REQUEST FOR STATEMENT OF QUALIFICATIONS

PWC2627007

HOFFER 12MG CLEARWELL #1 ENGINEERING STUDY

Date of Issue: August 5, 2026
Submission Deadline: August 25, 2026
4:00 p.m.

Direct all inquiries concerning this RFQ to:

Shelby Lesane
Procurement Advisor II
procurement@faypwc.com

Contents

PURPOSE AND BACKGROUND 3
PROJECT SCOPE 4
EXPERIENCE REQUIRED 4
RFQ SCHEDULE 4
QUESTIONS 4
QUALIFICATION STATEMENT REQUIREMENTS 5
ECONOMIC IMPACT (EI) PROGRAM PARTICIPATION 6
GREATER FAYETTEVILLE CHAMBER OF COMMERCE 7
VENDOR REGISTRATION VIA ISUPPLIER 7
SUBMISSION INSTRUCTIONS 7
AWARDING OF PROJECTS 7
E-VERIFY 7
IRAN DIVESTMENT ACT 8
ATTACHMENT A: CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS 9
ATTACHMENT B: ECONOMIC IMPACT DISCLOSURE FORM 10
ATTACHMENT C: AT A GLANCE 11
ATTACHMENT D - SERVICE AGREEMENT SAMPLE 12
ATTACHMENT E – ANNUAL INSPECTION REPORT 20
ATTACHMENT F – RECORDS DRAWINGS 27

REQUEST FOR STATEMENT OF QUALIFICATIONS FOR PROFESSIONAL SERVICES
HOFFER 12MG CLEARWELL #1 ENGINEERING STUDY
FAYETTEVILLE PUBLIC WORKS COMMISSION

In accordance with N.C.G.S. 143-64.31, Fayetteville Public Works Commission ("PWC") is seeking the services of a qualified professional engineering firm to provide professional services related to Hoffer 12MG Clearwell (CW) #1 Engineering Study. The system components to be addressed include water transmission, distribution, pumping, elevated storage and ground storage. Water Treatment Facilities are not included in the scope for this project.

PURPOSE AND BACKGROUND

The PWC owns and operates a public water supply system under the P.W.S. I.D. #03-26-010. The transmission / distribution system consists of approximately 1,376 miles of water main ranging from 2-inch through 54-inch diameter. According to the most recent Local Water Supply Plan (2024 update), the water system serves 86,236 residential, 7,119 commercial and 19 industrial users. The average and peak day demands for the entire PWC system during calendar year 2024 were 25.52 MGD and 34.72 MGD respectively. The present combined treatment capacity of PWC's two water treatment facilities is 50 MGD with an approved "high-rated filter" capacity 57.50 MGD.

PWC operates two water treatment facilities (WTFs). The Glenville Lake WTF has a capacity of 18 million gallons per day (mgd) and primarily treats raw water from the Cape Fear River. Raw water from the Glenville Lake watershed augments this supply. The P.O. Hoffer WTF primarily treats raw water from the Cape Fear River and is being expanded from 32 mgd to 48 mgd capacity.

The Hoffer WTP provides approximately 70% of PWC's water supply and has a total of 3 clear wells (CW) including CW#1 @ 12 MG, CW#2 @ 4 MG, and CW#3 @ 4 MG. Based on recent inspections from PWC's Water Storage Facility Assessment and Maintenance Program, multiple deficiencies have been identified on CW#1 12 MG including:

- Progression of cracks and spalling on the roof of the tank.
- Widespread roof and wall movement joint failure.
- Widespread failure of the wall exterior coating system above grade (below grade not visible).
- Active wall leaks at grade were encountered on the south and east elevations of the tank.
- Wet areas and soil erosion adjacent to the tank exist on the east, south, and west walls of the tank, indicating below grade leaks.
- Interior wall coating and floor movement joint failure was encountered in compartment 3A during our 2022 interior tank inspection.

For these reasons, PWC believes that clearwell #1 is not currently in a sound and watertight condition.

PROJECT SCOPE

PWC is seeking a firm whose combination of experience and personnel will provide timely, cost-effective, and quality professional services to support this project. The following general description of the tasks that may be required is not intended to be all-inclusive, nor is it guaranteed that all the tasks will be utilized.

1. Document the current infrastructure condition of CW #1 including any structural and geotechnical testing required to adequately assess the leaks in the tank.

2. Work closely with PWC staff to determine the feasibility of comprehensively rehabilitating this clearwell versus potentially replacing or relocating the clearwell. Prepare a report detailing all findings along with recommendations on how to repair or replace CW#1 so that the tank is completely watertight and protects PWC's drinking water.

3. Prioritize repairs or improvements, prepare conceptual level cost estimates, and project timelines for individual infrastructure projects.

A detailed Scope of Services will be negotiated between PWC and the selected Consultant. Upon completion of the Engineering Study document, PWC may elect to engage the selected consultant to complete the design, bidding and construction observation of any or all the proposed upgrades. Alternatively, PWC may elect to issue a separate Request for Qualification package for any or all the proposed upgrades.

EXPERIENCE REQUIRED

A minimum of five (5) years in Water Treatment Plant design and operation.

RFQ SCHEDULE

Action	Responsibility	Date/Time
Question Deadline	Vendors	Tuesday, August 11, 2026 @ 5:00 p.m.
Addendum Deadline	PWC	Tuesday, August 18, 2026 @ 5:00 p.m.
RFQ Submission Deadline	Vendors	Tuesday, August 25, 2026 @ 4:00 p.m.
Award Contract	PWC	October 2026

QUESTIONS

Written questions shall be e-mailed to procurement@faypwc.com by the date and time specified in the RFQ schedule. Firms will enter "RFQ #PWC2627007 – Questions" as the subject of the email.

Questions received prior to the submission deadline date, the Procurement Advisor's response, and any additional information deemed necessary by PWC will be posted in the form of an addendum to the PWC website and shall become an Addendum to this RFQ. No information, instruction, or advice provided orally or informally by any PWC personnel, whether made in response to a question or otherwise concerning this RFQ, shall be considered authoritative or

binding. Firms shall rely only on written material contained in an Addendum to this RFQ.

Inquiries should be submitted no later than the date and time noted in the RFQ schedule. Questions answered verbally will be followed up by written addenda as deemed necessary; oral interpretations shall have no effect.

If an Addendum is issued that requires acknowledgment, signature, or submission, it must be included with the firm's Statement of Qualifications. Firms are responsible for incorporating any required information from the Addendum into their response. However, acknowledgment and submission of the Addendum are only required if the Addendum specifies such requirements. Failure to comply with these instructions may result in disqualification of the proposal. Firms are responsible for ensuring that all issued Addendums are received and reviewed as part of their submission.

QUALIFICATION STATEMENT REQUIREMENTS

The qualifications statement shall consist of the following information, tabbed as identified and in the order indicated below:

Section 1 – Letter of Transmittal (maximum of two pages not including COI/s)

- Firm(s) name, year established, address, telephone number, fax number and contact person.
- Identify if the firm(s) is classified as a Disadvantaged Business Enterprise (DBE), Historically Underutilized Business (HUB), or Small Local Supplier (SLS).
- Provide copies of Certificates of Insurance (COI) showing General Liability, Automotive, Worker's Compensation, and Professional Liability Coverage (Certificate of Insurance will not count towards page limit). If two (2) or more firms are collaborating to form a Joint Venture Team, then each individual firm shall meet the required insurance coverage.
- State any conflicts of interest your firm or any key individuals of the firm may have with the Project or PWC.

Section 2 – Personnel (30% of score)

- Specify professional qualifications of key management and staff personnel to be assigned to the Project. If two (2) or more firms are collaborating to form a Joint Venture, then each firm shall provide the qualifications of key staff.
- Identify specialty, level of expertise, education, and any direct work experience on projects similar in scope to the one being proposed.

Note: Substitution of other personnel after the selection is made must be approved by PWC.

Section 3 – Consultants/Sub-consultants/Other Participants (20% of score)

- Provide a list of consultants who would be retained to provide services on the Project. For informational purposes, please include the business classification of any proposed Consultants/Sub-consultants.
- Provide a synopsis for each to include the size of staff, names of key personnel and services to be provided, and past experience.

- Specify the percentage of work anticipated to be attributed to these consultants. Note: If the respondent will self-perform all work the respondent must specify such in their submission.

Section 4 – Project and Project Management Experience (25% of score)

- Document expertise in those specific engineering tasks and/or technologies required to successfully complete the scope of work associated with the Project.
- Provide a brief description of the firm's project management experience and style, including a description of quality control methods.
- Provide a brief description of similar projects completed in the last five (5) years.
- Provide names and contact numbers for references for similar projects.

Section 5 – Project Approach and Understanding (15% of score)

- Include a listing and description of each phase of the Project and identify key staff who will be assigned to each phase of the Project.
- Provide a proposed schedule for completing the work.
- Describe why your firm or Joint Venture Team should be selected.

Ten percent (10%) of the submittal score will come from the firm's general qualifications including the completeness of the submittal, the firm's operating history, insurance, and licensing, and compliance with the RFQ requirements.

NOTE: The qualifications submittal shall be limited to a maximum number of twenty (20) pages. This page limit includes the tabs and/or other dividers. Also, note that double-sided pages will be counted as two (2) pages. Failure to comply with the page limits will result in automatic disqualification of the submittal. The front and back cover and copies of the COI do not count towards the total page limit.

No additional information regarding this Project will be provided prior to the award. The interested firm shall focus their response to this RFQ on their qualifications to complete the work, and why they should be selected for the specific project.

ECONOMIC IMPACT (EI) PROGRAM PARTICIPATION

Fayetteville PWC supports fair and open competition in all procurement activities and encourages participation from qualified businesses of all sizes. For the purposes of PWC procurements, a qualified business is one that demonstrates the capacity, capability, and resources to perform in accordance with the specifications, terms, and conditions of the solicitation. PWC also recognizes the value that small and locally based suppliers bring to the community and to the efficiency of its operations.

While no specific business certification is required for award, bidders that are certified as a North Carolina Historically Underutilized Business (HUB), Disadvantaged Business Enterprise (DBE), Small Business Administration (SBA)-certified firm, or PWC Small Local Supplier (SLS) are encouraged to participate and, when applicable, to indicate that status on the SDBE/SLS/Local Disclosure Form included in this solicitation.

GREATER FAYETTEVILLE CHAMBER OF COMMERCE

Members of the Greater Fayetteville Chamber of Commerce preferred, but not required.

VENDOR REGISTRATION VIA ISUPPLIER

All vendors interested in doing business with PWC must register as a vendor through the iSupplier Portal using the link below. The iSupplier self-service portal enables vendors to have real-time access to information regarding purchase orders, invoices, and payments through a secure environment. Attach a copy of your W9 to your online registration.

https://www.faypwc.com/isupplier-doing-business-with-pwc/

SUBMISSION INSTRUCTIONS

Email an un-redacted and redacted PDF of the Statement of Qualifications to the PWC Procurement Department at procurement@faypwc.com no later than the date and time specified in the RFQ schedule.

AWARDING OF PROJECTS

Fayetteville Public Works Commission will consider and evaluate Statements of Qualifications in accordance with N.C.G.S. 143-64.31. Statements of Qualifications will be reviewed by a committee composed of PWC personnel. Qualification packages will be ranked based on this review, which will consider the criteria described above. Fayetteville Public Works Commission will attempt to negotiate a Service Agreement with the highest-ranked firm. Should the parties be unable to reach an agreement, Fayetteville Public Works Commission reserves the right to continue scope and fee negotiations with the other firms, in order of their proposal rankings.

PWC reserves the right to reject any or all submittals.

E-VERIFY

Firms hereby acknowledges that “E-Verify” is the Federal E-Verify program operated by the US Department of Homeland Security and other Federal agencies which is used to verify the work authorization of newly hired employees pursuant to Federal law and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes. Firms further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with North Carolina General Statutes §64-26(a). Firms hereby pledges, attests, and warrants through execution of this Agreement that the firm complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests and warrants that any sub-consultants currently employed by or subsequently hired by the firm shall comply with any and all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.

IRAN DIVESTMENT ACT

As mandated by North Carolina General Statute 147-86.59(a), the firm hereby certifies that it is not listed on the Final Divestment List created by the North Carolina State Treasurer pursuant to North Carolina General Statute 147-86.58. The firm further certifies that in accordance with North Carolina General Statute 147-86.59(b) that it shall not utilize any sub-consultant found on the State Treasurer's Final Divestment List. The firm certifies that the signatory to this Contract is authorized by the firm to make the foregoing statement.

ATTACHMENT A: CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

The Primary Participant, _____ (major third party contractor), certifies to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction or records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(If the primary participant is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.)

THE PRIMARY PARTICIPANT _____ CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET. SEQ. ARE APPLICABLE THERETO.

_____	_____
Signature	Title
_____	_____
Printed Name	Date

ATTACHMENT B: ECONOMIC IMPACT DISCLOSURE FORM

Prime Contractor: _____
Address & Phone: _____
Project: _____
Name: _____
Pay Application # _____

Please provide the names of any local suppliers or subcontractors anticipated to be used on this project. For purposes of this requirement, “local” refers to firms located within the Fayetteville Metropolitan Statistical Area (MSA), which includes Cumberland, Hoke, and Harnett Counties. This form must be fully completed and submitted with the bid and with each subsequent pay application.

Firm Name	SDBE, SLS, or Local	Construction Trade or Supplies	Payment Amount
Ex. ABC Company	*Local - MSA*	*Hauling*	*$25,000.00*

_____
Signature

_____, _____
Printed Name Title

_____
Date

ATTACHMENT C

PWC at a Glance

Customers

- In operation since 1905
- Provides Electric, Water & Wastewater Services to more than 250,000 people
- Total Customers: 123,017
- Number of Services: 275,382
  - Electric: 83,918
  - Water: 98,439
  - Wastewater: 93,004
  - Irrigation: 6,426
- Customers with 2+ services: 75%

Customer Service

- Annual Customer Contacts: 443,258
- Average Monthly Calls: 33,657
- Annual Bills Generated: 1.5 Million
- Customer Incentive Programs: 14
- Annual Water Leak Notifications: 20,772 (24 million gal)

Employees

- Number of Employees: 690
- Average Tenure of Employees: 10 years
- Average Age: 45
- Annual Turnover: 6.0%*
- Annual Hours Worked: 1.3 Million

*non retirement

Facilities

- Butler-Warner Generation Plant (268 MW)
  - Electric Service Area: 147 Sq. miles
- P.O. Hoffer Water Treatment Facility (39.5 MGD)
- Glenville Lake Water Treatment Facility (18.0 MGD)
  - Drinking Water Service Area: 116 Sq. miles
- Cross Creek Water Reclamation Facility (25 MGD)
- Rockfish Creek Water Reclamation Facility (21 MGD)
  - Wastewater Service Area: 109 Sq. miles

Electric Operations

- Purchase Wholesale Power from Duke Energy
- Only NC municipal system to own/operate a generation plant (Dispatched for use by Duke Energy)
- Generation Capacity: 265 MW
- Annual MWH Sold: 2 million
- System Peak: 499 MW (Feb. 20, 2015)
- Solar Generation Capacity: 2.9 MW
- Annual Solar Generation: 1,454,371 KWH
- Battery Storage: 2 MW
- Electric Distribution Substations: 32
- Distribution Lines: 1,364 miles
- Transmission Lines: 123 miles
- Streetlights/Area Lights: 38,023

Water/Wastewater Operations

- Population Served: 225,000+
- Drinking Water Treated: 10.645 Billion Gallons/Year
- 100% Compliant for all EPA Drinking Water Standards
- Daily Water Treatment Capacity: 50 MG/Day
- Daily Wastewater Treatment Capacity: 46 MG/Day
- Water/Wastewater Infrastructure: 2,979 miles
- Hydrants: 8,780
- Sanitary Sewer Lift Stations: 79
- Manholes: 34,430

Financial

- FY24 Annual Operating Budget: $450 Million
- Total Assets: $1.89 Billion
- Bond Rating: Aa2(Moody's), AA (Standard & Poor's), AA (Fitch)
- Operations & Maintenance Expense per Customer: $570 ($618 National Median)
- Annual Cash Contributions to the City of Fayetteville in Lieu of Taxes: $12.06 Million
- Annual Streetlight Services: $4.14 Million
- Annual Annexation Construction Costs: $8.49 Million
- Total Value of Annual Contributions to the City of Fayetteville: $30.81 Million

Visit www.FayPWC.com to learn more about PWC

(As of October 2025)

Last revised December 5, 2025

For the internal use of Fayetteville Public Works Commission only

Requester/Responsible Employee:

Project Title:

Contract Number: (Assigned by Procurement)

Bid Number (if applicable) (Assigned by Procurement)

Account String (w/Budget Code): (for project funding)

Not to Exceed Amount:

Completion or Termination Date:

Work Scope/Purpose:

Notes: (1) This Service Agreement may be utilized for all services (including legal, accounting, and consulting services). However, (a) for services subject to G.S. 143-64.31 (including but not limited to engineering and surveying services), PWC must first comply with the applicable RFQ requirement, unless exempted by law; and (b) for Information Technology, as defined in G.S. 143B-1320, PWC must first comply with applicable RFP requirements set forth in G.S. 143-129.8..

(2) A purchase order must be generated by Procurement and approved by the CFO to encumber funds.

SERVICE AGREEMENT

This Service Agreement ("Agreement") is made by and between Fayetteville Public Works Commission ("PWC"), a North Carolina public authority, and _____("Provider"), a _____ _____ (each of PWC and Provider is referred to herein as a "Party" and collectively as the "Parties"), as of the date of execution last written below (the "Effective Date"). For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Services. PWC retains Provider to _____ as more particularly described in Exhibit A attached hereto and incorporated herein by this reference (the "Services"). The Services shall be completed on or prior to the deadline(s) set forth in Exhibit A, but in any event no later than _____. In the event of a conflict between the provisions of this Agreement and the provisions of any attachment or exhibit to this Agreement, the terms of this Agreement shall govern. Provider shall not use the existence of this Agreement or the name of Fayetteville Public Works Commission as part of any commercial advertising or marketing of products or services without the prior written consent of PWC.

2. Service Standards. Provider shall perform and deliver the Services in accordance with (a) the professional skill and care ordinarily exercised by other providers delivering services on the same or similar projects; (b) Provider's professional licensing obligations; and (c) all applicable laws. Provider shall notify PWC promptly of the discovery of errors, omissions, discrepancies, or inconsistencies in the Services rendered. If any of the Services that Provider renders or work product, which includes but is not limited to reports, analyses, designs, specifications, plans, drawings, and other documents, that Provider delivers to PWC contain errors or omissions, Provider shall promptly correct or supplement such Services at no additional cost to PWC. PWC's acceptance of, use of, or payment for such Services shall in no way alter or reduce the Service standards set forth herein or PWC's rights hereunder. Provider shall not assign or subcontract or transfer the Services or any rights under or interest in this Agreement without the prior written consent of PWC. Provider shall treat all information from PWC and work product resulting from the Services as confidential and proprietary, unless such information is available from public sources, and Provider shall not publish or disclose

SAMPLE

confidential or proprietary information without the prior written consent of PWC for any purposes other than the performance of the Services.

3. Delivery of Services and Ownership of Work Product. Time is of the essence with regard to the delivery of the Services. In the event of suspension or termination of the Services, Provider shall promptly deliver to PWC all work product completed or in progress as of the date of termination along with reproducible documents, drawings, plans, specifications, and electronic records of the completed portion of the Services upon PWC's payment of the undisputed portion(s) of Provider's invoices in accordance with Section 8, Billing and Payment. Provider grants PWC an irrevocable license to use the work product resulting from the Services of Provider. The work product delivered by Provider to PWC in connection with the performance of the Services shall not infringe any intellectual property rights of any third party. Except as otherwise specified in this Agreement, Provider shall not use for its own purposes or allow a third party to use the work product resulting from the Services without the prior written consent of PWC.

4. Compensation. For the Services, Provider shall be compensated at the rates set forth in Exhibit A. Provider's rates shall not be increased during the term of the Agreement or the performance of the Services without the prior written consent of PWC.

5. Payment Limitation. Notwithstanding any other provision in this Agreement to the contrary, the total fees and expenses for the Services shall not exceed _____ and 00/100 dollars ($_____.00) (the "Cap"). Provider shall promptly notify PWC in writing when Provider has reached ninety percent (90%) of the Cap. The Cap is not a fixed fee to which Provider is entitled. PWC shall be obligated to pay only for Provider's actual time devoted to providing the Services and authorized, documented expenses incurred, not to exceed the Cap.

6. PWC's Duties. PWC shall: (a) timely provide such information in its possession, custody, or control as is reasonably necessary for Provider to perform the Services; (b) communicate promptly to Provider all decisions of PWC and clarifications that are reasonably needed by Provider; and (c) make payments to Provider in accordance with Section 8, Billing and Payment.

7. Representations and Warranties. Provider represents and warrants to PWC that Provider is duly licensed and authorized in the State of North Carolina to perform the Services. Each Party represents and warrants to the other Party that it is duly organized, validly existing and in good standing and has all requisite powers, rights, and authority to execute, enter into, and perform this Agreement in accordance with the terms and conditions of this Agreement, this Agreement constitutes a legal, valid, and binding obligation of such Party enforceable against it in accordance with its terms and the person signing this Agreement on behalf of Provider has been properly authorized and empowered to enter into this Agreement.

8. Billing and Payment; Sales and Use Taxes. Provider shall invoice PWC monthly for Services performed and expenses incurred during the preceding calendar month. All invoices shall provide reasonable detail of the services performed and expenses for which reimbursement may be sought, along with supporting documentation for such expenses. PWC shall pay the undisputed portion of each invoice within forty-five (45) calendar days after PWC's receipt of the invoice. PWC shall reimburse expenses at the lower of actual or reasonable cost, except in regard to expenses that are specifically pre-approved in writing by PWC or are set forth and included in a fixed price service arrangement. All payments from PWC to Provider

SAMPLE

shall be transferred electronically to Provider's designated financial institution, and Provider shall, prior to delivery of its first monthly invoice to PWC, supply the name of Provider's financial institution, routing number, and account number on the form available from PWC and provide to PWC a completed and signed IRS Form W-9. Provider has the right to impose a late payment charge of one percent (1%) per month for amounts unpaid by PWC by the date due. Provider shall maintain on a generally recognized accounting basis and retain for at least three (3) years the records supporting Provider's invoices to PWC. In the event of a dispute regarding a monthly invoice or any portion thereof: (a) Provider shall deliver to PWC all records supporting Provider's invoice(s) in dispute within ten (10) calendar days after PWC notifies Provider of the dispute, and Provider shall cooperate with PWC to verify the accuracy of all invoices; (b) Provider shall continue to proceed diligently with the performance of the Services pending resolution of the dispute; and (c) PWC shall pay Provider in accordance with this Agreement for all Services rendered by Provider which are not the subject of the dispute.

If the Services involve repair, maintenance, or installation subject to any sales and use tax under North Carolina law, then Provider shall comply with all of the following requirements so that PWC may recover the amount of the tax permitted under the law:

a. Furnish PWC documentary evidence showing the material used, sales tax paid, and County paid (County of sale). The documentary evidence shall include Provider's certified statement showing total purchases of materials from each separate vendor and total sales taxes charged to PWC and paid by Provider. The documentary evidence shall also include Provider's certified statement as to the amount paid by PWC for sales tax on the Services delivered by Provider to PWC. A certified form is required even if no sales tax was paid for pay request period. Materials used from Provider's warehouse stock shall be shown in a certified statement at warehouse stock prices and amount of County of Use Tax charged to PWC and paid by Provider;
b. Provider shall furnish to PWC invoices or copies of invoices for all materials purchased for said work within pay request period, and such invoices shall state the amount of North Carolina Sales Tax, if any, paid for materials. Provider shall also furnish to PWC invoices identifying the amount paid for the sales and use tax on Services that are subject to such taxation under North Carolina law; and
c. Provider shall <u>not</u> include any tax paid on supplies, tools, and equipment that Provider uses to perform the Service.

9. <u>Termination</u>. Except in regard to Services to be provided for a fixed price, PWC has the right to terminate the provision of Services, with or without cause, by delivering written notice of termination to Provider, and PWC shall be obligated to pay Provider only for work performed and reasonable expenses incurred until delivery of the notice of termination. Either Party may terminate an Agreement to provide Services for a fixed price for cause by delivering written notice of the cause and termination to the other Party, provided that the Party receiving the notice of termination shall have seven (7) calendar days to cure the cause cited in the termination notice. "Cause" means action by the non-terminating Party that constitutes a material breach of this Agreement including, but not limited to, a failure to adhere to a schedule, failure to timely pay, and material failure to produce work product that is consistent with the applicable service standards.

10. <u>Insurance</u>. Provider shall maintain during the provision of Services and for at least three (3) years thereafter (collectively, the "coverage period") the following insurance coverages, which insurance shall be placed with insurance companies authorized to do

SAMPLE

business in the State of North Carolina and rated A minus VII or better by the current edition of Best's Key Rating Guide or otherwise approved in writing by PWC:

(a) Intentionally Omitted.

(b) commercial general liability insurance with a combined single limit of liability of not less than $1,000,000 for each occurrence of bodily injury and/or property damage and an annual aggregate of liability of not less than $2,000,000 for bodily injury and/or property damage, and an annual aggregate of liability of not less than $2,000,000 for Completed Operations and Products Liability;

(c) worker's compensation insurance as required by State law; and

(d) automobile liability insurance with limits not less than $100,000 each person and $300,000 each accident for bodily injury and property damage.

Prior to initiating the Services, Provider shall deliver to PWC certificates of insurance confirming each such coverage, and Provider shall direct its insurers to provide annually to PWC certificates confirming each such coverage during the coverage period. PWC shall be named as an additional insured in the comprehensive automobile and commercial liability insurance policies. Commercial general liability coverage shall be written on an "occurrence" basis. Upon PWC's request, Provider shall give prompt written notice to PWC of any and all claims made against the professional liability errors and omissions or malpractice insurance policy during the coverage period. Provider shall not reduce or allow the required insurance coverages to lapse without PWC's prior written approval. All policies for insurance must be endorsed to contain a provision giving PWC a thirty (30) calendar day prior written notice by certified mail of any cancellation of that policy or material reduction in coverage. Should a notice of cancellation be issued for non-payment of premiums or any part thereof, or should Provider fail to provide and maintain certificates as set forth herein, PWC shall have the right, but not the obligation, to pay such premium to the insurance company or to obtain such coverage and to deduct such payment from any sums that may be due or become due to Provider, or to seek reimbursement for said payments from Provider. Any such sums paid by PWC shall be due and payable immediately by Provider upon notice from PWC. The insurance provisions of this Agreement shall not be construed as a limitation on Provider's responsibilities and liabilities pursuant to the terms and conditions of this Agreement. Provider's obligation to maintain insurance for three (3) years after completion of the Services shall survive the termination of this Agreement.

11. Indemnification and Liability. Provider shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives (collectively, "Indemnitees") from and against all claims, actions, liabilities, damages, losses, costs, and expenses (including, without limitation, injury to or death of any persons and damage to property, economic and consequential damages and attorneys' fees) asserted by one or more third parties against one or more of the Indemnitees arising out of negligent or willful acts, violations of law, infringement of any patent, trademark, trade secret, copyright, or other intellectual property right of a third party, or omissions or breach of the obligations set forth in this Agreement by Provider or any of its employees, agents, representatives, and subcontractors. Provider's obligation to indemnify, defend, and hold harmless the Indemnitees shall survive the termination of this Agreement and shall include the duty to pay for the reasonable attorney's fees and costs associated with defending the Indemnitee(s) by the legal counsel of each Indemnitee's choice.

SAMPLE

12. Notices. Any notice which either Party is required or desires to give the other hereunder shall be deemed sufficiently given if, in writing, it is delivered personally, or sent by certified U.S. mail, return-receipt requested, postage prepaid, to the addresses listed hereinbelow, or such other address as either Party shall give to the other Party by written notice in accordance herewith. Any notice given herein by personal delivery shall be deemed delivered when received. Any properly addressed notice given herein by certified mail shall be deemed delivered on the third Business Day after the same is deposited in an official United States Post Office, postage prepaid, or if sooner upon the date when the return receipt therefor is signed, or refusal to accept the mailing by the addressee is noted thereon by the postal authorities.

To PWC:
Fayetteville Public Works Commission
Attn: Timothy Bryant, CEO/General Manager
PO Box 1089
Fayetteville, NC 28302

To Provider:
_____
_____
_____

"Business Day" means each calendar day that is not a Saturday, Sunday, holiday observed by the federal government for its employees, or holiday observed by the State of North Carolina for its employees.

13. Compliance. Provider hereby acknowledges that "E-Verify" is the federal E-Verify program operated by the US Department of Homeland Security and other federal agencies which is used to verify the work authorization of newly hired employees pursuant to federal law and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes. Provider further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS §64-26(a). Provider hereby pledges, attests, and warrants through execution of this Agreement that Provider complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests, and warrants that all subcontractors currently employed by or subsequently hired by Provider to provide services for PWC shall comply with all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement. Provider hereby further acknowledges that the execution and delivery of this Agreement constitutes Provider's certification to PWC and to the North Carolina State Treasurer that, as of the Effective Date, Provider is not listed on (a) the Final Divestment List created and maintained by the North Carolina Department of State Treasurer pursuant to the Iran Divestment Act of 2015, Chapter 147, Article 6E of the General Statutes of North Carolina (the "Iran Divestment Act"); or (b) the list of companies that the North Carolina State Treasurer determines to be engaged in a boycott of Israel in accordance with Article 6G of Chapter 147 of the General Statutes of North Carolina. Provider represents and warrants to Commission that Provider, and all persons and entities owning (directly or indirectly) an ownership interest in it: (i) are not, and will not become, a person or entity with whom a party is restricted from doing business with under regulations of the Office of Foreign Asset Control ("OFAC") of the Department of the Treasury (including, but not limited to, those named on OFAC's Specially Designated and Blocked Persons list) or under

SAMPLE

any statute, executive order (including, but not limited to, the September 24, 2001, Executive Order 13224 Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism), or other governmental action; and (ii) are not knowingly engaged in, and will not knowingly engage in, any dealings or transactions or be otherwise associated with such persons or entities described in clause (i) above. The provisions of 41 CFR 60-1.4, 60-300.5(a) and 741.5(a) are hereby incorporated by reference, as applicable. Provider shall at all times during the term of this Agreement comply with Executive Order 11246. Provider shall abide by the requirements of 41 CFR 60–1.4(a), 60–300.5(a) and 60–741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, national origin, or for inquiring about, discussing, or disclosing information about compensation. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability or veteran status.

Except in strict compliance with Environmental Laws (defined below), neither Provider nor its employees, agents, contractors, subcontractors, licensees or invitees shall use, handle, store, or dispose of (or permit the use, handling, storing, or disposal of) any hazardous or toxic waste or substance in delivering the Services (or transport, transship or permit the transportation or transshipment of the same over or through the real property managed or operated by PWC) which is regulated, controlled, or prohibited by any federal, state, or local laws, ordinances, and/or regulations, including without limitation the Resource Conservation and Recovery Act, 42 U.S.C.§ 6901, et seq. ("RCRA"); the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended, 42 U.S.C. §9601, et. seq. ("CERCLA"); the Hazardous Materials Transportation Act, 49 U.S.C. §801, et. seq; the Federal Water Pollution Control Act, 33 U.S.C. §1321, et. seq; the Toxic Substances Control Act, 15 U.S.C. ("TSCA"); and the Occupational Safety and Health Act, 29 U.S.C. §651 et seq. (as subsequently amended, "Environmental Laws"). As used herein, hazardous or toxic substances or materials shall include without limitation the following: (1) "hazardous wastes" as defined under RCRA or any other federal, state or local law or regulation, (2) "hazardous substances" as defined under CERCLA or any other federal, state or local law or regulation, (3) gasoline, petroleum, or other hydrocarbon products, by-products, derivatives, or fractions (including spent products), (4) "toxic substances" as defined under TSCA, (5) "regulated medical waste" as defined by 40 C.F.R. § 259.30, (6) any radioactive materials or substances, or (7) asbestos and asbestos containing products. Provider shall comply with the Emergency Planning and Community Right-to-Know Act of 1986, as amended. Provider shall immediately report orally to PWC and confirm in writing within three (3) hours any type of chemical spill that occurs in or on any real property managed or operated by PWC or any spill or release of the waste materials during the performance of the Services.

14. Miscellaneous Provisions. Provider is and shall remain an independent contractor and shall undertake performance of the Services pursuant to the terms of this Agreement as an independent contractor. Nothing contained in this Agreement shall be deemed or construed to create the relationship of principal and agent or of partnership or of joint venture or of any association whatsoever between the Parties. No breach or non-performance of any term of this Agreement shall be deemed to be waived by either Party unless said breach or non-performance is waived in writing and signed by the Parties and then only to the extent specifically stated. No waiver of any breach or non-performance under this Agreement shall be deemed to constitute a waiver of any subsequent breach or non-performance, and for any such

breach or non-performance each Party shall be entitled to such remedies as provided by law. The invalidity, illegality, or un-enforceability of any portion or provision of this Agreement shall in no way affect the validity, legality, and/or enforceability of any other portion or provision of this Agreement. Any invalid, illegal, or unenforceable provision of this Agreement shall be deemed severed from this Agreement, and the balance of the Agreement shall be construed and enforced the same as if the Agreement had not contained any portion or provision which was invalid, illegal, or unenforceable; provided, however, severability shall not prevent this entire Agreement from being void in the event any portion or provision of this Agreement that is of the essence of this Agreement shall be void. This is the entire agreement of the Parties on the subject matter hereof, and all prior negotiations, representations, proposals, letters, agreements, understandings, or other communications between the Parties, whether written or oral, are hereby merged into the Agreement and superseded by this Agreement. This Agreement shall not be modified unless such modifications are evidenced in writing, signed by both Parties. Nothing herein shall be construed to give any right or benefits hereunder to anyone other than the Parties. This Agreement shall be governed by the laws of the State of North Carolina without the application of the laws of any other state. The exclusive venue for all mediations and litigation and any other legal proceedings regarding this Agreement shall be the State and Federal Courts serving Cumberland County, North Carolina, and Provider consents to personal jurisdiction in such courts. Provider irrevocably waives, to the fullest extent permitted by law, any objection that it may now or hereafter have to the laying of the venue of any such suit, action or proceeding in any such court serving Cumberland County or that any such suit, action or proceeding brought in any such court serving Cumberland County has been brought in an inconvenient forum. This Agreement may be executed in counterparts with the same effect as if the signatures to each counterpart were upon a single instrument, and all such counterparts together shall be deemed an original of this Agreement. For purposes of this Agreement, a facsimile copy or scanned copy or photocopy of a party's signature shall be sufficient to bind such party. This Agreement shall be subject to execution by electronic means in accordance with Article 40 of Chapter 66 of the North Carolina General Statutes. The titles of the paragraphs throughout this Agreement are for convenience only and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this instrument.

15. Morality Clause. If, in the sole opinion of PWC, at any time Provider or any of its owner(s), employee(s), or agent(s) (each party, owner, employee, and agent is an "Actor") engages in any one or more actions that bring disrepute, contempt, scandal, or public ridicule to the Actor or subject the Actor to prosecution or offend the community or public morals or decency or denigrate individuals or groups in the community served by PWC or are scandalous or inconsistent with community standards or good citizenship or may adversely affect PWC's finances, public standing, image, or reputation or are embarrassing or offensive to PWC or may reflect unfavorably on PWC or are derogatory or offensive to one or more employee(s) or customer(s) of PWC, PWC may immediately upon written notice to Provider terminate this Agreement, in addition to any other rights and remedies that PWC may have hereunder or at law or in equity.

16. Conflicts. Except with PWC's knowledge and prior written consent, Provider shall not engage in any activity or accept any employment, interest or contribution that would reasonably appear to compromise Provider's professional judgment with respect to the Services. Provider shall disclose to PWC any business or personal relationship with any Commissioner, officer, director, manager, or supervisor of PWC.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives as of the Effective Date.

Fayetteville Public Works Commission

By: _____
Timothy Bryant, CEO/General Manager

Date: _____

_____

By: _____
Name:
Title:

Date: _____

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act (N.C. Gen. Stat. § 159-1 et seq.).

By: _____
Rhonda Graham, Chief Financial Officer

Approved as to form:

_____
Legal Dept.

SAMPLE

ATTACHMENT E

FLEMING & ASSOCIATES, PA
STRUCTURAL ENGINEERING · BUILDING ENCLOSURES

Principals: Stephen Fleming, PE, RBEC ■ J. Ben Rogers, PE ■ Sarah Duncan, PE ■ John Kells, PE, SE

WATER STORAGE TANK ANNUAL INSPECTION REPORT - EXTERIOR

General			
Tank name:	Hoffer CW#1 (east tank)	**Location:**	508 Hoffer Drive Fayetteville, NC 28301
Tank capacity:	12 million gallons	**Year constructed:**	1969

In-service:	☒ Yes ☐ No					
Type:	☐ Multi-column elevated	☐ Pedosphere Elevated	☐ Hydropillar Elevated	☐ Composite Elevated	☒ Concrete Ground Supported	☐ Steel Ground supported

Inspection Information			
Exterior inspection date:	11/18/2025	**Inspector:**	John L. Kells, PE, SE, AMPP Certified Coatings Inspector
Interior inspection date:	n/a		

Structural					
Item	**Condition**				**Notes**
Concrete sidewalls:	☐ Good	☐ Fair	☒ Poor	☐ n/a	Groundwater present, indicative of wall leaks on east, west, and south walls. Multiple active leaks encountered. Widespread coating delamination.
Movement joints:	☐ Good	☐ Fair	☒ Poor	☐ n/a	Widespread failure of movement joint material.
Concrete base:	☐ Good	☐ Fair	☐ Poor	☒ n/a	Unknown condition / unexposed.
Concrete cap:	☐ Good	☒ Fair	☐ Poor	☐ n/a	Some concrete spalling and cracking at roof. Rebar exposed in several areas on roof.
Ladder:	☒ Good	☐ Fair	☐ Poor	☐ n/a	

Other notes:

- Spalling of concrete and reinforcing bars in several areas of the roof. Spalling and cracks appear to be progressing. Spalling and deterioration will become more widespread with continued freeze/thaw cycles. Coating history is unknown but spalling appears to be primarily of a thin cementitious coating overlay on the roof.
- Movement joints at roof and walls are in poor condition and should be scheduled for replacement.
- Spalling of concrete in isolated areas on exterior walls. Vertical cracks are present and some are actively leaking.
- Some erosion of soil at interface of wall and grade, and water present at grade in several areas, indicative of active leaks.
- We recommend that a more extensive study of the concrete structure be performed and corrective repairs designed as soon as possible with construction of repairs to follow design. Study may involve removing coatings from sidewalls and cores of concrete roof to make definitive recommendations for repair.
- Overall conditions/observed deficiencies are similar to that in the spring of 2025.
- Tank is not considered in a “sound watertight condition.”

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1004 Hay Street . Fayetteville, North Carolina 28305

Safety/Security				
Item				**Notes**
Compound locked:	☒ Yes	☐ No	☐ n/a	
Fence continuous/secure:	☒ Yes	☐ No	☐ n/a	
Safety climb present:	☐ Yes	☐ No	☒ n/a	
Hatches locked:	☒ Yes	☐ No	☐ n/a	
Ladder security cover:	☐ Yes	☐ No	☒ n/a	
Flying insect presence:	☐ Yes	☒ No	☐ n/a	

Other notes:
n/a

Coating					
Item					**Notes**
Type:	Possibly TNEMEC Series 156 (walls)				Blistering and widespread delamination of coating on walls.
Exterior condition:	☐ Good	☒ Fair	☒ Poor	☐ n/a	Coating condition at sidewalls in poor condition.
Interior condition:	☐ Good	☐ Fair	☐ Poor	☒ n/a	n/a
Last known re-coat:	2014±				Based on TNEMEC records.
Dry film thickness:				n/a	
Testing:	ASTM D 3359 (tape test)			☐ n/a	
	ASTM D 6677 (knife test)			☐ n/a	
	ASTM D 4752 (solvent rub)			☐ n/a	
	Field lead test			☐ n/a	

Exterior notes:
Blistering of coating present on all (4) exterior walls. Consider removing exterior coating and leaving uncoated. Roof coating appears to be thin cementitious overlay, which has progressing cracks with continued freeze/thaw cycles.

Other Comments
• Please note that this inspection is general and visual in nature. Unless otherwise noted, no destructive testing was performed. Additional testing, if required, should be performed by parties contracted directly by PWC. • Direct access to all areas was limited due to presence of water at interior of structure. • Analysis of structural components is outside the scope of this inspection. • Geotechnical evaluation or foundation evaluation is outside the scope of this inspection. • Inspection of sanitary components is outside Fleming and Associates scope of work and should be performed by others. • All other items unless directly included in this report are outside of the scope of this inspection.

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Photos

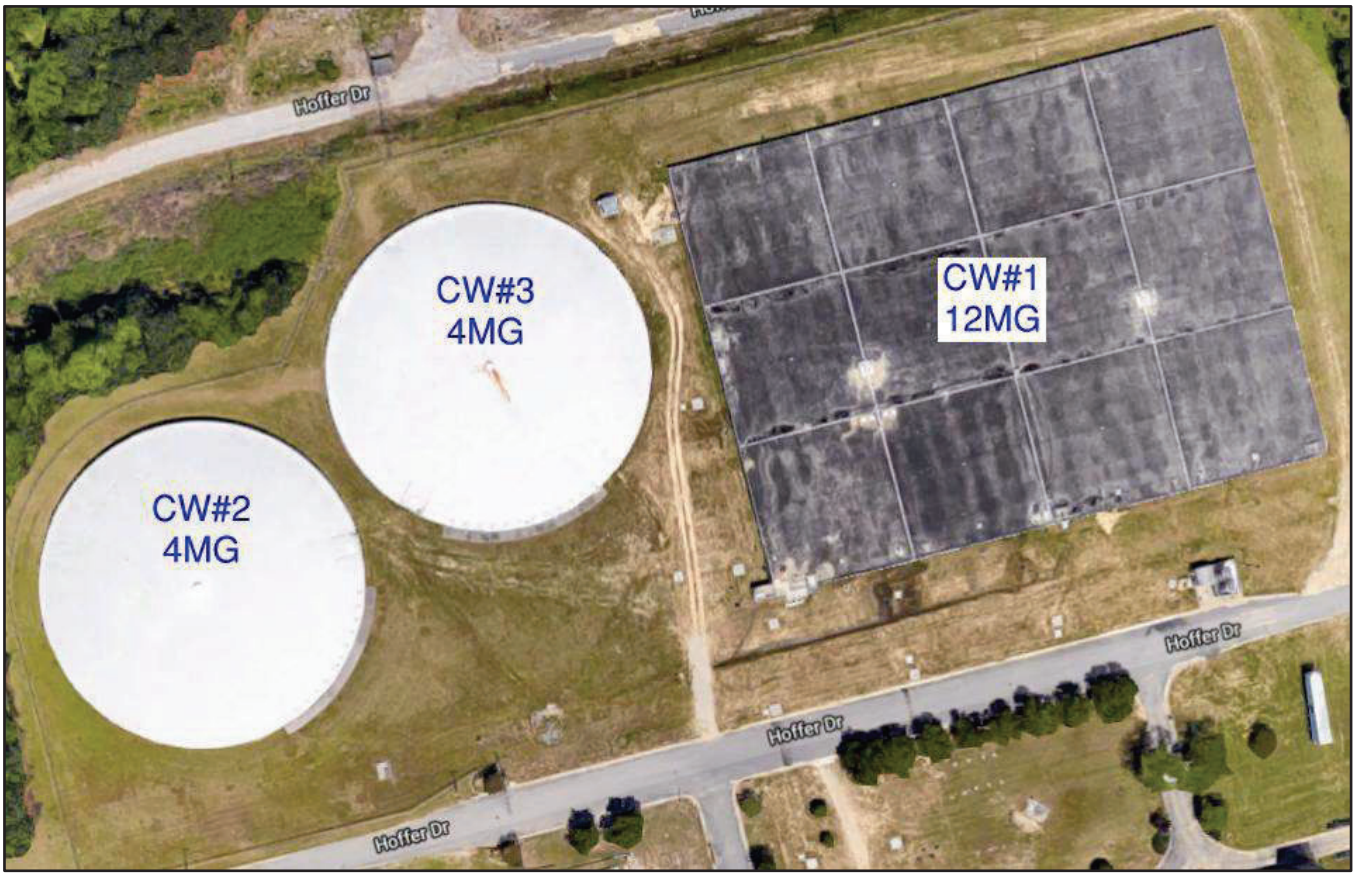


Photo 1

Aerial view of tanks with designations.

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Photos



Photo 2

Overall view of tank #1 (12MG).



Photo 3

West elevation of tank #1.



Photo 4

Sidewall coating failure, west elevation.



Photo 5

Wall movement joint coating failure, west elevation.

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Photos



Photo 6

Poor condition of movement joint, requires repair.



Photo 7

Poor condition of movement joint, requires repair.



Photo 8

Cracks in sidewall, north elevation.



Photo 9

Sidewall coating failure.

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Photos



Photo 10

Poor condition of movement joint and concrete spalling - requires repair.



Photo 11

Coating in poor condition, south elevation.



Photo 12

Active leak, south elevation.



Photo 13

Failed movement joint – typical across field of roof.

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Photos



Photo 14

Spalled cementitious coating.



Photo 15

Exposed and previously coating reinforcement.

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ATTACHMENT F

CONFIDENTIAL AND PROPRIETARY

PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE, NORTH CAROLINA

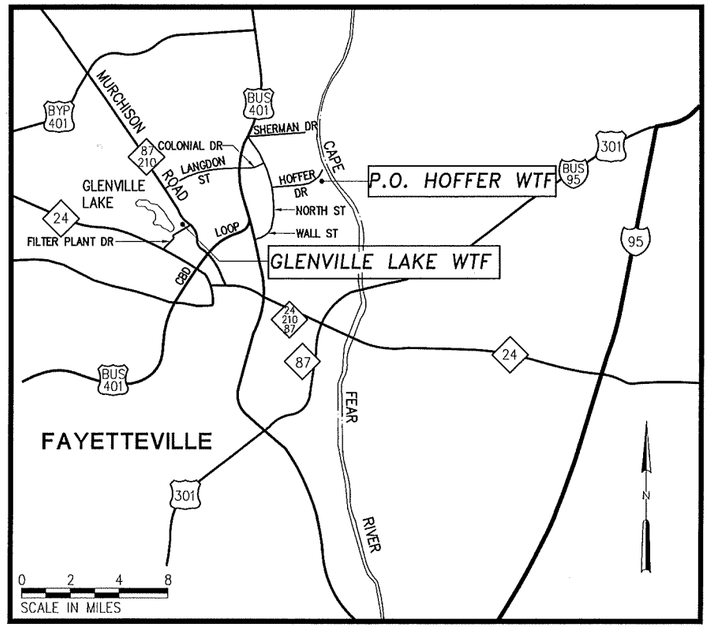
CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

P.O. HOFFER WTF
GLENVILLE LAKE WTF

FEBRUARY 2014

RECORD DRAWINGS

CONTRACT 11 - SINGLE PRIME



LOCATION MAP

HAZEN AND SAWYER
Environmental Engineers & Scientists

APPROVED AS-BUILTS

Vann McDougan 12/16/20
Signature Date

RECEIVED
MAR 25 2014
WATER RESOURCES ENGINEERING DIVISION
PUBLIC WORKS COMMISSION

PWC FAYETTEVILLE PUBLIC WORKS COMMISSION	
CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS PO HOFFER WTP GLENVILLE LAKE WTF FEBRUARY 2014 AS BUILT	
DRAWN BY: HAZEN SAWYER	WO #: N/A
ENG TECH: N/A	WO #: N/A
APPROVED BY: VM	PERMIT #: N/A
DATE: 12/16/20	PERMIT #: N/A
SCALE: AS-NOTED	
PROJ#: 190000096	# OF SHEETS: 77

NORTH CAROLINA PROFESSIONAL SEAL 039099 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWINGS

THESE DRAWINGS HAVE BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR AND/OR ANOTHER PARTY, BUT HAVE NOT BEEN VERIFIED BY THE CERTIFYING ENGINEER.

RECORD DRAWINGS

BW-15496

PLOT DATE: 01/05/19 3:55pm FILE: C:\MWDOCS\Profiles\JohnH-DRWG\205\205\CVR\Cover by DSD XREF FILE = NONE

ABBREVIATIONS

AB	ANCHOR BOLT
AC	ALTERNATING CURRENT/ ASBESTOS CEMENT
ACT	ACOUSTIC TILE
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AL	ALUMINUM
ALLOW	ALLOWANCE/ALLOWABLE
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASB	ASBESTOS
ASPH	ASPHALT
AT	ASPHALT TILE
B	BORING
BD	BOARD
BFE	BOTTOM OF FITTING ELEV
BFV	BUTTERFLY VALVE
BITUM	BITUMINOUS
℄	BASELINE
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BM	BENCH MARK
BOC	BACK OF CURB
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BRZ	BRONZE
BSMT	BASEMENT
BT	BOLT
BUR	BUILT-UP ROOFING
BV	BALL VALVE
C	CLOSET/CARPET/CHANNEL
CAB	CABINET
CB	CATCH BASIN
C/C	CENTER TO CENTER
CE	CONSTRUCTION EASEMENT
CEM	CEMENT
CER	CERAMIC
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON/CUBIC INCHES
CIP	CAST IRON PIPE
?	CENTER LINE
CL~~2	CHLORINE
CLG	CEILING
CLKG	CAULKING
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORP	CORPORATION
CORR	CORRIDOR
CP	CONCRETE PLANK
CRS	COURSE
CT	CERAMIC TILE
CTJ	CONTROL JOINT
CU	COPPER
CV	CHECK VALVE
CW	COLD WATER
CY	CUBIC YARD
DC	DIRECT CURRENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA (?)	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DIST	DISTRIBUTION
DJ	DOUBLE JOIST
DL	DEAD LOAD
DN	DOWN
DOZ	DOZEN
DR	DOOR
DWG	DRAWING
DWL	DOWEL
E	EAST/EASEMENT
EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EFF	EFFLUENT
EIP	EXIST IRON PIPE
EL OR ELEV	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
ELL	ELBOW
ENGR	ENGINEER
ENT	ENTRANCE
EOG	EDGE OF GRAVEL
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQPT	EQUIPMENT
EW	EACH WAY
EX	EXISTING
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
FAB	FABRICATE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FC	FLUSHING CONNECTION
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FF	FINISH FLOOR
FH	FIRE HYDRANT
FIN	FINISH
FIX	FIXTURE
FL	FLASHING/FLOOR
FLEX	FLEXIBLE
FLG	FLANGE
FLUOR	FLUORESCENT
FLXC	FLEXIBLE CONNECTION
FM	FORCE MAIN
FPRF	FIREPROOF
FRP	FIBERGLASS REINFORCED POLYESTER LAMINATE
FT	FEET
FTG	FOOTING/FITTING
FURR	FURRING/FURRED
G	GAS/GAS LINE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GI	GALVANIZED IRON
GL	GLASS
GPM	GALLONS PER MINUTE
GR	GRADE
GV	GATE VALVE
GW	GUY WIRE
GWB	GYPSUM WALL BOARD
GWF	GLAZED WALL FINISH
GYP	GYPSUM
H	HEIGHT
HDW	HARDWARE
HEX	HEXAGONAL
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HTR	HEATER
HVAC	HEATING,VENTILATION AND AIR CONDITIONING
HW	HOT WATER
HWL	HIGH WATER LEVEL
HWY	HIGHWAY
HYD	HYDRAULIC
I	IRON
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INCL	INCLUDED
INF	INFLUENT
INS	INSULATION
INT	INTERIOR
INV	INVERT
J	JOIST
JB	JUNCTION BOX
JCT	JUNCTION
JT	JOINT
L	LENGTH/ANGLE
LA	LINE AHEAD
LAB	LABORATORY
LAM	LAMINATED
LAT	LATERAL
LAV	LAVATORY
LB	POUND/LINE BACK
LF	LINEAR FEET
LG	LONG
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LIGHT POLE
LPT	LOW POINT
LT	LIGHT
LTG	LIGHTING
LVR	LOUVER
LWL	LOW WATER LEVEL
MAINT	MAINTENANCE
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MFR	MANUFACTURER
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLDG	MOLDING
MO	MASONRY OPENING
MOD	MODIFY/MODIFIED
MON	MONUMENT
MOT	MOTOR
MTD	MOUNTED
MTG	MOUNTING
MULT	MULTIPLE
N	NORTH
NA	NOT APPLICABLE
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OFF	OFFICE
OPER	OPERATOR
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OT	OPEN TRUSS
OVHD	OVERHEAD
PAR	PARALLEL
PC	POINT OF CURVE/PIECE
PCC	POINT OF COMPOUND CURVE
PCF	POUNDS PER CUBIC FOOT
PE LINING	POLYETHYLENE LINING
PERF	PERFORATED
PERP	PERPENDICULAR
PI	POINT OF INTERSECTION
℄	PROPERTY LINE/PLATE
PNL	PANEL
PP	POWER POLE
PREFAB	PREFABRICATED
PRV	PRESSURE RELIEF VALVE
PS	PUMPING STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENT/POINT
PTN	PARTITION
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	POTABLE WATER
QTY	QUANTITY
R	RADIUS/RISER
RCP	REINFORCED CONCRETE PIPE
RD	ROAD/ROOF DRAIN
RECIR	RECIRCULATION
RECP	RECEPTACLE
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REG	REGISTER
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
REST	RESTRAINED
REV	REVISE
RF	ROOF
RFG	ROOFING
RJ	RESTRAINED JOINT
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RT	RIGHT
RTU	REMOTE TERMINAL UNIT
RW	RAW WATER
R/W	RIGHT OF WAY
S	SOUTH/SLOPE
SAN	SANITARY
SBL	SURVEY BASELINE
SCH	SCHEDULE
SD	STORM/SITE DRAIN
SECT	SECTION
SERV	SERVICE
SEW	SEWER
SF	SQUARE FEET
SHT	SHEET
SI	SQUARE INCH
SIM	SIMILAR
SJ	STEEL JOIST
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STG	STORAGE
STIR	STIRRUP
STL	STEEL
STR	STRUCTURAL
SUB	SUBSTITUTE
SUP	SUPPLY
SUPT	SUPERINTENDENT
SUR	SURFACE
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWD	SIDE WATER DEPTH
SYM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TAN	TANGENT
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TDH	TOTAL DYNAMIC HEAD
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPERATURE
TER	TERRAZZO
THERMO	THERMOSTAT
THK	THICK
THRU	THROUGH
TOD	TOP OF DECK
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY/MANHOLE
TOS	TOP OF SLAB
TOW	TOP OF WALL
TOL	TOLERANCE
TPS	TWISTED PAIR SHIELDED
TRANS	TRANSFORMER
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
UTIL	UTILITY
VAC	VACUUM
VAT	VINYL ASBESTOS TILE
VCP	VITRIFIED CLAY PIPE
VEL	VELOCITY
VENT	VENTILATING/VENTILATION
VERT	VERTICAL
VOL	VOLUME
VP	VENT PIPE
VWC	VINYL WALL COVERING
W	WEST/WIDTH
W/	WITH
WC	WATER CLOSET
WF	WIDE FLANGE
WH	WALL HYDRANT
WI	WROUGHT IRON
WL	WATER LEVEL
W/L	WATER LINE
WO	WINDOW OPENING
W/O	WITHOUT
WP	WATERPROOF
WPFG	WATER PROOFING
WPT	WALL PENETRATING TYPE
WSE	WATER SURFACE ELEVATION
WSP	WEATHERSTRIP
WT	WEIGHT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
YD	YARD
YR	YEAR

INDEX OF DRAWINGS

DRAWING NUMBER	DESCRIPTION
	GENERAL
	COVER
X1	INDEX, ABREVIATIONS AND LEGEND
	P.O. HOFFER WATER TREATMENT FACILITY
	CIVIL
C100	SITE PLAN, DEMOLITION AND PROFILE
C101	GRADING AND EROSION CONTROL PLAN
C102	EROSION CONTROL NOTES AND LEGEND
	MECHANICAL
M100	SITE PLAN – DEMOLITION
M101	SITE PLAN
M102	ENLARGED SITE PLAN – CHEMICAL DUCT BANKS
M103	CHEMICAL DUCT BANK PROFILES
M104	CHEMICAL INJECTION–METER VAULT
M105	AMMONIA FACILITY – PLANS, SECTIONS AND DETAIL
M106	CHEMICAL JUNCTION BOXES – DETAILS
M107	CHEMICAL JUNCTION BOXES – DETAILS
M120	PLANS – DEMOLITION
M121	PLAN
M122	ROOF PLAN
M123	DETAILS
M124	LARGE DIAMETER PIPING – PLAN
M125	LARGE DIAMETER PIPING – SECTIONS
M126	LARGE DIAMETER PIPING – SECTIONS
M127	STOP LOGS – PLANS
M128	STOP LOGS – SECTIONS
M140	HYPOCHLORITE PLAN – DEMOLITION
M141	HYPOCHLORITE PLAN
M142	HYPOCHLORITE SCHEMATIC – DEMOLITION
M143	HYPOCHLORITE SCHEMATIC
M150	FERRIC PLAN – DEMOLITION
M151	FERRIC PLAN
	STRUCTURAL
S1	STRUCTURAL NOTES
S120	BOTTOM PLAN
S121	ROOF PLAN
S122	SECTIONS AND DETAILS
S123	SECTIONS AND DETAILS
S140	PLAN
S150	ROOF DEMOLITION PLAN
S151	ROOF RECONSTRUCTION PLAN

DRAWING NUMBER	DESCRIPTION
	P.O. HOFFER WATER TREATMENT FACILITY
	ELECTRICAL
E001	LEGEND AND NOTES
E100	SITE PLAN – DEMOLITION
E101	SITE PLAN – MODIFIED
E102	ENLARGED SITE PLAN
E103	CONDUIT AND WIRE SCHEDULES
E104	DUCTBANK SCHEDULES
E120	ROOF PLANS
E140	HYPOCHLORITE PLAN – DEMOLITION
E141	HYPOCHLORITE PLAN
E150	FERRIC PLAN – DEMOLITION
E151	FERRIC PLAN

DRAWING NUMBER	DESCRIPTION
	GLENVILLE LAKE WATER TREATMENT FACILITY
	CIVIL
C200	SITE PLAN AND DEMOLITION
C201	GRADING AND EROSION CONTROL PLAN
	MECHANICAL
M240	PLAN – DEDMOLITION
M241	PLAN
M242	HYPOCHLORITE SCHEMATIC – DEMOLITION
M243	HYPOCHLORITE SCHEMATIC
M244	CAUSTIC SCHEMATIC – DEMOLITION
M245	CAUSTIC SCHEMATIC
	STRUCTURAL
S240	DEMOLITION PLAN
S241	TOP PLAN
S242	SECTIONS AND DETAILS
S243	DETAILS
S260	PLANS, SECTIONS AND DETAIL
S261	ELEVATION AND DETAIL
	ELECTRICAL
E240	POWER PLAN – DEMOLITION
E241	POWER PLAN – MODIFIED
E242	PANEL SCHEDULES & RISER DIAGRAMS
E243	ELEMENTARY CONTROL SCHEMATICS
	MISCELLANEOUS STANDARD DETAILS
D01	MISCELLANEOUS STANDARD DETAILS
D02	MISCELLANEOUS STANDARD DETAILS
D03	MISCELLANEOUS STANDARD DETAILS
D04	MISCELLANEOUS STANDARD DETAILS
D05	MISCELLANEOUS STANDARD DETAILS
D06	MISCELLANEOUS STANDARD DETAILS
D07	MISCELLANEOUS STANDARD DETAILS
D08	MISCELLANEOUS STANDARD DETAILS
D09	MISCELLANEOUS STANDARD DETAILS
D10	MISCELLANEOUS STANDARD DETAILS
D11	MISCELLANEOUS STANDARD DETAILS
D12	MISCELLANEOUS STANDARD DETAILS

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BUILDING CODE SUMMARY – SCOPE OF WORK

P.O. HOFFER WATER TREATMENT FACILITY:

INCLUDES THE REPLACEMENT OF FERRIC SULFATE AND SODIUM HYPOCHLORITE BULK STORAGE TANKS, INCLUDING CHEMICAL PIPING AND VALVE MODIFICATIONS IN THE EXISTING BULK CHEMICAL AND THE EXISTING SODIUM HYPOCHLORITE BUILDINGFFY .. NO CHANGES ARE BEING MADE TO BUILDING ENTRANCES, EXITS, TYPE OF CONSTRUCTION, OCCUPANCY CLASSIFICATION, OR LIFE SAFETY SYSTEMS AS A RESULT OF THIS WORK.

GLENVILLE LAKE WATER TREATMENT FACILITY:

INCLUDES THE REPLACEMENT OF FERRIC SULFATE AND SODIUM HYPOCHLORITE BULK STORAGE TANKS INCLUDING CHEMICAL PIPING AND VALVE MODIFICATIONS; INSTALLATION OF A NEW CAUSTIC BULK STORAGE TANK INCLUDING NEW TRANSFER/RECIRCULATION PUMPS AND CHEMICAL PIPING AND VALVE MODIFICATIONS. NO CHANGES ARE BEING MADE TO BUILDING ENTRANCES, EXITS, OCCUPANCY CLASSIFICATION, TYPE OF CONSTRUCTION, OR LIFE SAFETY SYSTEMS AS A RESULT OF THIS WORK.

LEGEND

MATERIALS

GRADE OR EARTH
ASPHALT PAVING
SAND
GRAVEL
CONCRETE
CONC. FILL OR GROUT
CONC. MASONRY UNIT
BRICK
ROCK
STEEL
INSULATION
WATER SURFACE
GRATING
CHECKERED PLATE
GLASS
WOOD BLOCKING

SYMBOLS

GATE VALVE
BUTTERFLY VALVE
PLUG VALVE
SWING CHECK VALVE
GLOBE VALVE
PINCH VALVE
DIAPHRAGM VALVE
BALL VALVE
BALL CHECK VALVE
HARNESSED FLANGED ADAPTER
HARNESSED SLEEVE TYPE COUPLING
SLEEVE TYPE COUPLING
HARNESSED FLEXIBLE COUPLING
WALL PENETRATION
MECHANICAL COUPLING
WELDED JOINT
FLANGED JOINT
MECHANICAL, PUSH ON OR RESTRAINED JOINT
SLUICE GATE
SLIDE GATE/STOP GATE
FLUSHING CONNECTION
HOSE BIBB
QUICK DISCONNECT FITTING
YARD HYDRANT
FIRE HYDRANT
SOIL BORING

SECTION AND DETAIL KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

(A) A SECTION CUT ON DRAWING A3 IS IDENTIFIED AS FOLLOWS:

A — SECTION LETTER
A6 — DRAWING WHERE SECTION IS SHOWN

(B) THE SECTION SHOWN ON DRAWING A6 IS IDENTIFIED AS FOLLOWS:

A — SECTION LETTER
A3 — DRAWING FROM WHERE SECTION WAS TAKEN

DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT DETAILS ARE IDENTIFIED BY A SQUARE WITH A NUMBER IN THE UPPER HALF.

STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE CONTRACT DRAWINGS BY ONE OF TWO METHODS:

1509203 → REFERENCED ITEM

OR:

SEE 1509203 → REFERENCED ITEM

STANDARD DETAILS ARE COMPILED IN APPROXIMATE NUMERICAL ORDER IN THE BACK OF THE CONTRACT DRAWINGS ON THE D* DRAWINGS.

LINETYPES

PROPOSED ITEMS
EXISTING ITEMS
HIDDEN ITEMS
DEMOLITION ITEMS
CENTER LINE
MATCH LINE

NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
2	BIDDING	APR 2012	ZMW
1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED DCH/CLY
DRAWN HGM
CHECKED
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY D. CORY HOPKINS SEAL NUMBER 31433

NORTH CAROLINA PROFESSIONAL SEAL 035631 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWING

THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

HAZEN AND SAWYER
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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

INDEX, ABBREVIATIONS AND LEGEND

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER X1

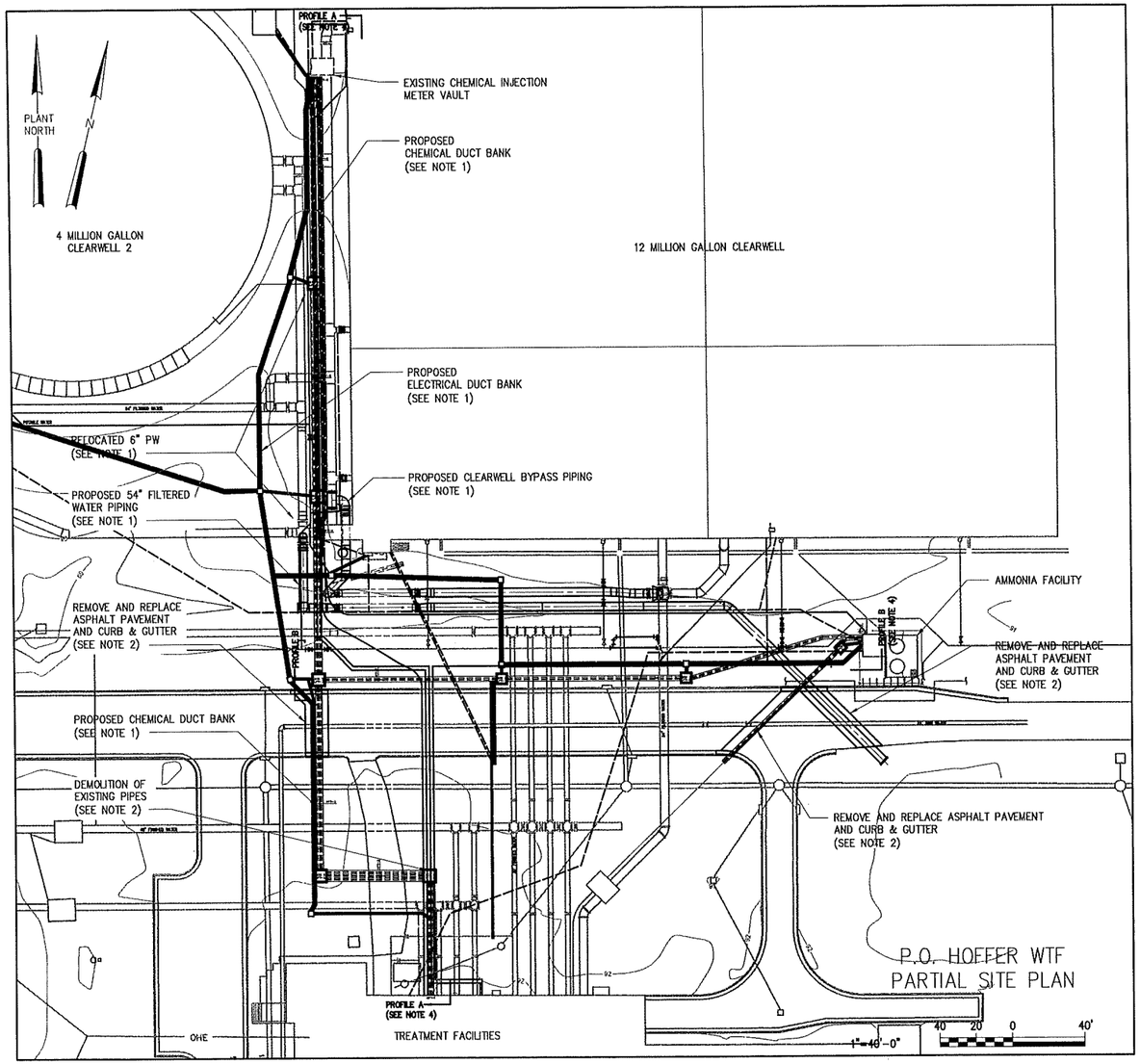
CONFIDENTIAL AND PROPRIETARY

RECORD DRAWINGS

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IMAGES=

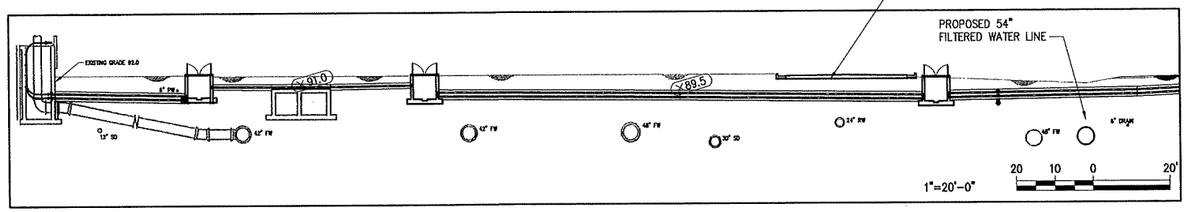
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BW-15496

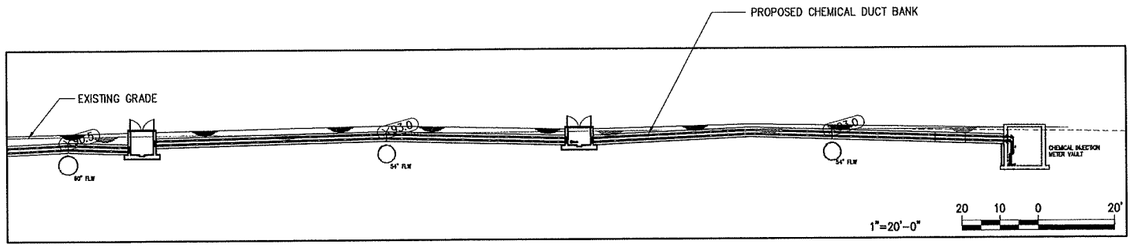


NOTES:

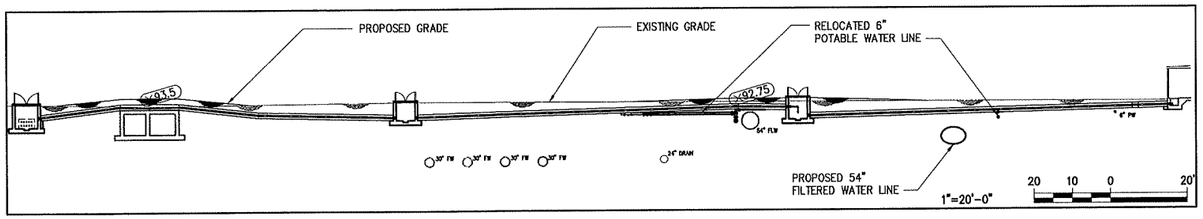
1. SEE CONTRACT SHEET M101 FOR ADDITIONAL INFORMATION ON PROPOSED CHEMICAL FEED, PIPE, AND DUCT WORK.
2. REMOVE AND REPLACE ASPHALT PAVEMENT AND CURB & GUTTER TO THE EXTENT NECESSARY TO ALLOW FOR INSTALLATION OF PIPING. SEE CONTRACT SHEET M100 FOR SITE DEMOLITION PLAN.
3. CONTRACTOR IS RESPONSIBLE FOR FIELD-VERIFYING THE LOCATION OF ALL UNDERGROUND PIPES AND UTILITIES.
4. SEE CONTRACT SHEET M103 FOR PROFILE ELEVATIONS AND ADDITIONAL INFORMATION.



PROFILE A – CHEMICAL DUCT BANK



PROFILE A (con't)– CHEMICAL DUCT BANK



PROFILE B – CHEMICAL DUCT BANK

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4	RECORD DRAWINGS	FEB 2014	ZMW
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY L. MICHAEL SANTOWASSO SEAL NUMBER 18560

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWING
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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

P.O. HOFFER WTF
SITE PLAN, DEMOLITION & PROFILE
PROPOSED SITE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
C100

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BW-15496

CONFIDENTIAL AND PROPRIETARY

RECORD DRAWINGS

GENERAL:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY ASSOCIATED WITH THE WORK UNDER THIS PROJECT AND FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY LAWS, CODES, REGULATIONS, AND ORDINANCES INCLUDING BUT NOT LIMITED TO THOSE CURRENTLY MANDATED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

2. CONTRACTOR SHALL USE ADEQUATE SHORING METHODS TO ENSURE:

   2.A. COMPLIANCE WITH OSHA REGULATIONS.

   2.B. PROTECTION OF EXISTING PAVEMENT AND ROAD SHOULDERS, STRUCTURES AND UTILITIES.

   2.C. CONSTRUCTION ACTIVITIES ARE CONFINED TO RIGHTS-OF-WAY OR EASEMENTS AS INDICATED

3. LIMITS OF DISTURBANCE (LOD) SHALL BE AS INDICATED ON THE CONTRACT DRAWINGS. ANY CHANGES TO THE LOD BY THE CONTRACTOR SHALL REQUIRE PRIOR APPROVAL FROM THE ENGINEER.

4. LOCATION OF EXISTING UTILITIES SHOWN ON THESE PLANS WERE COMPILED BASED ON THE BEST INFORMATION AVAILABLE. THESE LOCATIONS ARE NOT CONSIDERED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES AND FIELD VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. LOCATE WELL AHEAD OF PIPE LAYING OPERATIONS TO ALLOW FOR ADJUSTMENT TO PIPE ALIGNMENT AND ELEVATION AS REQUIRED. NO SEPARATE PAYMENT WILL BE MADE FOR FIELD VERIFICATION OR ADJUSTMENT OF DEPTH AS REQUIRED. CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE, ANY DAMAGE CAUSED BY CONSTRUCTION RELATED ACTIVITIES TO EXISTING UTILITY SERVICE LINES.

5. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES, CONTRACTOR SHALL STOP WORK IMMEDIATELY, TAKE NECESSARY PRECAUTIONS TO PREVENT INJURY OR FURTHER DAMAGE, AND NOTIFY PROPER AUTHORITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING/REPAIRING ALL EXISTING STRUCTURES, CONDUITS, OR OTHER UTILITIES DAMAGED BY CONTRACTOR'S OPERATIONS AT NO COST TO OWNER.

6. REMOVAL AND REPLACEMENT OR REPAIR OF EXISTING UTILITY SERVICES SHALL BE COORDINATED WITH APPROPRIATE UTILITY COMPANY AT NO ADDITIONAL COST TO THE OWNER.

7. IT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH POWER AND TELEPHONE COMPANIES FOR RELOCATING OR STABILIZING ANY EXISTING POLES WHICH WILL BE DISTURBED BY CONSTRUCTION. THIS WORK SHALL BE DONE AT NO COST TO OWNER.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT TO ORIGINAL OR BETTER CONDITION OF ALL EXISTING PAVEMENTS, GRAVEL ROADWAYS, PIPE CULVERTS, FENCES, AND MISCELLANEOUS ITEMS WHERE REQUIRED TO COMPLETE THE CONSTRUCTION.

9. ALL HOLES, TRENCHES, AND OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY BARRICADES, LIGHTS OR OTHER PROTECTIVE DEVICES.

10. REMOVAL OF EXCAVATED MATERIALS AND DAILY CLEANUP OPERATIONS SHALL BE PERFORMED IN COMPLIANCE WITH THE SPECIFICATIONS AND TO THE SATISFACTION OF THE OWNER/ENGINEER.

11. EXCESS/UNSUITABLE SPOIL TO BE REMOVED FROM SITE. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL SUBMIT THE OFF-SITE SPOIL LOCATIONS TO BE USED AND PROVIDE DOCUMENTATION OF EROSION CONTROL MEASURES TO BE PROVIDED DURING DISPOSAL OPERATIONS. CONTRACTORS OFF-SITE SEDIMENT CONTROL MEASURES MUST BE APPROVED BY NCDENR PRIOR TO SPOIL DISPOSAL.

12. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE IMPLEMENTED BEFORE CONSTRUCTION COMMENCES AND SHALL NOT BE REMOVED UNTIL RE-VEGETATION HAS BEEN ESTABLISHED.

13. THERE IS NO PAY ITEM FOR DEWATERING AND NO SEPARATE PAYMENT WILL BE MADE FOR DEWATERING. ANY DEWATERING OF THE TRENCH REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR THE PIPE.

14. THE CONTRACTOR SHALL RECORD AND SUPPLY TO THE ENGINEER THE FOLLOWING INFORMATION:

   14.A. THE LOCATION OF ALL UTILITIES CROSSED AND THE NEW LOCATION AND DEPTH OF ALL RELOCATED AND/OR ADJUSTED UTILITIES.

15. 100-YEAR FLOOD ELEVATIONS TAKEN FROM FLOOD INSURANCE RATE MAPS DATED JANUARY 5, 2007, AND MAP Nos. 3720044800J AND 3720043800J REFERENCED TO NAVD 88 DATUM (ELEVATION AT CROSS SECTION 7652 83.9 FT ABOVE MSL),

16. HORIZONTAL CONTROL: NAD 83 (2001)
    VERTICAL CONTROL: NAVD 88

EROSION CONTROL:

1. CONTRACTOR TO POST EROSION CONTROL PERMIT ON JOB SITE AS REQUIRED.

2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE ANY LAND CLEARING OR DISTURBANCE ACTIVITIES MAY BEGIN.

3. A RAIN GAUGE SHALL BE MAINTAINED IN GOOD WORKING ORDER ON THE SITE UNLESS ANOTHER RAIN-MONITORING DEVICE HAS BEEN APPROVED BY THE NC DIVISION OF WATER QUALITY

4. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY EROSION CONTROL MEASURES WHETHER OR NOT SHOWN ON THE PLANS TO PROTECT ADJACENT CREEKS, RIVERS, ROADWAYS, ETC. FROM SILTATION AND EROSION.

5. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS OF ANY RAINFALL EVENT THAT PRODUCES 1/2 INCH OR MORE OF RAIN. REPAIR AND/OR REPLACE AS NECESSARY. SEE STANDARD DETAILS ON CONTRACT SHEETS D4-D5 FOR SPECIFIC MAINTENANCE REQUIREMENTS FOR EACH EROSION AND SEDIMENT CONTROL MEASURE UTILIZED ON THIS PROJECT.

6. EROSION CONTROL MEASURES SHALL BE CLEANED OF ACCUMULATED SEDIMENT WHEN VOLUME OF MEASURE IS HALF FULL. REMOVED SEDIMENT SHALL BE DISPOSED OF IN SUCH A MANNER AS TO PREVENT FURTHER SEDIMENT TRANSPORT. IF NO SUITABLE ON-SITE LOCATIONS ARE AVAILABLE, ALL REMOVED SEDIMENT WILL BE LEGALLY DISPOSED OF OFF-SITE AT NO ADDITIONAL COST TO THE OWNER.

7. ALL EXCESS SOIL RESULTING FROM EARTHWORK OPERATIONS SHALL BE REMOVED FROM SITE BY CONTRACTOR OR STOCKPILED ON SITE. ANY ONSITE SOIL STOCKPILE AREAS SHALL BE WITHIN THE LOD AS SHOWN ON THE DRAWINGS, AND LOCATED, AT A MINIMUM, 50 FEET FROM ANY STORM DRAIN INLETS AND/OR SURFACE WATERS UNLESS IT CAN BE SHOWN THAT NO OTHER ALTERNATIVES ARE AVAILABLE. ALL ONSITE SOIL STOCKPILES SHALL BE SEEDED WITH TEMPORARY AND/OR PERMANENT SEEDING MEASURES FOR THE DURATION OF CONSTRUCTION ACTIVITIES. ALL CONTRACTOR STAGING AND LAYDOWN AREAS, SOIL OR WASTE STOCKPILE AREAS SHALL HAVE PERIMETER SILT FENCE. ANY SOILS TAKEN OFF SITE BECOMES THE CONTRACTORS RESPONSIBILITY AND SHALL COMPLY WITH ALL REQUIRED STATE AND LOCAL REGULATIONS AND PERMITS.

8. ALL EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL ENTIRE SITE IS PERMANENTLY STABILIZED WITH VEGETATION AS PER SEEDING SPECIFICATIONS AND SCHEDULE. ALL TEMPORARY EROSION CONTROL DEVICES ARE TO BE REMOVED AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

9. RESTORE ALL DISTURBED AREAS INCLUDING DITCHES/SWALES, STAGING/LAYDOWN/PARKING AREAS TO ORIGINAL CONTOUR AND SLOPE, EXCEPT WHERE NOTED ON THE CONTRACT DRAWINGS.

10. TOTAL ACREAGE DISTURBED:
    10.1. HOFFER: APPROXIMATELY 2.65 ACRES.
    10.2. GLENVILLE: APPROXIMATELY 0.12 ACRES.

CONSTRUCTION SEQUENCE

1. CONTRACTOR SHALL SIGN AND IMPLEMENT THE REQUIREMENTS OF THE STATE APPROVED EROSION CONTROL PLAN AND THE NORTH CAROLINA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL NOTIFY THE STATE LAND QUALITY SECTION AT (910) 433-3300 TO SCHEDULE A PRE-CONSTRUCTION MEETING. ADDITIONALLY, THE CONTRACTOR SHALL NOTIFY THE STATE LAND QUALITY SECTION, AT (910) 433-3300 AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.

2. INSTALL ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES IN LOCATIONS AS SHOWN ON THE CONTRACT DRAWINGS. NO CONSTRUCTION OR LAND DISTURBANCE ACTIVITIES MAY BEGIN UNTIL ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED. CLEAR ONLY THE AREA REQUIRED FOR INSTALLATION OF EROSION CONTROL MEASURES.

3. ONCE ALL TEMPORARY EROSION CONTROL MEASURES HAVE BEEN INSTALLED, THE SITE SHALL BE CLEARED AND GRUBBED, AS REQUIRED, WITHIN THE LIMITS OF DISTURBANCE (LOD) AS SHOWN ON THE CONTRACT DRAWINGS. ANY ADJUSTMENTS TO THE LOD SHALL REQUIRE PRIOR APPROVAL FROM THE ENGINEER AND OWNER.

4. ONCE CLEARING AND GRUBBING IS COMPLETE, CONSTRUCTION ACTIVITIES MAY BEGIN.

5. ALL EXCESS SOIL RESULTING FROM EARTHWORK OPERATIONS SHALL BE REMOVED FROM SITE BY CONTRACTOR OR STOCKPILED ON SITE (SEE EROSION CONTROL NOTE 7, FOR ADDITIONAL INFORMATION ON STOCKPILED SOILS). ANY SOILS TAKEN OFFSITE BECOMES THE CONTRACTORS RESPONSIBILITY, AND SHALL COMPLY WITH ALL REQUIRED STATE AND LOCAL REGULATIONS AND PERMITS.

6. ALL PIPE WORK SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD CONSTRUCTION TECHNIQUES. ONLY THE LENGTH OF TRENCH IN WHICH PIPE CAN BE INSTALLED IN ONE DAYS TIME SHALL BE OPEN AT ANY TIME, WITH SPOIL MATERIAL PLACED ON THE UPHILL SIDE OF THE TRENCH. TRENCH SHALL BE BACKFILLED AT END OF EACH DAYS WORK AND DISTURBED AREA SEEDED WITH TEMPORARY SEEDING MEASURES IF APPROPRIATE.

7. TEMPORARY SEEDING MEASURES SHALL BE EMPLOYED AS SOON AS PRACTICABLE ON DISTURBED AREAS BUT IN ANY EVENT WITHIN FOURTEEN (14) DAYS. DISTURBED SLOPES STEEPER THAN 3:1 SHALL BE TEMPORARILY SEEDED WITHIN SEVEN (7) DAYS UNLESS SLOPE LENGTH IS TEN (10) FEET OR LESS AND NOT STEEPER THAN 2:1. DISTURBED SLOPES 3:1 OR FLATTER SHALL BE TEMPORARILY SEEDED WITHIN FOURTEEN (14) DAYS UNLESS SLOPE LENGTH IS GREATER THAN 50 FEET.

8. STORM DRAINAGE INLETS SHALL BE PROTECTED WITH APPROPRIATE EROSION CONTROL MEASURES AT ALL TIMES.

9. ONCE ALL EARTHWORK AND CONSTRUCTION ACTIVITIES ARE COMPLETE, FINAL GRADING MAY BEGIN.

10. UPON COMPLETION OF FINAL GRADING, PERMANENT SEEDING SHALL BE APPLIED ON ALL DISTURBED AREAS. VEGETATIVE GROUND COVER SHALL BE APPLIED ON ALL DISTURBED AREAS AS OUTLINED IN NOTE 7, ABOVE.

11. ONCE PERMANENT STABILIZATION HAS OCCURRED, AND APPROVAL OF THE STATE LAND QUALITY SECTION ((910) 433-3300) HAS BEEN GRANTED, TEMPORARY SEDIMENT CONTROL MEASURES MAY BE REMOVED. ANY AREAS DISTURBED BY THE REMOVAL OF THESE MEASURES SHALL BE RETURNED AS CLOSELY AS POSSIBLE TO ORIGINAL CONDITION AND SEEDED, MULCHED, AND FERTILIZED.

SEEDING SCHEDULE
P.O. HOFFER WATER TREATMENT PLANT

APPLICATION RATES IN POUNDS/ACRE							
SEED*** MIXTURE	PLANTING SEASON	LIME*	SEED	FERTILIZER**	STRAW MULCH*	TOPDRESSING*	COMMENTS
P****	APRIL 1-JULY 15	3000	100	500	4000	N/A	WHERE NEAT APPEARANCE IS DESIRED, OMIT SERICEA. USE COMMON BERMUDAGRASS ONLY ON ISOLATED SITES WHERE IT CANNOT BECOME A PEST (CAN BE REPLACED W/ 5LB/AC CENTIPEDE).
TW	DEC 1-APRIL 15	2000	170	700-1,000	4000	N/A	
TS	APRIL 15-AUG 15	2000	40	700-1,000	4000	N/A	
TF	AUG 15-DEC 30	2000	120	700-1,000	4000	50 LB/AC NITROGEN IN MARCH	IF TEMPORARY COVER IS EXTENDED BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH

* APPLICATION RATES AND/OR CHEMICAL ANALYSIS SHALL BE CONFIRMED OR ESTABLISHED BY SOIL TEST. TACK MULCH BY APPLYING AT 0.10 GAL/YD²

** FERTILIZER SHALL BE 10-10-10 ANALYSIS. UPON WRITTEN APPROVAL BY NCDENR LAND QUALITY SECTION, A DIFFERENT ANALYSIS OF FERTILIZER MAY BE USED PROVIDED THE 1-1-1 RATIO IS MAINTAINED AND THE RATE OF APPLICATION ADJUSTED TO PROVIDE THE SAME AMOUNT OF PLANT FOOD AS A 10-10-10 ANALYSIS.

