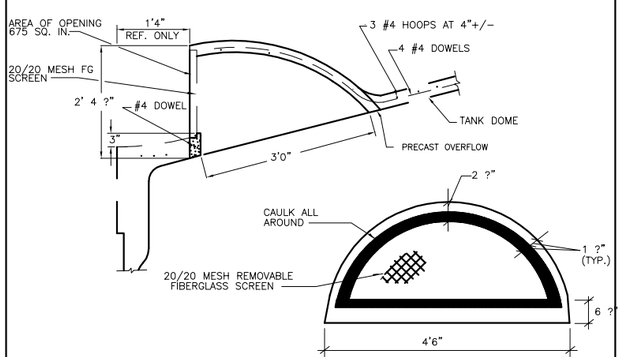
6 INTERIOR FIBERGLASS LADDER WITH TS SAFETY RAIL



7 50" FIBERGLASS VENTILATOR

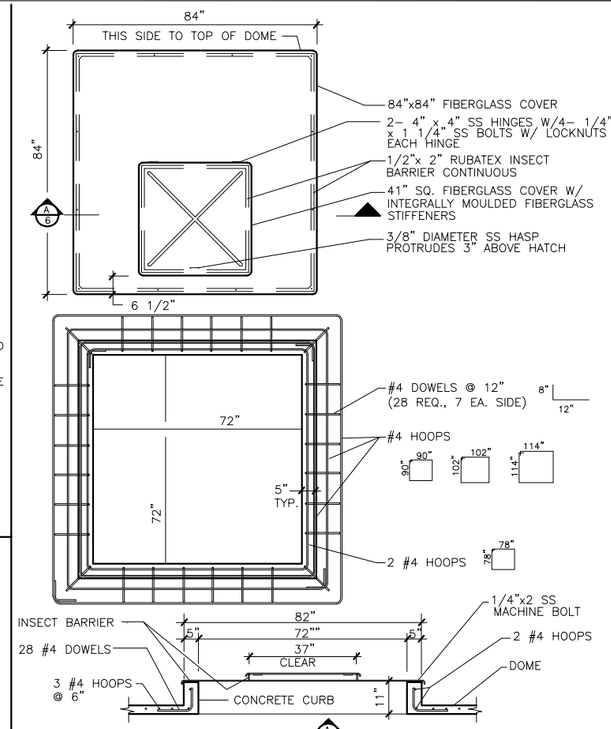


8 WALL MANHOLE (2 REQ.)



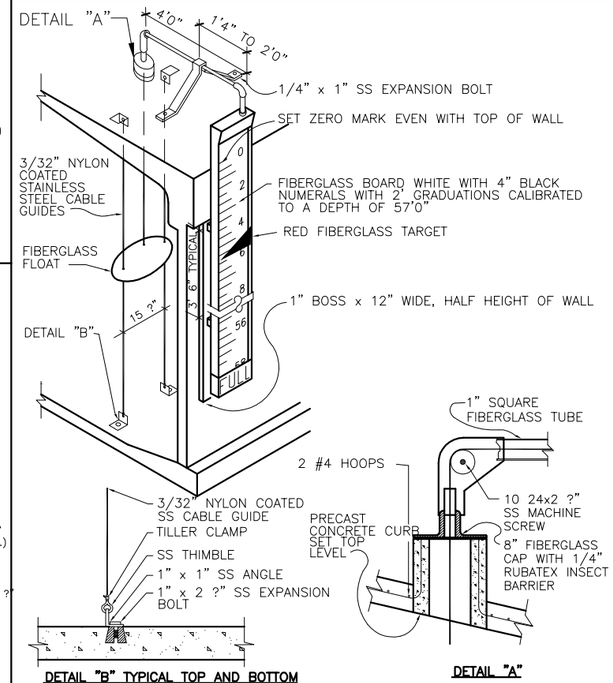
NOTE: KEEP SHOTCRETE REBOUND CLEANED OFF OF OVERFLOW. LEAVE PLYWOOD COVER IN PLACE UNTIL ALL SHOTCRETING IS COMPLETE

9 #675 PRECAST CONCRETE OVERFLOW (3 REQ.)



SECTION

10 FIBERGLASS HATCH COVER



DETAIL "B" TYPICAL TOP AND BOTTOM DETAIL "A"

