DATE: 4/21/2010

INVITATION TO BID
THIS IS NOT AN ORDER

BID NO.: 50-00097299

JEFFERSON PARISH

PURCHASING DEPARTMENT
P.O. BOX 9
GRETNA, LA. 70054-0009
504-364-2678

VENDOR:

BUYER: S. Vasquez

BIDS WILL BE RECEIVED IN THE PURCHASING DEPARTMENT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETNA, LA 70053 UNTIL 2:00 PM, 5/25/2010 AND THEN PUBLICLY OPENED.

LATE BIDS WILL NOT BE ACCEPTED

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES DISQUALIFY BID.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department. The provisions do not apply to public works projects

Questions on this bid are to be faxed to (504) 364-2693 no later than FIVE (5) working days prior to bid opening. Bid numbers should be mentioned in all requests.

The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH WILL ACCEPT ONE BID ONLY FROM EACH VENDOR. Items bid must meet or exceed specifications.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection.

If the bid exceeds $20,000.00 and if someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with LSA-R.S. 38:2212(A)(1)(c) or LSA-R.S. 38:2212 (O).

A. AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE.

Preference is hereby given to materials, supplies, and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitor soutside the state. "LSA-R.S.38:2251-2261"

B. USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

C. CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

Visit our website at WWW.JEFFPARISH.NET/BIDS

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

D. PRICES: Jefferson Parish is exempt from paying sales tax under LSA-R.S. 47:301 (8)(c). All prices for purchases by Jefferson Parish of supplies and materials shall be quoted in the unit measure specified and unless otherwise specified, shall be exclusive of state and Parish taxes.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from participation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations. New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A117.1-1961).

E. RESPONSE TO INVITATION: If your company is unable to bid on this request, please state your reason on bid form, and return to this office before bid opening date. Failure to do so may result in the removal of your company from Jefferson Parish's vendors list.

F. POSTING OF BIDS: Non-Advertised bids will be posted on bulletin board in Suite 4400, Jefferson Parish General Government Building, Gretna, LA, for a period of Five (5) working days after opening date.

Advertised bids will be tabulated and a copy forwarded to each responsive bidder.

IN ACCORDANCE WITH RECENT STATE LEGISLATION JEFFERSON PARISH IS NOW OFFERING ELECTRONIC PROCUREMENT TO ALL VENDORS

JEFFPro is the current Electronic Procurement System being used by the Parish. This system allows vendors the convenience of entering and submitting their pricing online. This is a secure site and no one has access to bid information.

Please follow the Purchasing Department link at purchasing.jeffparish.net to register and review Jefferson Parish solicitations.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 113646 or 113647 dated 12/09/09. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053.

ADDITIONAL REQUIREMENTS FOR THIS BID

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE CORRESPONDING INSTRUCTIONS BELOW.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14

1. All bidders are invited to attend the pre-bid conference. Failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. This conference is held to allow questions to be answered and inspect the site with owner's representative, etc. Failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification (with no additional cost to the owner).

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

2. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project.

3. A Louisiana State Contractor's License may be required in accordance with LSA-R.S. 37:2150 et seq. If providing information on the internet (JEFFPro) please enter license number in the vendor comment section of the bid form.

4. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.

5. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precautions must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.

6. All awards in excess of $5,000.00 for the construction, alteration, or repair of any public works will b reduced to a formal contract which shall be recorded at the contractor's expense. A price list of recordation costs may be obtained from the Clerk of Court and Ex-officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of $25,000.00 reduced to formal contract will require a performance bond.

7. A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. Performance bond shall be supplied at the signing of the contract.

8. Please indicate if you have insurance: YES _____ NO _____
Successful bidder will be required to furnish proof of insurance to this office.
Successful bidder will be required to furnish Federal I.D. Number.

9. Minimum insurance requirements for this bid are as indicated on the attached sheet.

10. Each bid must be accompanied by a cashier's check, certified check, money order, or surety bid bond in the amount of 5% of the bid, including all alternates.

11. Affidavit required is to be submitted within 10 working days of the bid opening to the Purchasing Department on all solicitations for construction, alteration or demolition of public building or project. (LSA-RS 38:2224)

12. This is a requirements contract to be provided on an as needed basis.

13. In the event that the successful bidder cannot furnish a specific item or material and labor in the required time, JEFFERSON PARISH may purchase on an emergency basis from the next lowest bidder, or available source, until such time as the successful bidder has notified the PARISH in writing that his stock or labor capability has been replenished. The difference in price will be charged against the successful bidder of this contract, and evidence of purchases and price will be provided.

14. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be disqualified if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.

TO: JEFFERSON PARISH
PURCHASING DEPT
P.O. BOX 9
GRETNA, LA 70054-0009
(Owner to provide name and address of owner)

BID FOR: 50-00097299
INSTALL SODIUM HYPOCHLORITE GENERATION
(Owner to provide name of project and other identifying information)

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by:_____ and dated:_____
(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA**: (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____ Dollars ($)_____

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

N/A Dollars ($)_____

Alternate No. 2 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

N/A Dollars ($)_____

Alternate No. 3 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

N/A Dollars ($)_____

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR'S LICENSE NUMBER:_____

NAME OF AUTHORIZED SIGNATORY OF BIDDER:_____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER:_____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **:_____

DATE: _____

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with LSA-R.S.38:2212(A)(1)(c) or LSA-R.S. 38:2212(O) .

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LSA-R.S. 38:2218.A is attached to and made a part of this bid.

IMPORTANT NOTICE TO ALL BIDDERS – BID REQUIREMENTS

As per LA R.S. 38:2212(A)(3)(c)(ii), the bid form shall contain Bid Security or Bid Bond, Acknowledgment of Addenda, Base Bid, Alternates, Bid Total, Signature of Bidder, Name, Title and Address of Bidder, Name of Firm or Joint Venture Corporate Resolution or other appropriate signature authorization, if required, Louisiana Contractors License Number, and on public works projects where unit prices are utilized, their inclusion in the bid form. Other documentation required shall be furnished by the low bidder at a later date, in accordance with the Bidding Documents.

To the extent that the Jefferson Parish front end documents, including the Instructions to Bidders, Supplemental Terms and Conditions, as per Resolutions 113646 and 113647, require that any information or documentation be supplied with the bid, and which said information or documentation is not allowed to be required with the bid under the new Louisiana Uniform Public Work Bid Form, then the requirement to provide it with the bid is waived. All such required information or documentation not provided with the bid must be provided within 10 working days of bid opening by the apparent low bidder. Failure to provide said information and documentation within the 10 working days shall be grounds to declare the bid non-responsive. This information and documentation includes, but is not limited to, the non-collusion affidavit, the tax identification number, and the proof of insurance. However, the payment and performance bond must be supplied upon contract signing.

Contractor's Louisiana License shall be in the following category: Municipal and Public Works Construction.

Bidder agrees that this bid shall be good and may not be withdrawn for a period of forty-five (45) calendar days after the scheduled closing time for receiving bids. In the event the Owner issues the Letter of Award during this period, the bid accepted shall continue to remain binding until the execution of the Contract.

Attached hereto is an Affidavit in proof that the undersigned has not entered into any collusion or agreements with any person or persons with respect to this proposal or the submission thereof, which affidavit must be provided within 10 working days of bid opening by the apparent low bidder.

Low Bidder will execute the formal agreement within twelve (12) days after the original date of Owner's Notification of award and will deliver a Performance Bond or Bonds for the faithful performance of the Contract.

Bid Security, in the sum of five percent (5%) of the total bid price (Base Bid), is to become the property of the Owner in the event the information or documentation required 10 working days after opening are not supplied, or if the Contract and Performance Bond are not executed within the time above set forth.

Further, the Bidder agrees that all work shall be completed as follows: complete in place and ready for intended use within one hundred twenty (120) days of the Notice to Proceed.

Further, as per Resolutions 113646 and 113647, the Bidder agrees to pay, as liquidated damages, the sum of $300.00 as follows for: (1) each consecutive calendar day after the agreed date of completion that the work remains substantially incomplete, or (2) each consecutive calendar day after substantial completion that the work has not been finally completed.

In addition to and not in lieu of the per diem liquidated damages, Owner shall also be entitled to recover from Contractor or Contractor's Surety additional liquidated damages as detailed in Resolutions 113646 and 113647. These additional liquidated damages may include, but are not limited to the following, in the amounts and for each of the items identified in the Supplementary Conditions (to be determined and filled in by the department):

(1) Extended architectural and/or engineering fees $0;
(2) Extended Resident Project Representative fees $525.00;
(3) Extended construction management fees $0;
(4) Extended Owner's overhead and personnel expenses $0; and
(5) Owner's other costs directly related to the delay in completion beyond the Contract Times.

INSTALLATION OF SODIUM HYPOCHLORITE GENERATION EQUIPMENTAT THE BRIDGE CITY WASTEWATER TREATMENT PLANT

SPECIFICATIONS

DIVISION I

GENERAL CONDITIONS

A **MANDATORY** Pre-Bid Conference and site inspection shall be held at **9:30 a.m.** on **TUESDAY, MAY 11, 2010,** at the Bridge City Wastewater Treatment Plant located at 1400 Hwy 90, Bridge City LA 70094.

Vendors MUST attend this meeting and sign the sign-in sheet or their bid will not be accepted.

1.0 SCOPE OF WORK

These specifications cover all labor, materials, and equipment required to install sodium hypochlorite generation equipment at the Bridge City Wastewater Treatment Plant as described hereinafter in these specifications and their associated plans.

1.1 The words "owner" or "Parish" refer to the Parish of Jefferson, Louisiana, acting through duly authorized governing authority, the Jefferson Parish Council.

1.2 The work consists of installing owner supplied sodium hypochlorite generation and storage equipment at the Bridge City Wastewater Treatment facility located at 1400 Hwy 90, Bridge City LA. The work will include removal of an existing foundation, construction of a new pile supported foundation and spill containment structure and installation of the owner supplied equipment as shown on the drawings.

1.3 The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these specifications and as shown on the drawings.

1.4 The Contractor shall furnish and install all materials, equipment, and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

1.5 The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, replacements, and restoration required as a result of damages caused during this construction.

1.6 Submittal Procedures: Four sets of all required submittals shall be transmitted to the Sewerage Capital Improvement Program Manager for use by the owner.

1.7 Quality Control: Inspection and testing will be performed by an independent testing laboratory selected and paid for by the owner.

1.8JEFFERSON PARISH GENERAL CONDITIONS:

The general conditions for the contract documents shall be in accordance with Council Resolution No. 113647 adopted on the 9th day of December 2009 as amended by Resolution No. 114117 adopted on the 3rd day of March 2010.

Resolution No. 113647 as amended will be considered a part of this bid whether attached or not. A copy may be obtained at all times from the Office of the Council Clerk, Suite 6700, Jefferson Parish General Government Building, Gretna, Louisiana 70053.

1.9 TIME OF COMPLETION AND LIQUIDATED DAMAGES

All work shall be completed and appropriate for intended service within one hundred twenty (120) days of the Notice to Proceed.

The work is to commence within ten (10) days after the Notice to Proceed.

Liquidated damages of $300.00 per working day will be assessed against the Contractor for failure to complete work within the Contract time.

1.10 OWNER OCCUPANCY

Owner will have full access to and use of all treatment plant facilities during the entire period of construction for the conduct of his normal operations. Cooperate with Owner's representative in all construction operations to minimize conflict and to facilitate Owner usage.

1.11 CLEANUP

During the course of the work, the Contractor shall keep the site of his operations in as clean and neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

1.12 INSURANCE AND INDEMNIFICATION REQUIREMENTS:

These shall be in accordance with the Jefferson Parish general conditions.

1.13 CONTRACTOR'S LICENSE

This contract will require a Louisiana State Contractor's License in the Municipal and Public Works Construction category. Please indicate your license number on the outside of your bid envelope.

DIVISION II

TECHNICAL SPECIFICATIONS

1.0 REMOVAL OF EXISTING FOUNDATION

Furnish all labor, materials, tools and equipment for removal of an existing foundation measuring approximately 6 feet wide by 14 feet long by 3 feet deep and backfilling to grade. Maximum of 50 cubic yards included.

1.1 Proper disposal of excavated material shall be the responsibility of the contractor.

1.2 All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

2.0 DRIVEN TREATED TIMBER PILES

Furnish all labor, materials, tools and equipment to perform all operations necessary for piling work as indicated on the drawings or specified herein.

2.1 All driven treated timber piles shall be in conformance with attached specification SECTION 2455.

3.0 CAST-IN-PLACE CONCRETE, FORMWORK, AND REINFORCEING STEEL

Furnish all labor, materials, tools and equipment for cast-in-place concrete pile supported foundation and containment walls including slabs, beams, walls, tank pads and any incidental structural concrete work as indicated on the drawings or specified herein.

3.1 All concrete, form work and concrete reinforcing shall be in conformance with attached specification SECTION 03033.

4.0 INSTALLATION OF OWNER SUPPLIED SODIUM HYPOCHLORITE GENERATION SYSTEM EQUIPMENT

Furnish all labor, materials, tools and equipment necessary to install owner supplied equipment including generation equipment, tanks, racks, pumps, electrical and instrumentation equipment, piping and any other incidentals necessary as indicated on the drawings or specified herein.

4.1 Contractor shall coordinate with equipment manufacturer to ensure proper installation.

4.1 Contractor shall provide factory trained technician to assist with installation and startup. Two trips of two days duration per trip maximum.

SECTION 03300

CAST-IN-PLACE CONCRETE, FORMWORK, AND REINFORCING STEEL

PART 1 - GENERAL

1.01 SUMMARY

A. Scope: This section includes all cast-in-place concrete, mix design, formwork, reinforcing steel, and incidental items required to complete the Work indicated on the drawings and specified herein. The work done under this section of the specifications includes all labor, materials, equipment, and services necessary for cast-in-place concrete including formwork, reinforcing, mix design, placement procedures, finishes, as indicated on the drawings and specified herein.

B. In general, the concrete work consists of the new pile supported foundation and containment walls for the Jefferson Parish Department of Sewerage Bridge City Wastewater Treatment Plant Hypoclorite Tank Containment; this includes slabs, beams, walls, tank pads, and any incidental structural concrete work.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. The work described in the following specification sections are to be consulted as they affect the work described herein. Contractor is to coordination with the relevant sections as needed.

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2. Division 1 Section "SUBMITTAL PROCEDURES" for submittal procedures and requirements.

3. Division 1 Section "QUALITY CONTROL" for independent testing agency procedures and administrative requirements.

1.03 CODES, STANDARDS & REFERENCES

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified. Meet requirements and recommendations of the applicable portions of the standards listed, of the latest edition:

1. American Society for Testing and Materials (ASTM)

   a. ASTM C31: "Standard Practice for Making and Curing Concrete Test Specimens in the Field"
   b. ASTM C33: "Standard Specifications for Concrete Aggregates"
   c. ASTM C39: "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens"
   d. ASTM C94: "Specification for Ready-Mix Concrete"
   e. ASTM C138: "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete"
   f. ASTM C143: "Standard Test Method for Slump of Hydraulic Cement Concrete"
   g. ASTM C150: "Standard Specifications for Portland Cement"
   h. ASTM C171: "Standard Specifications for Sheet Materials for Curing Concrete"
   i. ASTM C172: "Standard Practice for Sampling Freshly Mixed Concrete"
   j. ASTM C494: "Standard Specifications for Chemical Admixtures for Concrete"
   k. ASTM E96: "Standard Test Methods for Water Vapor Transmission of Materials"
   l. ASTM E154: "Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover"
   m. ASTM E329: "Specification for Agencies Engaged in Testing and/or Inspection of Materials Used in Construction"
   n. ASTM E1155: "Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers"
   o. ASTM E1643: "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs"
   p. ASTM E1745: "Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs"

2. American Concrete Institute (ACI)

   a. ACI 117-06: "Specifications for Tolerances of Concrete Construction and Materials"
   b. ACI 301-05: "Specifications for Structural Concrete for Buildings"

c. ACI 305R-99: "Hot Weather Concreting"
d. ACI 306.1-90: "Specification for Cold Weather Concreting"
e. ACI 315-99: "Details and Detailing of Concrete Reinforcement"
f. ACI 318-05: "Building Code Requirements for Reinforced Concrete"

3. American Society of Concrete Contractors (ASCC)

   a. ASCC: "Guide for Surface Finish of Formed Concrete"

4. American Welding Society (AWS)

   a. AWS D1.4-05: "Structural Welding Code – Reinforcing Steel"

5. Concrete Reinforcing Steel Institute (CRSI)

   a. CRSI: "Manual of Standard Practice"

6. International Code Council (ICC)

   a. International Building Code (IBC) 2006

B. Except as modified or supplemented by these specifications, the ACI 301 entitled "Specifications for Structural Concrete for Buildings" of the American Concrete Institute shall govern all work in the Section and the Contractor must have a copy of these specifications in the project's field office at all times. Copies of the ACI Specifications referenced in this section may be obtained by writing American Concrete Institute, P.O. Box 19150, Detroit, Michigan 48219.