*** SEED MIXTURES TO BE USED ON THE PROJECT SHALL BE AS FOLLOWS:

- P - PERMANENT SEEDING (LB/AC)
  50 PENSACOLA BAHIAGRASS; 30 SERICEA LESPEDEZA; 10 COMMON BERMUDAGRASS; 10 GERMAN MILLET.
- TF - TEMPORARY FALL SEEDING (LB/AC)
  120 RYE (GRAIN)
- TW - TEMPORARY WINTER SEEDING (LB/AC)
  120#/ACRE RYE (GRAIN), 50 #/ACRE KOBE LESPEDEZA
- TS - TEMPORARY SUMMER SEEDING (LB/AC)
  40 GERMAN MILLET

**** REFERTILIZE IN THE SECOND YEAR WITH 50 LB/AC NITROGEN. REPEAT AS GROWTH REQUIRES. MAY BE MOWED ONLY ONCE A YEAR.
RESEED, FERTILIZE, AND MULCH DAMAGED AREAS IMMEDIATELY.

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EROSION CONTROL NOTES AND LEGEND SHALL APPLY TO THE P.O. HOFFER WTF PROJECT SITE AND THE GLENVILLE LAKE WTF PROJECT SITE.

NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM:

THE SEDIMENTATION POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. RULES DETAILING THE DOCUMENTATION OF THESE INSPECTIONS TOOK EFFECT OCTOBER 1, 2010. THE SELF-INSPECTION PROGRAM IS SEPARATE FROM THE WEEKLY SELF MONITORING PROGRAM OF THE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES. THE FOCUS OF THE SELF-INSPECTION REPORT IS THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES ACCORDING TO THE APPROVED PLAN. THE INSPECTIONS MUST BE CONDUCTED AFTER EACH PHASE OF THE PROJECT, AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH THE NCGS 113A 54.1 AND 15A NCAC 4B.0131. THE SELF-INSPECTION REPORT FORM IS AVAILABLE AS AN EXCEL SPREADSHEET FROM HTTP://WWW.DLR.ENR.STATE.NC.US/PAGES/SEDIMENTATION_NEW.HTML. IF YOU HAVE ANY QUESTIONS OR CANNOT ACCESS THE FORM, PLEASE CONTACT THIS OFFICE AT (910) 433-3300.

LEGEND

SYMBOLS

- TEL PED
- POWER POLE
- SOIL BORING
- CURB INLET PROTECTION
- STABILIZED OUTLET FOR SILT FENCE
- GRATE INLET PROTECTION
- FIBER FILTRATION TUBE CHANNEL/SWALE PROTECTION
- 100-Yr FLOODPLAIN (BFEs)
- 500-Yr FLOODPLAIN
- CAPE FEAR RIVER

LINE TYPES

- PROPOSED ITEMS
- EXISTING ITEMS
- HIDDEN ITEMS
- DEMOLITION ITEMS
- SILT FENCE
- DITCH

ABBREVIATIONS

EOP	EDGE OF PAVEMENT	G	GAS
LOC	LIMITS OF CONSTRUCTION	SS	SANITARY SEWER
OHE	OVERHEAD ELECTRIC	W	WATER
FOC	FIBER OPTIC CABLE	℄	PROPERTY LINE
LP	LIGHT POLE	℄	CENTER LINE
UGE	UNDERGROUND ELECTRIC		
PP	POWER POLE		

DETAIL KEYING

DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT DETAILS ARE IDENTIFIED BY A SQUARE WITH A NUMBER IN THE UPPER HALF.

STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE CONTRACT DRAWINGS BY ONE OF TWO METHODS:

REFERENCED ITEM

OR:

SEE 1509203 REFERENCED ITEM

STANDARD DETAILS ARE COMPILED IN APPROXIMATE NUMERICAL ORDER IN THE BACK OF THE CONTRACT DRAWINGS ON THE D* DRAWINGS.

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5	RECORD DRAWINGS	FEB 2014	ZMW
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3	ADDENDUM 2	MAY 2012	ZMW
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY L. MICHAEL SANTOWASSO SEAL NUMBER 18560

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWING
THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

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Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

P.O. HOFFER WTF / GLENVILLE LAKE WTF
CIVIL
EROSION CONTROL LEGEND & NOTES

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

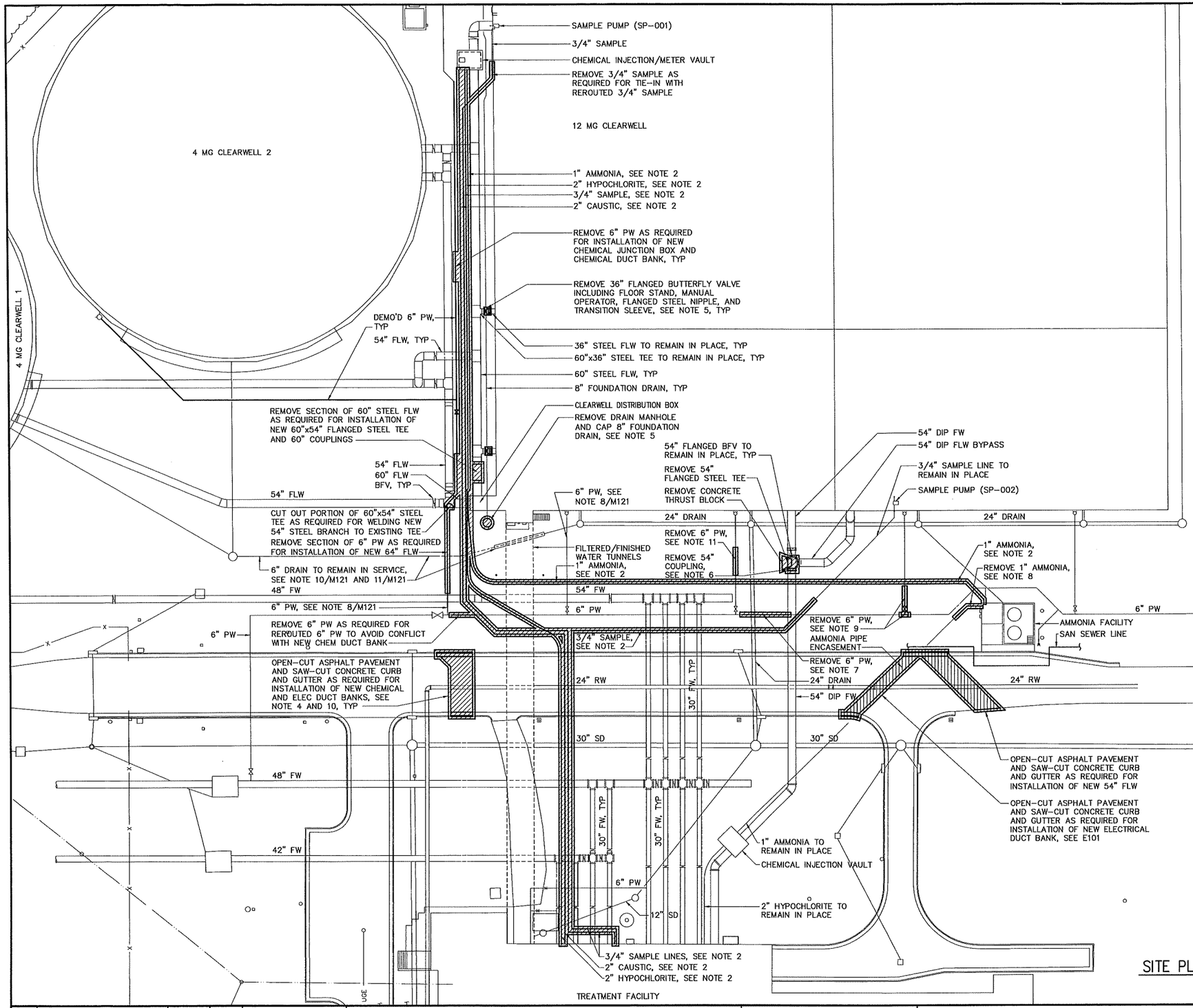
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER C102

RECORD DRAWINGS

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BW-15496

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NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.
2. REMOVE OR ABANDON IN PLACE CHEMICAL AND SAMPLING LINES IDENTIFIED ON PLAN. PIPING ABANDONED IN PLACE SHALL BE FLUSHED WITH CLEAN WATER AND CAPPED AT EACH END. FOR TEMPORARY CHEMICAL AND SAMPLE PIPING SEE SPECIFICATIONS SECTION 01520.
3. FOR UNDERGROUND ELECTRICAL DEMOLITION SEE ELECTRICAL SITE PLAN E100.
4. AFTER INSTALLATION OF CHEMICAL DUCT BANK, INSTALL NEW CONCRETE CURB AND GUTTER AND ASPHALT PAVEMENT TO MATCH EXISTING.
5. REPAIR AND REPLACE DRAINAGE STONE ENCASEMENT OF 8" FOUNDATION DRAIN AS REQUIRED PRIOR TO INSTALLATION OF NEW PIPING.
6. REMOVE 54" INSULATING MECHANICAL REDUCER COUPLING (TO BE REINSTALLED WITH NEW 54" CROSS).
7. REMOVE SECTION OF 6" PW AS REQUIRED FOR INSTALLATION OF REROUTED 6" PW TO AVOID CONFLICT WITH NEW CHEMICAL DUCT BANK.
8. REMOVE 1" AMMONIA AS REQUIRED FOR INSTALLATION OF NEW CHEMICAL DUCT BANK AND NEW JUNCTION BOX 8.
9. REMOVE SECTION OF 6" PW AS REQUIRED FOR INSTALLATION OF NEW CHEMICAL DUCT BANK, ROTATE 6" TEE DOWN 90° AND RELOCATE 6" GATE VALVE.
10. FOR NEW ELECTRICAL DUCT BANK LAYOUT SEE SITE PLAN ON E101.
11. REMOVE 6" PW AS REQUIRED FOR INSTALLATION OF 54" FLW BYPASS.

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SITE PLAN – DEMOLITION

1" = 30'

1"=30'-0" (30 15 0 30')

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
SITE PLAN - DEMOLITION

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

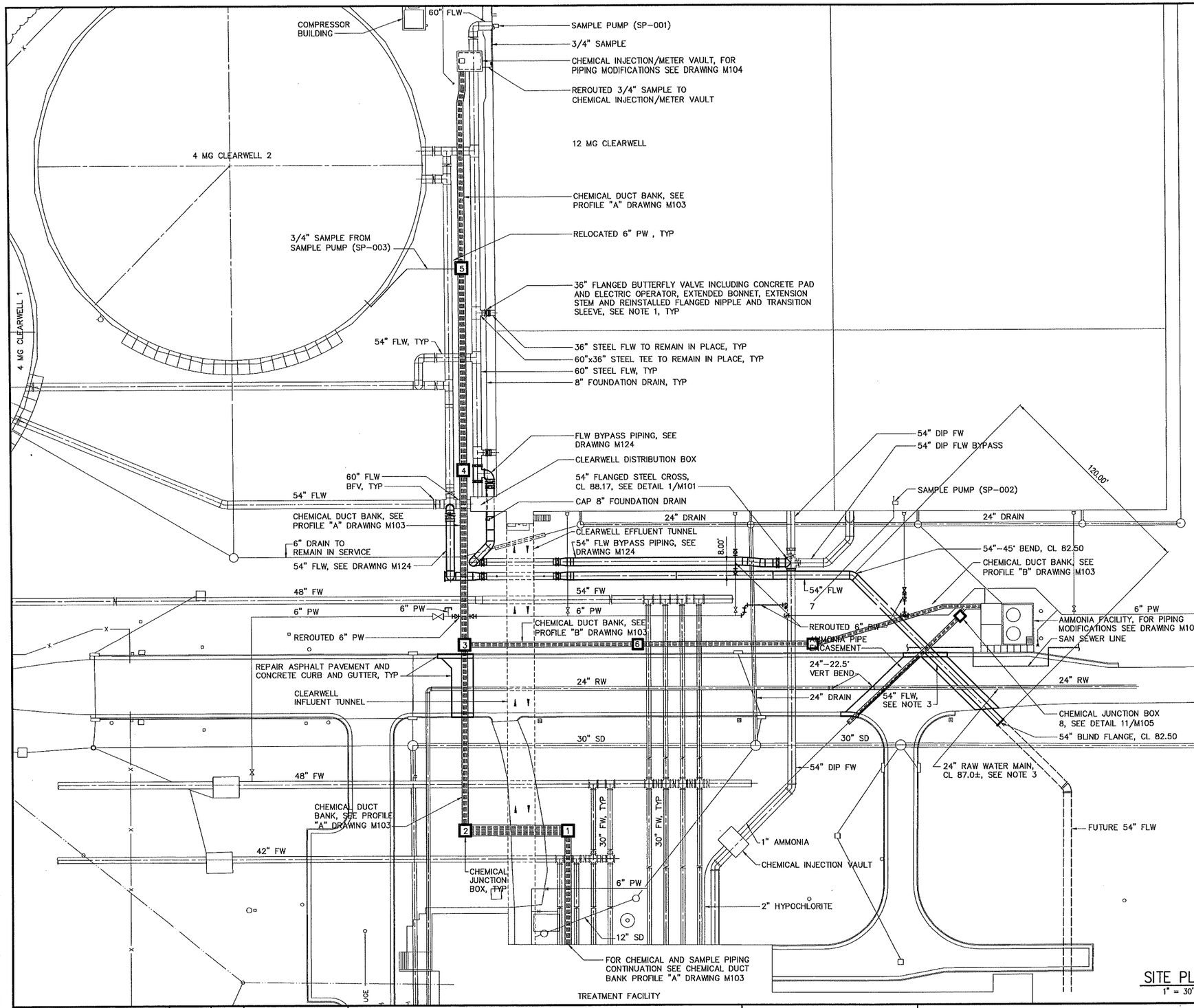
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SITE PLAN
1" = 30'

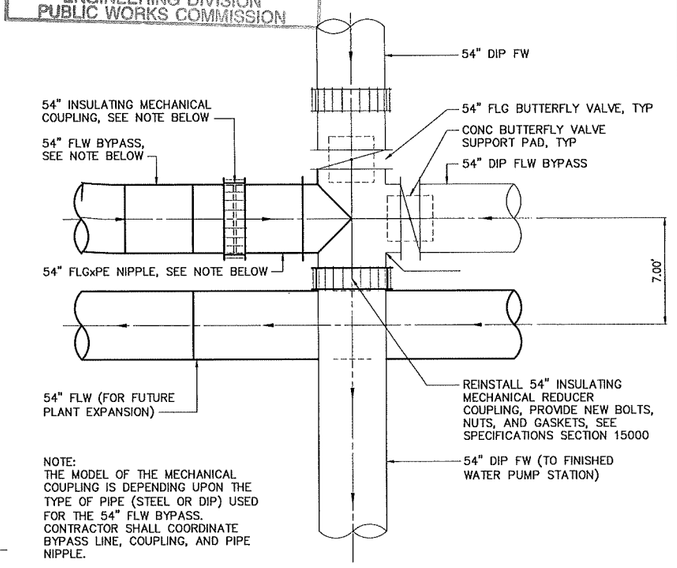
1"=30'-0"

30 15 0 30'

NOTES:

1. FIELD VERIFY SIZE, TYPE, AND CENTERLINE ELEVATION OF 36" BUTTERFLY VALVE, TRANSITION SLEEVE, AND PIPE PRIOR TO ORDERING NEW 36" VALVE. PROVIDE NEW HARDWARE AND GASKETS FOR 36" SLEEVE. FOR ADDITIONAL INFORMATION SEE SPECIFICATION SECTION 15000.
2. FOR NEW ELECTRICAL DUCT BANK SEE SITE PLAN ON DRAWING E101.
3. FIELD VERIFY LOCATION AND CL ELEVATION OF 24" RAW WATER MAIN PRIOR TO ORDERING MATERIALS FOR 54" FLW.

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NOTE:
THE MODEL OF THE MECHANICAL COUPLING IS DEPENDING UPON THE TYPE OF PIPE (STEEL OR DIP) USED FOR THE 54" FLW BYPASS. CONTRACTOR SHALL COORDINATE BYPASS LINE, COUPLING, AND PIPE NIPPLE.

54" BYPASS PIPING TIE-IN

DETAIL 1 / M101
1" = 5'

NEW 54" FLW AND FLW BYPASS PIPING IS SHOWN AS STEEL PIPING. FOR ADDITIONAL INFORMATION REGARDING FLW AND FLW BYPASS PIPING SEE SPECIFICATION SECTION 15390. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
SITE PLAN

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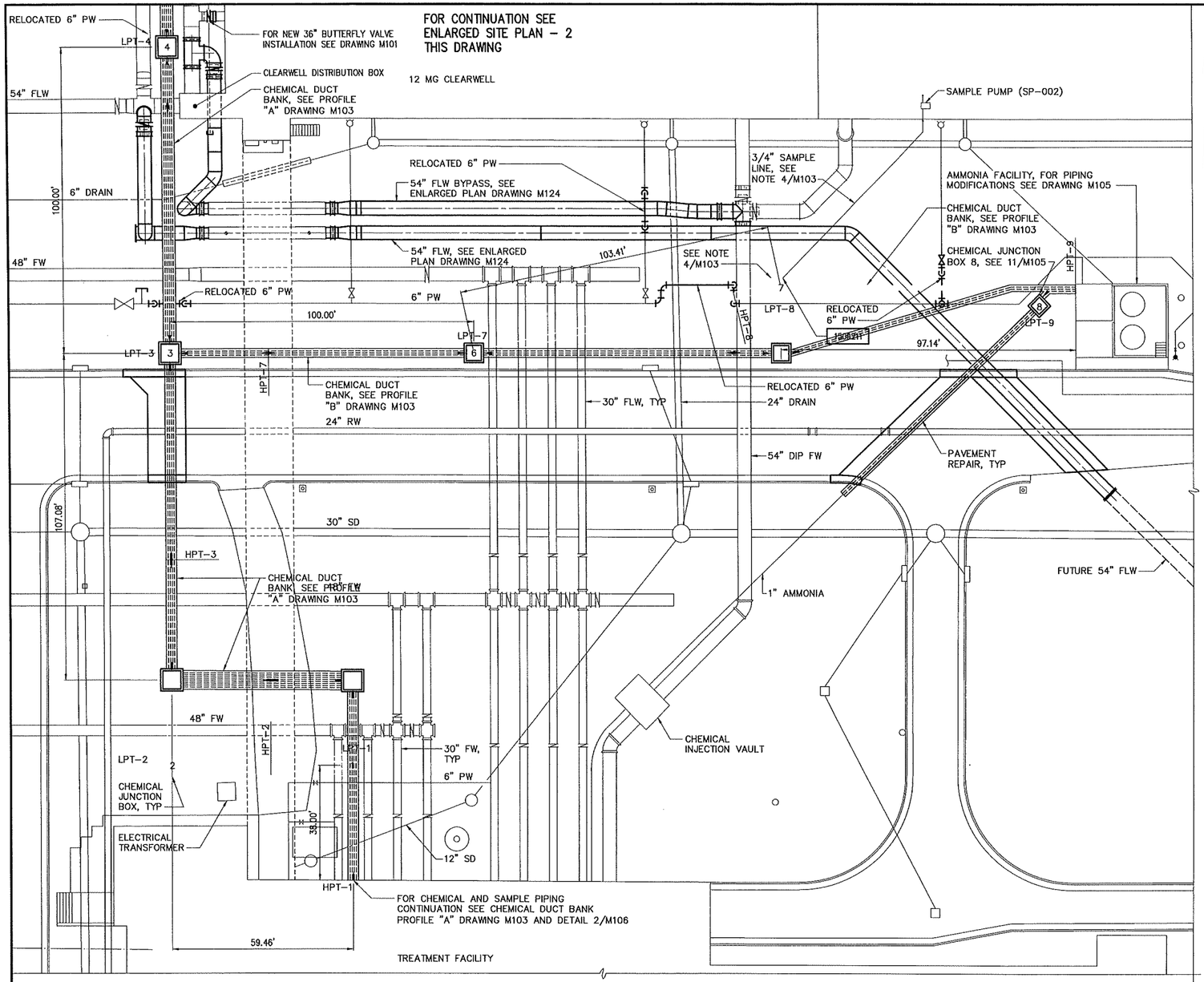
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NOTES:

1. CHEMICAL JUNCTION BOXES 1 THROUGH 5 SHALL BE 6'-0" SQUARE I.D. AND JUNCTION BOXES 6 AND 7 SHALL BE 5'-0" SQUARE I.D., FOR LAYOUT DETAILS SEE 3/M106 THROUGH 9/M106.
2. FOR TYPICAL DUCT BANK SECTIONS SEE 10/M106.
3. FOR JUNCTION BOX 8 SEE DETAIL 11/M105.
4. FOR ELECTRICAL DUCT BANK LAYOUT SEE SITE PLAN ON DRAWING E101.

CHEMICAL DUCT BANK
ENLARGED SITE PLAN - 1
1" = 20'

CHEMICAL DUCT BANK
ENLARGED SITE PLAN - 2
1" = 20'

1"=20'-0" 20 10 0 20'

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
ENLARGED SITE PLAN - CHEM. DUCT BANKS

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M102

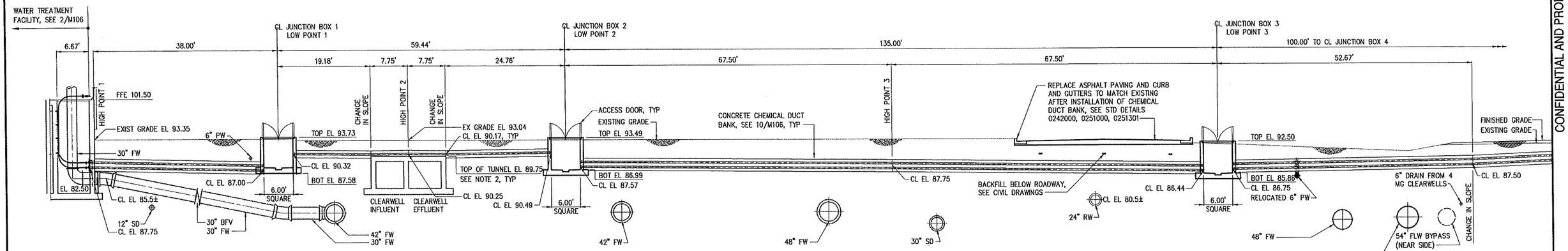
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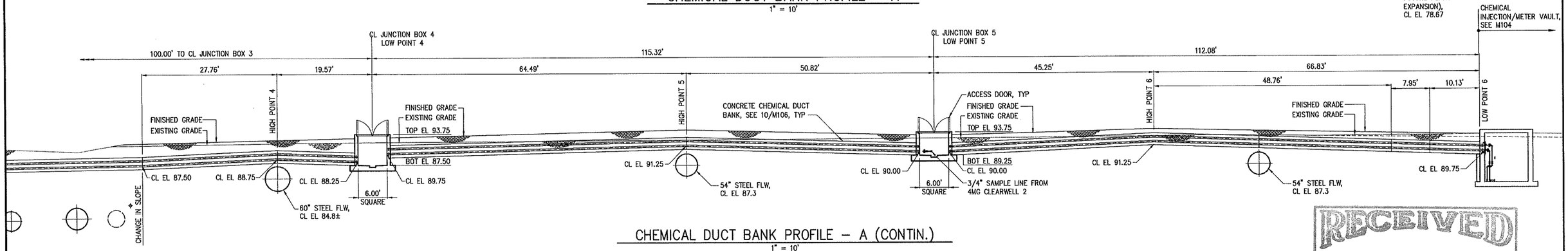
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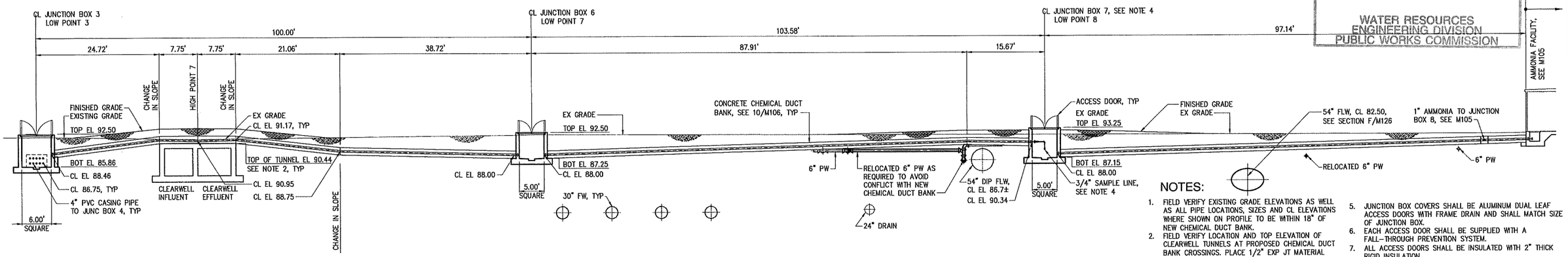
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CHEMICAL DUCT BANK PROFILE – A
1" = 10'



CHEMICAL DUCT BANK PROFILE – A (CONTIN.)
1" = 10'



CHEMICAL DUCT BANK PROFILE – B
1" = 10'

1"=10'-0"

NOTES:
1. FIELD VERIFY EXISTING GRADE ELEVATIONS AS WELL AS ALL PIPE LOCATIONS, SIZES AND CL ELEVATIONS WHERE SHOWN ON PROFILE TO BE WITHIN 18" OF NEW CHEMICAL DUCT BANK.
2. FIELD VERIFY LOCATION AND TOP ELEVATION OF CLEARWELL TUNNELS AT PROPOSED CHEMICAL DUCT BANK CROSSINGS. PLACE 1/2" EXP JT MATERIAL BETWEEN EXISTING CONCRETE TUNNEL AND NEW CONCRETE DUCT BANK FOR BOND BREAKER.
3. FINISHED GRADE, WHERE SHOWN ON PROFILE, SHALL BE A MINIMUM OF 18" ABOVE TOP OF NEW CHEMICAL DUCT BANK.
4. FIELD VERIFY LOCATION OF 3/4" SAMPLE LINE PRIOR TO ESTABLISHING LOCATION OF NEW CHEMICAL JUNCTION BOX 7. ADJUST LOCATION OF BOX AS REQUIRED BY LOCATION OF 3/4" SAMPLE LINE.
5. JUNCTION BOX COVERS SHALL BE ALUMINUM DUAL LEAF ACCESS DOORS WITH FRAME DRAIN AND SHALL MATCH SIZE OF JUNCTION BOX.
6. EACH ACCESS DOOR SHALL BE SUPPLIED WITH A FALL-THROUGH PREVENTION SYSTEM.
7. ALL ACCESS DOORS SHALL BE INSULATED WITH 2" THICK RIGID INSULATION.
8. TOP ELEVATION OF JUNCTION BOXES SHALL BE 6" (MIN) ABOVE EXISTING/FINISHED GRADE.
9. FOR TYPICAL JUNCTION BOX LAYOUT SEE DETAIL 12/M107.
10. FOR FRP STRUT PIPE SUPPORT ASSEMBLY CONSTRUCTION SEE DETAIL 12/M107.
11. UNLESS OTHERWISE NOTED CHEMICAL DUCT BANKS SHALL BE HORIZONTALLY CENTERED ON JUNCTION BOX

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
CHEMICAL DUCT BANK PROFILES

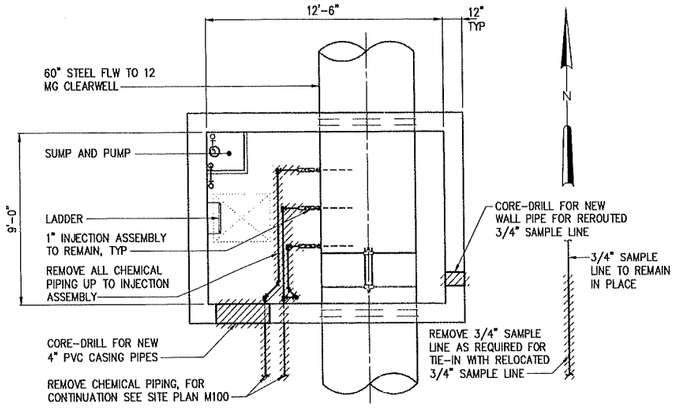
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

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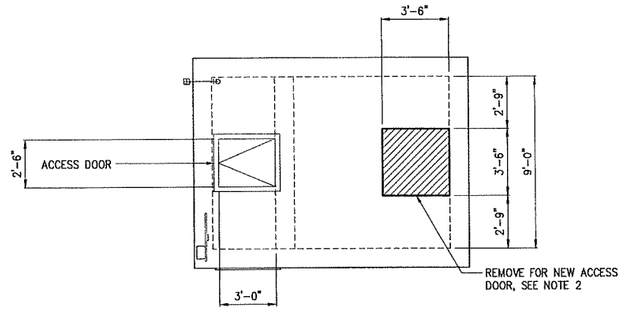
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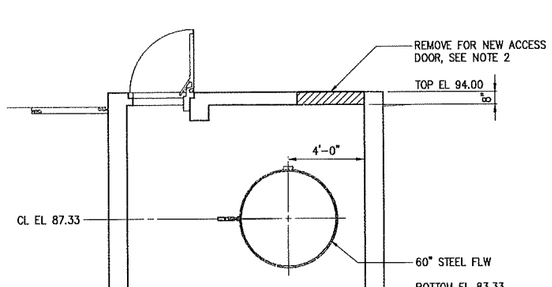
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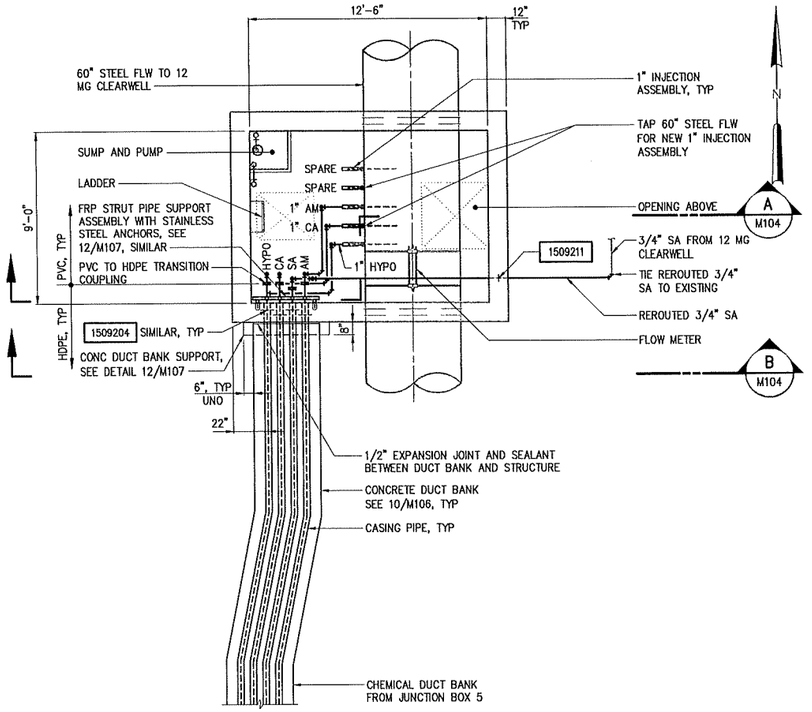
BOTTOM PLAN – DEMOLITION
1/4" = 1'-0"



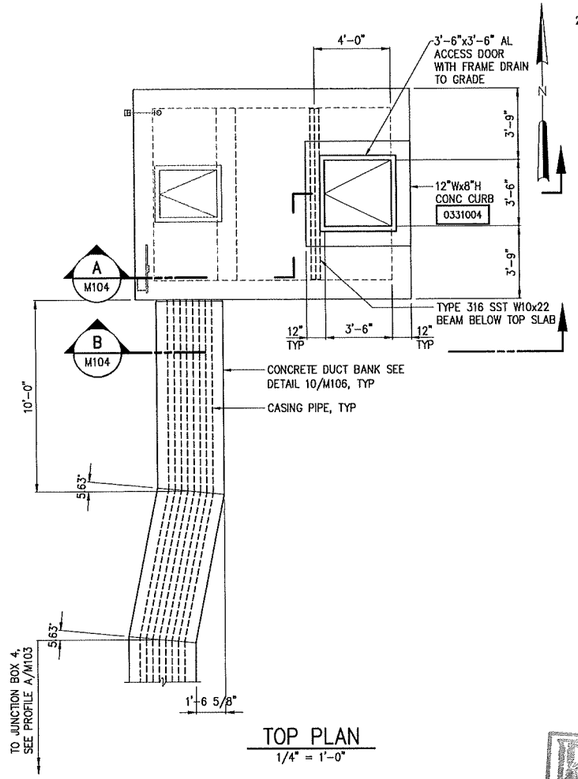
TOP PLAN – DEMOLITION
1/4" = 1'-0"



SECTION – DEMOLITION
1/4" = 1'-0"



BOTTOM PLAN
1/4" = 1'-0"



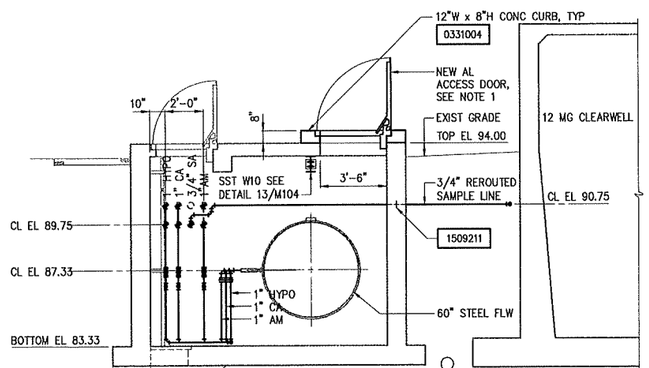
TOP PLAN
1/4" = 1'-0"

NOTES:

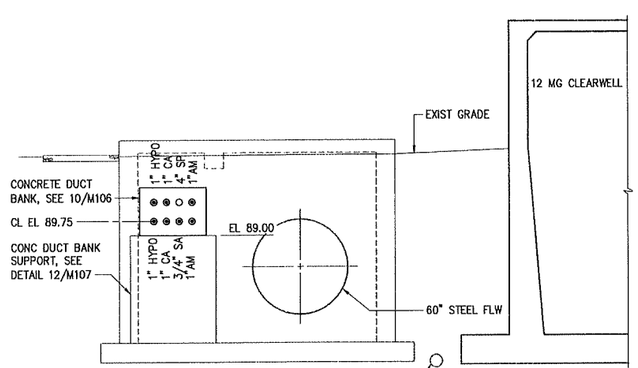
1. PROVIDE NEW 3'-6"x3'-6" ALUMINUM ACCESS DOOR WITH FALL-THROUGH PREVENTION SYSTEM
2. CONTRACTOR SHALL INSTALL W10 BEAM BELOW CONCRETE SLAB AS SHOWN PER TOP PLAN, SECTION A, AND DETAIL 13 ON THIS DRAWING PRIOR TO REMOVING PORTION OF CONCRETE SLAB. SEE DRAWING S1 FOR DEMOLITION NOTES.

PIPE LEGEND:

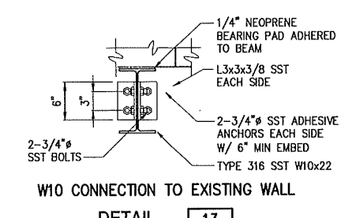
AM	AMMONIA
CA	CAUSTIC
HYPO	HYPOCHLORITE
SA	SAMPLE
SP	SPARE EMPTY CASING PIPE



SECTION A
1/4" = 1'-0" — A M104



SECTION B
1/4" = 1'-0" — B M104



W10 CONNECTION TO EXISTING WALL

DETAIL 13 / M104
1" = 1'-0"

1"=1'-0" 12" 6 0 1'

1/4"=1'-0" 1 0 1 2 3 7'

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
CHEMICAL INJECTION-METER VAULT

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

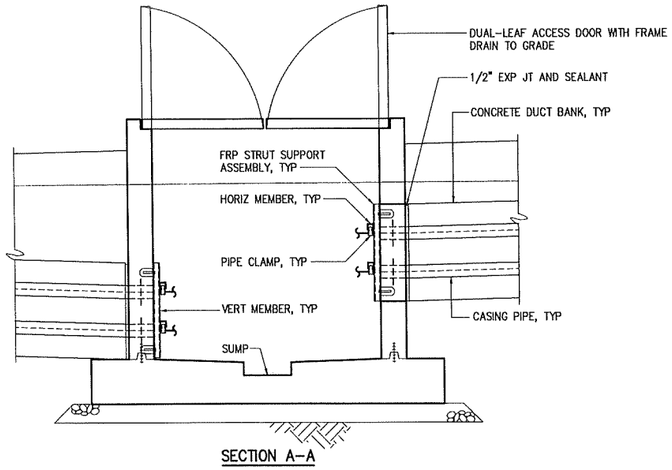
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
M104

BW-15496

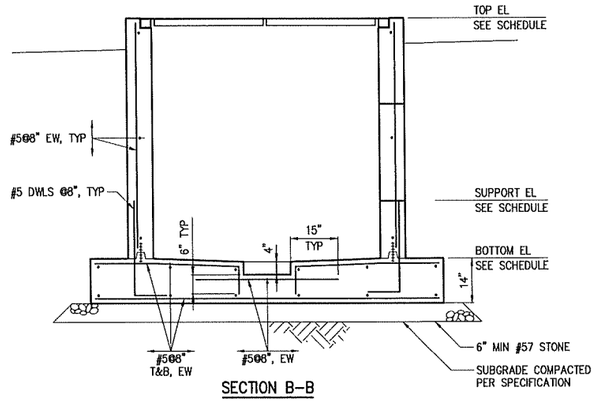
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SECTION A-A



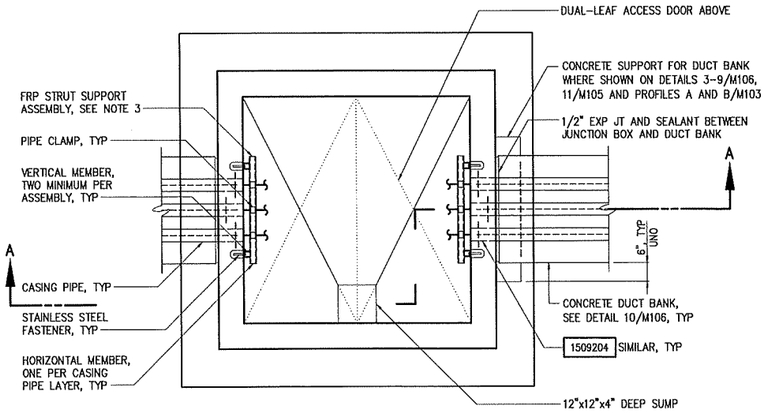
SECTION B-B

JUNCTION BOX SCHEDULE							
JUNCTION BOX	A	B	BOTTOM ELEV	TOP ELEV	SUPPORT ELEV	HPT	LPT
1	6'-0"	2'-6"	86.25	92.50	89.00	86.25	86.17
2	6'-0"	2'-6"	86.00	92.50	88.50	86.00	85.92
3	6'-0"	2'-6"	86.00	92.50	88.00	86.00	85.92
4	6'-0"	2'-6"	87.50	93.75	89.00	87.50	87.42
5	6'-0"	2'-6"	89.25	94.00	NA	89.25	89.17
6	5'-0"	2'-0"	87.25	92.50	NA	87.25	87.17
7	5'-0"	2'-0"	87.25	93.25	89.50	87.25	87.17
8	4'-0"	1'-6"	87.75	92.25	89.50	87.75	87.67

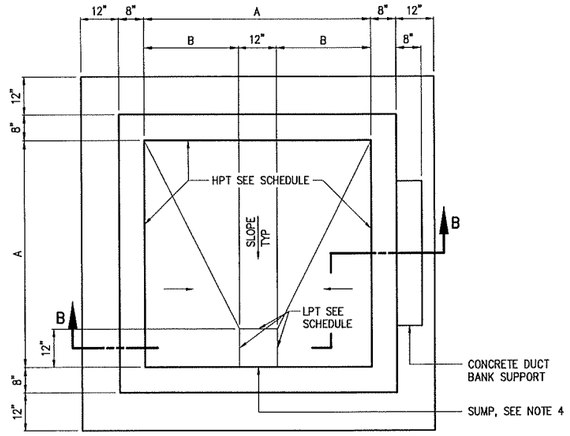
NOTES:

1. UNLESS OTHERWISE NOTED ALL CHEMICAL AND SAMPLE PIPING IN DUCT BANKS AND CHEMICAL BOXES SHALL BE HDPE TUBING
2. PIPING LAYOUT AND CONSTRUCTION PLAN ORIENTATION SHOWN ARE REPRESENTATIVE ONLY, ACTUAL PIPING LAYOUT AND CONSTRUCTION PLAN ORIENTATION SHALL BE AS REQUIRED PER DETAILS 3-9/M106, 11/M105 AND PROFILES A AND B ON M103.
3. CONTRACTOR SHALL PROVIDE FRP STRUT SUPPORT ASSEMBLY PER SPECIFICATIONS SECTION 15020.
4. SUMP LOCATION SHOWN PER DETAIL 12/M107 IS FOR REPRESENTATION ONLY. SUMPS SHALL BE LOCATED AS REQUIRED PER DETAILS 3-9/M106 AND 11/M105.

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PIPING PLAN



CONSTRUCTION PLAN

TYPICAL JUNCTION BOX LAYOUT

DETAIL 12
1/2" = 1'-0" M107

1/2"=1'-0" 12" 0 1 3'
3/8"=1'-0" 12" 0 1 2 4'

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
MECHANICAL
CHEMICAL JUNCTION BOXES - DETAILS

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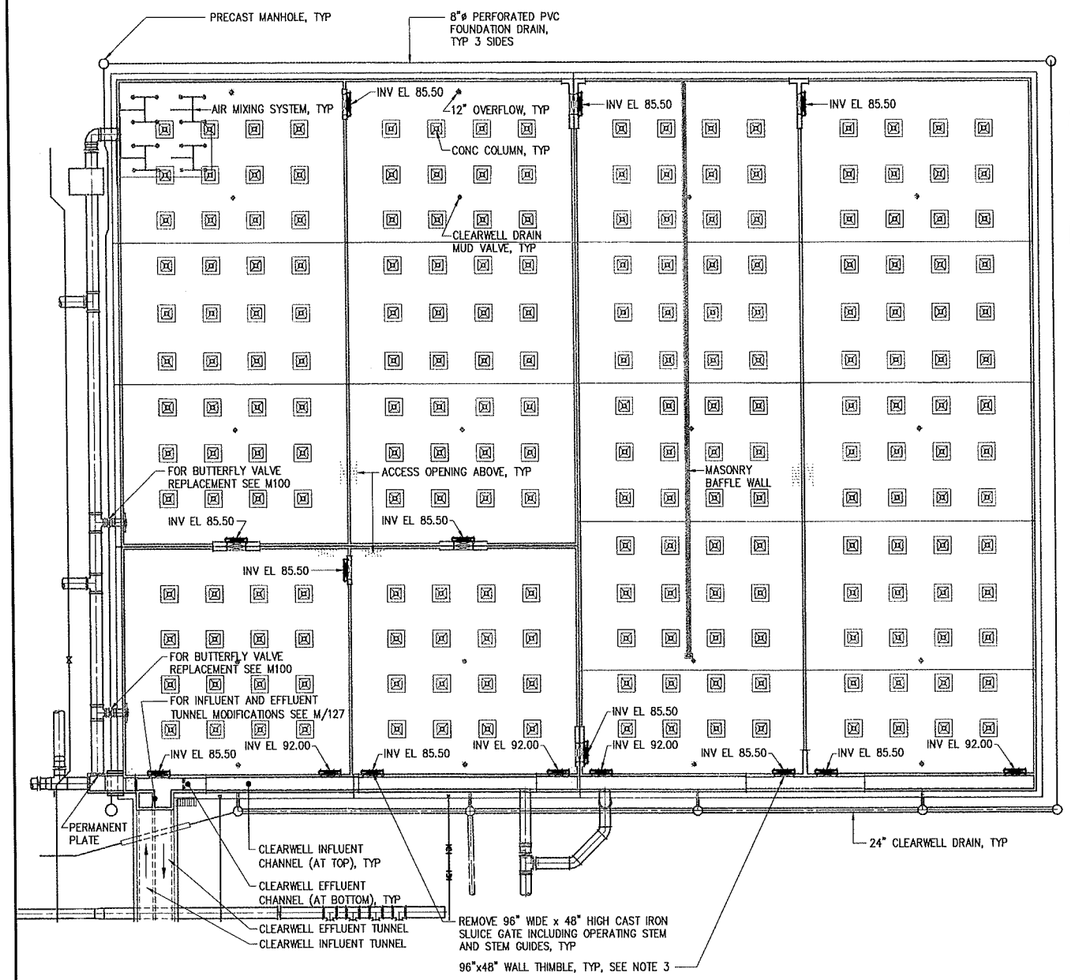
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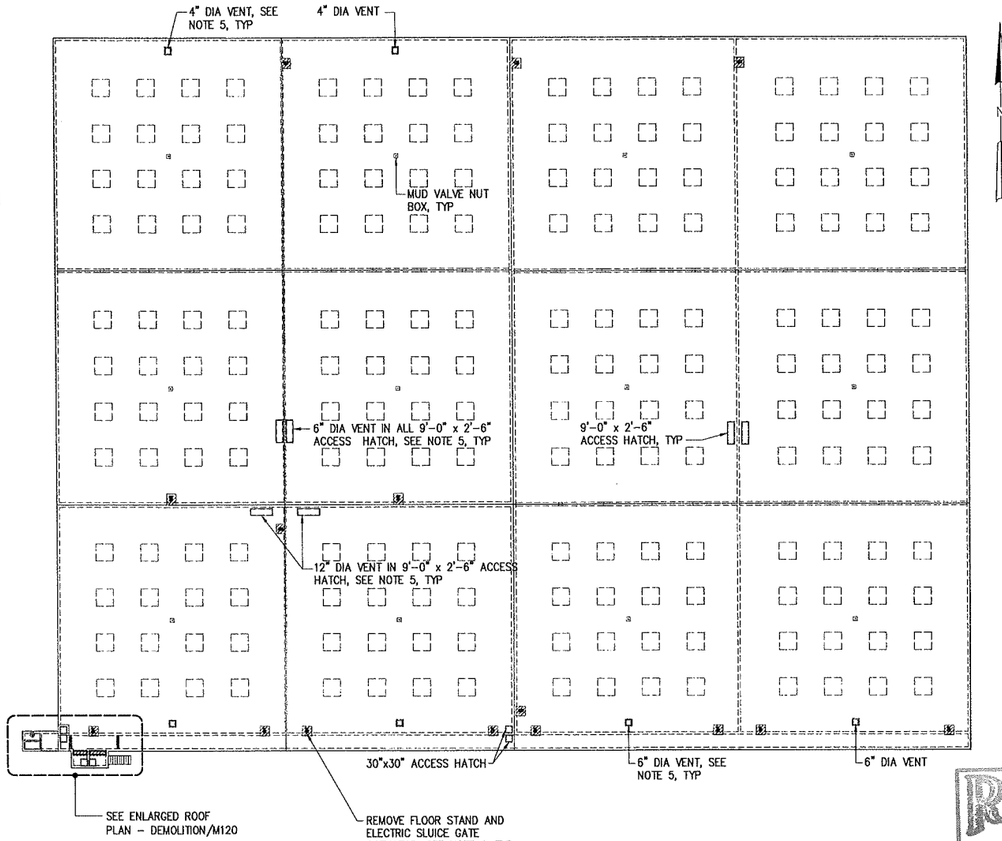
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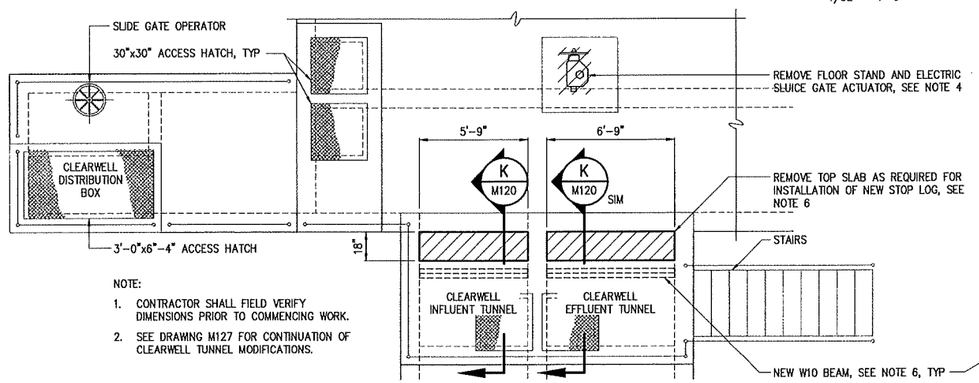
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BOTTOM AND TOP PLAN – DEMOLITION
1/32" = 1'-0"

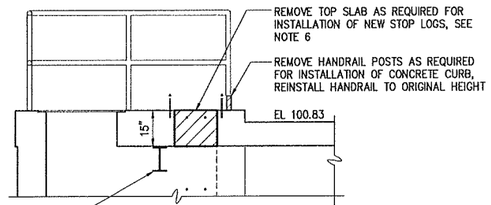


ROOF PLAN – DEMOLITION
1/32" = 1'-0"



NOTE:
1. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO COMMENCING WORK.
2. SEE DRAWING M127 FOR CONTINUATION OF CLEARWELL TUNNEL MODIFICATIONS.

ENLARGED ROOF PLAN – DEMOLITION
1/4" = 1'-0"



SECTION K / M120
3/8" = 1'-0"

1/32"=1'-0" 32 16 0 32'

NOTES:
1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520
2. CONTRACTOR SHALL SAFEGUARD AT ALL TIMES THE INTEGRITY OF THE 2" WIDE RUBBER EXPANSION JOINTS IN THE ROOF SLAB OF THE EXISTING 12 MG CLEARWELL. DAMAGE TO THE EXPANSION JOINTS SHALL BE REPAIRED IMMEDIATELY AFTER DAMAGE HAS OCCURRED AT NO COST TO THE OWNER. CONTRACTOR SHALL NOT USE ROOF SLAB AS STORAGE AREA FOR REMOVED SLUICE GATES.
3. AFTER REMOVAL OF SLUICE GATES THE CONTRACTOR SHALL ARRANGE AT A TIME CONVENIENT FOR ALL PARTIES AN INSPECTION OF THE EXISTING WALL THIMBLES. ENGINEER SHALL EVALUATE THE CONDITION OF EXISTING WALL THIMBLES. REPRESENTATIVES OF THE CONTRACTOR, SLUICE GATE MANUFACTURER, OWNER, AND THE ENGINEER SHALL BE PRESENT FOR THIS ASSESSMENT. FOLLOWING THE ASSESSMENT, THE ENGINEER IN CONSULTATION WITH THE OWNER SHALL IDENTIFY THE SPECIFIC WALL THIMBLES, IF ANY, TO BE REPLACED AS PART OF THIS CONTRACT. ALL WORK RELATED TO WALL THIMBLE REPLACEMENT SHALL BE COORDINATED THROUGH A NEGOTIATED CHANGE ORDER. ALL REUSED WALL THIMBLES SHALL BE THOROUGHLY CLEANED. THE CONTRACTOR SHALL FIELD MEASURE AND VERIFY BOLT HOLE PATTERN, DIAMETER OF BOLT HOLES, AND TYPE OF THREAD USED IN THE EXISTING WALL THIMBLES TO BE REUSED AND SHALL COORDINATE THIS INFORMATION WITH THE NEW SLUICE GATE MANUFACTURER PRIOR TO ORDERING NEW SLUICE GATES. THE CONTRACTOR SHALL ALSO FIELD MEASURE AND VERIFY SLUICE GATE INVERT AND TOP OF CONCRETE ROOF ELEVATIONS AT ALL GATE OPERATOR LOCATIONS AND COORDINATE THIS INFORMATION WITH THE SUPPLYING SLUICE GATE MANUFACTURER. FOR ADDITIONAL INFORMATION REGARDING SLUICE GATES AND WALL THIMBLES SEE SPECIFICATIONS SECTION 15206.
4. REMOVE AND REPLACE ALL STEMS AND STEM GUIDES GUIDES AS REQUIRED BY THE SLUICE GATE MANUFACTURER.
5. REMOVE ALL INSECT SCREENS IN EXISTING 4", 6", AND 12" DIA VENTS AND REPLACE WITH NEW TYPE 316 STAINLESS STEEL INSECT SCREENS.
6. W10 BEAM SHALL BE INSTALLED AS SHOWN PER DRAWING M127 PRIOR TO REMOVING ANY PORTION OF CONCRETE SLAB. FOR GENERAL DEMOLITION NOTES SEE DRAWING S1.

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3/6/14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
MECHANICAL
PLANS - DEMOLITION

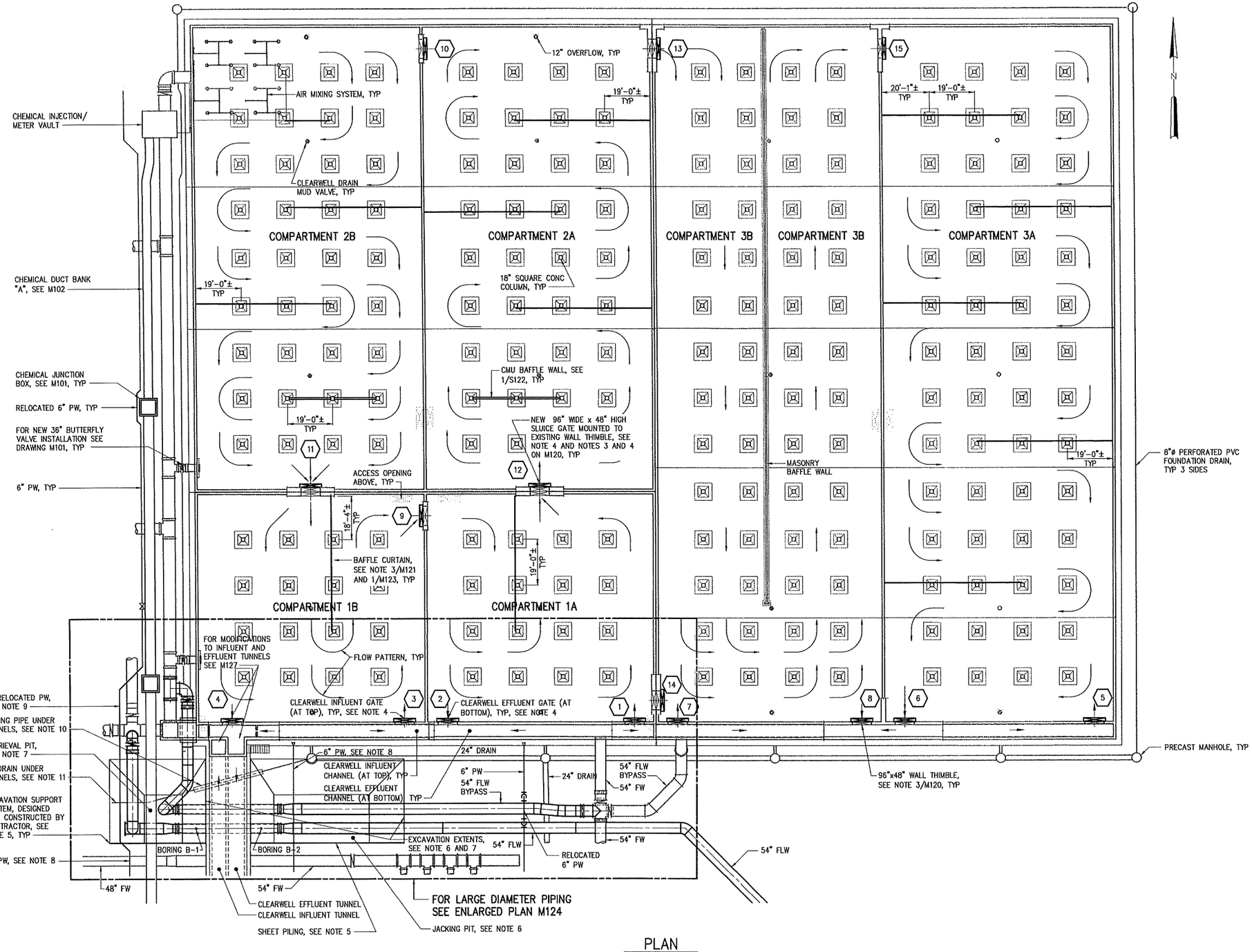
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DATE APRIL 2012
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DRAWING NUMBER
M120

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PLAN
3/64" = 1'-0"

3/64"=1'-0"

2016 12 8 4 0 22'

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.
2. FOR INVERT ELEVATIONS OF SLUICE GATES SEE BOTTOM AND TOP PLAN M120.
3. FIELD VERIFY DISTANCES BETWEEN COLUMNS, AND BETWEEN COLUMNS AND WALLS FOR PROPER LENGTH OF CURTAIN FABRIC REQUIRED.
4. FOR SLUICE GATE SCHEDULE CORRESPONDING TO GATE NUMBER IDENTIFIED ON PLAN SEE SPECIFICATIONS SECTION 15390.
5. IF NEEDED TO PROTECT STRUCTURES, PIPING, OR UTILITIES, CONTRACTOR SHALL SELECT, DESIGN, AND INSTALL APPROPRIATE EXCAVATION SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS AND CALCULATIONS OF PROPOSED EXCAVATION SUPPORT SYSTEM, BOTH SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN NORTH CAROLINA.
6. CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR JACKING PIT EXTENTS AS REQUIRED FOR INSTALLATION OF JACKING EQUIPMENT AND INSTALLATION OF 48" STEEL CASING PIPES. EXTENTS SHOWN THIS DRAWING ARE FOR REPRESENTATION ONLY.
7. CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR SIZE OF RETRIEVAL PIT AS REQUIRED FOR INSTALLATION OF NEW WATER PIPE LINES. EXTENTS SHOWN THIS DRAWING ARE FOR REPRESENTATION ONLY.
8. REMOVE 6" PW HYDRANT SUPPLY PIPE AS REQUIRED DURING INSTALLATION OF THE NEW 54" BYPASS AND FLW PIPE LINES AND RESTORE CONNECTION TO HYDRANT AFTER 54" BYPASS AND FLW PIPE LINES ARE IN SERVICE.
9. LOCATION OF RELOCATED 6" PW LINE AFTER NEW 54" BYPASS AND FLW PIPE LINES ARE IN SERVICE.
10. FIELD VERIFY LOCATION AND INVERT OF 6" DRAIN LINE AND CASING PIPE PRIOR TO INSTALLATION OF RETRIEVAL PIT AND NEW 54" BYPASS AND FLW PIPE LINES.
11. 6" DRAIN LINE SHALL REMAIN IN SERVICE AT ALL TIMES DURING CONSTRUCTION OF RETRIEVAL PIT AND INSTALLATION OF NEW 54" BYPASS AND FLW PIPE LINES BY PROVIDING TEMPORARY PUMPING AND/OR SHORING OF 6" DRAIN LINE.

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3-6-14

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CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
MECHANICAL
PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

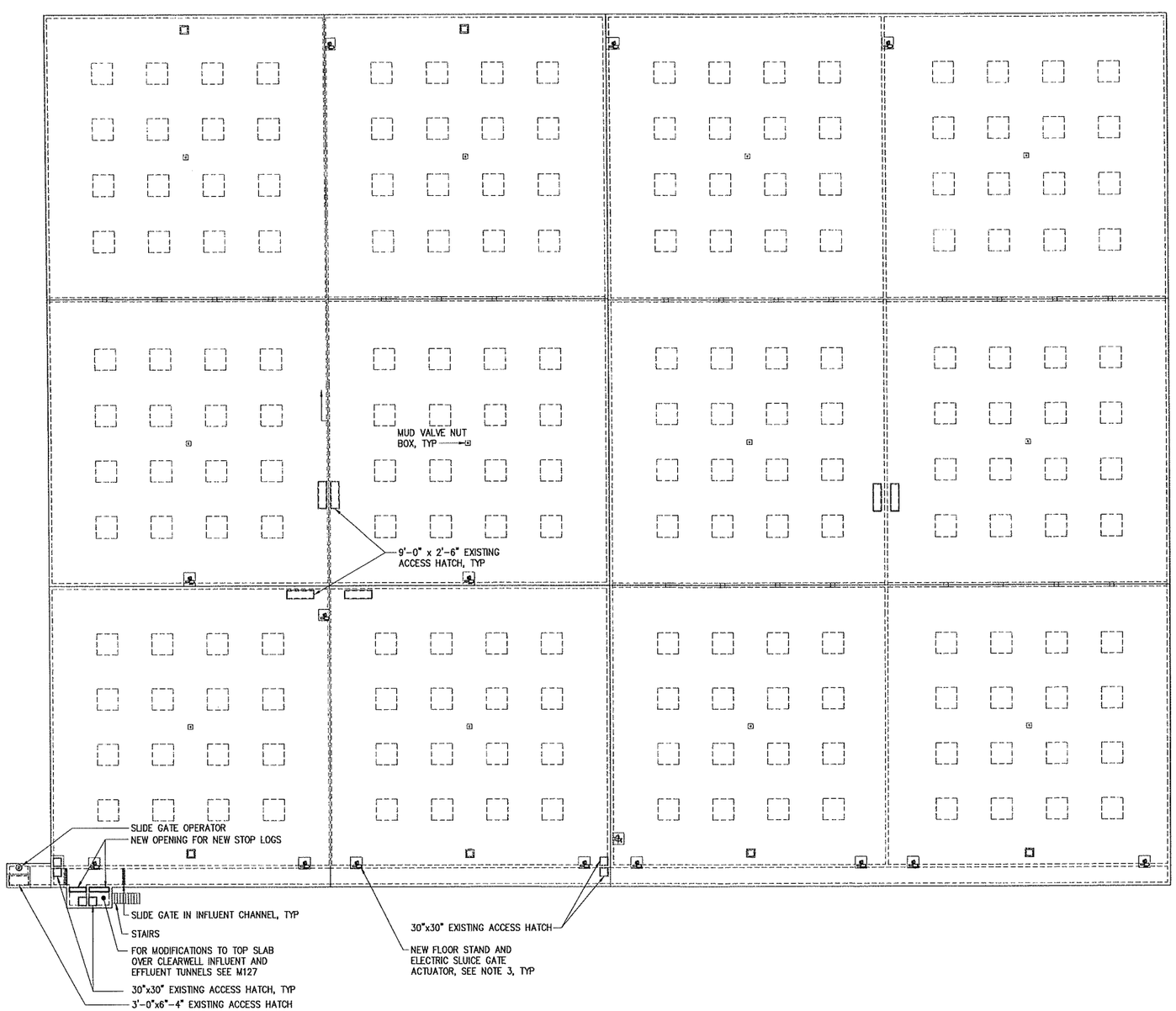
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ROOF PLAN
3/64" = 1'-0"

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520
2. CONTRACTOR SHALL SAFEGUARD AT ALL TIMES THE INTEGRITY OF THE 2" WIDE RUBBER EXPANSION JOINTS IN THE ROOF SLAB OF THE EXISTING 12 MG CLEARWELL. DAMAGE TO THE EXPANSION JOINTS SHALL BE REPAIRED IMMEDIATELY AFTER DAMAGE HAS OCCURRED AT NO COST TO THE OWNER.
3. FIELD VERIFY ALL ELEVATIONS OF EXISTING TOP OF CONCRETE ELEVATIONS AT SLUICE GATE OPERATOR LOCATIONS PRIOR TO ORDERING NEW SLUICE GATES, EXTENSION STEMS, AND FLOOR STANDS WITH ELECTRIC ACTUATORS

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3/64"=1'-0" 20 16 12 8 4 0 22'

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CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
MECHANICAL
ROOF PLAN

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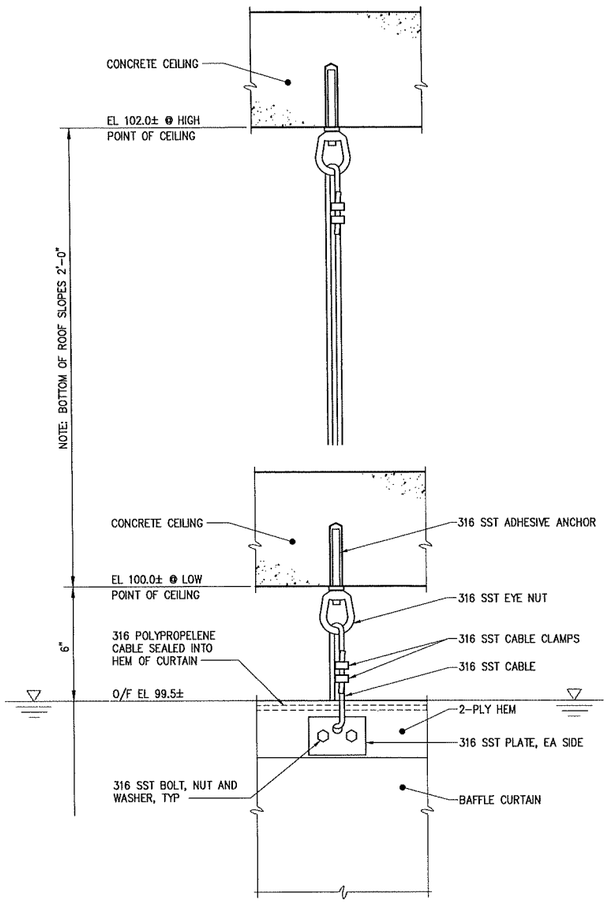
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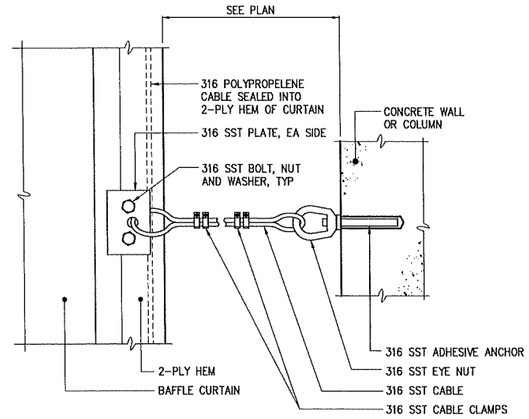
NOTES:

1. ALL STAINLESS STEEL (SST) SHALL BE TYPE 316.
2. DESIGN AND DETAILING OF CURTAIN BAFFLE SYSTEM SHALL BE THE EXCLUSIVE RESPONSIBILITY OF THE CURTAIN BAFFLE SYSTEM MANUFACTURER. DESIGN DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA AND SUBMITTED TO THE ENGINEER FOR APPROVAL. SEE SPECIFICATION 13200.



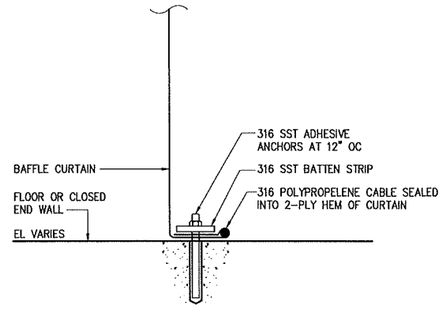
NOTE: PROVIDE ATTACHMENTS AT 3'-0" MAX O.C (VERTICAL)

TYPICAL ROOF OR BEAM ATTACHMENT



NOTE: PROVIDE ATTACHMENTS AT 1'-0" MAX O.C (VERTICAL)

TYPICAL FREE ATTACHMENT



TYPICAL FLOOR OR CLOSED ENDWALL ATTCHMENT

TYPICAL CURTAIN CONNECTIONS

DETAIL	1
3" = 1'-0"	M123

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3"=1'-0"

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HOFFER WTF CLEARWELL REHABILITATION
MECHANICAL
DETAILS

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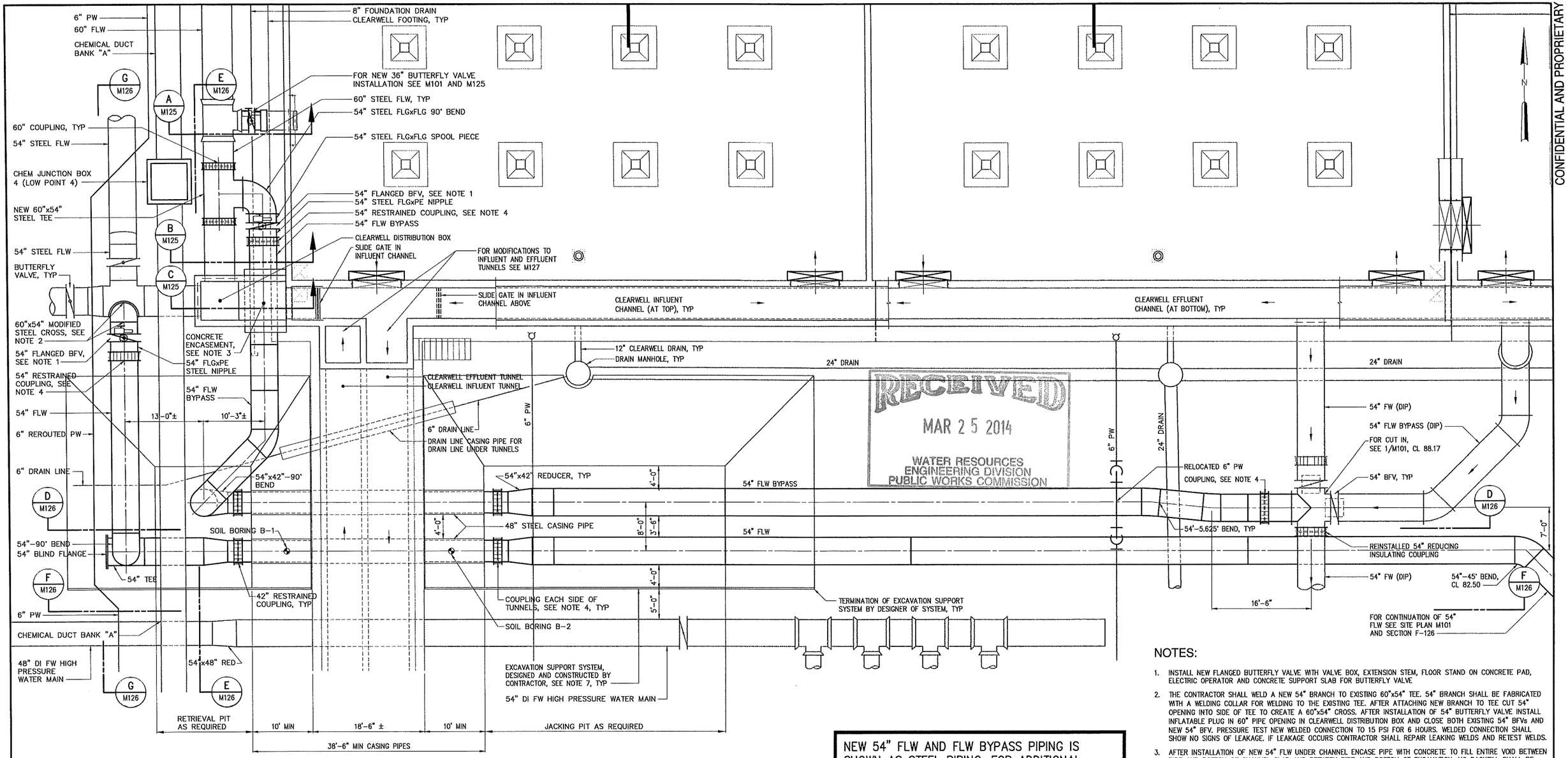
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NEW 54" FLW AND FLW BYPASS PIPING IS SHOWN AS STEEL PIPING. FOR ADDITIONAL INFORMATION REGARDING FLW AND FLW BYPASS PIPING SEE SPECIFICATION SECTION 15390. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.

LARGE DIAMETER PIPING

ENLARGED PLAN

1/8" = 1'-0"

NOTES:

1. INSTALL NEW FLANGED BUTTERFLY VALVE WITH VALVE BOX, EXTENSION STEM, FLOOR STAND ON CONCRETE PAD, ELECTRIC OPERATOR AND CONCRETE SUPPORT SLAB FOR BUTTERFLY VALVE
2. THE CONTRACTOR SHALL WELD A NEW 54" BRANCH TO EXISTING 60"x54" TEE. 54" BRANCH SHALL BE FABRICATED WITH A WELDING COLLAR FOR WELDING TO THE EXISTING TEE. AFTER ATTACHING NEW BRANCH TO TEE CUT 54" OPENING INTO SIDE OF TEE TO CREATE A 60"x54" CROSS. AFTER INSTALLATION OF 54" BUTTERFLY VALVE INSTALL INFLATABLE PLUG IN 60" PIPE OPENING IN CLEARWELL DISTRIBUTION BOX AND CLOSE BOTH EXISTING 54" BFVs AND NEW 54" BFV. PRESSURE TEST NEW WELDED CONNECTION TO 15 PSI FOR 6 HOURS. WELDED CONNECTION SHALL SHOW NO SIGNS OF LEAKAGE. IF LEAKAGE OCCURS CONTRACTOR SHALL REPAIR LEAKING WELDS AND RETEST WELDS.
3. AFTER INSTALLATION OF NEW 54" FLW UNDER CHANNEL ENCASE PIPE WITH CONCRETE TO FILL ENTIRE VOID BETWEEN PIPE AND BOTTOM OF CHANNEL SLAB AND BETWEEN PIPE AND BOTTOM OF EXCAVATION. NO BACKFILL SHALL BE PLACED AROUND PIPE IN THE AREA UNDER THE CONCRETE CHANNEL.
4. IF CONTRACTOR ELECTS TO JOIN STEEL AND DUCTILE IRON THE COUPLING SHALL BE A REDUCING AND INSULATING COUPLING DUE TO DIFFERENT ODs AND DISSIMILAR METALS AT THE JUNCTION.
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AS TO EXACT LOCATION, PIPE TYPE AND INVERT, AND LOCATION OF BOTTOM ELEVATION OF TUNNEL FOOTING PRIOR TO ORDERING NEW PIPING MATERIALS OR INSTALLING EXCAVATION SUPPORT SYSTEM IF REQUIRED..
6. SEE NOTES 5 THROUGH 11 ON DRAWING M121.
7. IF NEEDED TO PROTECT STRUCTURES, PIPING, OR UTILITIES, CONTRACTOR SHALL SELECT, DESIGN, AND INSTALL APPROPRIATE EXCAVATION SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS AND CALCULATIONS OF PROPOSED EXCAVATION SUPPORT SYSTEM, BOTH SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN NORTH CAROLINA.

1/8"=1'-0" 8 6 4 2 0 8'

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3	CONFORMED	JUL 2012	ZMW
2	BIDDING	APR 2012	ZMW
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DESIGNED DCH/CLY
DRAWN HGM
CHECKED ZMW
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY D. CORY HOPKINS SEAL NUMBER 31433

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3/6/14

RECORD DRAWING
THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF YARD PIPING
MECHANICAL
LARGE DIAMETER PIPING - PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER M124

RECORD DRAWINGS

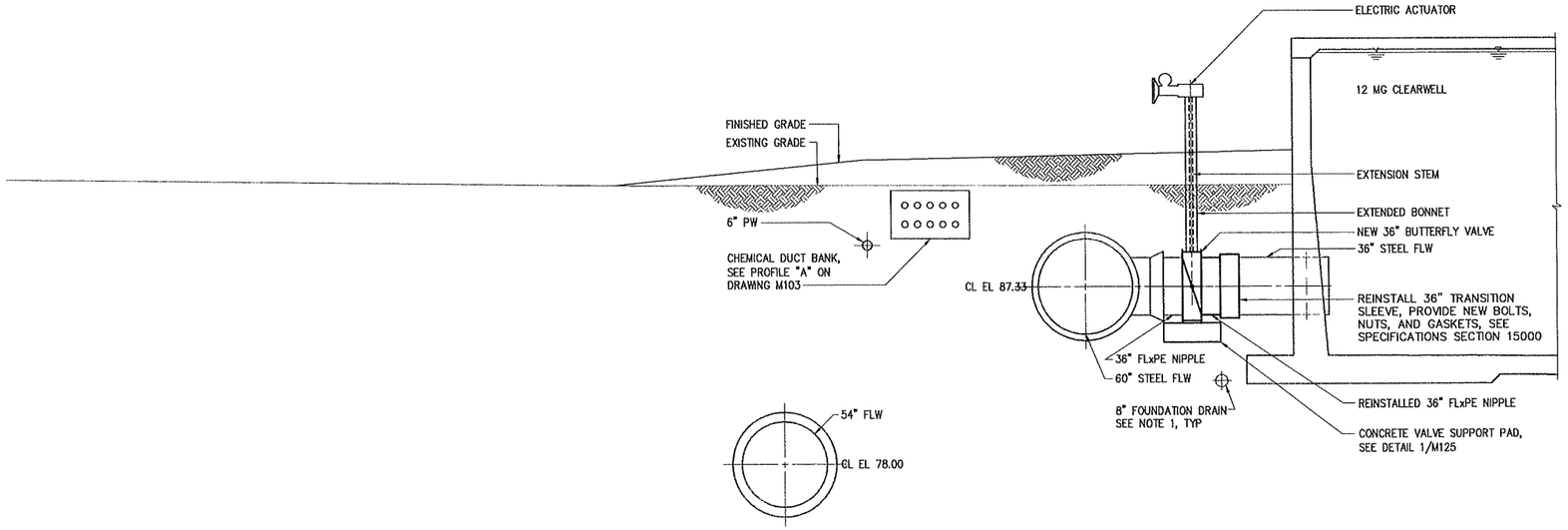
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XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALMECH, PO-CW-PB and PT, NC-BCS
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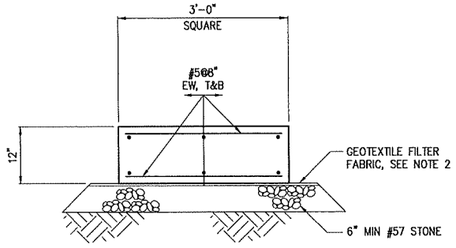
20140228 5:09P O:\30402\30402-010\drawings\MECH\30402-010-M124.dwg By:TMUNIZ

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MEANS NECESSARY TO PROTECT 8"Ø FOUNDATION DRAIN FROM ANY DAMAGE OR CLOGGING. ANY DAMAGED FOUNDATION DRAIN DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR TO A FULLY FUNCTIONING CONDITION.
2. WHERE NEW CONCRETE IS PLACED IN THE VICINITY OF THE 8"Ø FOUNDATION DRAIN, CONTRACTOR SHALL PLACE GEOTEXTILE FILTER FABRIC BENEATH CONCRETE TO THE EXTENTS NECESSARY TO PREVENT CLOGGING OF THE DRAIN.