11 FIBERGLASS LIQUID LEVEL INDICATOR

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CROM

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SCALE: NTS

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SHEET 8 OF 8

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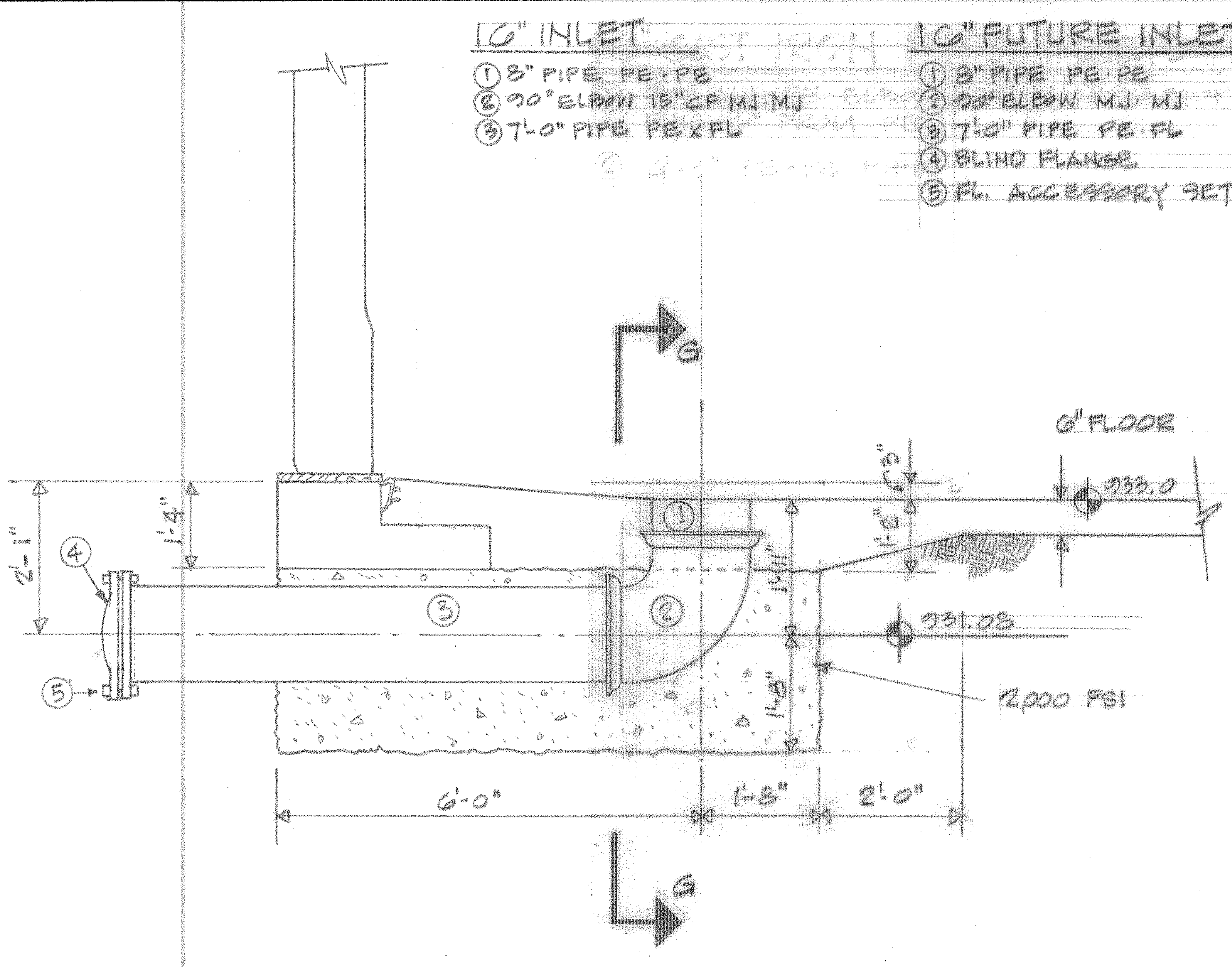
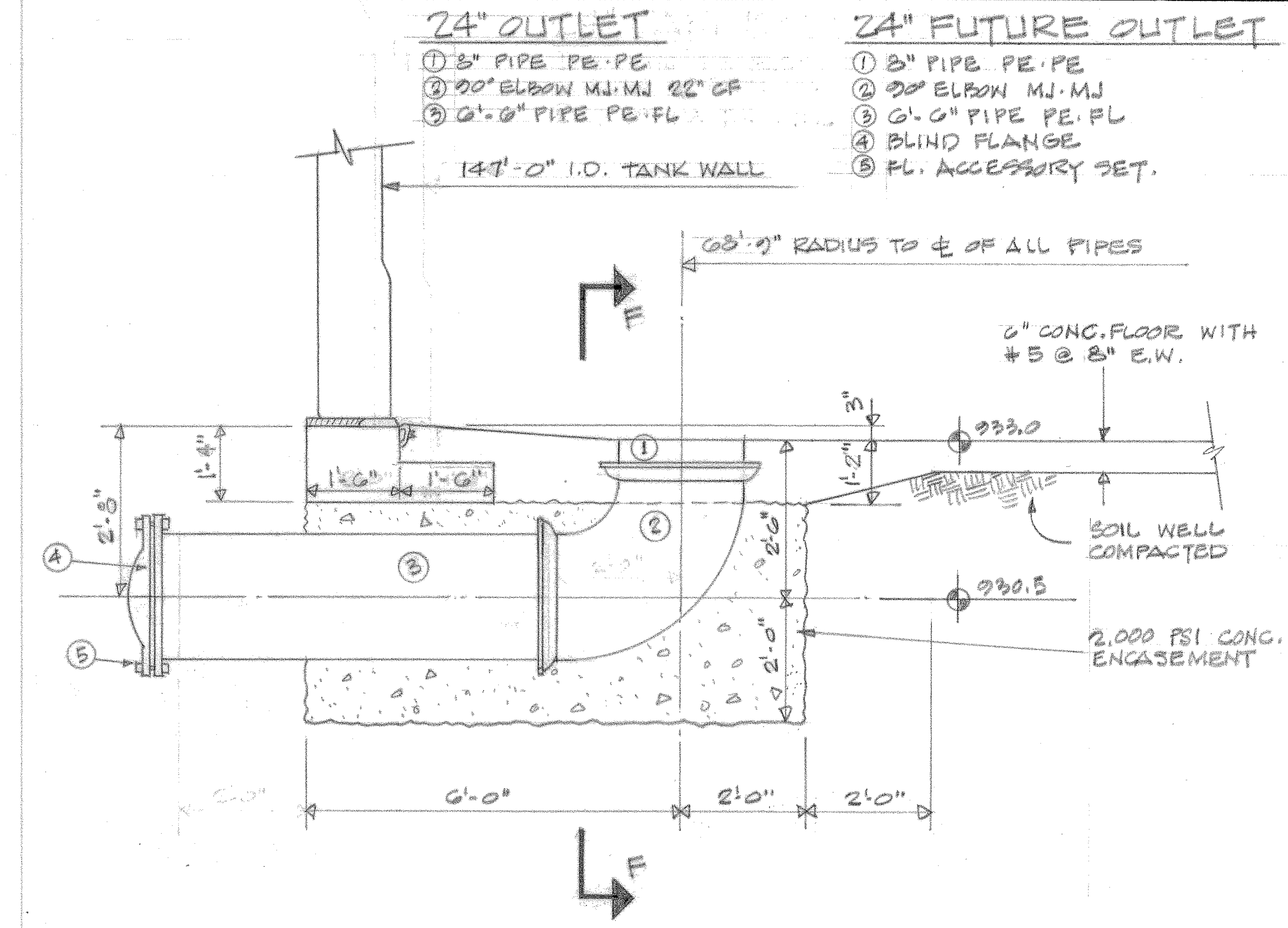
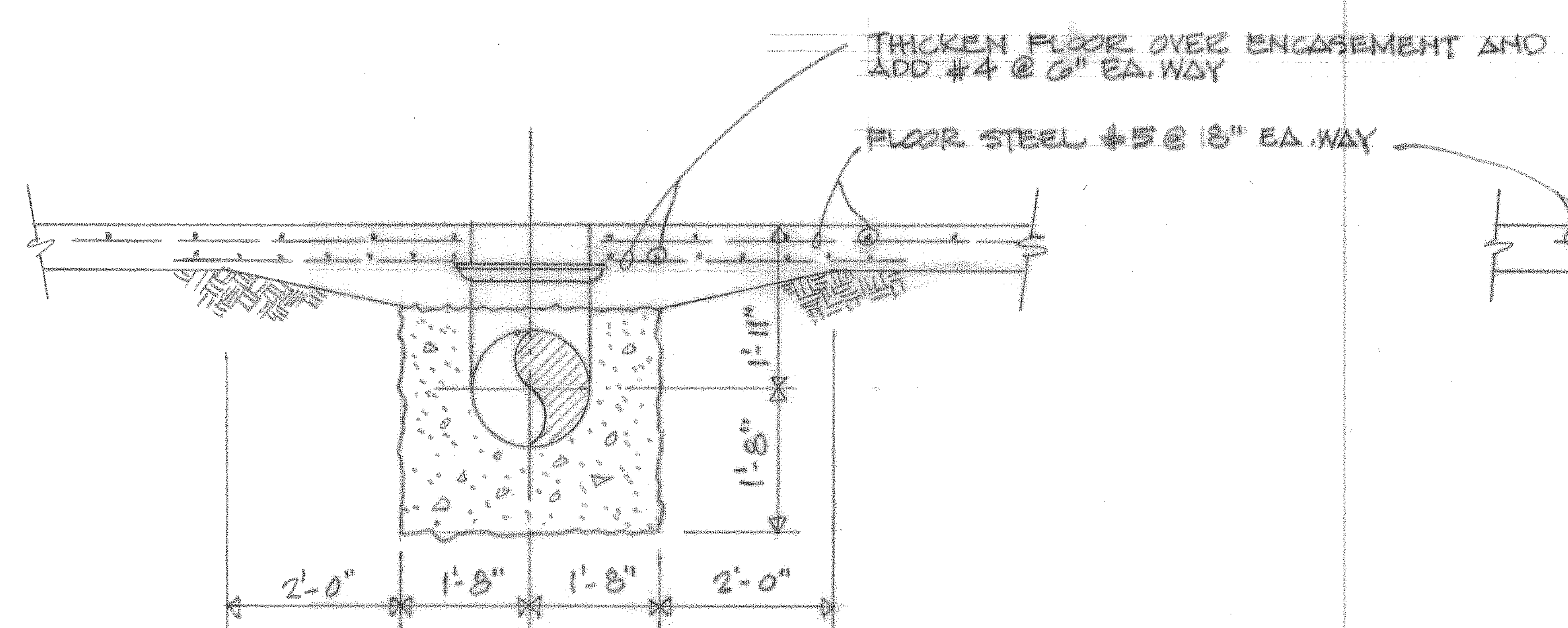