C. Work on this Project shall conform to all requirements of ACI 117 published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by below and elsewhere in this Contract Documents.

1.04 SUBMITTALS

A. General: The following items are to be submitted for review and approval in accordance with the Conditions of the Contract and Division 1 Specification Sections.

   1. Product Data: Submit manufacturer's descriptive literature and application recommendations for proprietary items, including admixtures, patching compounds, repair compounds, bonding adhesives, bonding agents, joint systems, curing compounds, reinforcement, forming accessories, non-shrink grout, and all other items that are specified within contract documents.

2. Shop Drawings: Contractor shall submit concrete reinforcement Shop Drawings indicating reinforcement bar size, grade, length, placement, etc. Drawings shall show bar arrangement, provide schedules, diagrams of bent bars and any special reinforcement required at openings or penetrations in concrete structures. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete structures. Details of bar supports and spacers shall be included.

   a. Reproductions of contract documents will not be acceptable as shop drawing and are not allowed. Any shop drawings submitted that are reproductions of, or that bear a substantial likeness to, the contract documents with only detailer's notes will be rejected. Any delays caused by re-submittals are to be accommodated within the specified contract time.

3. Mix Design: Contractor shall submit the proposed concrete mix design(s), with supporting historical testing data in accordance with ACI 318 Section 5.3.2 "Required average strength", for each strength and/or slump requirement indicated on Contract Documents for review by an independent testing laboratory at least 5 days prior to use.

   a. When a concrete production facility does not have field strength test records meeting the requirements of ACI 318 Section 5.3.1 "Sample Standard Deviation" as referenced by ACI 318 Section 5.3.2 "Required average strength", the required average strength shall meet or exceed the strength requirements of Table 5.3.2.2.

4. Pour Sequence: Contractor shall submit a Pour Sequence Plan, indicating any construction joints for review by the Engineer if concrete is to be placed in more than one pour.

1.05 QUALITY ASSURANCE

A. Testing Laboratory Services: All testing and inspection shall be conducted by the independent testing laboratory selected by Owner. The testing laboratory shall perform:

   1. Review of Concrete Mix Design: Testing laboratory is to review the concrete mix design(s) for approval.

   2. Sampling and Testing of Concrete: Concrete sampling and testing is to meet the requirements of subsection 3.15 of this specification section.

3. Floor Flatness/Levelness Testing: Floor flatness and levelness testing in accordance with ASTM E1155. Floor tolerance is to meet the requirements of subsection 3.10 of this specification section.

1.06 PRODUCT DELIVERY, HANDLING, AND STORAGE

A. Delivery: Concrete is to be delivered to Project site in such quantities and at such times to ensure continuity of installation.

B. Storage: Cementitious materials and aggregates shall be stored in such manner as to prevent deterioration or intrusion of foreign matter.

1. Any material that has deteriorated or has been contaminated shall not be used for concrete.

1.07 NON-DETAILED REINFORCING

A. Contractor shall provide labor, including placement, detailing and fabrication, and material for an additional 400 pounds of concrete steel reinforcement for discretionary use by the Engineer.

PART 2 - MATERIALS

2.01 CONCRETE MATERIALS

A. General: Concrete material shall attain a compressive strength of 4,000 psi at 28 days. The Delivery tickets shall indicate: mix design number, time batched, time arrived at site, total water added at site, slump (as delivered to site), etc. Provide mix designs with strengths as indicated on Contract Drawings. The slump is not to exceed 4 inches. All in-place concrete is to be free of any foreign materials, such as wood, etc. Contractors is to remove any and all foreign materials noticed during concrete placing and finishing.

1. Proportioning and Designing Mixes: Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

a. The proposed concrete mixture shall provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding.

b. The proposed concrete mixture shall achieve an average compressive strength as specified in accordance with the requirements of ACI 318 Section 5.3.2 and satisfy the durability criteria of ACI 318 Chapter 4 as applicable to the project conditions.

c. Normalweight Structural Concrete: Proportion mix of normalweight concrete to produce concrete with the specified minimum compressive strength at 28 days and a calculated equilibrium density of 145 pcf, plus or minus 3 pcf, as determined under ASTM C138.

i. All structural concrete for foundations, beams, slabs at grade, elevated slabs, walls etc. shall be a ready-mix concrete of normal weight aggregates able to achieve a 28 day strength of 4000 psi.

d. The water-cement ratio is not to exceed 0.40.

i. Appropriate admixtures are to be used as needed for placement and workability. See Section 2.04 of this specification section for requirements of admixtures.

2. Adjustment to Concrete Mixes: Adjustment to the approved concrete mix designs, including but not limited to the addition of water at the project site, is not allowed until test data and results has been submitted to and approved by the Architect. Approved adjustments to concrete mix design, when characteristics of materials, project conditions, weather, test results, or other circumstances warrant it, are acceptable.

B. Cementitious Materials: Cementitious material is to consist solely of Type I or Type II cement, as defined in ASTM C150 entitled "Specification for Portland Cement", of the latest revision. Only one type of Portland cement shall be used on the project. Cementitious material shall be stored in a manner as to prevent deterioration or intrusion of foreign matter. Any material that has deteriorated or has been contaminated shall not be used for concrete.

1. The admixtures fly ash, slag, and silica fume will not be permitted.

C. Aggregate: Coarse and fine aggregate for all concrete shall conform to one of the following specifications. All aggregates shall be clean and free of deleterious matter. Provide aggregates from a single source for exposed concrete. Aggregates shall be stored in a manner as to prevent deterioration or intrusion of foreign matter.

1. Aggregate Type: The type of aggregates used in concrete mixtures for this project shall conform to the following specifications. Referenced to the

Contract Drawings for type of aggregates to be used in different areas and/or applications.

a. Normal-Weight Aggregates shall conform to "Specifications for Concrete Aggregates" (ASTM C 33), of the latest revision.

b. Local aggregates that do not conform to the above mentioned criteria, but that have been proven by special test or actual service to produce concrete of adequate strength durability may be used, after qualifying documentation has been submitted, reviewed, and approved in writing by the Architect.

2. Aggregate Size: Nominal maximum size of coarse aggregate shall be not larger than:

a. 1/5 the narrowest dimension between sides of forms, nor

b. 1/3 the depth of slabs, nor

c. 3/4 the minimum clear spacing between individual reinforcing bars or wires, bundles of bars, individual tendons, bundled tendons, or ducts.

D. Mixing Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete or reinforcement. Nonpotable water shall not be used in concrete.

1. Mixing water for concrete, including that portion of mixing water contributed in the form of free moisture on aggregates, shall not contain deleterious amounts of chloride ions.

a. The maximum amount of water-soluble chloride ions that will be allowed in this concrete mix is 0.15% by weight of cement.

E. Concrete Mixing:

1. Ready-Mixed Concrete: Comply with requirements of ASTM C94, and as specified.

a. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1½ hours to 75 minuites, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes. Ice may be added to concrete so that delivery time can remain 1½ hours.

2.02 FORM MATERIALS

A. General: Forms shall provide a tight fit so as to contain cement paste during concrete placement. Furnish form materials capable of supporting construction loads in addition to weight of fresh concrete, without displacement or excessive deflection.

1. Plywood Forms: All plywood formwork is to be class 1 B-B or better.

B. Exposed Finish: Forms for exposed finish concrete shall be of material that will be compatible with ACI 117, Class A finish requirements. Material shall provide continuous, straight, smooth, exposed surfaces. Material shall be furnished in largest practical sizes so as to minimize the number of joints and to conform to joint system and/or patterned formliner system indicated on Contract Drawings.

C. Form Ties: Form ties shall be factory fabricated, adjustable in length of material that will not allow form deflection or will not spall concrete upon removal. Form ties may be removable or of the snap off type. Form tie type provided shall not leave any metal that is closer than 1½ inch from the plane of the exposed surface. Form tie type provided shall not have any device that will leave a hole larger than 7/8 inch or less than ½ inch in diameter in the exposed concrete surface.

D. Form Release Agent: Form release agent shall be a commercial formulation that will not bond with, stain, adversely affect concrete surfaces or adversely affect subsequent finish treatments of concrete surfaces.

2.03 REINFORCING STEEL MATERIALS

A. Reinforcing Bars: Reinforcing steel shall be new billet steel meeting the requirements of ASTM A 615, Grade 60, deformed. Reinforcing bars shall be lapped in accordance with the A.C.I. Building Code. Reinforcing steel shall be detailed, fabricated, and placed in accordance with A.C.I. 315 entitled "Manual of Standard Practice or Detailing Reinforced Concrete Structures."

B. Welded Wire Fabric: Welded wire fabric shall conform to the requirements of ASTM A185.

C. Supports for Reinforcement: Bar supports, chairs, bolsters, spacers, and other devices for spacing, supporting, and positioning reinforcing bars and welded wire fabric in place are to be provided as required. Use wire bar-type supports complying with CRSI specifications.

1. For slabs cast on grade, use supports with sand plates or horizontal runners.

2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.04 ADMIXTURES

A. General: Provide concrete admixtures that are compatible with other concrete ingredients and that contain not more than 0.1 percent chloride ions. Admixtures to be used in concrete shall be subject to prior approval by the engineer.

1. Any retarder or accelerator admixtures used in the concrete mixture must be water borne.

B. Water-Reducing Admixtures: Water-Reducing Admixture products shall conform to ASTM C494, Type A

C. High-Range Water-Reducing Admixtures: High-Range Water-Reducing Admixture products shall conform to ASTM C494

D. Water-Reducing, Accelerating Admixtures: Water-Reducing, Accelerating Admixture products shall conform to ASTM C494, Type C or E.

1. Available Products: Subject to compliance with requirements, provide one of the following acceptable products/manufacturers, or an approved equal:

a. POZZUTEC 20+
BASF Construction Chemicals, Cleveland, OH
b. ACCELGUARD 90
Euclid Chemical Company, Cleveland, OH
c. DARACCEL
Grace Construction Products

E. Water-Reducing, Retarding Admixtures: Water-Reducing, Retarding Admixture products shall conform to ASTM C494, Type D.

F. Required Application of Admixtures: Admixtures are to be used as needed to achieve all desired concrete characteristics and to ensure concrete will achieve the design performance requirements under the conditions placed. All admixtures are to be applied in accordance with the manufacturer's recommendations.

1. High-Range Water-Reducing Admixtures: High-range water-reducing admixture is to be in all concrete mixtures with water-cement ratios below

0.50, concrete that is to be pumped, and when required for placement and workability.

2. Water-Reducing, Accelerating Admixtures: A water-reducing accelerating admixture is to be used in all concrete placed at average ambient temperatures below 50 degrees F.

3. Water-Reducing, Retarding Admixtures: A water-reducing retarding admixture is to be used in all concrete when required by high temperatures, low humidity, or other adverse placing condition.

2.05 RELATED MATERIALS

A. General: The contractor is to follow all installation and surfaces preparation recommendations of the product manufacturer for all of the products listed below.

B. Curing Methods: Appropriate curing methods are to be employed to ensure that all concrete maintains a satisfactory moisture content and temperature so that its properties develop. Curing should be continued long enough to ensure that 100% of the specified value for concrete properties will be developed in a reasonable time period after deliberate curing measures have been terminated, especially for mechanical properties such as strength or modulus of elasticity, and for durability-related properties, such as low permeability, abrasion or scaling resistance, initial surface absorption, or resistance to freezing and thawing.

1. Membrane-Forming Curing Compound: Membrane-forming curing compound shall conform to ASTM C309 or ASTM C1315 when tested at the rate of coverage to be used on the job.

a. Curing and Sealing Compounds: Curing and sealing compounds shall be a clear non-yellowing acrylate type. The maximum coverage rate shall not exceed 300 sq. ft. per gallon. Curing and sealing compounds must meet or exceed all of the following qualities and/or requirements:

i. Solids Content: 30% minimum
ii. Moisture Loss: 0.08 lb/ft^2 in 72 h when applied at a coverage rate of 200 ft^2/gal.

b. Available Products: Subject to compliance with requirements, provide one of the following acceptable products/manufacturers, or an approved equal:

i. Super Rez-Seal or Super Plioucure
Euclid Chemical Company, Cleveland, OH

ii. Masterkure 30
BASF Building Systems, Shakopee, MN
iii. Unitex Clear Acrylic Cure 800
Unitex
iv. Dress and Seal 30
L & M Construction Products

C. Vapor Retarder: Vapor retarder must meet or exceed all of the following qualities/requirements:

1. Manufactured from prime virgin resins
2. Meets or exceeds ASTM E1745 Class A
3. Thickness of Retarder: 15 mils minimum
4. Water Vapor Transmission Rate: less than 0.006 gr./ft2/hr per ASTM E96
5. Permeance: less than 0.03 U.S. Perms [grains/(ft2 *hr * in.Hg)] per ASTM E96, Method B.
6. Puncture Resistance: 2200 grams minimum per ASTM D1709
7. Tensile Strength: 50.0 lbf/in minimum per ASTM E154

8. Available Products: Subject to compliance with requirements, provide one of the following acceptable products/manufacturers, or an approved equal:

a. "Florprufe 120"
GRACE Construction Products, Cambridge, MA
b. "Vapor Block 15"
Raven Industries, Inc., Sioux Falls, SD
c. "Griffolyn 15 mil"
Reef Industries, Inc., Houston, TX
d. "Stego Wrap 15 mil"
Stego Industries, LLC, San Juan Capistrano, CA
e. "Perminator 15 mil"
W.R. Meadows, Elgin, IL

9. Accessories: Follow all manufacturer's recommendations when providing accessories for vapor retarding system. All accessories must be compliant with vapor retarding system chosen. Accessories must meet or exceed all of the following qualities/requirements:

a. Seam Tape: High Density Polyethylene Tape with pressure sensitive adhesive.
i. Permeance: less than 0.3 perms per ASTM E96
ii. Width: 4 inches minimum.

b. Vapor Proofing Mastic:
i. Permeance: less than 0.3 perms per ASTM E96

c. Pipe Boots:
   i. Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

D. Concrete Repair: Concrete repair material must meet or exceed all of the following qualities/requirements:

1. Compressive Strength: 8000 psi at 28 days per ASTM C109.
2. Flexural Strength: 770 psi at 28 days per ASTM C348.
3. Direct Tensile Bond Strength: 300 psi at 28 days per ACI 503R.
4. Slant Shear Bond Strength: 3300 psi at 28 days per ASTM C882.
5. Chloride Permeability: 650 coulombs at 28 days per ASTM C1202.
6. Drying Shrinkage: 0.06% or less at 28 days per ASTM C157.