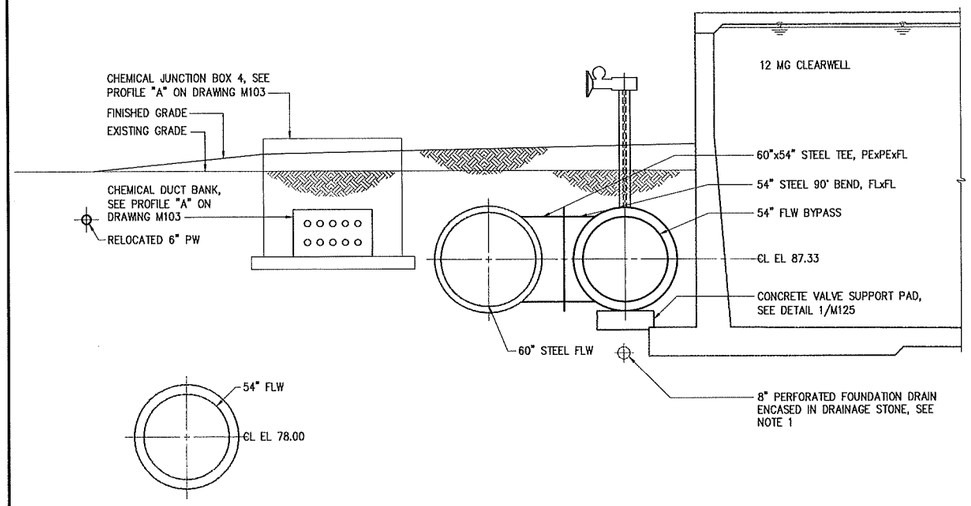
SECTION A
1/4" = 1'-0" M124



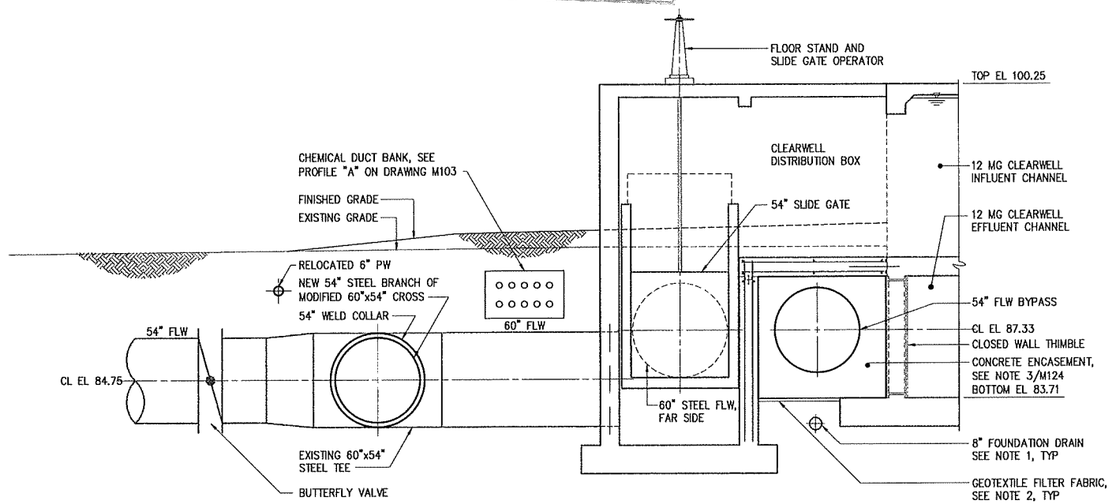
TYPICAL VALVE SUPPORT PAD

DETAIL 1
3/4" = 1'-0" M125

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SECTION B
1/4" = 1'-0" M124



SECTION C
1/4" = 1'-0" M124

1/4"=1'-0" 1 0 1 2 3 7'

NO	ISSUED FOR	DATE	BY
5	RECORD DRAWINGS	FEB 2014	ZMW
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF YARD PIPING
MECHANICAL
LARGE DIAMETER PIPING - SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER M125

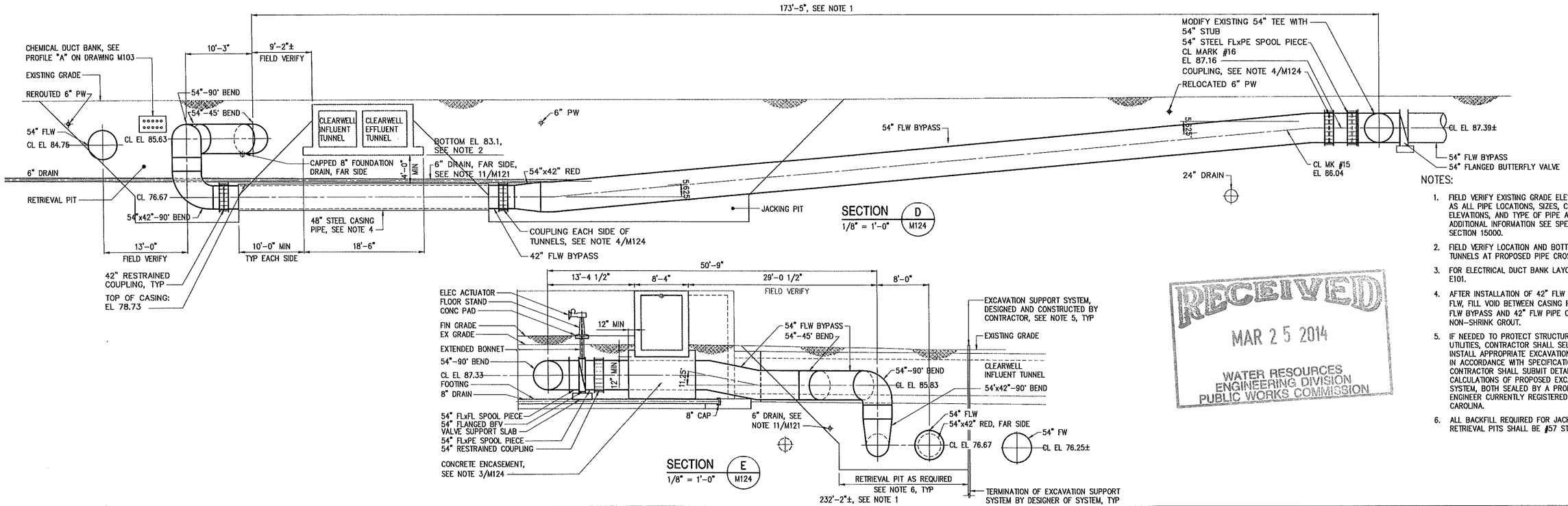
RECORD DRAWINGS

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XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALMECH, PO-CW-S01, PO-CW-S02, PO-CW-S03, NC-BCS
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BW-15484



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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF YARD PIPING
MECHANICAL
LARGE DIAMETER PIPING - SECTIONS

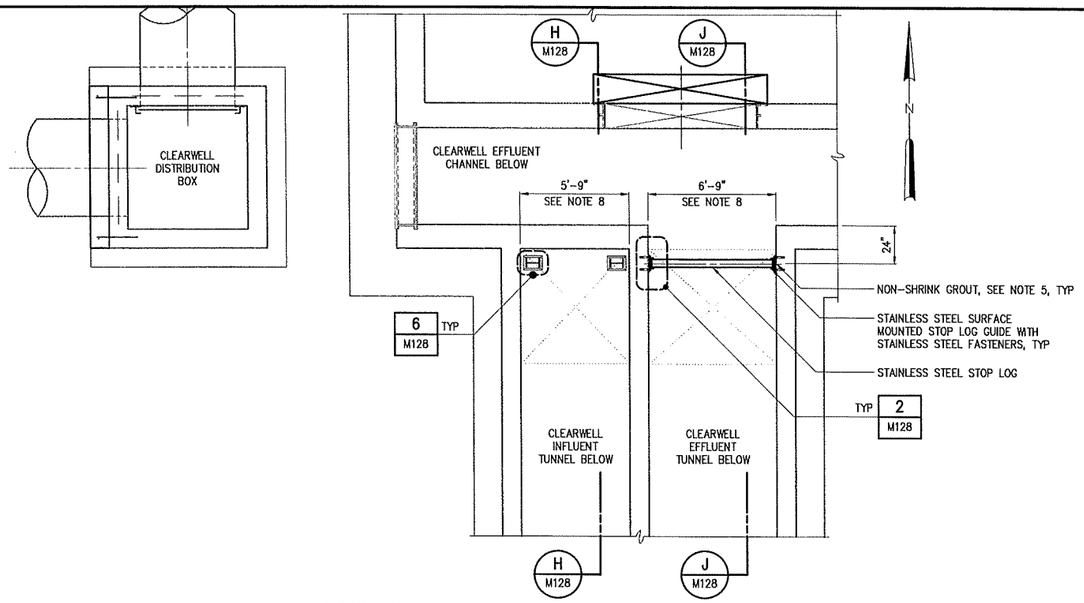
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
M126

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RECORD DRAWINGS

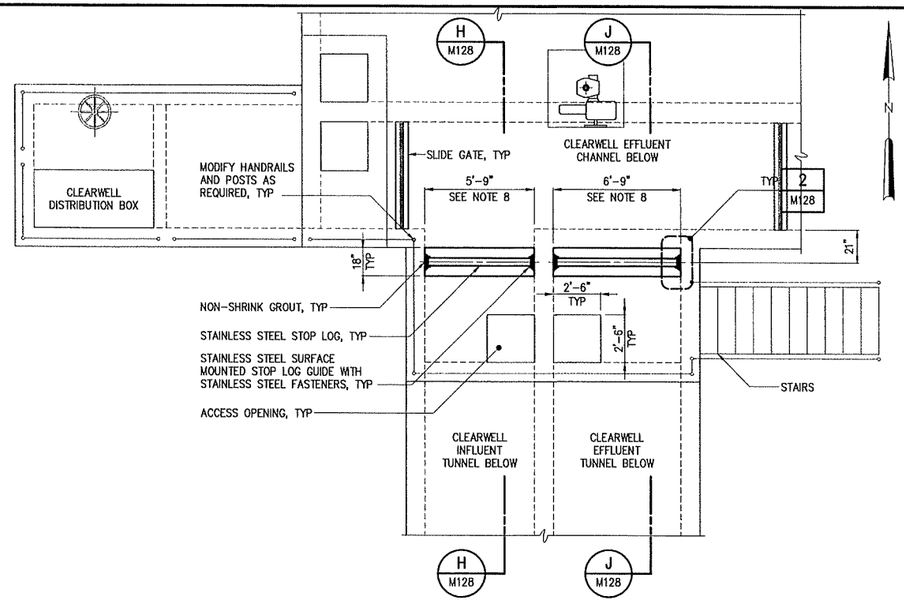
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IMAGES=



TUNNEL MODIFICATION AT CLEARWELL

CLEARWELL TUNNEL BOTTOM PLAN

1/4" = 1'-0"



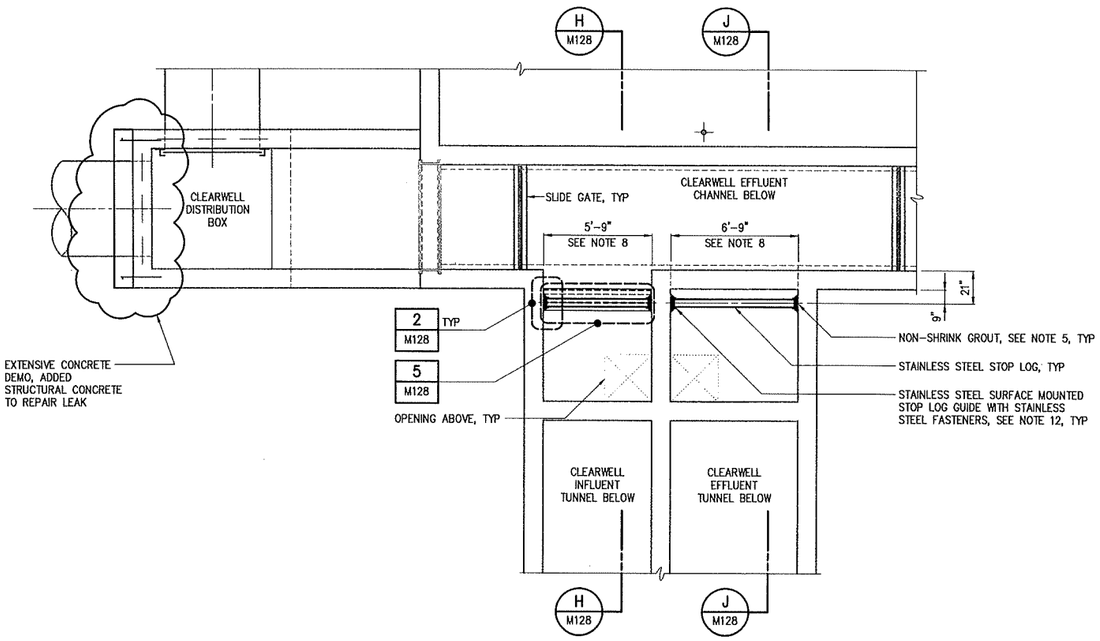
TUNNEL MODIFICATION AT CLEARWELL

ROOF PLAN AT ELEV 101.25

1/4" = 1'-0"

NOTES:

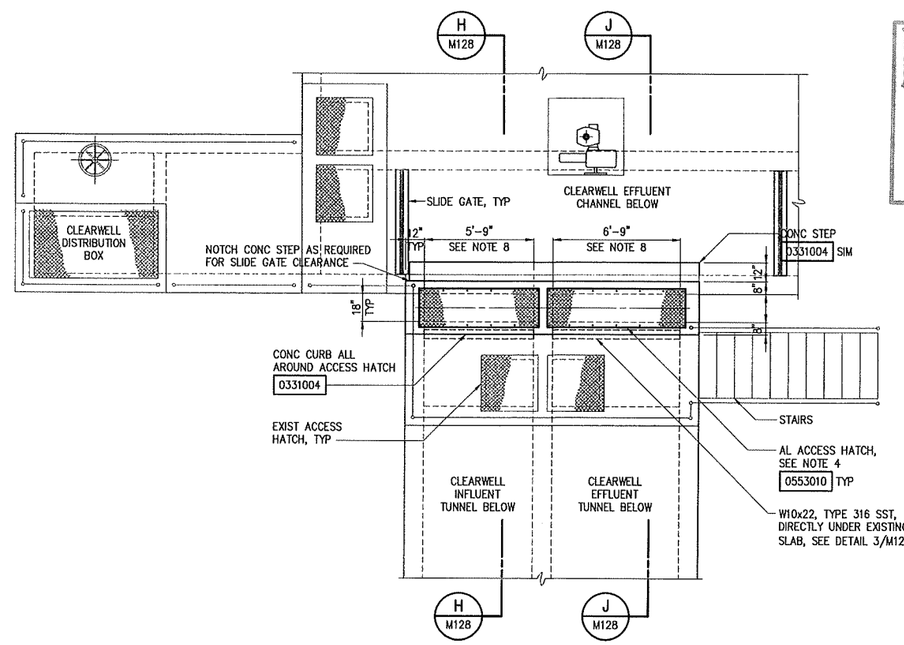
1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.
2. 54" CLEARWELL BYPASS PIPING NOT SHOWN, SEE DRAWING M124.
3. FOR DEMOLITION REQUIREMENTS, SEE DRAWING M120
4. ALUMINUM ACCESS HATCH SHALL BE WATERTIGHT, FOR CONSTRUCTION SEE TYP DETAIL 0553010, SIMILAR. ACCESS HATCH SHALL BE SUPPLIED WITHOUT HINGES AND LIFT HANDLES.
5. STOP LOG FRAME SHOWN IS OF ONE-PIECE CONSTRUCTION AND SHALL BE GROUTED AFTER INSTALLATION, SEE DETAIL 2/M128.
6. CONTRACTOR MAY ELECT TO INSTALL AN ADJUSTABLE 3-PIECE STOP LOG FRAME ASSEMBLY. FRAME ASSEMBLY SHALL BE MADE WATERTIGHT USING A CONTINUOUS NEOPRENE GASKET OF SUFFICIENT THICKNESS.
7. CONTRACTOR SHALL SUBMIT EITHER INSTALLATION SYSTEM TO THE ENGINEER FOR REVIEW.
8. FIELD VERIFY EXISTING DIMENSIONS OF CLEARWELL INFLUENT AND EFFLUENT TUNNELS PRIOR TO ORDERING STOP LOG ASSEMBLIES.
9. CONTRACTOR SHALL CLEAN AND SMOOTH OUT UNEVEN SURFACES OF TUNNELS AS REQUIRED FOR WATERTIGHT INSTALLATION OF STOP LOG GUIDES.
10. STOP LOG GUIDES SHALL BE INSTALLED TRUE VERTICALLY AND HORIZONTALLY WITHOUT BENDING THE GUIDES. UNEVENNESS OF WALLS OR BOTTOM SLAB SHALL BE SMOOTHED OUT WITH VARIOUS THICKNESS OF GROUT OR NEOPRENE GASKET OF SUFFICIENT THICKNESS TO ASSURE WATERTIGHTNESS.
11. ALL FASTENERS SHALL BE TYPE 316 STAINLESS STEEL.
12. DESIGN AND DETAILING OF STAINLESS STEEL STOP LOG, SURFACE MOUNTED FRAME, AND FASTENERS SHALL BE THE EXCLUSIVE RESPONSIBILITY OF THE MANUFACTURER AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF NORTH CAROLINA.



TUNNEL MODIFICATION AT CLEARWELL

CLEARWELL TUNNEL TOP PLAN

1/4" = 1'-0"



TUNNEL MODIFICATION AT CLEARWELL

ROOF PLAN AT ELEV 101.75

1/4" = 1'-0"

1/4"=1'-0" 1 0 1 2 3 7'

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL TUNNEL
MECHANICAL
STOP LOGS - PLANS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

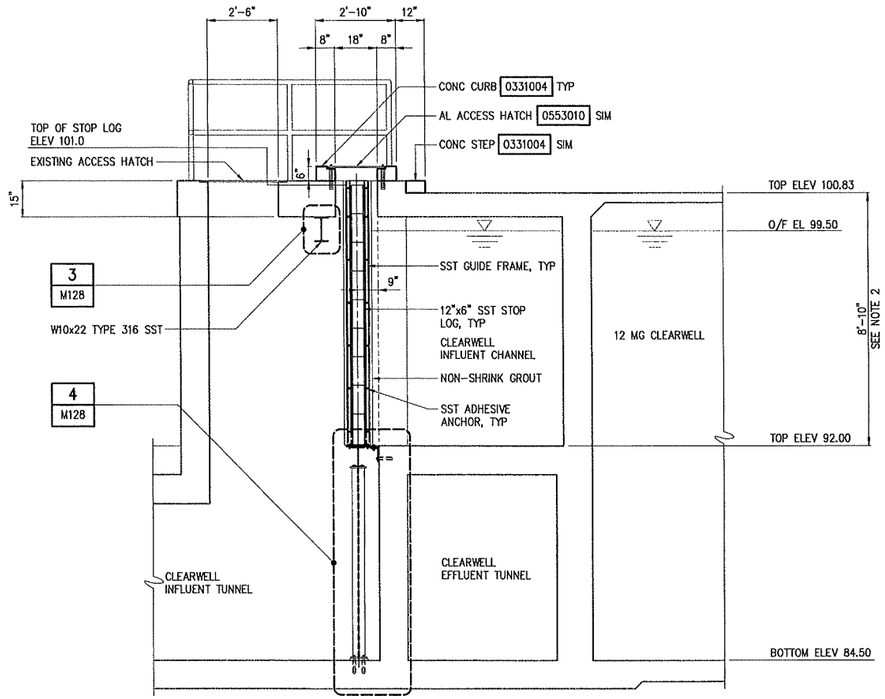
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER M127

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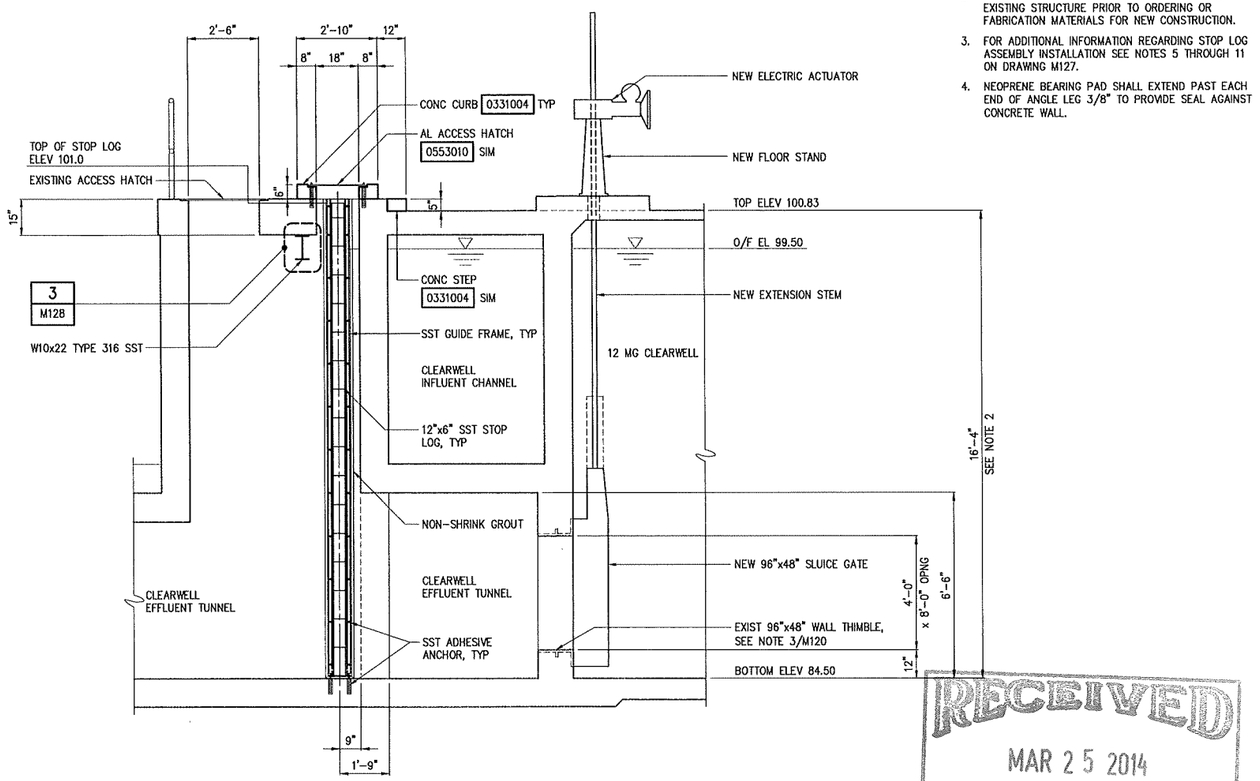
RECORD DRAWINGS

XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALMECH, PO-CW-TUNNEL-PB, PO-CW-TUNNEL-P1, PO-CW-TUNNEL-PR, PO-CW-TUNNEL-PR-2, NC-BCS IMAGES=

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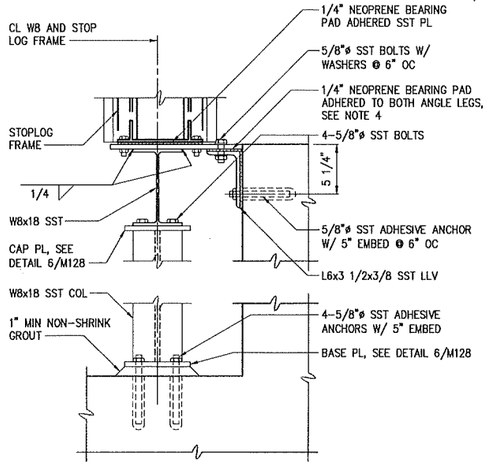
SECTION H
3/8" = 1'-0" M127



SECTION J
3/8" = 1'-0" M127

NOTES:

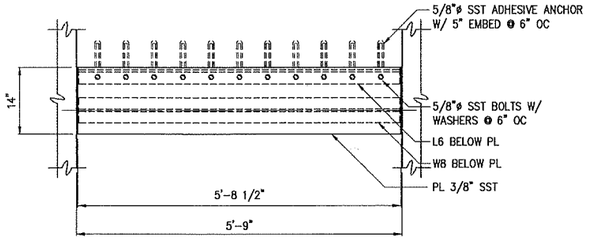
1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.
2. FIELD VERIFY ALL ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURE PRIOR TO ORDERING OR FABRICATION MATERIALS FOR NEW CONSTRUCTION.
3. FOR ADDITIONAL INFORMATION REGARDING STOP LOG ASSEMBLY INSTALLATION SEE NOTES 5 THROUGH 11 ON DRAWING M127.
4. NEOPRENE BEARING PAD SHALL EXTEND PAST EACH END OF ANGLE LEG 3/8" TO PROVIDE SEAL AGAINST CONCRETE WALL.



NOTE:
ALL STRUCTURAL MEMBERS, PLATES, BOLTS, WASHERS AND ADHESIVE ANCHORS SHALL BE 316 STAINLESS STEEL.

STOP LOG SUPPORT FRAME

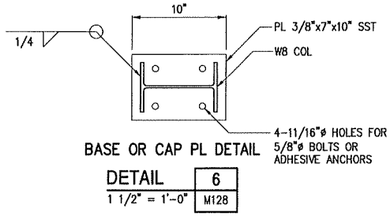
DETAIL 4
1 1/2" = 1'-0" M128



NOTE:
ALL STRUCTURAL MEMBERS, PLATES, BOLTS, WASHERS AND ADHESIVE ANCHORS SHALL BE 316 STAINLESS STEEL.

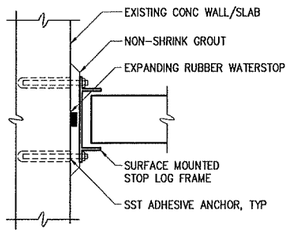
STOP LOG SUPPORT FRAME PLAN

DETAIL 5
3/4" = 1'-0" M128



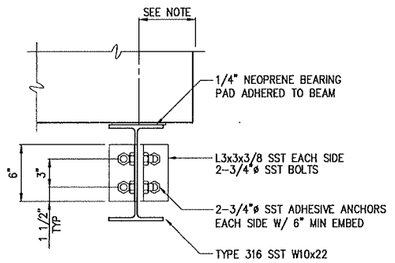
BASE OR CAP PL DETAIL

DETAIL 6
1 1/2" = 1'-0" M128



STOP LOG FRAME

DETAIL 2
1 1/2" = 1'-0" M127



NOTE:
LOCATE SST BEAM SUCH THAT ADHESIVE ANCHORS FROM INFLUENT TUNNEL BEAM DO NOT INTERFERE WITH ANCHORS FROM EFFLUENT TUNNEL BEAM.

W10 TO EXISTING CONC WALL CONNECTION

DETAIL 3
1 1/2" = 1'-0" M127

3/8"=1'-0"

12" 0 1 2 4'

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL TUNNEL
MECHANICAL
STOP LOGS - SECTIONS

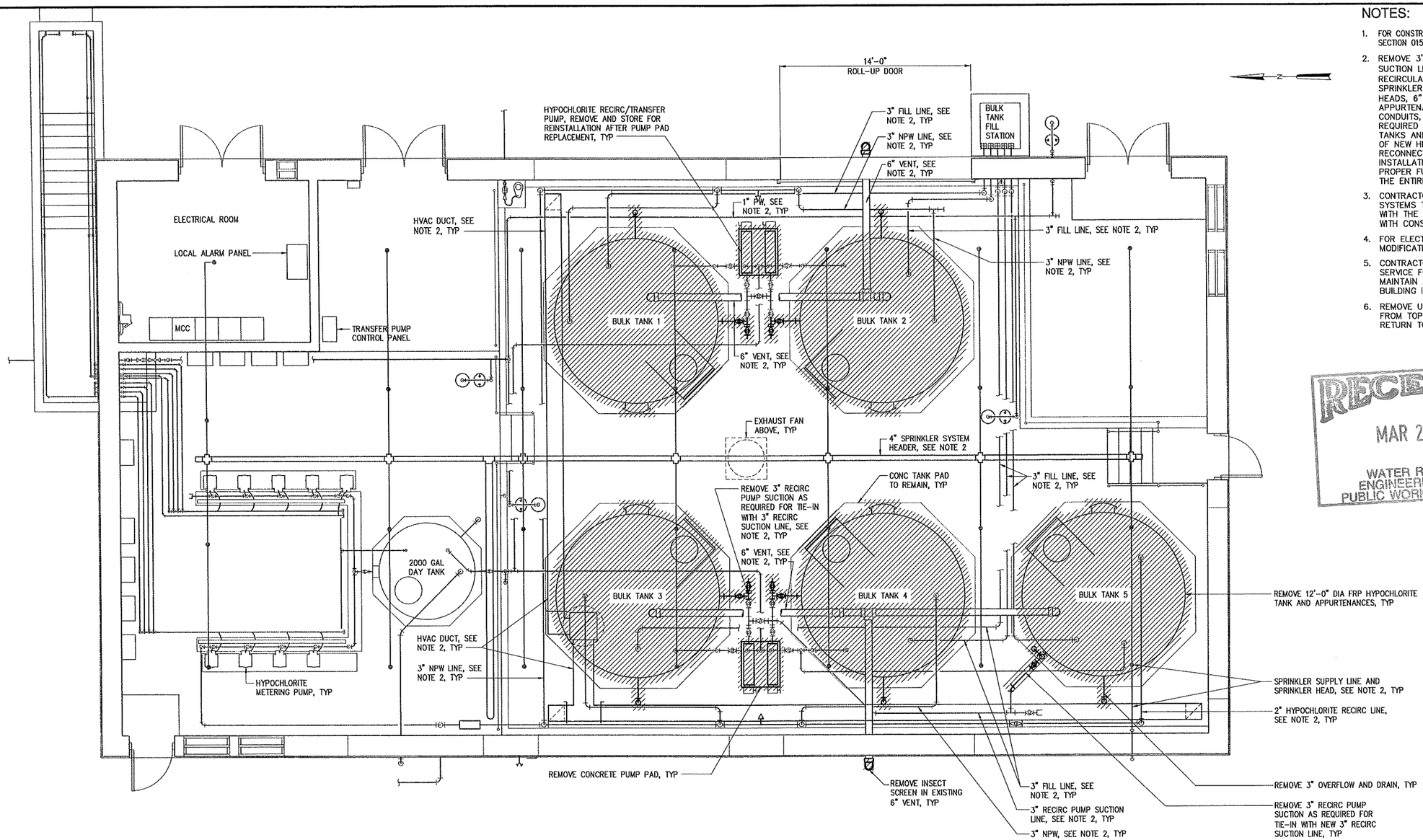
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DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
M128

RECORD DRAWINGS

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XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALMECH, PO-CW-TUNNEL-S01, PO-CW-TUNNEL-S02, PO-CW-TUNNEL-PB, PO-CW-TUNNEL-PT, NC-BCS
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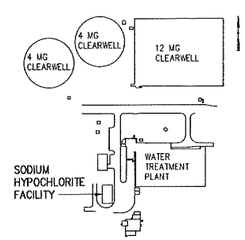


DEMOLITION PLAN
1/4" = 1'-0"

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520
2. REMOVE 3" TANK FILL LINE, 3" RECIRC PUMP SUCTION LINE, 3" NPW LINE, 2" RECIRCULATION DISCHARGE, 1" PW LINE, SPRINKLER SYSTEM PIPING AND SPRINKLER HEADS, 6" VENT PIPING, HVAC DUCTS AND APPURTENANCES, ELECTRICAL CABLE TRAYS, CONDUITS, AND LIGHTING FIXTURES AS REQUIRED FOR REMOVAL OF EXISTING FRP TANKS AND AS REQUIRED FOR INSTALLATION OF NEW HDPE TANKS. REINSTALL AND RECONNECT ALL ITEMS LISTED ABOVE AFTER INSTALLATION OF NEW TANKS TO PROVIDE PROPER FUNCTIONALITY OF NEW TANKS AND THE ENTIRE HYPOCHLORITE FACILITY.
3. CONTRACTOR SHALL COORDINATE ALL SYSTEMS TO BE DEMOLISHED OR MODIFIED WITH THE OWNER PRIOR TO COMMENCING WITH CONSTRUCTION
4. FOR ELECTRICAL DEMOLITION AND MODIFICATIONS SEE DRAWING E140.
5. CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE FOR ALL SYSTEMS AS REQUIRED TO MAINTAIN ALL SYSTEM IN THE CHEMICAL BUILDING IN OPERATION AT ALL TIMES
6. REMOVE ULTRASONIC SENSORS (NOT SHOWN) FROM TOP OF EXISTING FRP TANKS AND RETURN TO OWNER

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KEY PLAN
NTS

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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY D. CORY HOPKINS SEAL NUMBER 31433

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3/6/14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER CHEMICAL TANKS REPLACEMENT
MECHANICAL
HYPOCHLORITE PLAN - DEMOLITION

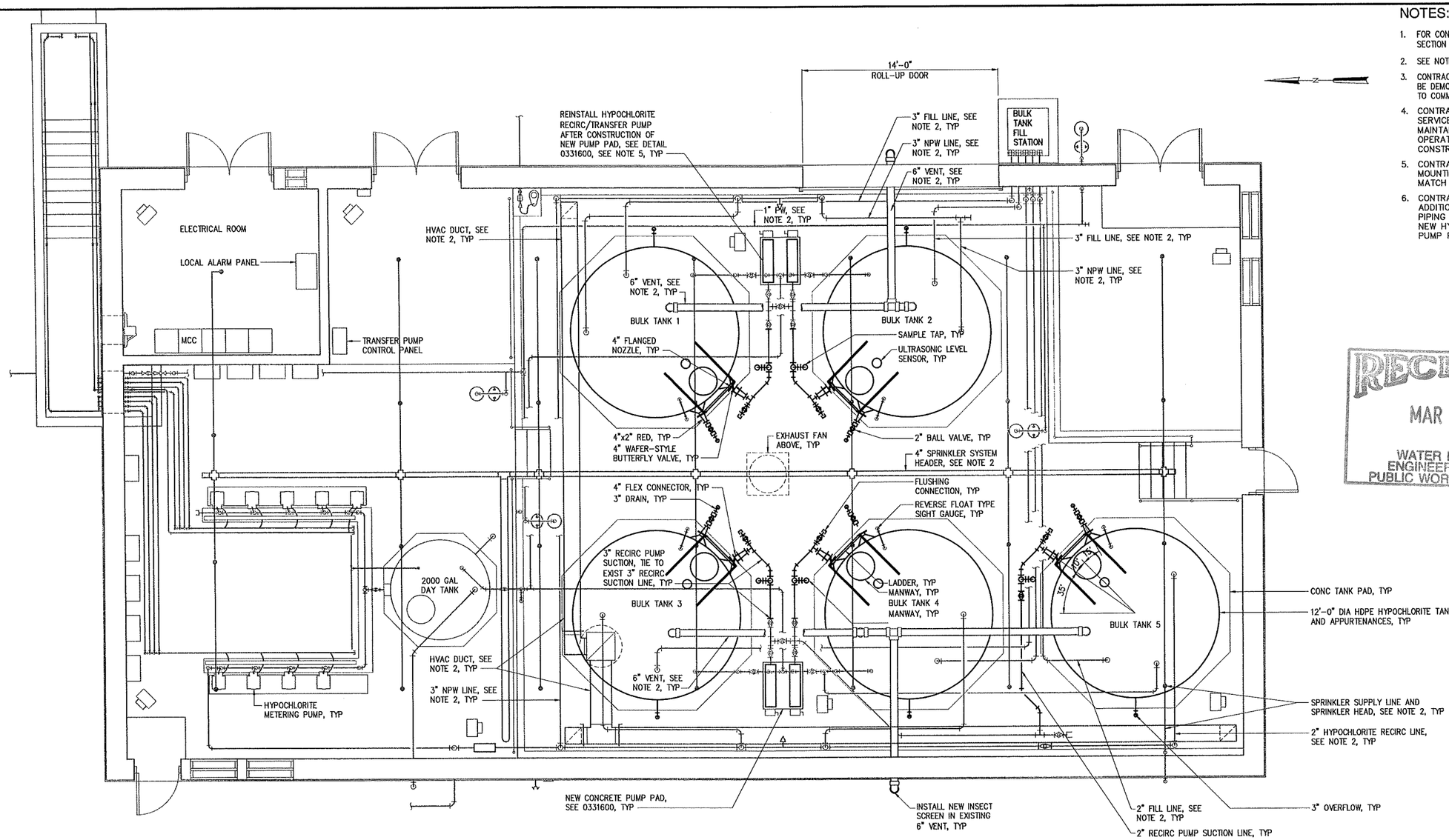
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER M140

RECORD DRAWINGS

BW-15496

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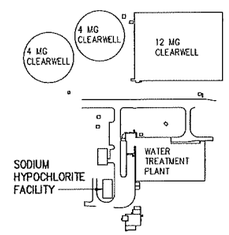


PLAN
1/4" = 1'-0"

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520.
2. SEE NOTE 2/M140.
3. CONTRACTOR SHALL COORDINATE ALL SYSTEMS TO BE DEMOLISHED OR MODIFIED WITH THE OWNER PRIOR TO COMMENCING WITH CONSTRUCTION.
4. CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE FOR ALL SYSTEMS AS REQUIRED TO MAINTAIN THE CHEMICAL SYSTEM IN OPERATION AT ALL TIMES DURING CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE ALL NEW MOUNTING HARDWARE AND BRACKETS TO MATCH EXISTING.
6. CONTRACTOR SHALL PROVIDED ALL ADDITIONAL PUMP SUCTION AND DISCHARGE PIPING AS REQUIRED TO ACCOMMODATE THE NEW HYPOCHLORITE RECIRC AND TRANSFER PUMP PADS.

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KEY PLAN
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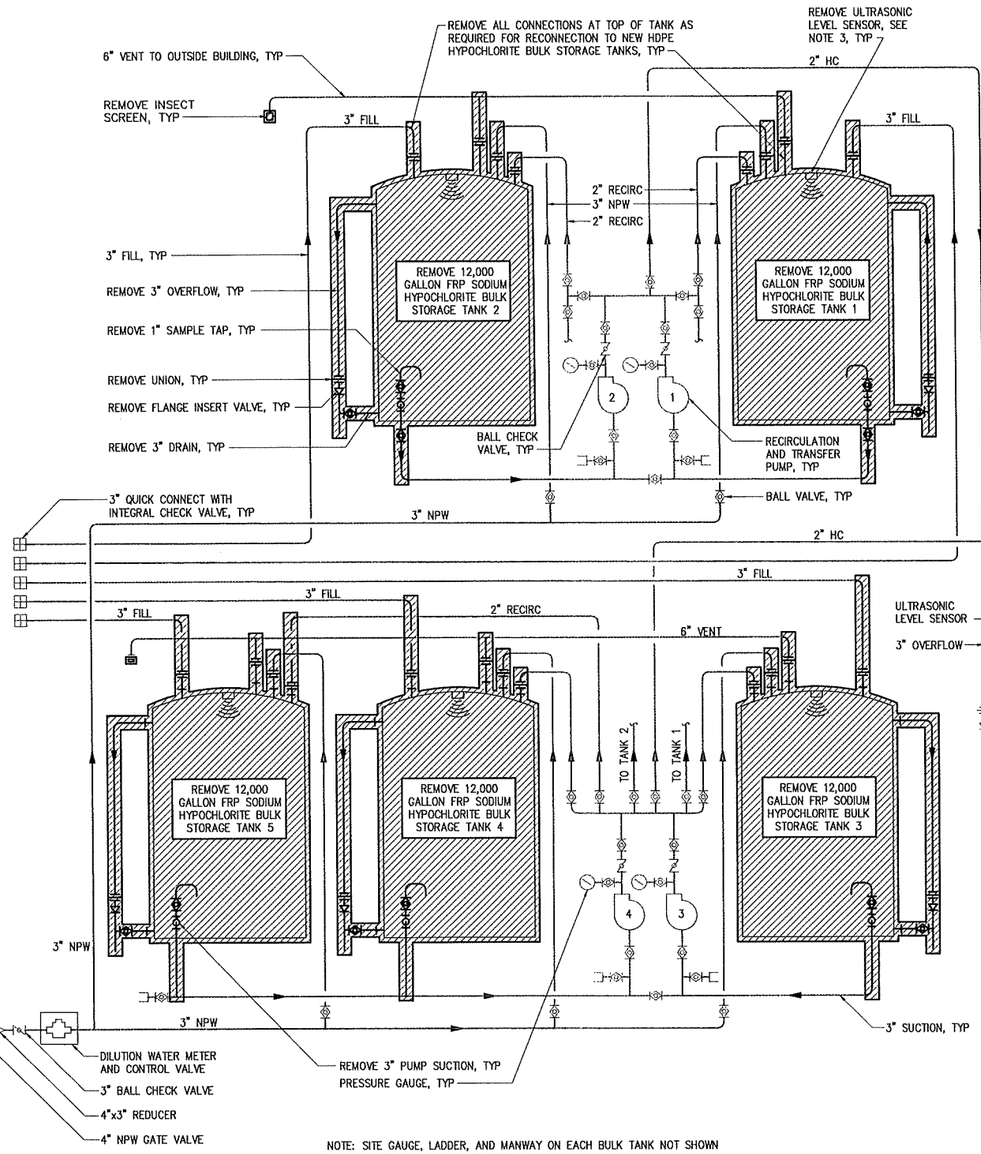
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NOTE: SITE GAUGE, LADDER, AND MANWAY ON EACH BULK TANK NOT SHOWN

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520
2. REMOVE AND REINSTALL ALL PIPING AND APPURTENANCES AS REQUIRED TO REMOVE FRP TANKS AND TO INSTALL NEW HDPE TANKS
3. RETURN ULTRASONIC LEVEL SENSORS AND APPURTENANCES TO THE OWNER

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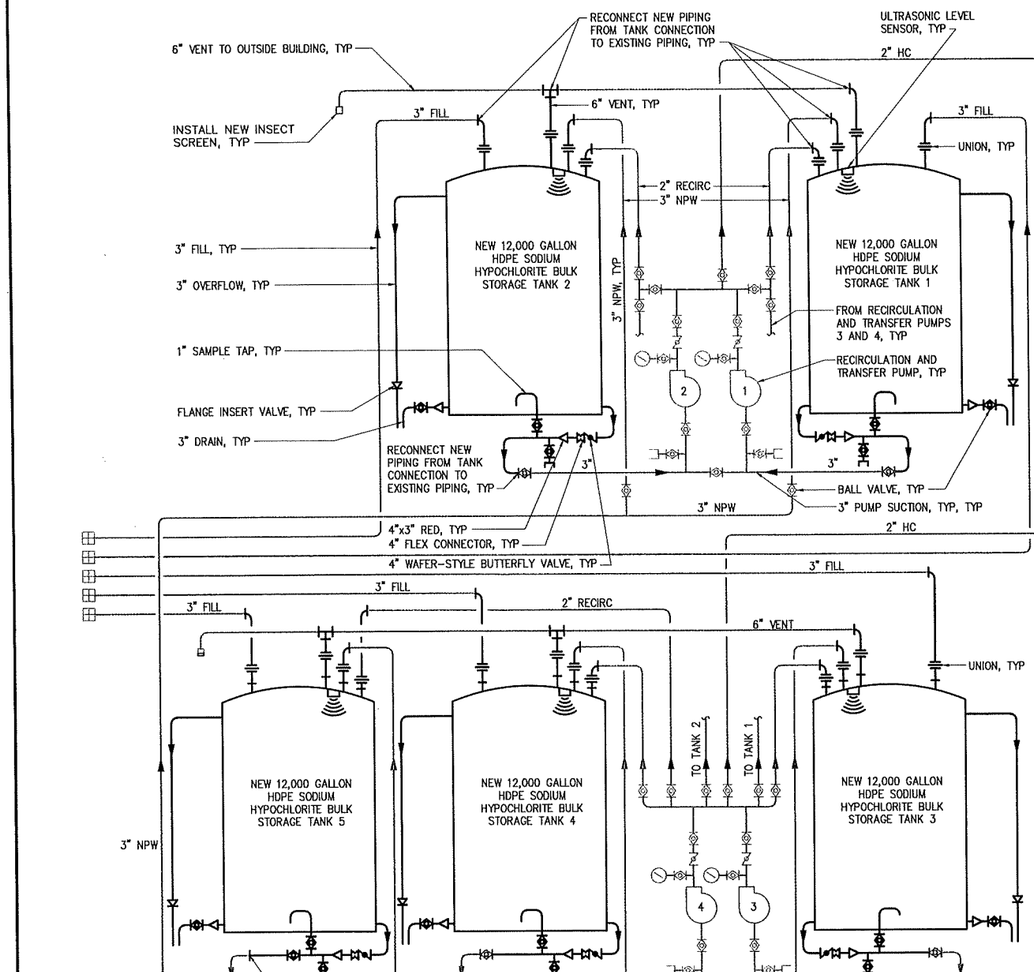
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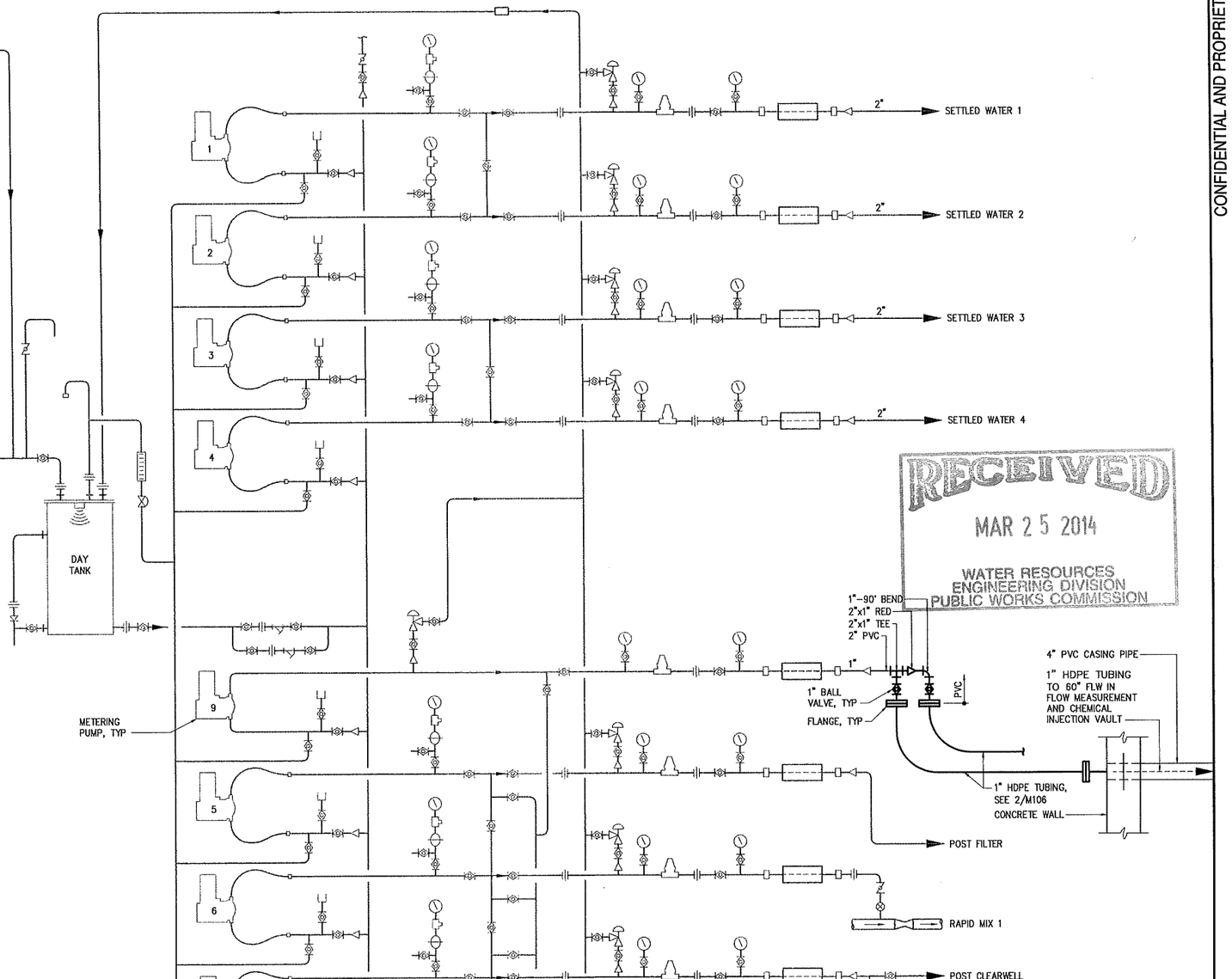
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NOTES:



NOTE:
REVERSE FLOAT TYPE SIGHT GAUGE, LADDER, AND MANWAY ON EACH BULK TANK NOT SHOWN



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GENERAL STRUCTURAL NOTES

G-1 THESE NOTES ARE GENERAL AND SUPPLEMENT THE SPECIFICATIONS. THESE NOTES APPLY TO THE ENTIRE PROJECT UNLESS MODIFIED OR NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.

G-2 STANDARD DETAILS SHALL BE USED WHEN REFERRED TO OR WHEN NO MORE RESTRICTIVE OR DIFFERENT DETAILS ARE SHOWN ON THE DRAWINGS.

G-3 DESIGN IS IN ACCORDANCE WITH AND CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE.

G-4 ALL DIMENSIONS INDICATED (*) SHALL BE VERIFIED EITHER BY FIELD MEASUREMENTS FOR EXISTING STRUCTURES OR BY SHOP DRAWINGS FOR EQUIPMENT FURNISHED. STRUCTURAL DIMENSIONS NOT SHOWN BUT CONTROLLED BY OR RELATED TO EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR WITH THE MANUFACTURER PRIOR TO CONSTRUCTION.

G-5 THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING INFORMATION IN THE FIELD AS REQUIRED FOR NEW WORK.

G-6 IF A CONFLICT IS FOUND BETWEEN DIFFERENT PORTIONS OF THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. CONTINUED CONSTRUCTION OF THE AREA IN CONFLICT SHALL BE AT THE CONTRACTOR'S OWN RISK UNTIL THE CONFLICT IS RESOLVED.

G-7 EQUIPMENT ANCHOR BOLT SIZES, TYPES, EMBEDMENT AND PATTERNS SHALL BE VERIFIED WITH THE MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO INSURE ACCURACY OF PLACEMENT.

G-8 STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND MANUFACTURER'S SHOP DRAWINGS.

G-9 STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURE. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED BY BRACING AND TEMPORARY SUPPORTS WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR. OVERSTRESSING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.

STRUCTURAL METALS

M-1 DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, LATEST EDITION.

M-2 STEEL MATERIAL:
- A) PLATES AND ANGLES: ASTM A36 UNO (36 KSI)
- B) STRUCTURAL W SHAPES: ASTM A992 (50 KSI)

M-3 PROVIDE MINIMUM 3/4" DIAMETER ASTM A325 HIGH STRENGTH BOLTS WITH SNUG TIGHTENED TYPE N CONNECTIONS FOR STRUCTURAL STEEL UNLESS NOTED OTHERWISE. HOLES FOR BOLTS SHALL BE STANDARD SIZE UNLESS NOTED OTHERWISE.

M-4 PROVIDE TYPICAL STEEL BEAM CONNECTIONS FOR A CAPACITY OF NOT LESS THAN THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE AISC TABLES FOR ALLOWABLE LOADS OF BEAMS UNLESS NOTED OTHERWISE.

M-5 DO NOT PAINT STEEL SURFACES WHICH ARE TO BE WELDED OR ARE TO BE ENCASED IN CONCRETE.

M-6 ALL STAINLESS STEEL FABRICATIONS EXPOSED TO UNDERWATER SERVICE SHALL BE TYPE 316. ALL OTHER STAINLESS STEEL FABRICATIONS SHALL BE TYPE 304 UNLESS NOTED OTHERWISE.

M-7 ALL GROOVE AND BUTT WELDS SHALL BE FULL PENETRATION.

M-8 FILLET WELD SIZES SHALL NOT BE LESS THAN THE MINIMUM SIZE REQUIRED BY AISC CODE FOR PLATE SIZES TO BE CONNECTED AND SHALL BE APPLIED TO THE ENTIRE JOINT CONTACT LENGTH, AND NOT LESS THAN 3/16".

M-9 BOTTOM SURFACES OF BASE PLATES SHALL BE GROUTED TO ENSURE FULL BEARING CONTACT WITH CONCRETE SLAB.

M-10 WHENEVER ONE MEMBER IS FASTENED TO ANOTHER WITH FASTENINGS (BOLTS, WELDS, ETC.) SET AT A UNIFORM SPACING, THERE SHALL BE A MINIMUM OF TWO FASTENINGS PER PIECE CONNECTED AND THE FIRST AND LAST FASTENINGS SHALL BE LOCATED NOT TO EXCEED 0.25 OF FASTENER SPACING FROM EACH END.

M-11 BOLTED CONNECTIONS FOR STRUCTURAL STEEL SHALL BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC (SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS).

M-12 STRUCTURAL WELDED JOINTS SHALL CONFORM TO THE PROVISIONS OF AWS D1.1, STRUCTURAL WELDING CODE BY AMERICAN WELDING SOCIETY. PROOF OF WELDER CERTIFICATION SHALL BE AVAILABLE AT THE JOB SITE DURING TIMES OF INSPECTION.

NONSTRUCTURAL COMPONENT ANCHORAGE

A-1 ALL ARCHITECTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS SHALL BE DESIGNED AND INSTALLED TO RESIST THE CONTROLLING CONDITION OF OPERATIONAL FORCES OR SEISMIC FORCES IN ACCORDANCE WITH GOVERNING BUILDING CODE. SEISMIC FORCES SHALL ALSO BE AS PER ASCE 7. COMPONENT SEISMIC ATTACHMENTS SHALL BE BOLTED, WELDED, OR OTHERWISE POSITIVELY FASTENED WITHOUT CONSIDERATION OF FRICTIONAL RESISTANCE PRODUCED BY THE EFFECTS OF GRAVITY. A CONTINUOUS LOAD PATH OF SUFFICIENT STRENGTH AND STIFFNESS BETWEEN THE COMPONENT AND THE SUPPORTING STRUCTURE SHALL BE PROVIDED. CONNECTIONS FOR BOTH ORTHOGONAL DIRECTIONS (TRANSVERSE AND LONGITUDINAL) SHALL BE DESIGNED BY THE CONTRACTOR'S ENGINEER CURRENTLY REGISTERED IN THE STATE OF NORTH CAROLINA.

A-2 COMPONENT REACTION FORCES AT THE POINT OF ATTACHMENT TO THE STRUCTURE SHALL BE SUBMITTED TO AND COORDINATED WITH THE ENGINEER FOR CONFIRMATION SUPPORTING STRUCTURE CAN WITHSTAND REACTION FORCES.

FOUNDATIONS

F-1 CONCRETE (CAST-IN-PLACE) NOTES APPLY TO FOUNDATIONS.

F-2 ALLOWABLE SOIL BEARING PRESSURE

PARAMETER / STRUCTURE	ALLOWABLE SOIL BEARING PRESSURE
CHEMICAL JUNCTION BOX	1500 PSF

F-3 MINIMUM DEPTH FROM ADJACENT FINISHED GRADE TO BOTTOM OF FOUNDATION = 12 INCHES.

CONCRETE (CAST-IN-PLACE)

C-1 DESIGN OF CONCRETE ELEMENTS INCLUDING WALLS, FORMED SLABS, BEAMS, AND COLUMNS IS IN ACCORDANCE WITH ACI 318 (CODE REQUIREMENTS FOR STRUCTURAL CONCRETE) AND 350 (CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES).

C-2 FOR CONCRETE MIX DESIGN SEE SPECIFICATION SECTION 03300.

C-3 CONCRETE STRENGTH CLASSES (28-DAY COMPRESSIVE STRENGTH):

- A) CLASS A1 CONCRETE (4,500 PSI): NORMAL WEIGHT CONCRETE SHALL BE USED IN ALL STRUCTURES, SIDEWALKS, PAVEMENTS, EXCEPT WHERE NOTED OTHERWISE IN CONTRACT DOCUMENTS. ALL CONCRETE SHALL BE CLASS A1 CONCRETE UNLESS ANOTHER CLASS IS SPECIFICALLY CALLED FOR ON CONTRACT DOCUMENTS OR SPECIFIED HEREIN.
- B) CLASS A6 CONCRETE (4,500 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE USED WHERE CONCRETE IS PLACED UNDER PRESSURE (PUMPED). CLASS A6 CONCRETE SHALL BE USED ONLY WHERE SPECIFICALLY APPROVED BY ENGINEER.
- C) CLASS B CONCRETE (3,000 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE USED FOR DUCT BANK ENCASEMENTS, CATCH BASINS, FENCE AND GUARD POST EMBEDMENT, CONCRETE FILL AND OTHER AREAS WHERE SPECIFICALLY NOTED ON CONTRACT DRAWINGS.

C-4 ALL BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60. WHERE REINFORCEMENT IS TO BE WELDED IN ACCORDANCE WITH AWS D1.4, ASTM A706 GRADE 60 SHALL BE USED. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

C-5 CONCRETE COVER FOR REINFORCING (UNLESS NOTED OTHERWISE ON THE DRAWINGS):

A) CONCRETE DEPOSITED DIRECTLY AGAINST SOIL:	3"
B) CONCRETE EXPOSED TO WEATHER (#5 OR SMALLER):	1 1/2"
CONCRETE EXPOSED TO WEATHER (#6 OR LARGER):	2"
C) SLABS:	1 1/2"
AT SURFACES CONTACTING FLUID:	2"
D) WALLS 12" OR MORE:	2"
WALLS LESS THAN 12" (#5 OR SMALLER):	1 1/2"
WALLS LESS THAN 12" (#6 OR LARGER):	2"
E) FOR SURFACES EXPOSED TO FLUID IN BEAMS, COLUMNS AND WALLS:	ADD 1/2" TO ABOVE VALUES

C-6 SPLICES SHALL BE CLASS 'B' CONFORMING TO THE PROVISIONS OF ACI 318 UNLESS NOTED OTHERWISE.

C-7 CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS NOT SHOWN SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE APPROVAL OF THE ENGINEER PRIOR TO SUBMITTING REBAR SHOP DRAWINGS. VERTICAL CONSTRUCTION JOINTS IN WALLS AND HORIZONTAL JOINTS IN SLABS SHALL BE PROVIDED AT A SPACING NOT GREATER THAN 45 FEET ON CENTER. FOR EXPOSED WALLS WITH FLUID OR EARTH ON THE OPPOSITE SIDE, THE SPACING BETWEEN VERTICAL AND HORIZONTAL JOINTS SHALL BE A MAXIMUM OF 25 FEET.

C-8 WHERE HORIZONTAL CONSTRUCTION JOINTS, LOCATED ABOVE THE FOUNDATION SLAB, EXTEND BEYOND WHERE NEEDED, THEY SHALL BE TERMINATED AT A VERTICAL CONSTRUCTION JOINT APPROVED BY THE ENGINEER.

C-9 ALL JOINTS WHICH ARE IN MEMBERS IN CONTACT WITH LIQUID OR BELOW GRADE SHALL HAVE A WATERSTOP. CONSTRUCTION JOINTS SHALL HAVE A 6" PVC RIBBED WATERSTOP. EXPANSION JOINTS SHALL HAVE A 9" PVC CENTER BULB RIBBED WATERSTOP. IN VERTICAL JOINTS, WATERSTOPS SHALL TERMINATE NO LESS THAN 18" ABOVE THE MAXIMUM WATER SURFACE OR 18" ABOVE GRADE, WHICHEVER IS HIGHER.

C-10 SLABS WITH SLOPING SURFACES SHALL HAVE THE INDICATED SLAB THICKNESS MAINTAINED AS THE MINIMUM. SLAB BOTTOMS CAN EITHER SLOPE WITH THE TOP SURFACE OR BE LEVEL. REINFORCEMENT IN SLABS WITH SLOPING SURFACES SHALL BE PLACED AT THE REQUIRED CLEARANCE FROM THE SLAB SURFACE.

C-11 ALL EXPOSED CORNERS SHALL HAVE A 3/4" CHAMFER OR A 1/2" RADIUS TOOLED CORNER.

C-12 EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.

C-13 REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY METAL PIPE, PIPE FLANGE, METAL CONDUIT, OR OTHER METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM CLEARANCE OF 2" SHALL BE PROVIDED.

C-14 DOWELS, ANCHOR BOLTS, PIPES, WATERSTOPS AND OTHER EMBEDDED ITEMS SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.

C-15 CONDUITS AND OTHER SIMILAR ITEMS EMBEDDED IN OR PENETRATING THROUGH CONCRETE SHALL BE SPACED ON CENTER NOT LESS THAN 3 TIMES THEIR OUTSIDE DIMENSION, BUT NOT LESS THAN 2 1/2" CLEAR. WHEN SUCH ITEMS ARE EMBEDDED IN WALLS OR SLABS, THEY SHALL NOT OCCUPY MORE THAN 1/3 OF THE MEMBER THICKNESS.

C-16 AT ALL TYPICAL CURBS, EQUIPMENT PADS, AND PIPE SUPPORT PIERS, REINFORCING DOWELS SHOWN MAY BE REPLACED WITH MATCHING DOWELS SET IN EPOXY IN DRILLED HOLES AS SPECIFIED. DOWELS LOCATED CLOSER THAN 3" FROM ANY EDGE OF CONCRETE SHALL NOT BE REPLACED WITH DRILLED DOWELS.

C-17 DRILLED ADHESIVE DOWELS (WHERE DOWELS ARE SHOWN TO BE PLACED INTO HARDENED CONCRETE):

- A) THE HOLE DIAMETER SHALL BE NO LARGER THAN 1/8" GREATER THAN THE DIAMETER OF THE REINFORCING BAR AT THE DEFORMATIONS.
- B) THE DEPTH OF EMBEDMENT SHALL BE 12 BAR DIAMETERS, UNLESS NOTED OTHERWISE.
- C) ADJUST THE DOWEL LOCATIONS AS NEEDED TO AVOID DRILLING THROUGH ANY REINFORCING BARS. IF THE LOCATION NEEDS TO BE MODIFIED, CONTACT THE ENGINEER.

C-18 CLEAR DISTANCE FROM ANCHOR BOLTS TO ANY CONCRETE EDGE SHALL BE 4" MINIMUM UNLESS NOTED OTHERWISE.

C-19 CONCRETE COMPRESSIVE STRENGTH TESTS SHALL BE AVAILABLE ON THE JOB SITE FOR REVIEW BY THE ENGINEER.

EXISTING INFORMATION

X-1 ALL EXISTING INFORMATION SHOWN ON THESE DRAWINGS INCLUDING LOCATION, DIMENSIONS, ELEVATIONS, AND CONFIGURATIONS IS DERIVED FROM THE 1967, 1974, 1992 AND 1997 CONTRACT DRAWINGS AND IS NOT GUARANTEED TO BE COMPLETE OR CORRECT.

X-2 THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING INFORMATION IN THE FIELD AS REQUIRED FOR DEMOLITION AND MODIFICATIONS.

SPECIAL INSPECTIONS

SI-1 SPECIAL PERIODIC AND CONTINUOUS INSPECTIONS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND THE NORTH CAROLINA BUILDING CODE. PERIODIC INSPECTION OF STRUCTURAL STEEL, WELDED CONNECTIONS, AND REINFORCING STEEL ARE REQUIRED.

MASONRY

M-1 MASONRY MORTAR SHALL BE ASTM C 270 TYPE "S" AND MASONRY GROUT SHALL CONFORM TO REQUIREMENTS OF ASTM C 476 AND ACI 530.1/ASCE 6 SECTION 4.

M-2 CONCRETE MASONRY UNIT NET AREA COMPRESSIVE STRENGTH SHALL BE 1900 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C 140. COMPLETE TEST REPORTS SHALL BE SUBMITTED TO THE BUILDING INSPECTOR.

M-3 MASONRY TRUSS TYPE REINFORCEMENT SHALL CONFORM TO ASTM A 82 AND REINFORCEMENT STEEL SHALL CONFORM TO REQUIREMENTS OF ASTM A 615 FOR GRADE 60 BILLET STEEL.

M-4 MASONRY REINFORCEMENT BAR SPLICES SHALL BE CONTACT SPLICES. UNLESS NOTED OTHERWISE, LENGTH OF SPLICE FOR SINGLE BARS IN CENTER OF CELLS OF 8" OR LARGER CMU SHALL BE A MINIMUM OF 25 INCHES FOR #4 BARS AND 32 INCHES FOR #5 BARS. LENGTH OF SPLICE FOR OTHER CONDITIONS SHALL BE AS SHOWN ON THE DRAWINGS.

M-5 BOND BEAM REINFORCEMENT SHALL BE PROVIDED WITH STD 90° HOOKS AT ALL WALL INTERSECTIONS. WHERE BOND BEAM REINFORCEMENT IS INTERRUPTED BY OPENINGS REINFORCEMENT SHALL BE PROVIDED WITH STD 180° HOOKS AT ENDS. SEE ARCHITECTURAL DRAWINGS FOR DETAILS.

M-6 DOWELS SHALL BE EITHER CAST INTO WALL OR INSTALLED WITH A DOWEL ADHESIVE SYSTEM. IF CAST, DOWELS SHALL BE EMBEDDED IN STEM WALL OR FOUNDATION SLAB A MINIMUM 9" AND SHALL HAVE A STD 90° HOOK. IF INSTALLED WITH A DOWEL ADHESIVE SYSTEM DOWELS SHALL BE STRAIGHT BARS EMBEDDED A MINIMUM OF 10" INTO STEM WALL. INSTALLATION OF ALL DOWELS SHALL BE PER MANUFACTURERS RECOMMENDATIONS. AS A MINIMUM THE FOLLOWING INSTALLATION REQUIREMENTS SHALL BE MET:

- A) HOLES SHOULD BE DRILLED WITH CARBIDE BIT UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER.
- B) ALL HOLES SHALL BE CLEANED USING COMPRESSED AIR AND A PROPERLY SIZED NYLON OR WIRE BRUSH.
- C) ADHESIVE SHALL BE INJECTED USING A DISPENSER, STATIC MIXING NOZZLE AND A PISTON PLUG TO MINIMIZE THE FORMATION OF AIR POCKETS PROVIDED BY THE MANUFACTURER. IF DEPTH OF HOLE IS DEEPER THAN THE STATIC MIXING NOZZLE A PLASTIC EXTENSION TUBE SUPPLIED BY THE MANUFACTURER SHALL BE USED FOR PLACING ADHESIVE.

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DEMOLITION

D-1 FOR DEMOLITION REQUIREMENTS, REFER TO SPECIFICATION 01540 – DEMOLITION AND REMOVAL OF EXISTING STRUCTURES AND EQUIPMENT.

D-2 CONCRETE DEMOLITION WITHIN STRUCTURES BEING MODIFIED SHALL BE SELECTIVE DEMOLITION BY CORE DRILLING OR SAWCUTTING AND CAREFUL REMOVAL OF CONCRETE SHOWN TO BE REMOVED. NO OVER CUTTING OF AREAS TO BE DEMOLISHED SHALL BE PERMITTED. CONTRACTOR SHALL CORE DRILL CORNERS OF OPENING PRIOR TO SAWCUTTING IF NECESSARY. VIBRATORY HAMMERS SHALL NOT BE USED FOR SELECT DEMOLITION WORK. JACK HAMMERS, HOE RAMS AND OTHER HIGH ENERGY DEMOLITION EQUIPMENT MAY BE USED FOR COMPLETE REMOVAL OF A STRUCTURE. EXPLOSIVES SHALL NOT BE USED FOR ANY DEMOLITION.

D-3 UNLESS ANCHORING DEVICES AND/OR REINFORCEMENT ARE NOTED TO REMAIN FOLLOWING DEMOLITION, REMOVE AND/OR BURN BACK ANCHORS AND REINFORCEMENT STEEL 1/2" MIN BELOW SURFACE. VOIDS CREATED SHALL BE FILLED WITH EPOXY RESIN BINDER.

D-4 WHERE DRAWINGS INDICATE A CONCRETE EQUIPMENT PAD TO BE DEMOLISHED, THE FLOOR SLAB SURFACE SHALL BE REPAIRED AS APPROVED BY ENGINEER. FOLLOWING SELECT DEMOLITION AND REMOVAL OF THE EQUIPMENT PAD, THE FLOOR SLAB SURFACE SHALL BE INSPECTED. IF THE FLOOR SLAB IS DAMAGED FROM THE EQUIPMENT PAD REMOVAL THE REPAIR SHALL BE:

- A) SAW CUT THE FLOOR SLAB AROUND THE EQUIPMENT PAD PERIMETER TO A DEPTH OF 1/4 INCH.
- B) SCARIFY AND REMOVE SLAB CONCRETE WITHIN THE PERIMETER TO A NOMINAL 1/4 INCH DEPTH. CLEAN AND REMOVE ALL CONCRETE LAITANCE.
- C) RESURFACE THE AREA BY APPLYING A POLYMER MODIFIED OR SILICA FUME ENHANCED CEMENTITIOUS REPAIR MORTAR, APPROVED BY THE ENGINEER, FOLLOWING THE MANUFACTURERS SURFACE PREPARATION AND APPLICATION RECOMMENDATIONS. LEVEL AND FINISH THE SURFACE TO MATCH THE FLOOR SLAB SURROUNDING AREA.

D-5 CONCRETE SURFACES LEFT EXPOSED FOLLOWING DEMOLITION SHALL BE SEALED WITH A HIGH-BUILD, MOISTURE TOLERANT, EPOXY RESIN COATING. THE COATING SHALL BE SIKAGUARD 62 BY SIKA CORPORATION OR APPROVED EQUAL. FOR POTABLE WATER APPLICATIONS, REQUIREMENTS OF ANSI/NSF STANDARD 61 SHALL BE SATISFIED.

D-6 A DETAILED CONSTRUCTION AND DEMOLITION PLAN SHALL BE SUBMITTED TO THE ENGINEER AND APPROVED BY THE ENGINEER AND OWNER PRIOR TO BEGINNING CONSTRUCTION. ANY SHUTDOWNS SHALL BE SUBMITTED TO, COORDINATED WITH, AND APPROVED BY THE OWNER. ONCE APPROVED, CONTRACTOR SHALL PROVIDE A MINIMUM OF THREE (3) WEEKS NOTICE TO OWNER PRIOR TO SHUTDOWN, SEE SPECIFICATION SECTION 01520.

REPAIR

R-1 EXTENT OF DEMOLITION AND REPAIR WORK SHALL BE DETERMINED BY JOINT SITE INSPECTION BETWEEN CONTRACTOR, OWNER, AND ENGINEER.

R-2 CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR PROVIDING SCAFFOLDING, SHORING, OR ANY OTHER SUPPORTING STRUCTURES NEEDED TO PROVIDE SUPPORT AND/OR ACCESS TO AREAS REQUIRING DEMOLITION AND REPAIR DURING ENTIRE EXTENT OF WORK.

R-3 FOR BID PURPOSES, CONTRACTOR SHALL BASE UNIT PRICE BIDS ON ESTIMATED QUANTITIES DEFINED ON DRAWINGS AND DESCRIBED IN SPECIFICATION SECTION 03732 – CONCRETE REPAIRS. ALL OTHER WORK NOT SPECIFICALLY QUANTIFIED SHALL BE INCLUDED IN LUMP SUM BID ITEM.

R-4 FOR BID PURPOSES, MEANS AND QUANTITY OF REPAIR SHALL BE AS DEFINED ON CONTRACT DRAWINGS AND DESCRIBED IN SPECIFICATIONS.

R-5 IF CONDITIONS OBSERVED REVEAL NEED TO, OR IF CONTRACTOR CHOOSES, TO PROPOSE ALTERNATE MEANS OF REPAIR TO METHODS DEFINED, CONTRACTOR SHALL SUBMIT PROPOSED REVISIONS TO ENGINEER FOR APPROVAL. PAYMENT FOR REVISIONS NOT INCLUDED IN UNIT PRICE PAY ITEMS OR AS PART OF LUMP SUM PAY ITEM SHALL BE PAID FOR BY TERMS OF A NEGOTIATED CHANGE ORDER.

R-6 FOR SPALL REPAIR AREAS, AFTER SHORING TO SUPPORT STRUCTURE AS NECESSARY, ALL DAMAGED CONCRETE SHALL BE REMOVED DOWN TO SOUND PARENT CONCRETE.

R-7 WHERE DEMOLITION OF DAMAGED CONCRETE EXPOSES REINFORCEMENT, PROVIDED REINFORCEMENT IS SOUND AND UNDAMAGED, THE REINFORCEMENT SHALL BE PRESERVED AND SHALL REMAIN IN PLACE TO AID IN ANCHORING NEW REPAIR MATERIAL TO PARENT CONCRETE. IF REINFORCEMENT IS CORRODED OR OTHERWISE DAMAGED, REINFORCEMENT SHALL BE REMOVED AND REPLACED WITH REINFORCEMENT OF IDENTICAL SIZE DOWELED INTO SOUND CONCRETE WITH A MINIMUM EMBEDMENT OF SIX INCHES SECURED WITH APPROVED DOWEL ADHESIVE IN ACCORDANCE WITH SPECIFICATION 03200 AND 05050.

R-8 REINFORCEMENT EXPOSED BY DEMOLITION WORK THAT WILL NOT BE CONCEALED BY SUBSEQUENT PLACEMENT OF REPAIR MATERIAL SHALL BE BURNED BACK A MINIMUM OF 1/2" INTO PARENT CONCRETE. RESULTING VOID SHALL BE PATCHED FLUSH WITH EPOXY RESIN BINDER AS PER SPECIFICATION 03250 – CONCRETE ACCESSORIES.

R-9 UPON COMPLETION OF REMOVAL OF DAMAGED CONCRETE AND REINFORCEMENT AND SUBSEQUENT INSTALLATION OF NEW REINFORCEMENT, CONTRACTOR IN CONJUNCTION WITH ENGINEER SHALL DETERMINE IF REPAIR QUALIFIES AS SURFACE REPAIR OR REPAIR REQUIRING FORMWORK AS DESCRIBED IN NOTES 10 AND 11, THIS SHEET.

R-10 IF THICKNESS OF AREA TO BE REPAIRED IS 1" OR LESS, A SURFACE APPLIED REPAIR MATERIAL SHALL BE APPLIED PER SPECIFICATION 03732 – CONCRETE REPAIR. AREA TO BE REPAIRED SHALL BE SCORED AROUND PERIMETER OF REPAIR AREA TO PREVENT FEATHER EDGES. MINIMUM THICKNESS OF SURFACE REPAIR SHALL BE 1/4".

R-11 REPAIR AREAS GREATER THAN 1" IN THICKNESS SHALL BE REPAIRED WITH A REPAIR REQUIRING FORMWORK IN ACCORDANCE WITH SPECIFICATION SECTION 03732 – CONCRETE REPAIR. AREA TO BE REPAIRED SHALL BE SCORED AROUND PERIMETER OF REPAIR AREA TO PREVENT FEATHER EDGES. MINIMUM THICKNESS OF FORMED REPAIR APPLICATIONS SHALL BE 1". CONTRACTOR HAS OPTION OF ADDING PEA GRAVEL TO REPAIR MATERIAL IN AREAS WHERE REPAIR EXCEEDS 6" IN THICKNESS.

R-12 ALL CRACKS, CONSTRUCTION JOINTS, AND POSSIBLE COLD JOINTS DISPLAYING MOISTURE INTRUSION OR EVIDENCE OF PREVIOUS MOISTURE INTRUSION SUCH AS DAMPNESS OR EFFLORESCENCE SHALL BE INJECTED WITH EITHER STRUCTURAL CRACK REPAIR MATERIAL OR WATERPROOF INJECTION GROUT AS PER SPECIFICATION SECTION 03732 – CONCRETE REPAIR. DETERMINATION OF WHICH METHOD TO USE SHALL BE DETERMINED BY JOINT INSPECTION BETWEEN CONTRACTOR AND ENGINEER. IF ACTIVE WATER LEAKAGE IS EVIDENT, WATERPROOF INJECTION GROUT WILL BE REQUIRED.

R-13 SEQUENCING OF ALL REPAIR WORK SHALL MEET STIPULATIONS SUMMARIZED IN SPECIFICATION SECTION 01520 – MAINTENANCE OF PLANT OPERATIONS DURING CONSTRUCTION.

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4	RECORD DRAWINGS	FEB 2014	ZMW
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1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED RDP
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY CHRISTOPHER T. PHILLIPS SEAL NUMBER 17676

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWING
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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF AND GLENVILLE WTF
STRUCTURAL
STRUCTURAL NOTES

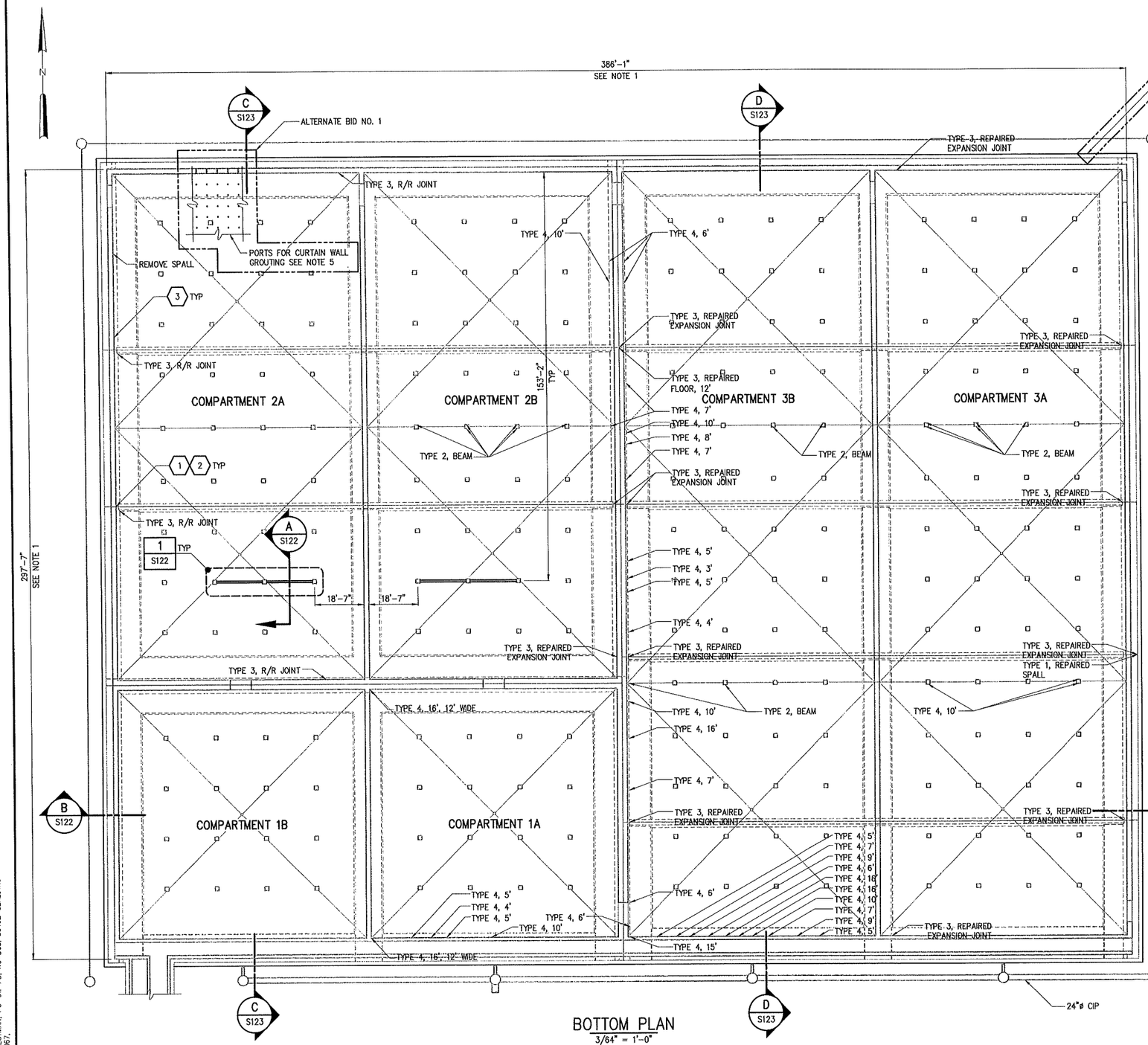
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S1

BW-15496

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RECORD DRAWINGS

XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, NC-BCS, 30402-SEALSTRU
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BOTTOM PLAN
3/64" = 1'-0"

NOTES:

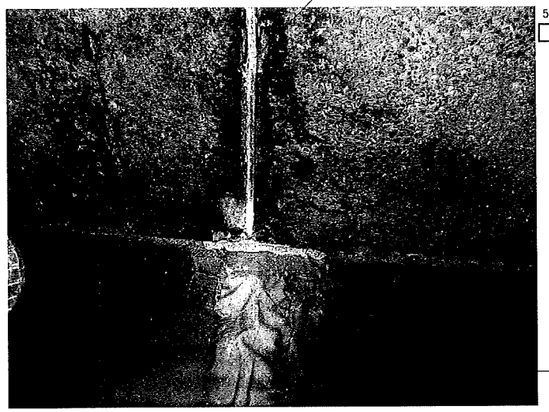
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS.
2. EXPANSION JOINTS IN WALLS AND SLAB OF CLEARWELL SHALL BE SEALED WITH A WATERPROOF MEMBRANE PATCH AS DESCRIBED IN SPECIFICATION SECTION 03732 – CONCRETE REPAIR. CLEARWELL SHALL BE DEWATERED AT EXPANSION JOINT LOCATIONS TO ALLOW FOR INSTALLATION OF PATCH. SURFACE OF INTERIOR OF CLEARWELL SHALL BE PREPARED AS REQUIRED BY MANUFACTURER OF PATCH TO ALLOW ADEQUATE INSTALLATION OF PATCH. NEW PATCH SHALL BE INSTALLED CONTINUOUS FULL HEIGHT OF THE EXPANSION JOINT IN WALLS AND SPLICED INTO EXISTING MEMBRANE PATCH AT THE BOTTOM SLAB OF THE STRUCTURE. SPLICE SHALL BE CONSTRUCTED TO ENSURE A WATER TIGHT SEAL BETWEEN NEW AND EXISTING MEMBRANE PATCH. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID FOR WATERPROOF MEMBRANE PATCH ON ESTIMATED QUANTITY GIVEN IN TABLE ON THIS DRAWING.
3. CRACKS OR CONSTRUCTION JOINTS DEEMED IN NEED OF REPAIR DURING JOINT SITE INSPECTION DESCRIBED ON DRAWING S1 AND IN SPECIFICATIONS, SHALL BE REPAIRED WITH EITHER STRUCTURAL CRACK REPAIR MATERIAL OR WATERPROOF INJECTION GROUT AS PER SPECIFICATION SECTION 03732 – CONCRETE REPAIR. SEE NOTE R–12 ON DRAWING S1. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID FOR CRACK REPAIR ON ESTIMATED QUANTITIES GIVEN IN TABLE ON THIS DRAWING.
4. FIGURES SHOWN ON THIS DRAWING AND LOCATED IN PLAN ON DRAWING S120 ARE REPRESENTATIVE OF REPAIRS REQUIRED AT MULTIPLE LOCATIONS WITHIN THE EXISTING CLEARWELL. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID ON REPAIRS AND QUANTITIES GIVEN IN TABLE ON THIS DRAWING.
5. AS AN ALTERNATE BID ITEM, CONTRACTOR SHALL ~~PROVIDE BID FOR INSTALLING CURTAIN GROUT~~ WATERPROOFING AROUND ENTIRE PERIMETER OF CLEARWELL AND BELOW ENTIRE EXTENTS OF BOTTOM SLAB. CURTAIN GROUT WATERPROOFING SHALL TOTALLY ENCAPSULATE CLEARWELL STRUCTURE TO FORM MOISTURE IMPENETRABLE BARRIER PREVENTING ANY GROUNDWATER FROM COMING INTO CONTACT AND PENETRATING EXTERIOR WALLS AND BOTTOM SLAB OF STRUCTURE. GROUT SHALL BE INSTALLED VIA INJECTION THROUGH PORTS DRILLED THROUGH WALLS AND BOTTOM MAT OF STRUCTURE FROM INSIDE OF STRUCTURE. CURTAIN GROUT WATERPROOFING SHALL MEET REQUIREMENTS OF SPECIFICATION SECTION 07120 AND SHALL FOLLOW RECOMMENDATIONS OF GROUT MANUFACTURER. CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR PROVIDING MEANS NECCESSARY TO PROTECT 8"ø FOUNDATION DRAIN FROM BEING DAMAGED OR FILLED WITH GROUT DURING CONSTRUCTION.

ALTERNATE BID NO. 1

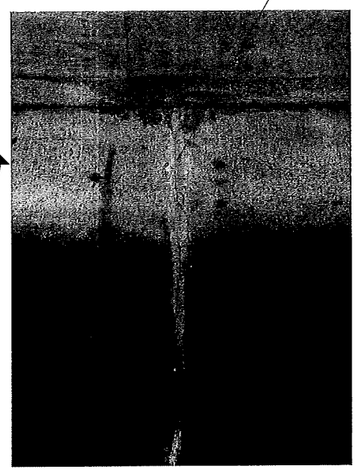
HOFFER WTF CLEARWELL REPAIR QUANTITIES		
TYPE OF REPAIR		ESTIMATED QUANTITY
1	SURFACE SPALL REPAIR	200 CUBIC FEET
2	SPALL REPAIR REQUIRING FORMWORK	200 CUBIC FEET
3	WATERPROOF MEMBRANE PATCH	400 LINEAR FEET
4	WATERPROOF INJECTION CRACK REPAIR	500 LINEAR FEET

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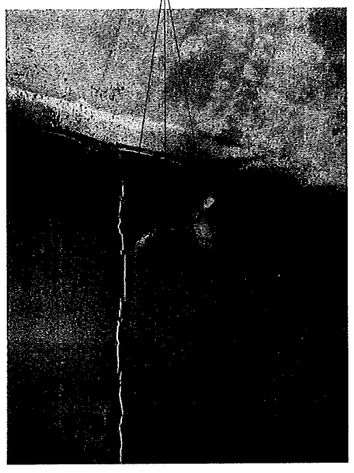
8"ø PERFORATED PVC FOUNDATION DRAIN, TYP 3 SIDES



1



2



3

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4	RECORD DRAWINGS	FEB 2014	ZMW
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DRAWN SPR/RDP
CHECKED ZMW
PROJ.ENGR.
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
STRUCTURAL
BOTTOM PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

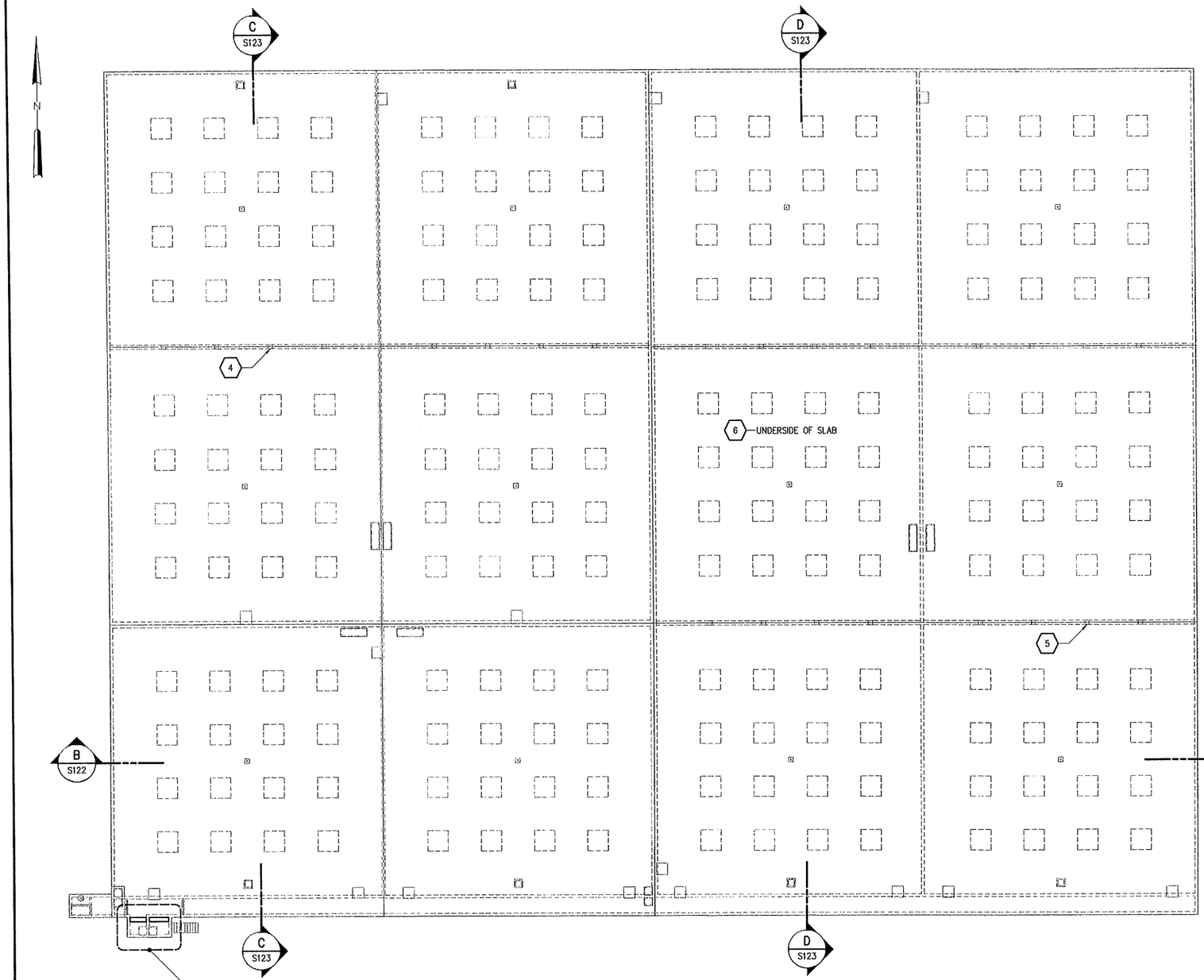
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S120

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RECORD DRAWINGS

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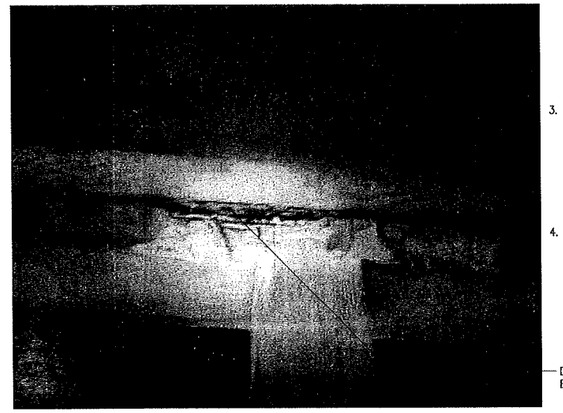
BW-15496



ROOF PLAN
3/64" = 1'-0"

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. DAMAGED CONCRETE SHOWN IN FIGURES 4 AND 5 SHALL BE REPAIRED USING SPALL REPAIR REQUIRING FORMWORK. REPAIR SHALL BE AS DESCRIBED IN REPAIR NOTES ON DRAWING S1 AND IN ACCORDANCE WITH SPECIFICATION 03732 – CONCRETE REPAIR. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID FOR SPALL REPAIR REQUIRING FORMWORK ON ESTIMATED QUANTITY INCLUDED IN TABLE ON DRAWING S120.
3. AREAS DEEMED IN NEED OF SURFACE SPALL REPAIR DURING JOINT SITE INSPECTION DESCRIBED ON DRAWING S1 AND IN SPECIFICATIONS, SHALL BE REPAIRED AS DESCRIBED IN REPAIR NOTES ON DRAWING S1 AND IN ACCORDANCE WITH SPECIFICATION SECTION 03732 – CONCRETE REPAIR. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID FOR SURFACE SPALL REPAIR ON ESTIMATED QUANTITY INCLUDED IN TABLE ON DRAWING S120.
4. FIGURES SHOWN ON THIS DRAWING AND LOCATED IN PLANS ARE REPRESENTATIVE OF REPAIRS REQUIRED AT MULTIPLE LOCATIONS WITHIN THE EXISTING CLEARWELL. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID ON REPAIRS AND QUANTITIES GIVEN IN TABLE ON DRAWING S120.