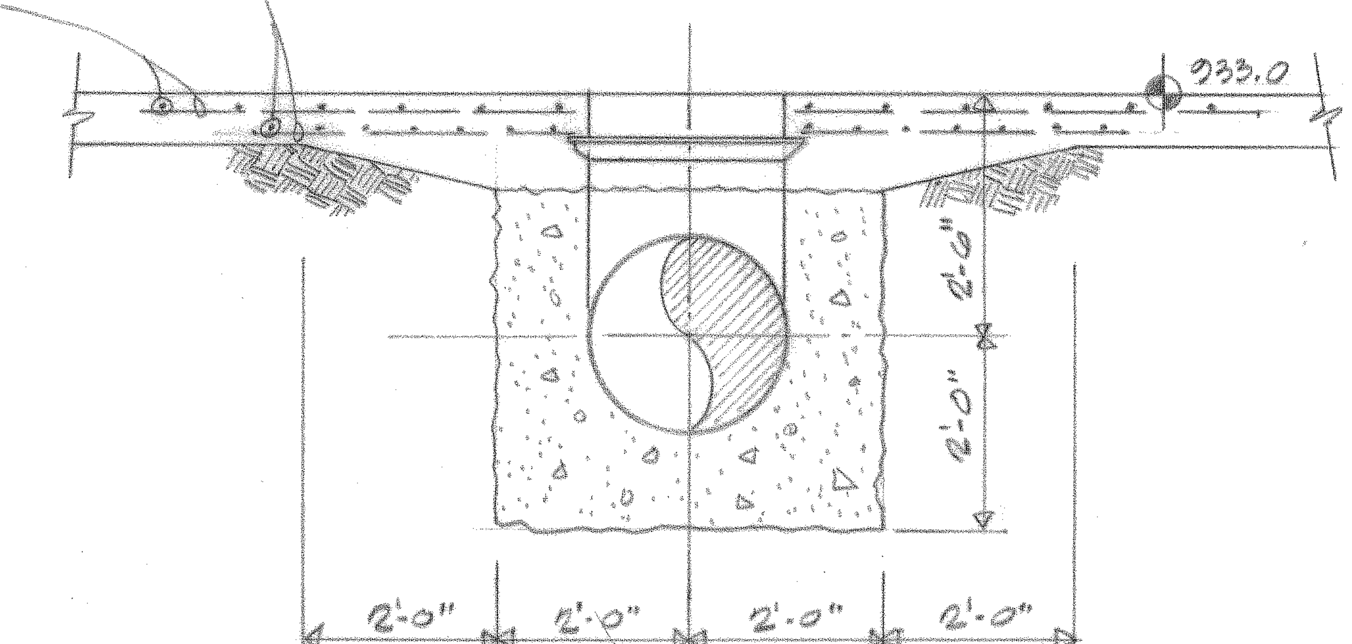
16" INLETS
SECTION C · C
SCALE: 1/2" = 1'-0"



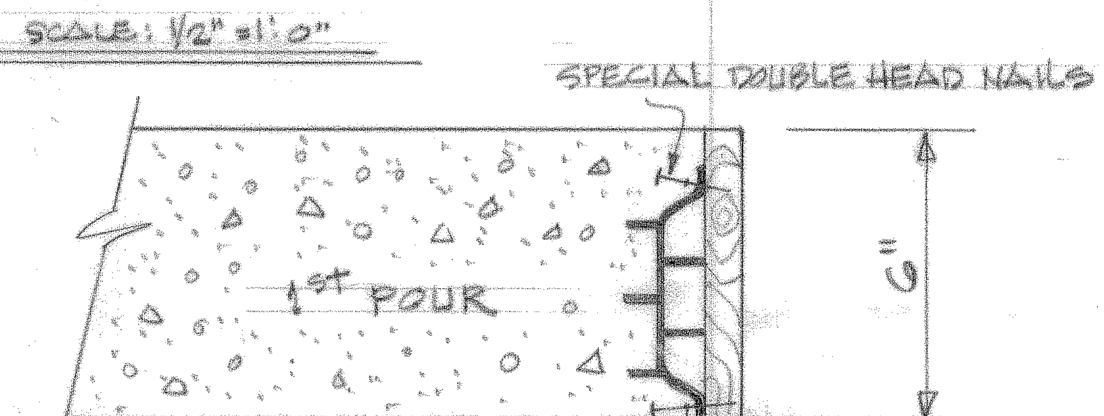
24" OUTLETS
SECTION B · B
SCALE: 1/2" = 1'-0"