7. Available Products: Subject to compliance with requirements, provide one of the following acceptable products/manufacturers, or an approved equal:

   a. ARDEX CP™ (for thickness of 1/4"to1/2"; for application of 1/2" to1" in thickness, add aggregate)
      Ardex Engineered Cements, Aliquippa, PA
   b. ARDEX CD FINE™ (for thickness of feather edge to 1/4")
      Ardex Engineered Cements, Aliquippa, PA
   c. "EMACO S66 CI"
      BASF Building Systems, Shakopee, MN
   d. "FIVE STAR STRUCTURAL CONCRETE S300"
      Five Star Products, Inc., Fairfield, CT

E. Bonding Adhesive: Bonding adhesives are to be ASTM C881, two-component, 100% solids, and moisture-tolerance material suitable for use on dry or damp surfaces. Provide the bonding adhesive type, grade, and class to meet Project requirements. Bonding adhesives must meet or exceed all of the following qualities and/or requirements:

1. Tensile Strength: 4400 psi at 14 days per ASTM D638
   a. Elongation at Break: 2.5% (Maximum) per ASTM D638
2. Bond Strength: 1800 psi at 14 days per ASTM C882
   a. Plastic concrete to hardened concrete
3. Shear Strength: 6400 psi at 14 days per ASTM D732
4. Slant Bond Shear Strength: 5000 psi per AASHTO T-237
5. Flexural Bond Strength: 570 psi per ASTM C293
6. Compressive Yield Strength: 8300 psi at 28 days per ASTM D695
   a. Compressive Modulus: 2.1×10^5 psi per ASTM D695

7. Available Products: Subject to compliance with requirements, provide one of the following acceptable products/manufacturers, or an approved equal:

   a. Concresive Liquid LPL
      BASF Construction Chemicals, LLC, Shakopee, MN
   b. Sikadur 32, Hi-Mod LPL
      Sika Corporation, Lyndhurst, NJ

PART 3 - EXECUTION

3.01 GENERAL

A. Work covered by this section of the Specifications includes the furnishing of all necessary labor, material, tools, and equipment, and the performing of all operations in connection with concrete in strict accordance with this section of the specifications and the applicable drawings and is subject to all terms and conditions of the contract.

A. Scope shall include the positioning of posts, bolts, embeds, and providing of openings required by other trades etc., that may be furnished under other sections of the Specifications. Scope shall include the coordination of concrete work with that of other trades.

B. Handle and store all products following the manufacturer's instructions, recommendations, and material safety data sheets.

C. Site Dewatering: For all concrete placed in below soil excavations, the contractor shall determine and provide the means, methods, and extent of site dewatering required to keep the excavations dry at the time of concrete placement. Adequate precautions are to be taken to ensure that excavations made on the site provide for quality construction.

   1. The contractor shall submit the proposed plan for site dewatering to the engineer for review prior to the beginning of excavation.

      a. Contractor is to provide adequate drainage as required to drain surface water away from the construction area.

      b. For areas subjected to high ground water, a well point or similar system is to be used to remove water from excavated areas.

   2. Motorized equipment shall not be allowed on exposed clay surfaces when wet.

3.02 STORAGE OF MATERIALS

A. Cement and aggregates shall be stored by the supplier in such a manner as to prevent deterioration or intrusion of foreign matter. Any material which has deteriorated or which has been damaged shall not be used for concrete.

3.03 FORMWORK

A. Design, erect, support, brace, and maintain formwork to carry vertical, lateral, static, and dynamic loads that might be applied until concrete can support such loads.

B. Formwork shall be designed and maintained so as to provide an ACI Class A finish for concrete surfaces exposed to view and an ACI Class C finish for concrete surfaces that will be completely concealed. The class of surface for offset between adjacent pieces of formwork facing material shall be Class A for surfaces permanently exposed to public view and Class C for surfaces that will be permanently concealed, unless otherwise specified.

C. Chamfer exposed edges and corners as indicated using wood, metal, PVC, or rubber chamfer strips fabricated so as to produce uniform smooth lines and tight edge joints.

D. Contact surfaces of formwork shall be coated with an approved form release agent prior to placing reinforcement. Excess release agent shall not be allowed to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed.

E. Formwork and adjacent surfaces shall be thoroughly cleaned just prior to concrete placement. Remove all debris, wood chips, sawdust, dirt, etc. Retighten forms, braces, shores, etc. as required prior to concrete placement, as required, to prevent concrete leakage and to maintain proper alignment and tolerances.

F. Formwork shall be designed and fabricated for easy form removal without hammering or prying against concrete surfaces that will be exposed.

G. Top plates shall be provided for inclined surfaces where the slope is too steep to place concrete with only bottom and side forms.

3.04 VAPOR RETARDER

A. Preparation: Ensure that subsoil meets project specification standards prior to proceeding:

1. Examine surface to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until acceptable conditions have been corrected.

2. Level and tamp or roll aggregate, sand, or granular base.

3. See section 4.1 of ACI 302.1R-04 for further soil-support system preparation requirements.

B. Installation: A vapor retarder is to be placed under all concrete that is cast against earth. Omit vapor retarder and seal at piles. Install vapor barrier in accordance with the more stringent of the manufacturer's instructions and/or ASTM E1643, of the latest revision.

1. Sheeting shall be placed in position with the longest dimension parallel to the concrete pour.

2. Lap vapor retarder over pile caps and/or seal to foundation walls.

3. Lap sheeting joints 6 inches and seal with manufacturer's recommended mastic, pressure-sensitive tape, or both.

4. Seal all penetrations, including pipes and piles, per manufacturer's instructions.

5. No penetration of the vapor retarder is allowed except for reinforcing steel and permanent utilities

6. Repair damaged areas by cutting patches of vapor retarder, overlapping damaged area 6 inches, and taping all four sides with tape.

3.05 REINFORCEMENT PLACEMENT

A. Reinforcement, including tendons, shall be accurately positioned as shown by Contract Drawings. Reinforcement shall be securely fastened and supported to prevent displacement before, or during placement in accordance with requirements of the American Concrete Institute specifications for Structural Concrete for Buildings (ACI 301 Latest Edition). Adequate support shall be provided to secure against displacement within tolerances permitted. Supports and spacers shall be provided at ACI recommended spacing.

1. Accurately position, support, and secure reinforcement in a manner to prevent displacement by formwork, construction, or concrete placement operations and work of other trades.

B. Spacing Limits for Reinforcement: Unless noted otherwise, spacing of all reinforcement shall conform to the following:

1. Beams, Slabs, and Walls: The minimum clear spacing between parallel bars in a layer shall be the diameter of the reinforcement bar, but not less than 1 in.

   a. Reinforcement shall be placed a single plane, except where noted otherwise or where spacing limitations defined in previously cannot be attained. Where parallel reinforcement is placed in two or more layers, bars in the upper layers shall be placed directly above bars in the bottom layer with distance between layers not less than 1 in.

2. Columns: In spirally reinforced or tied reinforced compression members, such as columns, clear distance between longitudinal bars shall be not less than 1.5 times the reinforcing bar diameter, nor less than 1 1/2 in.

3. Clear distance limitation between bars shall apply also to the clear distance between a contact lap splice and adjacent splices or bars.

4. In walls and slabs other than concrete joist construction, primary flexural reinforcement shall not be spaced farther apart than three times the wall or slab thickness, nor farther apart than 18 in.

C. Reinforcement Placement Tolerances: The placement of all reinforcement should be in accordance with the design documents, within the following tolerances:

1. Placement of non-prestressed reinforcement, including the placement of welded wire reinforcement (WWR), measured from form surface:

   a. When member depth, or thickness, is 4 in. or less: ± ¼"
   b. When member depth, or thickness, is over 4 in. but not over 12": ±3/8"
   c. When member depth, or thickness, is over 12 in: ± ½"

2. Concrete cover measured perpendicular to the concrete surface:

   a. Reduction in cover shall not exceed 1/3 the specified concrete cover, nor the following values:

      i. When member depth, or thickness, is 8 in. or less: - 3/8"
      ii. When member depth, or thickness, is over 8 in: - ½"
      iii. Reduction in cover to formed soffits shall not exceed -¼ "

3.06 INSERTS & FASTENING DEVICES FOR OTHER WORK

A. Cast-in-Place Items: Provide for installation of inserts, bolts, dowels, blocking, and other fastening devices required for attachment of other work. Properly locate all in cooperation with other trades and secure in position before concrete is poured.

3.07 CONCRETE PLACEMENT

A. Placing and depositing of all concrete shall be in accordance with the American Concrete Institute Building Code.

B. Concrete shall be conveyed from the mixer to the place of final deposit by methods, which will prevent the separation or loss of materials. Concrete shall not be dropped more than five feet (5') unless a special designed chute is used.

C. No concrete that has partially hardened or been contaminated by foreign matter shall be deposited on the work, nor shall re-tempered concrete be used. Total mixing time and delivery time shall not exceed 60 minutes.

D. Concrete shall be deposited in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined cold construction joints.

E. Do not use vibrators to transport concrete inside forms.

F. Job mixed concrete shall not be permitted.

G. Tolerances: Control form construction, and placing and finishing of concrete to meet the following requirements in the completed construction:

1. Deviation from plumb:

   a. For lines, surfaces, corners, arisers, and elements: the lesser of 0.3% times the height above the top of foundations as shown on structural drawings or ± 1 in.

   b. For the outside corner of an exposed corner column and contraction joint grooves in concrete exposed to view: the lesser of 0.2% times the height above the top of foundations as shown on structural drawings or -½" in.

2. Deviation from location:

   a. Vertical elements, measured at the top of element foundation: ±1 in.

b. Other elements: ±1 in.

c. Edge location of all openings: ± ½ in.

d. Sawcuts, joints, and weakened plane embedments in slabs: ± ¾ in.

3. Distance between adjacent elements sectioned by a vertical plane:

a. Where specified width is 2 in or less: ± 1/8 in.

b. Where specified width is more than 2 in. but not more than 12 in.: ± ¼ in.

c. All other elements: ± 1 in.

4. Deviation from cross-sectional dimensions:

a. Thickness of elements, except slabs, where specified dimension is:

i. 12 in or less: +3/8 in; - ¼ in.
ii. More than 12 in., and not more than 36 in.: +½ in.; -3/8 in.
iii. More than 36 in.: +1 in.; - ¾"

b. Unformed beams and walls cast against soil:

i. Deviation from thickness: -5%

c. Thickness of suspended slabs: - ¼"

d. Thickness of slabs-on-ground:

i. Average of all samples: -3/8 in.
ii. Individual sample: -3/4 in.
iii. Minimum number of samples shall be on per 10,000 ft^2
iv. Samples shall be taken within 7 days of placement.

5. Deviation from sawcut depth or formed opening width or height:

a. Depth of sawcut joints: ± ¼ in.

b. Opening width or height: - ½ in.; + 1 in.

6. Deviation from relative elevations or widths:

a. Stairs, measured along a line parallel to the stair axis.

i. Elevation of consecutive risers at the nosing: ± 3/16 in.
ii. Width of consecutive treads or within one tread: ± 3/16 in.

7. Deviation from slope or plane:

   a. Stair tread from back to nosing: ±¼ in.

   b. Formed surfaces over distances or 10 ft.

      i. All conditions, unless noted otherwise in this section: ± 0.3%
      ii. Outside corner of exposed corner column ±0.2%
      iii. Contraction joint grooves in concrete exposed to view: ±0.2%.

8. See the applicable sections of ACI 117: "Specifications for Tolerances of Concrete Construction and Materials" for further guidance on acceptable tolerances on the placement of concrete.

3.08 CONSTRUCTION JOINTS

A. Vertical construction joints shall in general be placed at mid-span of beams and slabs. Contractor shall submit a Pour Sequence Plan, indicating any construction joints for review by the Professional of Record.

   1. Provide 1½" deep key-way type construction joints, with all reinforcing steel continuous through the joint, at the end of each pours.
   2. Use bevel for easy removal.
   3. The maximum distance between construction joints shall be 150 feet.

B. Horizontal construction joint surfaces, such as between walls and slabs, shall be roughened to a ¼ inch height. Horizontal construction joints will not be allowed in beam, slabs, pile caps, or footings.

C. A thorough coating of bonding adhesive shall be applied to existing concrete surfaces that will be joined with fresh concrete.

   1. All surface preparation and installation instructions and recommendations of the bonding adhesive manufacturer are to be followed.

3.09 WEATHER REQUIREMENTS

A. Special procedures and methods, as recommended in ACI publications, shall be followed in cases of extremes in weather conditions.

   1. Cold Weather Placement: Cold weather procedures shall conform to all recommendations detailed in ACI publication 306 "Cold Weather Concreting".

a. Adequate equipment shall be provided for heating the concrete materials and protecting the concrete placed during freezing or near freezing weather. No frozen materials or materials containing ice shall be used.

b. Concrete shall not be placed when the temperature of the surrounding air is 42 degrees F and falling, but may be placed when it is 42 degrees F and rising.

2. Hot Weather Placement: Hot weather procedures shall conform to all recommendations detailed in ACI publication 305 "Hot Weather Concreting".

a. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1½ hours to 75 minuites, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes. Ice may be added to concrete so that delivery time can remain 1½ hours.

3.10 FINISHES

A. All areas shall be finished by tamping the concrete with suitable tools to force coarse aggregate down from the surface, then screeding, with straight edges and rough-floating to required initial finish flatness and levelness requirements of F_F 20 (floor flatness) and F_L 15 floor levelness.

B. Bugholes: All formed concrete surfaces, whether or not they are exposed to view, are to have bugholes, or air voids, conforming to a type P3, or better, as defined by ASCC. Appropriate admixtures are to be added to concrete as needed to ensure that this specific finish in achieved throughout. See section 3.14 for repair of excessively bugholed areas.

C. After the Initial procedures are completed, the concrete shall receive final finish (trowel, trowel and fine broom, non-slip broom) indicated in contract documents.

1. Unless otherwise shown elsewhere in contract documents, concrete surfaces are to be finished as follows:

a. Interior Surfaces: Interior surfaces are to receive a trowel finish.
i. Exception: Interior exposed concrete surfaces in mechanical, electrical, storage, and maintenance areas are to receive a fine-broom finish with the characteristics specified for an exterior slab.

b. Exterior surfaces: Exterior surfaces are to receive a fine-broom finish conforming to the following characteristics:

i. The fine-broom grooves are to be placed only in one direction and are to run parallel to the direction of the slope, if any indicated within contract documents.

ii. The fine-broom finish at exterior shall be shallow enough so as to not trap dirt.

D. The use of topping or dry fines in connection with the finishing procedures will not be permitted. Concrete slabs shall be finished to the proper elevation within stated requirements. Slope surfaces uniformly to drains where indicated.

E. A float finish shall be provided for monolithic slab surfaces which will receive a trowel finish and other finishes as specified; slab surfaces to be covered sand-bed terrazzo, with membrane or elastic waterproofing or membrane or elastic roofing and where indicated.

F. A trowel finish shall be provided for monolithic slab surfaces that are exposed to view. Trowel finished surfaces shall be free of trowel marks, uniform in texture and appearance. Trowel finished surface flatness and levelness characteristics shall be measured according to ASTM E 1155. Measurements shall be taken with a "Dipstick model 2200" floor profiler (Face Construction Technologies, Inc.), unless an alternate device is approved prior to concrete placement. The contractor is to coordinate with the Architectural documents as required to determine the flooring system and/or use of the area under consideration for the different areas of the building which will determine the required degree of tolerance. The tolerances requirements are as follows:

1. Areas of carpeted office areas shall comply with the following flatness and levelness criteria:

a. Surfaces of Concrete Slabs Cast on Grade:
i. Overall Tolerance (SOV): F_F 25 (floor flatness) and F_L 20 (floor levelness).
ii. Minimum Local Tolerance (MLV): F_F 18 (floor flatness) and F_L 16 (floor levelness) for an area of 20 ft. by 20 ft.

2. Any surface deflects that would "telegraph" or read through applied floor covering system shall be ground smooth.

3. Refer to ACI 302.1R for construction guidance on how to achieve these flatness and levelness values.

4. See the applicable sections of ACI 117-06: "Specifications for Tolerances of Concrete Construction and Materials" for guidance on acceptable tolerances on the concrete finishes.

G. Repair of Surfaces Constructed out of Specified Tolerances: Any surface that is not construction within the specified tolerances is to be brought into compliance with specified tolerances by the contractor at no additional cost to the owner.