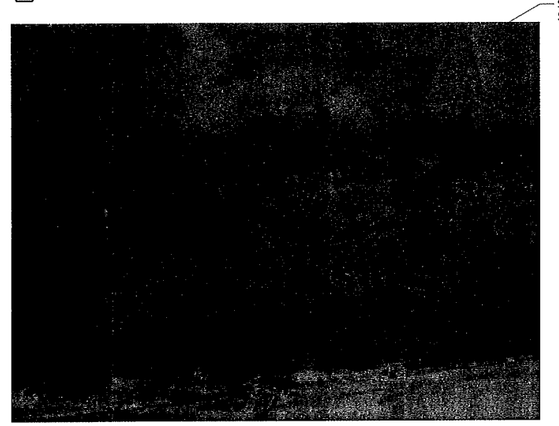
DAMAGED CONCRETE TO BE REPAIRED, SEE NOTE 2

4



DAMAGED CONCRETE TO BE REPAIRED, SEE NOTE 2

5



SURFACE SPALL REPAIR, SEE NOTE 3

6

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DESIGNED RDP
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z. M. MICHAEL WANG SEAL NUMBER 16425

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY D. CORY HOPKINS SEAL NUMBER 31433

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
STRUCTURAL
ROOF PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

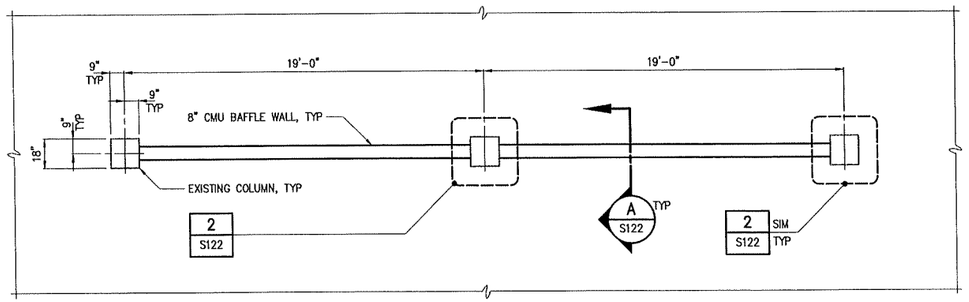
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S121

RECORD DRAWINGS

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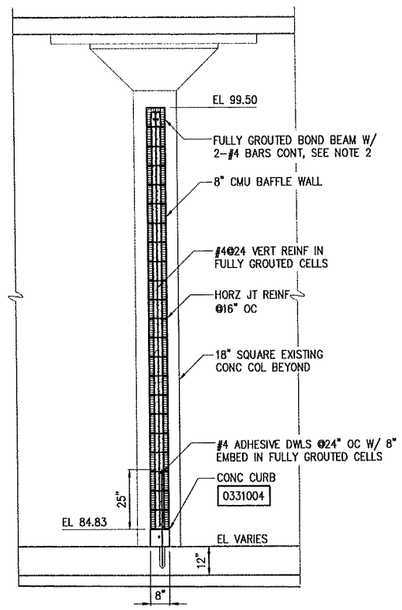
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CMU BAFFLE WALL PLAN

DETAIL 1 / 1/4" = 1'-0" / S120

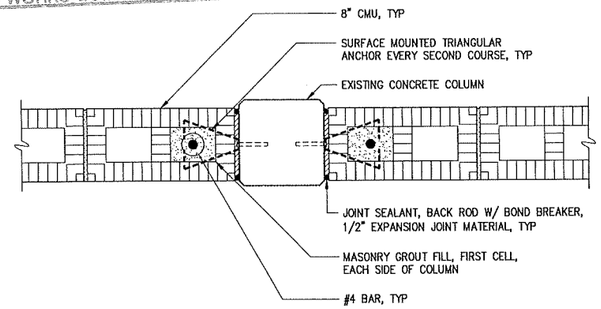


SECTION A / 3/8" = 1'-0" / S120

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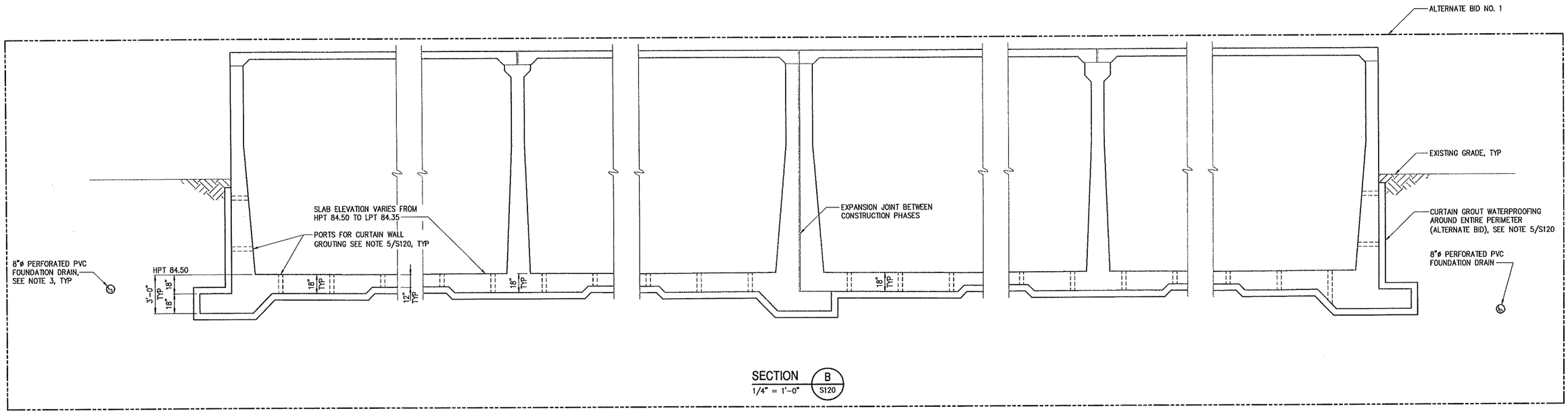
NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS.
2. BOND BEAM SHALL HAVE 2-#4 ADHESIVE DWLS WITH 6" EMBED AT ALL EXISTING CONCRETE COLUMNS. SPLICE DWLS WITH #4 CONT BARS 25" MINIMUM.
3. CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR PROVIDING MEANS NECCESSARY TO PROTECT 8"Ø FOUNDATION DRAIN FROM DAMAGE CLOGGING DURING CONSTRUCTION.



8" CMU TO EXISTING CONCRETE COLUMN

DETAIL 2 / 1 1/2" = 1'-0" / S122



SECTION B / 1/4" = 1'-0" / S120

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3/6/14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
STRUCTURAL
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

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DRAWING NUMBER S122

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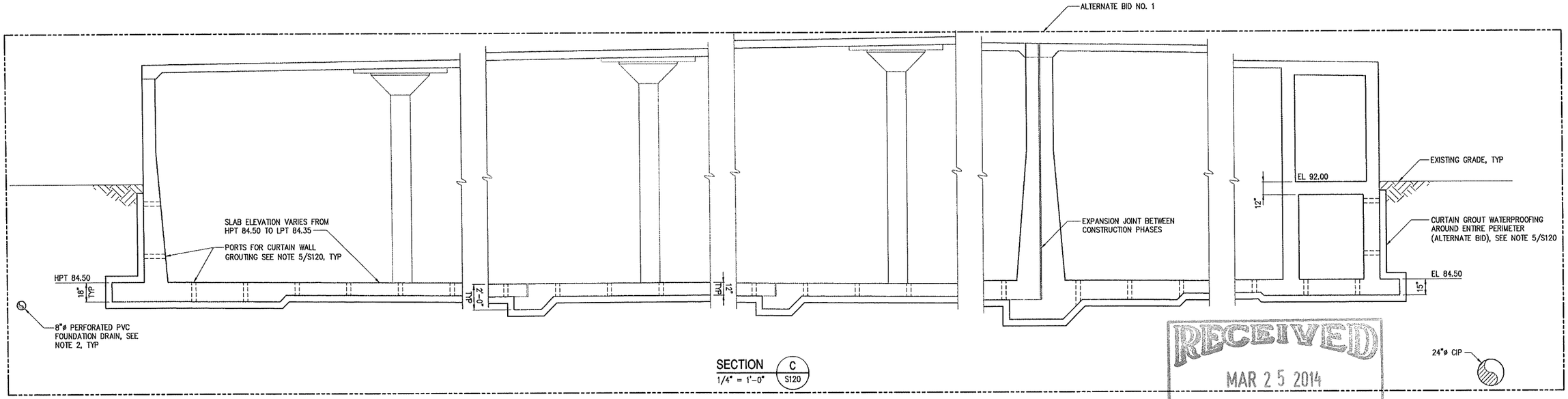
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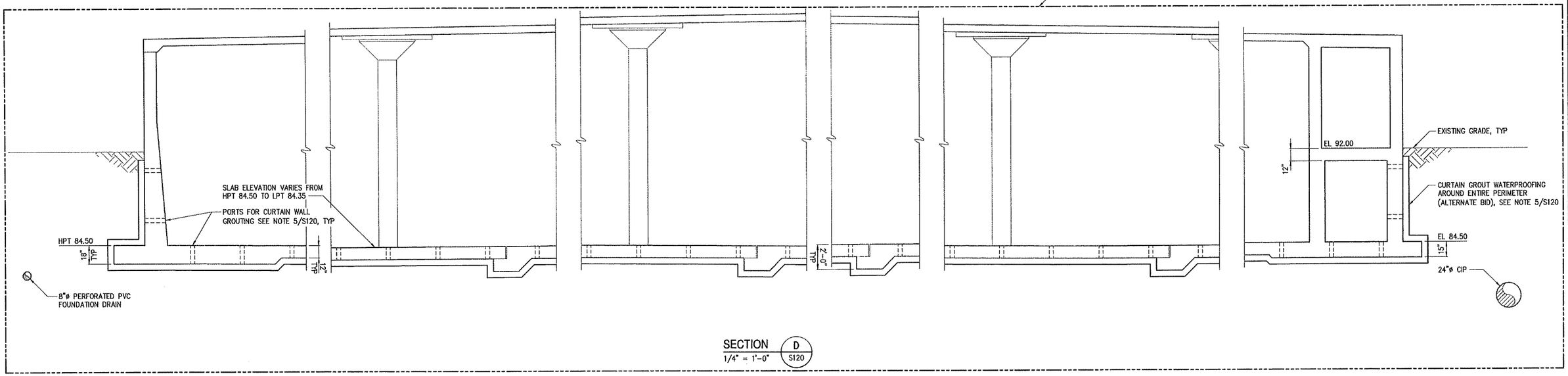
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SECTION C / S120
1/4" = 1'-0"

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SECTION D / S120
1/4" = 1'-0"

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4	RECORD DRAWINGS	FEB 2014	ZMW
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
STRUCTURAL
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
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S123

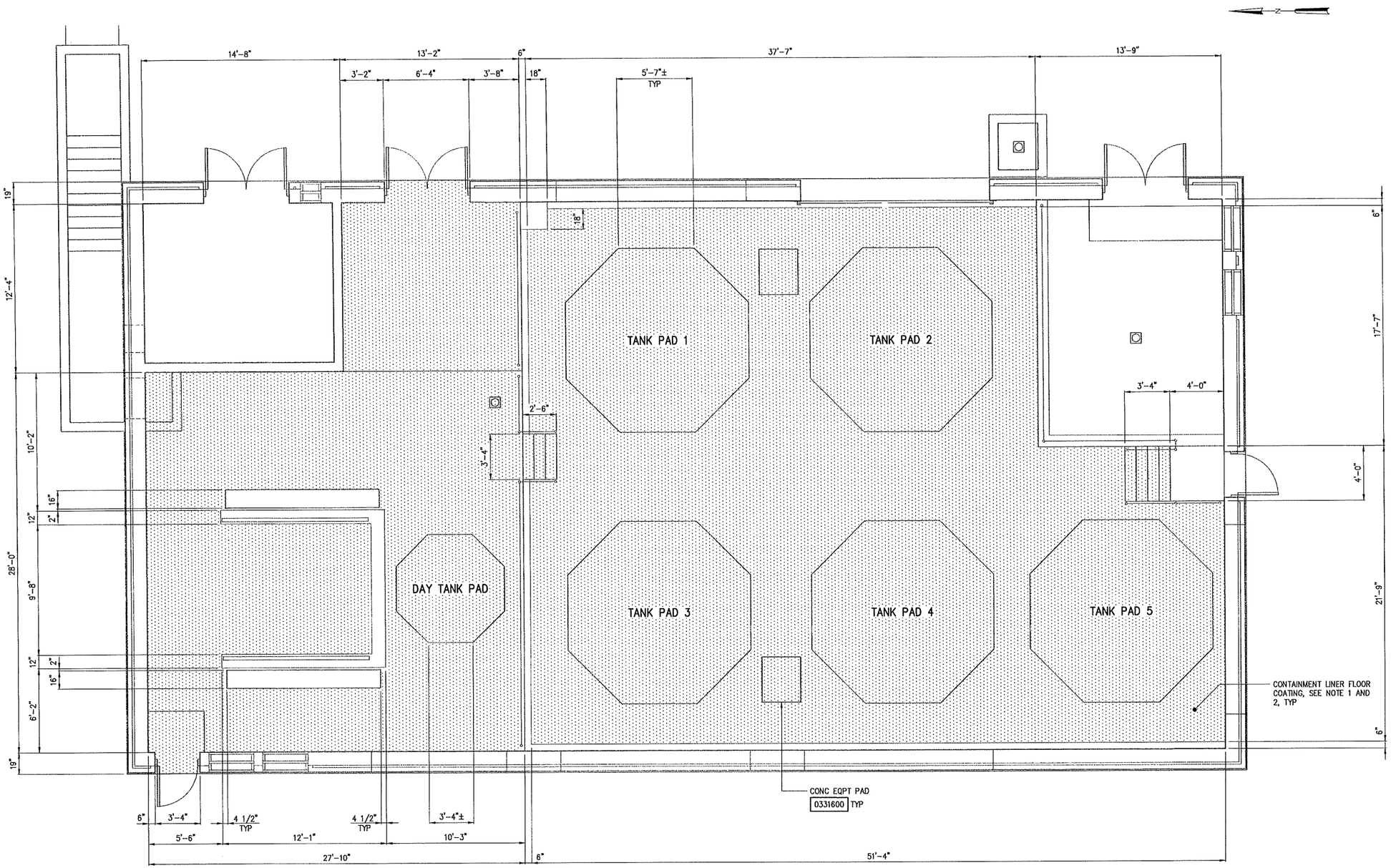
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IMAGES=

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PLAN
1/4" = 1'-0"

NOTES:

1. CONCRETE TANK PADS AND FLOOR AREAS INDICATED SHALL BE COATED WITH A CONTAINMENT LINER FLOOR COATING PER SPECIFICATION 09900–PAINTING. ALL FLOOR AND TANK PAD OBSTRUCTIONS SHALL BE REMOVED AND REINSTALLED IN ORIGINAL LOCATIONS AS NECESSARY TO COAT INDICATED AREAS. SURFACE PREPARATION SHALL BE AS REQUIRED PER SPECIFICATION 09900 AND COATING MANUFACTURERS RECOMMENDATIONS.CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY SERVICE AS REQUIRED TO MAINTAIN THE CHEMICAL SYSTEM IN OPERATION AT ALL TIMES DURING COATING WORK.
2. CONTRACTOR SHALL COORDINATE FLOOR COATING APPLICATION WITH HYPOCHLORITE TANK REPLACEMENT CONSTRUCTION SEQUENCE PER SPECIFICATION 01520.
3. DIMENSIONS INDICATING LIMITS OF FLOOR COATING FOR BID PURPOSES ONLY. FIELD CONDITIONS MAY VARY. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO COMMENCING WORK.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER CHEMICAL TANKS REPLACEMENT
STRUCTURAL
PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

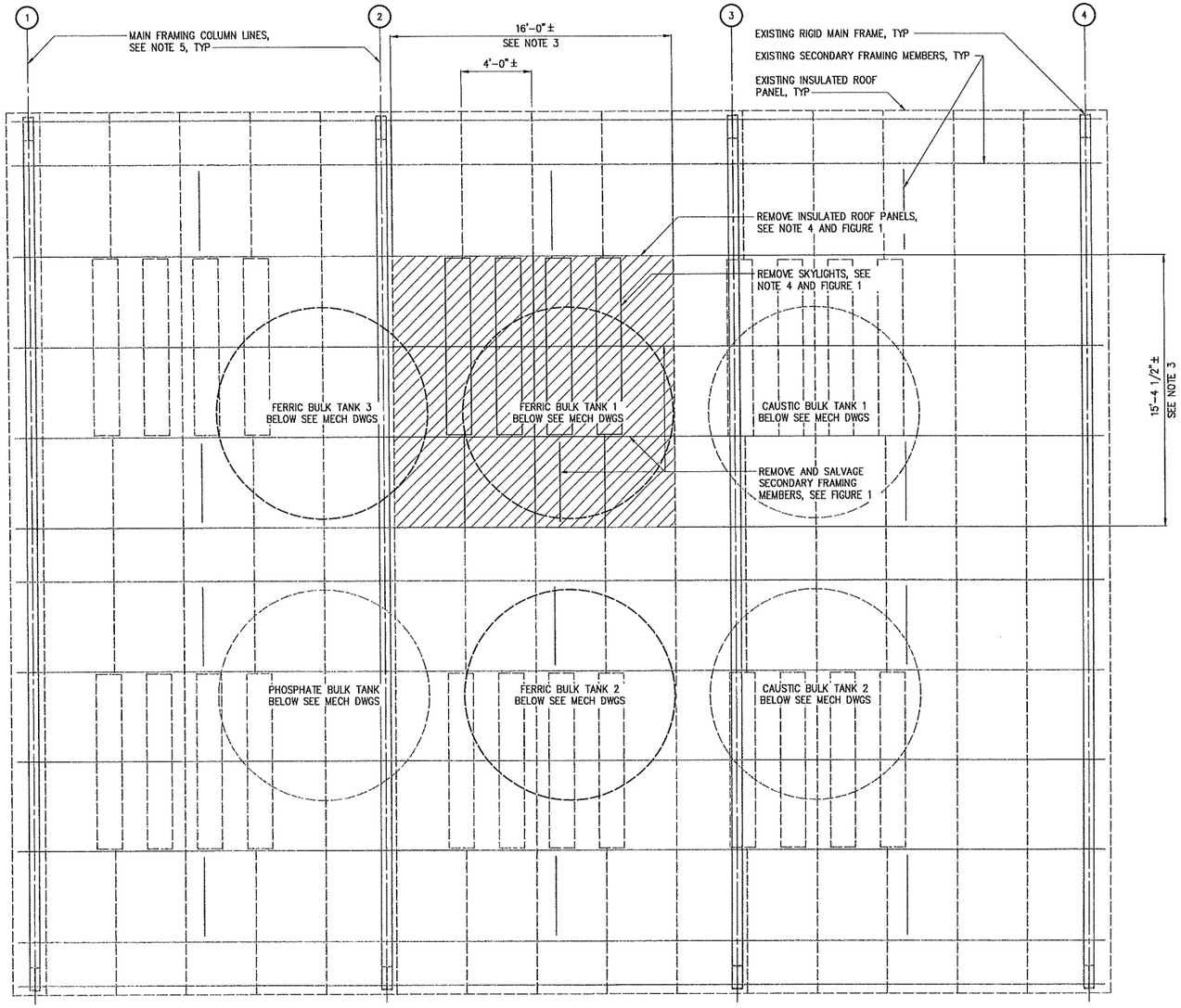
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ROOF DEMOLITION PLAN
1/4" = 1'-0"

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1

NOTES:

1. FOR GENERAL DEMOLITION AND REPAIR NOTES SEE DRAWING S1.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
3. AREA HATCHED AND DIMENSIONED FOR REMOVAL SHALL BE THE MINIMUM AREA REQUIRED FOR THE REMOVAL AND REINSTALLATION OF THE EXISTING AND NEW CHEMICAL TANKS.
4. CONTRACTOR SHALL HAVE THE OPTION TO SALVAGE THE EXISTING INSULATED ROOF PANELS AND SKYLIGHTS FOR REINSTALLATION PROVIDED NO DAMAGE IS INCURRED DURING REMOVAL. DAMAGED ROOF PANELS AND SKYLIGHTS SHALL BE REPLACED WITH NEW.
5. CONTRACTOR SHALL NOT REMOVE NOR ALTER ANY MAIN FRAMING DESIGNATED BY MAIN FRAMING COLUMN LINES ON THIS DRAWNG. SECONDARY FRAMING ONLY MAY BE REMOVED OR ALTERED.
6. CONTRACTOR SHALL PROVIDE TEMPORARY COVER FOR ROOF WHILE ALL WORK IS BEING DONE.
7. CONTRACTOR SHALL COORDINATE ALL WORK WITH TANK REPLACEMENT CONSTRUCTION SEQUENCE PER SPECIFICATION 01520.

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HOFFER CHEMICAL TANKS REPLACEMENT
STRUCTURAL
ROOF DEMOLITION PLAN

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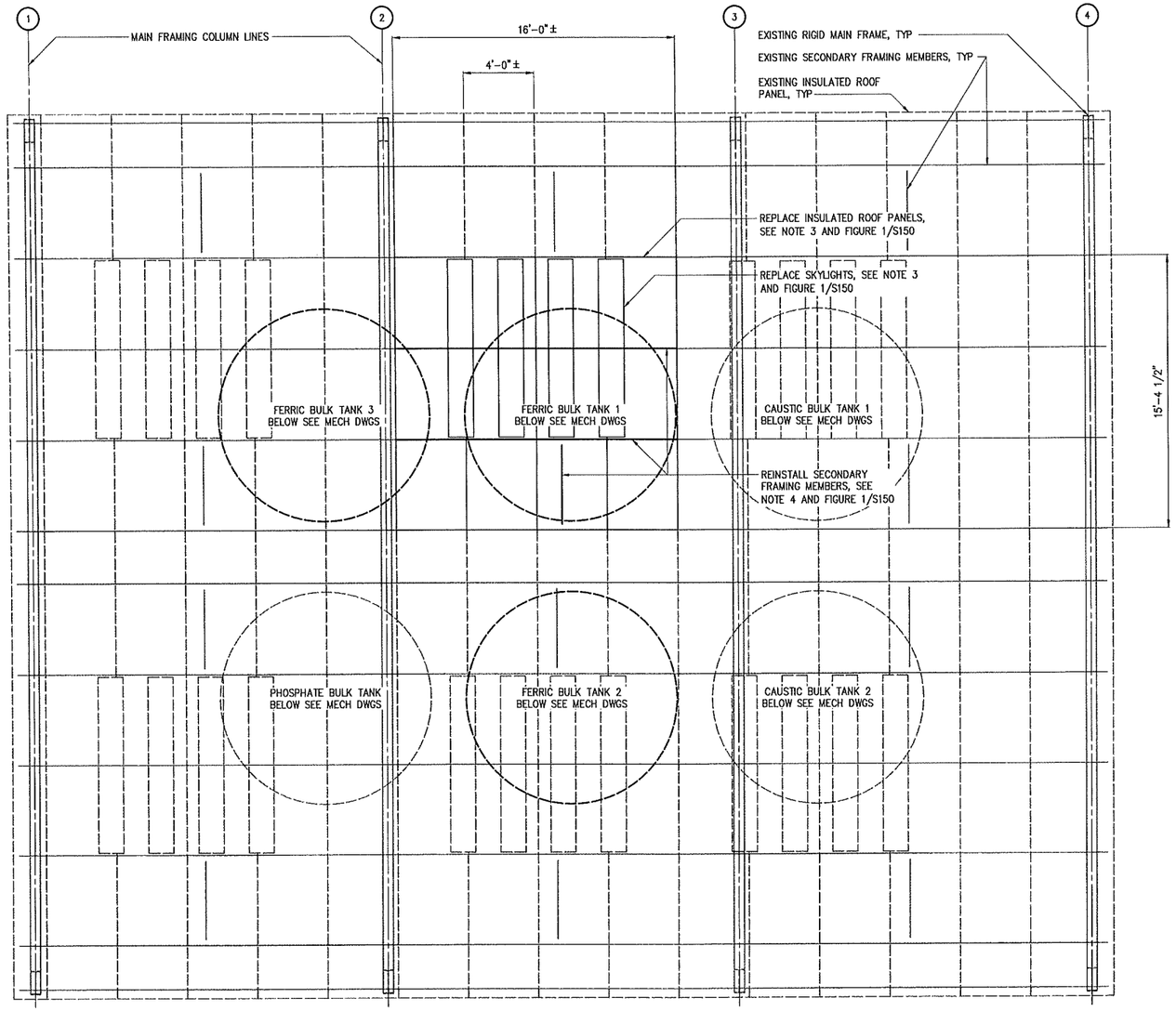
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BW-15496



ROOF RECONSTRUCTION PLAN
1/4" = 1'-0"

N

NOTES:

1. FOR GENERAL DEMOLITION AND REPAIR NOTES SEE DRAWING S1.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
3. PER NOTE 4/S150, IF CONTRACTOR CHOOSES, SALVAGED ROOF PANELS AND SKYLIGHTS SHALL BE REINSTALLED IN ORIGINAL LOCATIONS. DAMAGED ROOF PANELS AND SKYLIGHTS SHALL BE REPLACED WITH NEW.
4. CONTRACTOR SHALL REINSTALL SECONDARY FRAMING MEMBERS IN ORIGINAL LOCATIONS TO MATCH ORIGINAL SUPPORT CONDITIONS. ANY PURLIN SECTIONS CUT DURING REMOVAL SHALL BE COMPLETELY WELDED INTO ORIGINAL LOCATIONS USING FULL PENETRATION CONTINUOUS WELDS.
6. CONTRACTOR SHALL PROVIDE TEMPORARY COVER FOR ROOF WHILE ALL WORK IS BEING DONE.
7. CONTRACTOR SHALL COORDINATE ALL WORK WITH TANK REPLACEMENT CONSTRUCTION SEQUENCE PER SPECIFICATION 01520.

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HOFFER CHEMICAL TANKS REPLACEMENT
STRUCTURAL
ROOF RECONSTRUCTION PLAN

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LIGHTING:

- X DENOTES FIXTURE TYPE (TYP.)
  # DENOTES CIRCUIT NUMBER (TYP.)
- X #: 2' X 4' FLUORESCENT FIXTURE
- X #: 1' X 4' FLUORESCENT FIXTURE
- CEILING-MOUNTED FIXTURE
- WALL-MOUNTED FIXTURE
- EMERGENCY WALL-MOUNTED FIXTURE: LEFT: STANDARD/RIGHT: REMOTE-HEAD
- CEILING-MOUNTED EXIT SIGN: SHADED PORTION DENOTES SIGN FACE
- WALL-MOUNTED EXIT SIGN: SHADED PORTION DENOTES SIGN FACE
- POLE-MOUNTED FIXTURE
- PC: PHOTOCELL
- OS #: CEILING MOUNTED OCCUPANCY SENSOR: NUMBER DENOTES TYPE
- OS #: WALL MOUNTED OCCUPANCY SENSOR: NUMBER DENOTES TYPE

RECEPTACLES:

X DENOTES RECEPTACLE TYPE (TYP.):
GFCI DENOTES GROUND FAULT CIRCUIT INTERRUPT
UPS DENOTES UNINTERRUPTABLE POWER SUPPLY
WPCR DENOTES WEATHERPROOF CORROSION RESISTANT
# DENOTES CIRCUIT NUMBER (TYP.)

- DUPLEX RECEPTACLE
- SIMPLEX RECEPTACLE
- QUADRAPLEX RECEPTACLE
- MULTI-OUTLET RECEPTACLE SIMPLEX
- MULTI-OUTLET RECEPTACLE DUPLEX
- 240 VOLT RECEPTACLE
- SPECIAL PURPOSE OUTLET

PANELS AND BOXES

- JB: JUNCTION BOX
- PB: PULL BOX
- CP: CONTROL PANEL

HVAC AND FIRE ALARM

- FIRE ALARM CONTROL PANEL
- FIRE ALARM ANNUNCIATOR PANEL
- F: FIRE ALARM PULL STATION
- FIRE ALARM INDICATOR: X DENOTES ALERT TYPE (TYP.): A DENOTES AUDIBLE, V DENOTES VISIBLE (# DENOTES STROBE INTENSITY)
- X / F: FIRE ALARM INDICATOR MOUNTED ABOVE A FIRE ALARM PULL STATION
- DD: DUCT DETECTOR
- S X: SMOKE DETECTOR: X DENOTES TYPE: Z DENOTES IONIZATION, P DENOTES PHOTOELECTRIC, T DENOTES THERMAL
- H: HEAT DETECTOR
- T: THERMOSTAT
- R: AMBIENT TEMPERATURE TRANSMITTER

SWITCHES

- # SX: WALL SWITCH: X DENOTES TYPE: NO SUBSCRIPT DENOTES SINGLE-POLE SWITCH, 3 DENOTES 3-WAY SWITCH, 4 DENOTES 4-WAY SWITCH, # DENOTES CIRCUIT NUMBER, WPCR DENOTES WEATHERPROOF AND CORROSION RESISTANT
- COMBINATION MOTOR STARTER
- DISCONNECT SWITCH
- LOCAL CONTROL STATION

WIRING

- CONDUIT HOME RUN
- CONDUIT EXPOSED
- CONCRETE ENCASED CONDUIT
- CONDUIT CONCEALED
- FLEXIBLE CONDUIT
- CONCRETE ENCASED DUCTBANK
- LEFT: CONDUIT RISE (TURN UP) RIGHT: CONDUIT DROP (TURN DOWN)

ELEMENTARY CONTROL SCHEMATICS

- 3-POSITION SELECTOR SWITCH: HOA DENOTES HAND/OFF/AUTO, LOR DENOTES LOCAL/OFF/REMOTE, FOR DENOTES FORWARD/OFF/REVERSE
- PUSHBUTTON SWITCHES: LEFT: N.O./RIGHT: N.C., TEXT DENOTES LEGEND PLATE
- MUSHROOM HEAD EMERGENCY STOP PUSHBUTTON SWITCH N.C. MAINTAINED: TEXT DENOTES LEGEND PLATE
- PUSHBUTTON SWITCH N.C. WITH LOCK-OUT: TEXT DENOTES LEGEND PLATE
- SELECTOR SWITCH: TEXT DENOTES LEGEND PLATE
- DISCONNECT SWITCHES: LEFT: N.O./RIGHT: N.C.
- TEMPERATURE SWITCHES/THERMOSTATS: LEFT: N.O./RIGHT: N.C., TEXT DENOTES TAG NUMBER
- PRESSURE SWITCHES N.O.: LEFT: RISE TO CLOSE/RIGHT: FALL TO CLOSE, TEXT DENOTES TAG NUMBER
- PRESSURE SWITCHES N.C.: LEFT: RISE TO OPEN/RIGHT: FALL TO OPEN, TEXT DENOTES TAG NUMBER
- LEVEL SWITCHES N.O.: LEFT: RISE TO CLOSE/RIGHT: FALL TO CLOSE, TEXT DENOTES TAG NUMBER
- LEVEL SWITCHES N.C.: LEFT: RISE TO OPEN/RIGHT: FALL TO OPEN, TEXT DENOTES TAG NUMBER
- ON DELAY TIMED SWITCHES N.O.: TEXT DENOTES TAG NUMBER (N.O.T.C. / N.O.T.O.)
- ON DELAY TIMED SWITCHES N.C.: TEXT DENOTES TAG NUMBER (N.C.T.C. / N.C.T.O.)
- OFF DELAY TIMED SWITCHES: TEXT DENOTES TAG NUMBER (N.O.T.O. / N.C.T.C.)
- TORQUE SWITCH: TEXT DENOTES TAG NUMBER
- LIMIT SWITCHES: LEFT: N.O./RIGHT: N.C., TEXT DENOTES TAG NUMBER
- FLOW SWITCHES N.O.: LEFT: RISE TO CLOSE/RIGHT: FALL TO CLOSE, TEXT DENOTES TAG NUMBER
- FLOW SWITCHES N.C.: LEFT: RISE TO OPEN/RIGHT: FALL TO OPEN, TEXT DENOTES TAG NUMBER
- CONTACTS: LEFT: N.O./RIGHT: N.C., # DENOTES COIL NUMBER
- INDICATOR LIGHT: LEFT: STANDARD/RIGHT: PUSH-TO-TEST, X DENOTES COLOR
- RTM: RUN TIME METER
- SV: SOLENOID VALVE
- 480-120V CPT: CONTROL POWER TRANSFORMER
- MECHANICAL INTERLOCK CONNECTION
- MSH: MOTOR SPACE HEATER
- COIL: X DENOTES TYPE: M DENOTES MOTOR STARTER, CR DENOTES CONTROL RELAY, TR DENOTES TIME DELAY RELAY, LC DENOTES LIGHTING CONTACTOR, PR DENOTES INTERPOSING PILOT RELAY, # DENOTES REFERENCE LINE NUMBER

SINGLE-LINE DIAGRAMS

- TRANSFORMER ID, 45kVA, 480-120/208V; 3P/4W DRY TRANS: TRANSFORMER
- PROTECTIVE RELAY: NUMBER DENOTES IEEE DEVICE FUNCTION
- PS: PRESSURE SWITCH
- TS: TEMPERATURE SWITCH
- 100A: FUSE
- E.O. 800AF 800A PLUG 800AT LSIG N.C.: LOW-VOLTAGE DRAWOUT POWER CIRCUIT BREAKER: E.O. DENOTES ELECTRICALLY OPERATED; LSIG DENOTES INSTALLED TRIP FUNCTIONS: L DENOTES LONG-TIME, S DENOTES SHORT-TIME, I DENOTES INSTANTANEOUS, G DENOTES GROUND FAULT
- 1200A 52 E.O. BATT. N.C.: MEDIUM-VOLTAGE DRAWOUT POWER CIRCUIT BREAKER: E.O. DENOTES ELECTRICALLY OPERATED, BATT. DENOTES BATTERY BACKUP POWER
- 800AF 800AT: LOW-VOLTAGE MOLDED CASE CIRCUIT BREAKER
- 30A MCP: MOTOR CIRCUIT PROTECTOR
- OL: THERMAL OVERLOAD RELAY
- GROUND
- 600:5 (3): CT: NUMBERS DENOTE CT WINDING RATIO AND CT QUANTITY
- 50:5 (1): GFCT: NUMBERS DENOTE GFCT WINDING RATIO AND GFCT QUANTITY
- 480:120 (2): PT: NUMBERS DENOTE PT WINDING VOLTAGES AND PT QUANTITY
- DRAW-OUT ELEMENT
- 800A 3Φ 3W ATS OR MTS: ATS OR MTS
- #: MOTOR: # DENOTES HORSEPOWER
- 500kW 480V,3Φ,4W: GENERATOR
- COMBINATION POWER UNIT: X DENOTES NAMEPLATE ID
- LIGHTNING ARRESTOR

SINGLE-LINE DIAGRAMS, CONT'D.

- LEFT: RESISTOR RIGHT: LINE REACTOR: #% DENOTES IMPEDENCE
- CAPACITOR
- V VS: VOLTMETER AND SWITCH
- A AS: AMMETER AND SWITCH
- ST: SHUNT TRIP
- SPD: SURGE PROTECTIVE DEVICE
- K: KIRK-KEY INTERLOCK
- 30A MCP / 30A MCP: LEFT: FVNR STARTER: X DENOTES NEMA SIZE, DP DENOTES DEFINITE PURPOSE CONTACTOR; RIGHT: FVR STARTER
- 100AF 100AT / 100AF 100AT / 100A MCP: LEFT: VFD WITH LINE REACTOR; RIGHT: VFD WITH LINE REACTOR AND BYPASS STARTER

ABBREVIATIONS

ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
CT	CURRENT TRANSFORMER
DB	DUCTBANK
DSW	DISCONNECT SWITCH
EHH	ELECTRIC HAND HOLE
EMH	ELECTRIC MANHOLE
EO	ELECTRICALLY OPERATED
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GFCT	GROUND FAULT CURRENT TRANSFORMER
IC	INPUT CONTACTOR
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ISO	INTL ORGANIZATION FOR STANDARDIZATION
LCS	LOCAL CONTROL STATION
LP	LIGHTING PANEL
MFR	MULTI-FUNCTION RELAY
MOD	MOTOR OPERATED DAMPER
MOG	MOTOR OPERATED GATE
MOL	MOTOR OPERATED LOUVER
MOV	MOTOR OPERATED VALVE
MTS	MANUAL TRANSFER SWITCH
NC/NO	NORMALLY CLOSED/NORMALLY OPEN
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSN
NTS	NOT TO SCALE
OC	OUTPUT CONTACTOR
OL	OVERLOAD
PC	PHOTOCELL
PCC	POINT OF COMMON COUPLING
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL
PT	POTENTIAL TRANSFORMER
RCS	REMOTE CONTROL STATION
RIO	REMOTE I/O
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVSS	REDUCED VOLTAGE SOLID STATE
SP. C.	SPARE CONDUIT
SST	STAINLESS STEEL
TB	TEST BLOCK
TC/TO	TIMED CLOSE//TIMED OPEN
TSH	TWISTED SHIELDED
TX	TRANSFORMER
UPS	UNINTERRUPTABLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
WPCR	WEATHER PROOF CORROSION RESISTANT
WT	WALK THROUGH

MISC PLAN VIEW SYMBOLS

- E: EQUIPMENT CONNECTION
- GROUND RODS: LEFT: BURIED/RIGHT: IN TESTWELL
- X: DUCTBANK TAG: X DENOTES DUCTBANK ID
- X #: INSTRUMENT TAG: X DENOTES INSTRUMENT TYPE, # DENOTES INSTRUMENT NUMBER
- INSTRUMENT TRANSMITTER
- P-XXX-XXX: CONDUIT TAGS: P DENOTES POWER, C DENOTES CONTROL, XXX-XXX DENOTES CONDUIT ID

COMMUNICATIONS

- TELEPHONE OR NETWORK DROP
- PAGER RECEPTACLE
- HORN/LIGHT DEVICE
- PA: PA UNIT

EQUIPMENT/DEVICE LOCATION SYMBOLS

- *: LOCATED AT MCC, COMBINATION STARTER, OR BYPASS STARTER
- △: LOCATED IN FIELD
- X: LOCATED AT PANEL: X DENOTES PANEL ID: L DENOTES LOCAL CONTROL STATION
- □: LOCATED AT VFD

NOTES:

1. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UNDERGROUND CONCRETE ENCASED ELECTRICAL CONDUITS SHALL BE PER STANDARD DETAIL 1611801.
2. THE INSTALLATION OF ALL CONCRETE ENCASED ELECTRICAL CONDUITS SHALL COMPLY WITH ACI 318, SECTION 6.3. CONTRACTOR SHALL SUPPLY EXPANSION JOINT FITTINGS AS REQUIRED FOR THERMAL EXPANSION AND DEFLECTION.
3. BOND ALL NEW CONCRETE ENCASED GROUND CONDUCTORS TO EXISTING GROUND CONDUCTORS IN ALL MANHOLES, PULL BOXES, CABLE TRAYS, AND SIMILAR LOCATIONS WHERE APPLICABLE.
4. UNLESS OTHERWISE SPECIFIED OR NOTED, ALL WALL MOUNTED ELECTRICAL PANELS, ENCLOSURES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED 6'-6" (MAX) FROM THE TOP OF THE PANEL TO FINISHED FLOOR OR GRADE.
5. UNLESS OTHERWISE NOTED, ALL LIGHTING SWITCHES, CONTROL SWITCHES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED WITH THEIR CENTERLINE APPROXIMATELY 4'-0" ABOVE FINISHED FLOOR, SLAB, OR GRADE. THERMOSTATS SHALL BE MOUNTED 4'-4" ABOVE FINISHED FLOOR.
6. A SEPARATE EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH CIRCUIT (SEPARATE CONDUCTOR IN THE CONDUIT). THE CONDUCTOR SHALL BE TERMINATED AT THE PROPER DEVICE, TERMINAL, OR LUG AT THE POWER SOURCE (MCC GROUND BUS, PANELBOARD GROUND BUS, ETC.). GROUND CONDUCTOR SIZE SHALL BE PER THE LATEST EDITION OF THE NEC.
7. UNLESS SPECIFICALLY NOTED OTHERWISE, EXISTING PAVEMENT SHALL BE SAW CUT AND REMOVED TO ALLOW FOR THE INSTALLATION OF NEW ELECTRICAL DUCTBANKS. AFTER INSTALLATION, REPLACE PAVEMENT WITH NEW TO MATCH ORIGINAL CONDITIONS.

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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY DAVID A. ATKINSON, JR SEAL NUMBER 33831

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

ELECTRICAL
LEGEND AND GENERAL NOTES

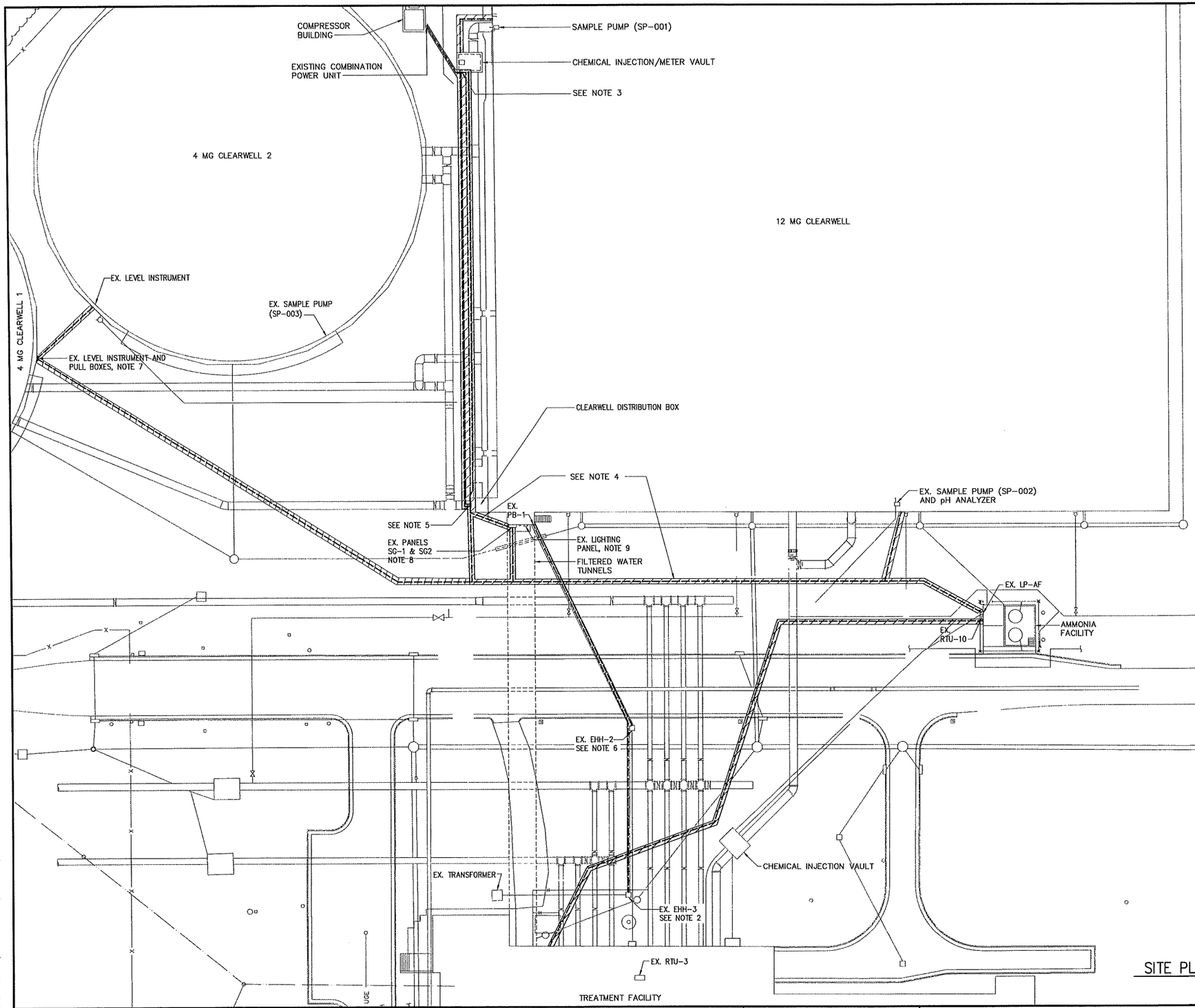
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BW-15496



SITE PLAN – DEMOLITION
1" = 30'

1"=30'-0" 30 15 0 30'

NOTES:

1. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS DURING CONSTRUCTION.
2. CONTRACTOR SHALL REMOVE WIRE BETWEEN THE EX. TRANSFORMER AND THE ELECTRICAL EQUIPMENT AT THE 12MG CLEARWELL. DUCTBANK BETWEEN EX. EHH-3 AND THE ELECTRICAL EQUIPMENT AT THE CLEARWELL SHALL BE REMOVED AS SHOWN.
3. REMOVE EXISTING POWER AND CONTROL PULLBOXES FROM THE SOUTH WALL OF THE CHEMICAL INJECTION/METER VAULT TO MAKE ROOM FOR CHEMICAL DUCTBANK ENTRY INTO THIS VAULT.
4. EXISTING ELECTRICAL DUCTBANKS SHALL BE REMOVED AS SHOWN TO MAKE ROOM FOR CHEMICAL DUCTBANKS AND YARD PIPING.
5. REMOVE EXISTING POWER AND CONTROL PULLBOXES FROM THE WEST WALL OF THE CLEARWELL.
6. CONTRACTOR SHALL REMOVE WIRE BETWEEN EX. RTU-3 AND EACH OF THE LEVEL INSTRUMENTS AT THE 4MG CLEARWELLS. WIRE SHALL ALSO BE REMOVED BETWEEN EX. RTU-3 AND EX. pH ANALYZER. DUCTBANK BETWEEN EX. EHH-2, EX. PULLBOX PB-1, AND THE LEVEL SENSORS AND pH ANALYZER SHALL BE REMOVED AS SHOWN.
7. REMOVE EXISTING PULL BOXES AND MOUNTING HARDWARE AT THIS CLEARWELL.
8. ALL CONDUIT AND WIRE IN DUCTBANKS SERVED BY PANELS SG-1 AND SG-2 SHALL BE REMOVED AS SHOWN. DUCTBANKS SHALL BE REMOVED AS SHOWN BUT PANELS SHALL REMAIN IN PLACE. THE FOLLOWING LOADS (FOR WHICH WIRING IS TO BE REMOVED) ARE SERVED BY PANEL SG-2: AMMONIA FACILITY, COMPRESSOR FACILITY COMBINATION POWER UNIT, AND COMPRESSOR FACILITY AIR COMPRESSOR.
9. ALL CONDUIT AND WIRE IN DUCTBANKS SERVED BY THIS LIGHTING PANEL SHALL BE REMOVED AS SHOWN. DUCTBANKS SHALL BE REMOVED AS SHOWN, BUT PANEL SHALL REMAIN IN PLACE. THE FOLLOWING LOADS (FOR WHICH WIRING IS TO BE REMOVED) ARE SERVED BY THE LIGHTING PANEL: SUMP PUMP AT CHEMICAL INJECTION/METER VAULT, LIGHT AT CHEMICAL INJECTION/METER VAULT, RECEPTACLE AT CHEMICAL INJECTION/METER VAULT, FLOW TRANSMITTER AT CHEMICAL INJECTION/METER VAULT, SAMPLE PUMP SP-001, LEVEL INSTRUMENTS AT EACH 4MG CLEARWELL, SAMPLE PUMP SP-002, AND THE pH ANALYZER.

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5	RECORD DRAWINGS	FEB 2014	ZMW
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CHECKED GJR
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY DAVID A. ATKINSON, JR SEAL NUMBER 33831

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035637 BENJAMIN C. SMITH 3/24/14

RECORD DRAWING
THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

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Environmental Engineers & Scientists
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License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
ELECTRICAL
SITE PLAN - DEMOLITION

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

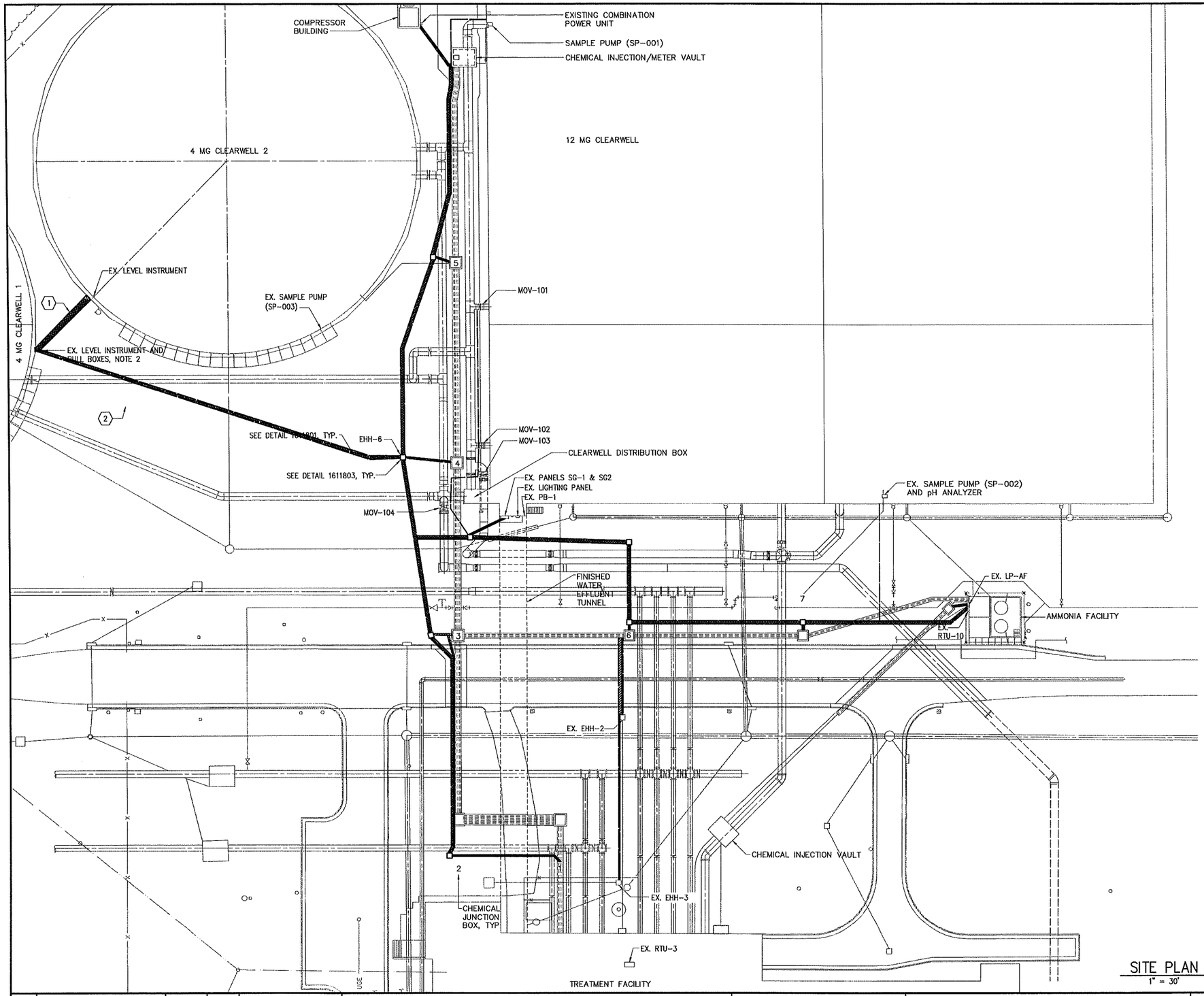
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER E100

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RECORD DRAWINGS

RW-15496

XREFs= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALELEC, FO-SP-ST, NC-BCS
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SITE PLAN
1" = 30'

1"=30'-0" 30 15 0 30'

NOTES:

1. SEE DRAWING E102 FOR ENLARGED PLANS OF THE MAJORITY OF THE SITE WORK. ONLY THE DUCTBANK IDENTIFIERS, HANDHOLE LABELS, ETC THAT ARE NOT SHOWN ON E102 APPEAR ON THIS OVERALL DRAWING.
2. CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) NEW NEMA 4X SST PULL BOXES IN PLACE OF THE EXISTING PULL BOXES TO BE REMOVED. PULL BOXES SHALL BE MOUNTED TO THE CLEARWELL AND BE LABELED AS PB-3 AND PB-4. PULL BOXES SHALL BE CONNECTED TO EXISTING LEVEL INSTRUMENTS AS SHOWN IN THE CONDUIT AND WIRE SCHEDULE.
3. SEE DRAWING E102 FOR CONDUIT AND WIRE AND E103 FOR DUCTBANK SCHEDULES.
4. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS DURING CONSTRUCTION.

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 2/6/14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
ELECTRICAL
SITE PLAN - MODIFIED

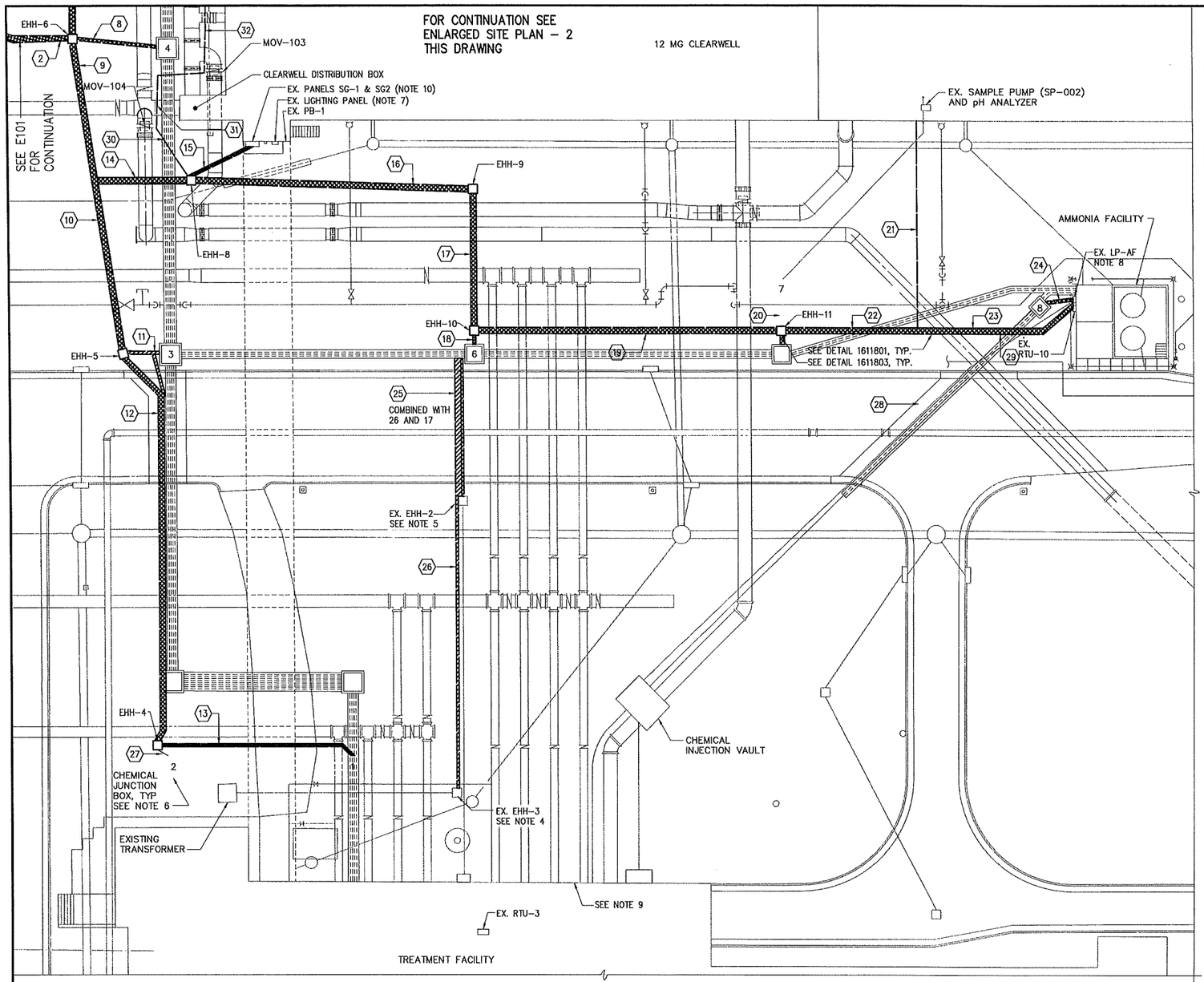
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DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
E101

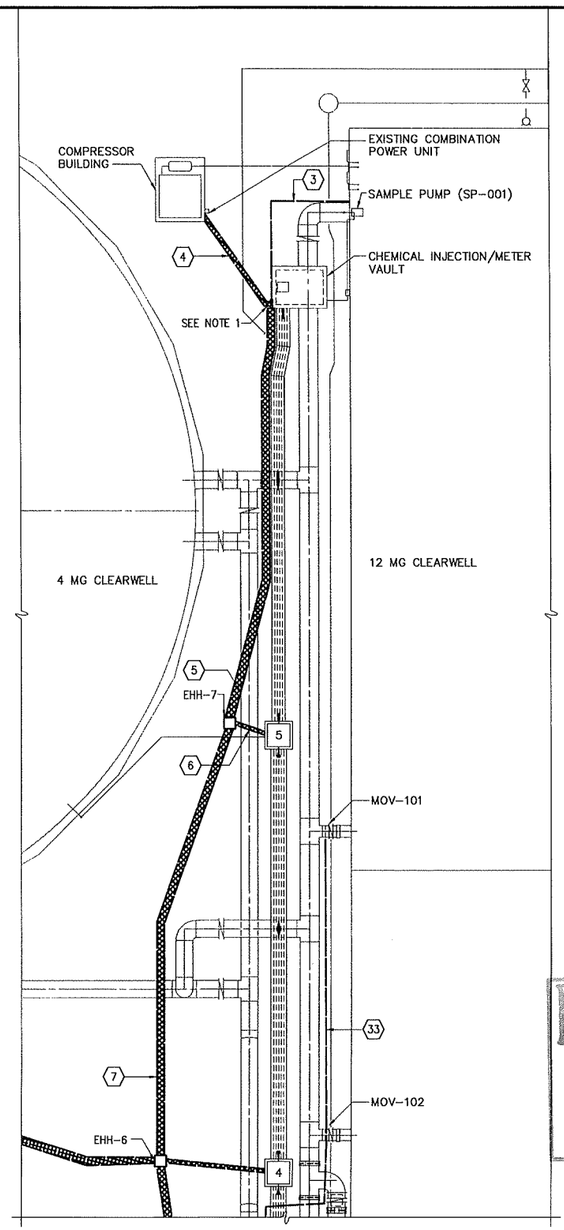
RECORD DRAWINGS

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ENLARGED SITE PLAN – 1
1" = 20'



ENLARGED SITE PLAN – 2
1" = 20'

NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) NEW NEMA 4X SST PULL BOXES ON WEST SIDE OF VAULT. PULL BOXES SHALL BE MOUNTED SIMILAR TO THE PULL BOXES TO BE REMOVED AND BE LABELED AS PB-5 AND PB-6. PULL BOXES SHALL BE CONNECTED TO EXISTING EXISTING LOADS AS SHOWN IN THE CONDUIT AND WIRE SCHEDULE.
2. SEE DRAWING E102 FOR CONDUIT AND WIRE AND E103 FOR DUCTBANK SCHEDULES.
3. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS DURING CONSTRUCTION.
4. NEW WIRE INSTALLED IN NEW DUCTBANK UP TO THIS EXISTING HANDHOLE SHALL CONTINUE THROUGH HANDHOLE INTO EXISTING DUCTBANK AND OVER TO THE EXISTING TRANSFORMER.
5. NEW WIRE INSTALLED IN NEW DUCTBANK UP TO THIS EXISTING HANDHOLE SHALL CONTINUE THROUGH HANDHOLE INTO EXISTING DUCTBANK AND OVER TO THE TREATMENT FACILITY AND INTO EX. RTU-3.
6. EACH CHEMICAL JUNCTION BOX SHALL BE FURNISHED WITH A DUPLEX GFCI WPCR RECEPTACLE INSIDE MOUNTED AS HIGH AS POSSIBLE. EACH CHEMICAL JUNCTION BOX SHALL ALSO BE PROVIDED WITH A FLOAT SWITCH PER THE REQUIREMENTS OF DIVISION 17.
7. CONTRACTOR SHALL PROVIDE THREE (3) NEW 20A, SINGLE POLE CIRCUIT BREAKERS IN THIS PANEL FOR THE CHEMICAL INJECTION VAULT RECEPTACLES. RECEPTACLE LOADS SHALL BE EVENLY SPLIT BETWEEN THE 3 CIRCUIT BREAKERS.
8. CONTRACTOR SHALL PROVIDE ONE (1) NEW 20A, SINGLE POLE CIRCUIT BREAKER IN THIS PANEL FOR THE CHEMICAL INJECTION VAULT RECEPTACLE.
9. CONTRACTOR SHALL ROUTE CONDUIT INSIDE BUILDING TO UNIT #2, CIRCUIT BREAKER 54 IN THE LOW VOLTAGE SWITCHGEAR ROOM. CONDUCTORS SHALL BE TERMINATED ON SAME CIRCUIT BREAKER THAT WAS PREVIOUSLY USED FOR THE AMMONIA FACILITY BACKUP FEED. APPROXIMATELY 200 FEET OF CONDUIT WILL BE REQUIRED INSIDE THE BUILDING. AT THE AMMONIA FACILITY, CONDUCTORS SHALL BE TERMINATED ON SAME 2 POLE CIRCUIT BREAKER THAT WAS PREVIOUSLY USED.
10. CONTRACTOR SHALL FURNISH AND INSTALL A NEW 3 POLE, 15A CIRCUIT BREAKER IN EX. PANEL SG-2 FOR THE NEW MOTOR OPERATED VALVES. PANELBOARD IS A SQUARE D NEHB MODEL.
11. CONTRACTOR SHALL FURNISH AND INSTALL A 3 POLE, 30A, NEMA 4X SST DISCONNECT SWITCH AT MOV-104, MOV-103, MOV-102, AND MOV-101. THEY ARE NOT SHOWN HERE DUE TO THE SMALL SCALE OF THE DRAWING.

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1"=20'-0" 20 10 0 20'

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PUBLIC WORKS COMMISSION
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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
ELECTRICAL
ENLARGED SITE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER E102

RECORD DRAWINGS

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CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT	2#12, #12GND	VIA PBX-3
P-1001	1"	EXISTING LIGHTING PANEL	CLEARWELL 1 LEVEL INSTRUMENT	2#12, #12GND	VIA PBX-3
P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP	2#12, #12GND	VIA PBX-5
P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP	2#12, #12GND	VIA-PBX-5
P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER	2#12, #12GND	VIA PBX-5
P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT	2#12, #12GND	VIA PBX-5
P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001	2#12, #12GND	
P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT	3#10, #10GND	
P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT	2#10, #10GND	
P-1009	2"	EXISTING TRANSFORMER	EXISTING PANEL SG-1	3#1, #6GND	
P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002	2#12, #12GND	
P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER	2#12, #12GND	
P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)	2#1, #8GND	
P-1013	1"	EXISTING LIGHTING PANEL	EHH-5	2#12, #12GND	SEE NOTE 1
P-1014	1"	EHH-5	CHEMICAL JUNCTION BOX 3	2#12, #12GND	SEE NOTE 1
P-1015	1"	EHH-5	EHH-4	2#12, #12GND	SEE NOTE 1
P-1016	1"	EHH-4	CHEMICAL JUNCTION BOX 2	2#12, #12GND	SEE NOTE 1
P-1017	1"	EHH-4	CHEMICAL JUNCTION BOX 1	2#12, #12GND	SEE NOTE 1
P-1018	1"	EXISTING LP-AF	CHEMICAL JUNCTION BOX 8	2#12, #12GND	
P-1019	1"	EXISTING LIGHTING PANEL	EHH-10	2#12, #12GND	SEE NOTE 1
P-1020	1"	EHH-10	CHEMICAL JUNCTION BOX 6	2#12, #12GND	SEE NOTE 1
P-1021	1"	EHH-10	CHEMICAL JUNCTION BOX 7	2#12, #12GND	
P-1022	1"	EXISTING LIGHTING PANEL	EHH-6	2#12, #12GND	SEE NOTE 1
P-1023	1"	EHH-6	CHEMICAL JUNCTION BOX 4	2#12, #12GND	SEE NOTE 1
P-1024	1"	EHH-6	CHEMICAL JUNCTION BOX 5	2#12, #12GND	
P-1025	1"	EX. UNIT #2	LP-AF (COMBO POWER UNIT)	2#8, #10GND	
P-1026	1"	EX. PANEL SG-2	MOV-104	3#12, #12GND	
P-1027	1"	MOV-104	MOV-103	3#12, #12GND	
P-1028	1"	MOV-103	MOV-102	3#12, #12GND	
P-1029	1"	MOV-102	MOV-101	3#12, #12GND	
P-1030				NOT USED	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT	2/C#16TSH, #14GND	VIA PB-4
C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT	2/C#16TSH, #14GND	VIA PB-4
C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP	6#14, #14GND	
C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER	2#14, #14GND	
C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT	2#14, #14NGND	
C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT	2/C#16TSH, #14GND	
C-1006	1"	EX. RTU-10	CHEMICAL JUNCTION BOX 8 (LSH-008)	2#14, #14GND	
C-1007	1"	EX. RTU-10	EHH-11	14#14, #14GND	SEE NOTE 2
C-1008	1"	EHH-11	CHEMICAL JUNCTION BOX 7 (LSH-007)	2#14, #14GND	SEE NOTE 2
C-1009	1"	EHH-11	EHH-10	12#14, #14GND	SEE NOTE 2
C-1010	1"	EHH-10	CHEMICAL JUNCTION BOX 86 (LSH-006)	2#14, #14GND	SEE NOTE 2
C-1011	1"	EHH-10	EHH-8	10#14, #14GND	SEE NOTE 2
C-1012	1"	EHH-8	EHH-5	6#14, #14GND	SEE NOTE 2
C-1013	1"	EHH-5	CHEMICAL JUNCTION BOX 3 (LSH-003)	2#14, #14GND	SEE NOTE 2
C-1014	1"	EHH-5	EHH-4	4#14, #14GND	SEE NOTE 2
C-1015	1"	EHH-4	CHEMICAL JUNCTION BOX 2 (LSH-002)	2#14, #14GND	SEE NOTE 2
C-1016	1"	EHH-4	CHEMICAL JUNCTION BOX 1 (LSH-001)	2#14, #14GND	
C-1017	1"	EHH-8	EHH-6	4#14, #14GND	SEE NOTE 2
C-1018	1"	EHH-6	CHEMICAL JUNCTION BOX 4 (LSH-004)	2#14, #14GND	SEE NOTE 2
C-1019	1"	EHH-6	CHEMICAL JUNCTION BOX 5 (LSH-005)	2#14, #14GND	
C-1020				NOT USED	
C-1021				NOT USED	
C-1022				NOT USED	
C-1023				NOT USED	
C-1024	1"	SPARE	SPARE	EMPTY W/PULL STRING	
C-1025	1"	SPARE	SPARE	EMPTY W/PULL STRING	
C-1026				NOT USED	
C-1027				NOT USED	
C-1028				NOT USED	
C-1029				NOT USED	
C-1030				NOT USED	

NOTES:

1. IN ORDER TO REDUCE THE NUMBER OF CONDUITS REQUIRED IN EACH DUCTBANK, SEVERAL OF THE CHEMICAL JUNCTION BOX RECEPTACLES SHALL SHARE A COMMON SUPPLY FROM THE EXISTING LIGHTING PANEL. IN EACH HANDHOLE THAT SERVES THE RECEPTACLES FOR MORE THAN ONE JUNCTION BOX, PROVIDE A WATERPROOF, HEAT SHRINK TYPE BUTT SPLICE IN THE RECEPTACLE WIRING.

2. IN ORDER TO REDUCE THE NUMBER OF CONDUITS REQUIRED IN EACH DUCTBANK, THE CONTROL WIRING FOR THE FLOAT SWITCHES COMES TO HANDHOLES AND SPLITS OUT TO BOTH THE NEAREST CHEMICAL JUNCTION BOX, AND CONTINUES ON TO THE NEXT HANDHOLE. NO SPLICES SHALL BE MADE IN THESE CONDUCTORS.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
ELECTRICAL
CONDUIT AND WIRE SCHEDULES

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
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BW-15496

DUCTBANK NUMBER	CONDUIT	SIZE	FROM	TO
DB-1	P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
DB-2	P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT
	P-1001	1"	EXISTING LIGHTING PANEL	CLEARWELL 1 LEVEL INSTRUMENT
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
	C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT
	C-1025	1"	SPARE	SPARE
DB-3	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
DB-4	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
DB-5	P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP
	P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP
	P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER
	P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT
	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-6	P-1024	1"	EHH-6	CHEMICAL JUNCTION BOX 5
	C-1019	1"	EHH-6	CHEMICAL JUNCTION BOX 5 (LSH-005)
	C-1025	1"	SPARE	SPARE
DB-7	P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP
	P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP
	P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER
	P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT
	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	P-1024	1"	EHH-6	CHEMICAL JUNCTION BOX 5
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1019	1"	EHH-6	CHEMICAL JUNCTION BOX 5 (LSH-005)
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-8	P-1023	1"	EHH-6	CHEMICAL JUNCTION BOX 4
	C-1018	1"	EHH-6	CHEMICAL JUNCTION BOX 4 (LSH-004)
	C-1025	1"	SPARE	SPARE
DB-9	P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT
	P-1001	1"	EXISTING LIGHTING PANEL	CLEARWELL 1 LEVEL INSTRUMENT
	P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP
	P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP
	P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER
	P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT
	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	P-1022	1"	EXISTING LIGHTING PANEL	EHH-6
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
	C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1017	1"	EHH-8	EHH-6
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-10	P-1013	1"	EXISTING LIGHTING PANEL	EHH-5
	C-1012	1"	EHH-8	EHH-5
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE

DUCTBANK NUMBER	CONDUIT	SIZE	FROM	TO
DB-11	P-1014	1"	EHH-5	CHEMICAL JUNCTION BOX 3
	C-1013	1"	EHH-5	CHEMICAL JUNCTION BOX 3 (LSH-003)
	C-1025	1"	SPARE	SPARE
DB-12	P-1015	1"	EHH-5	EHH-4
	C-1014	1"	EHH-5	EHH-4
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-13	P-1017	1"	EHH-4	CHEMICAL JUNCTION BOX 1
	C-1016	1"	EHH-4	CHEMICAL JUNCTION BOX 1 (LSH-001)
	C-1025	1"	SPARE	SPARE
DB-14	P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT
	P-1001	1"	EXISTING LIGHTING PANEL	CLEARWELL 1 LEVEL INSTRUMENT
	P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP
	P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP
	P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER
	P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT
	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	P-1013	1"	EXISTING LIGHTING PANEL	EHH-5
	P-1022	1"	EXISTING LIGHTING PANEL	EHH-6
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
	C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1017	1"	EHH-8	EHH-6
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-15	P-1000	1"	EXISTING LIGHTING PANEL	CLEARWELL 2 LEVEL INSTRUMENT
	P-1001	1"	EXISTING LIGHTING PANEL	CLEARWELL 1 LEVEL INSTRUMENT
	P-1002	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT SUMP PUMP RECP
	P-1003	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT RECP
	P-1004	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT FLOW TRANSMITTER
	P-1005	1"	EXISTING LIGHTING PANEL	CHEMICAL INJ/METER VAULT LIGHT
	P-1006	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-001
	P-1007	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMPRESSOR UNIT
	P-1008	1"	EXISTING PANEL SG-2	COMPRESSOR BUILDING COMBINATION POWER UNIT
	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	P-1013	1"	EXISTING LIGHTING PANEL	EHH-5
	P-1019	1"	EXISTING LIGHTING PANEL	EHH-10
	P-1022	1"	EXISTING LIGHTING PANEL	EHH-6
	P-1026	1"	EX. PANEL SG-2	MOV-104
	C-1024	1"	SPARE	SPARE
DB-16	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	P-1019	1"	EXISTING LIGHTING PANEL	EHH-10
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
	C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1011	1"	EHH-10	EHH-8
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-17	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	P-1019	1"	EXISTING LIGHTING PANEL	EHH-10
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1011	1"	EHH-10	EHH-8
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE

DUCTBANK NUMBER	CONDUIT	SIZE	FROM	TO
DB-18	P-1020	1"	EHH-10	CHEMICAL JUNCTION BOX 6
	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	C-1025	1"	SPARE	SPARE
DB-19	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	P-1021	1"	EHH-10	CHEMICAL JUNCTION BOX 7
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1009	1"	EHH-11	EHH-10
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-20	P-1021	1"	EHH-10	CHEMICAL JUNCTION BOX 7
	C-1008	1"	EHH-11	CHEMICAL JUNCTION BOX 7 (LSH-007)
	C-1025	1"	SPARE	SPARE
DB-21	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
DB-22	P-1010	1"	EXISTING LIGHTING PANEL	SAMPLE PUMP SP-002
	P-1011	1"	EXISTING LIGHTING PANEL	pH ANALYZER
	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1007	1"	EX. RTU-10	EHH-11
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-23	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1007	1"	EX. RTU-10	EHH-11
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-24	P-1018	1"	EXISTING LP-AF	CHEMICAL JUNCTION BOX 8
	C-1006	1"	EX. RTU-10	CHEMICAL JUNCTION BOX 8 (LSH-008)
	C-1024	1"	SPARE	SPARE
DB-25	P-1009	2"	EXISTING TRANSFORMER	EXISTING PANEL SG-1
	C-1000	1"	EX. RTU-3	CLEARWELL 2 LEVEL INSTRUMENT
	C-1001	1"	EX. RTU-3	CLEARWELL 1 LEVEL INSTRUMENT
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-26	P-1009	2"	EXISTING TRANSFORMER	EXISTING PANEL SG-1
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-27	P-1016	1"	EHH-4	CHEMICAL JUNCTION BOX 2
	C-1015	1"	EHH-4	CHEMICAL JUNCTION BOX 2 (LSH-002)
	C-1025	1"	SPARE	SPARE
DB-28	P-1025	1"	EX. UNIT #2	LP-AF (COMBO POWER UNIT)
DB-29	P-1012	2"	EXISTING PANEL SG-2	LP-AF (COMBO POWER UNIT)
	P-1025	1"	EX. UNIT #2	LP-AF (COMBO POWER UNIT)
	C-1002	1"	EX. RTU-10	AIR COMPRESSOR CP
	C-1003	1"	EX. RTU-10	AIR COMPRESSOR CONTROLLER
	C-1004	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1005	1"	EX. RTU-10	CHEMICAL INJ/METER VAULT
	C-1007	1"	EX. RTU-10	EHH-11
	C-1024	1"	SPARE	SPARE
	C-1025	1"	SPARE	SPARE
DB-30	P-1026	1"	EX. PANEL SG-2	MOV-104
DB-31	P-1027	1"	MOV-104	MOV-103
DB-32	P-1028	1"	MOV-103	MOV-102
DB-33	P-1029	1"	MOV-102	MOV-101

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5	RECORD DRAWINGS	FEB 2014	ZMW
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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY LDAVICHAELATANEDWASEO SEAL NUMBER [illegible]

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF - CHEMICAL DUCTBANK
ELECTRICAL
DUCTBANK SCHEDULES

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
E104

RECORD DRAWINGS

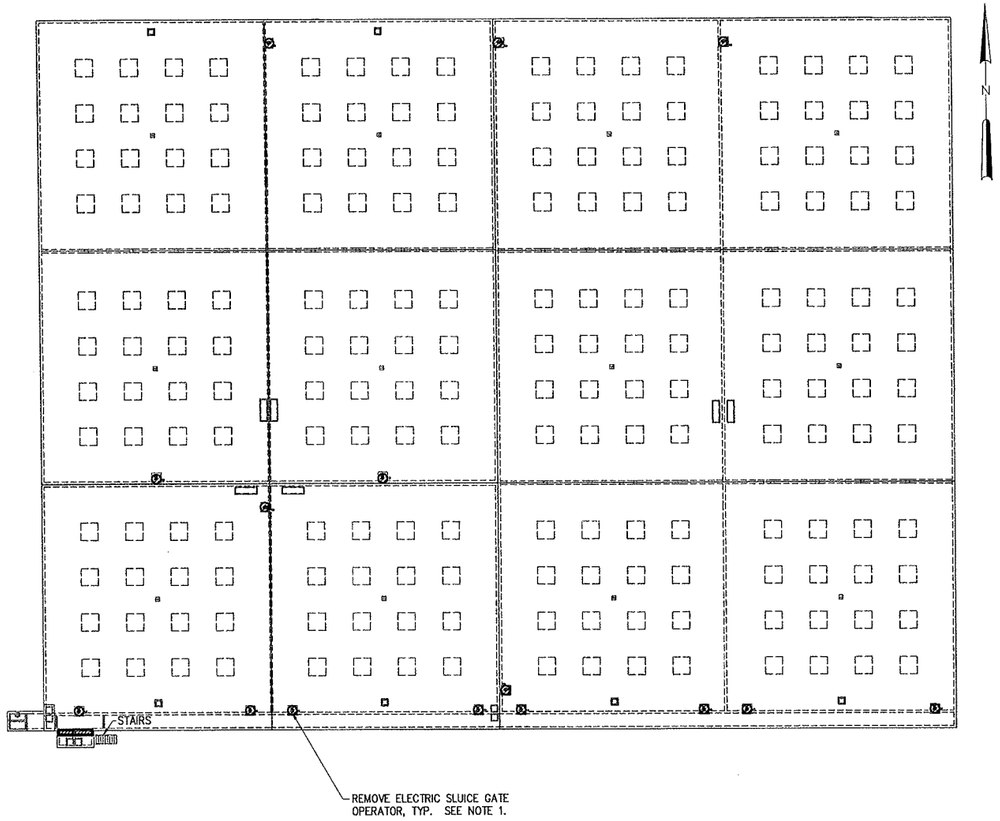
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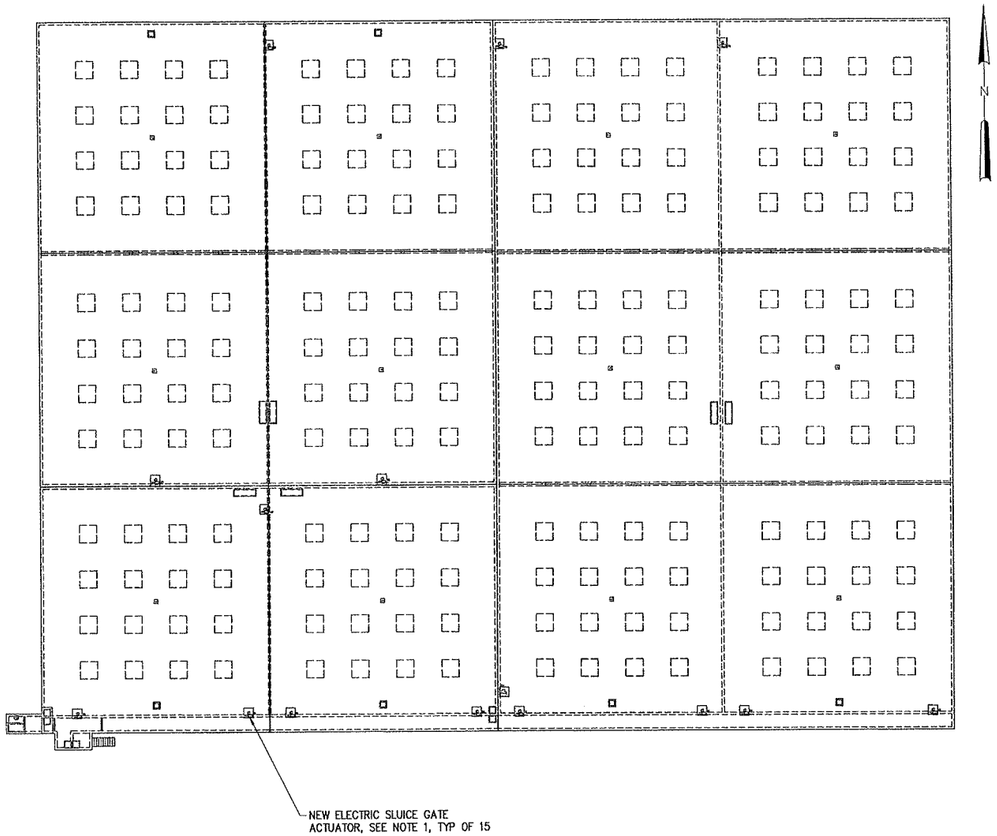
BW-15496

NOTES:

1. THE CONTRACTOR SHALL REMOVE THE FLEXIBLE CONDUIT AND WIRE BETWEEN EACH ACTUATOR AND RESPECTIVE LOCAL DISCONNECT SWITCH.
2. CONTRACTOR SHALL FURNISH NEW LIQUID TIGHT FLEXIBLE CONDUIT AND 3#12, #12GND BETWEEN EXISTING DISCONNECT SWITCH AND NEW ELECTRIC GATE ACTUATORS



ROOF PLAN – DEMOLITION
1/32" = 1'-0"



ROOF PLAN – PROPOSED
1/32" = 1'-0"

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1/32"=1'-0" 32 16 0 32'

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THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY DAVID A. ATKINSON, JR SEAL NUMBER 33831

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER WTF CLEARWELL REHABILITATION
ELECTRICAL
ROOF PLANS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE original DRAWING.