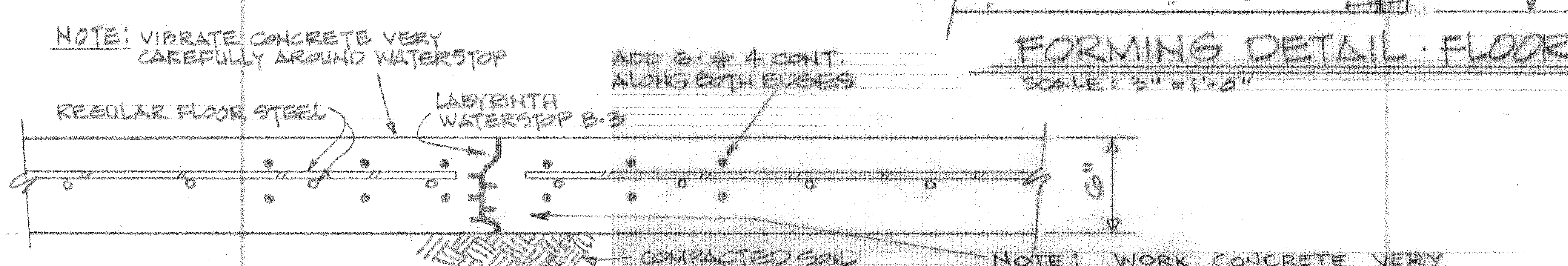
SECTION G · G
16" INLETS SCALE: 1/2" = 1'-0"



SECTION F · F
24" OUTLETS SCALE: 1/2" = 1'-0"



FORMING DETAIL · FLOOR JOINT
SCALE: 3" = 1'-0"



SECTION E · E
DETAIL OF FLOOR JOINT SCALE: 1 1/2" = 1'-0"

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DESIGN SPECIFICATIONS

SHOTCRETE:
fc
f'c
fci < 0.55 f'ci at winding

CONCRETE:
fc
f'c

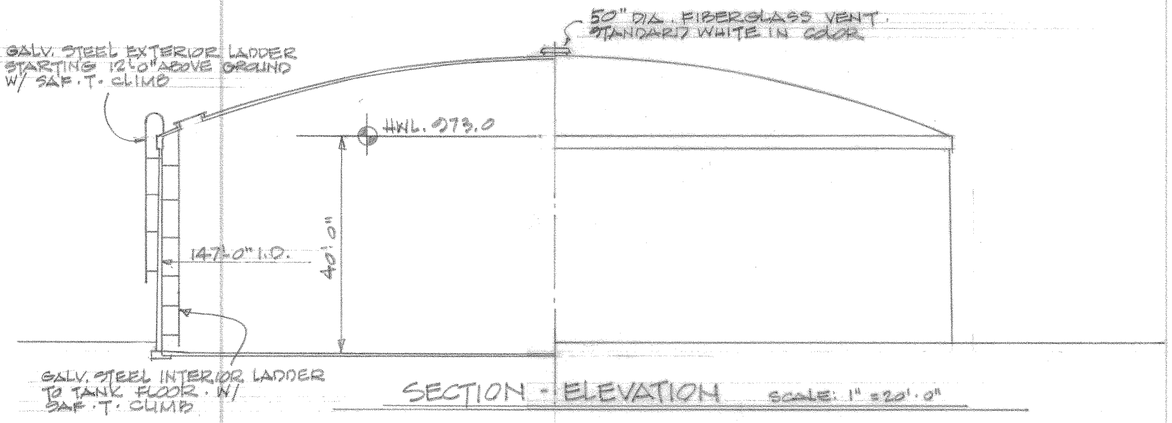
PRESTRESS WIRE:
MEETS ASTM SPEC.
Aw = □" IN PLACE
DIA. = "± IN PLACE
ULTIMATE STRESS PSI
INITIAL STRESS PSI
WORKING STRESS:
WALL PSI
DOME RING PSI

THIS DESIGN AND DRAWING ORIGINATED BY AND THE EXCLUSIVE PROPERTY OF THE CROM CORP.

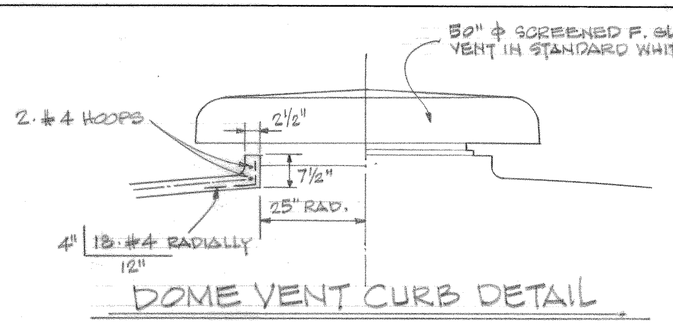
5 M.G. WATER STORAGE RESERVOIR
CLAYTON COUNTY WATER AUTHORITY,
MORROW, GEORGIA.
ROBERT & COMPANY ASSOCIATES
ATLANTA, GEORGIA.