1. Slab Surfaces: Slab surfaces that do not meet or exceed the specified applicable flatness and/or levelness tolerances must be topped with a self-leveling concrete topping in order to bring the floor back into the specified tolerance.

3.11 CONCRETE CURING AND PROTECTION

A. Concrete may be cured by application of wet burlap, clean water, or curing compound. Curing shall commence on exposed surfaces within three hours after concrete has taken the final set, and on formed surfaces within three hours after removal of forms.

B. Contractor shall provide an appropriate curing method for slab areas that are to have a sealed finish. Contractor shall submit method of curing for approval.

C. Curing compound, if used, shall be of such composition as to form an impervious membrane for at least seven days duration. Brand selected by the Contractor shall be submitted to the Engineer for approval prior to use.

D. Water curing shall be a minimum of seven days duration.

E. Concrete shall be protected from excessive vibration, strong shock loading, heavy rain, running water, and subsequent construction operations.

3.12 REMOVING FORMWORK

A. Formwork not supporting the weight of concrete, such as the sides of beams, walls, Columns and similar parts of the work, may be removed after a cumulative time, at not less than 50 degree F, of 24 hours after concrete placement, provided that concrete has cured sufficiently so as to not be damaged by the form removal process.

B. Formwork supporting the weight of concrete shall not be removed until the concrete has attained a minimum of 75 percent of the 28-day compressive strength. Compressive strength of in-place concrete shall be determined by

testing field-cured specimens representative of the respective concrete location.

3.13 REUSE OF FORMWORK

A. Formwork that is to be reused shall be cleaned, repaired, and be recoated with form release compound. Split, frayed, delaminated or otherwise damaged form facing materials will not be acceptable for exposed surfaces. Patched form facing materials shall not be acceptable for exposed surfaces.

3.14 CONCRETE SURFACE REPAIRS

A. Repair of formed concrete surfaces that will be exposed to view shall be made with a blended patching mortar of white Portland cement and standard Portland cement that will match surrounding concrete. Contractor shall submit product data for patching mortar and provide a test patch area in an inconspicuous area to verify mixture and application method. Test patch area shall be reviewed by the Project Architect before proceeding with surface repairs.

B. Repair of formed concrete surfaces that will not be exposed to view shall be patched with cement mortar immediately after removing forms, when acceptable to the Project Architect. Honeycombs, rock pockets, voids over ¼" in any direction and holes left by tie rods and bolts shall be cut down to solid concrete and patched, but in no case to a depth of less than 1".

   1. All concrete surfaces are to conform to type P3, or better, as defined by ASCC. Appropriate admixtures are to be added to concrete as needed to ensure that this specific finish in achieved throughout.

   2. All concrete surfaces that do not achieve this specific finish are to be refinished at the contractor's expense.

C. Unformed surfaces, such as monolithic slabs, shall be tested for smoothness, flatness, and levelness tolerances for the specified finish. Surfaces not meeting specified tolerances shall be corrected. High spots shall be ground after the concrete has cured at least 14 days.

D. If defects, that affect the concrete's durability, cannot be repaired to a level of acceptability by the Project Architect, such areas shall be removed and replaced.

E. Structural repairs shall only be made after written submittal of method and procedure has been approved by the Project Architect.

3.15 CONCRETE INSPECTION AND ACCEPTANCE PROVISIONS

A. Sampling and Testing: Sampling and testing of concrete may include the following or as directed by the Project Architect.

1. Slump: Slump shall be measured once each hour and for each set of compressive test specimens taken, for each class of concrete. Observed slump shall be compared to slump stated for mix design. Any slump observed that is beyond the range of the slump specified for the respective mix design shall be brought to the attention of the contractor and reported to the Engineer.

   a. Allowable Slump Tolerance:
      i. For all values: + 0"
      ii. For specified slump 3 in. or less: -1½"
      iii. For specified slump more than 3": -2½"

2. Compressive Test Specimen: One set of standard cylinders, in accordance with ASTM C31 of the latest revision, is to be taken at the point of discharge for each compressive strength test, unless otherwise directed. One set of cylinders is to consist of a minimum of four cylinders.

   a. Sampling: Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls, for each class of concrete. The testing laboratory shall submit documentation of having met the requirements of ASTM E329. Slump shall be measured once each hour and for each set of compressive test specimens taken.

   b. Testing: Specimens are to be tested in accordance with ASTM C39, of the latest revision.

      i. One specimen is to be tested at seven days, two specimens are to be tested at 28 days, and the remaining specimen is to be retained in reserve for later testing if required or as directed.

3. Temperature: Concrete temperature shall be tested once each hour and for each set of compressive test specimens.

B. Documentation of Testing: Test results shall be reported in writing to the Project Architect, Structural Engineer, ready mix producer, and the Contractor within 24 hours after the tests. Reports of compressive strength shall indicate name of testing service, concrete mix design identification, specified compressive strength, slump, temperature of concrete at delivery, location of

concrete sample in the structure and the compressive breaking strength and type of break at 7 days and 28 days.

1. Compressive strengths shall be evaluated in accordance with ACI recommendations.

2. Testing and inspecting agency is to evaluate results of compressive strength testing in accordance with ACI standards and include comment on the test reports as to whether or not the testing performed verifies the respective specified design strengths in accordance with ACI provisions.

C. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

D. Additional Testing: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure as directed by the Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed.

END OF SECTION

SECTION 02455

DRIVEN TREATED TIMBER PILES

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. Scope: This section specifies the furnishing all labor, materials, tool, and equipment to perform all operations necessary for piling work indicated or specified as shown within the contract document.

B. This section includes the furnishing and driving of the following types of piling:

1. ASTM D 25 – Round Timber Piles, peeled and treated, driven.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections and applicable addendum shall apply to this Section.

B. The work described in the following specification sections are to be consulted as they affect the work described herein.

1. Division 1 Section "SUBMITTAL PROCEDURES" for submittal procedures and requirements.

2. Division 1 Section "QUALITY CONTROL" for independent testing agency procedures and administrative requirements.

3. Division 3 Section "CAST-IN-PLACE CONCRETE, FORMWORK, AND REINFORCING STEEL "

1.03 CODES, STANDARDS & REFERENCES

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified. Meet requirements and recommendations of the latest applicable portions of the standards listed:

1. American Society for Testing and Materials (ASTM)
West Conshohocken, PA

a. ASTM D1143/D1143M: "Standard Test Methods for Deep Foundations Under Static Axial Compressive Load"

2. International Code Council (ICC)

a. International Building Code, 2006 Edition

1.04 CONTRACTOR DUTIES

A. Notification: The contractor shall notify the Professional of Record and the Testing Laboratory 48 hours prior to commencement of driving project piles. Driving of any piles must not commence without representatives of the Testing Laboratory being present. The Contractor shall also notify the Director of the responsible regulatory agency at the least 24 hours in advance of pile driving.

1.05 QUALITY ASSURANCE

A. Testing and inspection services shall be conducted by the independent testing laboratory selected and paid for by the Owner. The testing laboratory employed by the Owner shall perform the design control and testing services required by Owner for pile foundations including:

1. Perform inspections of all piles at source and at project site, and mark conforming piles for identification.

2. Logging of all piles driven, as a minimum record the following information:

a. Date Driven
b. Hammer Description
c. Pile Length
d. Pile Tip Diameter
e. Pile Butt Diameter
f. Location of Pile
g. Number of blows per foot for full length of pile
h. Tip and Butt Elevation
i. Vibration Measurements
j. Record Control Elevations provided by Contractor
k. Heaved piles

3. Observation of Pile-driving Operations

a. All piles that are not driven to the required tip elevation are to be reported to the Professional of Record immediately.

4. Vibration monitoring.

B. Vibration Monitoring Reports: The Testing Laboratory employed by the Owner shall monitor vibration caused by pile driving operations on a daily basis.

1. Any vibration recordings in excess of 0.25 in/sec are to be reported to the Professional of Record immediately.

C. Driving Logs: A neat, orderly, daily pile driving report shall be maintained by the Testing Laboratory. These reports shall identify each pile with a number that corresponds to a numbered pile plan submitted prior to the driving operation. This driving logs record shall be transmitted to the general contractor, the Project Professional of Record 's representative, the Structural Engineer, and to the Geotec Engineer at the end of each day that piles are logged.

1. The tips of all ASTM D 25 treated timber piles shall be driven to approximately 35 feet below finished floor elevation.

a. All piles that are not driven the required tip elevation are to be reported to the Professional of Record immediately.

1.06 SUBMITTALS

A. Submit the following in accordance with the Conditions of the Contract and Division 1 Specification Sections:

1. Numbered Pile Plan: A plan of all piles

2. As-Driven Pile Locations: An "As-Built" survey of pile locations, performed by a Louisiana Registered Land Surveyor. Piles shall be located horizontally to column lines and vertically referenced to the finish floor elevation datum of 100'-0". This report shall include the name of the pile driving contractor, type, and size of hammer used.

3. Driving Equipment: Descriptive data for hammer and other accessory equipment used in pile driving operations.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery: Material shall be delivered to the Project site in such quantities and at such times to ensure continuity of pile driving operations and adherence to project schedule.

B. Storage: Piles shall be stored in orderly groups above ground and blocked to prevent distortion of piles.

C. Handling: Pile shall be handled with care ensure piles are not damaged. Care shall be exercised to Pile shall not be dropped, breaking, or abrading the surface. Repair damaged piles or replace damaged piles with new undamaged piles.

1. All cuts or damaged surfaces of treated piles, including the tops of cut-off piles, shall be brush treated with copper napthenate conforming to AWPA specification M4. All shakes and splits are to be filled in accordance with AWPA P9. Treatments shall thoroughly penetrate the cut surfaces.

1.08 PROJECT CONDITIONS:

A. Surface Information: Subsurface log data taken at the site are in the office of the Professional of Record and are available to the Contractor. It shall not be assumed that conditions over the entire site are shown by log data. Data on indicated subsurface conditions are not intended as representative or warranties of accuracy or continuity between soil borings. It is expressly understood that the Contractor will be responsible for all interpretations or conclusions that he draws from the subsurface information. Owner and Engineer will not assume responsibility for variations of subsoil quality or condition at locations other than places shown and at time of investigation.

1. Additional soil borings and other exploratory operations may be made by the Contractor at no cost to Owner.

B. Protection of Property: The Contractor shall document the conditions of existing paving, structures, sewers, above ground utilities, buried utilities, and other property on and adjacent to the work site and shall take suitable, proper, and necessary precautions to protect such property from damage which could result from the execution Piling work. Should damage occur due to the Contractor's operations, the Contractor shall bear the responsibility and cost for repairing or replacing the damaged work to its original condition, without additional compensation.

1. Documentation: Video recordings of all existing conditions of structures, finishes, equipment, adjacent improvements, and all other property on and adjacent to the work site that might be construed as damage resulting from pile driving operations.

a. All such recordings are to be performed to a sufficient extent to document all of the above referenced adjacent items in sufficient detail to determine whether or not the items where damaged prior to commencing of pile driving operations.

b. File video recordings with the Professional of Record before starting any pile driving operations.

2. Locate Existing Utilities: Coordinate the location of all existing underground utilities with the owner. Locate full extent of all existing buried utilities, such as existing sewer lines, existing water lines, existing gas lines, exiting power lines, etc, by nondestructive means prior to performing any site work. If the existing location of any existing utilities that are to remain come within 1'-0" of conflicting with placement of new construction, including piles, the contractor is to notify the Professional of Record and provided a detailed, dimensioned sketch, prepared by the contractor, showing the field determined location and elevation of such utilities relative to the building. Such subsurface investigations are to be conducted in a timely manner such that the project schedule is not impacted.

C. Basis for Bids: Bids shall be based on indicated number of piles and dimensions from point of cut-off, plus not less than 1 foot of extra length for cutting piles at required cut-off elevations.

1. No payment will be made for rejected piles including piles driven out of place, imperfect piles, or piles damaged during driving or handling.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Piling: Piles shall be round timber piles, conforming to ASTM D25 of the latest revision. Piles shall be clean peeled, Southern Pine or Douglas Fir.

1. The tip of each treated timber pile shall be driven to an elevation of approximately 35 feet below finished floor elevation. Piles shall have a minimum butt diameter of 8 inches 3 feet from butt of pile and a minimum tip diameter of 6 inches. Refer to drawings for design capacity.

2. Preservative Treatment: Preservative and minimum final retention shall be in accordance with AWPA U1 (Commodity Specification E, Use Category 4C.) Comply with AWPA Standards P5-02, C1-02, and C3-99 with minimum net retention of 0.80 lbs per cubic ft. of wood and penetration as required for foundation piles.

3. Brush Treatment Solution: Treated all pile cut-offs with Copper Napthenate conforming to AWPA Standard M4.

2.02 DRIVING EQUIPMENT

A. General: Pile driving equipment shall be of a type generally used in standard pile driving practice, operated at the manufacturer's specified rate, to develop required rated energy per blow. All driving equipment is subject to the Professional of Record 's approval. Professional of Record will reject equipment if in his opinion, at any time, the equipment does not perform its intended task adequately.

B. Hammer and Leads:

1. Treated Timber Piles:

a. Use a Vulcan No. 2, delivering 7,260 ft-lbs. per blow, single-acting drop hammer, or an equal hammer with a 3,000 lb. ram and a controlled drop of 2'-5" that operates at the rate of 60 blows per minute.

b. Leads: Fixed

C. Followers:

1. Not Less than twelve inches (12") in diameter, of oak, gum or other hardwood; straight and sound, and shall be maintained free of crushing or brooming.

2. Fitted with a standard iron shoe.

PART 3 – EXECUTION

3.01 PRELIMINARY WORK

A. Prior to beginning any pile driving operations, the contractor shall perform all preventive work per Part 1, subpart 1.07 "PROJECT CONDITIONS", paragraph B "Protection of Property" of this specification

B. The contractor shall also verify all existing dimensions and locations of subsurface utilities prior to commencing pile-driving operations.

1. Contractor shall hand dig to locate any existing sub-surface utility lines before driving piles.

C. All piles shall be marked at 1-foot intervals with a horizontal line and the number of feet from the pile tip shall be marked at 5-foot intervals.

3.02 DRIVING PILES

A. Plumb leads and pile prior to driving. Pile shall be held firmly in position and in axial alignment with the hammer by the fixed leads. Driving of each pile shall be continuous, without intermission, until the pile has been driven to final resistance or required depth.

B. Timber piles shall be continuously driven until the tips reach approximately 35 ft below first floor elevation. The geotec report recommends that the approximate driving rate should not exceed 12 blows per foot using a Vulcan No. 2 hammer that delivers 7,260 ft.-lbs. of energy per blow. The contractor shall have the option of driving the treated timber piles by alternate methods after being review and approved in writing by the Professional of Record.

   1. Contractor is cautioned that these are driving rates. Driving rates at refusal or final penetration shall be noted on the driving log (blows per distance of movement). These logs shall be transmitted by fax to the geotech engineer only.

C. Piles that heave during the process of driving adjacent piles shall be redriven to their original elevations, or to their original resistance.

D. Care shall be exercised by the Contractor in driving of piles to prevent damage to existing sewers or other utilities; any resulting damage to the facilities shall be repaired by the Contractor at his expense.

E. Any discrepancies in locations of piles or elevation of cut-offs shall be brought to the attention of the Engineer for resolution.

3.03 VIBRATION MONITORING

A. Pile driving will cause vibrations that may affect nearby buildings and utilities. Pile driving should be monitored at any structure of concern during the driving of the job piles to record their magnitude of vibrations.

   1. The peak particle velocity of the earth between the driving operation and adjacent structures during pile driving shall be 0.25 inch per second or less. If sustained peak particle velocity exceeds 0.25 inch per second, the Contractor shall terminate driving operations.

   2. Pre-drilling may be used to reduce vibrations or soil and pile heave, if found to occur at this site. The rig used to drive the job piles is to have pre-drilling capabilities. Pre-drilling should be made by wet rotary methods and should be performed with a fishtail type drill bit that has a maximum diameter of 6". If the piles are pre-drilled, the pre-drilled hole should not penetrate any deeper than 20 feet below ground surface.