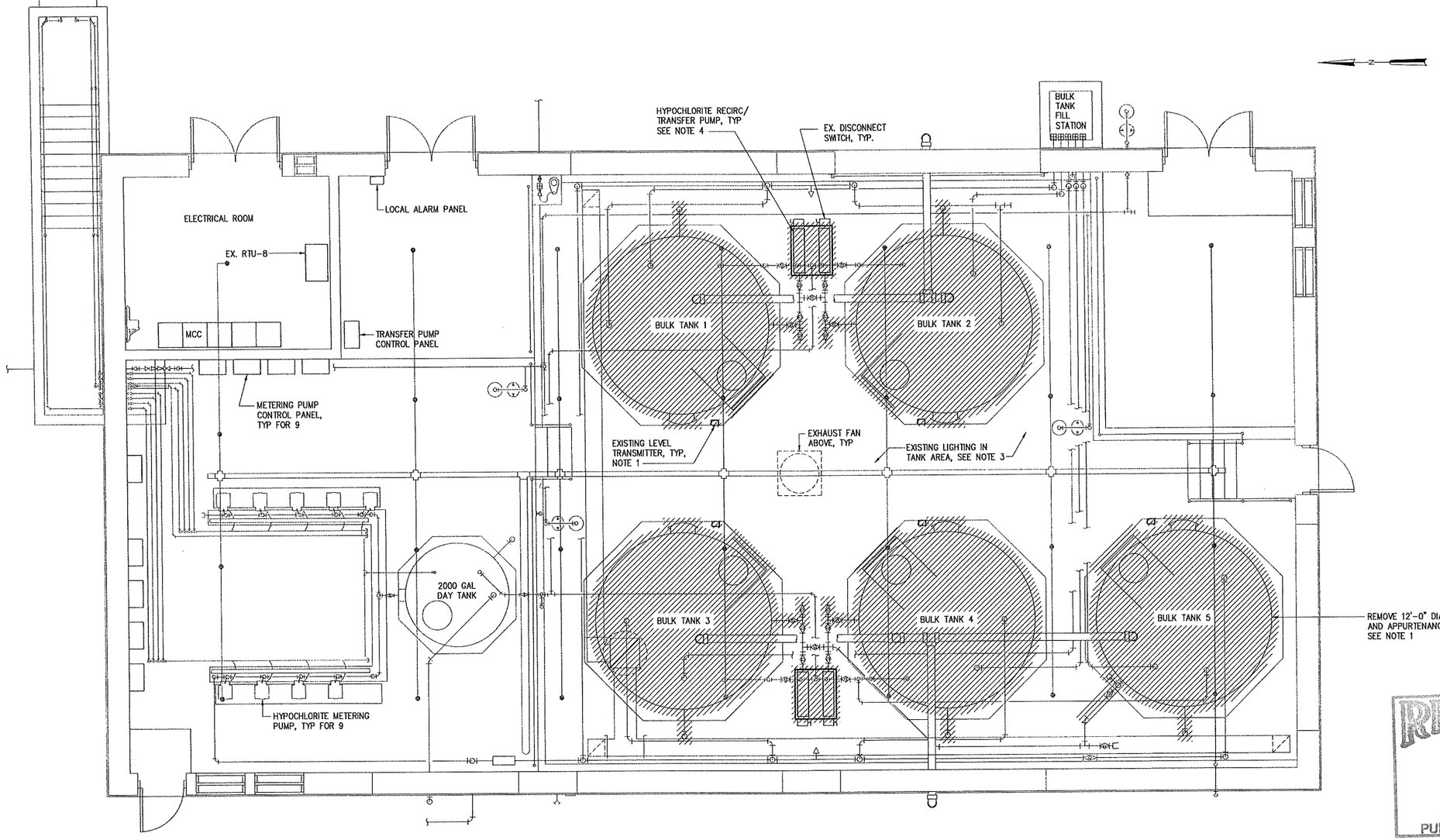
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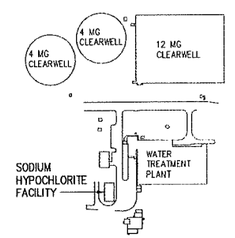


PLAN – DEMOLITION
1/4" = 1'-0"

NOTES:

1. REMOVE ULTRASONIC SENSORS (NOT SHOWN) FROM TOP OF HYPOCHLORITE BULK TANKS AND ASSOCIATED LEVEL TRANSMITTERS AND RETURN TO OWNER. CABLES CONNECTED BETWEEN THE SENSORS AND TRANSMITTERS SHALL BE CAREFULLY REMOVED FROM THEIR CONDUITS DURING THIS PROCESS. THE CONDUIT BETWEEN THE LEVEL TRANSMITTER AND THE SENSOR SHALL BE REMOVED AS WELL. ALL OTHER WIRING ASSOCIATED WITH THE TRANSMITTERS SHALL REMAIN IN PLACE. THE CONTRACTOR MAY REMOVE THE EXISTING TRANSMITTER MOUNTING SUPPORTS TO FACILITATE REPLACEMENT OF THE BULK TANKS. HOWEVER, EXISTING CONDUITS AND CONDUCTORS TO REMAIN MUST BE PROTECTED FROM DAMAGE. ANY DAMAGE INCURRED DURING THE EXECUTION OF THIS WORK SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
2. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.
3. PENDANT MOUNTED FLUORESCENT LIGHT FIXTURES AND ANY ASSOCIATED CONDUIT AND WIRE SHALL BE REMOVED AS NECESSARY TO FACILITATE THE REMOVAL OF THE BULK STORAGE TANKS. UP TO EIGHT (8) FIXTURES IN THE TANK AREA MAY NEED TO BE TEMPORARILY REMOVED. THE FIXTURES HANG DOWN BELOW THE TOP ELEVATION OF THE EXISTING TANKS. THE FIXTURES, CONDUIT AND WIRE SHALL BE RE-INSTALLED IN THEIR ORIGINAL LOCATIONS AFTER THE NEW STORAGE TANKS ARE IN PLACE. ANY FIXTURES DAMAGED DURING THE EXECUTION OF THIS WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
4. THE TRANSFER/RECIRCULATION PUMPS SHALL BE TEMPORARILY REMOVED TO REPLACE THE CONCRETE EQUIPMENT PAD BELOW. THE DISCONNECT SWITCH AND MOUNTING SUPPORTS ASSOCIATED WITH EACH PUMP SHALL BE TEMPORARILY REMOVED TO FACILITATE REPLACEMENT OF THE EQUIPMENT PAD. THE CONTRACTOR SHALL PROTECT EXISTING CONDUIT STUB UPS FROM FLOOR BELOW EACH DISCONNECT AS THIS CONDUIT AND WIRE WILL BE RE-USED.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER CHEMICAL TANKS REPLACEMENT
ELECTRICAL
HYPOCHLORITE PLAN - DEMOLITION

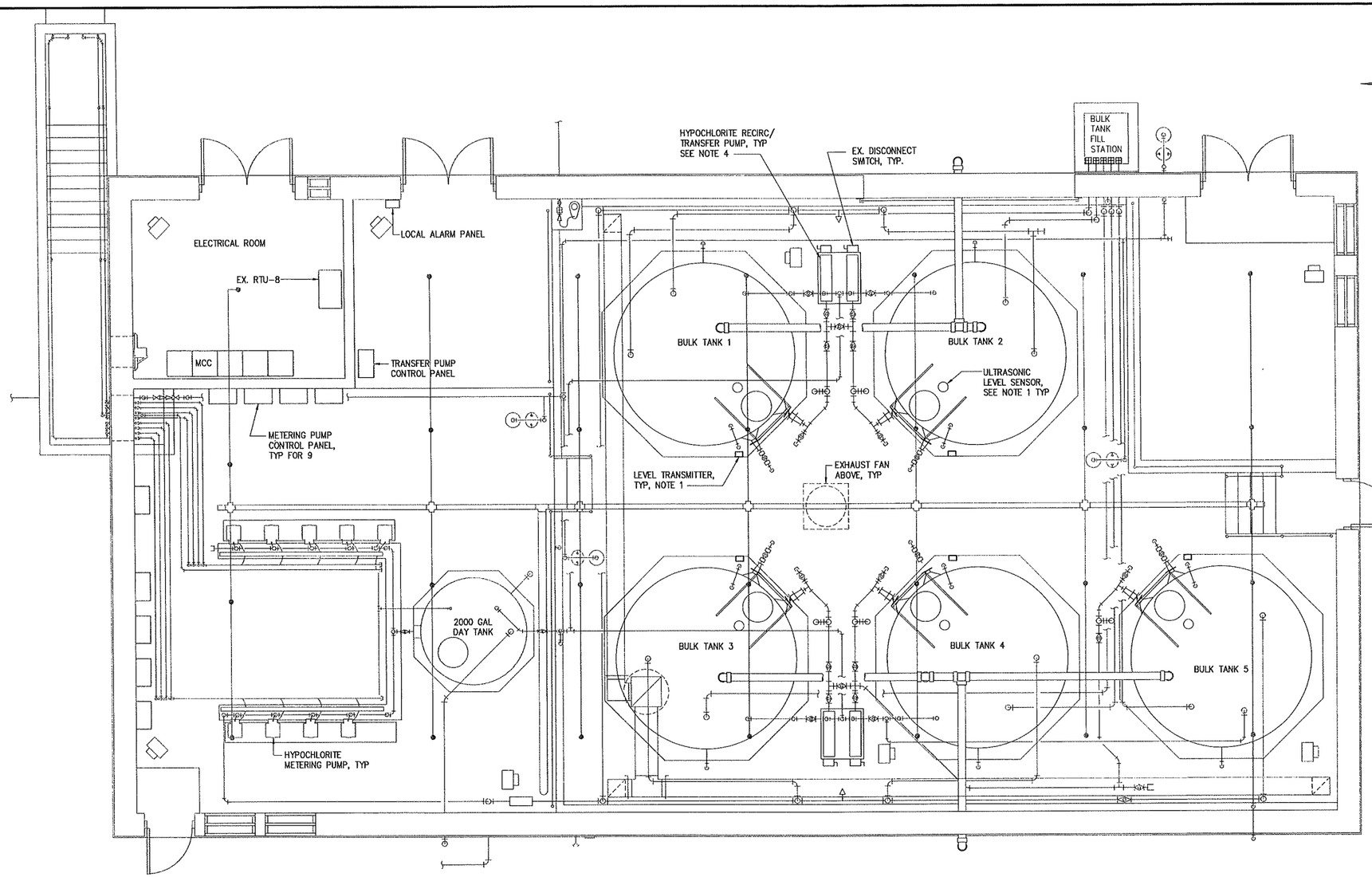
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
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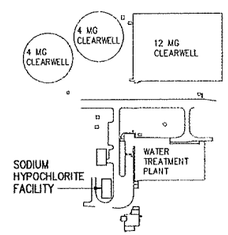


PLAN
1/4" = 1'-0"

NOTES:

1. INSTALL NEW LEVEL TRANSMITTERS IN PLACE OF REMOVED TRANSMITTERS, AND INSTALL LEVEL SENSORS ON TOP OF TANK. TRANSMITTERS SHALL BE CONNECTED TO EXISTING POWER, CONTROL AND SIGNAL CONDUIT AND WIRE. A NEW 1" CONDUIT SHALL BE INSTALLED BETWEEN EACH TRANSMITTER AND THE LEVEL SENSOR AT THE TOP OF THE TANK. THE CONDUIT SHALL BE ROUTED UP BESIDE THE TANK LADDER AND BE FASTENED TO THE TANK LADDER MOUNTING BRACKETS AND NOT THE TANK ITSELF. CABLE FROM NEW LEVEL SENSOR SHALL BE INSTALLED IN THIS CONDUIT. CABLE SHALL BE FURNISHED AS INTEGRAL PART OF LEVEL SENSOR, PROVIDED BY INSTRUMENT MANUFACTURER.
2. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.
3. ALL CONDUIT IN THIS BUILDING SHALL BE PVC SCHEDULE 80. THIS BUILDING IS CONSIDERED A CHEMICAL AREA AND MATERIALS OF CONSTRUCTION USED SHALL BE IN ACCORDANCE WITH ALL DIVISION 16 REQUIREMENTS FOR CHEMICAL AREAS.
4. AFTER THE TRANSFER/RECIRCULATION PUMP EQUIPMENT PAD REPLACEMENT WORK IS COMPLETE, EACH PUMP DISCONNECT SWITCH SHALL BE RE-INSTALLED IN THE SAME LOCATION. NEW LFMC CONDUIT WITH 3#12, #12GND INSIDE SHALL BE PROVIDED BETWEEN THE RE-INSTALLED DISCONNECT SWITCH AND THE PUMP.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER CHEMICAL TANKS REPLACEMENT
ELECTRICAL
HYPOCHLORITE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

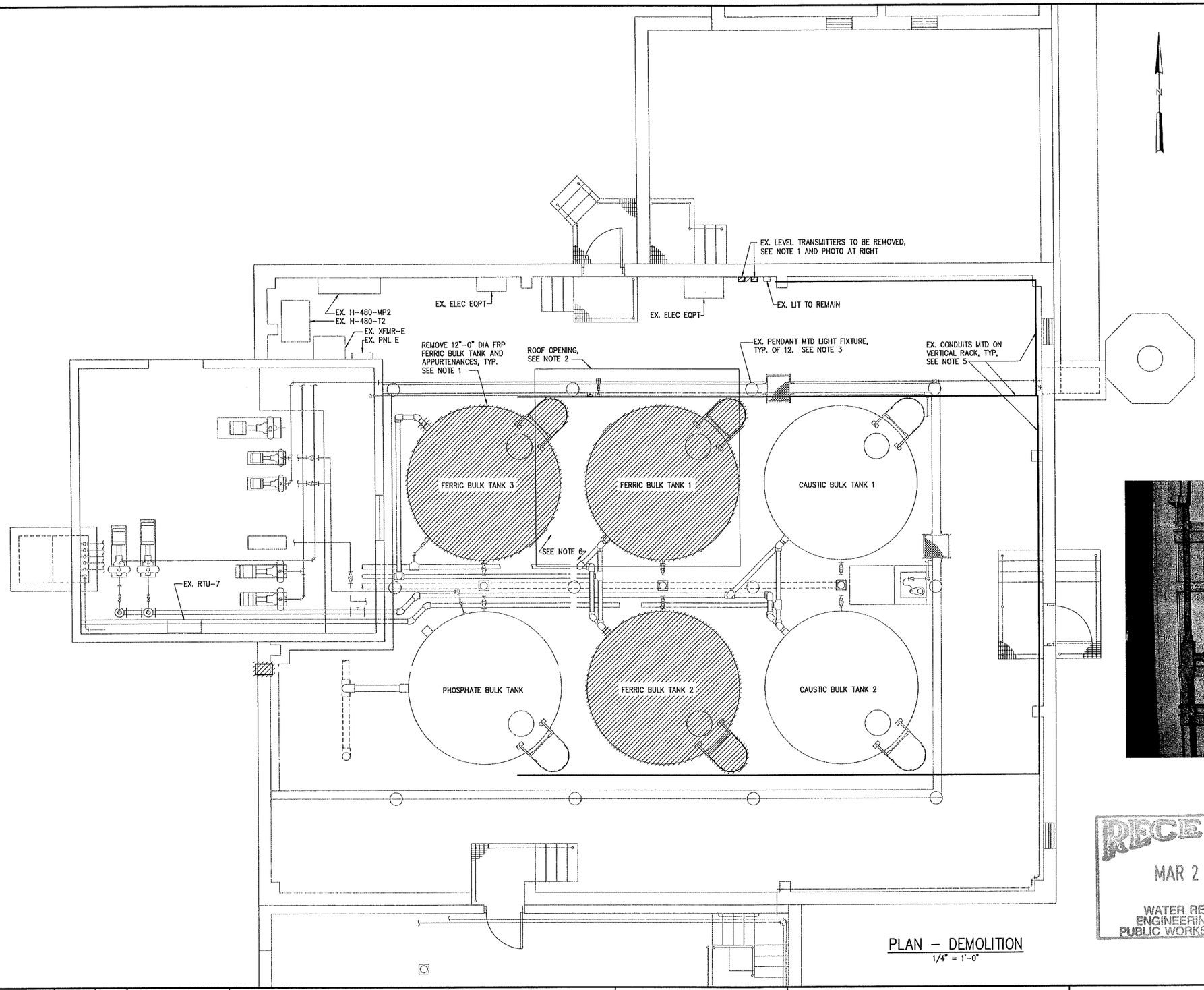
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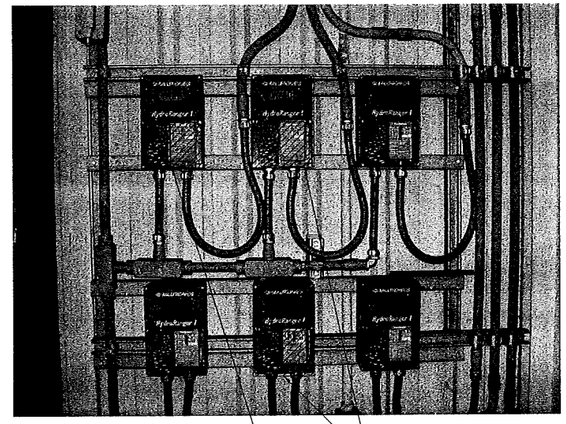
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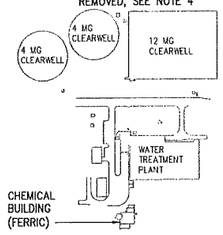


PLAN – DEMOLITION
1/4" = 1'-0"

NOTES:

1. REMOVE ULTRASONIC SENSORS (NOT SHOWN) FROM TOP OF FERRIC BULK TANKS AND ASSOCIATED LEVEL TRANSMITTERS AND RETURN TO OWNER. CABLES CONNECTED BETWEEN THE SENSORS AND TRANSMITTERS SHALL BE CAREFULLY REMOVED FROM THEIR CONDUITS DURING THIS PROCESS. ALL OTHER WIRING ASSOCIATED WITH THE TRANSMITTERS TO BE REMOVED SHALL REMAIN IN PLACE.
2. TANKS SHALL BE REMOVED THROUGH THIS TEMPORARY ROOF OPENING AS SHOWN ON DRAWING S150.
3. PENDANT MOUNTED LIGHT FIXTURES AND ANY ASSOCIATED CONDUIT AND WIRE SHALL BE REMOVED AS NECESSARY TO FACILITATE THE REMOVAL OF THE BULK STORAGE TANKS. THE FIXTURES, CONDUIT AND WIRE SHALL BE RE-INSTALLED IN THEIR ORIGINAL LOCATIONS AFTER THE ROOF IS RESTORED. ANY FIXTURES DAMAGED DURING THE EXECUTION OF THIS WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
4. THE LEVEL TRANSMITTERS TO BE REPLACED ARE ASSOCIATED WITH THE FERRIC TANKS TO BE REPLACED. HOWEVER, THE LEVEL TRANSMITTERS ARE LABELED AS "ALUM" AND NOT FERRIC.
5. THE EX. CONDUITS BETWEEN EACH OF THE SIX (6) BULK TANK LEVEL SENSORS AND THEIR RESPECTIVE LEVEL TRANSMITTER ARE INSTALLED IN A VERTICAL RACK ROUTED AS SHOWN. THE VERTICAL RACK IS SUPPORTED BY THE LADDER OF EACH EXISTING BULK TANK. THE RACK INSTALLED ALONG THE SOUTH SIDE OF THE BULK TANKS SHALL BE TEMPORARILY SUPPORTED DURING REMOVAL OF FERRIC BULK TANK 2. THE RACK INSTALLED ALONG THE NORTH SIDE OF THE BULK TANKS SHALL BE TEMPORARILY SUPPORTED DURING THE REMOVAL OF FERRIC BULK TANKS 1 AND 2. AT ALL TIMES DURING CONSTRUCTION, THE CAUSTIC AND PHOSPHATE BULK TANK LEVEL INSTRUMENTS SHALL REMAIN IN OPERATION.
6. TO FACILITATE THE REMOVAL OF THE THREE (3) BULK TANKS, THE EXISTING FLOOR MOUNTED STANDS LOCATED BETWEEN THE TANKS SHALL BE REMOVED. THE STANDS ARE NO LONGER BEING USED. CONDUITS STUBBING UP FROM THE FLOOR AT EACH STAND SHALL BE CUT BACK TO 1/2" BELOW THE CONCRETE SURFACE. THE CONCRETE SHALL BE PATCHED WITH AN EPOXY RESIN BINDER TO MATCH ORIGINAL SURFACE.
7. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.





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HOFFER CHEMICAL TANKS REPLACEMENT
ELECTRICAL
FERRIC PLAN - DEMOLITION

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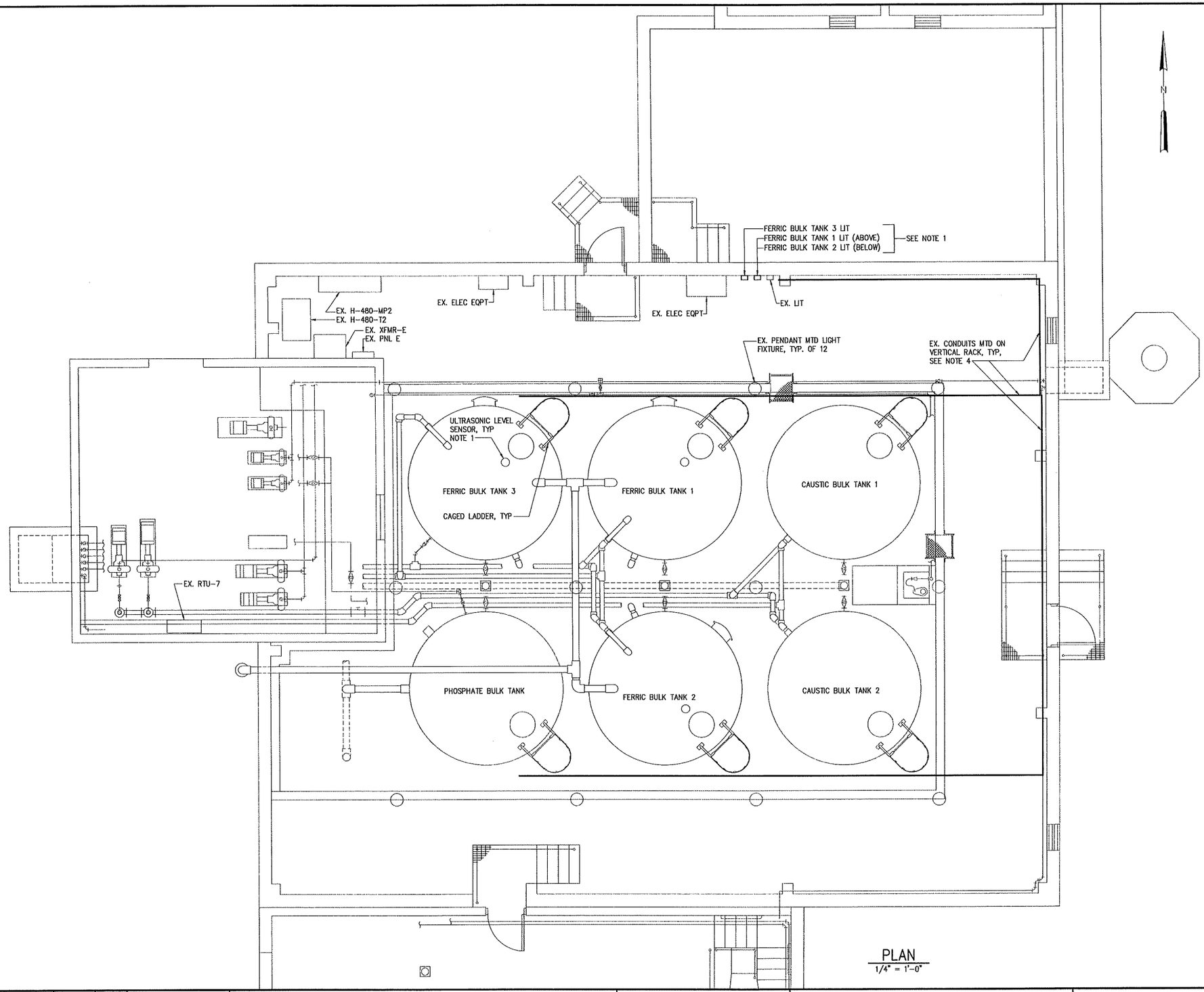
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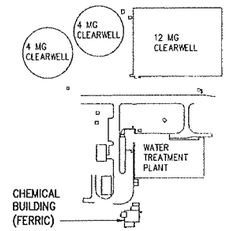
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PLAN
1/4" = 1'-0"

NOTES:

1. INSTALL NEW LEVEL TRANSMITTERS IN PLACE OF REMOVED TRANSMITTERS. TRANSMITTERS SHALL BE CONNECTED TO EXISTING POWER AND SIGNAL CONDUIT AND WIRE. INSTALL NEW LEVEL SENSOR ON TOP OF TANKS.
2. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.
3. ALL CONDUIT IN THIS BUILDING SHALL BE PVC SCHEDULE 80. THIS BUILDING IS CONSIDERED A CHEMICAL AREA AND MATERIALS OF CONSTRUCTION USED SHALL BE IN ACCORDANCE WITH ALL DIVISION 16 REQUIREMENTS FOR CHEMICAL AREAS.
4. AFTER EACH FERRIC BULK TANK IS INSTALLED, THE EXISTING CONDUIT RACK SHALL BE RE-ATTACHED TO THE BULK TANK LADDER. TEMPORARY CONDUIT RACK SUPPORTS SHALL BE REMOVED. NEAR EACH FERRIC BULK TANK LADDER, THE EXISTING (AND EMPTY) SCHEDULE 80 PVC CONDUIT SHALL BE CUT. A NEW CONDUIT SHALL BE SOLVENT WELDED TO THE EXISTING CONDUIT AND SHALL BE ROUTED UP THE LADDER TO THE LEVEL SENSOR ON TOP OF THE TANK. THE NEW CABLE BETWEEN THE LEVEL SENSOR AND THE LEVEL TRANSMITTER SHALL BE ROUTED THROUGH EACH NEW/EXISTING CONDUIT. THE CONTRACTOR SHALL CAREFULLY MEASURE TO DETERMINE THE LENGTH OF CABLE REQUIRED FOR EACH TANK SINCE THE CABLE IS FURNISHED AS PART OF THE LEVEL SENSOR BY THE INSTRUMENT MANUFACTURER.



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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

HOFFER CHEMICAL TANKS REPLACEMENT
ELECTRICAL
FERRIC PLAN

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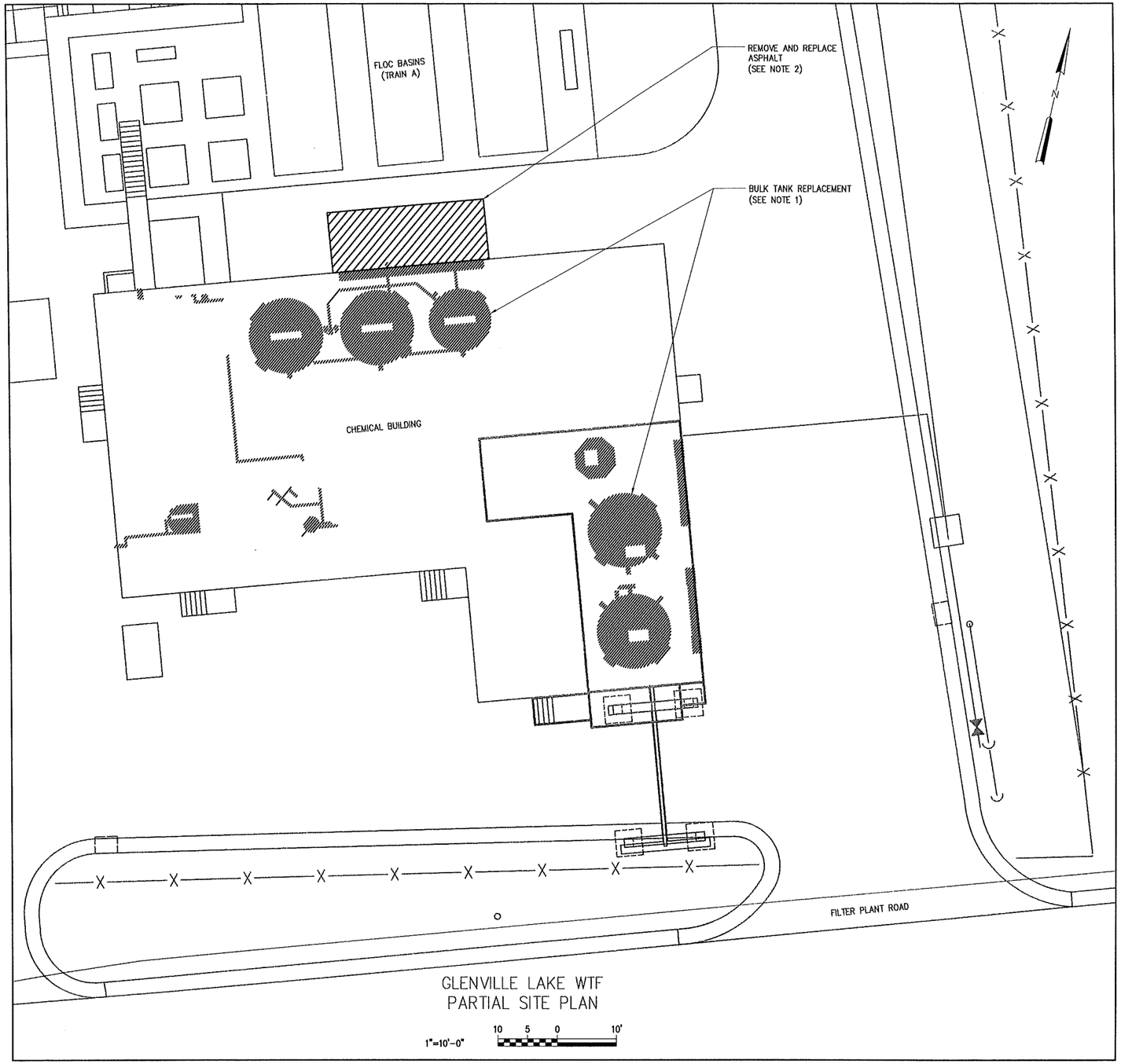
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GLENVILLE LAKE WTF
PARTIAL SITE PLAN

1"=10'-0" 10 5 0 10'

NOTES:

1. SEE CONTRACT SHEET M240 FOR COMPLETE DEMOLITION PLAN OF CHEMICAL TANKS AND LINES.
2. SECTION OF ASPHALT AT THE KNOCK-OUT WALL SHALL BE DEMOLISHED AND REPLACED TO THE EXTENT NECESSARY TO ALLOW FOR INSTALLATION OF TANKS. SEE CONTRACT SHEET M240 FOR LOCATION OF KNOCK-OUT WALL.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF
CIVIL
SITE PLAN & DEMOLITION

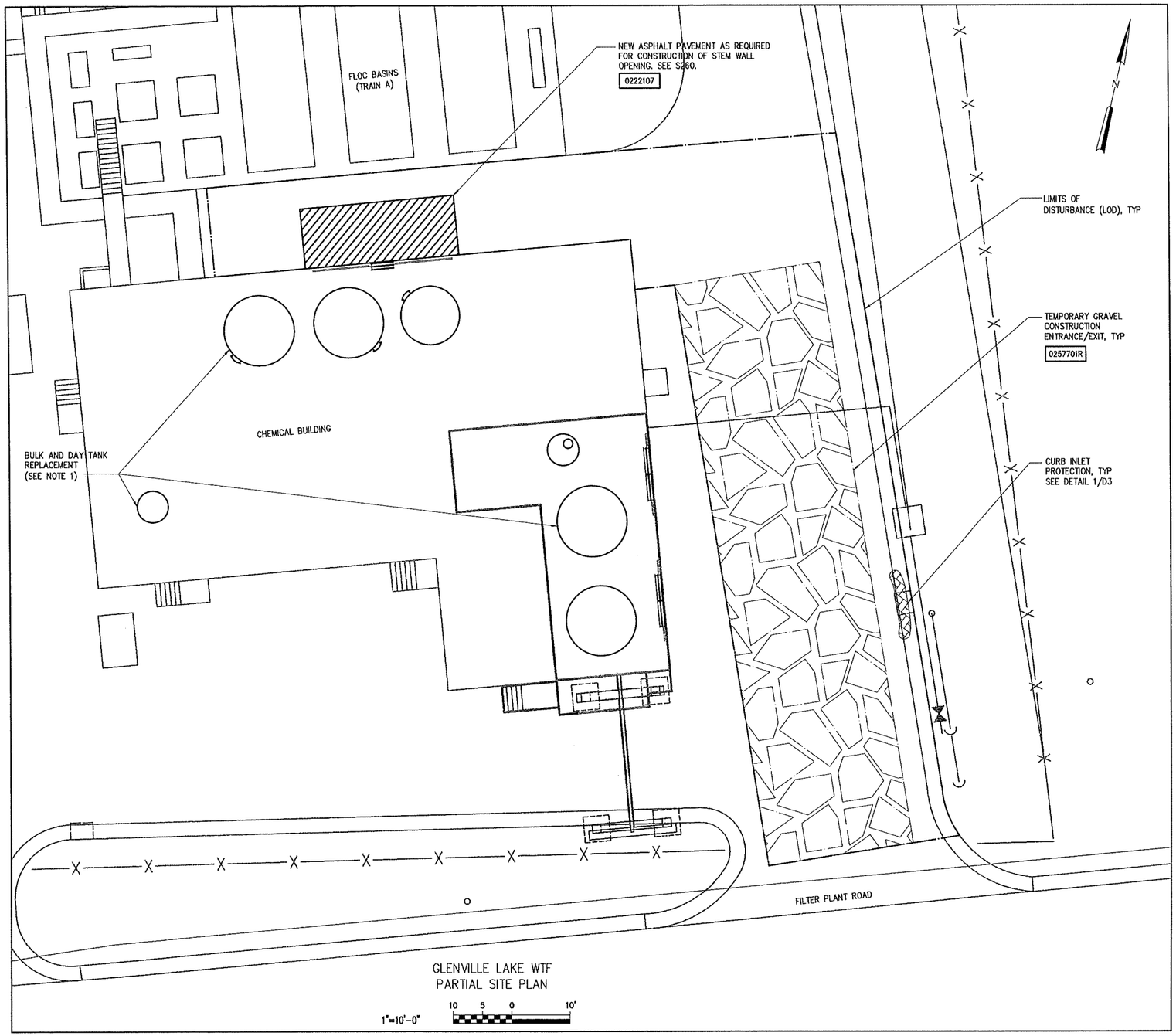
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NOTES:

1. SEE CONTRACT SHEET M241 FOR INFORMATION ON INSTALLATION OF BULK AND DAY TANKS AND LINES.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE LAKE WTF
CIVIL
GRADING & EROSION CONTROL PLAN

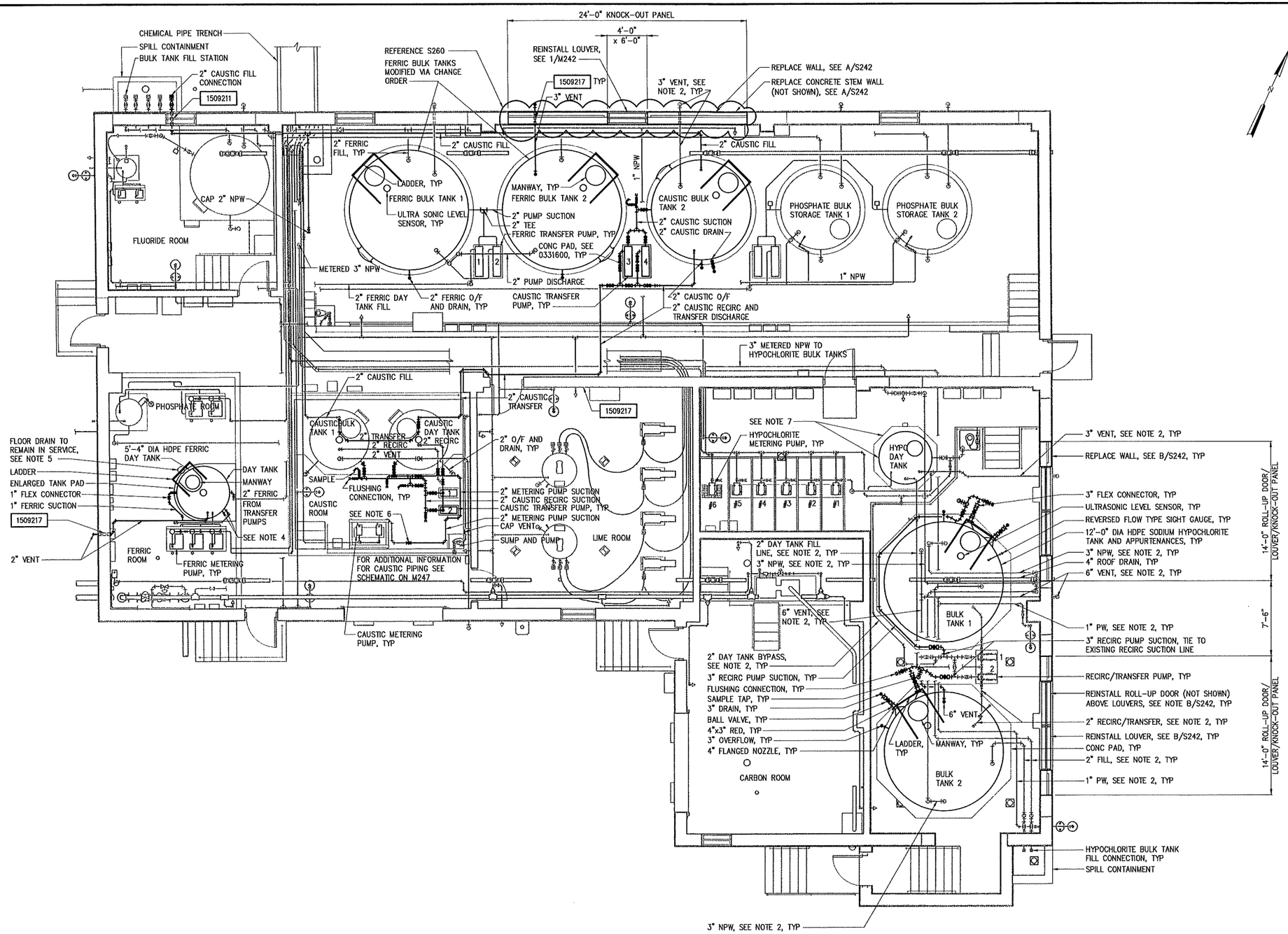
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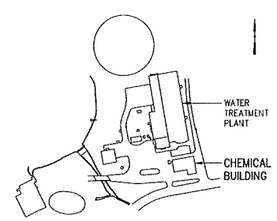
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PLAN
3/16" = 1'-0"

NOTES:

1. FOR CONSTRUCTION SEQUENCE SEE SPECIFICATIONS SECTION 01520
2. SEE NOTES 2/M240 AND 3/M240
3. CONTRACTOR SHALL PROVIDE TEMPORARY LINES FOR ITEMS LISTED UNDER NOTE 2/M240 AS REQUIRED TO MAINTAIN THE CHEMICAL SYSTEM AT ALL TIMES DURING NEW CONSTRUCTION
4. CONNECT EXISTING OVERFLOW AND DRAIN TO NEW FERRIC DAY TANK
5. CONTRACTOR TO INSTALL ENLARGED DAY TANK PAD TO CLEAR EXISTING FLOOR DRAIN, SEE DETAIL 1/S243
6. TIE NEW 2" METERING PUMP SUCTION TO EXISTING 2" METERING PUMP SUCTION UPSTREAM OF EXISTING Y-STRAINERS
7. RECONNECT PIPING TO EXISTING HYPOCHLORITE DAY TANK AND REINSTALL ON REPAIRED CONCRETE TANK PAD, SEE DETAIL 2/S243
8. PROVIDE NEW STAINLESS STEEL INSECT SCREENS ON VENT LINES FOR ALL NEW TANKS
9. CONTRACTOR SHALL PROVIDE A NEW STAINLESS STEEL INSECT SCREEN FOR ALL VENT LINES



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GLENVILLE WTF CHEM TANKS REPLACEMENT
MECHANICAL
PLAN

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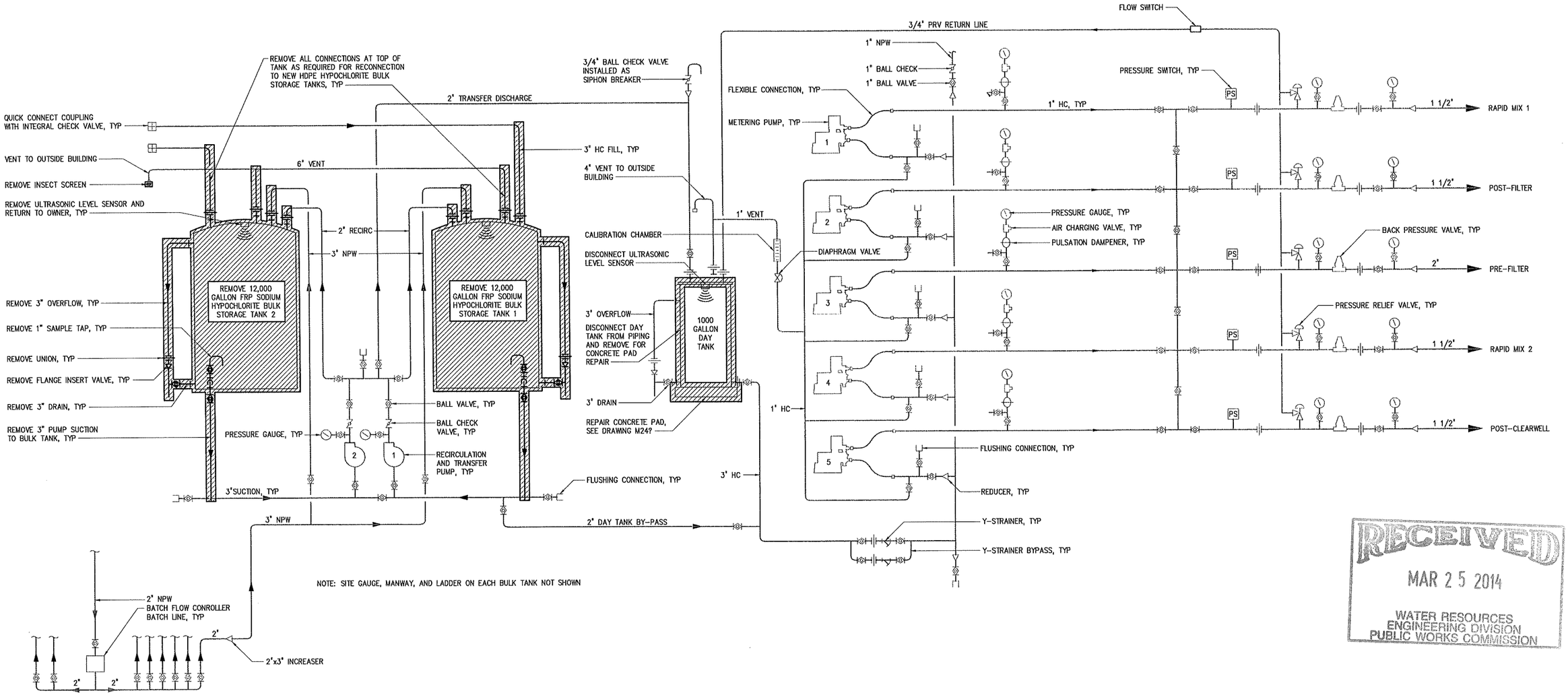
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MECHANICAL
HYPOCHLORITE SCHEMATIC - DEMOLITION

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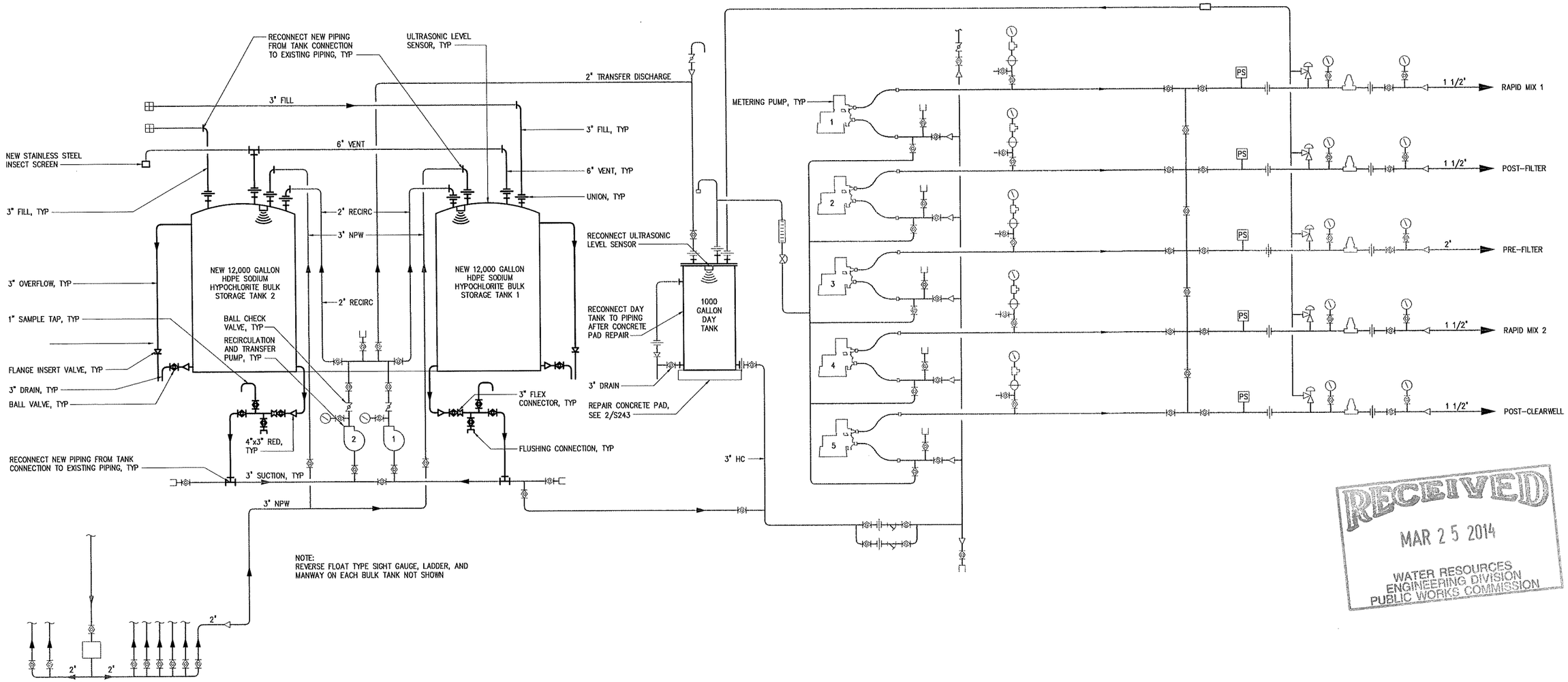
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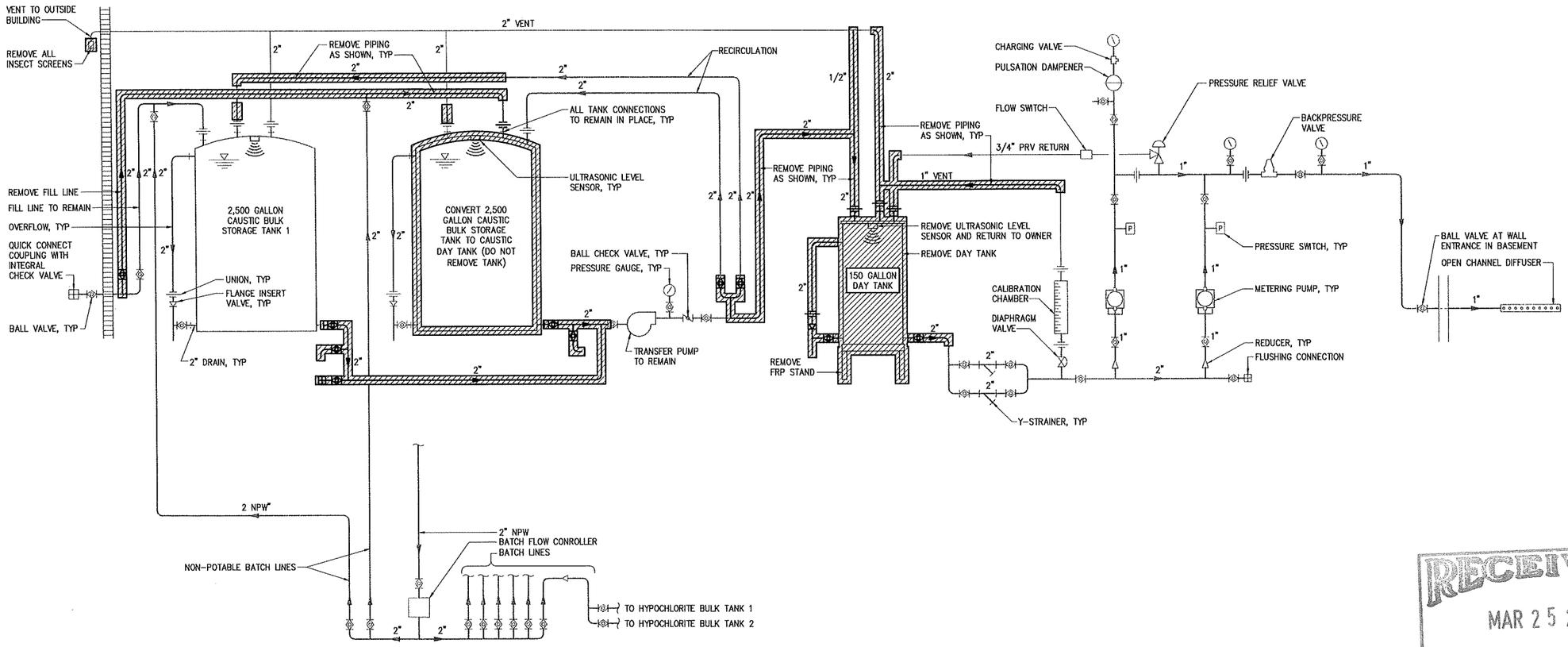
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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
MECHANICAL
CAUSTIC SCHEMATIC - DEMOLITION

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
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M244

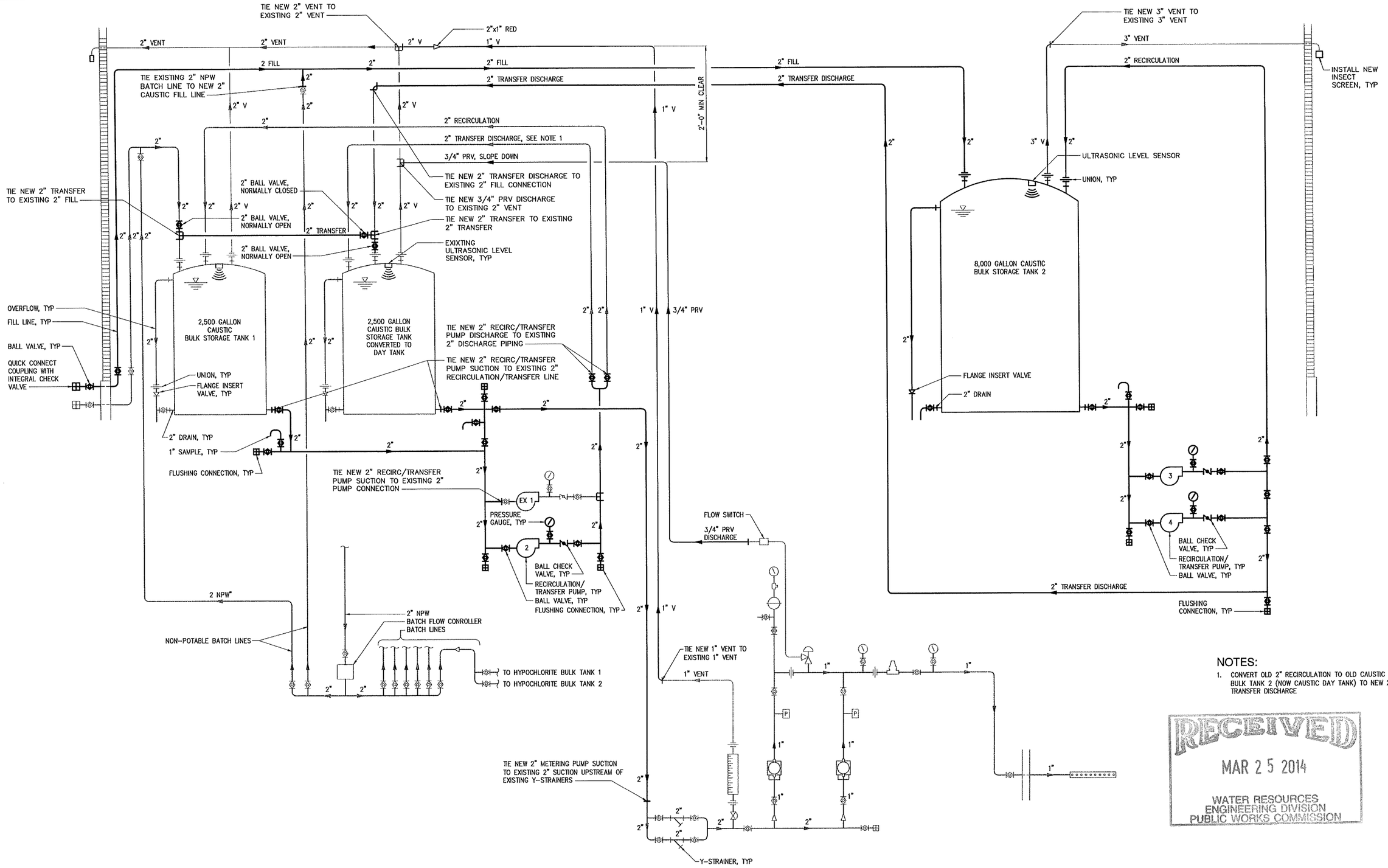
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BW-15496

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20140228 5:10P O:\30402\30402-010\drawings\MECH\30402-010-M244.dwg By: TMUNIZ

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NOTES:

1. CONVERT OLD 2" RECIRCULATION TO OLD CAUSTIC BULK TANK 2 (NOW CAUSTIC DAY TANK) TO NEW 2" TRANSFER DISCHARGE

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4	RECORD DRAWINGS	FEB 2014	ZMW
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DRAWN HGM
CHECKED ZMW
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GLENVILLE WTF CHEM TANKS REPLACEMENT
MECHANICAL
CAUSTIC SCHEMATIC

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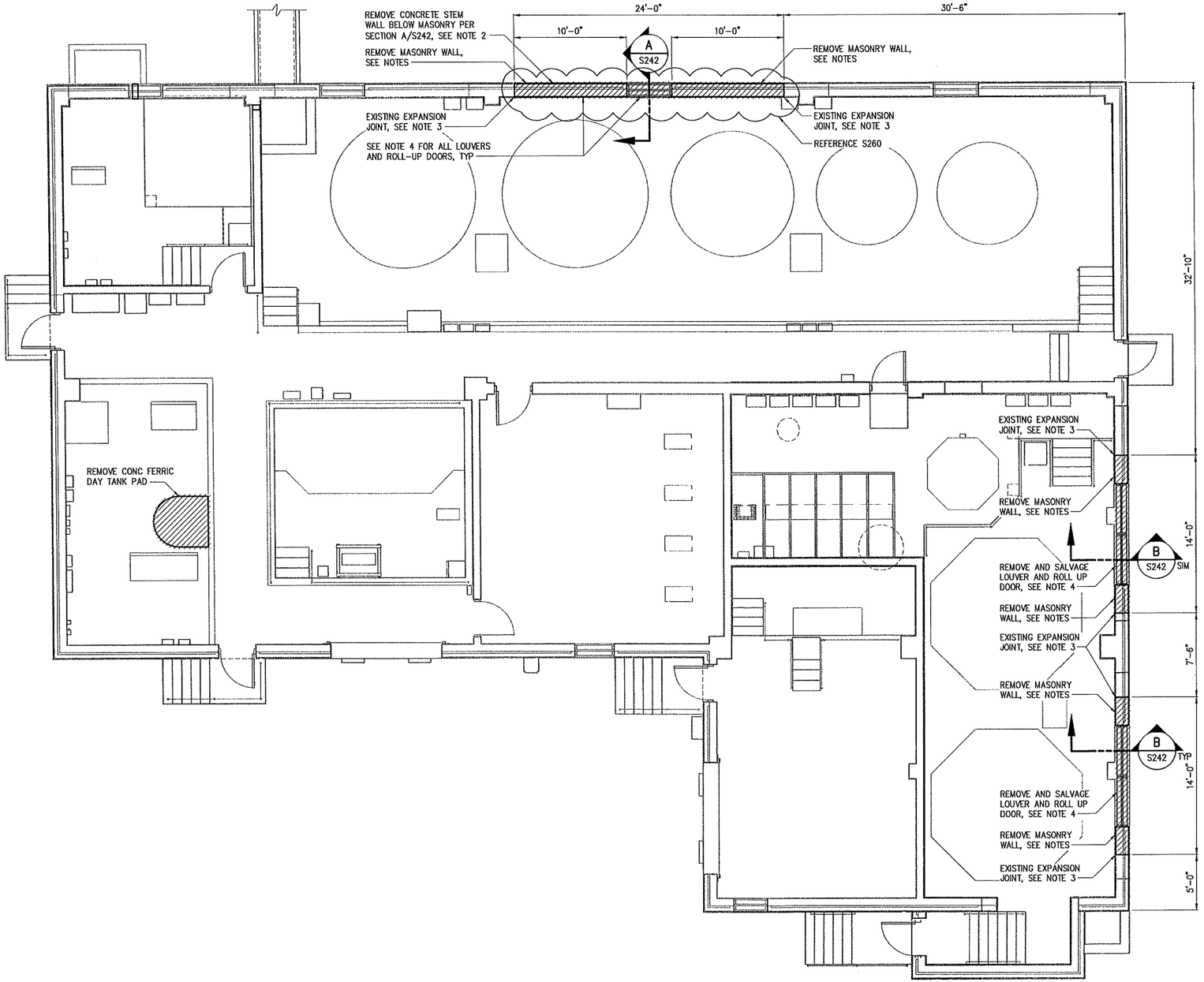
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BW-15496



DEMOLITION PLAN
3/16" = 1'-0"

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS.
2. ALL CONCRETE AND MASONRY DEMOLITION SHOWN SHALL BE SELECTIVE DEMOLITION UTILIZING METHODS WHICH DO NOT DAMAGE EXISTING CONCRETE OR MASONRY OUTSIDE OF THE AREAS INDICATED TO BE REMOVED. WHERE SAW-CUTTING IS PERFORMED NO OVER CUTTING WILL BE PERMITTED. NO VIBRATORY EQUIPMENT SHALL BE PERMITTED THAT MAY CAUSE DAMAGE TO THE EXISTING STRUCTURE OR EQUIPMENT. REGARDLESS OF THE METHODS USED, CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING STRUCTURE OR EQUIPMENT DURING DEMOLITION. WHERE REINFORCING, ANCHOR BOLTS OR OTHER METAL APPURTENANCES ARE EXPOSED AFTER REMOVAL OF EXISTING STRUCTURAL ELEMENTS, THEY SHALL BE BURNED BACK A MINIMUM OF 1/2" BELOW THE SURFACE AND RESULTING VOID SHALL BE PATCHED WITH AN EPOXY RESIN BINDER.
3. MASONRY WALL DEMOLITION SHALL BE BETWEEN EXPANSION JOINTS. MASONRY BEYOND EXPANSION JOINTS SHALL NOT BE DAMAGED DURING DEMOLITION.
4. CONTRACTOR SHALL FIELD LOCATE EXISTING LOUVERS AND ROLL UP DOORS TO BE SALVAGED PRIOR TO REMOVAL TO ALLOW FOR REINSTALLATION IN ORIGINAL LOCATIONS.
5. SEE DRAWING S1 FOR STRUCTURAL AND DEMOLITION NOTES.
6. CONTRACTOR SHALL PROVIDE ALL TEMPORARY SHORING, BRACING, AND ANY OTHER MEANS NECESSARY TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING DURING CONSTRUCTION.
7. CONTRACTOR SHALL COORDINATE ALL WORK WITH CONSTRUCTION SEQUENCE PER SPECIFICATION 01520.

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
STRUCTURAL
DEMOLITION PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S240

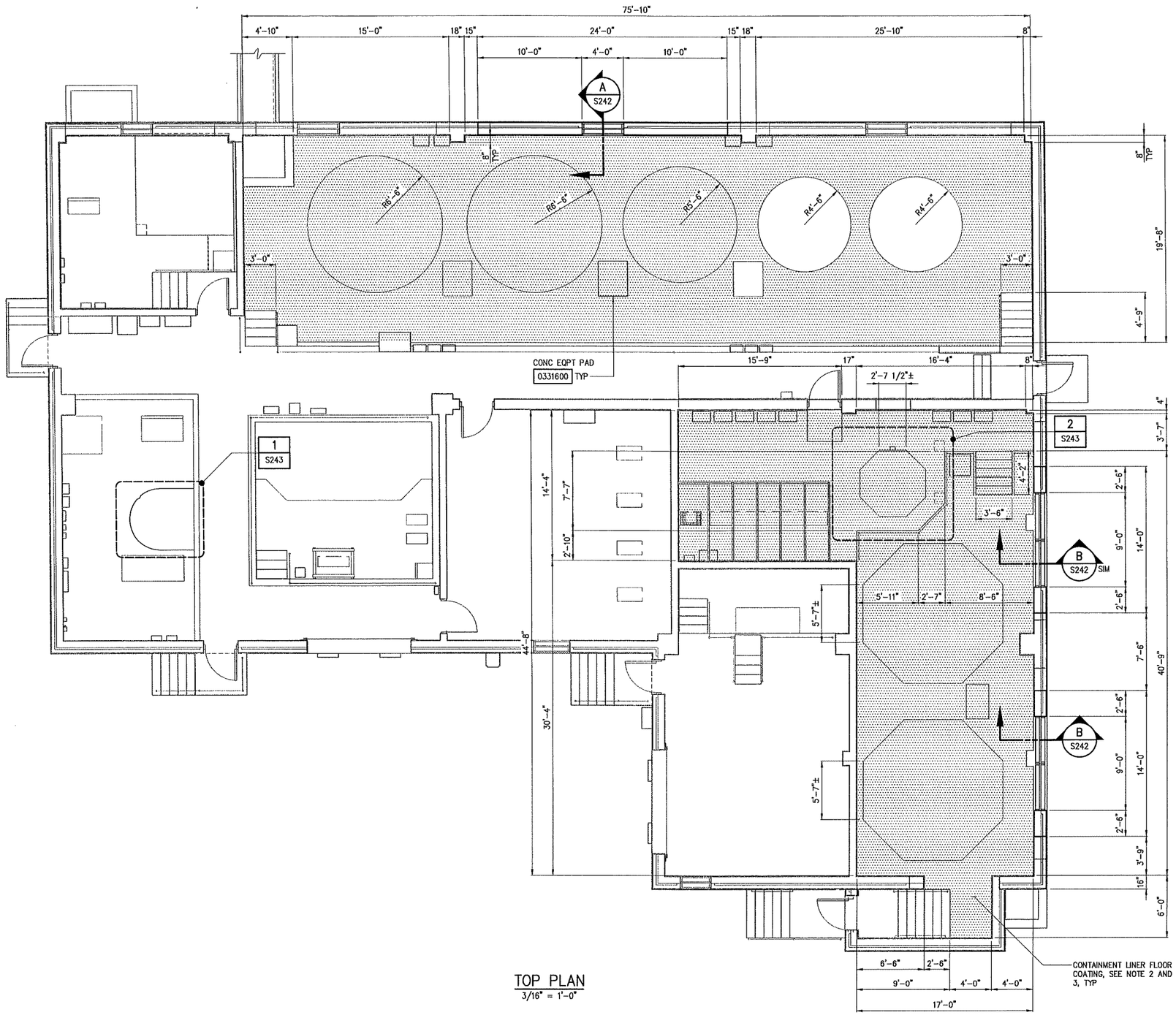
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IMAGES=
20140228 5:18P O:\30402\30402-010\drawings\STRU\S240.dwg By: TMUNZ

BW-15496

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS. DIMENSIONS INDICATING LIMITS OF FLOOR COATING ARE FOR BID PURPOSES ONLY.
2. CONCRETE TANK PADS AND FLOOR AREAS INDICATED SHALL BE COATED WITH A CONTAINMENT LINER FLOOR COATING PER SPECIFICATION 09900 – PAINTING. ALL FLOOR AND TANK PAD OBSTRUCTIONS SHALL BE REMOVED AND REINSTALLED IN ORIGINAL LOCATIONS AS NECESSARY TO COAT INDICATED AREAS. SURFACE PREPARATION SHALL BE AS REQUIRED PER SPECIFICATION 09900 AND COATING MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY SERVICE AS REQUIRED TO MAINTAIN THE CHEMICAL SYSTEM IN OPERATION AT ALL TIMES DURING COATING WORK.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH TANK REPLACEMENT CONSTRUCTION SEQUENCE PER SPECIFICATION 01520.
4. SEE DRAWING S1 FOR STRUCTURAL NOTES.



TOP PLAN
3/16" = 1'-0"

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
STRUCTURAL
TOP PLAN

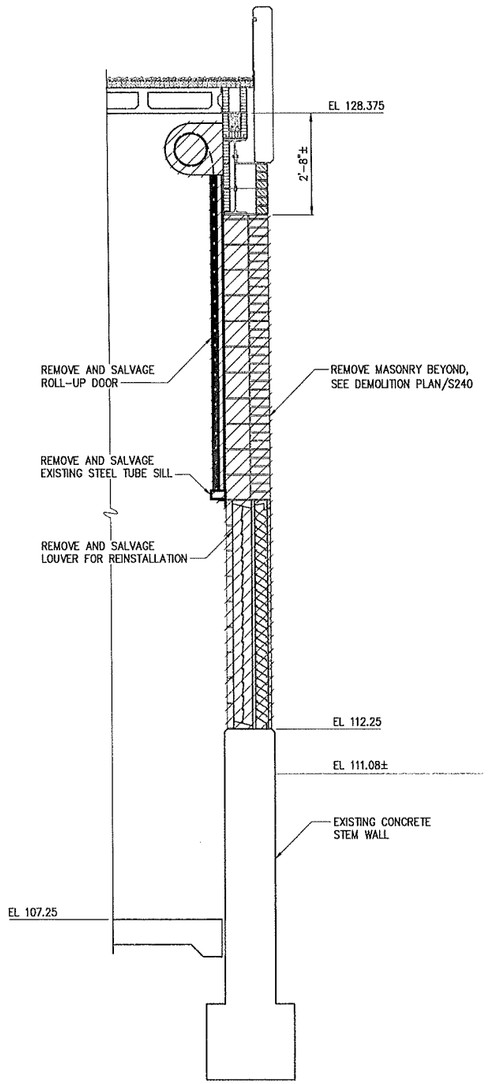
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S241

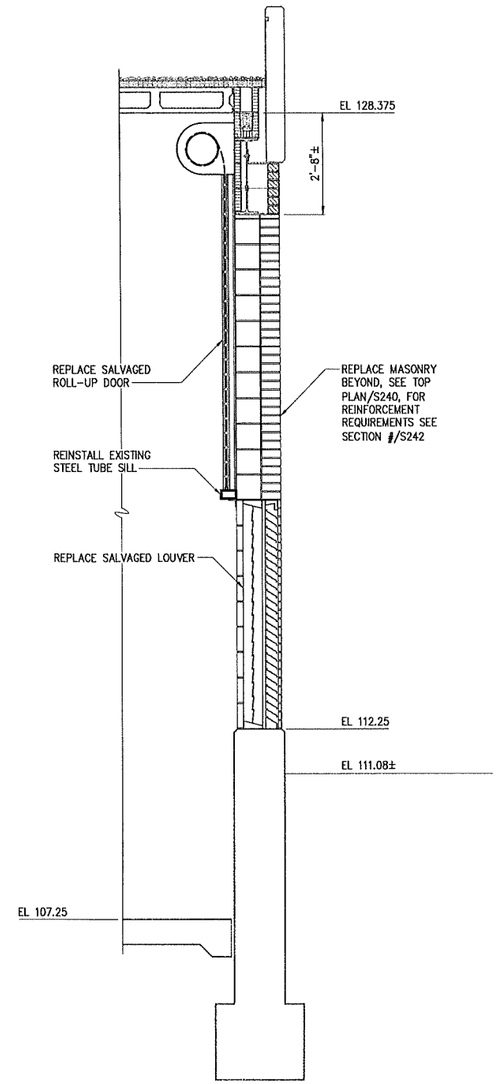
RECORD DRAWINGS

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DEMOLITION



RECONSTRUCTION

EAST WALL DEMOLITION AND RECONSTRUCTION

SECTION B / S240

1/2" = 1'-0"

NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS.
2. ALL CONCRETE AND MASONRY DEMOLITION SHOWN SHALL BE SELECTIVE DEMOLITION UTILIZING METHODS WHICH DO NOT DAMAGE EXISTING CONCRETE OR MASONRY OUTSIDE OF THE AREAS INDICATED TO BE REMOVED. WHERE SAW-CUTTING IS PERFORMED NO OVER CUTTING WILL BE PERMITTED. NO VIBRATORY EQUIPMENT SHALL BE PERMITTED THAT MAY CAUSE DAMAGE TO THE EXISTING STRUCTURE OR EQUIPMENT. REGARDLESS OF THE METHODS USED, CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING STRUCTURE OR EQUIPMENT DURING DEMOLITION. WHERE REINFORCING, ANCHOR BOLTS OR OTHER METAL APPURTENANCES ARE EXPOSED AFTER REMOVAL OF EXISTING STRUCTURAL ELEMENTS, THEY SHALL BE BURNED BACK A MINIMUM OF 1/2" BELOW THE SURFACE AND RESULTING VOID SHALL BE PATCHED WITH AN EPOXY RESIN BINDER.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE REMOVAL OF ASPHALT PAVEMENT AND SUBGRADE TO THE EXTENT REQUIRED FOR INSTALLATION OF THE NEW CHEMICAL TANKS. FOLLOWING INSTALLATION OF THE TANKS AND RECONSTRUCTION OF THE BUILDING WALL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING THE SUBGRADE AND ASPHALT PAVEMENT TO THE CURRENT EXISTING GRADE ELEVATION. PAVEMENT AND GRADE SHALL BE PLACED SO THAT WATER DRAINS AWAY FROM THE BUILDING WALL.
4. CONTRACTOR SHALL CONFIRM STEEL LINTEL AND FASCIA ANGLE SUPPORT PRIOR TO PROCEEDING WITH DEMOLITION.
5. SEE DRAWING S1 FOR STRUCTURAL AND DEMOLITION NOTES.

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
STRUCTURAL
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

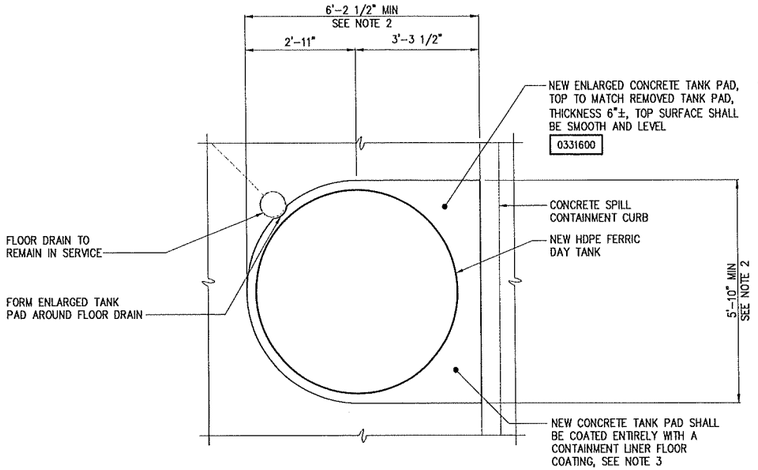
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S242

RECORD DRAWINGS

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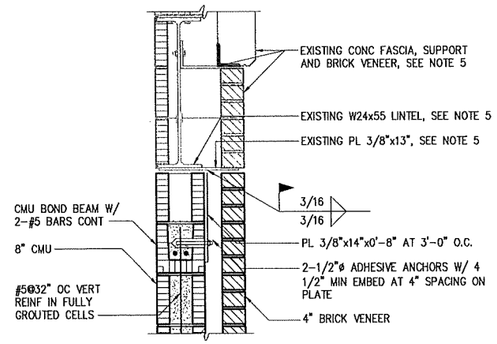
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FERRIC DAY TANK PAD

DETAIL 1 / 1/2" = 1'-0" / S241



MASONRY WALL TO STEEL BEAM CONNECTION

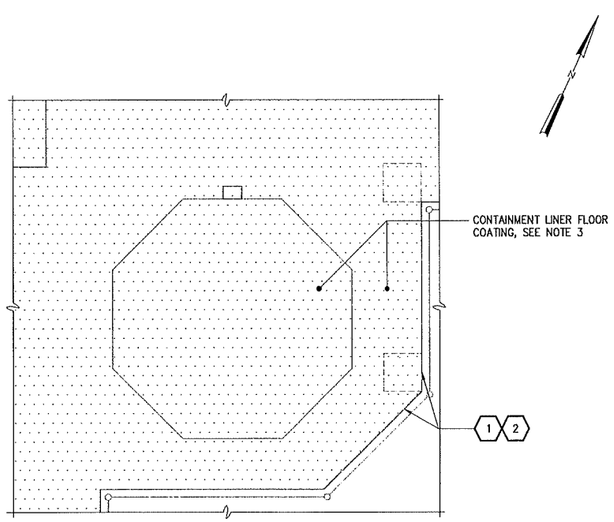
DETAIL 3 / 1" = 1'-0" / S242

NOTES:

1. SEE DRAWING S1 FOR STRUCTURAL AND DEMOLITION NOTES.
2. OVERALL SIZE OF TANK PAD SHALL BE AS REQUIRED FOR SECURING NEW TANK TO NEW TANK PAD. CONTRACTOR SHALL COORDINATE REQUIRED PAD SIZE WITH FERRIC DAY TANK MANUFACTURER.
3. CONCRETE TANK PADS AND FLOOR AREAS INDICATED SHALL BE COATED WITH A CONTAINMENT LINER FLOOR COATING PER SPECIFICATION 09900-PAINTING. ALL FLOOR AND TANK PAD OBSTRUCTIONS SHALL BE REMOVED AND REINSTALLED IN ORIGINAL LOCATIONS AS NECESSARY TO COAT INDICATED AREAS. SURFACE PREPARATION SHALL BE AS REQUIRED PER SPECIFICATION 09900 AND COATING MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY SERVICE AS REQUIRED TO MAINTAIN THE CHEMICAL SYSTEM IN OPERATION AT ALL TIMES DURING COATING WORK.
4. DAMAGED CONCRETE SHOWN IN FIGURES 1 AND 2 SHALL BE REPAIRED USING SPALL REPAIR REQUIRING FORMWORK. REPAIR SHALL BE AS DESCRIBED IN REPAIR NOTES ON DRAWING S1 AND IN ACCORDANCE WITH SPECIFICATION 03732 - CONCRETE REPAIR. FOR BID PURPOSES, CONTRACTOR SHALL BASE BID FOR SURFACE SPALL REPAIR REQUIRING FORMWORK ON ESTIMATED QUANTITY INCLUDED IN TABLE ON THIS DRAWING.
5. CONTRACTOR SHALL CONFIRM STEEL LINTEL AND FASCIA ANGLE SUPPORT PRIOR TO PROCEEDING WITH DEMOLITION.

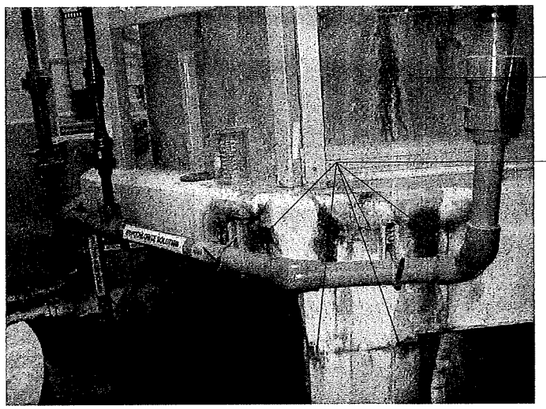
GLENVILLE WTF REPAIR QUANTITIES	
TYPE OF REPAIR	ESTIMATED QUANTITY
SPALL REPAIR REQUIRING FORMWORK	20 CUBIC FEET

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HYPOCHLORIDE DAY TANK PAD

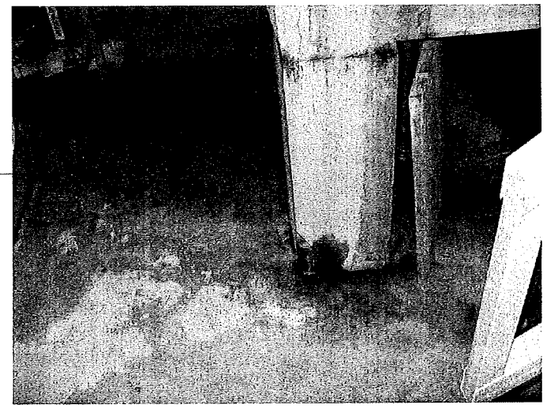
DETAIL 2 / 1/2" = 1'-0" / S241



1

CONCRETE TANK PAD AND REPAIRED AREA SHALL BE COATED WITH A CONTAINMENT LINER FLOOR COATING PER DETAIL 2/S243

DAMAGED CONCRETE TO BE REPAIRED, SEE NOTE 4



2

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CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
STRUCTURAL
DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
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DRAWING NUMBER
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RECORD DRAWINGS

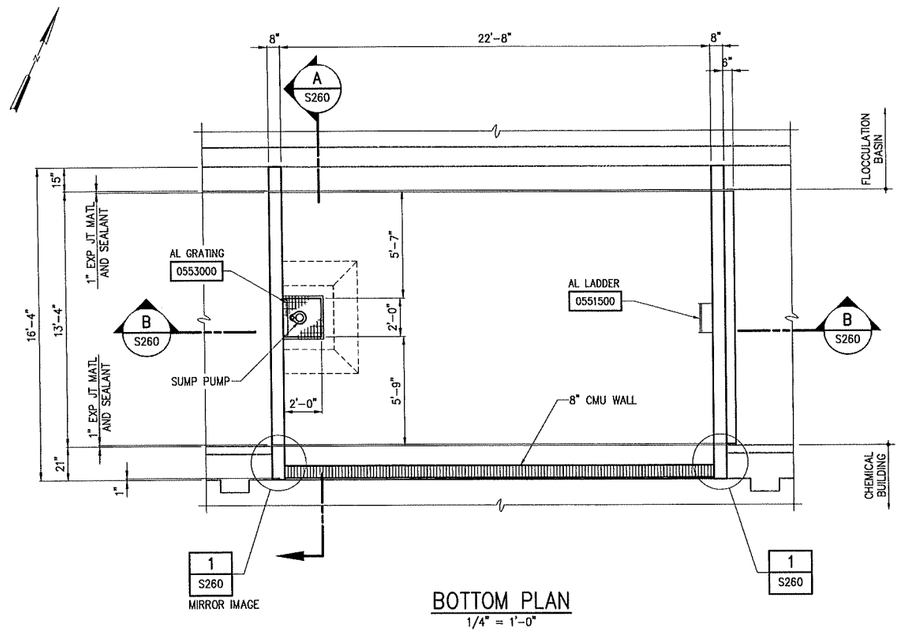
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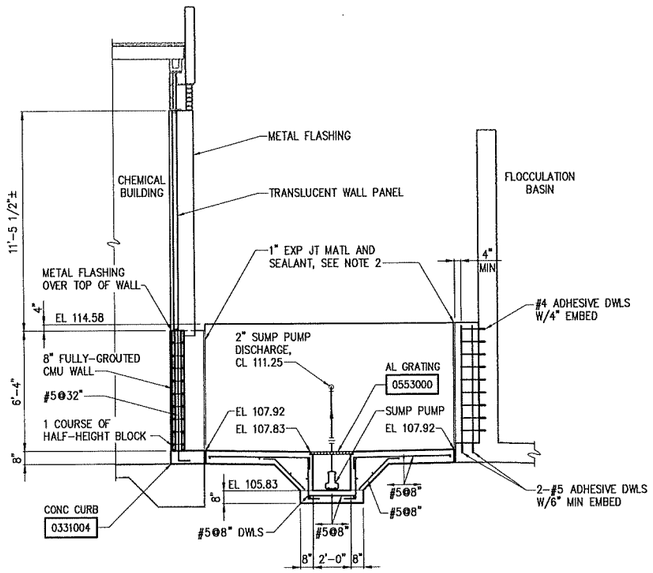
BW-15496

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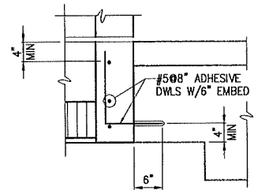
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS OF EXISTING STRUCTURES.
2. EXPANSION JOINT SEALANT SHALL BE SOMNEBORN NP2 OR APPROVED EQUAL.



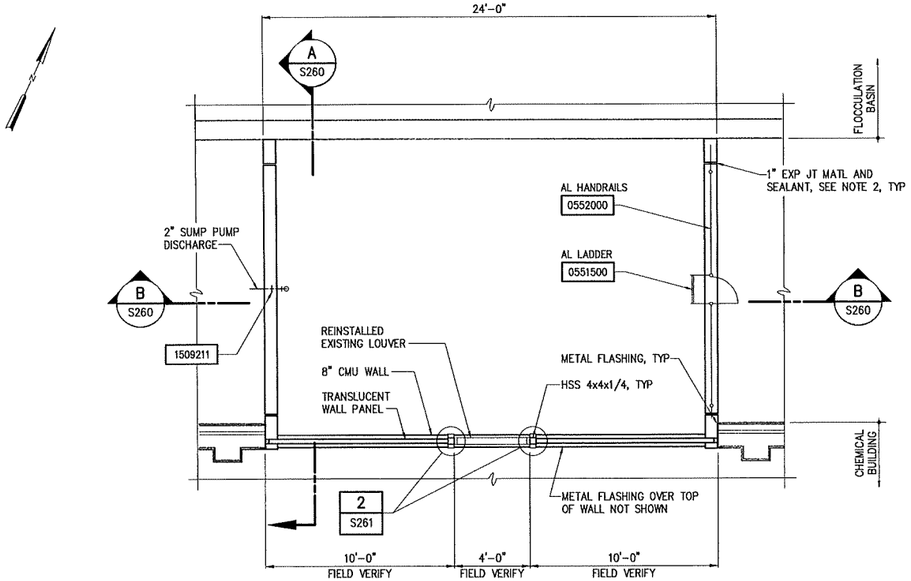
BOTTOM PLAN
1/4" = 1'-0"



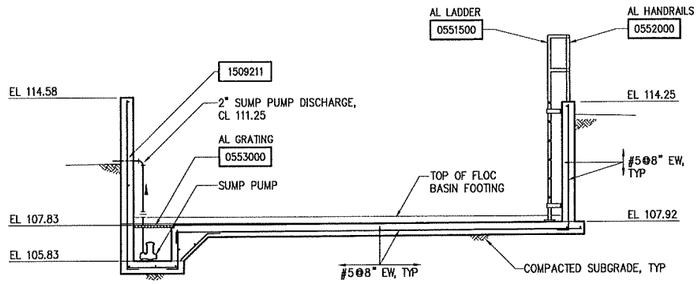
SECTION A
1/4" = 1'-0"
S260



DETAIL 1
3/4" = 1'-0"
S260



TOP PLAN
1/4" = 1'-0"



SECTION B
1/4" = 1'-0"
S260

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

TANK MAINTENANCE AREA
STRUCTURAL
PLANS, SECTIONS AND DETAIL

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DATE APRIL 2012
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DRAWING NUMBER
S260

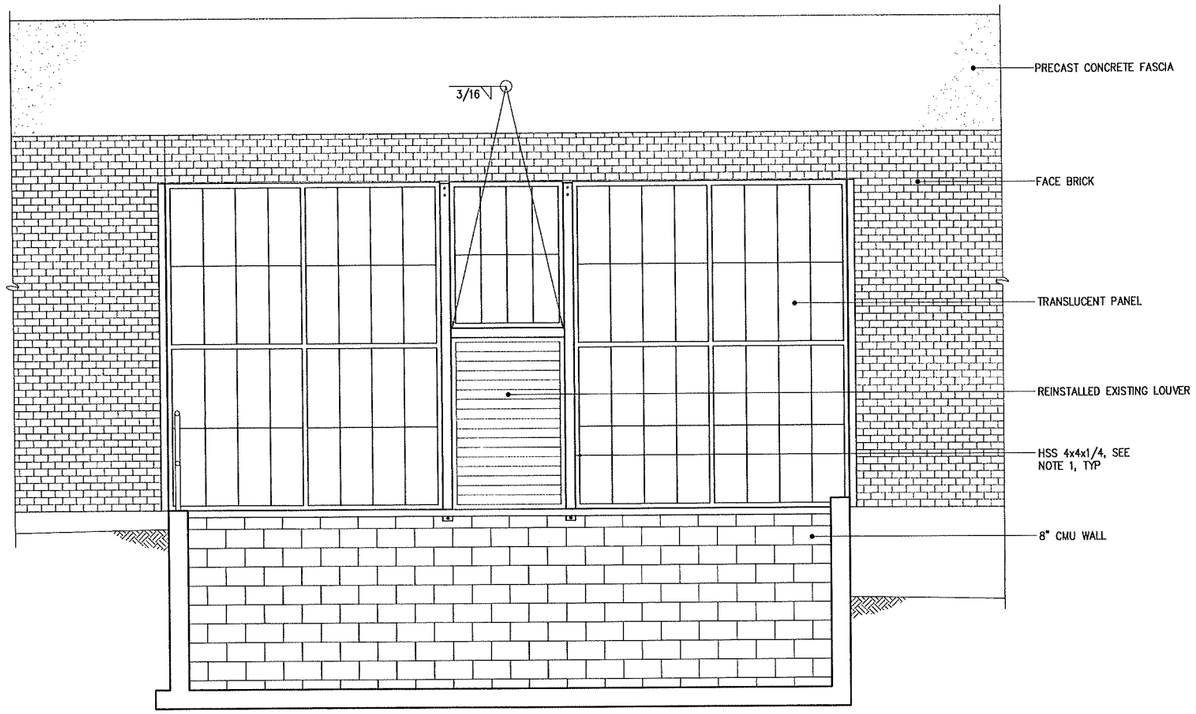
BW-1546

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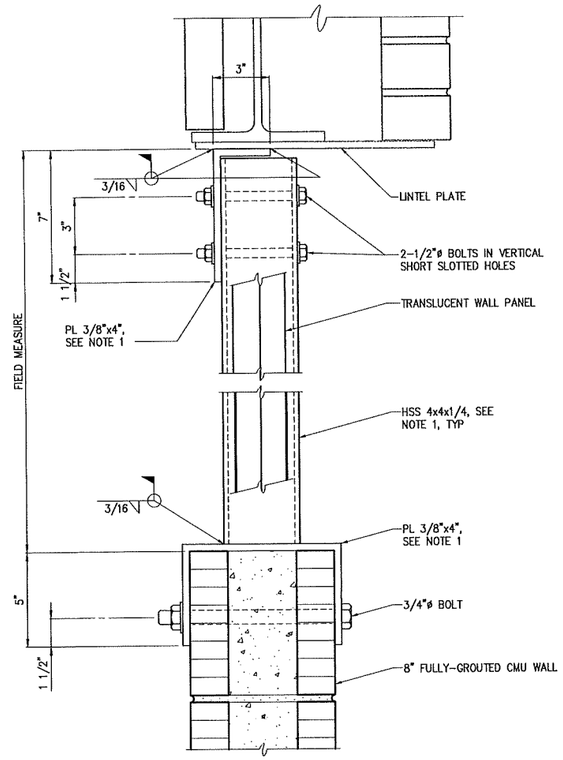
20140228 5:18P O:\30402\30402-010\drawings\STRU\S260.dwg By: TMUNIZ

NOTES:

1. ALL NEW STEEL, BOLTS AND FLASHING SHALL BE PAINTED TO MATCH THE EXISTING LOUVER.



NORTH ELEVATION
3/8" = 1'-0"



DETAIL 2 / 3" = 1'-0" / S260

RECEIVED
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WATER RESOURCES ENGINEERING DIVISION
PUBLIC WORKS COMMISSION

NO	ISSUED FOR	DATE	BY
3	RECORD DRAWINGS	FEB 2014	ZMW
2	BIDDING	APR 2012	ZMW
1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED RDP
DRAWN WDR
CHECKED ZMW
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z.M. MICHAEL WANG SEAL NUMBER 16425

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY D. CORY HOPKINS SEAL NUMBER 31433

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

RECORD DRAWING
THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

TANK MAINTENANCE AREA
STRUCTURAL
ELEVATION AND DETAIL

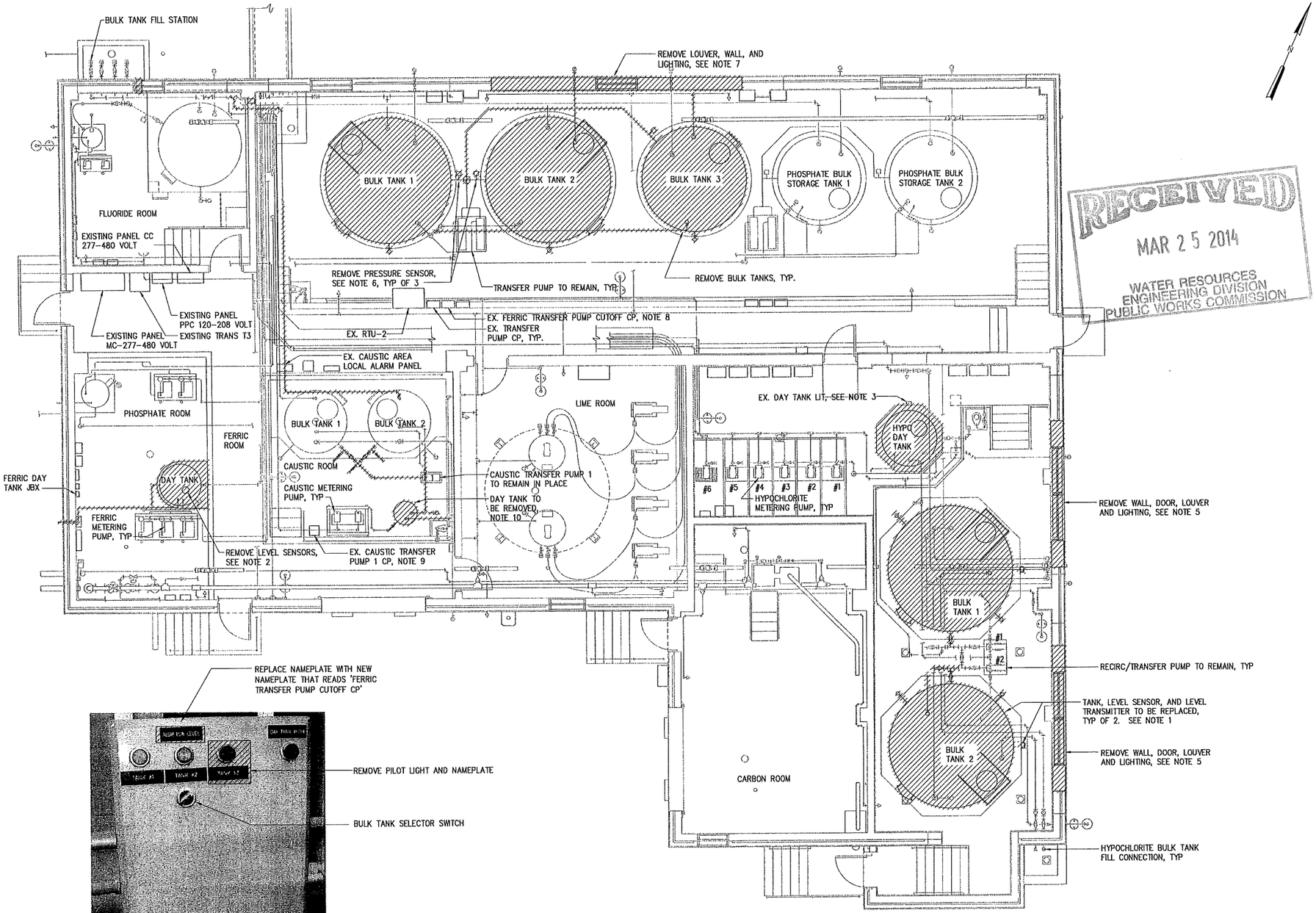
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
S261

BW-15496

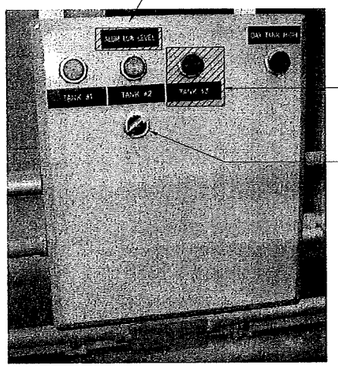
CONFIDENTIAL AND PROPRIETARY
RECORD DRAWINGS

XREFS= 30402-TBLK, 30402-SEALPROJECTNAN, 30402-SEALMECH, GL-TMA-EL-NORTH, GL-TMA-DA, NC-BGS
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PLAN – DEMOLITION
3/16" = 1'-0"

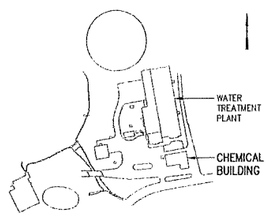
REPLACE NAMEPLATE WITH NEW NAMEPLATE THAT READS 'FERRIC TRANSFER PUMP CUTOFF CP'



FERRIC TRANSFER PUMP CUTOFF CP

NOTES:

1. REMOVE ULTRASONIC SENSORS (NOT SHOWN) FROM TOP OF BULK TANKS AND ASSOCIATED LEVEL TRANSMITTERS AND RETURN TO OWNER. CABLES CONNECTED BETWEEN THE SENSORS AND TRANSMITTERS SHALL BE CAREFULLY REMOVED FROM THEIR CONDUITS DURING THIS PROCESS. THE CONDUIT BETWEEN THE LEVEL TRANSMITTER AND THE SENSOR SHALL BE REMOVED AS WELL. ALL OTHER WIRING ASSOCIATED WITH THE TRANSMITTERS SHALL REMAIN IN PLACE. THE CONTRACTOR MAY REMOVE THE EXISTING TRANSMITTER MOUNTING SUPPORTS TO FACILITATE THE REPLACEMENT OF THE BULK TANKS. HOWEVER, EXISTING CONDUITS AND CONDUCTORS TO REMAIN MUST BE PROTECTED FROM DAMAGE. ANY DAMAGE INCURRED DURING THE EXECUTION OF THIS WORK SHALL BE REPAIRED AT NOT ADDITIONAL COST TO THE OWNER.
2. REMOVE RF TYPE LEVEL SWITCHES FROM TOP OF DAY TANK. CONDUIT BETWEEN THE LEVEL SWITCHES AND THE FERRIC DAY TANK JBX SHALL BE REMOVED. THE WIRE FROM THIS CONDUIT SHALL BE COILED UP AT THE JBX FOR USE WITH THE NEW DAY TANK LEVEL TRANSMITTER.
3. THE HYPO DAY TANK SHALL BE TEMPORARILY REMOVED TO REPAIR THE EQUIPMENT PAD BELOW. THE LEVEL TRANSMITTER AND MOUNTING SUPPORTS ASSOCIATED WITH IT SHALL BE TEMPORARILY REMOVED TO FACILITATE REPAIR OF THE EQUIPMENT PAD. THE CONTRACTOR SHALL PROTECT THE EXISTING CONDUIT AND WIRE STUBBING UP FROM THE FLOOR BELOW THE TRANSMITTER AS THIS CONDUIT AND WIRE WILL BE RE-USED.
4. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.
5. THE CONTRACTOR SHALL TEMPORARILY DISCONNECT THE MOTOR OPERATOR ON EACH LOUVER TO FACILITATE THE REMOVAL OF THE LOUVER. A PENDANT MOUNTED FLUORESCENT LIGHT EXISTS IN FRONT OF EACH ROLL UP DOOR. THE LIGHTS SHALL BE TEMPORARILY REMOVED TO FACILITATE THE REMOVAL OF THE BULK TANKS. THE FIXTURES SHALL BE RE-INSTALLED IN THEIR ORIGINAL LOCATIONS AFTER THE NEW BULK TANKS ARE IN PLACE. ANY FIXTURES DAMAGED DURING THE EXECUTION OF THIS WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
6. REMOVE THREE (3) PRESSURE-TYPE LEVEL SENSORS/TRANSMITTERS FROM TANK PIPING AND RETURN TO OWNER. CONDUIT AND WIRE BETWEEN EACH TRANSMITTER AND EX. FERRIC TRANSFER PUMP CUTOFF CP SHALL BE REMOVED.
7. THE CONTRACTOR SHALL TEMPORARILY DISCONNECT THE MOTOR OPERATOR ON THIS LOUVER TO FACILITATE REMOVAL OF THE LOUVER. THE PORTION OF THE CONDUIT SERVING THE LOUVER BETWEEN THE CEILING AND THE MOTOR OPERATOR SHALL BE TEMPORARILY REMOVED. THE WIRE FROM INSIDE THE CONDUIT SHALL BE CAREFULLY COILED UP AND MOVED OUT OF THE WAY OF THE WALL DEMOLITION. CONDUIT AND WIRE TO LOUVER SHALL BE REPLACED AFTER WALL IS RESTORED. TWO (2) PENDANT MOUNTED FLUORESCENT LIGHT FIXTURES MAY BE TEMPORARILY REMOVED AS NECESSARY TO FACILITATE THE REMOVAL OF THE BULK TANKS. THE FIXTURES SHALL BE RE-INSTALLED IN THEIR ORIGINAL LOCATIONS AFTER THE NEW BULK TANKS ARE IN PLACE. ANY FIXTURES DAMAGED DURING THE EXECUTION OF THIS WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
8. AFTER THE CONDUIT AND WIRE FROM THE BULK TANK 3 LEVEL TRANSMITTER IS REMOVED, THE CONTRACTOR SHALL MODIFY THE FERRIC TRANSFER PUMP CUTOFF CP. THE EXISTING AGM MODULE INSIDE THE CP THAT IS ASSOCIATED WITH BULK TANK 3 SHALL BE REMOVED AND RETURNED TO THE OWNER. THE BULK TANK SELECTOR SWITCH WIRING SHALL BE MODIFIED SUCH THAT IN THE TANK 3 POSITION, NOTHING HAPPENS. SEE MODIFICATIONS TO EXISTING CUTOFF CP SHOWN ON SHEET E243. REMOVE TANK 3 PILOT LIGHT AND ASSOCIATED NAMEPLATE AS SHOWN IN PHOTO.
9. THE ENTIRE WIRE RUN AND THE EXPOSED PORTION OF THE CONDUIT BETWEEN EX. CAUSTIC TRANSFER PUMP 1 CP AND EX. PANEL CC SHALL BE REMOVED.
10. CONDUIT AND WIRE BETWEEN THIS DAY TANK LEVEL SWITCH AND THE CAUSTIC AREA LOCAL ALARM PANEL SHALL BE REMOVED.