THE CROM CORPORATION
250 S.W. 36TH TERRACE
GAINESVILLE, FLORIDA 32601

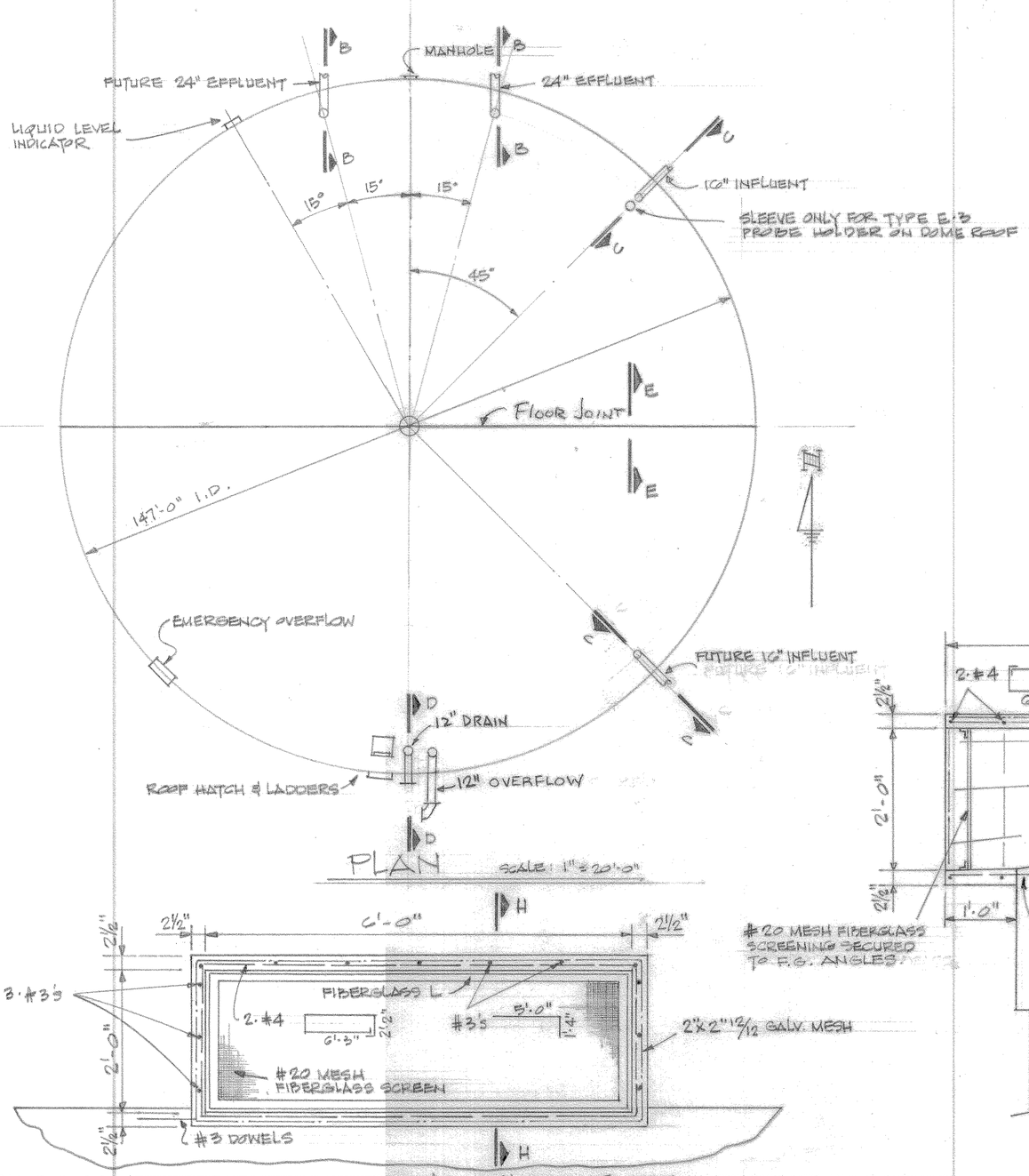
SCALE: AS NOTED DATE: 9-23-71 DRAWN: N.M. CHKD: HEP APPVD:	REVISIONS: APPROVAL & CLARIFICATIONS 10-4-71 FILE NO. 7123	SHEET 3 OF 4



SECTION - ELEVATION SCALE: 1" = 20'-0"

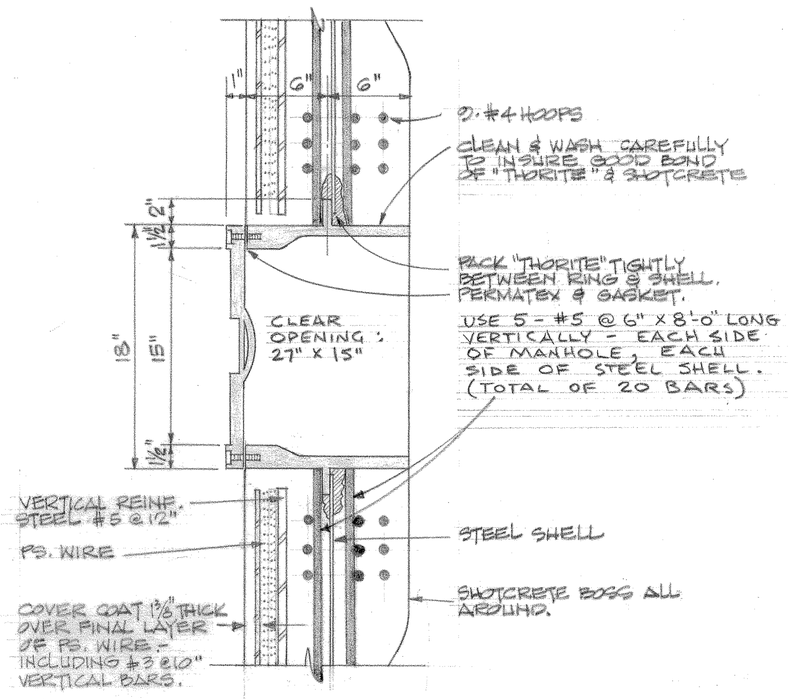


DOME VENT CURB DETAIL

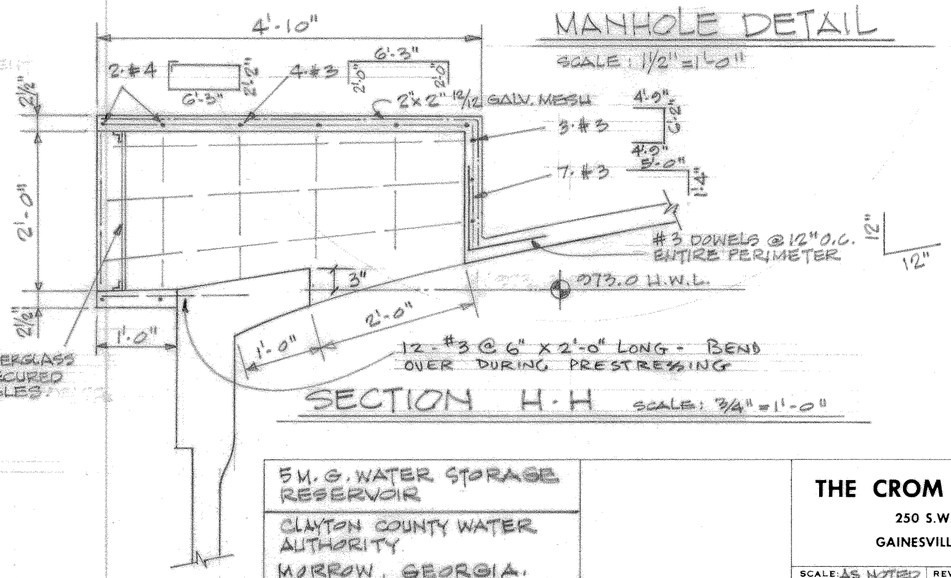


PLAN SCALE: 1" = 20'-0"

EMERGENCY OVERFLOW DETAIL - ELEVATION SCALE: 3/4" = 1'-0"



MANHOLE DETAIL SCALE: 1½" = 1'-0"



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

#20 MESH FIBERGLASS SCREENING SECURED TO F.G. ANGLES

WHERE STANDARD SPECIFICATIONS ARE IN CONFLICT WITH CROM CORPORATION SPECIFICATIONS OR WITH GOOD PRESTRESSING OR SHOTCRETE PRACTICES, THE STANDARD SPECIFICATIONS SHALL BE SUBORDINATED.