3.04 DRIVING TOLERANCES

A. Tolerance for all piles shall not be more than two percent (2%) out-of-plumb and not more than three inches (3") out of place. After cut-off, the center of gravity of each pile cap, which has two or more piles, shall be within two inches (2") of the centroid of the pile cap as shown on the Drawings.

1. If the variations from the true center exceed the above tolerance, the piles in each cluster shall be plotted by the Contractor and the center of gravity of said cluster determined. If required, sufficient piling shall be added at locations determined by the Professional of Record. Contractor shall, at his cost, drive such additional piling and/or alter pile caps as may be required to compensate for or to rectify the conditions brought about by failure to preserve proper spacing, whether this defect is discovered before or after cutting off.

B. Corrective Work: All labor and materials for the correction for piles driven outside of the above mention tolerances shall be supplied by the contractor is his expense.

3.05 MISSING PILES

A. Any discrepancies in locations of piles or elevation of cut-offs shall be brought to the attention of the Engineer for resolution.

3.06 PILE CUTOFF

A. Cutting-Off: The tops of all piles shall be cut-off at right angles to their axis at the elevation indicated on the Drawings, on a neat horizontal plane, and at elevation indicated. All cutoff portions shall be removed from the job site and dispose of off site.

B. Over-Driven Piles: Any piles driven too low to permit proper cut-off elevation shall be corrected without additional cost to the Owner, as instructed by the Professional of Record.

3.07 DEFECTIVE PILES

A. Any substantial sudden increase in the rate of penetration of a timber pile shall be investigated for possible damage. If the sudden increase in rate of penetration cannot be correlated to the soil strata, the pile shall be removed for inspection or rejected.

B. Immediately remove and replace a pile that is damaged, deflected, broken, or which cannot be driven to proper elevation. Replace such pile with an

acceptable substitute pile at the location determined by the Professional of Record. In the event that such pile removal should prove to be impossible, abandon the defective pile and replace it with additional pile(s) driven close to the worthless one as directed by the Professional of Record.

END OF SECTION

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
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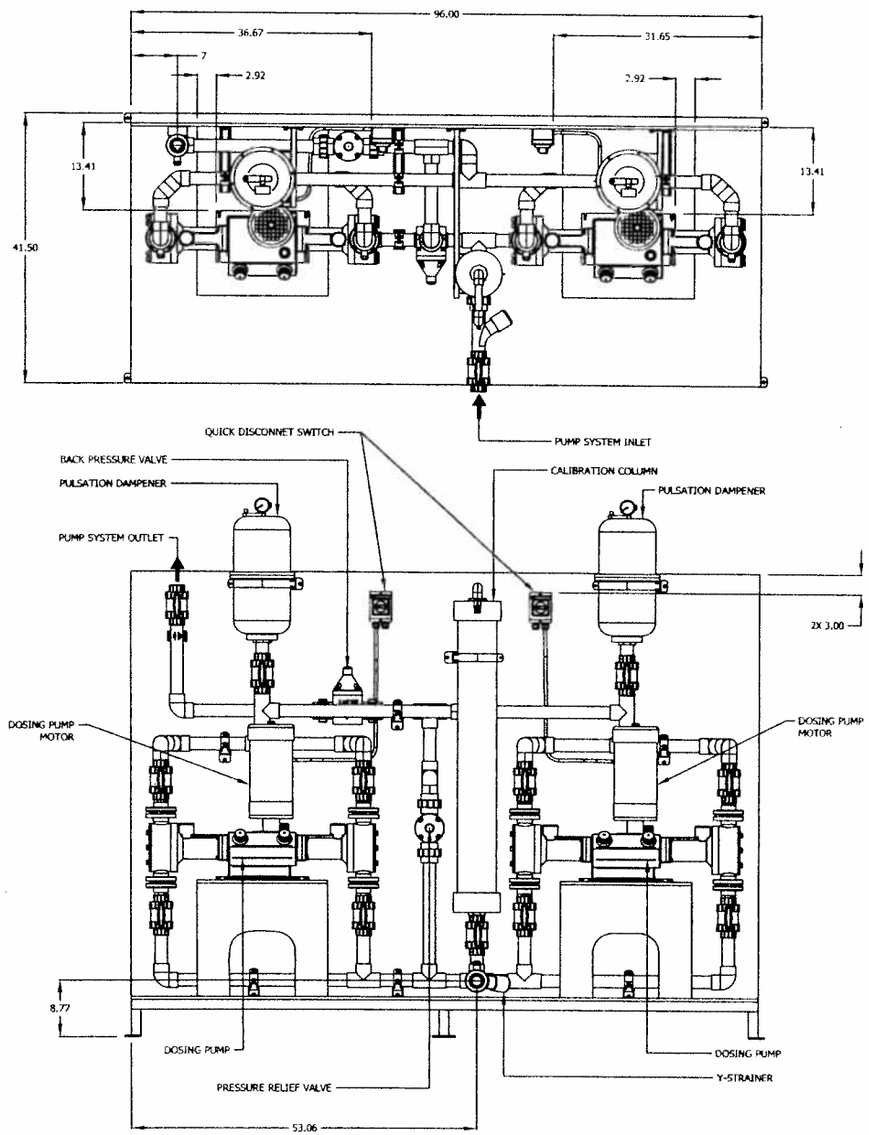
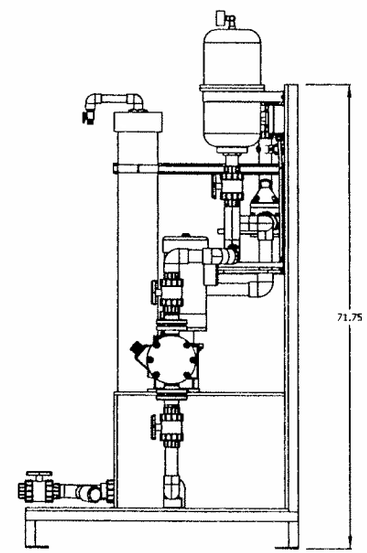
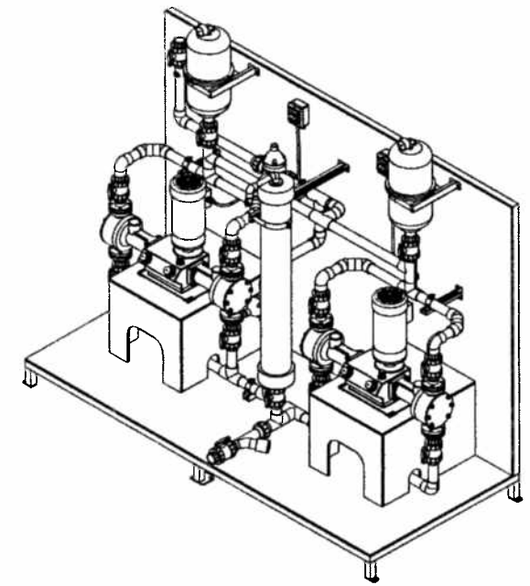
1	5/28/08	UPDATED TO REVISED DESIGN	JAK		







SEVERN TRENT SERVICES

CLORTEC

2660 COLUMBIA STREET TORRANCE, CALIFORNIA 90503
TELEPHONE No: (310)-618-9700 FAX No: (310)-618-1364
WEB SITE: www.severntrentservices.com

UNLESS OTHERWISE NOTED
TOLERANCES:

TYPE:	INCHES	(MM)
FRACTIONS	± 1/8"	
.X	± .1"	± 2.5
.XX	± .02"	± .51
.XXX	± .005"	± .127
ANGLES	± 1°	

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JEFFERSON PARISH

BRIDGE CITY, LA

PROJECT:

TITLE:

PUMP SKID ASSEMBLY
KM-257-770/2
488GPH, 1.5HP MOTOR, 460V, 3Ø

SCALE:	CLORTEC JOB No:	SIZE:	REV:
NTS	CP00060	B	1

DWG No: PSA-PP-1-2-KM257770-2-B-GA-08

SHEET: 1 OF 1

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0	4.27.08	ISSUED FOR APPROVAL	SM		
1	5.27.08	FOR CHANGES SEE SHEET 2	SM		
2	6.06.08	FOR CHANGES SEE SHEET 2	BCW	JB	SM
3	7.01.08	REVISED LOCATIONS OF TIE DOWN LUGS AND LIFTING CHANNELS	SM		

BRIDGE CITY

JEFFERSON PARISH, LA

CT-450 (450 lbs/Day) RACK MOUNTED

ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM

EQUIPMENT & PIPING LAYOUT

SEVERN TRENT SERVICES
CLORTEC
2660 Columbia Street Torrance, Ca. 90503
TELEPHONE No: (310) 533-5849 E-MAIL
FAX No: (310) 618-1384 WEB SITE www.severntrentservices.com

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TOLERANCES:

TYPE:	INCHES	[MM]
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.X	± .1"	± 2.5
.XX	± .02"	± .51
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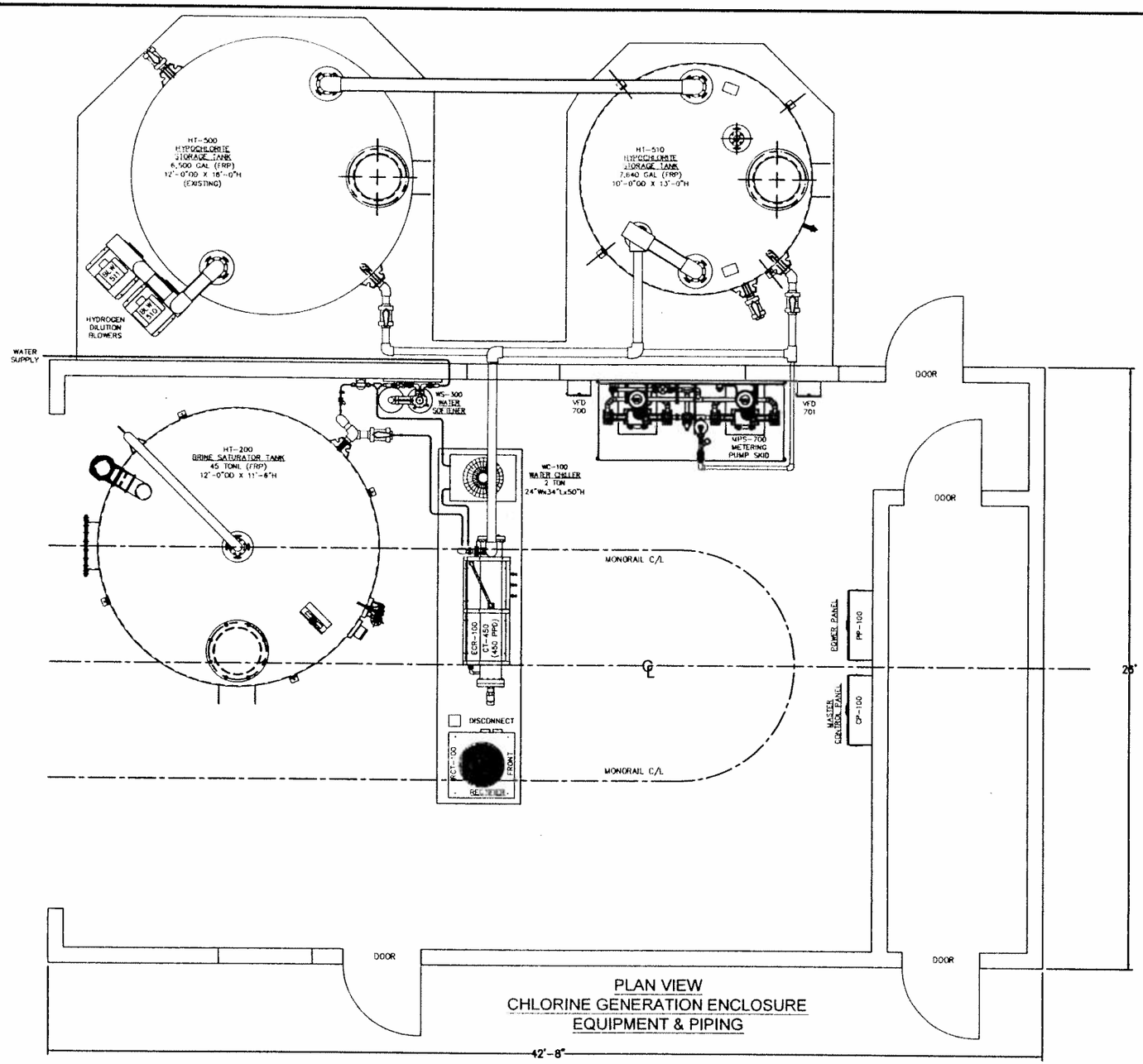
BRIDGE CITY
JEFFERSON PARISH, LA

CT-450 (450 LBS/DAY)
RACK MOUNTED ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM
EQUIPMENT & PIPING LAYOUT

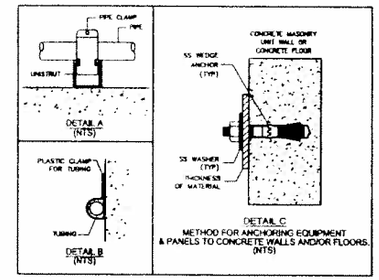
SCALE:	CLORTEC JOB No:	SIZE:	REV:
NTS	CP00060	B	3

DWG No. CP00060-ML-00 SHEET 1 OF 2

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0	4.27.08	ISSUED FOR APPROVAL	SM		
1	5.27.08	ADDED EXISTING TANK	SM		
2	6.06.08	ADDED PIPING	BCW	JB	SM
3	7.01.08	REVISED LOCATIONS OF TIE DOWN LUGS AND LIFTING CHANNELS	SM		



PLAN VIEW
CHLORINE GENERATION ENCLOSURE
EQUIPMENT & PIPING



NOTE:

THE DIMENSIONS OF THIS HYPOCHLORITE GENERATION ROOM MIGHT NOT CORRESPOND TO FIELD CONDITIONS. THIS IS ONLY A REPRESENTATION OF THE SPACE REQUIRED TO ACCOMODATE CT-450 CELL RACK AND THE ASSOCIATED COMPONENTS SPECIFIED FOR THIS PROJECT.

NOTES:

1. ALL PIPING, FITTINGS & VALVES ARE PVC SCH. 80. ALL TUBING ARE BLACK POLYETHYLENE.
2. EXACT LOCATION OF EQUIPMENT AND INTERCONNECTING PIPING ROUTING MAY VARY DEPENDING ON FIELD CONDITIONS.
3. ELECT. POWER, WATER SUPPLY, POINT OF INJECTION AND SCADA INTERFACE AND PIPE IDENTIFICATION/LABELING ARE DONE BY OTHERS.
4. ALL UNDERGROUNG & CONCRETE WORK, WALL AND ROOF PENETRATIONS ARE DONE BY OTHERS.
5. STWP RECOMMENDS ADDING FLOOR DRAINS FOR THE RACKS, THE WATER SOFTENERS AND THE TANKS.
6. ALL ELECTRICAL CONDUITS, WIRING ,JUNCTION AND PULL BOXES WILL BE PROVIDED BY OTHERS.
7. ALL PAINTING AND COATING TO BE PROVIDED BY OTHERS.
8. ALL BACKBOARDS AND SUPPORTS TO BE PROVIDED BY OTHERS.
9. PROPER ROOM VENTILATION SHOULD BE SIZED BY OTHERS.
10. BRINE TANK AND HYPOCHLORITE STORAGE TANKS SHOULD BE ON TANK PADS
11. HYDROGEN DILUTION BLOWERS SHOULD BE ELEVATED FROM TANK PAD

SEVERN TRENT SERVICES
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BRIDGE CITY
JEFFERSON PARISH, LA

CT-450 (450 LBS/DAY)
RACK MOUNTED ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM
EQUIPMENT & PIPING LAYOUT

SCALE:	CLORTEC JOB No:	SIZE:	REV
NTS	CP00060	B	3

DWG No: CP00060-ML-00
SHEET: 2 OF 2

GENERAL NOTES (1 / S1.0)

1 GENERAL

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS, MECHANICAL, ELECTRICAL, PLUMBING AND SITE DRAWINGS. CONSULT THESE DRAWINGS FOR DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS. CONFLICTS BETWEEN DRAWINGS, SPECIFICATIONS, EXISTING CONDITIONS, ETC. SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER FOR RESOLUTION PRIOR TO PROCEEDING WITH AFFECTED WORK.

ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.

IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO INSURE THE STABILITY OF THE BUILDING AND IT'S COMPONENTS DURING ERECTION, THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING & TEMPORARY BRACING. IT SHALL ALSO BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ADJACENT STRUCTURES, EXISTING UTILITIES, ETC. FROM DAMAGE DURING CONSTRUCTION.

NO PENETRATIONS NOT SHOWN ON CONTRACT DRAWINGS OR APPROVED SHOP DRAWINGS SHALL BE MADE IN ANY FOUNDATION MEMBER, FLOOR SLAB, GRADE BEAM, ETC. WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.

2 EXISTING CONDITIONS

ALL DIMENSIONS AND CONDITIONS TYING INTO OR GOVERNED BY EXISTING CONSTRUCTION CONDITIONS ARE APPROXIMATE AND ARE NOT ASSERTED TO BE CORRECT. ALL SUCH DIMENSIONS AND CONDITIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE PREPARATION OF SHOP DRAWINGS. THE FIRST SUBMITTAL OF SHOP DRAWINGS MUST CONTAIN CORRECT CONDITIONS AND DIMENSIONS OBTAINED FROM FIELD OBSERVATIONS AND MEASUREMENTS. IF CONDITIONS AND/OR DIMENSIONS VARY GREATLY FROM THOSE SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO THE PREPARATION OF SHOP DRAWINGS.

3 DAMAGE TO EXISTING CONSTRUCTION

ALL WORK SHALL BE DONE IS A MANNER THAT WILL NOT DAMAGE THE EXISTING CONSTRUCTION THAT IS TO REMAIN.

4 FOUNDATION

THE FOUNDATION OF THIS BUILDING IS TO CONSIST OF A DEEP FOUNDATION ACHIEVED BY DRIVEN TREATED-TIMBER PILES. ALL DRIVEN PILE WORK SHALL BE PERFORMED IN CONFORMANCE WITH SPECIFICATION 02455, DRIVEN PILES. SEE THIS SPECIFICATION FOR ADDITIONAL INFORMATION NOT GIVEN BELOW.

PILE TYPE
ALL PILES SHALL BE TREATED TIMBER PILES CONFORMING TO ASTM SPECIFICATION D-25 OF THE LATEST REVISION. PILES SHALL BE DRIVEN TO A TIP ELEVATION OF 35' BELOW FIRST FLOOR ELEVATION AND HAVE A MINIMUM TIP DIAMETER OF 8" & A MINIMUM BUTT DIAMETER OF 8" AS MEASURED 3 FEET FROM THE END. ALLOW 1'-0" FOR CUT-OFF. PILES SHALL BE PINE OR DOUGLAS FIR, CLEAN OR ROUGH PEELED. PILES SHALL BE TREATED WITH CHROMATED COPPER ARSENATE (CCA) TO 0.80 LB. PER CU. FT. RETENTION IN ACCORDANCE WITH A.W.P.A. SPECIFICATIONS. BRUSH TREAT TOP OF PILE CUT-OFF WITH COPPER NAPTHENATE CONFORMING TO A.W.P.A. SPECIFICATION M4.

PILE INSTALLATION
PILES ARE TO BE DRIVEN WITH A VULCAN NO. 2 HAMMER, OR A SINGLE-ACTING DROP HAMMER DELIVERING 7200 FT.-LBS. OF ENERGY PER BLOW. PILES MAY BE FOLLOWED. PILES ARE TO BE DRIVEN AT A RATE THAT IS NOT TO EXCEED 12 BLOWS PER FOOT OF PENETRATION. PEAK PARTICLE VELOCITY DURING DRIVING SHALL NOT EXCEED 0.25 INCH.

PILE DESIGN CAPACITY
DESIGN CAPACITY OF THIS PILE IS FIVE (5) TONS IN COMPRESSION, AS ESTABLISHED BY THE PARISH OF JEFFERSON AMENDENTS TO THE ADOPTED INTERNATIONAL CODES.

TESTING & QUALITY ASSURANCE:
AS A MINIMUM, THE INSPECTION SERVICE SHALL INSPECT ALL PILES; LOG DRIVING OF EACH PILE FOR FULL LENGTH, RECORD ACTUAL TIP, BUTT, AND LENGTH DIMENSIONS OF EACH PILE. INSPECT AND TEST CONCRETE SAME AS REQUIRED IN GENERAL NOTE 3. SEE SPECIFICATIONS SECTION 02455 FOR ADDITIONAL REQUIREMENTS.

5 CONCRETE

ALL CONCRETE, FORM WORK, AND CONCRETE REINFORCING SHALL BE IN CONFORMANCE WITH SPECIFICATION 03300.

ALL STRUCTURAL CONCRETE, FOR FOUNDATIONS, SLABS AT GRADE, WALLS, PADS, ETC. SHALL BE A READY-MIX CONCRETE. CONCRETE MIX SHALL BE OF STANDARD WEIGHT AGGREGATES ABLE TO ACHIEVE A 28 DAY STRENGTH OF 4000 PSI. THE MIX DESIGN SHALL BE SUBMITTED TO A RECOGNIZED TESTING LABORATORY FOR APPROVAL. PROPOSED MIX DESIGN SHALL BE UNIQUELY IDENTIFIED BY MIX NUMBER OR OTHER POSITIVE MEANS. MIX DESIGN AND VERIFYING TEST REPORTS SHALL BE SUBMITTED 5 DAYS PRIOR TO USE. CALCIUM CHLORIDES SHALL NOT BE UTILIZED. OTHER ADMIXTURES MAY ONLY BE UTILIZED WITH THE APPROVAL OF THE STRUCTURAL ENGINEER.

ALL CONCRETE WORK SHALL COMPLY WITH ALL THE REQUIREMENTS OF ASTM STANDARD C94 FOR THE MEASURING, MIXING, TRANSPORTING, ETC. CONCRETE TICKETS SHALL BE TIME STAMPED WHEN THE CONCRETE IS BATCHED. THE MAXIMUM TIME ALLOWED FROM THE TIME MIXING WATER IS ADDED TO THE TIME THE CONCRETE IS DEPOSITED, SHALL NOT EXCEED ONE AND ONE HALF HOURS. IT SHALL BE THE DUTY OF THE TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR OF ANY NONCOMPLIANCE WITH THE ABOVE.

NO HORIZONTAL JOINTS SHALL BE PERMITTED. VERTICAL CONSTRUCTION JOINTS IN CONCRETE SHALL BE LOCATED AT MID-SPAN. A POUR SEQUENCE SHALL BE SUBMITTED FOR REVIEW.

A STANDARD HOOK SHALL BE PROVIDE AT THE TERMINATION OF ALL BEAM TOP REINFORCING BARS. CORNER BARS WITH FULL TENSION LAPS, MATCHING CONTINUOUS BAR SIZE AND SPACING SHALL BE PROVIDED FOR ALL HORIZONTAL BEAM BARS.

STANDARD LAP SPLICE LENGTHS ARE AS FOLLOWS:

BAR SIZE	LAP LENGTH TOP BARS	LAP LENGTH OTHER BARS
#3	24"	18"
#4	32"	25"
#5	40"	31"
#6	48"	37"

REINFORCING STEEL SHALL BE OF ASTM A615 GRADE 60 DEFORMED BARS, FREE FROM OIL, SCALE AND RUST. REINFORCING SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE TYPICAL BENDING DIAGRAM & PLACING DETAILS OF ACI. STANDARDS & SPECIFICATIONS OF THE LATEST REVISIONS.

REINFORCING SHALL BE SECURED IN PLACE BY THE USE OF METAL TIES AND SUPPORTED BY METAL BOLSTERS, CHAIRS, SPACERS AND OTHER DEVICES. SUPPORTS FOR ELEVATED SLABS SHALL HAVE LEGS PROTECTED WITH PLASTIC.

5 CONCRETE (CONTINUED)

REINFORCEMENT IS TO BE PLACED WITH THE MINIMUM FOLLOWING CLEARANCES:
SLABS: 1½" CLEAR BOTTOM, 1½" CLEAR TOP.
WALLS: 1½" CLEAR TYP.
BEAMS: 3" CLEAR BOTTOM EARTH FORMED, 3" CLEAR SIDES EARTH FORMED, 1½" CLEAR TO STIRRUPS SIDES BOARD FORMED, 2" CLEAR TO LONGITUDINAL REINFORCEMENT SIDES BOARD FORMED, 1½" CLEAR TOP.

ALL VERTICAL FACES OF CONCRETE ARE TO BE FORMED WITH A BOARD.

ALL MECHANICAL SPLICES SHALL COMPLY WITH ACI 318-02 REQUIREMENTS. BAR ENDS MUST BE TAPER THREADED WITH COUPLER MANUFACTURE'S BAR THREADER TO ENSURE PROPER TAPER AND THREAD ENGAGEMENT. BARS SHALL BE TIGHTENED TO THE MANUFACTURER'S RECOMMENDED WRENCH SETTING. MECHANICAL THREADED BAR SPLICES SHALL BE AS MANUFACTURED BY ERICO CONCRETE PRODUCTS OR AS APPROVED BY THE STRUCTURAL ENGINEER.

PROVIDE A 6 MIL POLYETHYLENE VAPOR BARRIER ON TOP OF FILL UNDER ALL INTERIOR SLABS AND BEAMS. OMIT ON TOP OF PILES.

CONCRETE TESTING SERVICES SHALL BE PROVIDED & PAID FOR BY THE OWNER.

DESIGN, ERECTION AND REMOVAL OF ALL FORM WORK, SHALL MEET THE REQUIREMENTS SET FORTH IN ACI STANDARDS 347 AND 301.

6 STRUCTURAL STEEL

GENERAL:
ALL STEEL, THAT IS NOT FIREPROOFED, SHALL RECEIVE A RUST PREVENTATIVE PRIMER COATING. ALL FABRICATION AND ERECTION SHALL CONFORM TO THE AISC CODE OF STANDARD PRACTICE OF THE LATEST REVISION.

STRUCTURAL STEEL SHAPES:
THE FOLLOWING STRUCTURAL STEEL SHAPES ARE TO CONFORM TO THE RESPECTIVE ASTM UNLESS OTHERWISE SPECIFICALLY INDICATED ELSEWHERE:

STEEL PIPE	ASTM A53
OTHER STRUCTURAL SHAPES	ASTM A36
STEEL PLATES	ASTM A36

ALL STRUCTURAL STEEL SHAPES, PLATES, AND ALL MISCELLANEOUS METAL ITEMS AND CONNECTORS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. ALL STRUCTURAL STEEL INDICATED TO BE HOT-DIP GALVANIZED ON CONSTRUCTION DOCUMENTS IS TO BE DONE IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION, INCLUDING ALL SHOP WELDING AND DRILLING HAS BEEN COMPLETED. ALL DAMAGED COATING, INCLUDING DAMAGE DUE TO WELDING, IS TO BE REPAIRED IN ACCORDANCE WITH ASTM A780. WHEREVER MEMBERS ARE IN CONTACT WITH EACH OTHER AND A STRENGTH WELD IS NOT REQUIRED, THE JOINT SHALL BE SEALED WITH A MINIMUM ⅛" FILLET WELD.

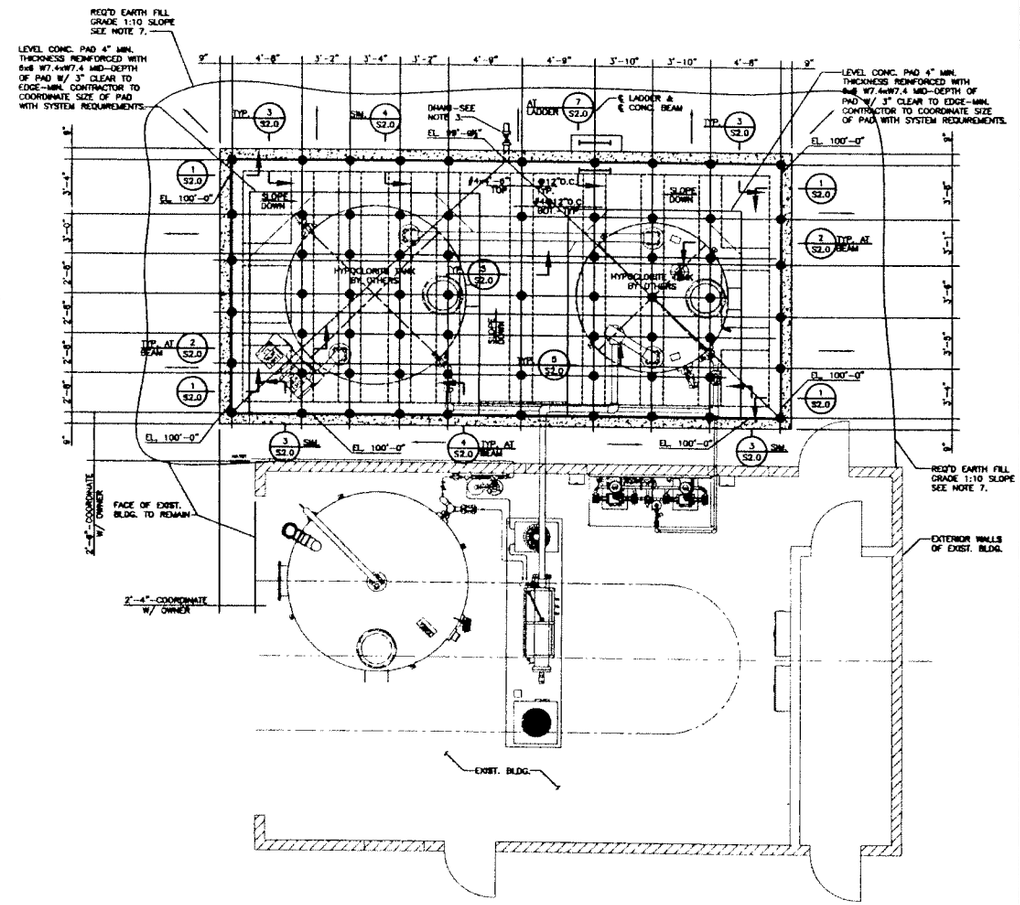
CONNECTIONS:
THE FOLLOWING STRUCTURAL STEEL CONNECTION ELEMENTS ARE TO CONFORM TO THE RESPECTIVE SPECIFICATION UNLESS OTHERWISE SPECIFICALLY INDICATED ELSEWHERE:

BOLTS	ASTM A325 OR ASTM F1852, TYPE 1
THREADED RODS	ASTM A193, B7
ANCHOR RODS	ASTM F1554, GRADE 36
NUTS	ASTM A563, HEAVY HEX GRADE DH
WASHERS	ASTM F436, GRADE 1
WELDS	AWS/AWS D1.1

ALL FIELD BOLTED CONNECTIONS SHALL CONFORM TO ASTM A325 AND BE ¾" (MIN.) DIAMETER U.N.O. ALL WELDED CONNECTIONS SHALL HAVE A MINIMUM ⅜" FILLET WELD UNLESS OTHERWISE NOTED. ALL WELDS SHALL BE MADE WITH E-70 ELECTRODES.

ALL FASTENERS JOINING HOT-DIP GALVANIZED STRUCTURAL ELEMENTS, INCLUDING BUT NOT LIMITED TO BOLTS, ANCHOR RODS, NUTS, WASHERS, & EMBEDDED PLATES, ARE TO BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153. ALL DAMAGED COATING DUE TO WELDS IS TO BE REPAIRED IN ACCORDANCE WITH ASTM A780.