KEY PLAN
NTS

RECEIVED
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WATER RESOURCES ENGINEERING DIVISION
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NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
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DESIGNED CJG
DRAWN CJG
CHECKED GJR
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY DAVID A. ATKINSON, JR SEAL NUMBER 33831

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3/24/14

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License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
ELECTRICAL
POWER PLAN - DEMOLITION

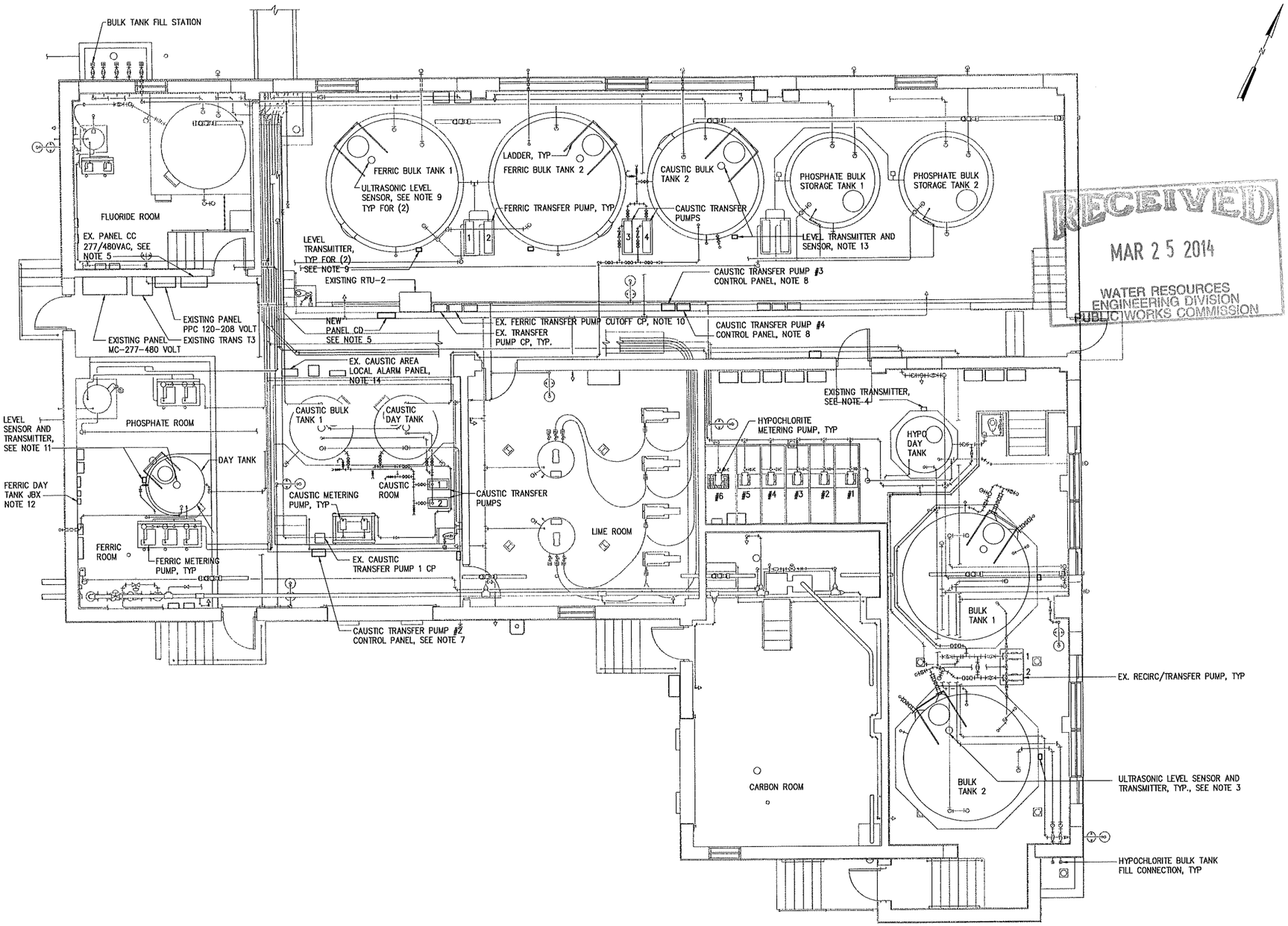
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
E240

BW-15496

CONFIDENTIAL AND PROPRIETARY
RECORD DRAWINGS

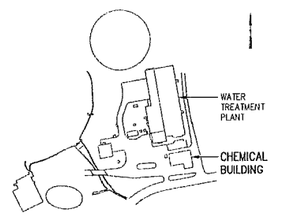
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IMAGES= DSC06379,
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PLAN
3/16" = 1'-0"

NOTES:

1. THE CHEMICAL FEED SYSTEMS IN THIS BUILDING MUST REMAIN IN OPERATION AT ALL TIMES. SEE SPECIFICATION SECTION 01520 FOR SPECIFIC OPERATIONAL CONSTRAINTS.
2. ALL CONDUIT IN THIS BUILDING SHALL BE PVC SCHEDULE 80. THIS BUILDING IS CONSIDERED A CHEMICAL AREA AND MATERIALS OF CONSTRUCTION USED SHALL BE IN ACCORDANCE WITH ALL DIVISION 16 REQUIREMENTS FOR CHEMICAL AREAS.
3. INSTALL NEW LEVEL TRANSMITTERS IN PLACE OF REMOVED TRANSMITTERS, AND INSTALL LEVEL SENSORS ON TOP OF TANK. TRANSMITTERS SHALL BE CONNECTED TO EXISTING POWER, CONTROL AND SIGNAL CONDUIT AND WIRE. A NEW 1" CONDUIT SHALL BE INSTALLED BETWEEN EACH TRANSMITTER AND THE LEVEL SENSOR AT THE TOP OF THE TANK. THE CONDUIT FOR BULK TANK 1 SHALL BE ROUTED UP BESIDE THE TANK LADDER AND BE FASTENED TO THE TANK LADDER MOUNTING BRACKETS AND NOT THE TANK ITSELF. THE CONDUIT FOR BULK TANK 2 SHALL BE ROUTED FIRST ALONG THE TANK PAD AROUND THE TANK, THEN UP THE LADDER SUPPORTS SIMILAR TO BULK TANK 1. CABLE FROM NEW LEVEL SENSOR SHALL BE INSTALLED IN THESE CONDUITS. CABLE SHALL BE FURNISHED AS INTEGRAL PART OF LEVEL SENSOR, PROVIDED BY INSTRUMENT MANUFACTURER.
4. AFTER THE HYPO DAY TANK EQUIPMENT PAD REPAIR WORK IS COMPLETE, THE LEVEL TRANSMITTER SHALL BE RE-INSTALLED IN THE SAME LOCATION. TRANSMITTER SHALL BE RE-CONNECTED TO EXISTING POWER, CONTROL, AND SIGNAL CABLES.
5. SEE DRAWING E242 FOR PANEL MODIFICATIONS AND PANEL SCHEDULES.
6. CONDUIT HOMERUNS FOR NEW CONDUITS ARE NOT SHOWN ON THIS PLAN DUE TO THE SMALL SCALE. SEE DRAWING E242 FOR CONDUIT AND WIRE REQUIREMENTS.
7. CONTROL PANEL SHALL BE MOUNTED SIMILAR TO CAUSTIC TRANSFER PUMP 1 CP.
8. CONTROL PANEL SHALL BE MOUNTED SIMILAR TO THE OTHER CHEMICAL TRANSFER PUMP CP'S.
9. INSTALL NEW LEVEL TRANSMITTERS IN THE LOCATION SHOWN, AND INSTALL LEVEL SENSORS ON TOP OF TANK. TRANSMITTER SHALL BE MOUNTED TO NON-METALLIC SUPPORTS SIMILAR TO THE HYPO BULK STORAGE TANKS. TRANSMITTERS SHALL BE CONNECTED TO EX. PANEL PPC AND EX. FERRIC TRANSFER PUMP CUTOFF CP AS SHOWN ON DRAWING E242. A NEW 1" CONDUIT SHALL BE INSTALLED BETWEEN EACH TRANSMITTER AND THE LEVEL SENSOR AT THE TOP OF THE TANK. THE CONDUITS SHALL BE ROUTED FIRST ALONG THE TANK PAD AROUND THE TANK, THEN UP THE LADDER SUPPORTS. THE CONDUIT SHALL BE ROUTED UP BESIDE THE TANK LADDER AND BE FASTENED TO THE TANK LADDER MOUNTING BRACKETS AND NOT THE TANK ITSELF.
10. ANALOG LEVEL SIGNALS FROM THE BULK FERRIC TANKS SHALL BE LANDED ON THE EXISTING AGM UNITS IN THE FERRIC TRANSFER PUMP CUTOFF CP. LEVEL SIGNAL WILL THEN BE CONTINUED TO RTU VIA EXISTING WIRING.
11. INSTALL NEW LEVEL TRANSMITTER IN THE LOCATION SHOWN, AND INSTALL LEVEL SENSOR ON TOP OF TANK. TRANSMITTER SHALL BE MOUNTED TO NON-METALLIC SUPPORTS SIMILAR TO THE HYPO BULK STORAGE TANKS. TRANSMITTER SHALL BE CONNECTED TO EX. PANEL PPC, EX RTU-2, AND FERRIC DAY TANK JBX AS SHOWN ON DRAWING E242. A NEW 1" CONDUIT SHALL BE INSTALLED BETWEEN THE TRANSMITTER AND LEVEL SENSOR.
12. EXISTING HIGH HIGH LEVEL WIRING (REMOVED FROM PREVIOUS DAY TANK LEVEL SWITCH) BETWEEN THIS JUNCTION BOX AND RTU-2 SHALL BE COILED UP AND PLACED INTO THE BOX FOR FUTURE USE. EXISTING HIGH LEVEL WIRING BETWEEN THIS JUNCTION BOX AND FERRIC TRANSFER PUMP CUTOFF CP SHALL BE CUT TO AN APPROPRIATE LENGTH AND BUTT SPLICED TO #14 WIRE FROM NEW LEVEL TRANSMITTER. THIS WIRING WILL BE INTERLOCK BETWEEN DAY TANK HIGH LEVEL AND THE TRANSFER PUMPS.
13. INSTALL NEW LEVEL TRANSMITTER IN THE LOCATION SHOWN, AND INSTALL LEVEL SENSOR ON TOP OF TANK. TRANSMITTER SHALL BE MOUNTED TO NON-METALLIC SUPPORTS SIMILAR TO THE HYPO BULK STORAGE TANKS. TRANSMITTER SHALL BE CONNECTED TO EX. PANEL PPC AND EX. CAUSTIC AREA LOCAL ALARM PANEL AS SHOWN ON DRAWING E242. A NEW 1" CONDUIT SHALL BE INSTALLED BETWEEN THE TRANSMITTER AND THE LEVEL SENSOR AT THE TOP OF THE TANK. THE CONDUIT SHALL BE ROUTED FIRST ALONG THE TANK PAD AROUND THE TANK, THEN UP THE LADDER SUPPORTS. THE CONDUIT SHALL BE ROUTED UP BESIDE THE TANK LADDER AND BE FASTENED TO THE TANK LADDER MOUNTING BRACKETS AND NOT THE TANK ITSELF.
14. THIS PANEL SHALL BE MODIFIED AS SHOWN ON DRAWING E243.



KEY PLAN
NTS

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WATER RESOURCES ENGINEERING DIVISION
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NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
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DESIGNED CJG
DRAWN CJG
CHECKED GJR
PROJ.ENGR.
APPROVED

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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 3-6-14

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HAZEN AND SAWYER
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4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
ELECTRICAL
POWER PLAN - MODIFIED

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
E241

CONFIDENTIAL AND PROPRIETARY

RECORD DRAWINGS

BW-15496

XREFS= 30402-TBLK, 30402-SEALPROJECTMAN, 30402-SEALELEC, GL-CB-PB, GL-SP-ST-KEYPLAN, NC-BCS
IMAGES=
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208/120 VOLTS
3 PHASE, 4 WIRE

EXISTING PANEL PPD
MAIN BREAKER
60A 3P

TYPE: NEMA 4X
MOUNT: SURFACE

DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	No.	POLE	TRIP	WIRE	DESCRIPTION
SPARE		20	1	1	–			–			2	1	20		NaOCl MPCP #3
NaOCl MPCP #1		20	1	3		–			–		4	1	20		NaOCl MPCP #4
NaOCl MPCP #2		20	1	5			–			–	6	1	20		NaOCl MPCP #5
CAUSTIC ALARM PANEL		20	1	7	–			–			8	1	20		CAUSTIC SUMP RECPT
LT-1, LT-2, LT-3		20	1	9		–			–		10	1	20		NaOCl ALARM PANEL
CAUSTIC METERING PUMP #1		20	1	11			–			–	12	1	20		LT-4, LT-5, LT-6
CAUSTIC METERING PUMP #2		20	1	13	–			–			14	1	20		NaOCl SUMP RECPT
HOT BOX HEATER		20	1	15		–			–		16	1	20		HP-MP6
FERRIC TANK 1 LEVEL	SEE RISER	20	1	17			100			100	18	1	20	SEE RISER	FERRIC TANK 2 LEVEL
CAUSTIC TANK 2 LEVEL	SEE RISER	20	1	19	100			100			20	1	20	SEE RISER	FERRID DAY TANK LEVEL
SPACE			1	21		–			–		22	1			SPACE
SPACE			1	23			–			–	24	1			SPACE

TOTAL	100	0	100
PHASE TOTAL	200	0	200

100	0	100	TOTAL
TOTAL NEW LOAD	400		

NOTES:
22K AIC

TOTAL NEW LOAD (AMPS)
1.1
1.9%

480/277 VOLTS
3 PHASE, 4 WIRE

NEW PANEL CD
MAIN BREAKER
100A 3P

TYPE: NEMA 4X
MOUNT: SURFACE

DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	No.	POLE	TRIP	WIRE	DESCRIPTION
EXISTING CAUSTIC TRANSFER PUMP #1 CP	SEE RISER	20	3	1	667			1,667			2				
				3		667			1,667		4	3	20	SEE RISER	CAUSTIC TRANSFER PUMP #3 CP
				5			667			1,667	6				
CAUSTIC TRANSFER PUMP #2 CP	SEE RISER	20	3	7	667			1,667			8				
				9		667			1,667		10	3	20	SEE RISER	CAUSTIC TRANSFER PUMP #4 CP
				11			667			1,667	12				
SPARE		20	3	13	–			–			14				
				15		–			–		16	3	20		SPARE
				17			–			–	18				
SPARE		20	3	19	–			–			20				
				21		–			–		22	3	20		SPARE
				23			–			–	24				
SPARE		20	3	25	–			–			26				
				27		–			–		28	3	20		SPARE
				29			–			–	30				
SPARE		20	3	31	–			–			32				
				33		–			–		34	3	20		SPARE
				35			–			–	36				
SPARE		20	3	37	–			–			38				
				39		–			–		40	3	20		SPARE
				41			–			–	42				

NOTES:
SPD-100K
65KAIC

TOTAL	1,333	1,333	1,333
PHASE TOTAL	4,667	4,667	4,667

3,333	3,333	3,333	TOTAL
TOTAL LOAD	14,000		

TOTAL LOAD (AMPS)
16.8
16.8%

480/277 VOLTS
3 PHASE, 4 WIRE

MODIFIED PANEL CC
MAIN BREAKER
225A 3P

TYPE: NEMA 4X
MOUNT: SURFACE

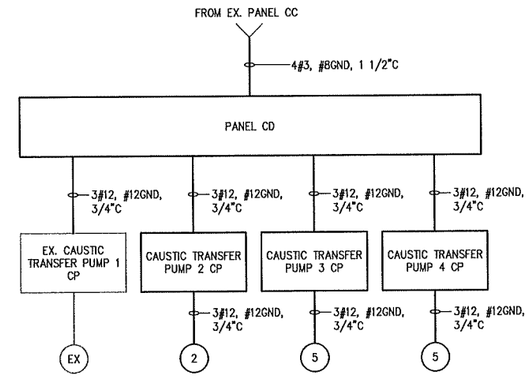
DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	No.	POLE	TRIP	WIRE	DESCRIPTION
MONORAIL		60	3	1	–			–			2				
				3		–			–		4	3	20		NaOCl TRANSFER PUMP #1
				5			–			–	6				
PANEL CD (SEE NOTE 1)		100	3	7	4,667			–			8				
				9		4,667			–		10	3	20		NaOCl TRANSFER PUMP #2
				11			4,667			–	12				
CARBON ROOM EXHAUST FAN		20	3	13	–			–			14				
				15		–			–		16	3	20		UH-1
				17			–			–	18				
UH-7 & UH-8		20	3	19	–			–			20				
				21		–			–		22	3	20		NaOCl ROOM EXHAUST FAN
				23			–			–	24				
OUTSIDE POLE LIGHTS		20	1	25	–			–			26	1			SPACE
LIGHTS		20	1	27		–			–		28	1	20		LIGHTS CARBON/NaOCl
LCP		20	1	29			–			–	30	1	20		LIGHTS ALUM ROOM

NOTES:
SIEMENS
CAT NO. S3E30ML125FBS

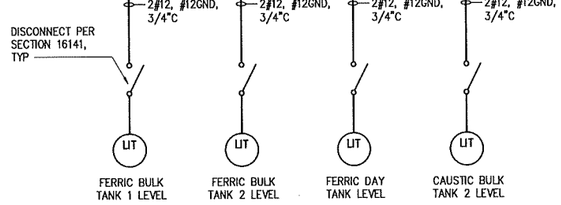
TOTAL	4,667	4,667	4,667
PHASE TOTAL	4,667	4,667	4,667

0	0	0	TOTAL
TOTAL NEW LOAD	14,000		

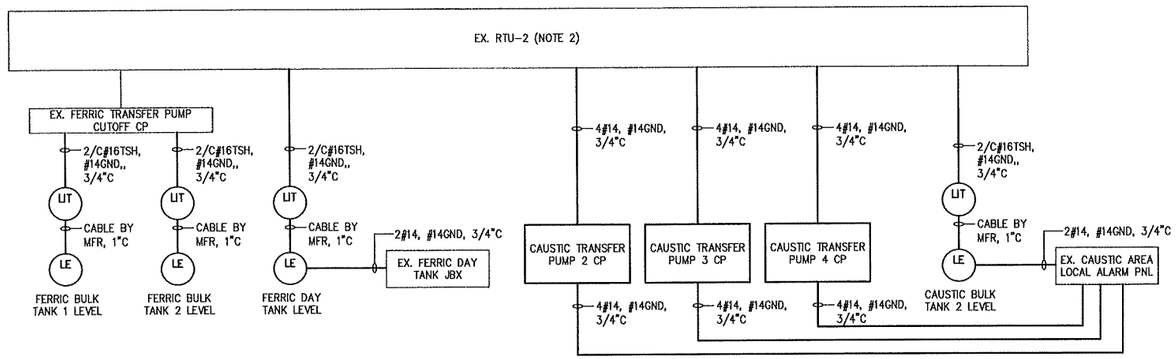
TOTAL NEW LOAD (AMPS)
16.8
7.5%



TRANSFER PUMP CONTROL PANELS
RISER DIAGRAM



EX. PANEL PPD
RISER DIAGRAM



EX. RTU-2
RISER DIAGRAM

NOTES:
1. REMOVE THE EXISTING 20A, 3P CIRCUIT BREAKER THAT IS SERVING EXISTING CAUSTIC TRANSFER PUMP NO.1 AND REPLACE IT WITH A 100A, 3P CIRCUIT BREAKER. EXISTING PANEL CC IS AN S3 SERIES PANEL AS MANUFACTURED BY SIEMENS. NEW CIRCUIT BREAKER SHALL BE RATED FOR 14KAIC AT 480VAC.
2. ONLY NEW CONNECTIONS TO THE RTU ARE SHOWN HERE. EXISTING CONNECTIONS NOT SHOWN.

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DRAWN CJG
CHECKED GJR
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH 4.6.14

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CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

GLENVILLE WTF CHEM TANKS REPLACEMENT
ELECTRICAL
PANEL SCHEDULES & RISER DIAGRAMS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER
E242

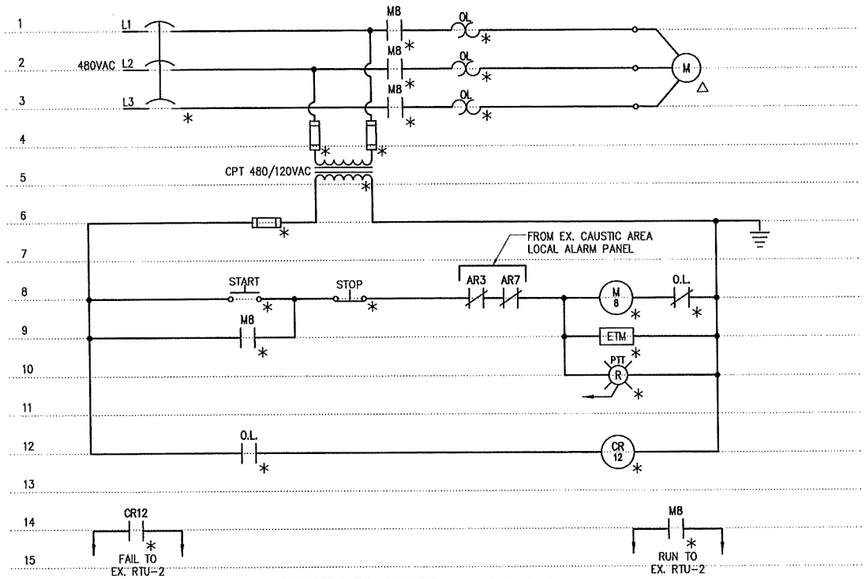
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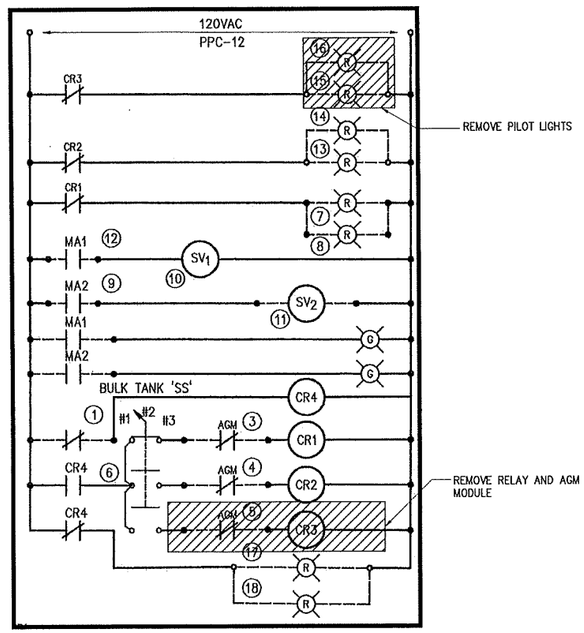
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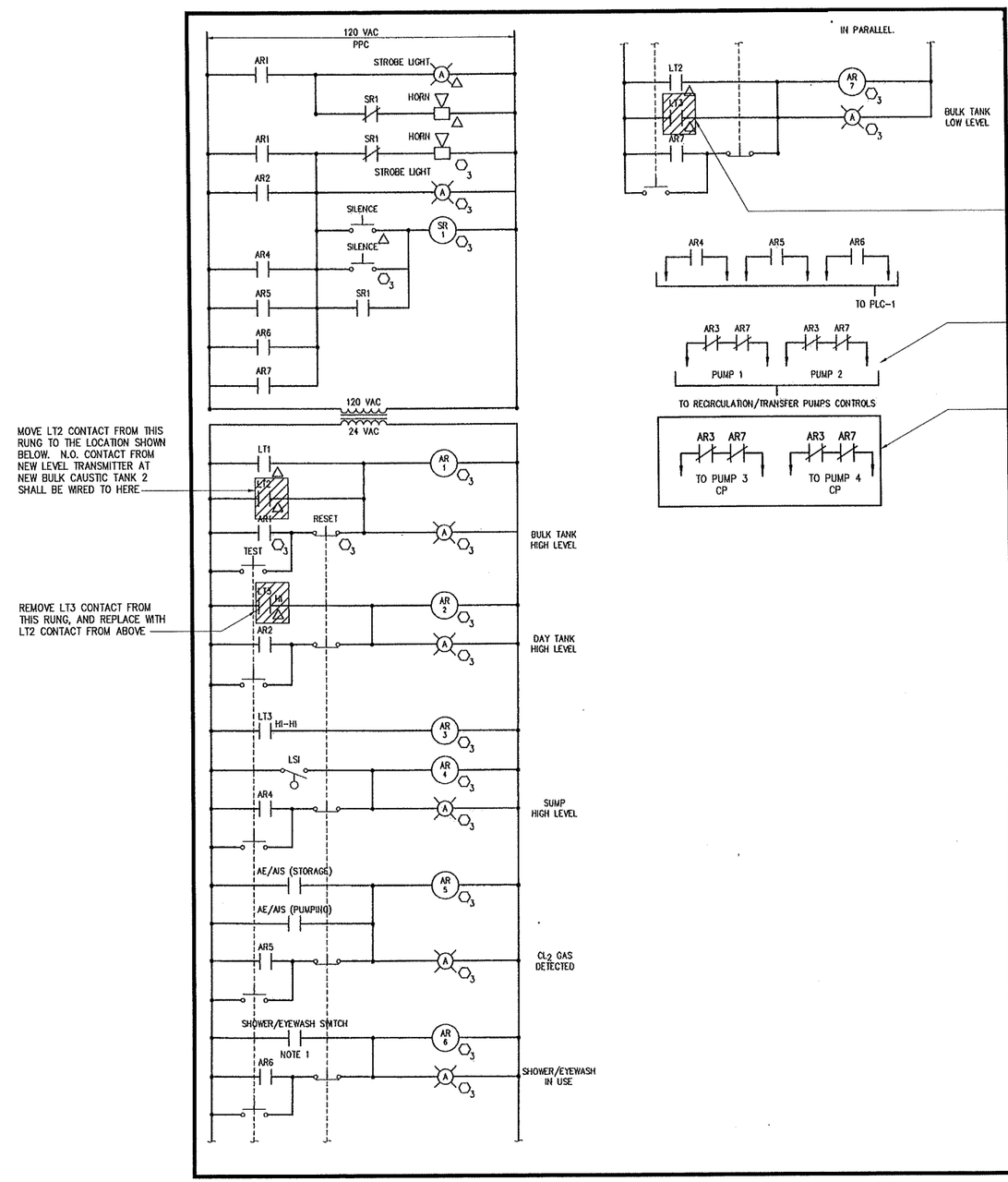
CAUSTIC TRANSFER PUMPS 2, 3 AND 4

ELEMENTARY CONTROL SCHEMATIC



EX. FERRIC TRANSFER PUMP CUTOFF CP

MODIFICATIONS



EX. CAUSTIC AREA LOCAL ALARM PANEL

MODIFICATIONS

NOTES:

1. EXISTING RELAYS AR3 AND AR7 SHALL BE REPLACED OR MODIFIED IF NECESSARY TO ACCOMMODATE THE NUMBER OF ADDITIONAL N.C. CONTACTS SHOWN.

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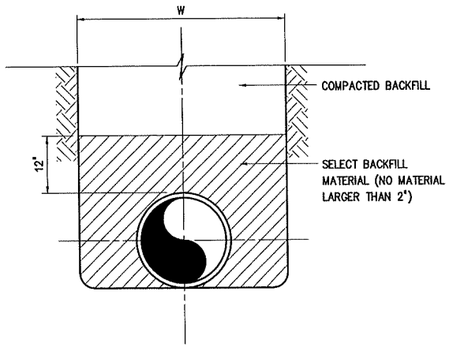
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H&S JOB NUMBER 30402-010
DRAWING NUMBER E243

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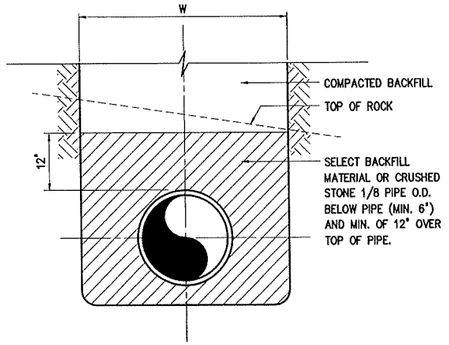
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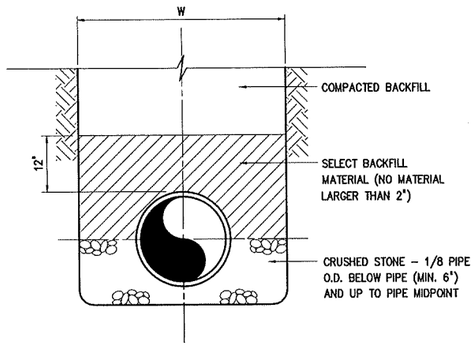
TYPE A
IN EARTH

0222100



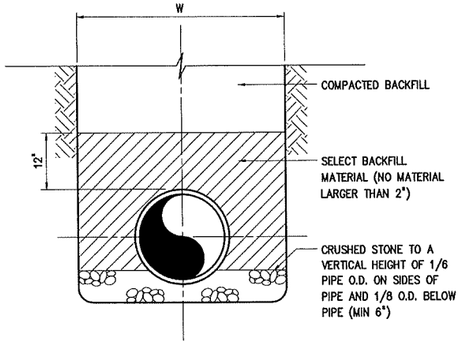
TYPE A
IN ROCK

0222101



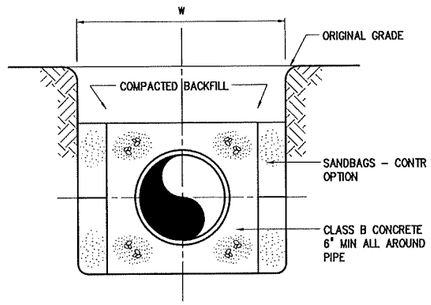
TYPE B

0222102



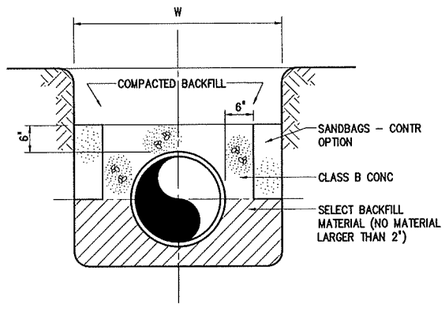
TYPE C

0222103



CONCRETE ENCASEMENT
(SEE NOTE 1)

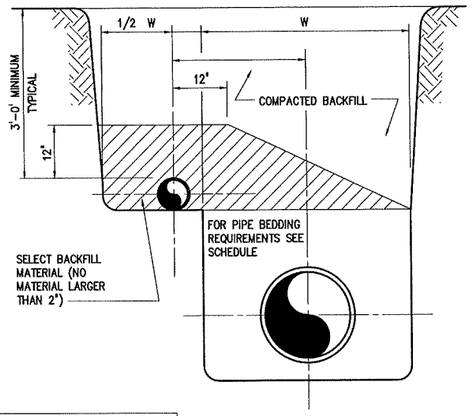
0222104



CONCRETE ARCH
(SEE NOTE 1)

0222105

PIPE BEDDING



PARALLEL PIPES IN TRENCH

0222106

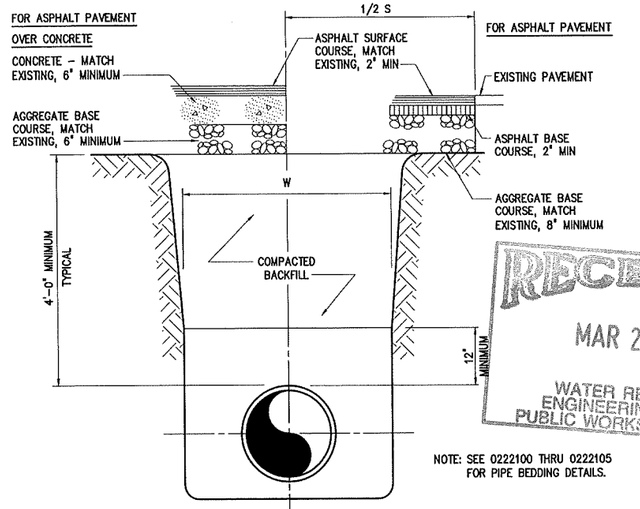
TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W WIDTH OF TRENCH	
	MAX	W=MIN
4"–6"	3'–9"	2'–0"
8"–10"	3'–9"	2'–2"
12"	3'–9"	O.D.+2'
14"–16"	4'–2"	O.D.+2'
18"	4'–4"	O.D.+2'
20",21"	4'–8"	O.D.+2'
24"	4'–11"	O.D.+2'
27"	5'–9"	O.D.+2'
30"	6'–7"	O.D.+2'
36"	7'–4"	O.D.+2'
42"	8'–2"	O.D.+2'
48"	8'–9"	O.D.+2'
54"	9'–4"	O.D.+2'
60"	9'–10"	O.D.+2'
72"	11'–0"	O.D.+2'
78"	11'–8"	O.D.+2'
84"	12'–0"	O.D.+2'
90"	12'–6"	O.D.+2'
96"	13'–0"	O.D.+2'
108"	14'–0"	O.D.+2'
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0–6'	S=W+4'	
>6–8'	S=W+8'	
>8–10'	S=W+12'	
>10–12'	S=W+16'	
>12–14'	S=W+20'	
>14–16'	S=W+24'	
>16–18'	S=W+28'	
>18'	S=W+32'	

W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

0222109

NOTES:

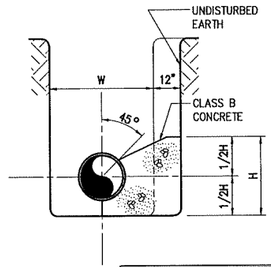
1 CONCRETE THRUST BLOCKS, ARCHES, ENCASEMENTS, FLOWABLE FILL, ETC. SHALL BE FORMED USING PLYWOOD OR SANDBAGS TO PROVIDE REQ'D SHAPE.



NOTE: SEE 0222100 THRU 0222105 FOR PIPE BEDDING DETAILS.

TYPICAL TRENCH

0222107



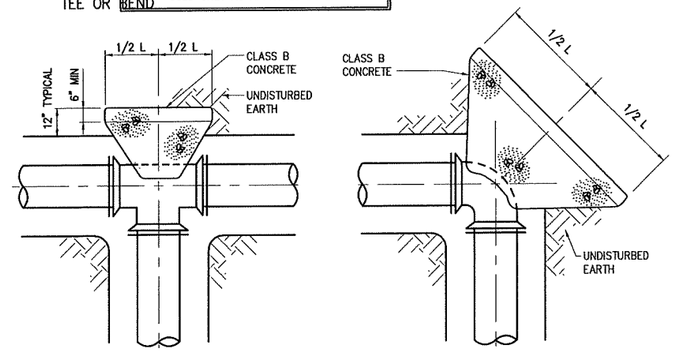
TYPICAL SECTION TEE OR BEND

CONCRETE THRUST BLOCKING SHALL BE USED ONLY AS APPROVED BY ENGINEER.

CONCRETE THRUST BLOCK SCHEDULE*											
PIPE SIZE (IN)	BEND										DESIGN PRESSURE (PSI)
	90°/TEE		45°		22 1/2°		11 1/4°		5 5/8°		
	H	L	H	L	H	L	H	L	H	L	
6	1.4	2.8	1.0	2.1	0.7	1.5	0.5	1.0	XXX	XXX	100
8	1.8	3.7	1.4	2.7	1.0	1.9	0.7	1.4	XXX	XXX	100
12	2.7	5.4	2.0	4.0	1.4	2.8	1.0	2.0	XXX	XXX	100
16	3.6	7.1	2.6	5.2	1.9	3.7	1.3	2.6	XXX	XXX	100
24	5.3	10.5	3.9	7.7	2.8	5.5	2.0	3.9	XXX	XXX	100
30	6.5	13.1	4.8	9.6	3.4	6.9	2.4	4.9	XXX	XXX	100
36	7.8	15.6	5.8	11.5	4.1	8.2	2.9	5.8	XXX	XXX	100
42	9.1	18.2	6.7	13.4	4.8	9.5	3.4	6.8	XXX	XXX	100
48	10.4	20.7	7.6	15.3	5.4	10.9	3.9	7.7	XXX	XXX	100
54	11.7	23.3	8.6	17.1	6.1	12.2	4.3	8.7	XXX	XXX	100

* BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5. DIMENSIONS FOR BLOCKS IN FEET

0222114



PLAN – TEE

PLAN – BEND

THRUST BLOCKS
(SEE NOTE 1)

0222108

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CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

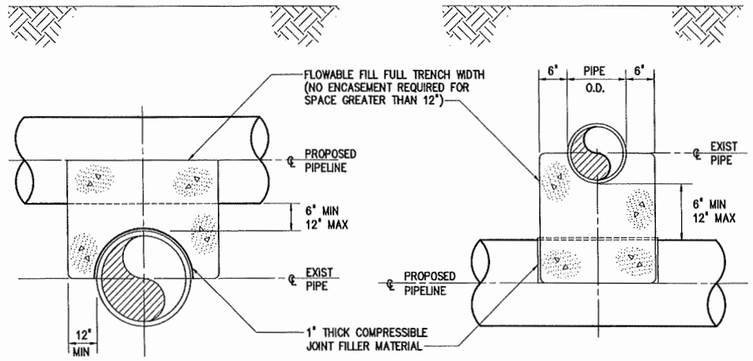
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

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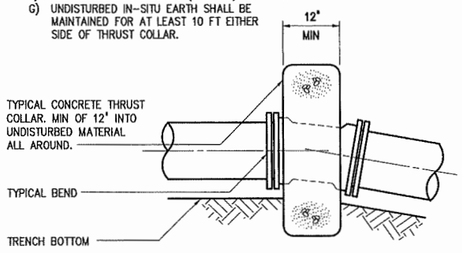


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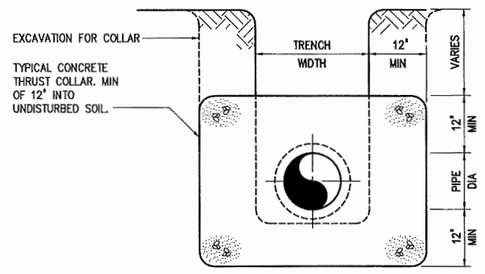
1. PROPOSED DESIGN RESTRICTIONS ARE LISTED BELOW. FOR SITUATIONS OUTSIDE THESE RESTRICTIONS ANCHORAGE SHALL BE AS RECOMMENDED BY THE ENGINEER.
   - A) NOMINAL SOIL COVER = 4FT ABOVE PIPE
   - B) SOIL PHI = 30°
   - C) SOIL UNIT WEIGHT = 120 PCF
   - D) PIPE DESIGN PRESSURE = 100 PSI
   - E) PIPE SIZE ≤ 12"ϕ
   - E) VERTICAL PIPE BENDS (DOWN) < 11.25° MAX
   - F) ALL VERTICAL PIPE BENDS (UPWARD) < 6° MAX
   - G) UNDISTURBED IN-SITU EARTH SHALL BE MAINTAINED FOR AT LEAST 10 FT EITHER SIDE OF THRUST COLLAR.

PROPOSED PIPELINE UNDER EXIST PIPE

0222118

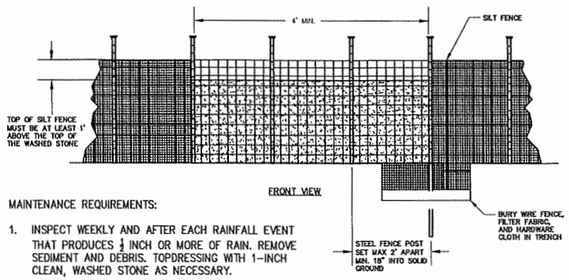


ELEVATION



THRUST COLLAR

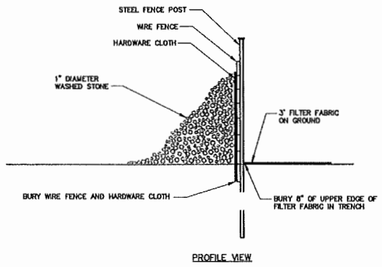
0222111



MAINTENANCE REQUIREMENTS:

1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES ½ INCH OR MORE OF RAIN. REMOVE SEDIMENT AND DEBRIS. TOPDRESSING WITH 1-INCH CLEAN, WASHED STONE AS NECESSARY.
2. REMOVE ACCUMULATED SEDIMENT. THE CONTRACTOR SHALL DISPOSE OF SEDIMENT OFF-SITE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.

(DETAIL ADOPTED FROM THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA – ENGINEERING DEPARTMENT).

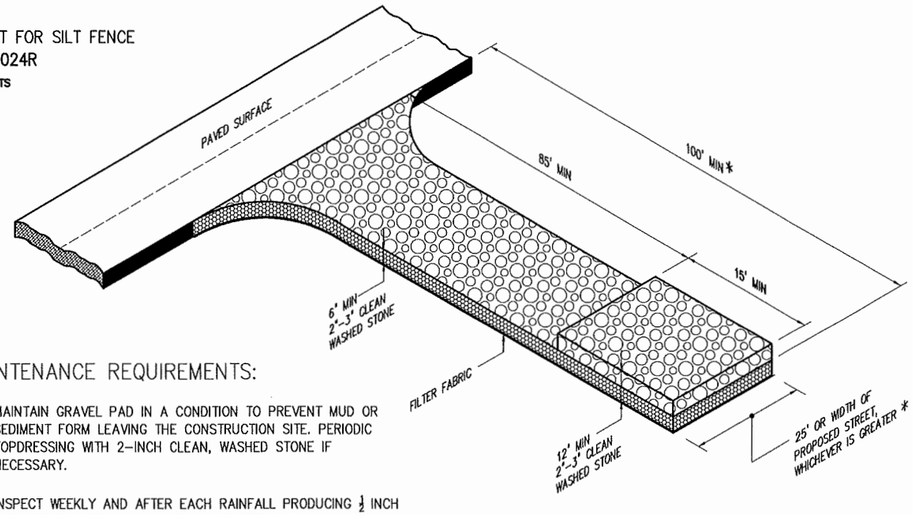


PROFILE VIEW

STABILIZED OUTLET FOR SILT FENCE

0227024R

NTS



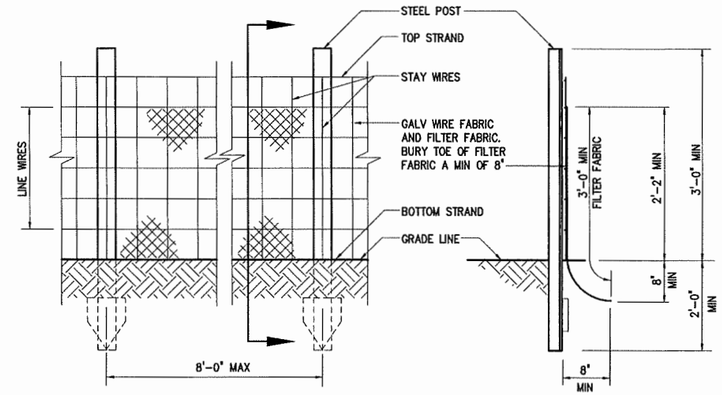
MAINTENANCE REQUIREMENTS:

1. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FORM LEAVING THE CONSTRUCTION SITE. PERIODIC TOPDRESSING WITH 2-INCH CLEAN, WASHED STONE IF NECESSARY.
2. INSPECT WEEKLY AND AFTER EACH RAINFALL PRODUCING ½ INCH OR MORE OF RAIN FOR ACCUMULATED SEDIMENT. REMOVE ANY ACCUMULATED SEDIMENT AS NECESSARY.
3. IMMEDIATELY REMOVE MATERIALS, SEDIMENT, AND/OR DEBRIS THAT HAS BEEN TRACKED ONTO ROADWAYS.

* OR AS SHOWN ON PLAN

TEMPORARY GRAVEL CONSTRUCTION
ENTRANCE / EXIT

0257701R



ELEVATION
SILT FENCE

SECTION
SILT FENCE

NOTES:

1. EXTRA STRENGTH FILTER FABRIC (AS APPROVED BY THE ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
2. FILTER FABRIC SHALL BE WIRED DIRECTLY TO THE POST.

MAINTENANCE REQUIREMENTS:

1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2 INCH OR MORE OF RAIN. REMOVE ANY ACCUMULATED SEDIMENT AND/OR WOODY DEBRIS.
2. FILTER FABRIC THAT HAS COLLAPSED, TORN, OR HAS IN ANY WAY HAS BECOME COMPRIMISED SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
3. REMOVE ANY SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND ALSO TO REDUCE PRESSURE ON THE FENCE. AVOID UNDERMINING THE FENCE DURING CLEANOUT.
4. REPLACE FILTER FABRIC THREE (3) MONTHS AFTER INITIAL INSTALLATION AND EVERY THREE (3) MONTHS THEREAFTER UNTIL CONSTRUCTION HAS COMPLETED AND CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.

SILT FENCE

0227000

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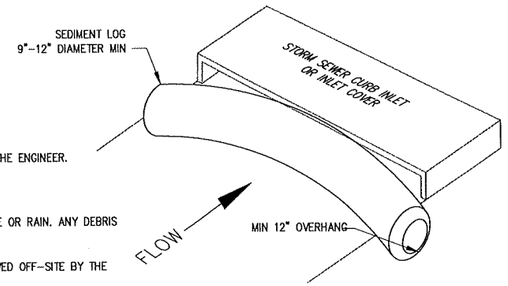
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Bw-15496

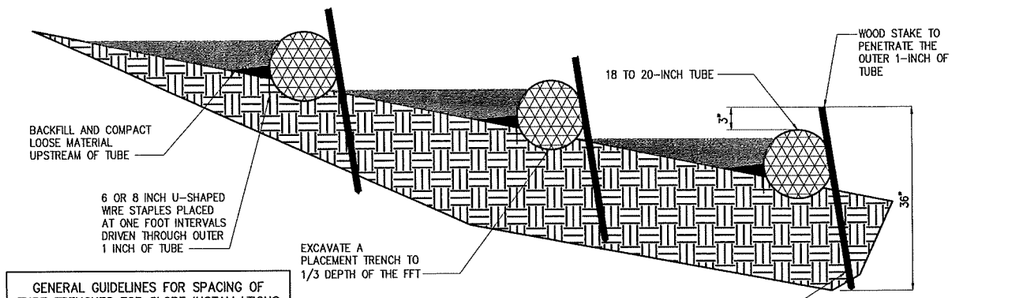
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NOTES:
1. SEDIMENT LOG SHALL CONSIST OF RECYCLED SYNTHETIC FIBERS.
2. SEDIMENT LOG SHALL EXTEND A MINIMUM OF 12" BEYOND INLET OPENING.
3. CURB INLET PROTECTION SHALL BE GUTTERBUDDY® BY ACF ENVIRONMENTAL, OR EQUAL, AS APPROVED BY THE ENGINEER.
4. REFER TO MANUFACTURER'S INSTRUCTIONS TO ENSURE PROPER INSTALLATION.

MAINTENANCE REQUIREMENTS:
1. INSPECT SEDIMENT LOG ON A WEEKLY BASIS AND AFTER EACH RAINFALL EVENT PRODUCING ½ INCH OR MORE OR RAIN. ANY DEBRIS OR SEDIMENT VISIBLE SHALL BE REMOVED IMMEDIATELY.
2. DAMAGE TO THE SEDIMENT LOG SHALL BE REPAIRED IMMEDIATELY.
3. REMOVE SEDIMENT WHEN ACCUMULATION REACHES ½ THE DIAMETER OF THE LOG. SEDIMENT SHALL BE REMOVED OFF–SITE BY THE CONTRACTOR IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.

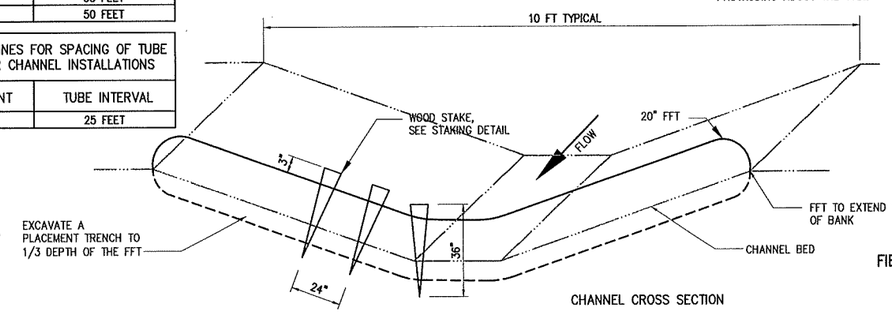
DETAIL 1/D–3 CURB INLET PROTECTION



PROFILE VIEW – W/STAKING DETAIL

GENERAL GUIDELINES FOR SPACING OF TUBE TRENCHES FOR SLOPE INSTALLATIONS	
SLOPE GRADIENT	TUBE INTERVAL
1H:1V	15 FEET
2H:1V	25 FEET
3H:1V	35 FEET
4H:1V	50 FEET

GENERAL GUIDELINES FOR SPACING OF TUBE TRENCHES FOR CHANNEL INSTALLATIONS	
SLOPE GRADIENT	TUBE INTERVAL
2%	25 FEET



CHANNEL CROSS SECTION

NOTES:

SLOPE PROTECTION APPLICATIONS:
1. OVERLAP OR 'HOOK' ADJACENT ROLL ENDS BY A MINIMUM OF ONE FOOT AND REDUCE STAKING INTERVAL TO ONE FOOT WITHIN OVERLAP SECTION.
2. WHEN USED IN CONJUNCTION WITH WATERBARS, OVERLAP OR 'HOOK' FFT ROLL END A MINIMUM OF ONE FOOT ALONG DOWNSLOPE SIDE OF WATERBAR AND EMBED A MINIMUM OF 6 INCHES. REDUCE STAKING INTERVAL TO ONE FOOT. THE FFT ROLL MUST HAVE GOOD CONTACT WITH THE WATERBAR IN ORDER TO PREVENT SHORT–CIRCUITING.
3. SMOOTH SOIL SURFACE AND REMOVE ALL OBSTRUCTIONS GREATER THAN 1"–2" IN DIAMETER.
4. WHEN PERFORMANCE–ENHANCING POLYMERS (PAMs) ARE USED, THE MOST DOWNSTREAM FFT SHALL BE A STAND–ALONE PRODUCT (NO PAMs).

CHANNEL PROTECTION APPLICATIONS:
1. FOR CHANNEL APPLICATIONS, BOTH UPSTREAM AND DOWNSTREAM ANCHORING SHOULD BE AT 1 FOOT INTERVALS.
2. FOR CHANNEL APPLICATIONS, FFTs SHALL BE STAND–ALONE PRODUCTS WITHOUT PAMs.
3. FFTs SHALL BE PLACED IN CHANNEL (AS DEMONSTRATED BELOW), IN ORDER TO ALLOW WATER TO POOL SUFFICIENTLY ON THE UPSTREAM SIDE OF THE FFT.
4. FFTs SHALL EXTEND TO THE TOP OF BANK IN ORDER TO PREVENT SHORT CIRCUITING OF FLOW.

MAINTENANCE REQUIREMENTS:
1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES ½ INCH OR MORE OF RAIN. REMOVE ANY ACCUMULATED SEDIMENT AND/OR WOODY DEBRIS.
2. FFTs SHALL BE ENTRENCHED AS SHOWN TO PREVENT UNDERCUTTING. ANY EVIDENCE OF UNDERCUTTING AND/OR EROSION SHALL BE REPAIRED IMMEDIATELY.
3. STAKES AND/OR STAPLES THAT HAVE BECOME LOOSE OR DISPLACED SHALL BE REPAIRED IMMEDIATELY.
4. WHEN SEDIMENT ACCUMULATION REACHES ½ THE DIAMETER OF THE FFT, IT SHALL BE REMOVED AND DISPOSED OFF–SITE BY THE CONTRACTOR IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
5. ANY VISIBLE DAMAGE TO THE FFT SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

FIBER FILTRATION TUBE (FFT) – CHANNEL/SWALE PROTECTION
0227039

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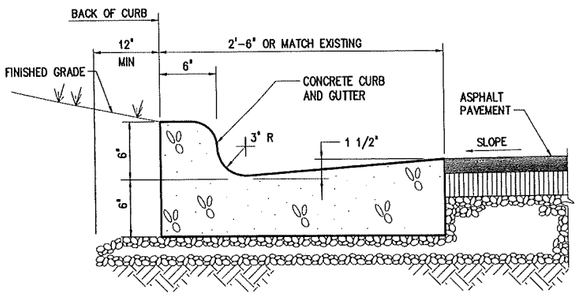
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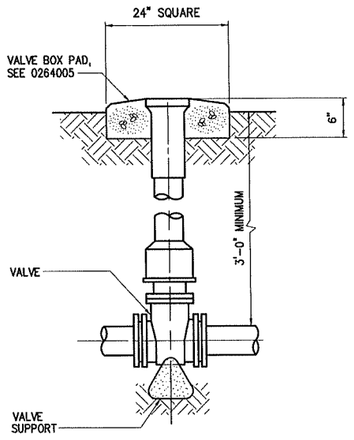
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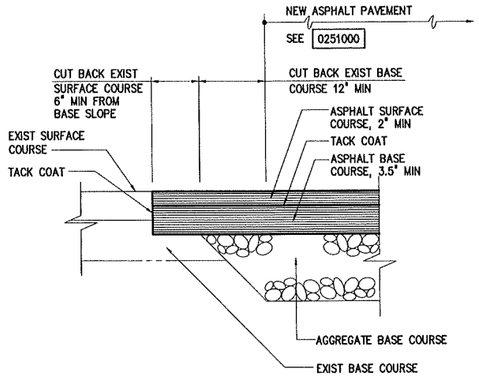
CURB AND GUTTER

0242000



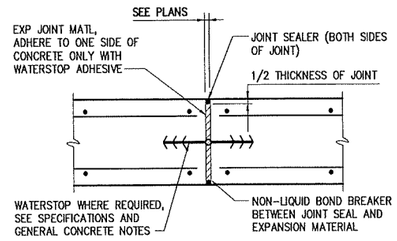
VALVE BOX

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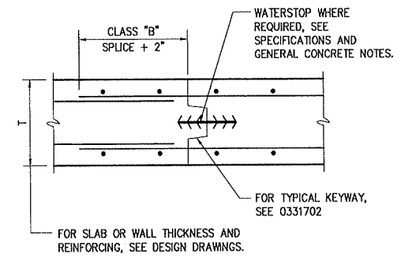
TYPICAL PAVEMENT JUNCTION

0251301



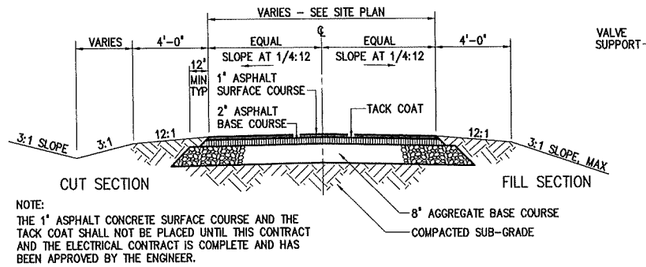
TYPICAL EXPANSION JOINT

0325100



TYPICAL SLAB HORIZONTAL CONSTRUCTION JOINT

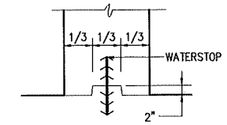
0331701



NOTE:
THE 1" ASPHALT CONCRETE SURFACE COURSE AND THE TACK COAT SHALL NOT BE PLACED UNTIL THIS CONTRACT AND THE ELECTRICAL CONTRACT IS COMPLETE AND HAS BEEN APPROVED BY THE ENGINEER.

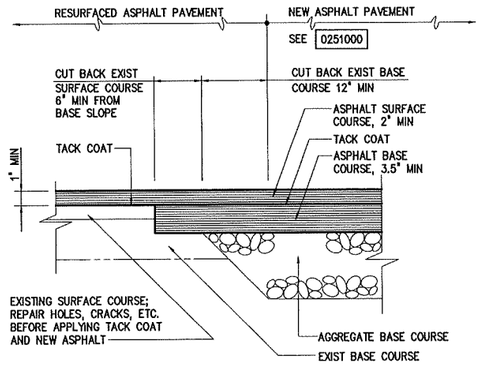
TYPICAL ROADWAY SECTION

0251000



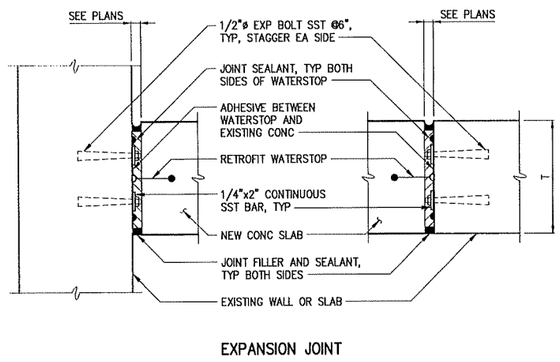
TYPICAL KEYWAY

0331702

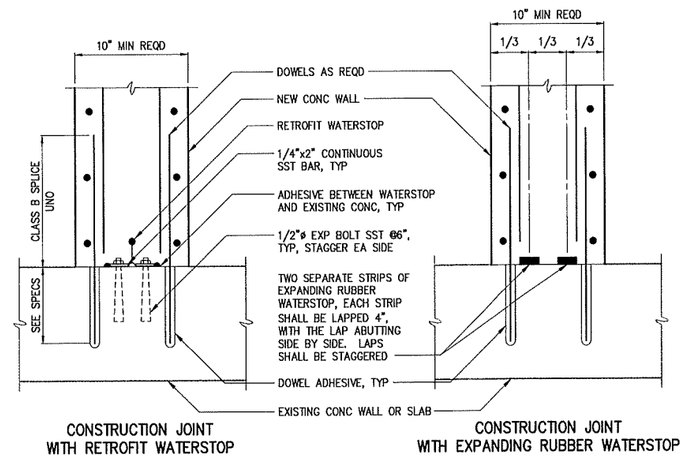


TYPICAL PAVEMENT JUNCTION WITH RESURFACING OF EXISTING PAVEMENT

0251300



EXPANSION JOINT

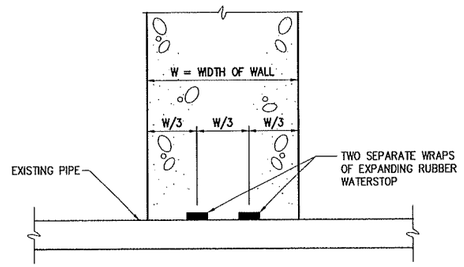


CONSTRUCTION JOINT WITH RETROFIT WATERSTOP

CONSTRUCTION JOINT WITH EXPANDING RUBBER WATERSTOP

WATERSTOP CONNECTIONS TO EXISTING STRUCTURES (PLAN AT WALLS OR SECTION AT SLAB)

0325302



NOTE: EACH WRAP SHALL BE LAPPED 4", WITH THE LAP ABUTTING SIDE BY SIDE. LAPS SHALL BE SEPARATED BY 180°.

WATERSTOP CONNECTION AROUND EXISTING PIPE

0325303

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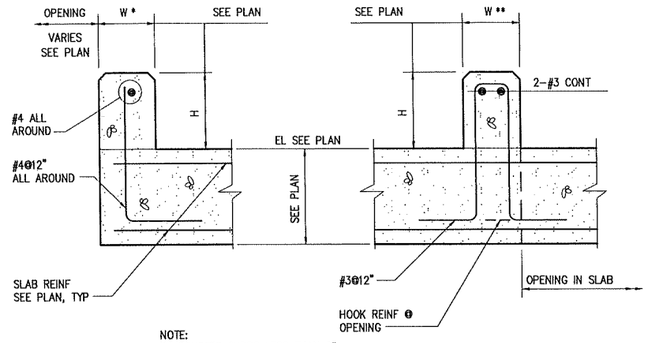
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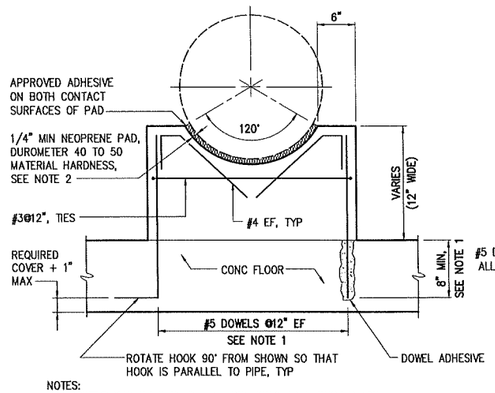
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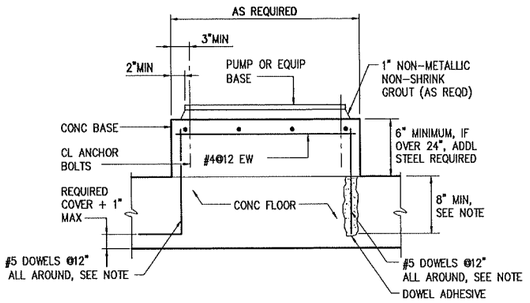
NOTE:
W* DENOTES CURBS LESS THAN 8"
W** DENOTES CURBS EQUAL TO OR GREATER THAN 8"
DOWELS MAY BE CAST IN OR ANCHORED WITH DOWEL ADHESIVE SYSTEM WITH A 6" MINIMUM EMBEDMENT.

TYPICAL CONCRETE CURB
0331004



NOTES:
1. DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.
2. ENGINEER SHALL VERIFY THICKNESS OF PAD WILL ACCOMMODATE DESIGN MOVEMENT, PARTICULARLY FOR OUTSIDE AERIAL PIPE.

CRADLE PIPE SUPPORT
0331601



NOTE: DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.

TYP PUMP OR EQUIP BASE
0331600

NOTES:

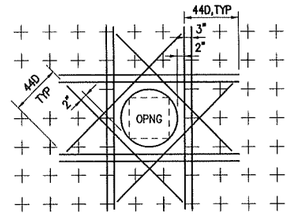
1 THIS DETAIL APPLIES FOR OPENINGS 8"ø AND LARGER. FOR SMALLER OPENINGS, BEND BARS OR ADJUST SPACING OF REINFORCEMENT TO AVOID OPENING.

2 PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENING. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS EXCEPT WHERE NOTED OTHERWISE.

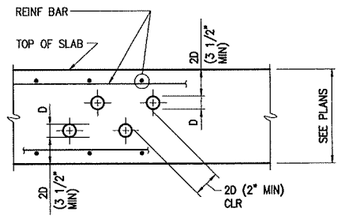
3 PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING WITH SIZE EQUAL TO MAIN REINFORCEMENT, TYPICAL EACH FACE.

4 WHERE INVERT OF OPENING IN WALL IS LESS THAN 44 BAR DIAMETERS FROM TOP OF SLAB, EXTRA REINFORCEMENT ON EACH SIDE SHALL INCLUDE DOWELS EMBEDDED INTO SLAB WITH STANDARD 90 DEGREE HOOKS TO SPLICE WITH EXTRA VERTICAL REINFORCEMENT. DOWELS SHALL ALSO STILL BE PROVIDED BELOW OPENING.

5 WHERE INVERT OF OPENING IN WALL OR SLAB IS CLOSER THAN 44 BAR DIAMETERS TO EDGE OF SLAB OR BOTTOM OF WALL, EXTRA DIAGONAL BARS MAY BE TERMINATED TWO INCHES FROM EDGE OF SLAB OR BOTTOM OF WALL. DOWELS DO NOT HAVE TO BE PROVIDED TO SPLICE WITH DIAGONAL BARS.

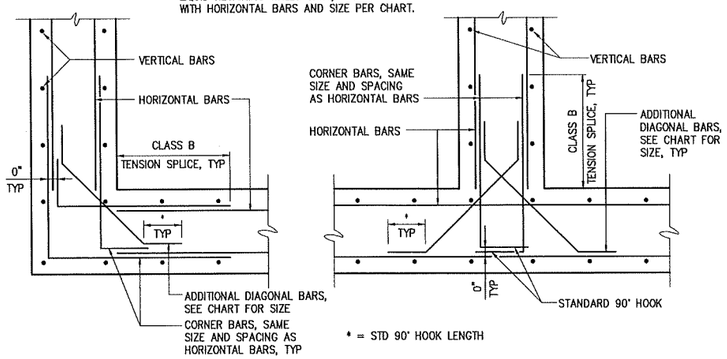


TYPICAL REINF AT OPENINGS
0331703



NOTE:
D DENOTES PIPE OR CONDUIT OD

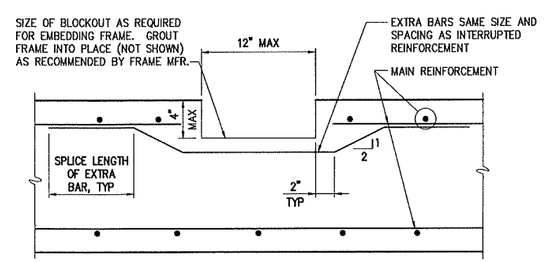
PIPE OR CONDUIT EMBEDDED IN SLAB
0331604



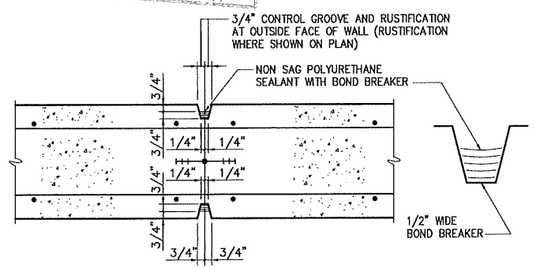
CORNER INTERSECTION

TYPICAL WALL REINFORCING
0331700

DIAGONAL BAR SIZE CHART	
BAR SIZE – HORIZONTAL REINFORCEMENT	BAR SIZE – DIAGONAL REINFORCEMENT
# 3	# 3
# 4	# 3
# 5	# 4
# 6	# 5
# 7	# 5
# 8	# 6
# 9	# 7
# 10	# 8
# 11	# 9
AT LOCATIONS WHERE DIFFERENT SIZE HORIZONTAL BARS CONVERGE, THE LARGER BAR SIZE SHALL CONTROL	



TYPICAL BLOCKOUT FOR EMBEDDED EQUIPMENT FRAME
0331710



VERTICAL WALL CONSTRUCTION JOINT
0331712

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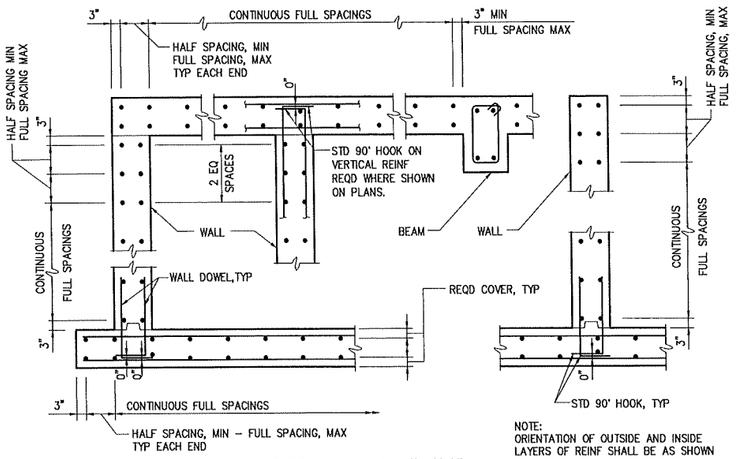
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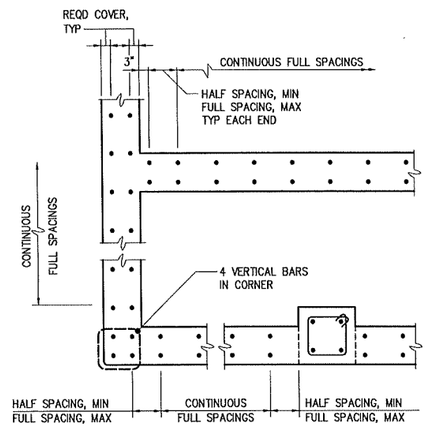
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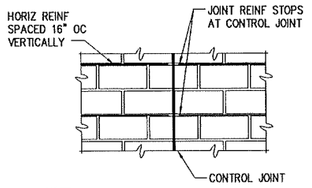
SECTION – WALLS AND SLABS

NOTE:
ORIENTATION OF OUTSIDE AND INSIDE LAYERS OF REINF SHALL BE AS SHOWN ON PLANS. "FULL SPACING" IS BAR SPACING CALLED OUT ON PLANS.

TYPICAL BAR PLACEMENT
0331704

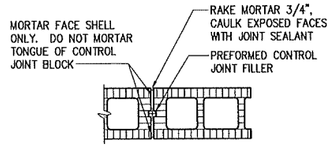


PLAN – WALLS



NOTE:
CONTROL JOINTS MAY BE OFFSET A MAXIMUM DISTANCE OF 8". CROSS WIRES WITHIN THIS OFFSET SHALL BE CUT.

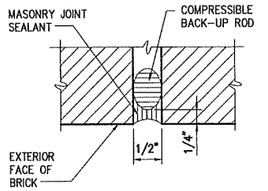
ELEVATION



PLAN

NOTE: WIDE FLANGED PREFORMED CONTROL JOINT FILLER MAY BE USED IN LIEU OF DETAIL SHOWN

CONTROL JOINT BLOCK
0418000



BRICK EXPANSION JOINT
0418001

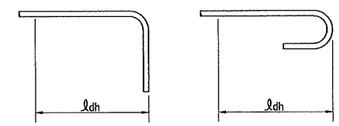
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DEVELOPMENT LENGTH OF STANDARD HOOKS
FOR BARS IN TENSION

fy = 60,000 psi fc' = 4000 psi OR GREATER

BAR SIZE	DEVELOPMENT LENGTH, ℓdh	
	BASIC	W/ CONC COVER *
#3	8"	6"
#4	10"	7"
#5	1'-0"	9"
#6	1'-3"	11"
#7	1'-5"	1'-0"
#8	1'-7"	1'-2"
#9	1'-10"	1'-4"
#10	2'-1"	1'-6"
#11	2'-3"	1'-7"

* SIDE COVER NORMAL TO PLANE OF HOOK AT LEAST 2 1/2"; AND FOR 90° HOOK, END COVER BEYOND OUTSIDE END OF HOOK AT LEAST 2".



0321003

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH
FOR BARS IN COMPRESSION

fy = 60,000 psi fc' = 4000 psi OR GREATER

BASIC DEVELOPMENT LENGTH		BAR SIZE	SPLICE LENGTH	
BASIC	CONFINEMENT *		BASIC	CONFINEMENT *
8"	8"	# 3	12"	12"
10"	8"	# 4	1'-3"	12"
1'-0"	9"	# 5	1'-7"	1'-3"
1'-3"	1'-0"	# 6	1'-11"	1'-6"
1'-5"	1'-1"	# 7	2'-3"	1'-9"
1'-7"	1'-3"	# 8	2'-6"	1'-11"
1'-10"	1'-4"	# 9	2'-10"	2'-2"
2'-1"	1'-7"	# 10	3'-3"	2'-6"
2'-3"	1'-8"	# 11	3'-7"	2'-9"

* BAR ENCLOSED WITHIN SPIRALS OF NOT LESS THAN 1/4 INCH DIAMETER AND NOT MORE THAN 4 INCH PITCH OR WITHIN #4 TIES IN CONFORMANCE WITH ACI 318. SECTION 7.10.5 AT NOT MORE THAN 4 INCHES ON CENTER, FACTOR 0.75 USED.

0321002

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH
FOR BARS IN TENSION

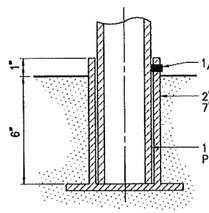
** BASED ON MATERIALS AND CONDITIONS AS FOLLOWS:
fy = 60,000 psi, UNCOATED BARS, CLEAR COVER ≥ 1.5 INCHES
fc' = 4000 psi OR GREATER, NORMAL WEIGHT CONCRETE

BASIC DEVELOPMENT LENGTH ℓd				BAR SIZE	CLASS B SPLICE LENGTH 1.3 xℓ d			
CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"			CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"	
BASIC	TOP *	BASIC	TOP *		BASIC	TOP *	BASIC	TOP *
1'-0"	1'-0"	1'-0"	1'-4"	# 3	1'-0"	1'-3"	1'-4"	1'-8"
1'-0"	1'-3"	1'-7"	2'-1"	# 4	1'-3"	1'-8"	2'-1"	2'-9"
1'-3"	1'-7"	2'-4"	3'-0"	# 5	1'-7"	2'-0"	3'-0"	3'-11"
1'-6"	1'-11"	3'-1"	4'-0"	# 6	1'-11"	2'-5"	4'-0"	5'-2"
2'-5"	3'-1"	4'-11"	6'-4"	# 7	3'-1"	4'-0"	6'-4"	8'-3"
3'-0"	3'-11"	6'-0"	7'-9"	# 8	3'-11"	5'-1"	7'-9"	10'-1"
3'-8"	4'-9"	6'-9"	8'-9"	# 9	4'-9"	6'-3"	8'-9"	11'-4"
4'-6"	5'-10"	7'-7"	9'-10"	# 10	5'-10"	7'-7"	9'-10"	12'-9"
5'-5"	7'-0"	8'-5"	10'-11"	# 11	7'-0"	9'-1"	10'-11"	14'-2"

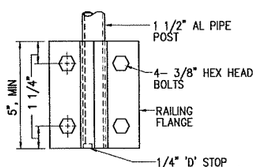
* TOP REINFORCEMENT IS HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

** FOR MATERIALS OR CONDITIONS DIFFERENT FROM THOSE STATED, LengthS SHOWN IN CHART SHALL BE MODIFIED TO CONFORM TO THE PROVISIONS OF ACI 318, SECTION 12.2.

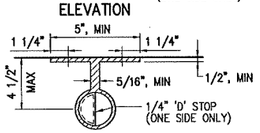
0321004



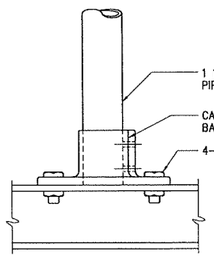
REMOVABLE POST IN CONCRETE



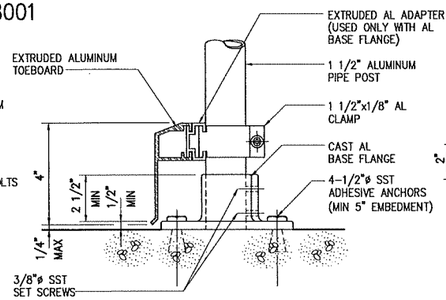
ELEVATION



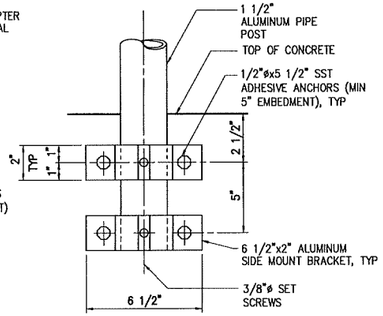
SIDE MOUNT TO METAL



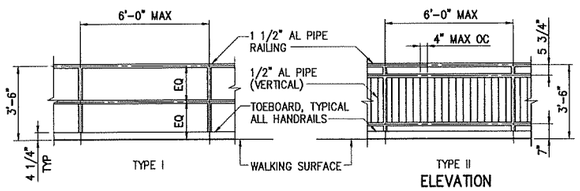
SURFACE MOUNTED TO METAL



SURFACE MOUNTED TO CONCRETE

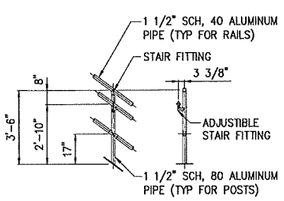


SIDE MOUNT TO CONCRETE

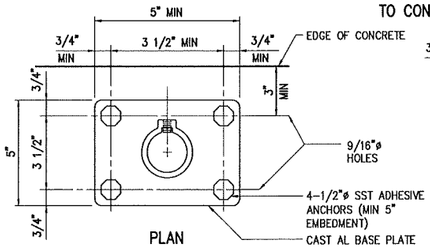


ELEVATION

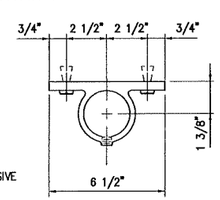
NOTE:
UNLESS SHOWN OTHERWISE ON THE CONTRACT DRAWING, HANDRAILS SHALL BE TYPE I.



TYPE III STAIR/RAMP HANDRAIL



PLAN



PLAN

ALUMINUM HANDRAILS
0552000

NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
2	BIDDING	APR 2012	ZMW
1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED H&S
DRAWN H&S
CHECKED H&S
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY L. MICHAEL SANTOWASSO SEAL NUMBER 18560

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

RECORD DRAWING
THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

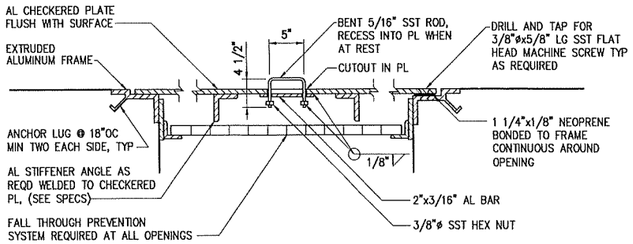
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER D06

BW-15496

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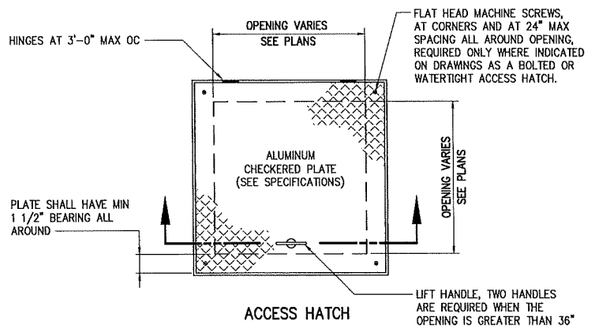
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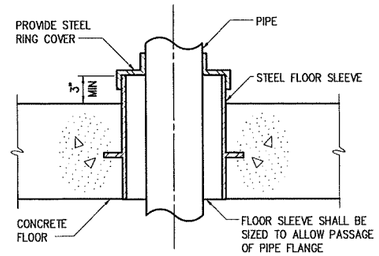


STANDARD SECTION WATERTIGHT

ACCESS HATCH

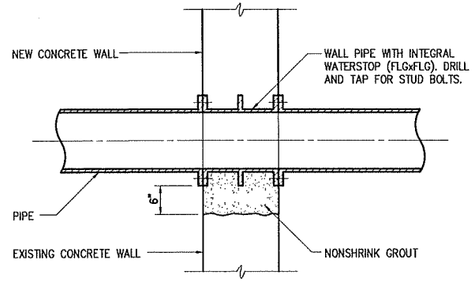


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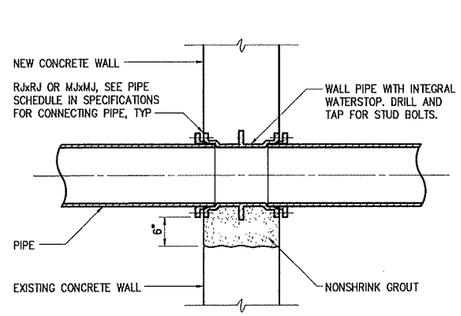


FLOOR PENETRATION

1509200



1509201



1509202

NOTES:

1. ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.
2. PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.
3. COMBINATION WATERSTOP SHALL BE REQUIRED AT ALL NEW PIPE PENETRATIONS THROUGH EXISTING CONCRETE WALLS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. SEE COMBINATION WATERSTOP DETAIL 1509222.
4. ALL NEW OPENINGS IN EXISTING CONCRETE WALLS SHALL BE ACCOMPLISHED WITH A CLEAN SAW-CUT. SURFACES SHALL BE ROUGHENED BY APPROVED METHODS.