DESIGN SPECIFICATIONS

SHOTCRETE:

fc
f'c
fci < 0.55 f'ci at winding

CONCRETE:

fc
f'c

PRESTRESS WIRE:

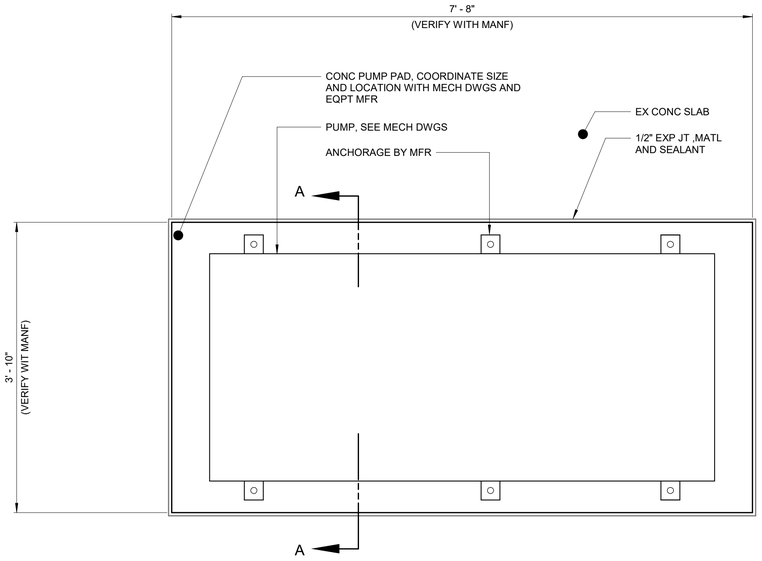
Meets ASTM Spec.	
Aw =	[illegible]" IN PLACE
Dia. =	"± IN PLACE
ULTIMATE STRESS	PSI
INITIAL STRESS	PSI
WORKING STRESS:	
Wall	PSI
Dome Ring	PSI

THIS DESIGN AND DRAWING ORIGINATED BY AND THE EXCLUSIVE PROPERTY OF THE CROM CORP.

5 M.G. WATER STORAGE RESERVOIR
CLAYTON COUNTY WATER AUTHORITY
MORROW, GEORGIA.
ROBERT & COMPANY ASSOCIATES
ATLANTA, GEORGIA.

THE CROM CORPORATION
250 S.W. 36TH TERRACE
GAINESVILLE, FLORIDA 32601

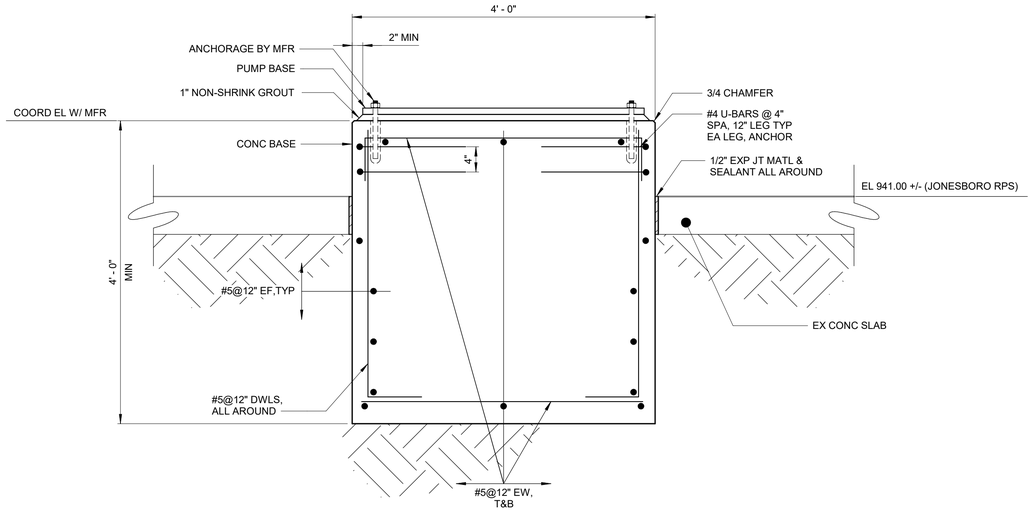
SCALE: AS NOTED
DATE: 9-28-71
DRAWN: N.M.
CHKD: HEP
APPVD:
REVISIONS: APPROVAL & CLARIFICATIONS 10-4-71
FILE NO. 7128
SHEET 2 OF 4



TYPICAL PUMP BASE - PLAN

DETAIL 1

1" = 1'-0"



SECTION A-A

1" = 1'-0"

1

REV	ISSUED FOR	DATE	BY
1	ADDENDUM No. 1	04/2024	BCJ

PROJECT ENGINEER:	B. JONES
DESIGNED BY:	D. OLADIMEJI
DRAWN BY:	D. OLADIMEJI
CHECKED BY:	A. THURSTON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

ISSUED FOR BID

GEORGIA REGISTERED No. 000116 STRUCTURAL ENGINEER FREDERICK P. POWELL

2024.04.19 15:53:50-04'00'