TESTING & QUALITY ASSURANCE:
AS A MINIMUM, THE INSPECTION SERVICE SHALL REVIEW THE WELDER'S QUALIFICATIONS AND CHECK ALL STRUCTURAL STEEL CONNECTIONS IN THE FIELD.



PLAN NOTES: UNLESS NOTED OTHERWISE
1. TOP OF CONCRETE SLAB AT EL. VARIES-SEE PLAN. ELEVATION 100'-0" IS TO MATCH HIGHEST FINISH FLOOR ELEVATION OF EXISTING ADJACENT BUILDING.
2. 6" CONCRETE SLAB THROUGHOUT. SEE PLAN FOR MAIN REINFORCEMENT. SEE SECTIONS AND DETAILS FOR ADDITIONAL REINFORCEMENT. PROVIDE #3 @ 12" O.C. TEMPERATURE AND SHRINKAGE REINFORCEMENT PERPENDICULAR TO AND ON TOP OF MAIN BOTTOM REINFORCEMENT.
3. 4"ø PVC DRAIN WITH 4"ø VALVE. VALVE SHALL BE ASAHI TYPE 58 BUTTERFLY VALVE WITH PVC BODY AND DISC AND EPDM SEAT AND O-RINGS (LEVER OPERATED) OR APPROVED EQUAL.
4. ALL UNDERGROUND UTILITIES AND PIPING IS TO BE LOCATED, UNEARTHED, AND EXPOSED PRIOR TO PERFORMING ANY MODIFICATIONS TO THE SITE.
5. THE COATING SYSTEM USED FOR THE INTERIOR OF THIS CONTAINMENT TANK SHALL BE ARC 781V QUARTZ REINFORCED COMPOSITE SYSTEM AS MANUFACTURED BY A.W. CHESTERTON COMPANY, OR AN APPROVED EQUAL. FOLLOW ALL MANUFACTURERS INSTALLATION PROCEDURES AND RECOMMENDATIONS.
6. COORDINATE LOCATION AND SIZE OF ALL OPENINGS THROUGH WALL BY OTHERS. OPENINGS SMALLER THAN 6", AND SPACED MORE THAN 2'-0" APART MAY BE MADE WITHOUT ALTERATION TO THE REINFORCEMENT.
7. — — INDICATES DIRECTION OF SLOPE FOR REQUIRED EARTH FILL AROUND PERIMETER OF CONCRETE STRUCTURE. GRADE AT 1:10 SLOPE MAXIMUM.

FOUNDATION FRAMING PLAN (2 / S1.0)
TANK CONTAINMENT SCALE: ¼"=1'-0"

PERRIN & CARTER, INC.
ENGINEERS, ARCHITECTS, & PLANNERS
3501 Ridgelake Dr., Metairie, La 70002

JEFFERSON PARISH DEPARTMENT OF SEWAGE
BRIDGE CITY WASTEWATER TREATMENT PLANT
HYPOCLORITE TANK AND CONTAINMENT

REV.	DATE	DESCRIPTION	BY

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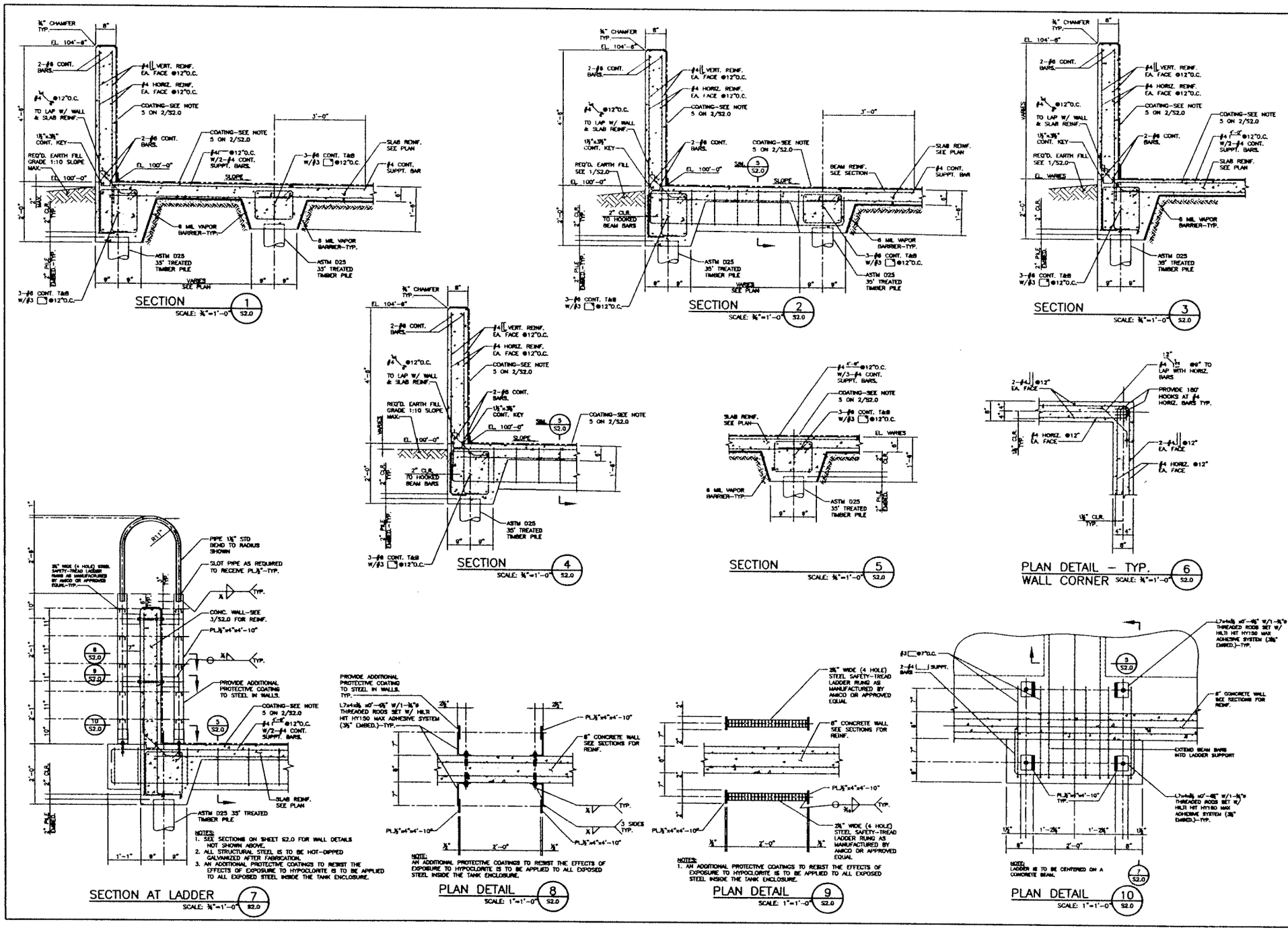
DATE: 01/27/10
DRAWN BY: KJH
CHECKED BY: MAC
FILE NAME: 06012_S1.0

SHEET TITLE:
GENERAL NOTES, & TANK RAMING PLAN
PROJECT NO.
06012
DWG. NO.:
S1.0
SHEET OF


SECTION 1 S2.0
SCALE: ¾"=1'-0"
SECTION 2 S2.0
SCALE: ¾"=1'-0"
SECTION 3 S2.0
SCALE: ¾"=1'-0"
SECTION 4 S2.0
SCALE: ¾"=1'-0"
SECTION 5 S2.0
SCALE: ¾"=1'-0"
PLAN DETAIL – TYP. WALL CORNER 6 S2.0
SCALE: ¾"=1'-0"
SECTION AT LADDER 7 S2.0
SCALE: ¾"=1'-0"
NOTES:
1. SEE SECTIONS ON SHEET S2.0 FOR WALL DETAILS NOT SHOWN ABOVE.
2. ALL STRUCTURAL STEEL IS TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
3. AN ADDITIONAL PROTECTIVE COATINGS TO RESIST THE EFFECTS OF EXPOSURE TO HYPOCLORITE IS TO BE APPLIED TO ALL EXPOSED STEEL INSIDE THE TANK ENCLOSURE.
PLAN DETAIL 8 S2.0
SCALE: 1"=1'-0"
NOTE:
AN ADDITIONAL PROTECTIVE COATINGS TO RESIST THE EFFECTS OF EXPOSURE TO HYPOCLORITE IS TO BE APPLIED TO ALL EXPOSED STEEL INSIDE THE TANK ENCLOSURE.
PLAN DETAIL 9 S2.0
SCALE: 1"=1'-0"
NOTES:
1. AN ADDITIONAL PROTECTIVE COATINGS TO RESIST THE EFFECTS OF EXPOSURE TO HYPOCLORITE IS TO BE APPLIED TO ALL EXPOSED STEEL INSIDE THE TANK ENCLOSURE.
PLAN DETAIL 10 S2.0
SCALE: 1"=1'-0"
NOTE:
LADDER IS TO BE CENTERED ON A CONCRETE BEAM.
PERRIN & CARTER, INC.
ENGINEERS, ARCHITECTS, & PLANNERS
3501 Ridgelake Dr., Metairie, La 70002
JEFFERSON PARISH DEPARTMENT OF SEWAGE
BRIDGE CITY WASTEWATER TREATMENT PLANT
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SECTIONS
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0	4-30-08	ISSUED FOR APPROVAL	SM		
1	5-27-08	ADDED EXISTING TANK, REVISED TANK INLET	SM		

BRIDGE CITY

JEFFERSON PARISH, LA

CT-450 (450 lbs/Day) RACK MOUNTED

ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM

PIPING & INSTRUMENTATION DIAGRAM

SEVERN TRENT SERVICES CLORTEC

2650 Columbia Street Torrance, Ca 90503

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UNLESS OTHERWISE NOTED

TOLERANCES

TYP.	INCHES	(MM)
FRACTIONS	± 1/8"	
X	± .1"	± 2.5
XX	± .02"	± .51
XXX	± .005"	± .127
ANGLES	± 1°	

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BRIDGE CITY
JEFFERSON PARISH, LA

CT-450 (450 LBS/DAY)
RACK MOUNTED ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM

SCALE	CLORTEC JOB NO.	SIZE	REV.
NTS	CP00060	B	1

DWG. NO. CP00060-I-00 SHEET 1 OF 4

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0	4-30-08	ISSUED FOR APPROVAL	SM		
1	5-27-08	ADDED EXISTING TANK, REVISED TANK INLET	SM		

VALVE SYMBOLS

- BALL VALVE (OPEN)
- BALL VALVE (CLOSED)
- BALL VALVE W/ LOCKING HANDLE
- VENTED BALL VALVE
- VENTED BALL VALVE W/LOCKING HANDLE
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- NEEDLE VALVE
- CHECK VALVE (WAFER, SPRING, SWING, Y-CHECK)
- BACKFLOW PREVENTER
- GATE VALVE
- PRESSURE REGULATING VALVE
- PRESSURE RELIEF VALVE
- PRESSURE RELIEF VALVE (3-WAY)
- SAMPLE POINT VALVE (NEEDLE, BALL) — SP
- SOLENOID VALVE
- FLOAT VALVE
- ELECTRIC, AIR, ETC. ACTUATED BUTTERFLY VALVE
- ACTUATED DIAPHRAGM VALVE
- EDUCTOR

CONNECTION SYMBOLS

- CONCENTRIC REDUCER (LINE-SIZE REDUCTION)
- CAPPED LINE
- UNION
- FLANGE CONNECTION
- FLEX CONNECTOR, VIBRATION ISOLATOR
- FLEXIBLE LINE, HOSE, TUBING
- CAMLOK FITTING
- GAUGE ISOLATOR, GAUGE GUARD
- FLOW ARROW
- DRAIN — FLOOR DRAIN, DRAIN CONNECTION
- SOURCE LEADER (TAG)
- A / 2 — REFERENCE LETTER; LINE CONTINUATION (TAG); SHEET NUMBER

INSTRUMENTATION SYMBOLS

- PI 00 — IN-LINE PRESSURE INDICATOR
- PI 00 — PANEL-MOUNT PRESSURE INDICATOR
- PI 00 — IN-LINE PRESSURE INDICATOR WITH ISOLATION VALVE BLAH
- PI 00 — PANEL-MOUNT PRESSURE INDICATOR WITH ISOLATION VALVE
- FI — IN-LINE FLOW ELEMENT WITH PANEL-MOUNT FLOW INDICATOR
- FI 00 / FE 00 — IN-LINE VORTEX-TYPE FLOW ELEMENT WITH PANEL-MOUNT FLOW INDICATOR
- AI 00 / AE 00 — RES, %REJ, pH, ETC.; IN-LINE ANALYTICAL ELEMENT WITH PANEL-MOUNT ANALYTICAL INDICATOR
- AI / AE AE — RES, %REJ, pH, ETC.; (2) IN-LINE ANALYTICAL ELEMENTS SHARING (1) PANEL-MOUNT ANALYTICAL INDICATOR
- XX MONITOR — TOC, SILICA, HARDNESS, OXYGEN, ETC.; OFF-SKID ANALYTICAL MONITOR WHICH PULLS IN-LINE SAMPLE AND DUMPS TO A DRAIN; DRAIN

EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP
- VERTICAL PUMP
- METERING PUMP
- BRINE PROPORTIONING PUMP OR BELOWS PUMP
- LE — SALT LEVEL PROBE
- LT — ULTRASONIC LEVEL TRANSMITTER
- PS LO HI — DIFFERENTIAL PRESSURE SWITCH
- CARTRIDGE FILTER HOUSING
- IN-LINE (ROTAMETER) FLOW INDICATOR
- D — PULSATION DAMPENER
- BLOWER BACKDRAFT DAMPENER
- BLOWER

LINE SYMBOLS

- PROCESS FLOW, MAIN FLOW
- MINOR FLOW, DRAIN, BYPASS, DIVERT
- FUTURE
- AIR LINE
- POWER SUPPLY ELECTRICAL CONNECTION, 3Ø PWR
- INSTRUMENT SIGNAL
- DATA/COMMUNICATION
- LOOP — CUSTOMER POINT OF USE

ABBREVIATIONS

AC	ACTIVATED CARBON
ADV	ACTUATED DIAPHRAGM VALVE
AE	ANALYTICAL ELEMENT
AI	ANALYTICAL INDICATOR
AIT	ANALYTICAL INDICATOR TRANSMITTER
AL	ALARM LIGHT
BFV	BUTTERFLY VALVE
BLW	BLOWER
BR	BRINE
BP	BRINE PUMP
BPV	BACK PRESSURE VALVE
CC	CALIBRATION COLUMN
CP	CONTROL PANEL
CS	CORP STOP
CV	CHECK VALVE
CWS	CITY WATER SUPPLY
DPS	DIFFERENTIAL PRESSURE SWITCH
DPSL	DIFFERENTIAL PRESSURE SWITCH LOW
DV	DIAPHRAGM VALVE
EC	ELECTROLYTIC CELL
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FR	FILTER CARTRIDGE
FRQ	FLOW INDICATOR/TOTALIZER
FIT	FLOW INDICATOR TRANSMITTER
FM	FLOWMETER
FS	FLOW SWITCH
FSL	FLOW SWITCH LOW
HD	HYDROGEN DETECTOR
HI	HIGH
HS	HYPOCHLORITE SOLUTION
HV	HAND VALVE
HX	HEAT EXCHANGER
ISB	INTRINSICALLY SAFE BARRIER
LE	LEVEL ELEMENT
LIT	LEVEL INDICATOR TRANSMITTER
LO	LOW
LS	LEVEL SWITCH
LSL	LEVEL SWITCH LOW
MP	METERING PUMP
MV	MOTORIZED VALVE
N.O	NORMALLY OPEN
N.C	NORMALLY CLOSED
NPW	NON-POTABLE WATER
OSHG	ON-SITE HYPOCHLORITE GENERATION
P	PUMP
PD	PULSATION DAMPENER
PI	PRESSURE INDICATOR
PIT	PRESSURE INDICATING TRANSMITTER
PRV	PRESSURE REGULATING VALVE
PRV	PRESSURE RELIEF VALVE
PS	PRESSURE SWITCH
PSB	POWER SUPPLY BOX
PSL	PRESSURE SWITCH LOW
PT	PRESSURE TRANSMITTER
PV	PRESSURE VESSEL
PVC	POLYVINYL CHLORIDE
QC	QUALITY CONTROL
SV	SOLENOID VALVE
SP	SAMPLE POINT
SW	SOFTENED WATER
TK	TANK
TC	TEMPERATURE CONTROL
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TS	TEMPERATURE SWITCH
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
VFD	VARIABLE FREQUENCY DRIVE
WC	WATER CHILLER
WH	WATER HEATER
WS	WATER SOFTENER
YST	Y-STRAINER