RECEIVED
MAR 25 2014
WATER RESOURCES ENGINEERING DIVISION
PUBLIC WORKS COMMISSION

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NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
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DESIGNED H&S
DRAWN H&S
CHECKED H&S
PROJ.ENGR.
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

RECORD DRAWING

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

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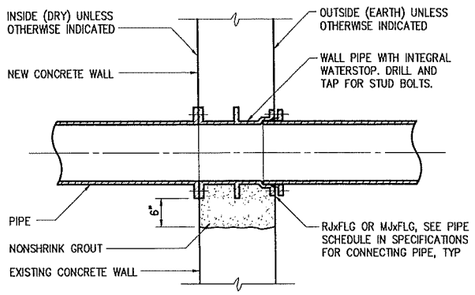
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER D07

RECORD DRAWINGS

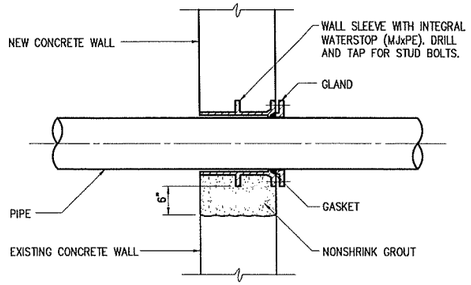
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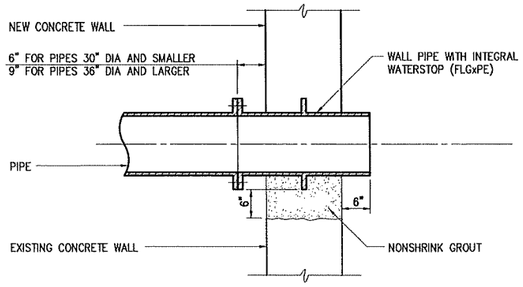
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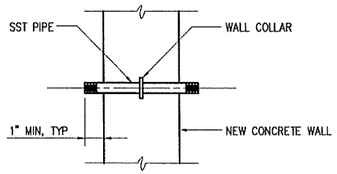
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1509206



1509209



1509212

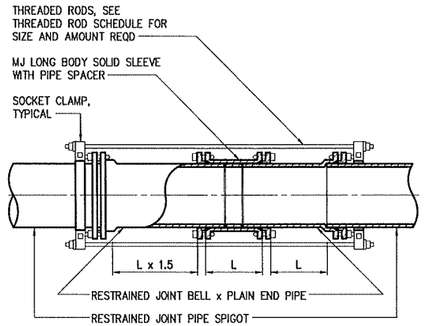
NOTES:

1 ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.

2 PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.

3 COMBINATION WATERSTOP SHALL BE REQUIRED AT ALL NEW PIPE PENETRATIONS THROUGH EXISTING CONCRETE WALLS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. SEE COMBINATION WATERSTOP DETAIL 1509222.

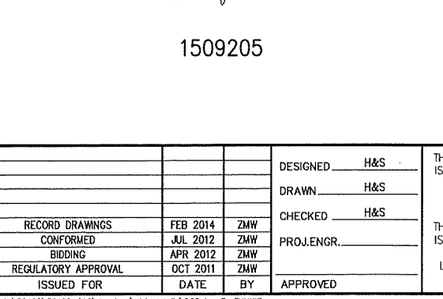
4 ALL NEW OPENINGS IN EXISTING CONCRETE WALLS SHALL BE ACCOMPLISHED WITH A CLEAN SAW-CUT. SURFACES SHALL BE ROUGHENED BY APPROVED METHODS.



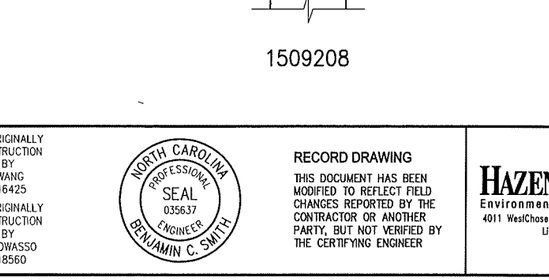
RESTRAINED MJ SOLID SLEEVE

1509221

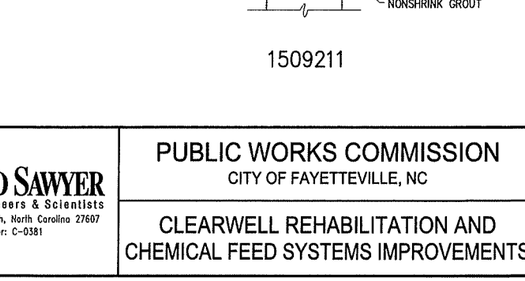
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WATER RESOURCES
ENGINEERING DIVISION
PUBLIC WORKS COMMISSION



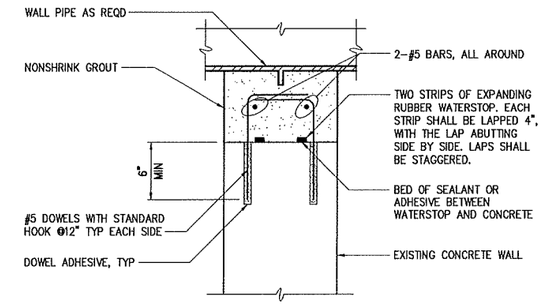
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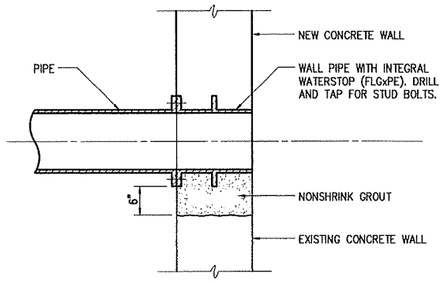


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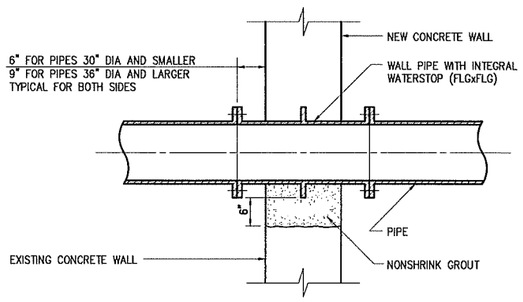


CAULKED WALL PENETRATION

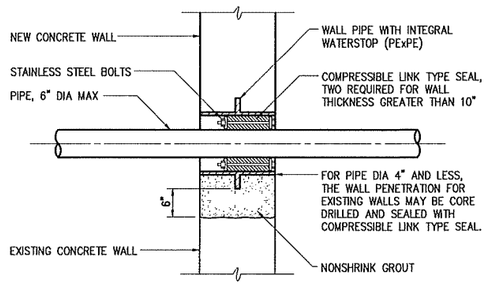
1509217



1509205



1509208



1509211

NOTES:
ALL OPENINGS SHALL BE SAWCUT OR (SINGLE) CORE DRILLED AS REQUIRED. USE OF JACKHAMMERS OR STITCH DRILLING IS NOT PERMITTED. THE PERIMETER SURFACE OF THE OPENING SHALL BE SMOOTH.

WATERSTOP

1509222

NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
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DESIGNED H&S
DRAWN H&S
CHECKED H&S
PROJ.ENGR.
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

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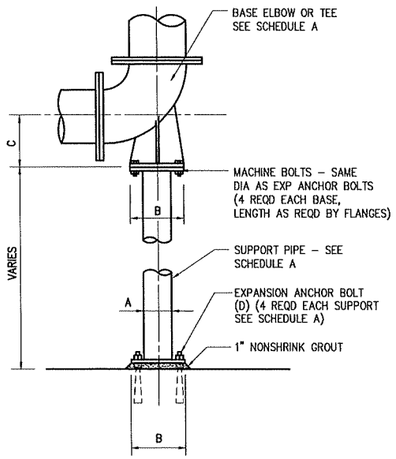
DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER D08

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RECORD DRAWINGS

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BW-1594



BASE ELBOW (TEE)

1509400

SCHEDULE A				
BASE ELBOW (TEE) (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	1 1/2	5	4 7/8	1/2 x 5
4	2	6	5 1/2	5/8 x 5
5–6	2 1/2	7	VARIES	5/8 x 5
8–10	4	9	VARIES	5/8 x 5
12–16	6	11	VARIES	3/4 x 6
18–24	8	13 1/2	VARIES	3/4 x 6
30	10	16	23	7/8 x 7
36	12	19	26	7/8 x 7

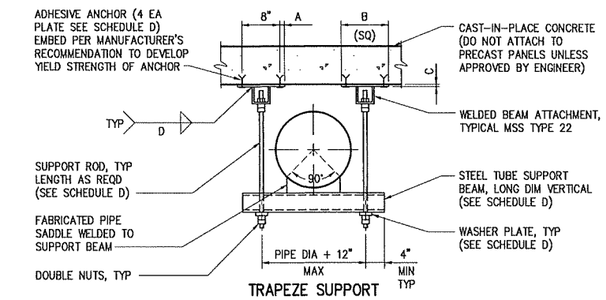
SCHEDULE B				
ADJUSTABLE SADDLE (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	2 1/2	7	1 1/2	5/8 x 5
4–12	3	7 1/2	2 1/2	5/8 x 5
14–16	4	9	3	5/8 x 5
18–20	6	11	3 1/2	3/4 x 6
24–48	6	11	4	3/4 x 6

1509401

SCHEDULE C							
SUPPORT RODS AND BRACKET SPACING (FOR STANDARD WEIGHT PIPE)							
PIPE SIZE (INCHES)	BACK PLATE (INCHES)	MINIMUM ROD ø (INCHES)		MAX SPAN IN FEET (SEE NOTE 8)			
		PROCESS PIPING	STEEL AIR PIPING	COPPER	PLASTIC	STEEL	DIP (SEE NOTE 7)
UP TO 1	SEE NOTE 4	3/8	3/8	5	5	6	–
1 1/4–2	"	3/8	3/8	8	5	10	–
2 1/2–3 1/2	"	3/8	3/8	8	5	12	6
4–5	"	1/2	3/8	–	5	14	8
6	"	5/8	3/8	–	5	15	9
8–12	"	3/4	1/2	–	5	15	9
14–16	"	7/8	1/2	–	5	15	9
18	"	1	1/2	–	5	18	10
20–24	"	1 1/4	5/8	–	5	18	10

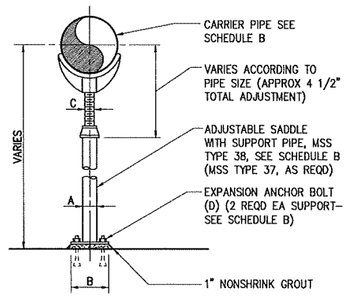
1509412

SCHEDULE D											
TRAPEZE SUPPORT (DIM IN INCHES)											
PIPE SIZE	STEEL TUBE SUPPORT BEAM VERT x HOR	MINIMUM ROD ø (INCHES)		WASHER PLATE	BASE PLATE			WELD	ADHESIVE ANCHOR DIA	MAX SUPPORT SPACING IN FEET (SEE NOTE 8)	
		PROCESS PIPING	STEEL AIR PIPING		A	B	C	D		PROCESS PIPING	STEEL AIR PIPING
12–14	4x4x3/8	1/2	1/2	4x4x1/4	1	10	3/8	3/16	1/2	10	15
16–24	4x4x3/8	3/4	5/8	4x4x3/8	1	10	1/2	3/16	5/8	10	15
30–36	6x4x3/8	1	3/4	4x4x1/2	2	12	1/2	1/4	3/4	10	20
42	6x4x3/8	1 1/4	3/4	5x5x1/2	2	12	3/4	1/4	7/8	10	25
48	8x4x3/8	1 1/2	1	5x5x3/4	2	12	1	1/4	1	10	30



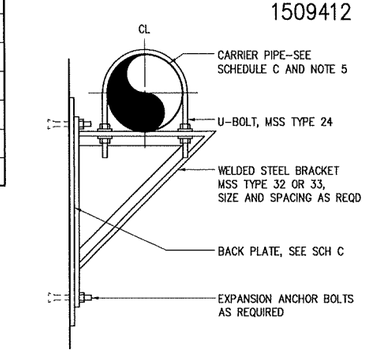
TRAPEZE SUPPORT

1509413



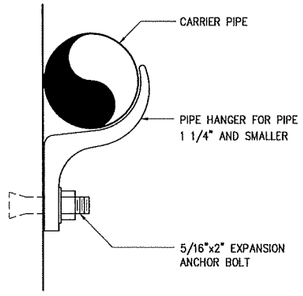
ADJUSTABLE SADDLE

1509405



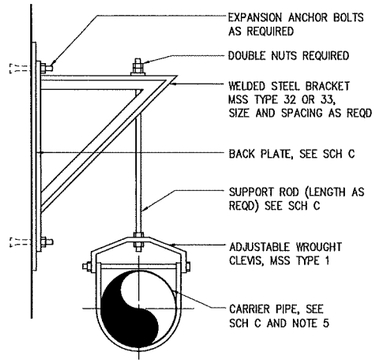
PIPE SUPPORT BRACKET

1509404



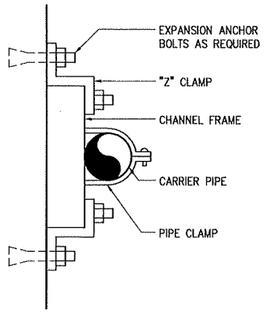
WALL HANGER PIPE SUPPORT

1509403



PIPE SUPPORT BRACKET

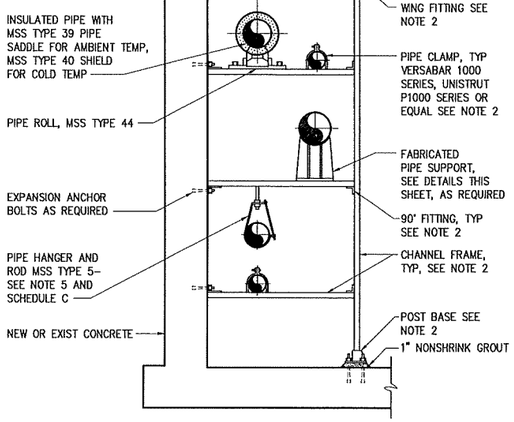
1509407



PIPE WALL SUPPORT AND SUPPORT RACK SHALL BE ASSEMBLED W/ CHANNEL FRAMES AND ACCESSORIES AS MANUFACTURED BY UNISTRUT CORP OR EQUAL

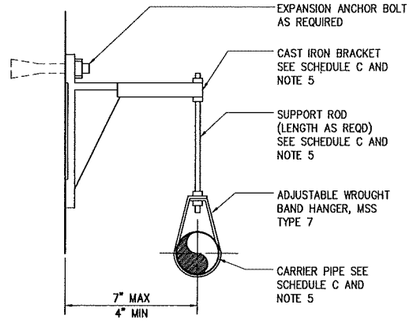
PIPE WALL SUPPORT

1509402



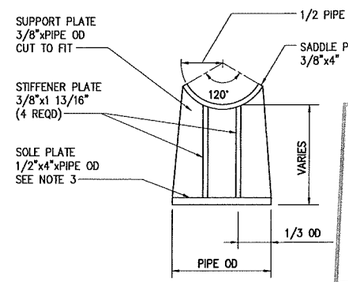
PIPE SUPPORT RACK

1509408



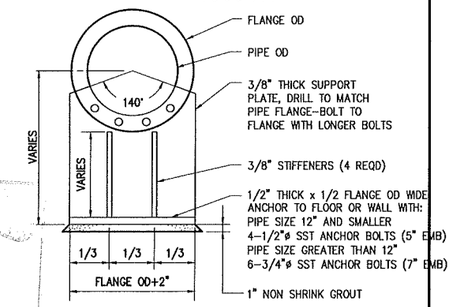
PIPE SUPPORT BRACKET

1509406



FABRICATED PIPE SUPPORT (AT PIPE)

1509410



FABRICATED PIPE SUPPORT (AT FLANGE)

1509409

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PUBLIC WORKS COMMISSION

NOTES:

1. MSS REFERS TO THE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, STANDARD PRACTICE SP–58 AND SP–69.
2. PIPE WALL SUPPORT AND PIPE SUPPORT RACK SHALL BE ASSEMBLED WITH CHANNEL FRAMES AND ACCESSORIES AS MANUFACTURED BY UNISTRUT CORP, OR VERSABAR CORP, OR EQUAL.
3. FABRICATED PIPE SUPPORT MAY BE USED AS SHOWN IN PIPE SUPPORT RACK DETAIL, OR TO SUPPORT PIPE FROM THE FLOOR.
4. BACK PLATES SHALL BE DESIGNED BY THE CONTRACTOR ACCORDING TO WALL TYPES AND THE WEIGHTS INVOLVED. BACK PLATE TO BE SUPPLIED BY BRACKET MANUFACTURER.
5. PIPE HANGERS, SUPPORTS AND BRACKETS ARE SHOWN HERE IN VARIOUS COMBINATIONS AS GENERAL DETAILS. THE CONTRACTOR SHALL DESIGN THE SUPPORT SYSTEM BASED ON ACTUAL WEIGHTS AND CONDITIONS AS SPECIFIED OR AS SHOWN ON THE CONTRACT DRAWINGS. THE PIPE SUPPORTS SHOWN AND REFERENCED UNDER SCHEDULES A, B & C ARE DESIGNED AND DETAILED FOR GRAVITY LOADING ONLY. RESULTING LATERAL LOADS FROM CONSTRUCTION CONDITIONS, DESIGN SEISMIC EVENT OR OTHER RELATED CONDITIONS SHALL BE APPLIED TO THE PIPE AND OTHER NON–STRUCTURAL COMPONENTS IN ACCORDANCE WITH THE GOVERNING BUILDING CODE. SUPPLEMENTAL LATERAL STIFFNESS, RESISTANCE AND MEMBERS (WHEN NECESSARY) SHALL BE PROVIDED ALONG PIPE OR AT GRAVITY SUPPORTS AND CONNECTIONS WHEN REQUIRED BY CALCULATIONS. THE CONTRACTOR SHALL INCLUDE DESIGN CALCULATIONS AND DETAILS WITH ALL PIPE HANGAR AND SUPPORT SUBMISSIONS FOR REVIEW BY THE ENGINEER. THE MAIN STRUCTURE AND STRUCTURAL COMPONENTS THAT WILL SUPPORT THE PIPE HANGARS AND OTHER APPURTENANT COMPONENTS OF THE FACILITY HAVE BEEN DESIGNED TO RESIST ALL RESULTING SECONDARY LATERAL LOADING FROM NON–STRUCTURAL MEMBERS FOR GRAVITY AND LATERAL LOADS.
6. ALL INSULATED PIPES SHALL USE A SHIELD (MSS TYPE 40) WITH THE APPLICABLE PIPE SUPPORT.
7. MINIMUM OF ONE HANGER PER PIPE SECTION, CLOSE TO JOINT, ON THE BARREL. ALSO AT CHANGE IN DIRECTION AND BRANCH CONNECTIONS.
8. RODS AND SPACING ARE BASED ON STANDARD WEIGHT MATERIALS ACCORDING TO MSS SP–69. AND ARE FOR REFERENCE ONLY. THE CONTR SHALL SPACE HIS HANGERS BASED ON ACTUAL CONDITIONS.
9. REFER TO THE APPROPRIATE AND RELATED SPECIFICATION SECTIONS AND DRAWINGS OF THE CONTRACT DOCUMENTS REGARDING SUPPLEMENTAL DESIGN REQUIREMENTS RELATING TO PERFORMANCE SUBMISSIONS BY CONTRACTOR. ALL NON–STRUCTURAL COMPONENTS, INCLUDING PIPING, HVAC DUCT, PLUMBING AND ELECTRICAL CONDUIT SUPPORT SYSTEMS SHALL BE ADEQUATELY DESIGNED AND INSTALLED UTILIZING SUFFICIENT CONNECTIONS AND MEMBERS TO ACCOMMODATE AND RESIST THE DESIGN LATERAL FORCES ASSOCIATED WITH A SPECIFIC COMPONENT'S DYNAMIC INERTIA DURING THE DESIGN SEISMIC EVENT. REFER TO THE CODE COMPLIANCE DRAWING FOR STRUCTURAL DESIGN INFORMATION FOR SPECIFIC SEISMIC DESIGN CRITERIA.

1509411

NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
2	BIDDING	APR 2012	ZMW
1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED H&S
DRAWN H&S
CHECKED H&S
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425
THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY L. MICHAEL SANTOWASSO SEAL NUMBER 18560

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

RECORD DRAWING
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Environmental Engineers & Scientists
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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402–010
DRAWING NUMBER D09

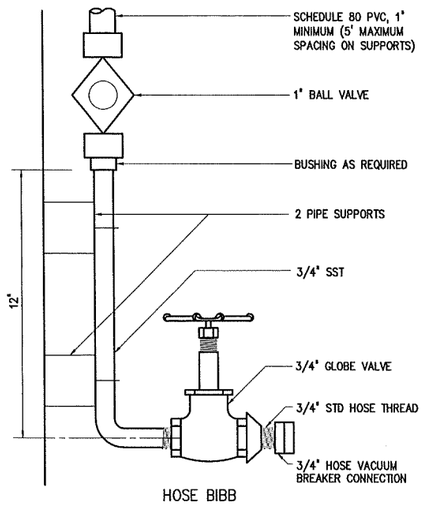
RECORD DRAWINGS

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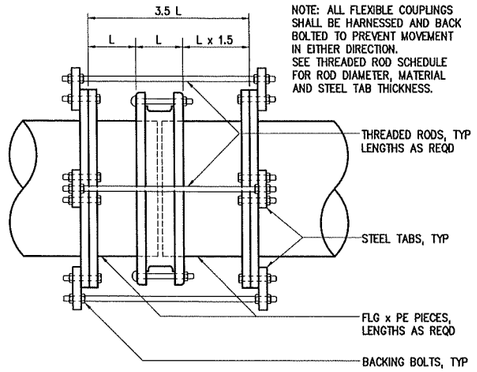
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BW-15496



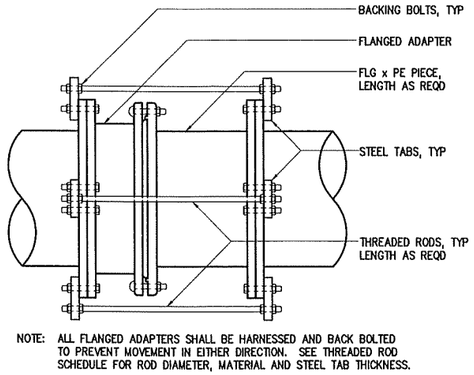
HOSE BIBB

1511500



HARNESSED SLEEVE TYPE COUPLING

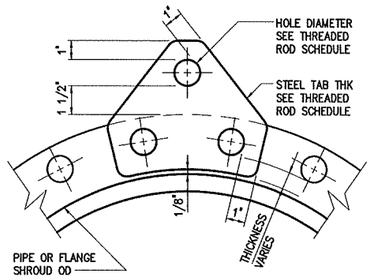
1516400



NOTE: ALL FLANGED ADAPTERS SHALL BE HARNESSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

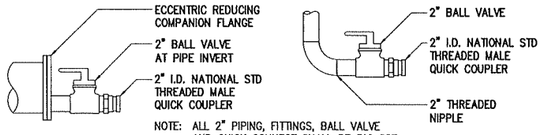
HARNESSED FLANGED ADAPTER

1516402



STEEL TAB

1516401

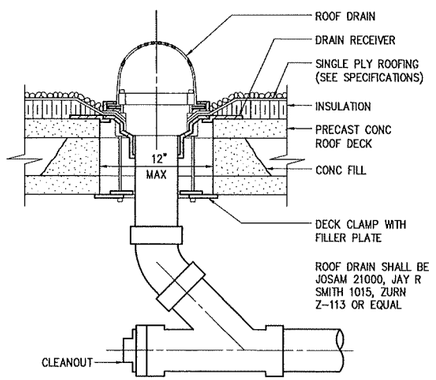


NOTE: ALL 2" PIPING, FITTINGS, BALL VALVE AND QUICK CONNECT SHALL BE 316 SST

TYPE I TYPE II

FLUSHING CONNECTIONS

1511501



ROOF DRAIN

1542201

THREADED ROD SCHEDULE

DESIGN PRESSURE (DIMENSIONS IN INCHES)

PIPE SIZE	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		300 PSI		350 PSI	
	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK
4,6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	8-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	8-3/4	2	10-3/4	2	10-3/4	2
30	4-1	2 1/4	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	8-1	2 1/4	10-1	2 1/4	10-1	2 1/4
36	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	8-1	2 1/2	10-1	2 1/2	12-1	2 1/2	14-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4
48	6-1 1/4	2 3/4	4-1 1/4	2 3/4	8-1 1/4	2 3/4	8-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
54	6-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

1. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
2. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
3. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
4. THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED.
5. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWSE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNEMEC 46-465 HI-BUILD OR EQUAL.

1516403

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DESIGNED H&S
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NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER D10

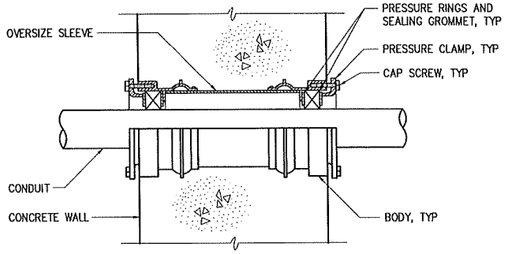
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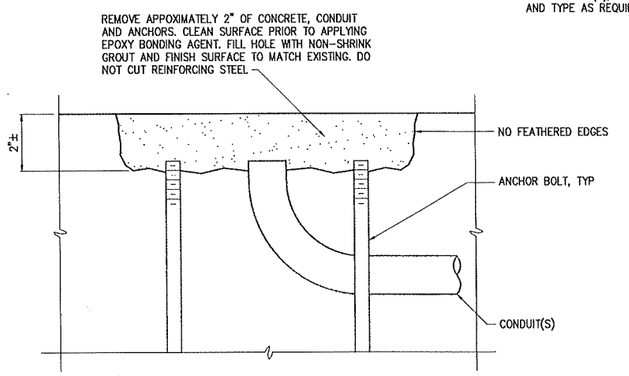
BW-15496



NOTE: USE O-Z/GEDNEY SEAL, TYPE "FSK", "WSK", OR EQUAL

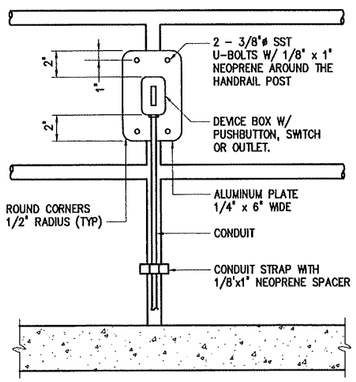
CONDUIT THROUGH WALL SEAL

1611102



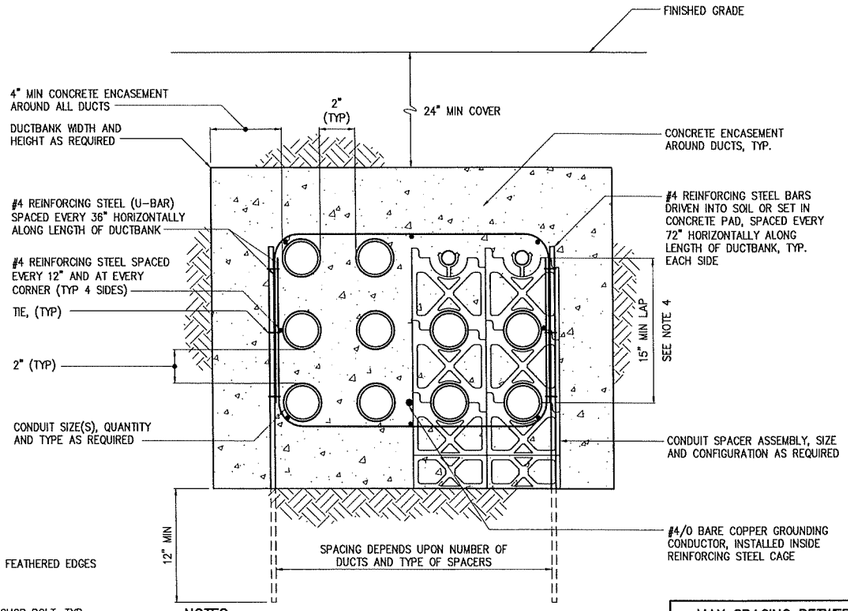
SEALING ABANDONED CONDUIT AND ANCHOR BOLTS

1611103



HANDRAIL MOUNTED PUSHBUTTON, SWITCH OR OUTLET

1613003



NOTES:

1 CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 03300.

2 REINFORCING STEEL AND TIES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 03200. OVERLAP FOR REINFORCING STEEL SPLICES ALONG THE DUCTBANK LENGTH SHALL BE 15", MINIMUM.

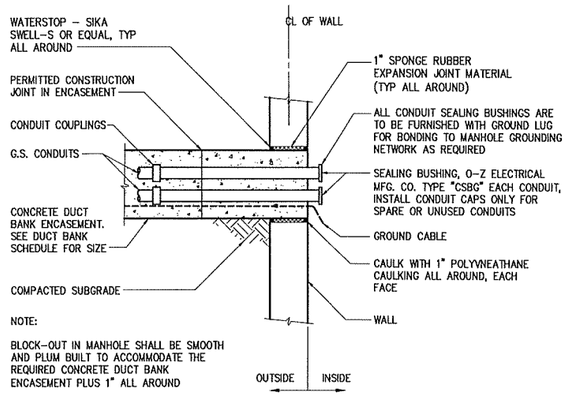
3 CONDUIT SPACERS ARE REQUIRED IN ACCORDANCE WITH SPECIFICATION SECTION 16118. HORIZONTAL SPACING OF CONDUIT SPACER ASSEMBLIES ALONG LENGTH OF DUCTBANK SHALL AS SHOWN IN THE TABLE.

4 FOR DUCTBANKS LESS THAN 15" IN HEIGHT, THE LAP SHALL BE THE HEIGHT OF THE DUCTBANK.

MAX SPACING BETWEEN CONDUIT SPACER ASSEMBLIES	
CONDUIT SIZE	SPACING
1"	3 FT
1 1/4-2"	5 FT
2 1/2-3"	6 FT
3 1/2-5"	7 FT
6"	8 FT

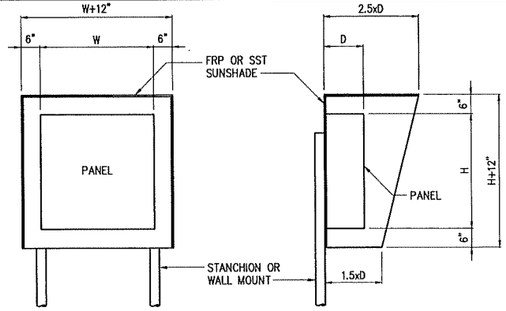
TYPICAL DUCTBANK SECTION

1611801



DUCT BANK TERMINATION AT MANHOLE

1611804



FRONT ELEVATION SECTION

NOTES

1 PANELS SHALL BE PROVIDED WITH SUNSHADES AS SPECIFIED OR AS SHOWN ON THE DRAWINGS.

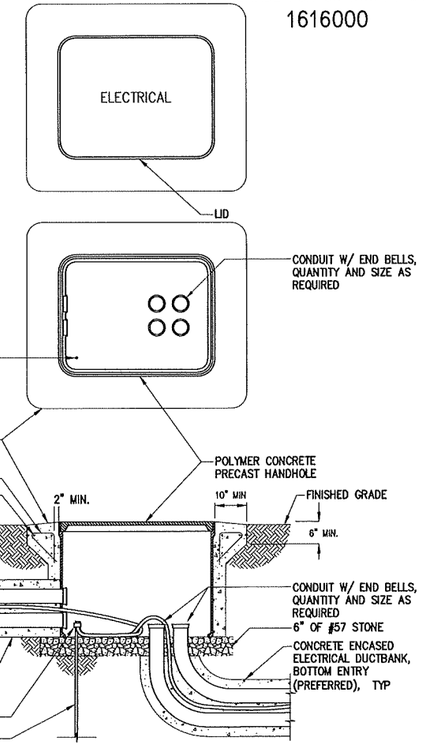
2 SUNSHADES SHALL BE FRP, STYLE E AS MANUFACTURED BY O'BRIEN CORPORATION, OR EQUAL, OR FABRICATED FROM 10 GAUGE TYPE 304 STAINLESS STEEL. WHERE PRACTICAL, PANELS AND INSTRUMENTS SHALL BE MOUNTED IN A NORTH FACING DIRECTION.

3 CONTRACTOR SHALL VERIFY PANEL SIZE BEFORE CONSTRUCTION OF SUNSHADE AND MODIFY AS REQUIRED TO PROTECT PANELS FROM THE EFFECTS OF SOLAR HEAT GAIN.

4 SUNSHADES SHALL BE SUITABLE FOR WALL OR STAND MOUNTING.

SUNSHADE FOR OUTDOOR PANELS

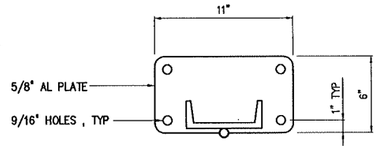
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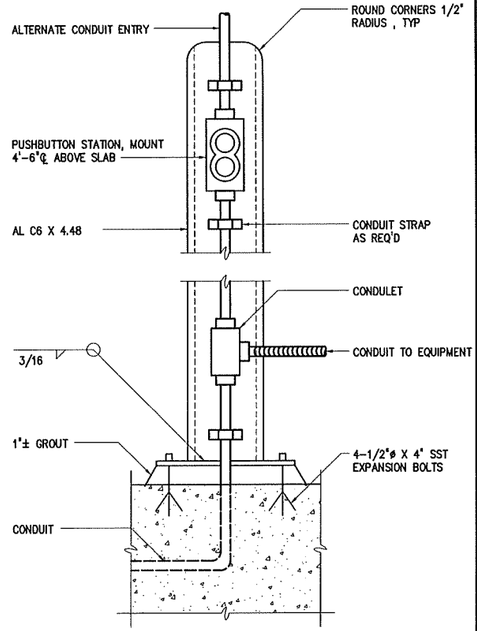


NOTE:
1. FOR SIDE ENTRY, CONDUIT DUCTBANK SHALL ENTER PULLBOX AT LOWEST POINT.
2. GROUND CONDUCTORS WITHIN DUCTBANK SHALL BE EXOTHERMICALLY WELDED TOGETHER AND TO GROUND ROD.

ELECTRICAL HANDHOLE DETAIL

1611803





ELEVATION

NOTES:

1 COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

2 SUPPLY 1'-2" DIAMETER X 2'-6" DEEP FOUNDATION WHERE MOUNTING SURFACE IS NOT AVAILABLE.

3 USE SST WASHERS, NUTS AND BOLTS FOR MOUNTING DEVICES.

TYPICAL PUSHBUTTON STATION INSTALLATION DETAIL

1613001

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NO	ISSUED FOR	DATE	BY
4	RECORD DRAWINGS	FEB 2014	ZMW
3	CONFORMED	JUL 2012	ZMW
2	BIDDING	APR 2012	ZMW
1	REGULATORY APPROVAL	OCT 2011	ZMW

DESIGNED H&S
DRAWN H&S
CHECKED H&S
PROJ.ENGR.
APPROVED

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY Z M MICHAEL WANG SEAL NUMBER 16425

THIS DOCUMENT ORIGINALLY ISSUED FOR CONSTRUCTION AND SEALED BY L. MICHAEL SANTOWASSO SEAL NUMBER 18560

NORTH CAROLINA PROFESSIONAL SEAL 035637 ENGINEER BENJAMIN C. SMITH

RECORD DRAWING

THIS DOCUMENT HAS BEEN MODIFIED TO REFLECT FIELD CHANGES REPORTED BY THE CONTRACTOR OR ANOTHER PARTY, BUT NOT VERIFIED BY THE CERTIFYING ENGINEER

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607
License Number: C-0381

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NC

CLEARWELL REHABILITATION AND CHEMICAL FEED SYSTEMS IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

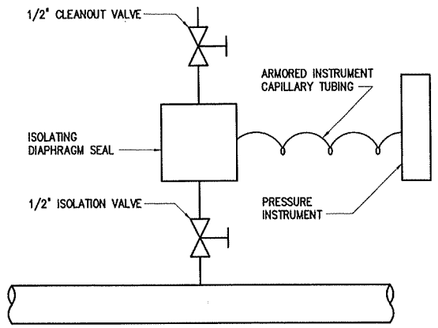
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DATE APRIL 2012
H&S JOB NUMBER 30402-010
DRAWING NUMBER D11

RECORD DRAWINGS

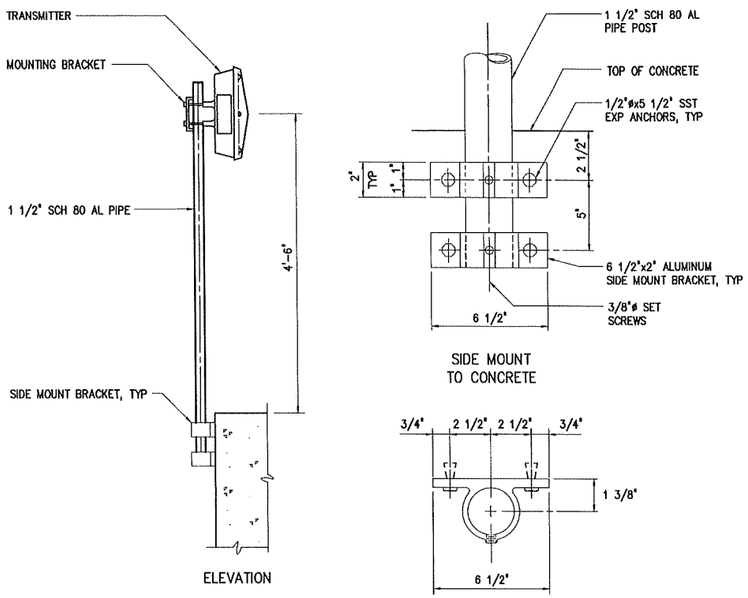
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BW-15496



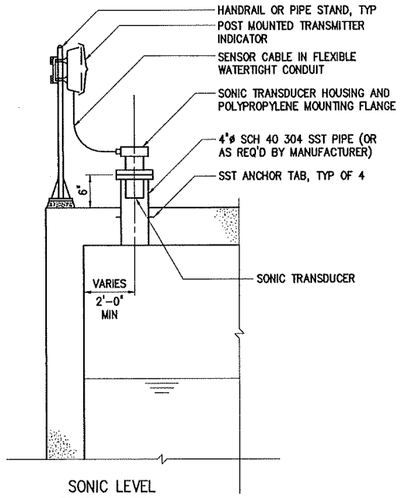
TAPPED DIAPHRAM SEAL DETAIL

1696105



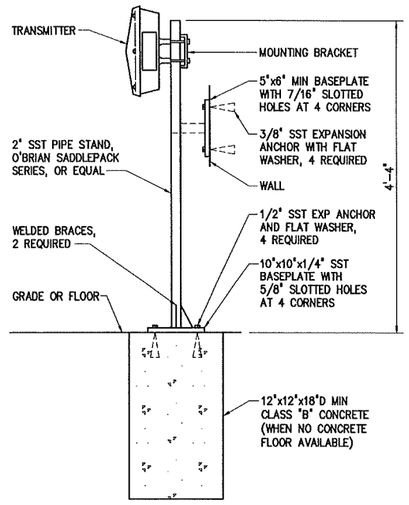
TYPICAL PIPE STAND TRANSMITTER MOUNTED ON SIDE WALL

1696213



SONIC LEVEL SENSOR DETAIL

1696202



TYPICAL PIPE STAND TRANSMITTER MOUNT FLOOR OR WALL

1696214

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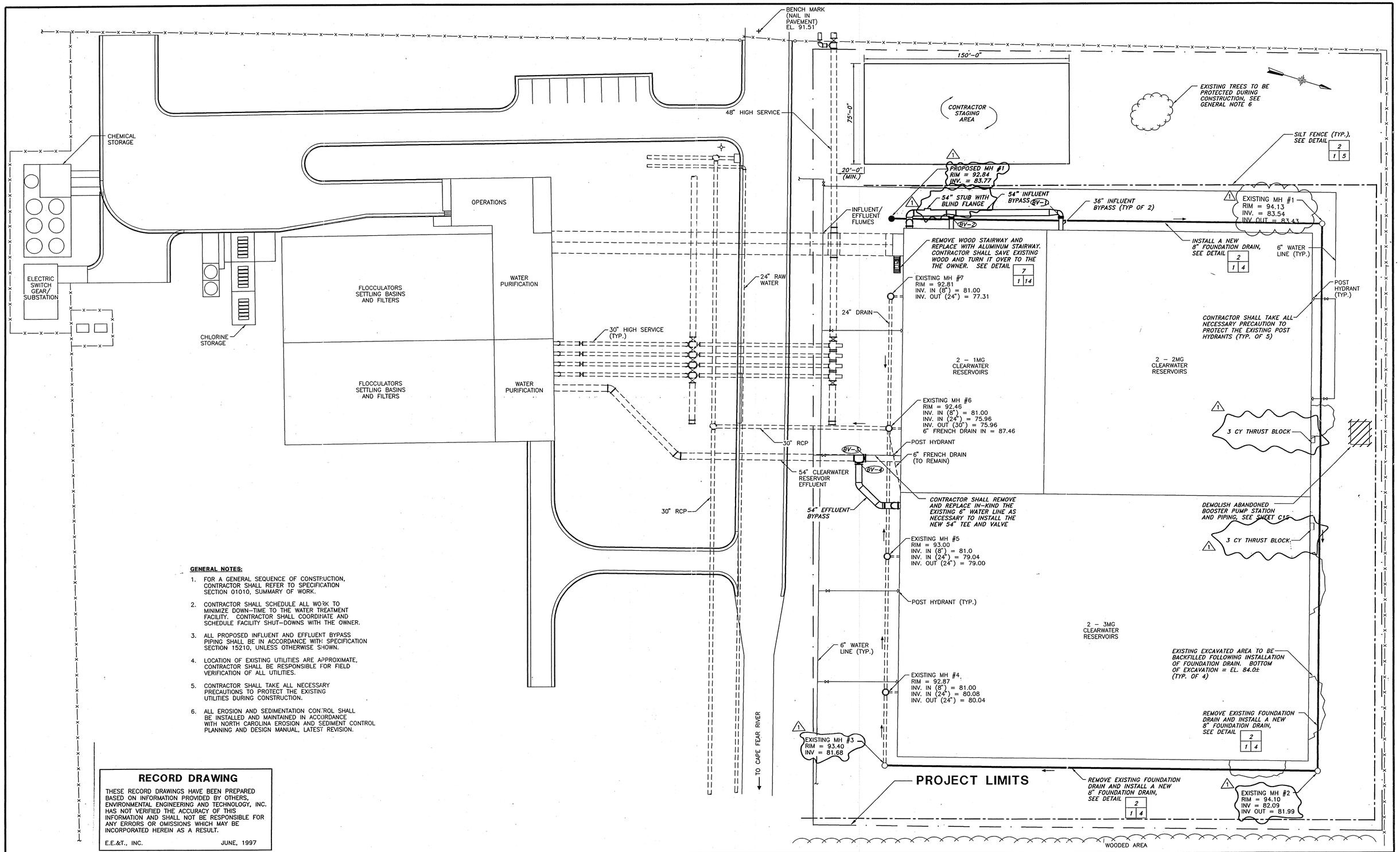
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BW-15496



GENERAL NOTES:

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

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NO.	BY	DATE	REMARKS
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DWN J.L.C. C.O.G.
CKD C.V. M.M.B.

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

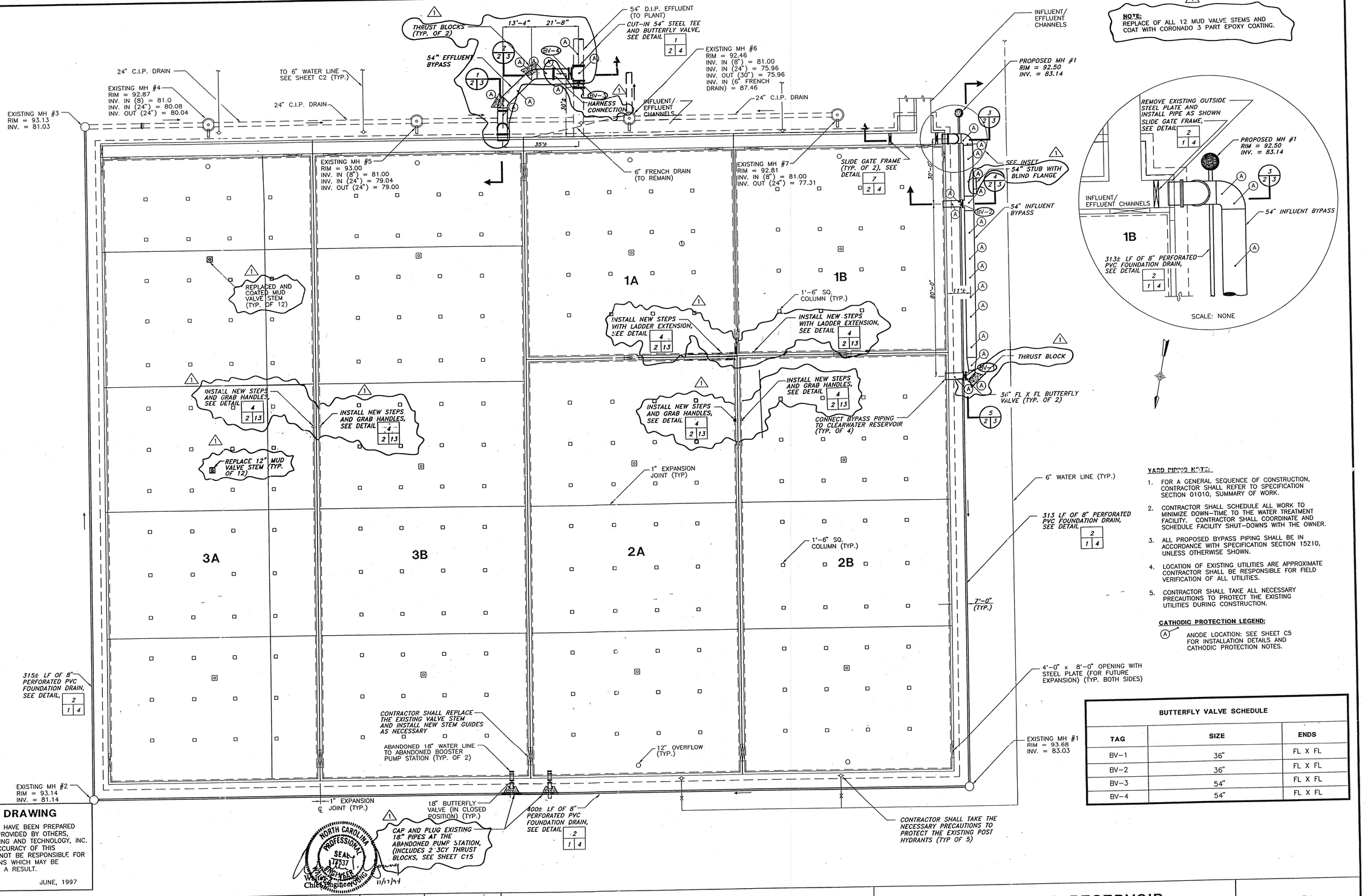
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

SITE PLAN

SCALE: 1" = 30'

DATE FEBRUARY, 1995
C SHEET 1 OF 15
DWG. NO. 1202–1

G:\FAYETTVLE\ARNELL\FAYCLG Mon Mar 13 10:17:29 1995



NOTE:
REPLACE OF ALL 12 MUD VALVE STEMS AND COAT WITH CORONADO 3 PART EPOXY COATING.

YARD PIPING NOTE:

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CATHODIC PROTECTION LEGEND:

(A) ANODE LOCATION: SEE SHEET C5 FOR INSTALLATION DETAILS AND CATHODIC PROTECTION NOTES.

BUTTERFLY VALVE SCHEDULE

TAG	SIZE	ENDS
BV-1	36"	FL X FL
BV-2	36"	FL X FL
BV-3	54"	FL X FL
BV-4	54"	FL X FL

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CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

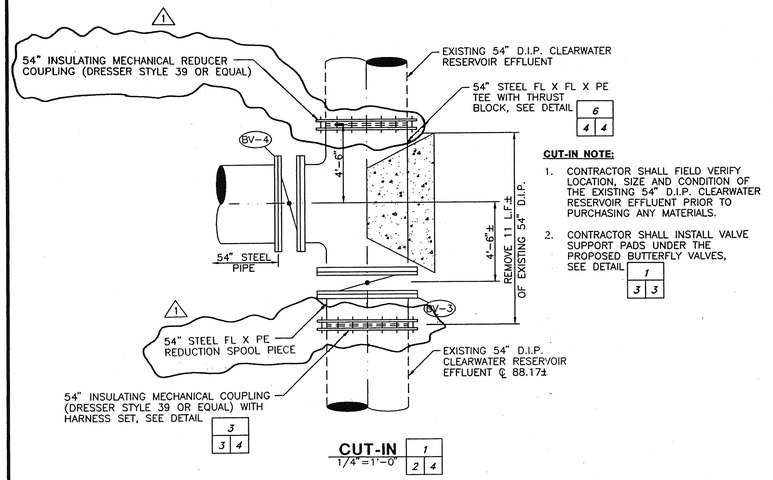
CLEARWATER RESERVOIR PIPING MODIFICATIONS

SCALE: 1" = 20'

DATE FEBRUARY
C SHEET 2 OF 15
DWG. NO. 1202-3

FAYCLA.DWG

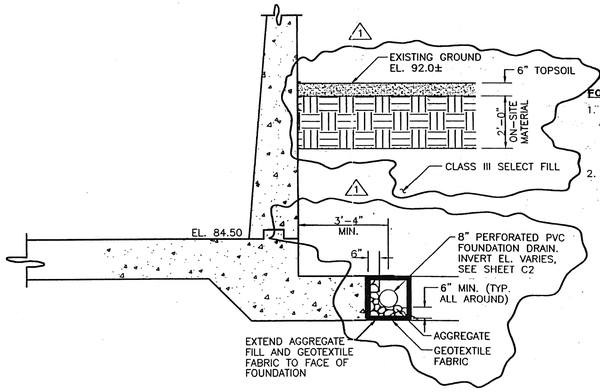
G:\FAYETT\CLEARWEL\FAYCLA Tue Mar 14 08:15:46 1995



CUT-IN NOTE:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION, SIZE AND CONDITION OF THE EXISTING 54" D.I.P. CLEARWATER RESERVOIR EFFLUENT PRIOR TO PURCHASING ANY MATERIALS.
2. CONTRACTOR SHALL INSTALL VALVE SUPPORT PADS UNDER THE PROPOSED BUTTERFLY VALVES, SEE DETAIL 1/3 3

CUT-IN 1/2 4
1/4" = 1'-0"



FOUNDATION DRAIN NOTES:

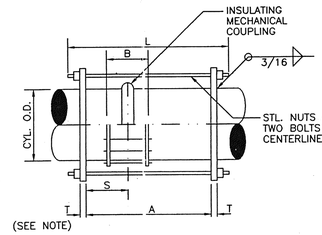
1. AGGREGATE SHALL BE NO. 57 STONE AS SPECIFIED PER SECTION 1005 OF NCDOT STANDARD SPECIFICATIONS, LATEST REVISION.
2. GEOTEXTILE FABRIC SHALL BE TYPE 1 AS SPECIFIED PER SECTION 1056 OF NCDOT STANDARD SPECIFICATIONS, LATEST REVISION.

FOUNDATION DRAIN 2/1 4
3/8" = 1'-0"

S = 1.5 B (9" MIN.)

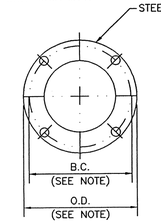
A = 3.0 O B (18" MIN.)

L = A + 6"



HARNESS SET NOTE:

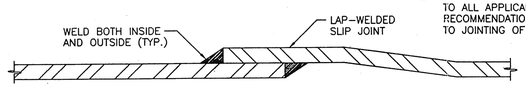
1. B.C. (BOLT CIRCLE) & O.D. (OUTSIDE DIAMETER) SHALL BE SIZED TO ENSURE 1/2" MIN. CLEARANCE AROUND COUPLING. TIE ROD DIAMETER AND FLANGE THICKNESS (T) SHALL MATCH STANDARD FLANGE DIMENSIONS OF PIPE.
2. HARNESS SET ASSEMBLY SHALL BE IN ACCORDANCE WITH AWWA M11.



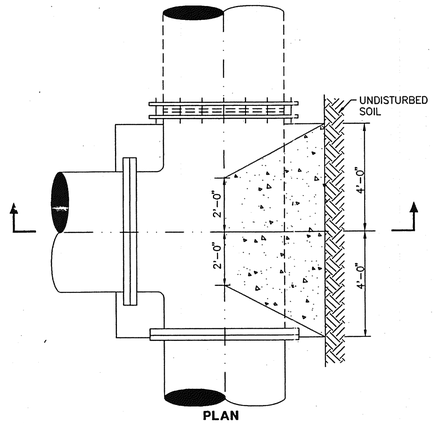
HARNESS SET 3/3 4
N.T.S.

WELDED JOINT NOTES:

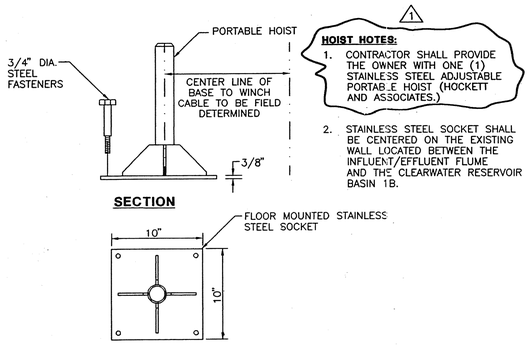
1. PIPE JOINTS SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C200 AND AWWA M11.
2. CONFORM TO AWWA M11 AND TO ALL APPLICABLE MANUFACTURER'S RECOMMENDATIONS PERTAINING TO JOINTING OF PIPE.



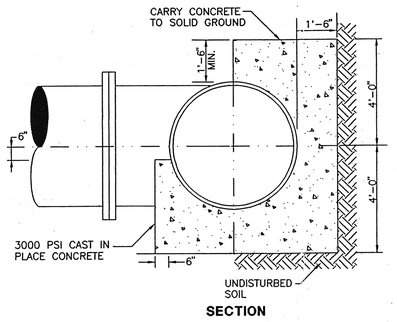
WELDED JOINT 4/3 4
N.T.S.



PLAN

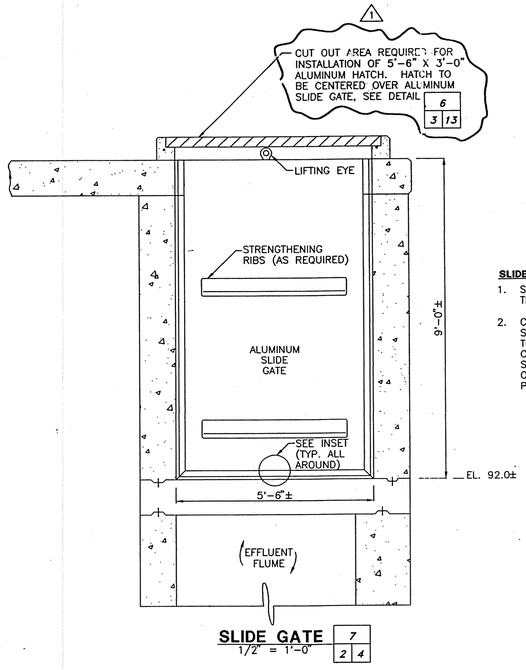


HOIST PLATFORM SOCKET 5/6 4
N.T.S.

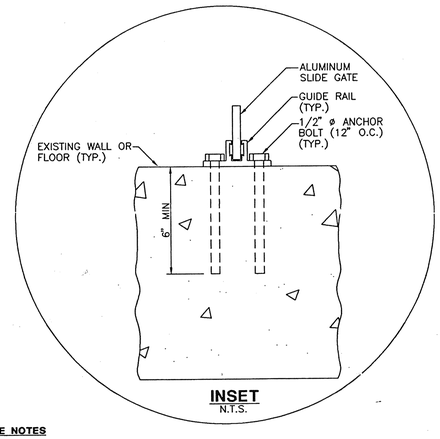


SECTION

THRUST BLOCK 6/4 4
3/8" = 1'-0"



SLIDE GATE 7/2 4
1/2" = 1'-0"



INSET
N.T.S.

SLIDE GATE NOTES

1. SLIDE GATE FRAME IS TYPICAL FOR THE TWO(2) FRAMES REQUIRED.
2. CONTRACTOR SHALL PROVIDE ONE(1) SLIDE GATE FOR DIRECTING OF FLOW TO THE RESERVOIR BASINS DURING THE CONSTRUCTION PHASE. SLIDE GATE SHALL BECOME THE PROPERTY OF THE OWNER FOLLOWING COMPLETION OF THE PROJECT.

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

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NORTH CAROLINA PROFESSIONAL SEAL 12378 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

YARD PIPING AND CLEARWATER RESERVOIR DETAILS

SCALE: AS SHOWN

DATE FEBRUARY, 1995
C SHEET 4 OF 15
DWG. NO. 1202-4

G:\FAYETTE\CLEARWEL\FAYCLK Mon Mar 13 10:37:10 1995

FAYCLK.DWG

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CLEARWATER RESERVOIR REPAIRS

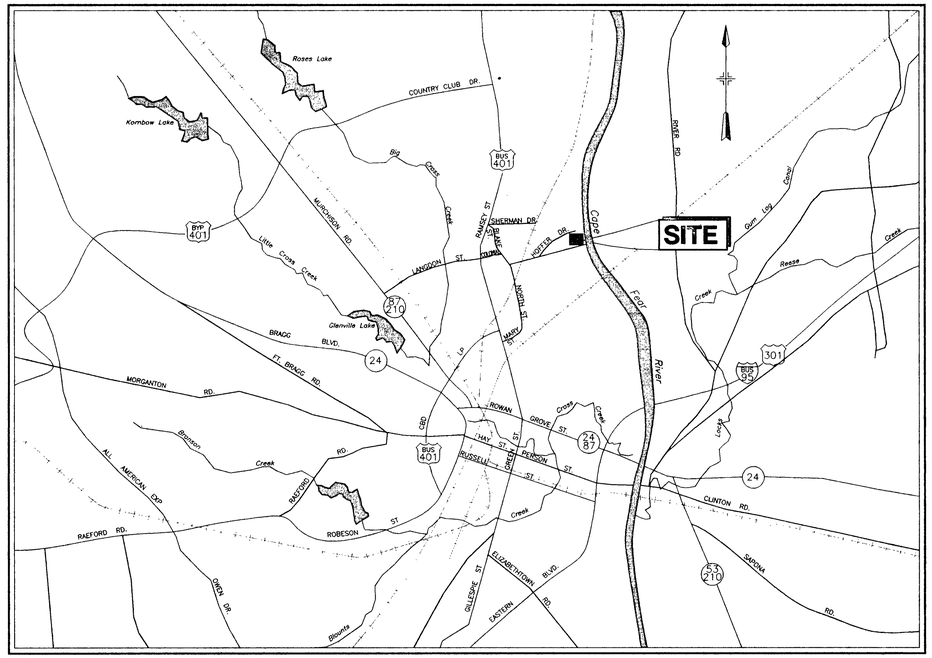
FAYETTEVILLE, NORTH CAROLINA

FEBRUARY, 1995

INDEX

SHEET	CIVIL	DWG. NO.
C1	SITE PLAN	1202-1
C2	CLEARWATER RESERVOIR PIPING MODIFICATIONS	1202-2
C3	YARD PIPING SECTIONS	1202-3
C4	YARD PIPING AND CLEARWATER RESERVOIR DETAILS	1202-4
C5	MISCELLANEOUS SITE WORK DETAILS	1202-5
C6	CLEARWATER RESERVOIR ROOF PLAN DEFICIENCY LOCATIONS	1202-6
C7	CLEARWATER RESERVOIR ELEVATION DEFICIENCY LOCATIONS	1202-7
C8	INTERIOR CLEARWATER RESERVOIR DEFICIENCY LOCATIONS	1202-8
C9	CLEARWATER RESERVOIR SECTION 1	1202-9
C10	CLEARWATER RESERVOIR SECTION 2	1202-10
C11	CLEARWATER RESERVOIR SECTION 3	1202-11
C12	CLEARWATER RESERVOIR SECTION 4	1202-12
C13	STRUCTURAL REPAIR DETAILS	1202-13
C14	MISCELLANEOUS REPAIR DETAILS	1202-14
C15	EXISTING BOOSTER PUMP STATION DEMOLITION	1202-15

SHEET	ELECTRICAL	DWG. NO.
E1	ELECTRICAL REPAIRS	1202-16



VICINITY MAP
NOT TO SCALE

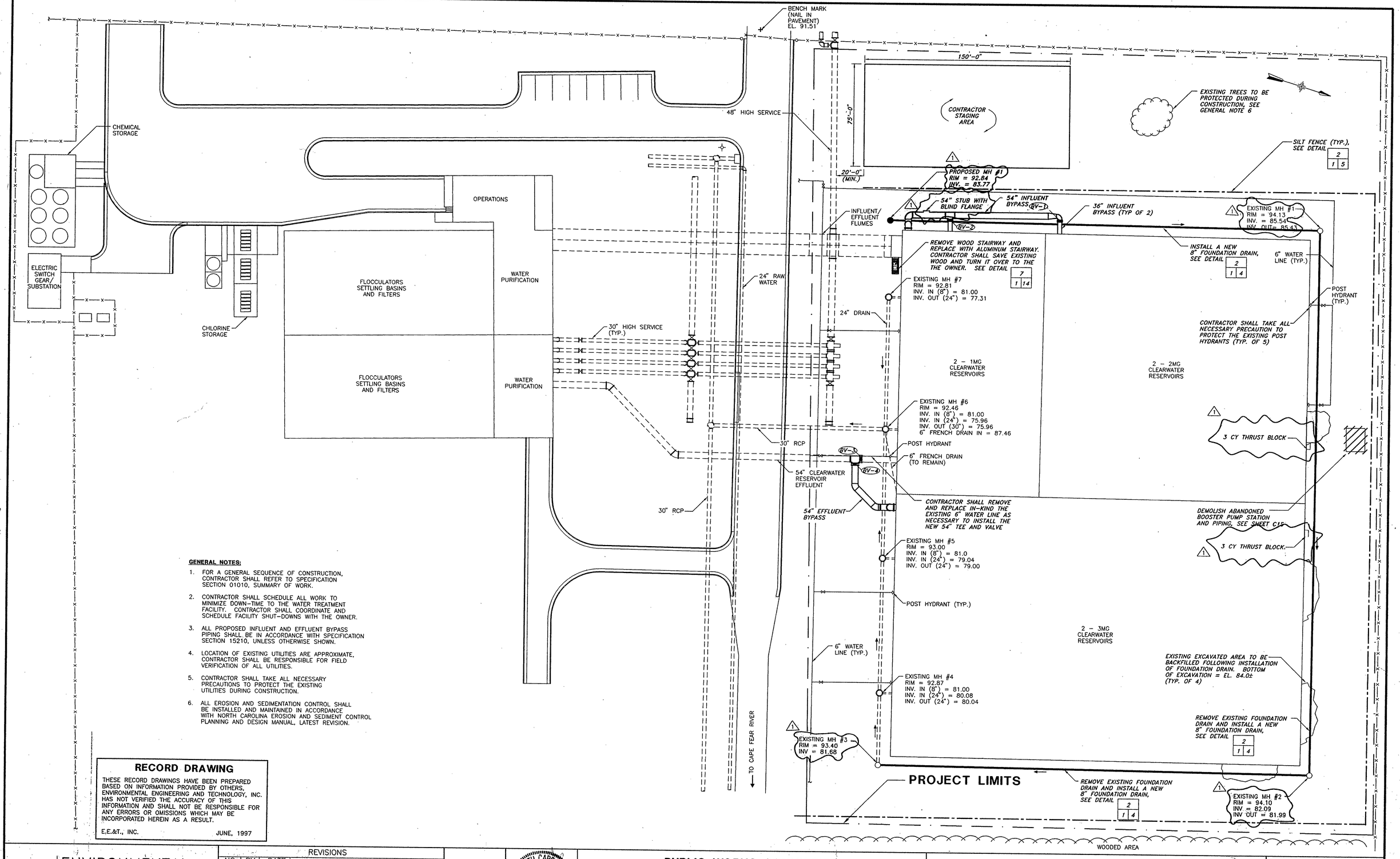
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PUBLIC WORKS COMMISSION

ENVIRONMENTAL ENGINEERING AND TECHNOLOGY, INC.
712 GUM ROCK COURT
NEWPORT NEWS, VIRGINIA 23606
(804) 873-1534

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP

AS-BUILTS
TSS 7/2/97

G:\FAYETT\CLEARWEL\FAYCLO Mon Mar 13 12:11:26 1995



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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

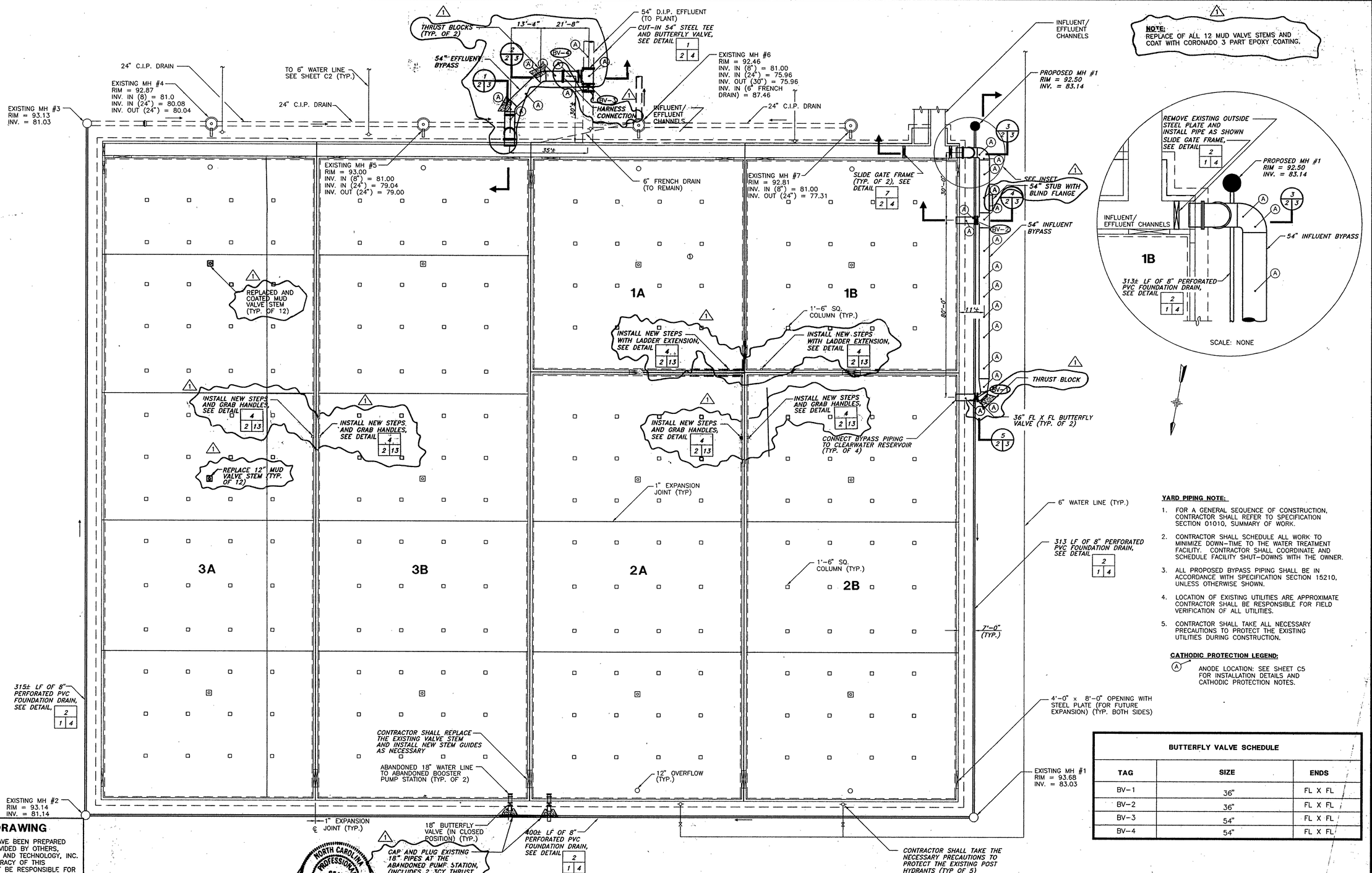
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

SITE PLAN

SCALE: 1" = 30'

DATE FEBRUARY, 1995
C SHEET 1 OF 15
DWG. NO. 1202-1

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YARD PIPING NOTE:

1. FOR A GENERAL SEQUENCE OF CONSTRUCTION, CONTRACTOR SHALL REFER TO SPECIFICATION SECTION 01010, SUMMARY OF WORK.
2. CONTRACTOR SHALL SCHEDULE ALL WORK TO MINIMIZE DOWN-TIME TO THE WATER TREATMENT FACILITY. CONTRACTOR SHALL COORDINATE AND SCHEDULE FACILITY SHUT-DOWNS WITH THE OWNER.
3. ALL PROPOSED BYPASS PIPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15210, UNLESS OTHERWISE SHOWN.
4. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL UTILITIES.
5. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES DURING CONSTRUCTION.

CATHODIC PROTECTION LEGEND:

(A) ANODE LOCATION: SEE SHEET C5 FOR INSTALLATION DETAILS AND CATHODIC PROTECTION NOTES.

BUTTERFLY VALVE SCHEDULE

TAG	SIZE	ENDS
BV-1	36"	FL X FL
BV-2	36"	FL X FL
BV-3	54"	FL X FL
BV-4	54"	FL X FL

RECORD DRAWING

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS, ENVIRONMENTAL ENGINEERING AND TECHNOLOGY, INC. HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

E.E.&T., INC. JUNE, 1997

NORTH CAROLINA PROFESSIONAL SEAL 17537 ENGINEER — Walter C. Weller, Jr. — Chief Engineer

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

FAYCLA.DWG

REVISIONS			
NO.	BY	DATE	REMARKS
1			RECORD DRAWING

DES E.M.P.
DWN J.L.C. C.O.G.
CKD C.V. M.M.B.

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER — MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

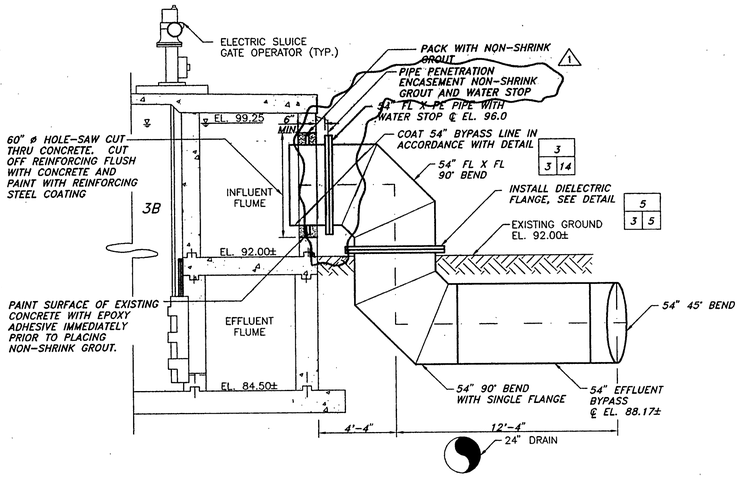
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR PIPING MODIFICATIONS

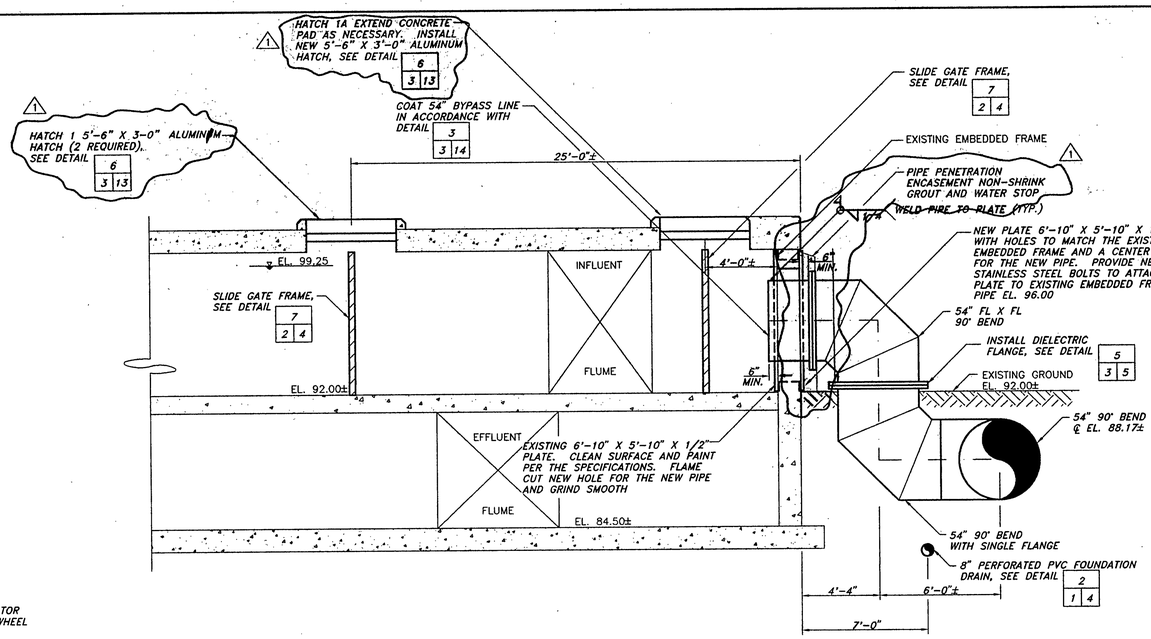
SCALE: 1" = 20'

DATE FEBRUARY
C SHEET 2 OF 15
DWG. NO. 1202-3

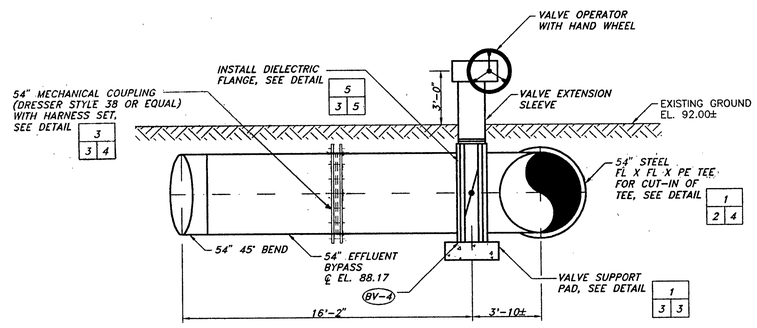
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EFFLUENT BYPASS LINE SECTION 1/2|2|3
1/4"=1'-0"



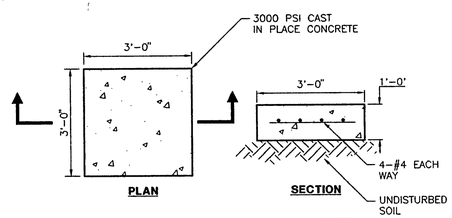
INFLUENT BYPASS LINE SECTION 3/2|3
1/4"=1'-0"



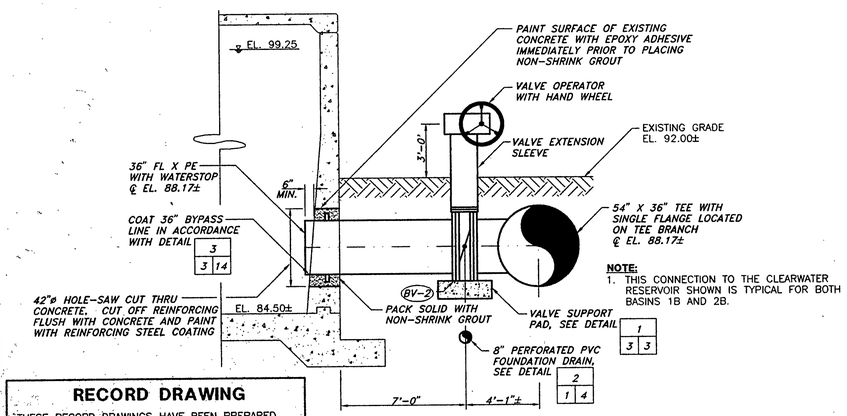
EFFLUENT BYPASS LINE SECTION 2/2|3
1/4"=1'-0"

YARD PIPING NOTES:

1. ALL PROPOSED BYPASS PIPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15210, UNLESS OTHERWISE NOTED.
2. SEE BUTTERFLY VALVE SCHEDULE SHEET C2 FOR VALVE SIZE.
3. ALL VALVES SHALL BE COATED IN ACCORDANCE WITH CATHODIC PROTECTION NOTE 7 ON SHEET C5.
4. CATHODIC PROTECTION SYSTEM SHALL BE INSTALLED AS SHOWN ON SHEETS C2 AND C5.
5. ABOVE GROUND INFLUENT AND EFFLUENT BYPASS PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION SECTION 09900.
6. JOINTS LOCATED BELOW GROUND FOR BYPASS PIPING SHALL BE LAP-WELDED SLIP JOINTS, SEE DETAIL 4/3|4

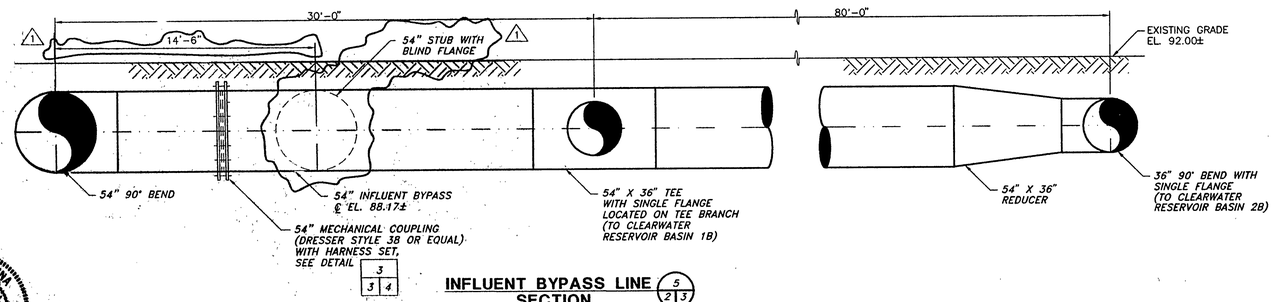


VALVE SUPPORT PAD 1/3|3
N.T.S.



NOTE:
1. THIS CONNECTION TO THE CLEARWATER RESERVOIR SHOWN IS TYPICAL FOR BOTH BASINS 1B AND 2B.

INFLUENT BYPASS LINE SECTION 4/2|3
1/4"=1'-0"



INFLUENT BYPASS LINE SECTION 5/2|3
1/4"=1'-0"

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

NORTH CAROLINA PROFESSIONAL SEAL 17537 ENGINEER WILLIAM CHRISTOPHER HOWARD Chief Engineer 11/17/94

NORTH CAROLINA PROFESSIONAL SEAL 67.66 ENGINEERS ROGER G. STROUD 11/17/94

NORTH CAROLINA PROFESSIONAL SEAL 12370 ENGINEERS MARK M. BISHOP

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

REVISIONS			
NO.	BY	DATE	REMARKS
1			RECORD DRAWING

DES E.M.P.
DWN J.L.C. C.O.G.
CKD C.V. M.M.B.

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

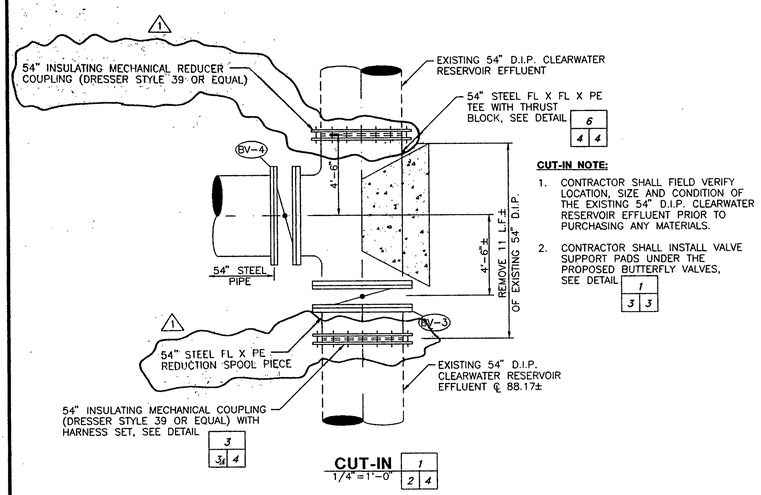
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

YARD PIPING SECTION

SCALE: AS SHOWN

DATE FEBRUARY, 1995
C SHEET 3 OF 15
DWG. NO. 1202-3

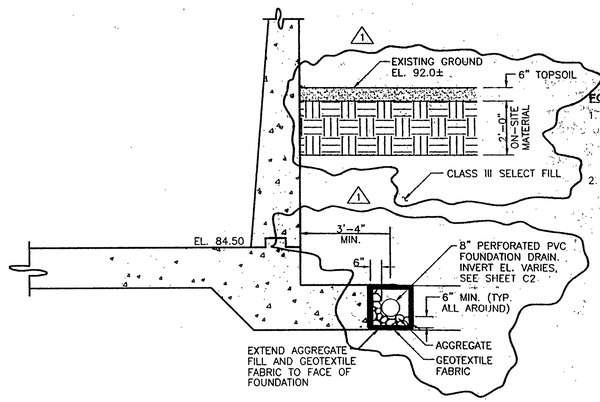
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CUT-IN NOTE:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION, SIZE AND CONDITION OF THE EXISTING 54" D.I.P. CLEARWATER RESERVOIR EFFLUENT PRIOR TO PURCHASING ANY MATERIALS.
2. CONTRACTOR SHALL INSTALL VALVE SUPPORT PADS UNDER THE PROPOSED BUTTERFLY VALVES, SEE DETAIL 1 3|3

CUT-IN 1 2|4
1/4" = 1'-0"



FOUNDATION DRAIN NOTES:

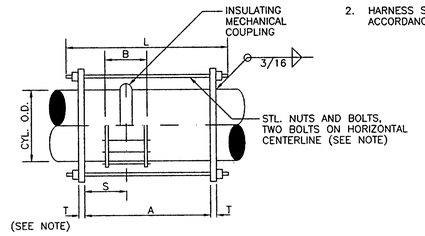
1. AGGREGATE SHALL BE NO. 57 STONE AS SPECIFIED PER SECTION 1005 OF NCDOT STANDARD SPECIFICATIONS, LATEST REVISION.
2. GEOTEXTILE FABRIC SHALL BE TYPE 1 AS SPECIFIED PER SECTION 1056 OF NCDOT STANDARD SPECIFICATIONS, LATEST REVISION.

FOUNDATION DRAIN 2 1|4
3/8" = 1'-0"

S = 1.5 B (9" MIN.)

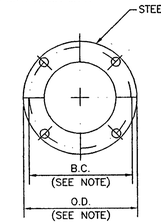
A = 3.0 O B (18" MIN.)

L = A + 6"

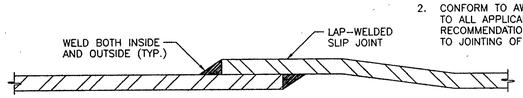


HARNESS SET NOTE:

1. B.C. (BOLT CIRCLE) & O.D. (OUTSIDE DIAMETER) SHALL BE SIZED TO ENSURE 1/2" MIN. CLEARANCE AROUND COUPLING. TIE ROD DIAMETER AND FLANGE THICKNESS (T) SHALL MATCH STANDARD FLANGE DIMENSIONS OF PIPE.
2. HARNESS SET ASSEMBLY SHALL BE IN ACCORDANCE WITH AWWA M11.



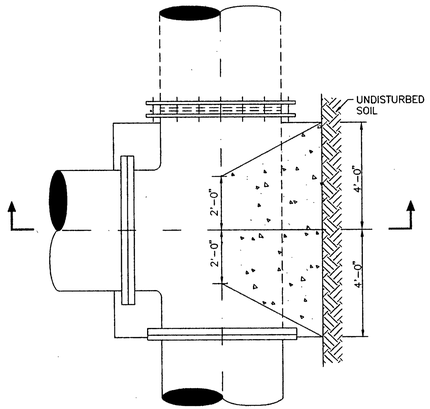
HARNESS SET 3 3|4
N.T.S.



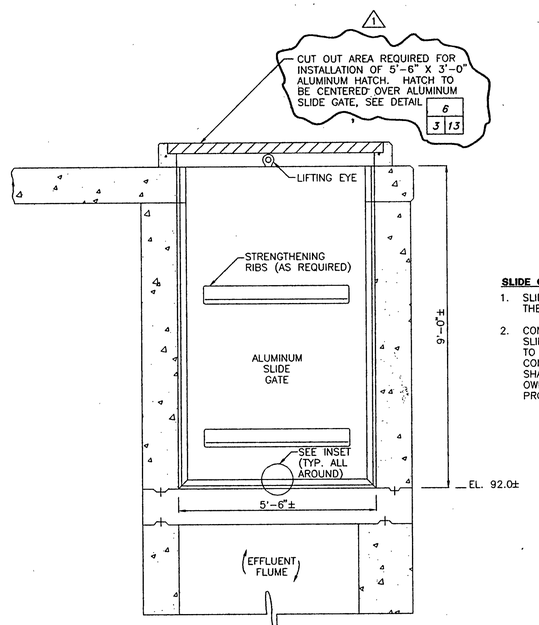
WELDED JOINT NOTES:

1. PIPE JOINTS SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C200 AND AWWA M11.
2. CONFORM TO AWWA M11 AND TO ALL APPLICABLE MANUFACTURER'S RECOMMENDATIONS PERTAINING TO JOINTING OF PIPE.

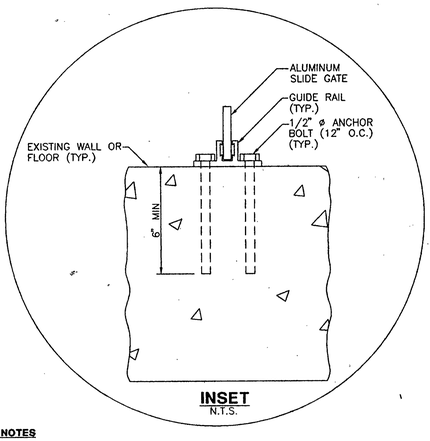
WELDED JOINT 4 3|4
N.T.S.



PLAN



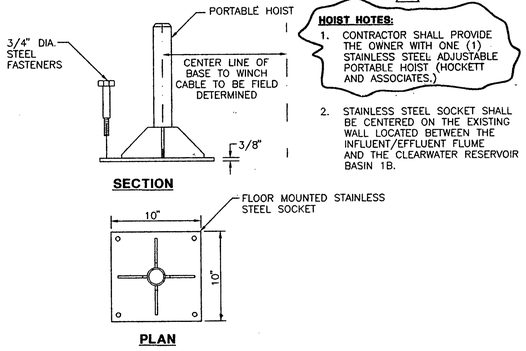
SLIDE GATE 7 2|4
1/2" = 1'-0"



INSET
N.T.S.