Hazen

HAZEN AND SAWYER
1300 ALTMORE AVE SUITE 520
ATLANTA, GEORGIA 30342
GBPE LIC #: PEF003685 EXP: 6/30/2024

CLAYTON COUNTY WATER AUTHORITY
CLAYTON COUNTY, GA

JONESBORO
RPS IMPROVEMENTS

GENERAL
STRUCTURAL
GENERAL STRUCTURAL DETAILS

DATE:	MARCH 2024
HAZEN NO.:	32457-027
CONTRACT NO.:	HS-RE-21-06
DRAWING NUMBER:	S3

Autodesk Docs://32457-027_Jonesboro and Noahs AK RPS IMP/32457-027-GENERAL_STRU.rvt
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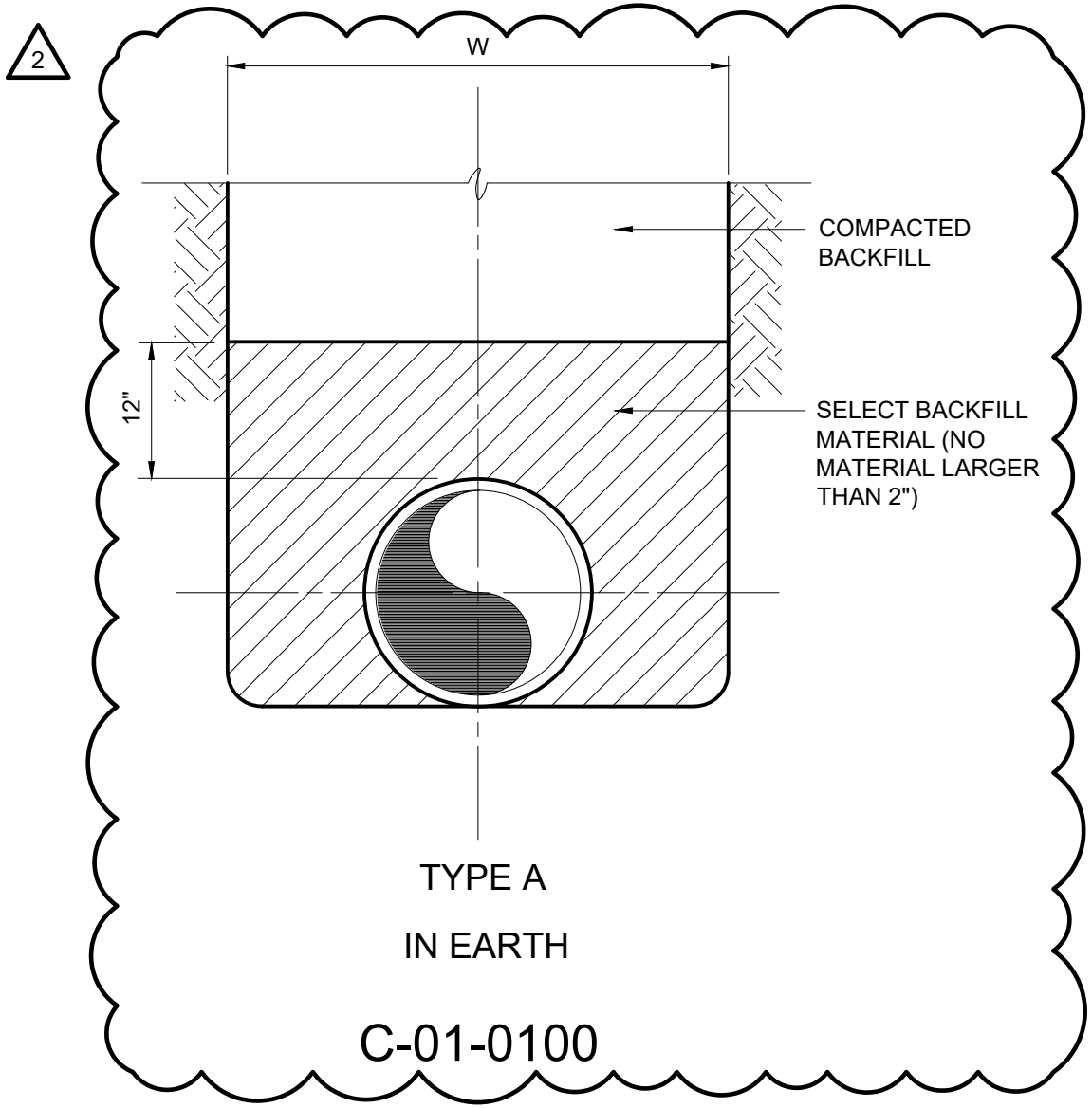

TYPE A

IN EARTH

C-01-0100

ADDENDUM NO.	DATE	CLAYTON COUNTY WATER AUTHORITY CLAYTON, GA	HAZEN JOB NUMBER	REFER TO CONTRACT DRAWING NUMBER
1	2024.04		32457-027	CD001
ATTACHMENT NO.	BY	JONESBORO AND NOAH'S ARK RPS IMPROVEMENTS	CONTRACT NUMBER	
H	BCJ		2024-WP-12	SHEET 1 OF 1

SECTION 40 66 54
CELLULAR COMMUNICATION SYSTEM

PART 1 – GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall furnish, test, install and place in satisfactory operation the cellular communication system, with all spare parts, accessories, and appurtenances as herein specified and as shown on the Drawings.

B. The cellular communication system shall utilize 4G LTE cellular Ethernet. The Contractor shall construct the system in accordance with all applicable FCC rules. In addition, the Contractor shall prepare and submit any other required documentation as required.

C. Owner will have a service agreement with a cellular service provider (4G LTE carrier) directly and will pay the activation and monthly cost to the provider. Contractor shall provide a cut-over schedule to the cellular service provider and coordinate with the provider to activate the cellular modem and test communications before cut-over at site.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 40 61 13 – Process Control System General Provisions

B. Section 40 67 00 – Control System Equipment Panels and Racks

C. Section 40 78 56 – Isolators and Surge Suppressors

1.03 TOOLS, SUPPLIES AND SPARE PARTS

A. The following tools shall be provided:

1. One set of coaxial cable preparation tools required for installing coaxial cable ground clamps and all types of coaxial cable connectors supplied under this Contract. Tools shall be specifically designed for the size and type of cables supplied under this Contract.

2. Cellular router remote management software as described herein.

B. The following spare parts shall be provided:

1. One (1) spare 4G LTE router

020119

2. Two (2) of each type of coaxial cable connector furnished under this Contract

1.04 SUBMITTALS

A. In addition to submittals required under Section 40 61 15 – Process Control System Submittals, submit antenna installation details for antenna installations required under this Contract. The details shall include scaled drawings of the antenna, antenna mounting hardware and support structures, coaxial cables, connectors, ground clamps, fasteners, and lightning surge protectors. An equipment list shall be included identifying each component. Submit product literature for each component.

1.05 TELEMETRY SYSTEM EQUIPMENT LOCATIONS

A. Cellular router shall be mounted on a DIN rail in the Pump Station PLC control panel. Refer to the Drawings for the LCP and cellular antenna locations.

PART 2 – PRODUCTS

2.01 GENERAL

A. The Contractor shall provide a multicarrier 4G LTE cellular communications system.

B. All communications equipment shall be installed in accordance with the manufacturer's recommendations, FCC rules and regulations, and details on the Contract Drawings.

C. All cellular communications equipment power and signal lines that extend or are located outside of an enclosed structure shall be protected from lightning and voltage surges in accordance with the requirements of Section 40 78 56 – Isolators, Intrinsically-Safe Barriers, and Surge Suppressors.

2.02 CELLULAR ANTENNAS AND APPURTENANCES

A. Type and specification of the cellular antenna should be coordinated with the cellular service provider.

B. Antennas for the remote station cellular routers shall be cross-polarized directional wide band antennas.

C. Cellular antennas shall be RSRF ANT627-NF-PANEL-MIMO-OD, or owner-approved equal.

D. Cellular antenna shall meet the following requirements:

1. Rotation pattern: Omni-Directional

2. Antenna Gain: 698-960 MHz 1.5 dBi, 1710-2700 MHz 4.5 dBi

3. Bandwidth VSWR: less than 2:1

4. Impedance: 50 ohms

5. Maximum input power rating: 20 watts or higher

6. RF Connector: SMA Plug

E. Cellular antennas shall be supplied as a complete kit including mounting hardware, coaxial antenna cable, surge suppressor, weatherproofing kit, and other appurtenances required for a reliable installation.

2.03 CELLULAR ROUTERS

A. Cellular routers shall utilize 4G LTE to transmit and receive Ethernet/IP PLC communications data. The routers shall be completely compatible with the control and information system's hardware and communication protocols. Cellular router shall have dual SIM card and multi-carrier support for link redundancy.