GENERAL NOTES

1. THIS DRAWING IS FOR EQUIPMENT PROCESS FLOW INFORMATION PURPOSES ONLY. ALL EQUIPMENT, COMPONENTS, INSTRUMENTS, DEVICES, PIPING, FITTINGS, VALVES & CONDUIT SHOWN ON THIS DRAWING ARE NOT NECESSARILY SUPPLIED & INSTALLED BY CLORTEC. REFER TO CONTRACT DOCUMENTS, CLORTEC SCOPE OF SUPPLIES FOR CLORTEC RESPONSIBILITY IN THIS PROJECT.
2. ALL PIPING FITTINGS & VALVES ARE SCH. 80. ALL TUBING ARE BLACK POLYETHYLENE.
3. ELECTRICAL POWER, WATER SUPPLY, POINT OF INJECTION AND SCADA ARE PROVIDED BY OTHERS.
4. ALL UNDER GROUND WORK, CONCRETE WORK, WALL AND ROOF PENETRATIONS ARE DONE BY OTHERS.
5. ALL ELECTRICAL CONDUITS, WIRING ,JUNCTION AND PULL BOXES WILL BE PROVIDED BY OTHERS.
6. ALL PAINTING AND COATING TO BE PROVIDED BY OTHERS.
7. ALL BACKBOARDS AND SUPPORTS TO BE PROVIDED BY OTHERS.
8. CUSTOMER TO PROVIDE WATER SUPPLY PRESSURE & TEMPERATURE.
9. CUSTOMER TO PROVIDED DETAILLED DOSING ROUTINE.
10. CUSTOMER TO PROVIDED HYPOCHLORITE FEEDING SYSTEM PRESSURE.
11. ALL ELECTRICAL DISCONNECT SWITCHES ARE PROVIDED BY OTHERS.

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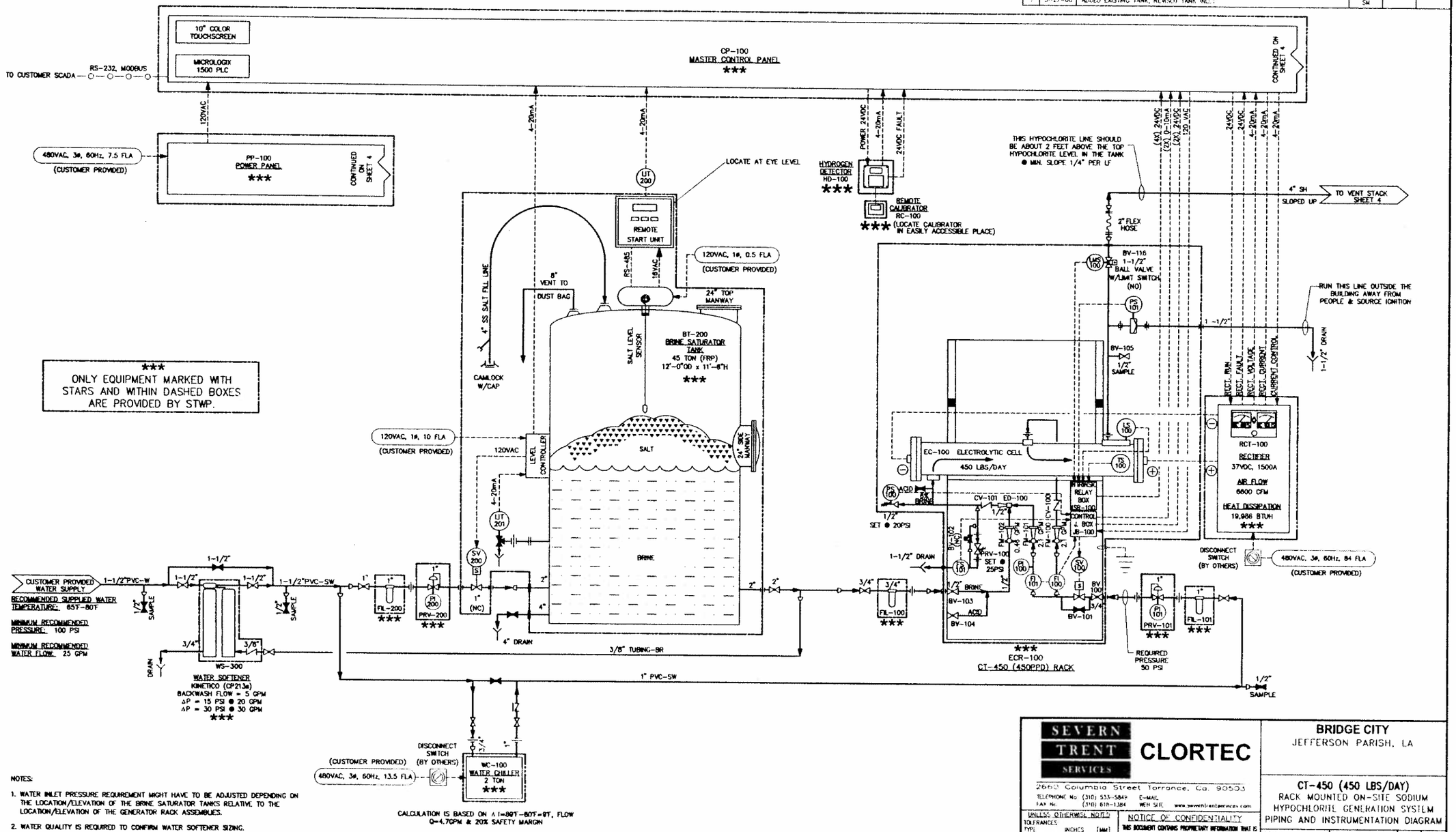
BRIDGE CITY
JEFFERSON PARISH, LA

CT-450 (450 LBS/DAY)
RACK MOUNTED ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

SCALE	CLORTEC JOB No	SIZE	REV
NTS	CP00060	B	1
DWG No CP00060-I-00		SHEET 2 OF 4	

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0	4-30-08	ISSUED FOR APPROVAL	SM		
1	5-27-08	ADDED EXISTING TANK, REVISED TANK INLET	SM		



*** ONLY EQUIPMENT MARKED WITH STARS AND WITHIN DASHED BOXES ARE PROVIDED BY STWP.

NOTES:

1. WATER INLET PRESSURE REQUIREMENT MIGHT HAVE TO BE ADJUSTED DEPENDING ON THE LOCATION/ELEVATION OF THE BRINE SATURATOR TANKS RELATIVE TO THE LOCATION/ELEVATION OF THE GENERATOR RACK ASSEMBLIES.
2. WATER QUALITY IS REQUIRED TO CONFIRM WATER SOFTENER SIZING.
3. THESE WATER SOFTENERS NEED TO BE INSTALLED AT THE SAME ELEVATION & CLOSE TO BRINE TANK

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SCALE	CLORTEC JOB No.	SIZE	REV
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DWG. No. CP00060-I-00		SHEET 3 OF 4	

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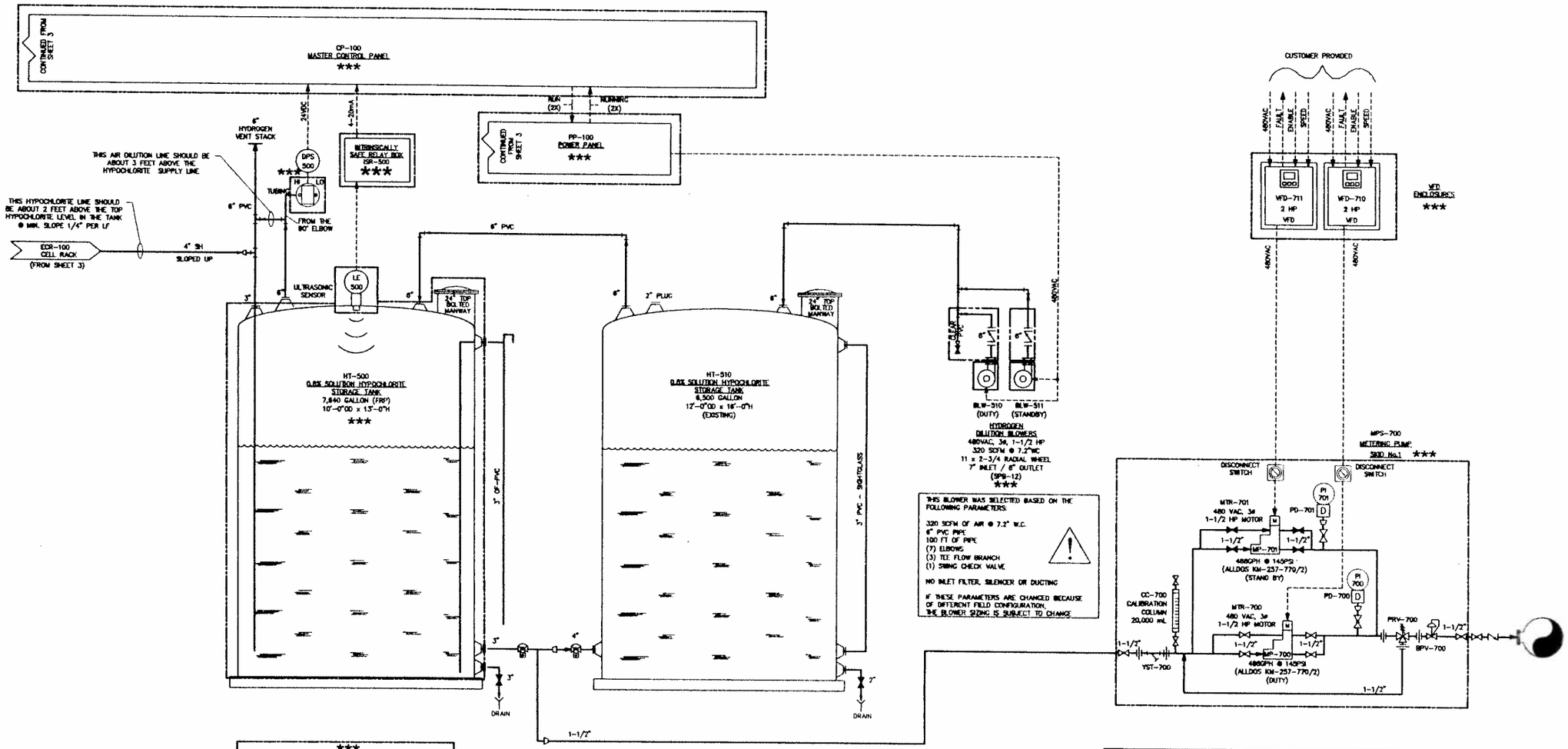
0	4-30-08	ISSUED FOR APPROVAL	SM		
1	5-27-08	ADDED EXISTING TANK, REVISED TANK INLET	SM		



***
ONLY EQUIPMENT MARKED WITH STARS AND WITHIN DASHED BOXES ARE PROVIDED BY STWP.

SEVERN TRENT SERVICES
CLORTEC
2660 Columbia Street Torrance, Ca. 90503
TELEPHONE No (310) 533-5849 E-MAIL
FAX No (310) 618-1384 WEB SITE www.severntrentservices.com

UNLESS OTHERWISE NOTED
TOLERANCES:

TYPE	INCHES	(MM)
FRACTIONS	± 1/16"	
.X	± .1"	± 2.5
.XX	± .02"	± .5
.XXX	± .005"	± .127
ANGLES	± 1°	

NOTICE OF CONFIDENTIALITY
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION THAT IS AND SHALL REMAIN THE PROPERTY OF SEVERN TRENT WATER PURIFICATION, INC. AND IS TO BE RETURNED IMMEDIATELY UPON REQUEST. ITS CONTENTS MAY NOT BE REPRODUCED, DISTRIBUTED, CIRCULATED, OR DISCLOSED TO THIRD PARTIES. RECIPIENT WILL NOT USE THIS INFORMATION FOR ANY PURPOSES WITHOUT PRIOR WRITTEN CONSENT OF SEVERN TRENT WATER PURIFICATION, INC.

BRIDGE CITY
JEFFERSON PARISH, LA

CT-450 (450 LBS/DAY)
RACK MOUNTED ON-SITE SODIUM HYPOCHLORITE GENERATION SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM

SCALE	CLORTEC JOB No	SIZE	REV
NTS	CP00060	B	1

DWG No CP00060-I-00
SHEET 4 OF 4

AFFIDAVIT

STATE OF LOUISIANA
PARISH OF JEFFERSON

BEFORE ME, THE UNDERSIGNED AUTHORITY, PERSONALLY CAME AND APPEARED _____, WHO AFTER BEING BY ME DULY SWORN, DEPOSED AND SAID THAT HE IS THE FULLY AUTHORIZED_____OF_____ (HEREIN AFTER REFERRED TO AS BIDDER) THE PARTY WHO SUBMITTED A BID FOR_____, BID NO. _____ AND SAID AFFIANT FURTHER SAID:

1) That bidder employed no person, corporation, firm, association or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the bidder whose services in connection with the construction of the public building or project or in securing the public contract were in the regular course of their duties for bidder; and
2) That no part of the contract price received by bidder was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the bidder whose services in connection with the construction of the public building or project were in the regular course of their duties for bidder.
3) Said bid is genuine and the bidder has not colluded, conspired or agreed directly or indirectly with any other bidder to offer a sham or collusive bid.
4) Said bidder has not in any manner, directly or indirectly, agreed with any other person to fix the bid price of affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to induce any other person to refrain from bidding.
5) Said bidder is not intended to secure an unfair advantage of benefit from the Parish of Jefferson or in favor of any person interested in the proposed contract.

_____

SWORN TO AND SUBSCRIBED
BEFORE ME THIS _____
DAY OF_____, 20_____

_____
NOTARY PUBLIC

Revised 4/29/08

INSURANCE REQUIREMENTS

All insurance requirements shall conform to Jefferson Parish Resolution No. 113646 or No. 113647 dated 12/09/09.

The contractor shall not commence work under this contract until he has obtained all insurance and complied with the requirements of the specifications and Resolution No. 113646 or No. 113647.

WORKER'S COMPENSATION INSURANCE

As required by Louisiana State Statute, exception; Employer's Liability, Section B shall be $1,000,000 per occurrence when Work is to be over water and involves maritime exposures to cover all employees not covered under the State Worker's Compensation Act, otherwise this limit shall be no less than $500,000 per occurrence.

COMMERCIAL GENERAL LIABILITY

Shall provide limits not less than the following: $1,000,000.00 Combined Single Limit per Occurrence for bodily injury and property damage.

COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily injury liability $1,000,000.00 each person; $1,000,000.00 each occurrence. Property Damage Liability $1,000,000.00 each occurrence.

DEDUCTIBLES

No insurance required shall include a deductible not greater that $10,000.00. The cost of the deductible be borne by the contractor.

UMBRELLA LIABILITY COVERAGE

An umbrella policy or excess may be used to meet minimum requirements.

CONSTRUCTION AND RENOVATION PROJECTS REQUIRE THE FOLLOWING:

OWNER'S PROTECTIVE LIABILITY

To be for the same limits of liability for bodily injury and property damage liability established for commercial general liability.

BUILDER'S RISK INSURANCE

The contractor shall maintain Builder's Risk Insurance at his own expense to insure both the owner (Parish of Jefferson) and contractor as their interest may appear.