SLIDE GATE NOTES

1. SLIDE GATE FRAME IS TYPICAL FOR THE TWO(2) FRAMES REQUIRED.
2. CONTRACTOR SHALL PROVIDE ONE(1) SLIDE GATE FOR DIRECTING OF FLOW TO THE RESERVOIR BASINS DURING THE CONSTRUCTION PHASE. SLIDE GATE SHALL BECOME THE PROPERTY OF THE OWNER FOLLOWING COMPLETION OF THE PROJECT.



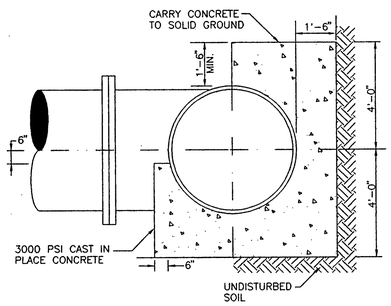
HOIST NOTES:

1. CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE (1) STAINLESS STEEL ADJUSTABLE PORTABLE HOIST (HOCKETT AND ASSOCIATES.)
2. STAINLESS STEEL SOCKET SHALL BE CENTERED ON THE EXISTING WALL LOCATED BETWEEN THE INFLUENT/EFFLUENT FLUME AND THE CLEARWATER RESERVOIR BASIN 1B.

SECTION

PLAN

HOIST PLATFORM SOCKET 5 6|4
N.T.S.



SECTION

THRUST BLOCK 6 4|4
3/8" = 1'-0"

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

REVISIONS			
NO.	BY	DATE	REMARKS
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DWN J.L.C. C.O.G.
CKD C.V. M.M.B.

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

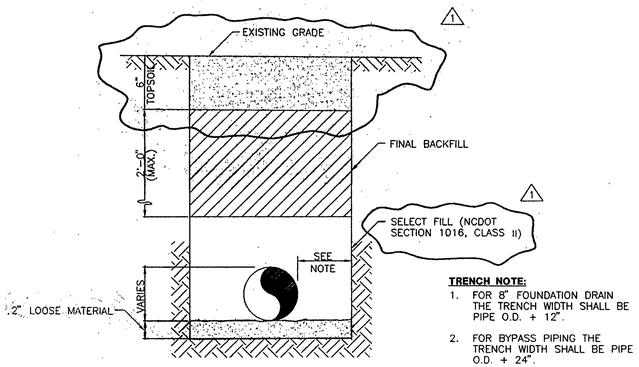
YARD PIPING AND CLEARWATER RESERVOIR DETAILS

SCALE: AS SHOWN

DATE FEBRUARY, 1995
C SHEET 4 OF 15
DWG. NO. 1202-4

G:\FAYETTV\CLEARWEL\FAYCLK Mon Mar 13 10:37:10 1995

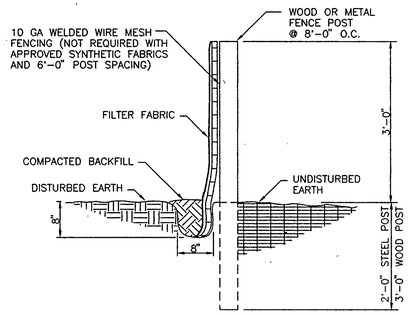
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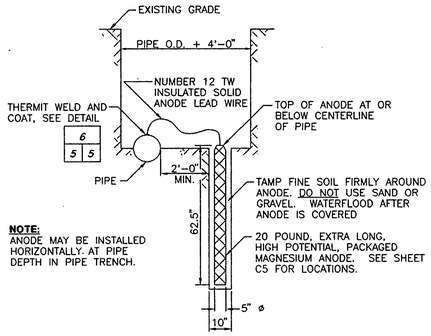
TRENCH NOTE:

1. FOR 8" FOUNDATION DRAIN THE TRENCH WIDTH SHALL BE PIPE O.D. + 12".
2. FOR BYPASS PIPING THE TRENCH WIDTH SHALL BE PIPE O.D. + 24".

TYP. TRENCH FOR PIPE 6" AND LARGER (1 / 5 5)
1-1/2" = 1'-0"



SILT FENCE (2 / 1 5)
N.T.S.

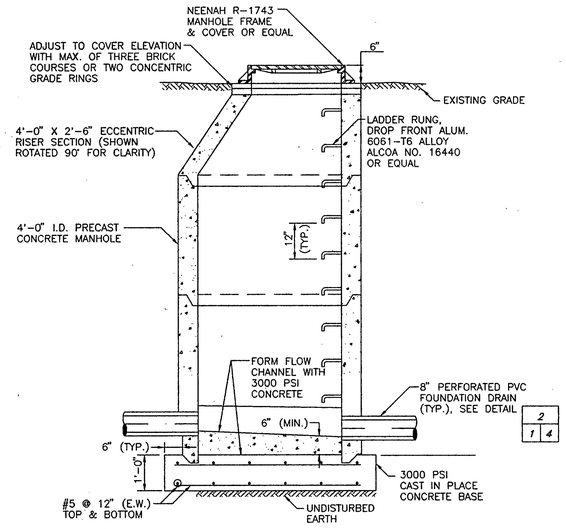


NOTE:
ANODE MAY BE INSTALLED HORIZONTALLY AT PIPE DEPTH IN PIPE TRENCH.

MAGNESIUM ANODE (3 / 2 5)
N.T.S.

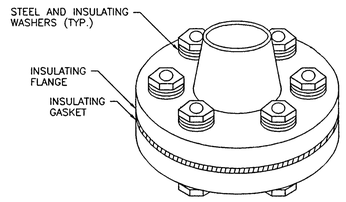
CATHODIC PROTECTION NOTES:

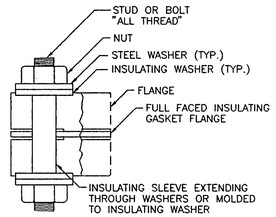
1. THESE PROJECT DRAWINGS ARE INTENDED TO PROVIDE A GENERAL LAYOUT OF THE REQUIRED CATHODIC PROTECTION COMPONENTS. THE CONTRACTOR MAY MAKE MINOR MODIFICATIONS TO PROPOSED COMPONENT LOCATIONS WITH PRIOR APPROVAL FROM THE ENGINEER. ANY CHANGES SHALL BE DOCUMENTED ON THE "PROJECT RECORD DRAWINGS".
2. ALL DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR DRAWINGS EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.
3. THE EXTENT AND LOCATION OF THE OTHER UNDERGROUND STRUCTURES WITHIN THE FACILITY ARE NOT KNOWN. CONTRACTOR SHALL PROCEED WITH CAUTION WHEN PERFORMING ALL EXCAVATIONS.
4. MAGNESIUM ANODE INSTALLATION:
   a. DO NOT INSTALL ANODES UNTIL INSPECTED AND APPROVED BY THE ENGINEER.
   b. THERMIT WELD LEAD WIRES DIRECTLY TO THE FITTINGS AND PIPING INDICATED.
   c. PLACE ANODES A MINIMUM OF 2-FEET FROM ALL BURIED METALLIC STRUCTURES.
   d. ALL ANODES SHALL BE PREPACKAGED, HIGH POTENTIAL, 20 POUND MAGNESIUM.
   e. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ANODES AT APPROXIMATE LOCATIONS SHOWN ON SHEET C2.
   REFER TO THE "THERMIT WELDMENT INSTALLATION DETAIL"
   f. BE CAREFUL DURING BACKFILLING NOT TO DAMAGE ANODE OR LEAD WIRES DURING BACKFILLING. REPLACE OR REPAIR ALL DAMAGED COMPONENTS.
   REFER TO "MAGNESIUM ANODE" INSTALLATON DETAIL.
5. THERMIT WELDMENT INSTALLATION:
   a. FOLLOW MANUFACTURER'S INSTRUCTIONS AND INSTALLATION DETAILS WHEN THERMIT WELDING COPPER WIRES TO STEEL STRUCTURES.
   b. GRIND ALL STEEL STRUCTURES TO GREY METAL BEFORE WELDING.
   c. THERMIT WELD THE WIRE TO THE STRUCTURE.
   d. CLEAN THE WELDMENTS.
   e. COAT ALL WELDMENTS WITH BRUSH-ON MASTIC, AND COVER WITH BACKFILL SHIELDS.
   REFER TO "THERMIT WELDMENT INSTALLATION" DETAIL.
6. DIELECTRIC ISOLATION:
   a. INSTALL DIELECTRIC ISOLATION KITS ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
   b. INSTALL DIELECTRIC ISOLATION, SUCH AS RUBBER PADDING, BETWEEN PIPING AND PIPE SUPPORTS ON THE PROTECTED (BURIED) SIDE OF THE ISOLATION FLANGE/UNION INSIDE THE BUILDING.
   c. HAVE ALL DIELECTRIC ISOLATORS TESTED PRIOR TO BURIAL OR INSTALLATION OF THERMAL INSULATION.
   d. THERMAL INSULATION AROUND PIPE RISERS AT DIELECTRIC ISOLATION MUST NOT SHORT THE DIELECTRIC ISOLATION.
   e. INSTALL DIELECTRIC ISOLATION BETWEEN VALVES AND VALVE POSITION INDICATOR SWITCH ELECTRICAL CONDUITS AS APPLICABLE.
   f. INSTALL TAR BOXES AROUND BURIED DIELECTRIC FLANGES AFTER TESTING AND BURIAL. CONSTRUCT WOOD FRAMES AROUND FLANGES AND CAST HOT TAR INTO FRAMES SO A MINIMUM OF 3 INCHES OF TAR COVERS ALL SURFACES.
   REFER TO "DIELECTRIC FLANGE AND UNION" INSTALLATION DETAIL.
7. BURIED VALVES:
   a. COAT ALL VALVE SURFACES INCLUDING NUTS, BOLTS, AND WASHERS WITH BRUSH-ON MASTIC.



SECTION

MANHOLE (4 / 5 5)
N.T.S.

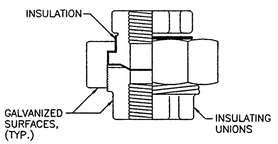


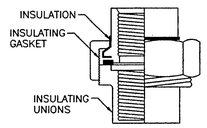


MATERIALS FOR FLANGES GASKET:
BUNA NITRIL
FACED PHENOLIC, TYPE E FULL FACE, JOCK-O-RING

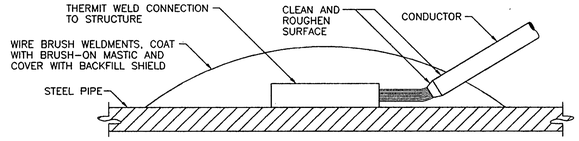
SLEEVES AND WASHERS:

1. 1-1/4 INCH DIAMETER BOLTS AND SMALLER, DOUBLE SIDED MOLDED ONE-PIECE MINLON.
2. 1-1/2 INCH DIAMETER BOLTS AND LARGER, POLYETHYLENE SLEEVES AND DOUBLE ASSEMBLY CE PHENOLIC WASHERS.





DIELECTRIC FLANGE AND UNION (5 / 3 5)
N.T.S.



INSTALLATION NOTES:

1. GRIND METAL SURFACE TO GREY METAL BEFORE WELDING, AND CLEAN.
2. METAL SURFACES TO BE DRY AND FREE OF FOREIGN MATERIAL.
3. CONNECTION AND EXPOSED METAL TO HAVE 1/2-INCH MINIMUM COATING. COVER COATING WITH BACKFILL SHIELD.
4. MULTIPLE WELDS ON THE SAME SURFACE SHALL BE A MINIMUM 3-INCHES APART.
5. USE MANUFACTURER RECOMMENDED WLEDER AND CHARGE SIZES FOR THE TYPE AND SIZE STRUCTURES TO BE WELDED TO.
6. INSTALL COPPER SLEEVE OVER END OF #12 COPPER WIRE BEFORE WELDING.
7. DO NOT USE "COAL TAR" MASTIC IN CONJUCTION WITH ASPHALT COATINGS.
8. FOR VERTICAL WELDS BUILD A TAPE TENT AROUND THE WELDMENT AND EXPOSED METAL, AND FILL WITH MASTIC.
9. WHEN USING PLASTIC CAPS AS BACKFILL SHIELDS, BRUSH MASTIC OVER AFFECTED AREA, FILL CAP WITH MASTIC AND PLACE OVER WELDMENT, BRUSH MASTIC OVER AFFECTED AREA AND CAP, THEN PUSH THE CORNERS OF THE CAP DOWN SO THEY ARE STUCK IN THE MASTIC.

THERMIT WELDMENT (6 / 5 5)
N.T.S.

NORTH CAROLINA PROFESSIONAL SEAL 17537 ENGINEER — Chief Engineer — 11/7/94

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

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NO.	BY	DATE	REMARKS
1			RECORD DRAWING

DES E.M.P.
DWN J.L.C. C.O.C.
CKD C.V. M.M.B.

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER — MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

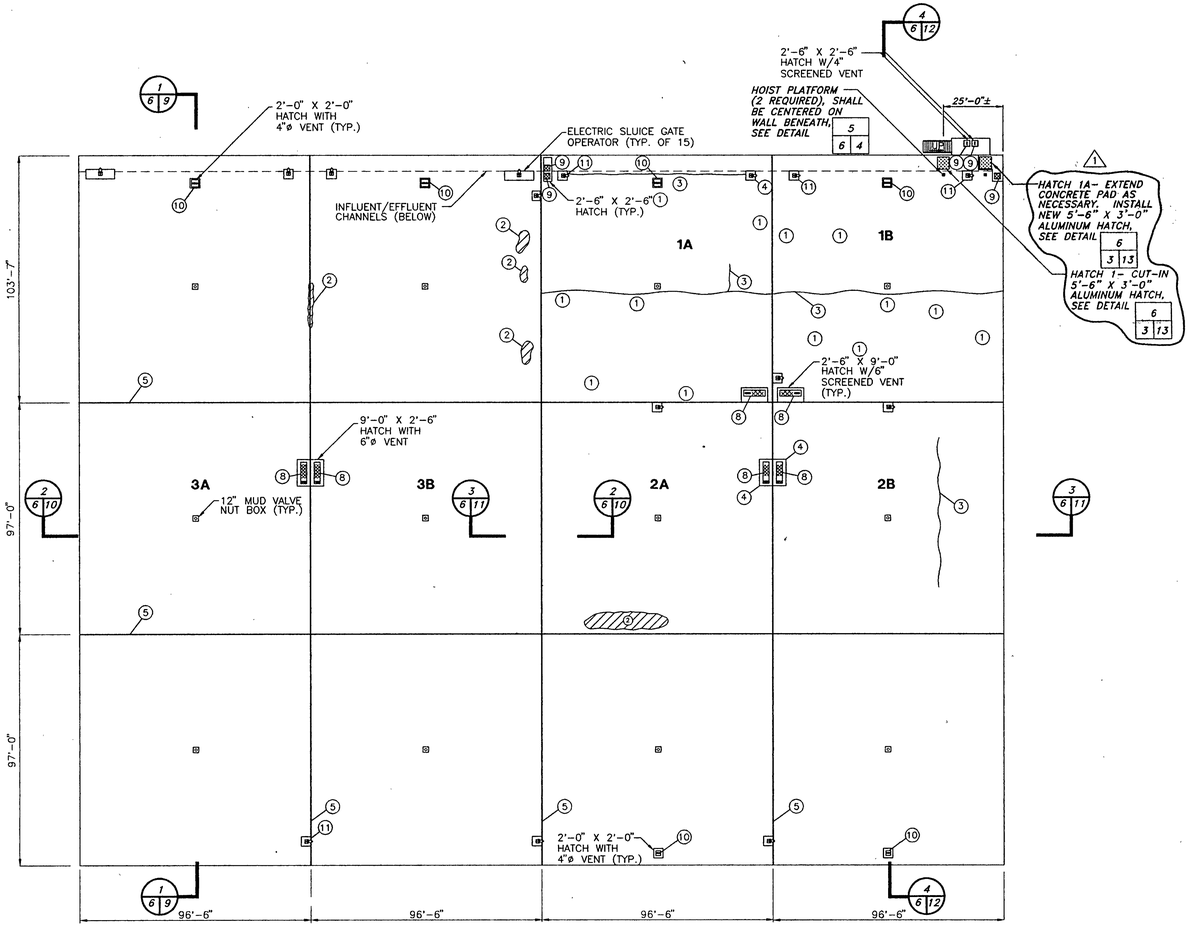
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

MISCELLANEOUS SITE WORK DETAILS

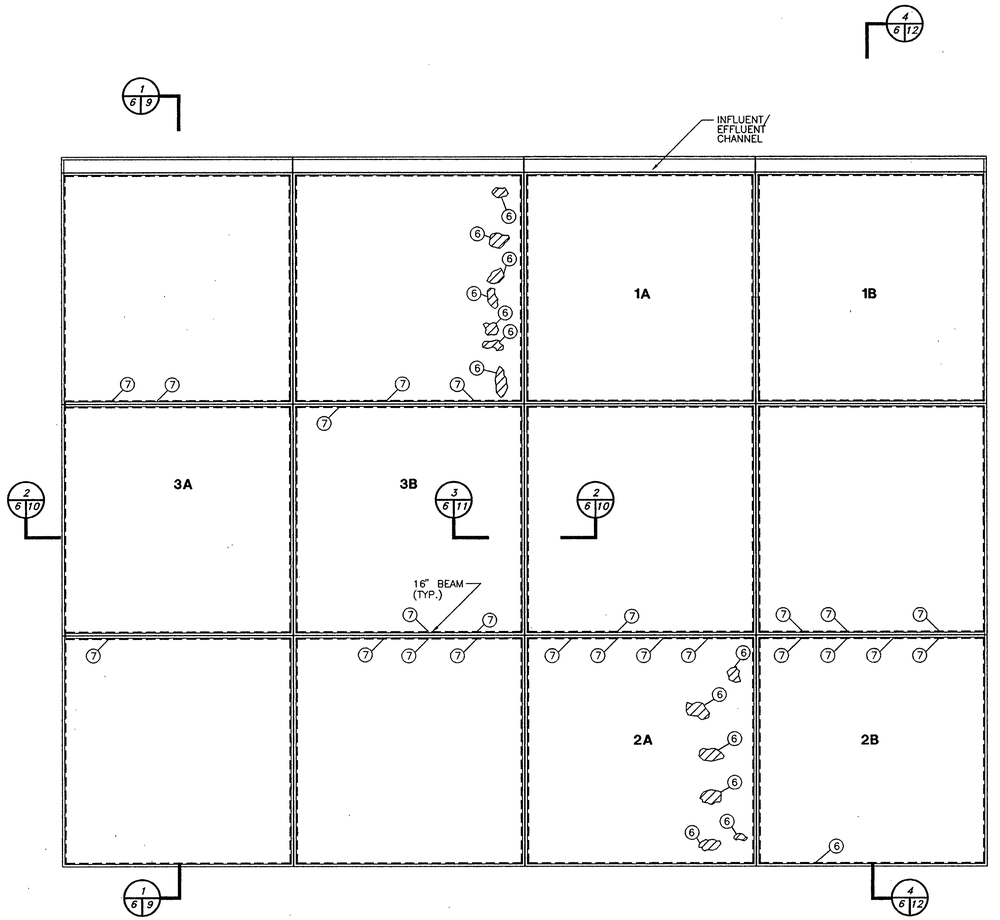
SCALE: AS SHOWN

DATE FEBRUARY, 1995
C SHEET 5 OF 15
DWG. NO. 1202-5

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TOP-SIDE - PLAN
1" = 30'



UNDER-SIDE - PLAN
1" = 30'

TOP-SIDE NOTES:

1. REMOVE AND REPLACE EXISTING BILCO HATCH HARDWARE WITH 316 STAINLESS STEEL HARDWARE.
2. FOR ALL ELECTRICAL WORK, SEE SHEET E1.

REPAIR SCHEDULE

LEGEND	DESCRIPTION	BASE BID QANTITY	REPAIR DETAIL
1	EXPOSED REBAR (TOP-SIDE)	3,000 SF	9-6-13
2	SURFACE SPALLING (TOP-SIDE)	140 SF	8-6-13
3	CRACK SLAB TOP SIDE (DELETED) △	360 LF	3-6-13
4	CRACKED CONCRETE PAD	3 EACH	3-6-13
5	EXPANSION JOINT (TOP-SIDE)	1,700 LF	1-6-13
6	SURFACE SPALL (UNDER-SIDE)	140 SF	8-6-13
7	BEAM SPALL (UNDER-SIDE)	105 SF	8-6-13
8	HARDWARE (9'-0" X 2'-6" HATCH)	6	SEE TOP-SIDE NOTE 1
9	HARDWARE (2'-6" X 2'-6" HATCH)	3	SEE TOP-SIDE NOTE 1
10	HARDWARE (2'-0" X 2'-0" HATCH)	6	SEE TOP-SIDE NOTE 1
11	SLUICE GATE OPERATOR PAD	4	12-6-13

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

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NORTH CAROLINA PROFESSIONAL SEAL 12378 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

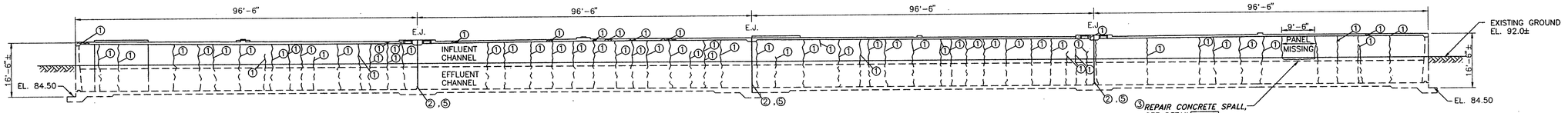
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR ROOF PLAN DEFICIENCY LOCATION

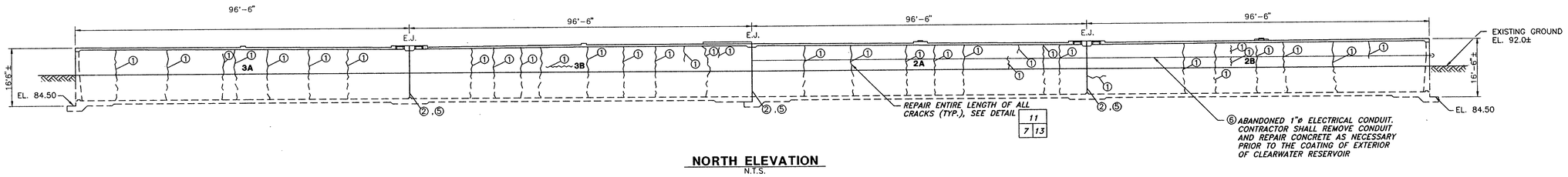
SCALE: 1" = 30'

DATE FEBRUARY, 1995
C SHEET 6 OF 15
DWG. NO. 1202-6

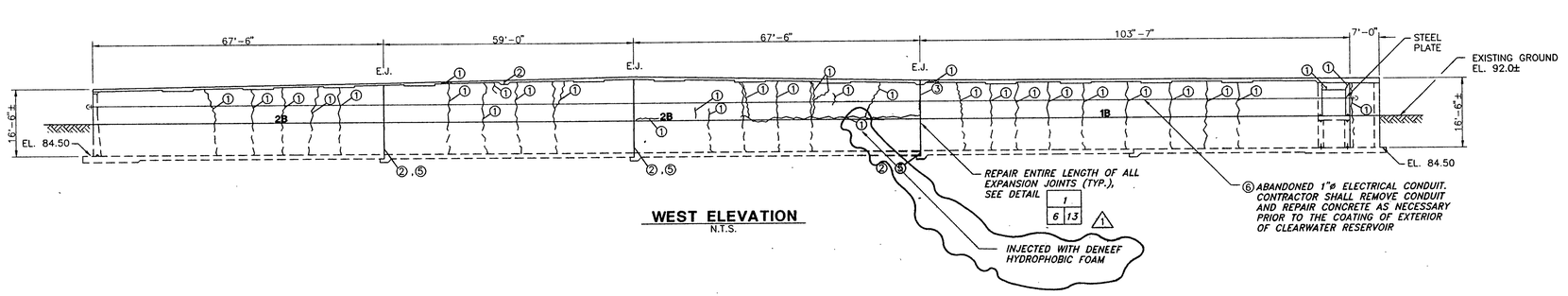
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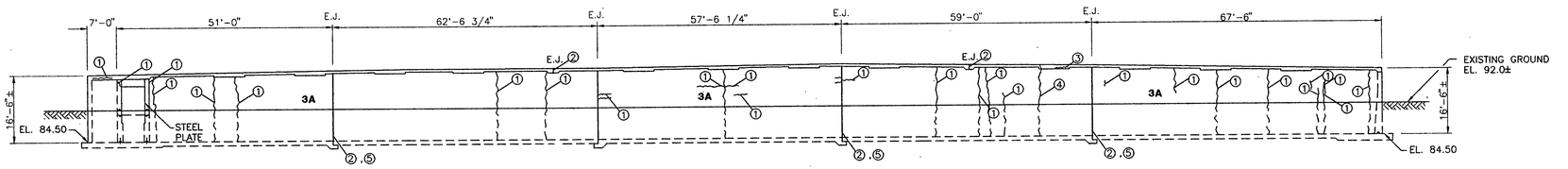
SOUTH ELEVATION
N.T.S.



NORTH ELEVATION
N.T.S.



WEST ELEVATION
N.T.S.



EAST ELEVATION
N.T.S.

REPAIR SCHEDULE

LEGEND	DESCRIPTION	BASE BID QANTITY	REPAIR DETAIL
1	WALL CRACK	2,400 LF	11-7-13
2	EXTERIOR WALL EXPANSION JOINT	225 LF	1-6-13
3	SPALL WALL	95 SF	8-6-13
4	EXTERIOR WALL COATING	16,725 SF	SEE NOTE 1
5	INTERIOR WALL EXPANSION JOINT (NOT SHOWN)	180 LF	5-7-13
6	REMOVE ABANDONED ELECTRICAL CONDUIT	490 LF	SEE NOTE 2

CONCRETE REPAIR NOTE:

1. EXTERIOR SURFACE OF ALL CONCRETE WALLS SHALL BE COATED FROM THE TOP OF THE ROOF TO 24" BELOW EXISTING GRADE IN ACCORDANCE WITH SPECIFICATION SECTION 09910 (TYP. ALL AROUND)
2. FOR ALL ELECTRICAL WORK, SEE SHEET E1

RECORD DRAWING

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NO.	BY	DATE	REMARKS
1			RECORD DRAWING

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NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

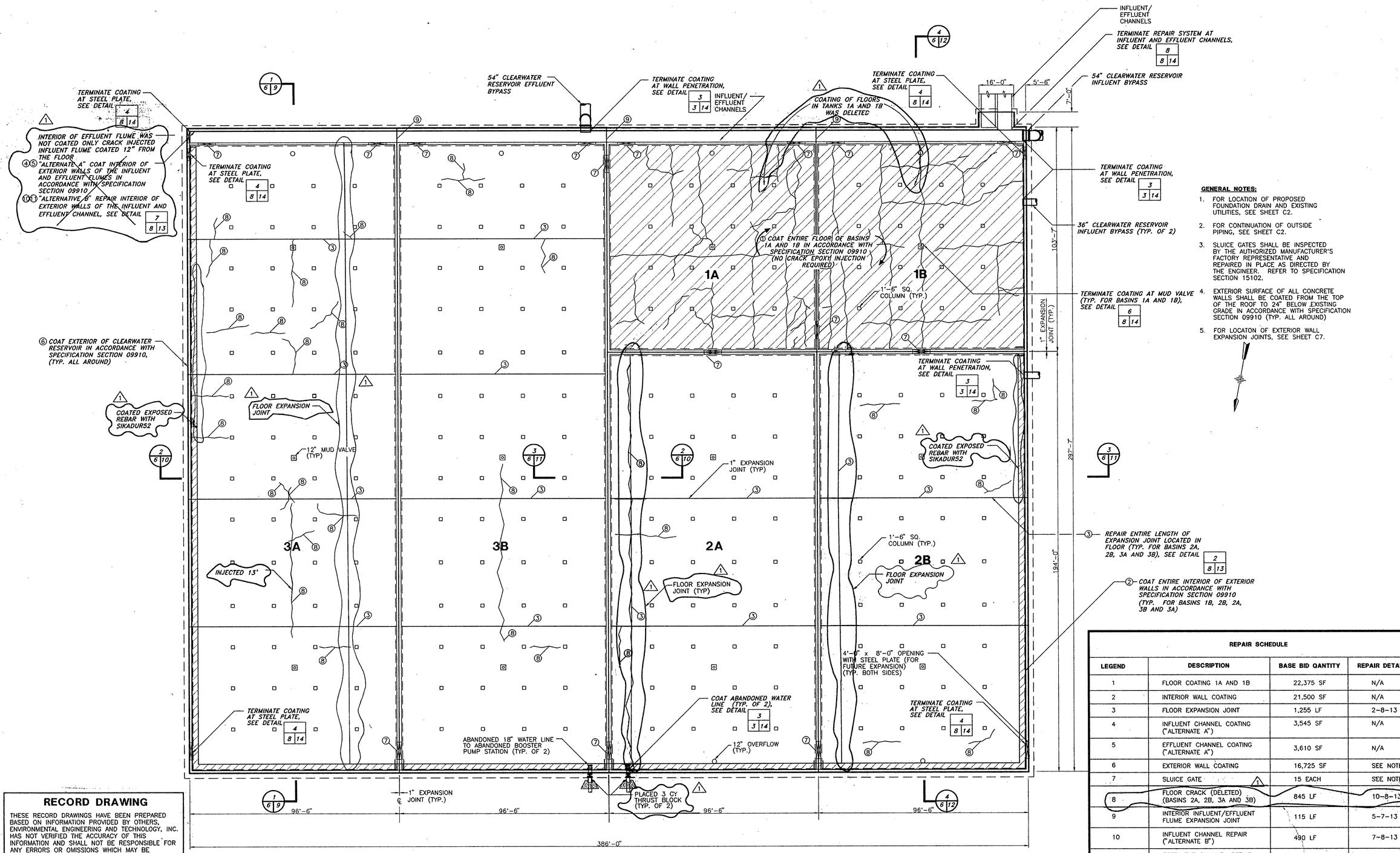
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR ELEVATIONS DEFICIENCY LOCATIONS

SCALE: NOT TO SCALE

DATE FEBRUARY, 1995
C SHEET 7 OF 15
DWG. NO. 1202-7

G:\FAYETTV\CLEARWEL\FAYCLF Mon Mar 13 10:49:09 1995



GENERAL NOTES:

1. FOR LOCATION OF PROPOSED FOUNDATION DRAIN AND EXISTING UTILITIES, SEE SHEET C2.
2. FOR CONTINUATION OF OUTSIDE PIPING, SEE SHEET C2.
3. SLUICE GATES SHALL BE INSPECTED BY THE AUTHORIZED MANUFACTURER'S FACTORY REPRESENTATIVE AND REPAIRED IN PLACE AS DIRECTED BY THE ENGINEER. REFER TO SPECIFICATION SECTION 15102.
4. EXTERIOR SURFACE OF ALL CONCRETE WALLS SHALL BE COATED FROM THE TOP OF THE ROOF TO 24" BELOW EXISTING GRADE IN ACCORDANCE WITH SPECIFICATION SECTION 09910 (TYP. ALL AROUND)
5. FOR LOCATON OF EXTERIOR WALL EXPANSION JOINTS, SEE SHEET C7.

REPAIR SCHEDULE

LEGEND	DESCRIPTION	BASE BID QANTITY	REPAIR DETAIL
1	FLOOR COATING 1A AND 1B	22,375 SF	N/A
2	INTERIOR WALL COATING	21,500 SF	N/A
3	FLOOR EXPANSION JOINT	1,255 LF	2-8-13
4	INFLUENT CHANNEL COATING ("ALTERNATE A")	3,545 SF	N/A
5	EFFLUENT CHANNEL COATING ("ALTERNATE A")	3,610 SF	N/A
6	EXTERIOR WALL COATING	16,725 SF	SEE NOTE 4
7	SLUICE GATE 1	15 EACH	SEE NOTE 3
8	FLOOR CRACK (DELETED) (BASINS 2A, 2B, 3A AND 3B)	845 LF	10-8-13
9	INTERIOR INFLUENT/EFFLUENT FLUME EXPANSION JOINT	115 LF	5-7-13
10	INFLUENT CHANNEL REPAIR ("ALTERNATE B")	490 LF	7-8-13
11	EFFFLUENT CHANNEL REPAIR ("ALTERNATE B")	490 LF	7-8-13

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E.E.&T., INC. JUNE, 1997

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CITY OF FAYETTEVILLE, NORTH CAROLINA

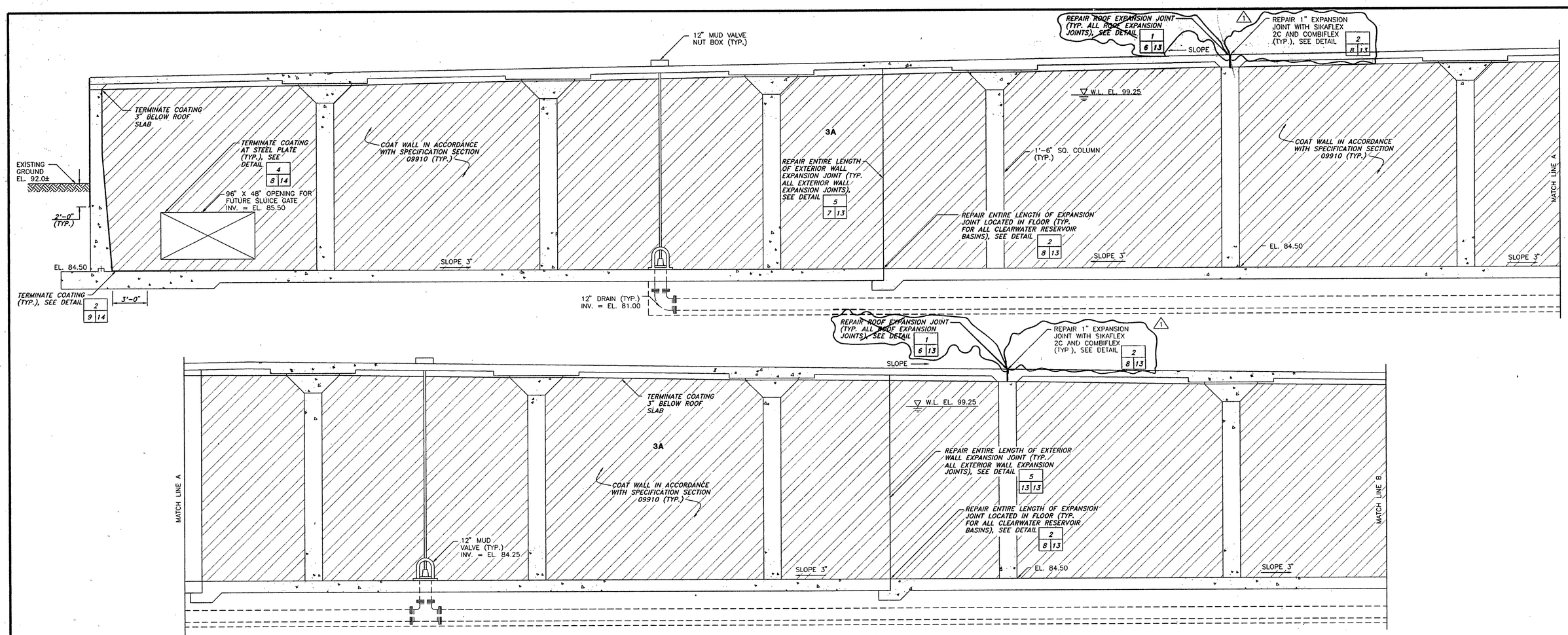
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

INTERIOR CLEARWATER RESERVOIR DEFICIENCY LOCATIONS

SCALE: 1" = 20'

DATE FEBRUARY, 1995
C SHEET 8 OF 15
DWG. NO. 1202-8

G:\FAYETT\CLEARWEL\FAYCLA Mon Mar 13 10:20:49 1995



SECTION 1/4" = 1'-0" (1 6 9)

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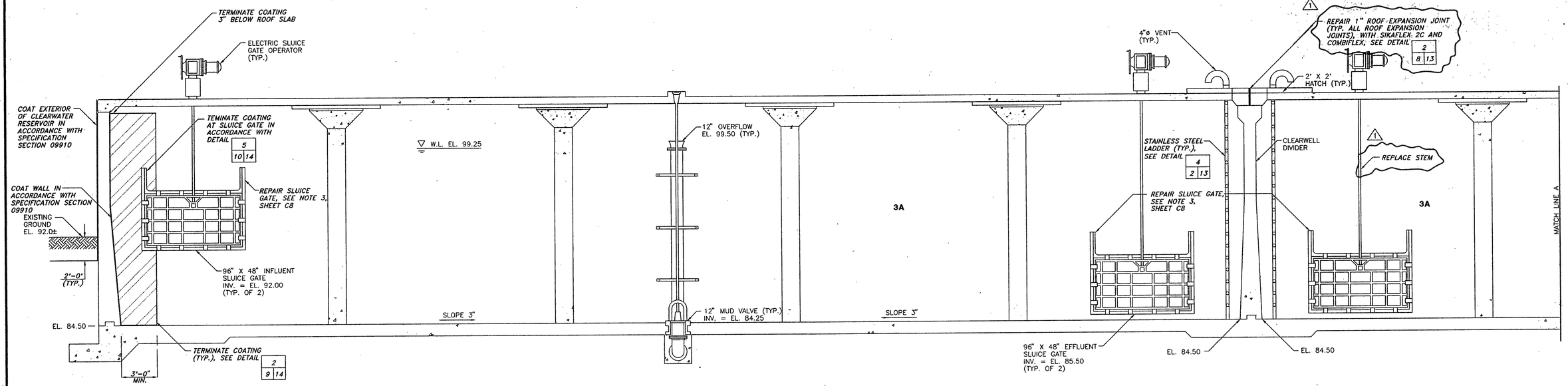
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

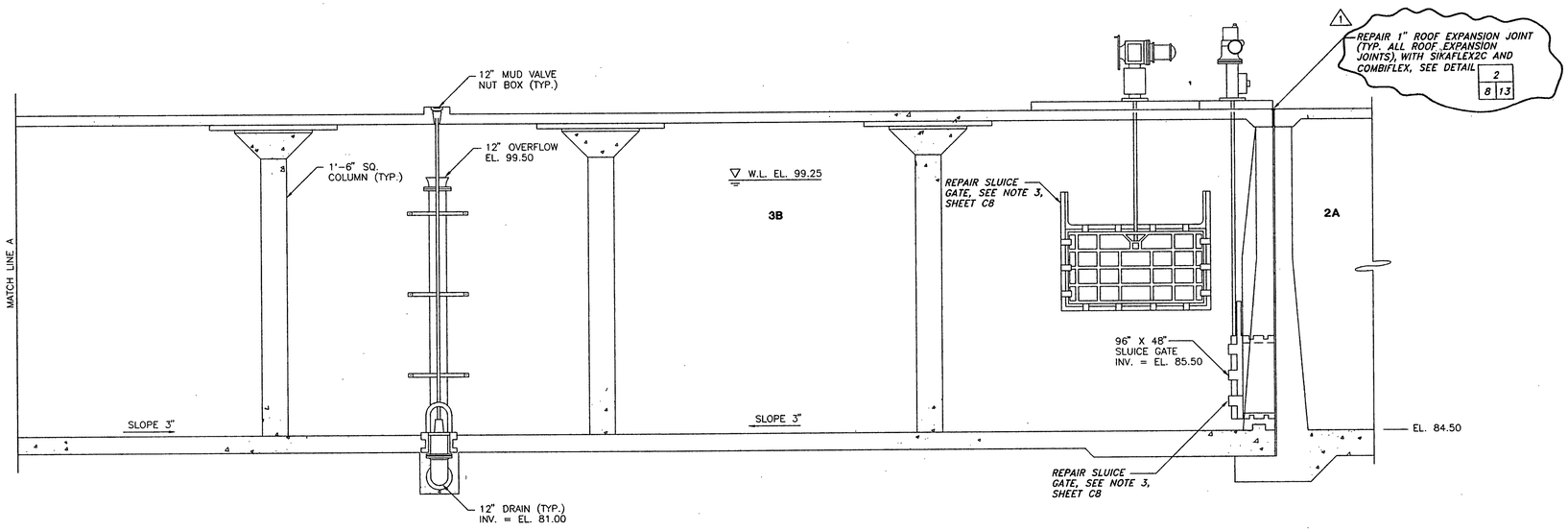
CLEARWATER RESERVOIR SECTION 1

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

DATE FEBRUARY, 1995
C SHEET 9 OF 15
DWG. NO. 1202-9

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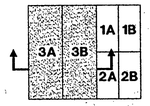


SECTION 2/6|10
1/4" = 1'-0"

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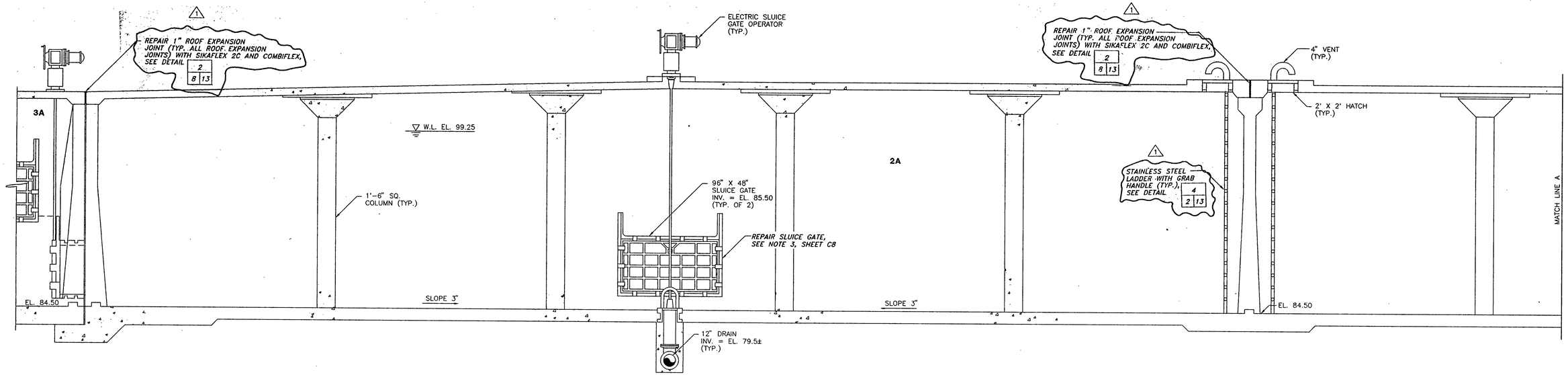
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR SECTION 2

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

DATE FEBRUARY, 1995.
C SHEET 10 OF 15
DWG. NO. 1202-10

G:\FAYETTV\CLEARWEL\FAYCLD Mon Mar 13 11:00:55 1995
FAYCLD.DWG

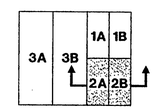


SECTION 3/6|11
1/4" = 1'-0"

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PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR SECTION 3

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

DATE FEBRUARY, 1995
C SHEET 11 OF 15
DWG. NO. 1202-11

G:\FAYETT\CLEARWEL\FAYCLC Mon Mar 13 11:04:40 1995

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E.E.&T., INC. JUNE, 1997

ELECTRIC SLUICE GATE OPERATOR (TYP.)
TERMINATE COATING AT WALL PENETRATION OF 54" INFLUENT BYPASS, SEE DETAIL 3/3|14
TERMINATE COATING 3" BELOW ROOF SLAB
54" INFLUENT BYPASS ℄ EL. 96.00
2' X 2' HATCH WITH 4"ø VENT
SLOPE
1 INTERIOR OF EFFLUENT FLUME WAS NOT COATED ONLY CRACK INJECTED INFLUENT FLUME COATED 12" FROM THE FLOOR AND EFFLUENT FLUMES IN ACCORDANCE WITH SPECIFICATION SECTION 09910 "ALTERNATE B" REPAIR INTERIOR OF EXTERIOR INFLUENT AND EFFLUENT FLUMES, SEE DETAIL 7/8|13
12" OVERFLOW EL. 99.50
W.L. EL. 99.25
5'-6"
8'-0"
96" X 48" SLUICE GATE INV. = EL. 85.50
W.L. EL. 99.25
COAT WALL IN ACCORDANCE WITH SPECIFICATION SECTION 09910
TERMINATE COATING 3" BELOW ROOF SLAB
EXISTING MH #7
EXISTING GROUND EL. 92.0±
INFLUENT FLUME
EL. 92.00
TERMINATE COATING AT STEEL PLATE OPENING, (TYP.) SEE DETAIL 4/8|14
1B
1 TERMINATE COATING AT VALVE (TYP.), SEE DETAIL 6/8|14
96" X 48" OPENING FOR FUTURE SLUICE GATE INV. = EL. 85.50
2'-0" (TYP.)
6"
6"
5'-0"
2'-0" (TYP.)
1 TERMINATE COATING AT COLUMNS (TYP.), SEE DETAIL 2/9|14
1 REPLACED AND COATED MUDVALVE STEM (TYP. OF 12)
MATCH LINE A
EFFLUENT FLUME
SLOPE 3"
EL. 84.50
INV. = EL. 81.00
1'-0" (TYP.)
36" INFLUENT BYPASS ℄ EL. 88.17
1 TERMINATE COATING (TYP.), SEE DETAIL 2/9|14
24" DRAIN INV. (IN) = 77.31
REPAIR ALL SLUICE GATES IN ACCORDANCE WITH SPECIFICATION SECTION 15102 (TYP. OF 15 TOTAL)
1 COAT ENTIRE FLOOR OF BASINS 1A AND 1B IN ACCORDANCE WITH SPECIFICATION SECTION 09910
TERMINATE COATING AT WALL PENTRATION OF 36" INFLUENT BYPASS, SEE DETAIL 3/3|14

SLOPE
1 REPAIR 1" ROOF EXPANSION JOINT (TYP. ALL ROOF EXPANSION JOINTS), SEE DETAIL 2/8|13
W.L. EL. 99.25
TERMINATE COATING 3" BELOW ROOF SLAB
W.L. EL. 99.25
1B
2B
TERMINATE COATING (TYP.), SEE DETAIL 2/9|14
COAT WALL IN ACCORDANCE WITH SPECIFICATION SECTION 09910
REPAIR ENTIRE LENGTH OF EXTERIOR WALL EXPANSION JOINT (TYP. ALL EXTERIOR WALL EXPANSION JOINTS), SEE DETAIL 5/7|13
REPAIR ENTIRE LENGTH OF EXPANSION JOINTS LOCATED IN FLOOR (TYP. FOR ALL CLEARWATER RESERVOIR BASINS), SEE DETAIL 2/8|13
MATCH LINE A
1 TERMINATE COATING AT COLUMNS (TYP.), SEE DETAIL 2/9|14
2'-0" (TYP.)
COAT ENTIRE FLOOR OF BASINS 1A AND 1B IN ACCORDANCE WITH SPECIFICATION SECTION 09910
TERMINATE COATING AT WALL PENETRATION OF 36" INFLUENT BYPASS, SEE DETAIL 3/3|14
12" MUD VALVE (TYP.) INV. EL. 84.25
SLOPE 3"
SLOPE 3"
SLOPE 3"
EL. 84.50
36" INFLUENT BYPASS ℄ EL. 88.17
1 REPAIRED WITH SIKAFLEX2C AND COMBIFLEX REPAIR 1" ROOF EXPANSION JOINT (TYP. ALL ROOF EXPANSION JOINTS), SEE DETAIL 2/8|13
REPAIR ALL SLUICE GATES IN ACCORDANCE WITH SPECIFICATION SECTION 15102 (TYP. OF 15 TOTAL)

SLOPE
12" MUD VALVE NUT BOX (TYP.)
12" OVERFLOW EL. 99.50
W.L. EL. 99.25
TERMINATE COATING 3" BELOW ROOF SLAB
W.L. EL. 99.25
2B
COAT EXTERIOR OF CLEARWATER RESERVOIR IN ACCORDANCE WITH SPECIFICATION SECTION 09910 (TYP. ALL AROUND)
COAT WALL IN ACCORDANCE WITH SPECIFICATION SECTION 09910
EXISTING GROUND EL. 92.0±
MATCH LINE B
COAT WALL IN ACCORDANCE WITH SPECIFICATION SECTION 09910
1'-6" SQ. COLUMN (TYP.)
REPAIR ENTIRE LENGTH OF EXTERIOR WALL EXPANSION JOINT (TYP. ALL EXTERIOR WALL EXPANSION JOINTS), SEE DETAIL 5/7|13
96" X 48" OPENING FOR FUTURE SLUICE GATE INV. = EL. 85.50
2'-0" (TYP.)
TERMINATE COATING (TYP.), SEE DETAIL 2/9|14
REPAIR ENTIRE LENGTH OF EXPANSION JOINT LOCATED IN FLOOR (TYP. FOR ALL CLEARWATER RESERVOIR BASINS), SEE DETAIL 2/8|13
EL. 84.50
SLOPE 3"
SLOPE 3"
EL. 84.50
3'-0" MIN.
TERMINATE COATING AT STEEL PLATE OPENING (TYP.), SEE DETAIL 4/8|14
12" DRAIN (TYP.) INV. = EL. 81.00

SECTION 4/6|12
1/4" = 1'-0"

KEY: 3A | 3B | 1A 1B | 2A 2B

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.
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NO.	BY	DATE	REMARKS
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NORTH CAROLINA PROFESSIONAL SEAL 12378 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

CLEARWATER RESERVOIR SECTION 4

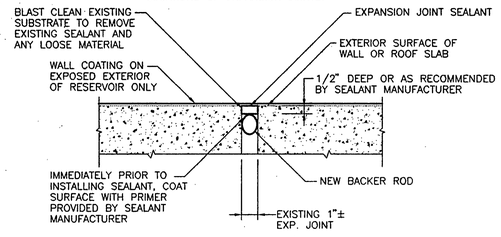
SCALE: 1/4" = 1'-0"

DATE FEBRUARY, 1995
C SHEET 12 OF 15
DWG. NO. 1202-12

G:\FAYETTVLE\ARCHEL\FAYCLE Mon Mar 13 11:44:26 1995

NOTES:

1. REMOVE ALL EXISTING SEALANTS, BACKING BARS AND FOREIGN MATERIALS PRIOR TO INSTALLING NEW JOINT SEALANT.
2. EXCAVATE SOILS AS REQUIRED TO INSTALL SEALANT FULL HEIGHT OF EXTERIOR WALLS. BACKFILL PER THE SPECIFICATIONS.
3. SEE PLANS AND ELEVATIONS FOR LOCATIONS OF EXPANSION JOINTS.



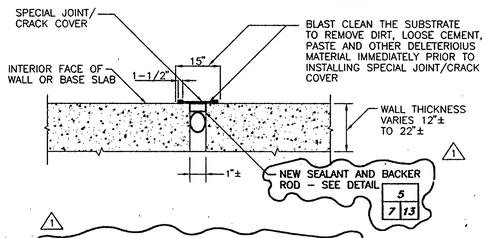
REPAIR OF SLAB AND WALL EXPANSION JOINTS ON EXTERIOR SURFACES

N.T.S. | 1 | 6 13

INTERIOR FLOOR EXPANSION JOINT NOTES:

1. DETAIL IS APPLICABLE FOR FLOORS IN BASINS 2A, 2B, 3A AND 3B.
2. REMOVE EXISTING SEALANTS, BACKING BARS AND FOREIGN MATERIALS PRIOR TO INSTALLING NEW JOINT SEALANT.
3. SEE PLANS AND ELEVATIONS FOR LOCATIONS OF EXPANSION JOINTS.

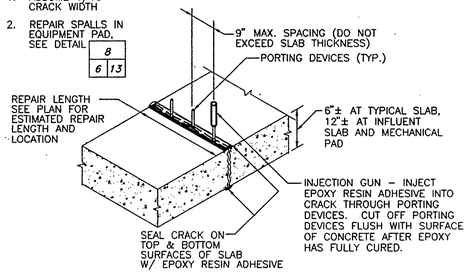
NOTE:
THIS DETAIL SHALL BE AN ALTERNATE FOR WALLS OF THE INFLUENT AND EFFLUENT CHANNELS IF THE WALL COATING SYSTEM CANNOT BE APPLIED, SEE DETAIL 7 | 8 13



REPAIR OF EXPANSION JOINTS SIMILAR FOR ROOF EXPANSION JOINTS AND INTERIOR FLOOR SURFACES

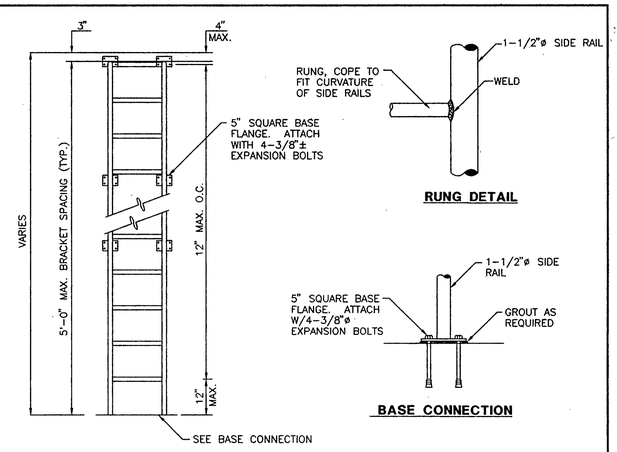
N.T.S. | 2 | 8 13

NOTE:
1. ASSUME 1/16" CRACK WIDTH
2. REPAIR SPALLS IN EQUIPMENT PAD, SEE DETAIL 8 | 6 13



ROOF SLAB AND MECHANICAL PAD CRACK REPAIR

N.T.S. | 3 | 6 13

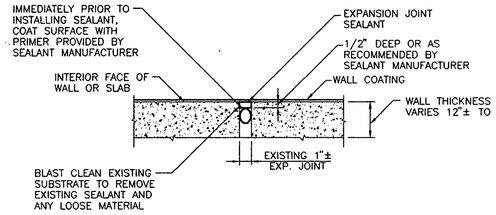


LADDER

N.T.S. | 4 | 2 13

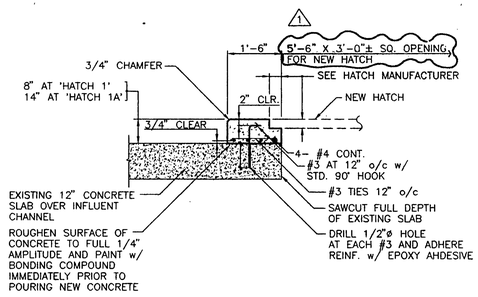
INTERIOR WALL EXPANSION JOINT NOTES:

1. THE DETAIL SHOWN IS GENERAL. THE CONTRACTOR SHALL: SUBMIT THE PROPOSED METHOD OF DETAILING THE INTERIOR EXPANSION JOINT.
2. REMOVE ALL EXISTING SEALANTS, BACKING BARS AND FOREIGN MATERIALS PRIOR TO INSTALLING NEW JOINT SEALANT.
3. SEE PLANS AND ELEVATIONS FOR LOCATIONS OF EXPANSION JOINTS.



REPAIR OF EXPANSION JOINTS ON INTERIOR SURFACES OF WALLS

N.T.S. | 5 | 7 13



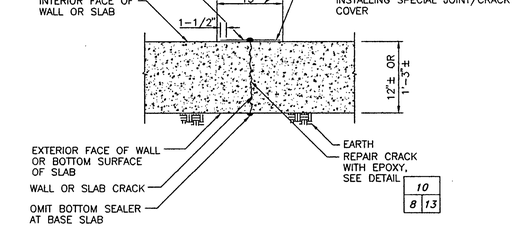
SECTION AT SIDE OF NEW HATCH

HATCH CUT-IN

N.T.S. | 6 | 3 13

"ALTERNATE B" REPAIR NOTES:

1. CRACK REPAIR IS COMMON TO BOTH "ALTERNATE A" AND "ALTERNATE B". QUANTITY OF CRACK REPAIR IS OF EQUAL AMOUNTS FOR BOTH "ALTERNATE A" AND "ALTERNATE B"

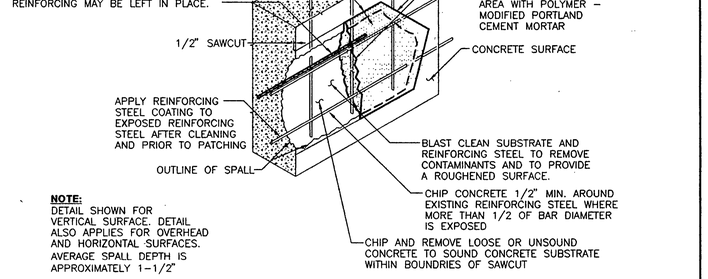


"ALTERNATE B" REPAIR OF THE INFLUENT AND EFFLUENT CHANNELS

N.T.S. | 7 | 8 13

CONCRETE SPALL NOTES:
THIS DETAIL APPLIES TO THE FOLLOWING:

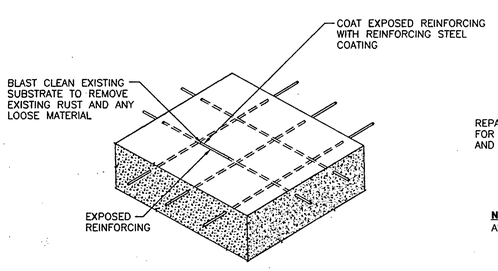
1. TOP AND BOTTOM OF THE ROOF SLAB.
2. INTERIOR AND EXTERIOR SURFACE OF THE EXTERIOR WALLS.
3. SIDES AND BOTTOMS OF BASIN'S INTERIOR BEAMS.



NOTE:
DETAIL SHOWN FOR VERTICAL SURFACE. DETAIL ALSO APPLIES FOR OVERHEAD AND HORIZONTAL SURFACES. AVERAGE SPALL DEPTH IS APPROXIMATELY 1-1/2"

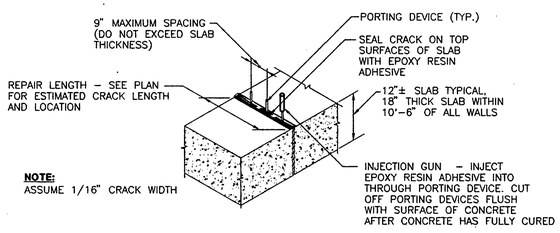
CONCRETE SPALL REPAIR

N.T.S. | 8 | 6 13



EXPOSED REINFORCING REPAIR

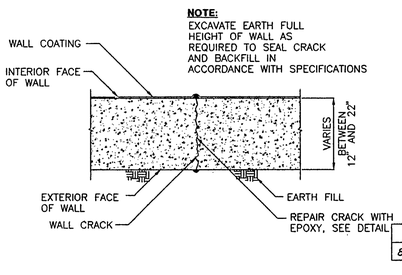
N.T.S. | 9 | 6 13



NOTE:
ASSUME 1/16" CRACK WIDTH

FLOOR SLAB CRACK REPAIR

N.T.S. | 10 | 8 13



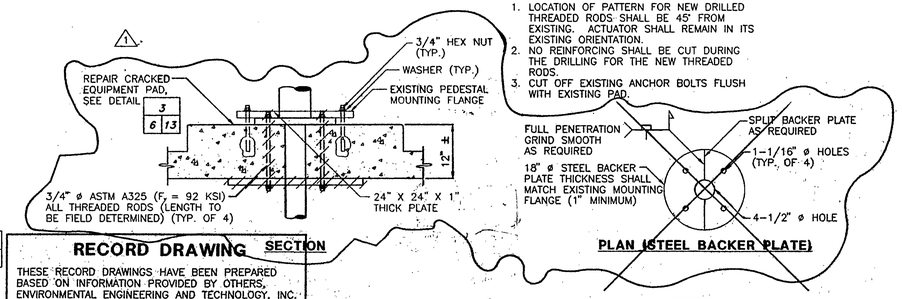
NOTE:
EXCAVATE EARTH FULL HEIGHT OF WALL AS REQUIRED TO SEAL CRACK AND BACKFILL IN ACCORDANCE WITH SPECIFICATIONS

EXTERIOR WALL CRACK REPAIR

N.T.S. | 11 | 7 13

SLUICE GATE OPERATOR PAD REPAIR NOTES:

1. LOCATION OF PATTERN FOR NEW DRILLED THREADED RODS SHALL BE 45° FROM EXISTING. ACTUATOR SHALL REMAIN IN ITS EXISTING ORIENTATION.
2. NO REINFORCING SHALL BE CUT DURING THE DRILLING FOR THE NEW THREADED RODS.
3. CUT OFF EXISTING ANCHOR BOLTS FLUSH WITH EXISTING PAD.



SLUICE GATE OPERATOR PAD REPAIR

N.T.S. | 12 | 6 13

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

FAYCLM.DWG

REVISIONS			
NO.	BY	DATE	REMARKS
1			RECORD DRAWING

DES J.H.H.
DWN J.L.C. C.O.G.
CKD S.P.&A.

NORTH CAROLINA PROFESSIONAL SEAL 6766 ENGINEER ROGER G. STROUD

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

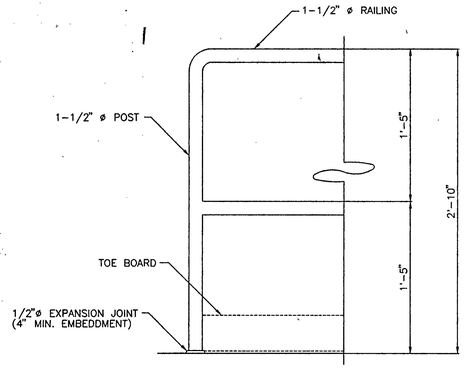
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

STRUCTURAL REPAIR DETAILS

SCALE: AS SHOWN

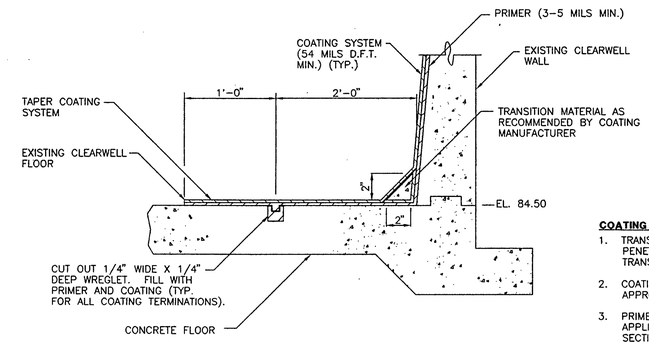
DATE FEBRUARY, 1995
C SHEET 13 OF 15
DWG. NO. 1202-13

G:\FAYETTVLE\KMELL\FAYCLM Mon Mar 13 11:53:16 1995



ALTERNATE END ELEVATION

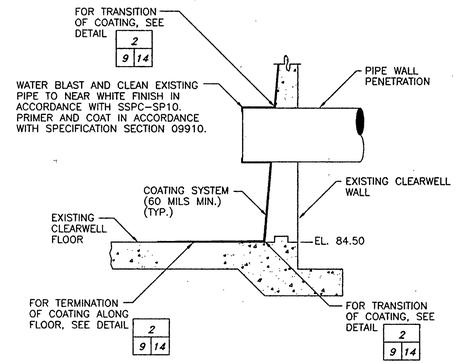
STAIR RAILING
1-1/2" = 1'-0" — 1 | 14 | 14



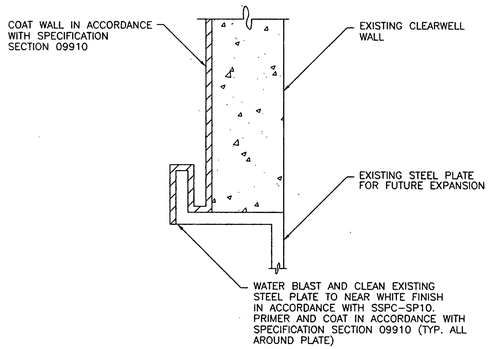
COATING TRANSITION/TERMINATION
N.T.S. — 2 | 9 | 14

COATING NOTES:

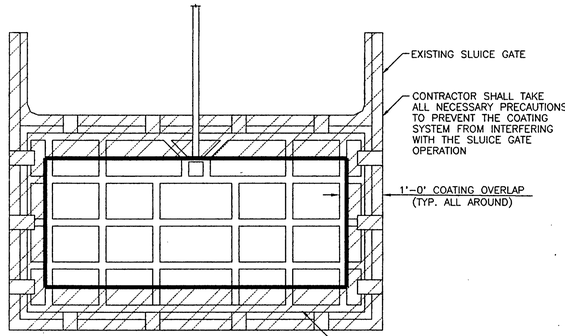
1. TRANSITION IS TYPICAL FOR BOTH WALL PENETRATIONS AND VERTICAL AND HORIZONTAL TRANSITIONS.
2. COATING SYSTEM SHALL BE ANSI/NSF61 APPROVED FOR POTABLE WATER.
3. PRIMER AND COATING SYSTEM SHALL BE APPLIED IN ACCORDANCE WITH SPECIFICATION SECTION 09910.
4. CONTRACTOR SHALL SUBMIT THE COATING TRANSITION/TERMINATION DETAIL THAT IS RECOMMENDED FOR USE BY THE COATING MANUFACTURER TO THE ENGINEER FOR APPROVAL.



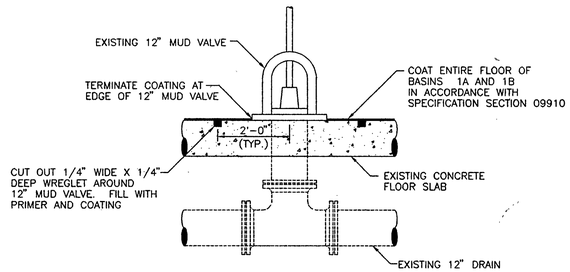
WALL PENETRATION
N.T.S. — 3 | 3 | 14



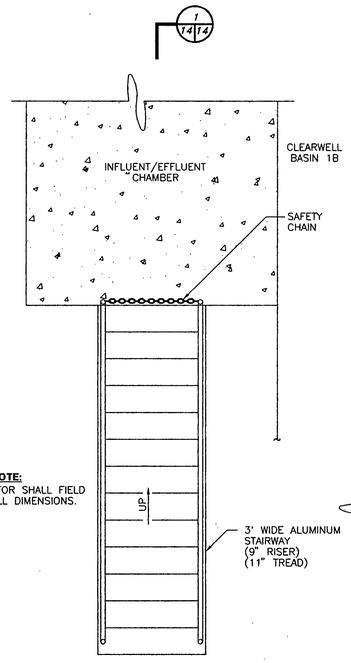
STEEL PLATE COATING
N.T.S. — 4 | 8 | 14



SLUICE GATE COATING
N.T.S. — 5 | 10 | 14



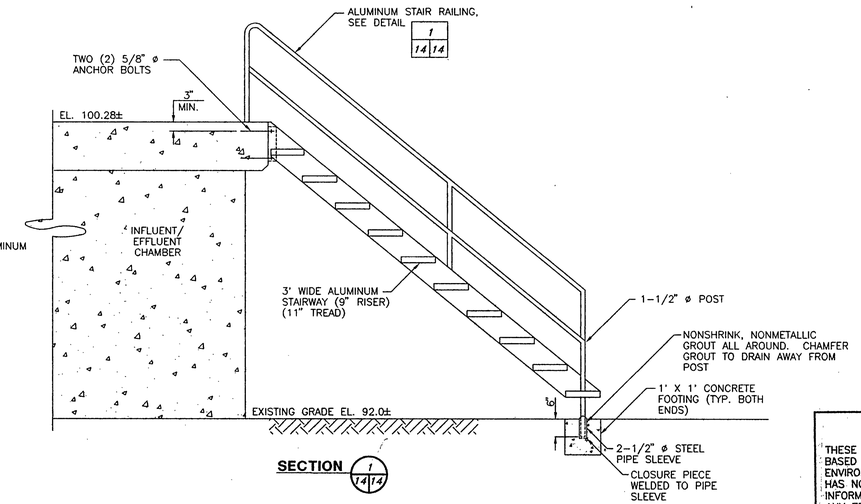
VALVE COATING TERMINATION
N.T.S. — 6 | 8 | 14



STAIRWAY NOTE:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

PLAN



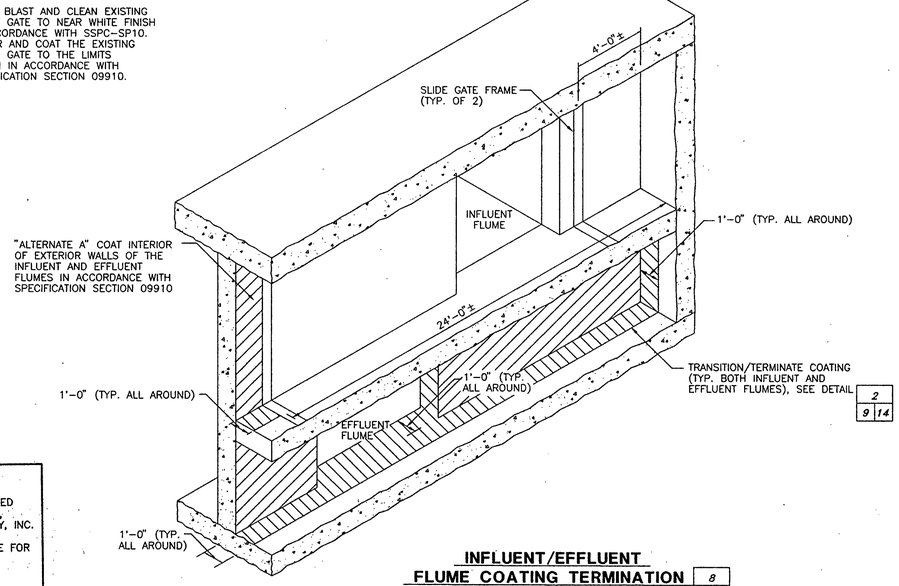
SECTION 1 | 14 | 14

ALUMINUM STAIRWAY
1/2" = 1'-0" — 7 | 1 | 14

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

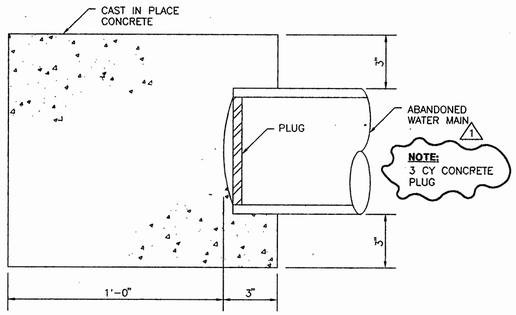


INFLUENT/EFFLUENT FLUME COATING TERMINATION
N.T.S. — 8 | 8 | 14

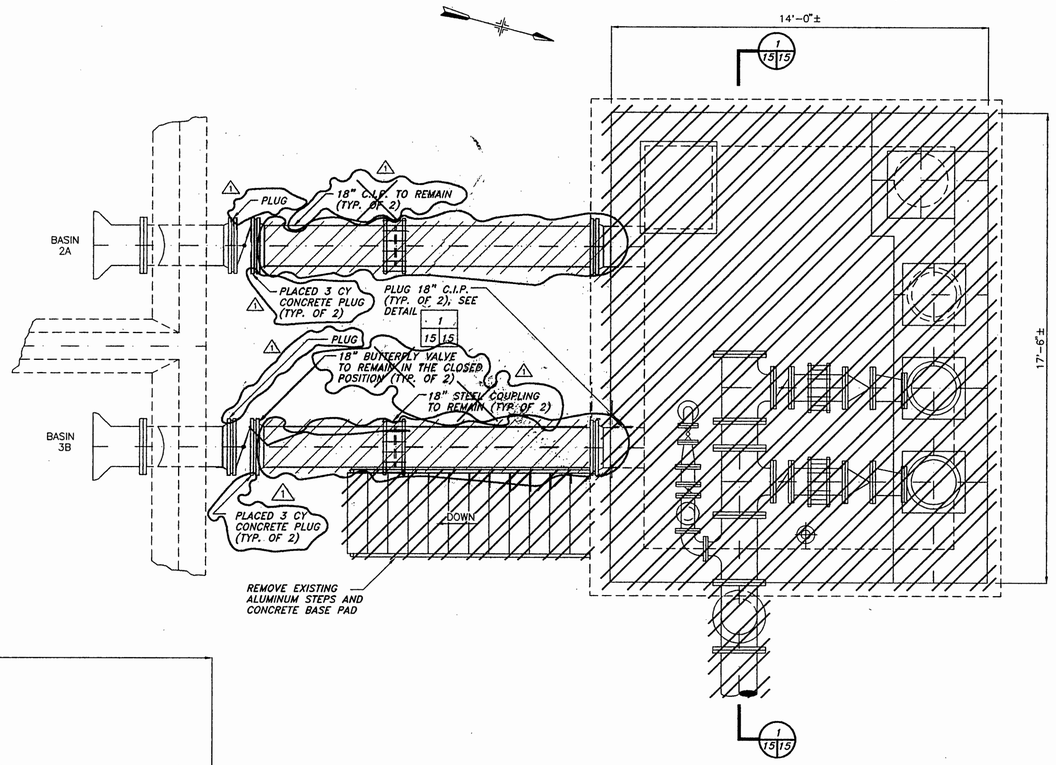
ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.	REVISIONS				DES E.M.P.	NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP	PUBLIC WORKS COMMISSION CITY OF FAYETTEVILLE, NORTH CAROLINA P.O. HOFFER WATER TREATMENT FACILITY CLEARWATER RESERVOIR REPAIRS	MISCELLANEOUS REPAIR DETAILS	DATE FEBRUARY, 1995
	NO.	BY	DATE	REMARKS	DWN J.L.C. C.O.G.			SCALE: AS SHOWN	C SHEET 14 OF 15
	1			RECORD DRAWING	CKD C.V. M.M.B.				DWG. NO. 1202-14

FAYCLN.DWG

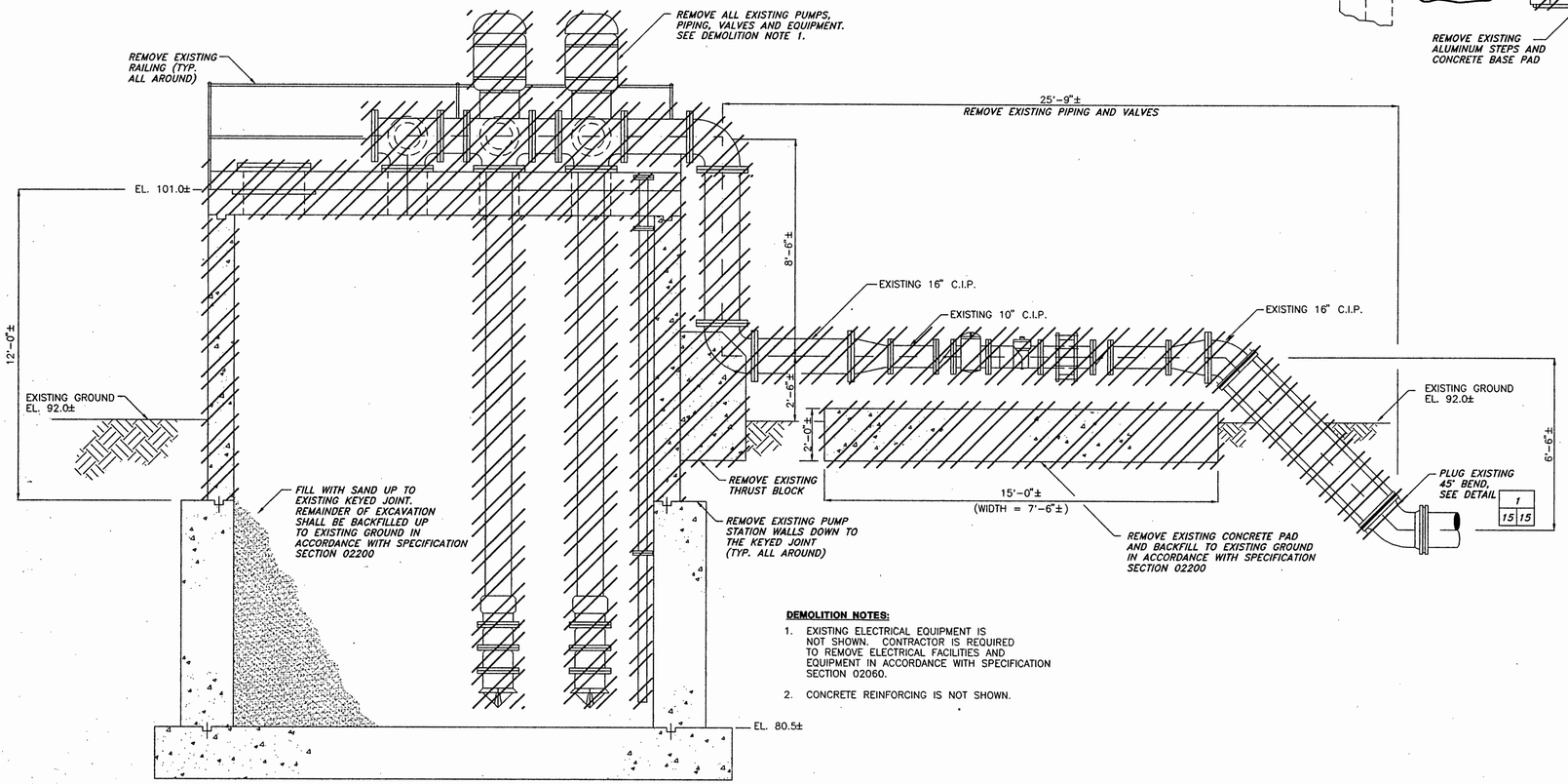
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PLUG FOR ABANDONED WATER MAIN (1 / 15|15)
3" = 1'-0"



PLAN
3/8" = 1'-0"



SECTION (1 / 15|15)
3/8" = 1'-0"

DEMOLITION NOTES:

1. EXISTING ELECTRICAL EQUIPMENT IS NOT SHOWN. CONTRACTOR IS REQUIRED TO REMOVE ELECTRICAL FACILITIES AND EQUIPMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02060.
2. CONCRETE REINFORCING IS NOT SHOWN.

RECORD DRAWING

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E.E.&T., INC. JUNE, 1997

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

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REVISIONS			
NO.	BY	DATE	REMARKS
1			RECORD DRAWING

DES E.M.P.
DWN J.L.C. C.O.G.
CKD C.V. M.M.B.

NORTH CAROLINA PROFESSIONAL SEAL 12379 ENGINEER MARK M. BISHOP

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

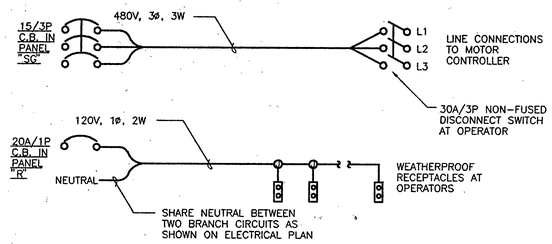
P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

EXISTING BOOSTER PUMP STATION DEMOLITION

SCALE: AS SHOWN

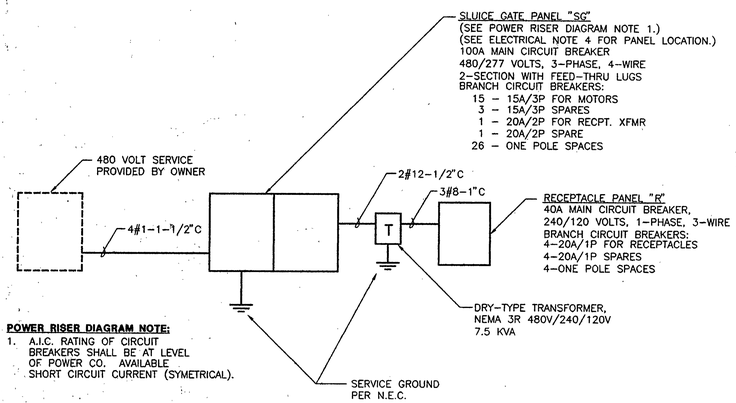
DATE FEBRUARY, 1995
C SHEET 15 OF 15
DWG. NO. 1202-15

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POWER CONNECTION DIAGRAMS-TYPICAL FOR 15 OPERATORS

NO SCALE | 1 | 1 | 1

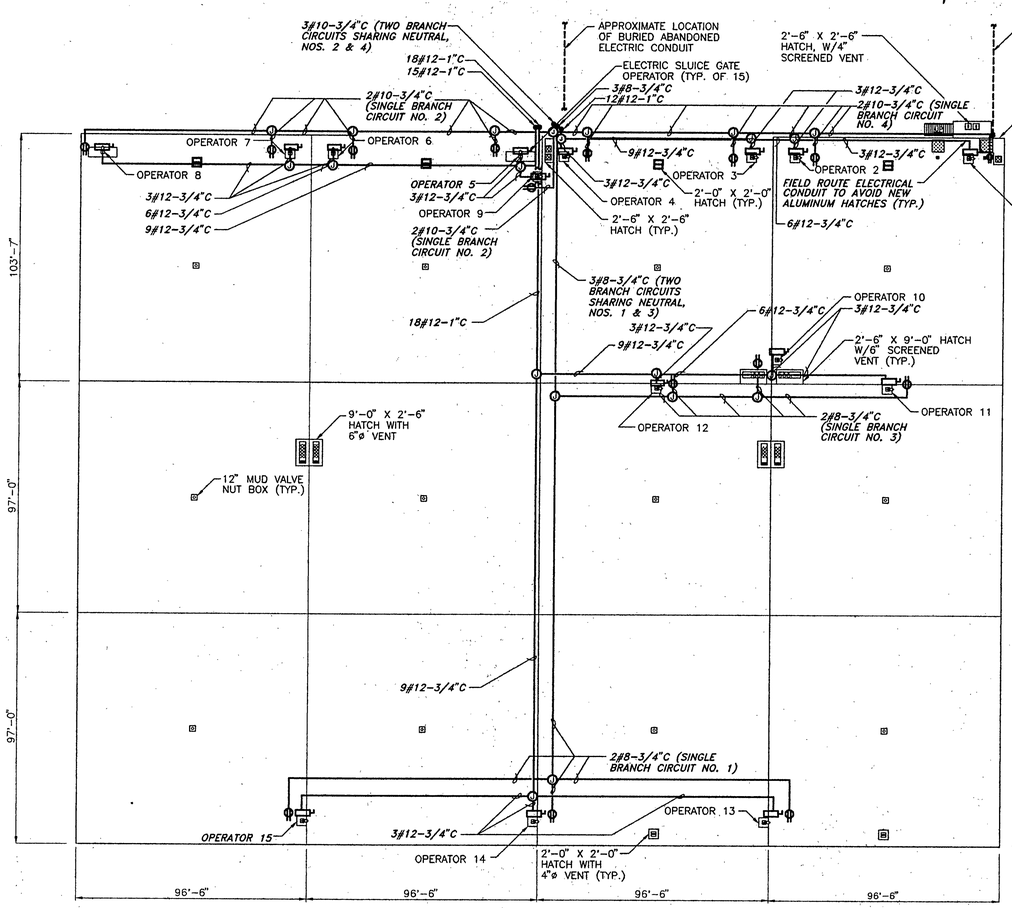


POWER RISER DIAGRAM NOTE:

1. A.I.C. RATING OF CIRCUIT BREAKERS SHALL BE AT LEVEL OF POWER CO. AVAILABLE SHORT CIRCUIT CURRENT (SYMETRICAL).

POWER RISER DIAGRAM

NO SCALE | 2 | 1 | 1

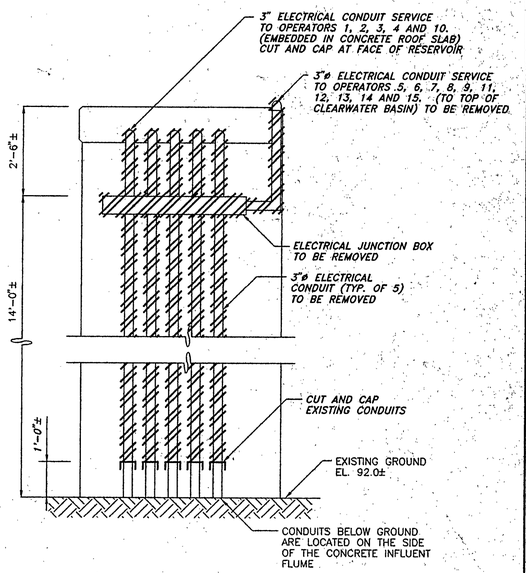


ELECTRICAL NOTES:

1. DISCONNECT EXISTING GATE OPERATOR MOTORS (15). REMOVE DEVICES, WIRING AND RACEWAYS BACK TO POWER SOURCES.
2. REMOVE EXISTING RECEPTACLES AT THE OPERATORS (15). REMOVE WIRING AND RACEWAYS BACK TO POWER SOURCES.
3. SCHEDULE OF REPAIRS TO THE SLUICE GATE OPERATORS IS SHOWN IN APPENDIX A OF THE SPECIFICATIONS.
4. FOR BIDDING PURPOSES, PANEL SG, XFMR AND PANEL R SHALL BE LOCATED ON THE SOUTHWEST CORNER FACE OF THE RESERVOIR. FINAL LOCATION WILL BE FIELD DETERMINED.

ELECTRICAL LEGEND:

- 30A, 3 POLE, NON FUSED, 600V WEATHERPROOF DISCONNECT SWITCH, NEMA 4X
- 20A, 125 VAC, GROUNDING TYPE G.F.I. DUPLEX RECEPTACLE IN NEMA 4X ENCLOSURE
- JUNCTION BOX, NEMA 4X WITH GASKETED COVER
- CONDUIT RUN DOWN AND WEST TO RESPECTIVE POWER PANEL



ELEVATION (S.W. CORNER FACE)

1/2" = 1'-0"

ENVIRONMENTAL ENGINEERING & TECHNOLOGY, INC.

FAYCLP

REVISIONS			
NO.	BY	DATE	REMARKS

DES B.F.A.
DWN J.L.C. C.O.G.
CKD

NORTH CAROLINA PROFESSIONAL SEAL 20473 ENGINEER STEVEN G. ROBERTS

PUBLIC WORKS COMMISSION
CITY OF FAYETTEVILLE, NORTH CAROLINA

P.O. HOFFER WATER TREATMENT FACILITY
CLEARWATER RESERVOIR REPAIRS

ELECTRICAL

SCALE: 1" = 30'

DATE FEBRUARY, 1995
E SHEET 1 OF 1
DWG. NO. 1202-16

G:\FAYETTVLE\DRWG\FAYCLP Fri May 19 14:07:19 1995