B. Cellular routers shall be a Semtech (Sierra Wireless) Airlink RV50X or approved equal.

C. Cellular routers shall have the following operation and performance specifications:

1. Environmental

a. Temperature Range: -40°C to +70°C

b. Humidity: 90% at 60°C; non-condensing

2. Standards and Certifications:

a. Safety: UL 60950

b. EMI: FCC Part 15B Class A or B.

c. Radio: FCC Rules Part 22H, FCC Part 24E.

3. General Router Requirements

a. Protocol Support: The router shall support the following network protocols:

1) HTTP, HTTPS, FTP, SFTP, SSL, SMTP, Device Cloud SNMP, SNMP (v1/v2c/v3), SSH, Telnet and CLI for web management.

2) Remote management; SMS management, protocol analyzer, ability to capture PCAP for use with Wireshark.

3) DynDNS, Dynamic DNS client compatible with BIND9/No-IP/DynDNS.

4) DHCP.

5) DNS client compatible with BIND9/No-IP/DynDNS.

6) QoS via TOS/DSCP/WRED.

7) Ethernet, serial I/O and Modbus bridging for connecting diverse field assets.

b. Routing/Failover: The router shall support the following routing and failover features:

1) IP pass-through.

2) NAT, NAPT with IP Port Forwarding.

3) Ethernet Bridging.

4) GRE.

5) Multicast Routing.

6) Routing Protocols: PPP, PPPoE, RIP (v1,v2) OSPF, SRI, BGP, iGMP routing (multicast).

7) RSTP (Rapid Spanning Tree Protocol).

8) IP Failover: VRRP, VRRP+TM.

9) Automatic failover/failback to second GSM network/Standby APN.

c. Security: The router shall support the following security features:

1) IP filtering.

2) Stateful inspection firewall with scripting address and port translation;

3) VPN: IPSec with IKEv1, IKEv2, NAT Traversal.

4) SSL, SSLv2, SSLv3, FIPS 197, Open VPN client and server; PPTP, L2TP.

5) VPN Tunnels: 5. Cryptology: SHA-1, MD5, RSA.

6) Encryption: DES,3DES and AES up to 256-bit (CBC mode for IPsec).

7) Authentication: RADIUS, TACACS+, SCEP for X.509.

8) certificates;.

9) Content Filtering(via 3rd party).

10) MAC Address Filtering; VLAN support.

d. Hardware Interfaces: The router shall support the following interfaces:

1) 1 x RJ45 10/100/1000 Ethernet,

2) 1 x RS-232/RS-485 serial

3) 1 x USB 2.0

4) 3 x Antenna connectors: SMA

e. Cellular Modem (WWAN)

1) The cellular modem shall be equipped with two SIM card slots capable of supporting two different cellular service providers. The modem shall be capable of automatically switching between providers to ensure optimal cellular signal quality.

2) The cellular modem shall be capable of supporting at least two of the following 4G LTE carriers through a Machine-to-Machine (M2M) data plan:

a) Verizon

b) AT&T

c) Sprint

d) T-Mobile

3) The cellular modem shall have fall back capability and automatically switch to 3g or 2g service should 4G LTE become degraded or unavailable.

4) Input Power: The cellular router shall be capable operating on 24V DC power.

5) Remote Configuration: The user shall have the ability to configure any cellular radio over-the-air from the SCADA network.

6) PLC Programming: The modem shall provide the user the capability to program any remote site PLC over-the-air from any computer in the SCADA network.

7) Active Ports: The modem shall have, as a minimum, two active ports that can sequentially manage the transfer of Ethernet and serial data messages: 1 serial and 2 Ethernet. In addition, router shall have 1 USB 2.0 port.

2.04 TRANSMISSION CABLE AND MISCELLANEOUS REQUIREMENTS

A. Provide all cables and connectors to connect the radio to the antenna. Provide flexible jumper cables with appropriate connectors within panels to connect the radio to the surge suppressor. Attenuation including connectors from the radio to the surge suppressor shall not exceed 0.25 dB.

B. Provide weatherproof connections that are suitable for direct environmental exposure. Weatherproof connections shall include heat shrink tubing that provides a waterproof and corrosion resistant seal. The heat shrink tubing shall be polyolefin lined with thermoplastic adhesive as manufactured by 3M, or equal. Heat shrink tubing shall be provided for all RF transmission cable connections located outside of panels or air conditioned rooms.

C. Utilize appropriate bulkhead RF transmission cable surge suppression devices at cable entrances, Polyphaser or equivalent.

2.05 CELLULAR ROUTER MANAGEMENT SOFTWARE

A. Cellular router management software shall be provided to view each radio's cellular latency, dropped signal, link activation, signal strength, network traffic conditions, alarms, notifications and configuration data remotely from a Microsoft Windows computer connected to any node on the network.

B. The software shall allow for remote cellular router firmware updates.

C. The software shall obtain the data unobtrusively without affecting the transmission of wireless communication data. The software shall allow viewing the data from multiple cellular routers simultaneously in a user friendly graphical format. The software shall log the data and allow viewing of historical data on graphical charts. The network

management software shall be Digi Remote manager or equivalent from the manufacturer of the supplied cellular routers.

D. The cellular router management software shall be installed on a network connected workstation or server, supplied by the Owner. Provide the required software license to allow continuous operation with all cellular routers connected, plus 10 future cellular routers on each telemetry system. Software license shall be registered in the Owner's name.

PART 3 – EXECUTION

3.01 CELLULAR ROUTER TESTING

A. After the cellular routers have been installed, the Contractor shall test the following items and make all necessary adjustments to maximum performance of the communication links:

1. Signal strength
2. Cellular protocol mode (LTE, 4G, 3G, etc.)
3. Standing wave ratio (SWR)
4. Radio temperature
5. Software revision
6. Hardware revision

B. The Contractor shall test the integrity of the antenna cable after installation to ensure that the insertion losses do not exceed 2.0 dBs.

C. Prior to the PLC panel Factory Acceptance Test, the I&C subcontractor shall request and receive one activated SIM card from the Owner and coordinate with the Owner to establish communications with the City SCADA system. During the test the I&C subcontractor shall demonstrate internet to M2M (machine to machine) cellular internet connectivity with the City SCADA System.

D. The Contractor shall submit all test results of the above-described test for approval by the Engineer. The Contractor shall provide a copy of the approved test results in the final O&M Manuals.

3.02 WARRANTY

A. Cellular routers shall be furnished with a minimum 5-year manufacturer's warranty. The warranty shall cover hardware and software provided by the manufacturer.

B. The warranty period shall begin upon Final Acceptance as described in Part 3 of Section 40 61 21.73.

END OF SECTION

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