

**INVITATION TO BID**  
**CITY OF NAPLES**  
**PURCHASING DIVISION**  
**CITY HALL, 735 8<sup>TH</sup> STREET SOUTH**  
**NAPLES, FL 34102**  
**PH: 239-213-7100    FX: 239-213-7105**

NOTIFICATION DATE: <b>11/29/13</b>	TITLE <b>Water Treatment Plant Thickener Tank Rehabilitation</b>	NUMBER: <b>14-012</b>	OPENING DATE & TIME: <b>12/20/13 2:00 PM</b>
<b>PRE-BID DATE, TIME AND LOCATION: Non-Mandatory Pre-Bid Meeting held December 10; 11:00 AM local time; 380 Riverside Circle, Naples FL, 34102</b>			

NAME OF PARTNERSHIP, CORPORATION OR INDIVIDUAL:	
MAILING ADDRESS:	
CITY-STATE-ZIP:	
PH:	EMAIL:
FX:	WEB ADDRESS:

<p>I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting a bid for the same materials, supplies, or equipment and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder. In submitting a bid to the City of Naples the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the City of Naples all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the United States and the State of FL for price fixing relating to the particular commodities or services purchased or acquired by the City of Naples. At the City's discretion, such assignment shall be made and become effective at the time the City tenders final payment to the bidder.</p> <p style="text-align: center;"><b>FEI/EIN Number</b> _____</p>		
AUTHORIZED SIGNATURE	DATE	PRINTED NAME/TITLE
<p style="color: red; font-size: small;">Please initial by all that apply  I acknowledge receipt / review of the following addendum</p> <p style="color: red; font-size: small;"> _____Addendum #1                      _____Addendum #2                      _____Addendum #3                      _____Addendum #4</p>		

**PLEASE NOTE THE FOLLOWING:**

- > **This page must be completed and returned with your bid.**
- > **Bids must be submitted in a sealed envelope, marked with bid number & closing date.**
- > **Bids received after the above closing date and time will not be accepted.**
- > **If you do not have an email address and you want a copy of the Bid Tab, please enclose a stamped, self-addressed envelope with your bid.**

## GENERAL CONDITIONS

**TO INSURE ACCEPTANCE OF THE BID, PLEASE FOLLOW THESE INSTRUCTIONS. ANY AND ALL SPECIAL CONDITIONS, ATTACHED HERETO, HAVE PRECEDENCE.**

**1. SEALED BID:** All bids must be submitted in a sealed envelope. The face of the envelope shall contain the bid name and bid number. Bids not submitted on attached bid form shall be rejected. All bids are subject to the conditions specified herein. Those which do not comply with these conditions are subject to rejection.

**2. EXECUTION OF BID:** Bid must contain a manual signature of authorized representative in the proposal section. Bid must be typed or printed in ink. Use of erasable ink is not permitted. All corrections made by bidder to his bid must be initialed.

**3. NO BID:** If not submitting a bid, respond by returning the Statement of No Bid and explain the reason in the spaces provided. Failure to respond 3 times in succession without justification shall be cause for removal of the supplier's name from the bid mailing list. NOTE: To qualify as a respondent, bidder must submit a "NO BID," and it must be received no later than the stated bid opening date and hour.

**4. BID OPENING:** Shall be public, on the date and at the time specified on the bid form. It is the bidder's responsibility to assure that his bid is delivered at the proper time and place of the bid opening. Bids which for any reason are not so delivered will not be considered. Offers by telegram, telephone; or fax are not acceptable. Bid files may be examined during normal working hours.

**5. WITHDRAWAL OF BIDS:** Withdrawal of a bid within sixty (60) days after the opening of bids is subject to suspension or debarment in accordance with Section 2-668 of the City Code for up to three years.

**6. PRICES, TERMS and PAYMENT:** Firm Prices include all packing, handling, shipping charges and delivery to the destination shown herein. Bidder is encouraged to offer cash discount for prompt invoice payment. Terms of less than 20 days will not be considered.

**A. TAXES:** The City of Naples does not pay Federal Excise and Sales taxes on direct purchases of tangible personal property. See exemption number on face of purchase order. This exemption does not apply to purchases of tangible personal property made by contractors who use the tangible personal property in the performance of contracts for the improvement of City-owned real property.

**B. MISTAKES:** Bidders are expected to examine the specifications, delivery schedule, bid prices, extensions, and all instructions pertaining to supplies and services. Failure to do so will be at bidder's risk. In case of mistake in extension, the unit price will govern.

**C. CONDITION AND PACKAGING:** It is understood and agreed that any item offered or shipped as a result of this bid shall be a new, current standard production model available at the time of this bid. All containers shall be suitable for storage or shipment, and all prices shall include standard commercial packaging.

**D. SAFETY STANDARDS:** Unless otherwise stipulated in the bid, all manufactured items and fabricated assemblies shall comply with applicable requirements of Occupational Safety and Health Act and any standards there under.

**E. UNDERWRITERS' LABORATORIES:** Unless otherwise stipulated in the bid, all manufactured items and fabricated assemblies shall carry U.L. approval and re-examination listing where such has been established.

**F. PAYMENT:** Payment will be made by the buyer after the items awarded to a vendor have been received, inspected, and found to comply with award specifications, free of damage or defect and properly invoiced. All invoices shall bear the purchase order number. Payment for partial shipments shall not be made unless specified in the bid. Failure to follow these instructions may result in delay in processing invoices for payment. In addition, the purchase order number must appear on bills of lading, packages, cases, delivery lists and correspondence.

**7. DELIVERY:** Unless actual date of delivery is specified (or if specified delivery cannot be met), show number of days required to make delivery after receipt of purchase order in space provided. Delivery time may become a basis for making an award (see Special Conditions). Delivery shall be within the normal working hours of the user, Monday through Friday, unless otherwise specified.

**8. MANUFACTURERS' NAMES AND APPROVED EQUIVALENTS:** Any manufacturers' names, trade names, brand names, information and/or catalog numbers listed in a specification are for information and not intended to limit competition. The bidder may offer any brand for which he is an authorized representative, which meets or exceeds the specification for any item(s). If bids are based on equivalent products, indicate on the bid form the manufacturer's name and number. Bidder shall submit with his proposal, cuts, sketches, and descriptive literature, and/or complete specifications. Reference to literature submitted with a previous bid will not satisfy this provision. The bidder shall also explain in detail the reason(s) why the proposed equivalent will meet the specifications and not be considered an exception thereto. Bids which do not comply with these requirements are subject to rejection. Bids lacking any written indication of intent to quote an alternate brand will be received and considered in complete compliance with the specifications as listed on the bid form.

**9. INTERPRETATIONS:** Any questions concerning conditions and specifications shall be directed in writing to this office for receipt no later than ten (10) days prior to the bid opening. Inquiries must reference the date of bid opening and bid number. Failure to comply with this condition will result in bidder waiving his right to dispute the bid.

**10. CONFLICT OF INTEREST:** All bid awards are subject to Section 2-973 Conflict of Interest, City of Naples Code of Ordinances, which states: *"No public officer or employee shall have or hold any employment or contractual relationship with any business entity or any agency which is subject to the regulation of or is doing business with the city; nor shall an officer or employee have or hold any employment or contractual relationship that will create a continuing or frequently recurring conflict between his private interests and the performance of his public duties or that would impede the full and faithful discharge of his public duties. Any member of the city council or any city officer or employee who willfully violates this section shall be guilty of malfeasance in office or position and shall forfeit his office or position. Violation of this section with the knowledge, express or implied, of the person or corporation contracting with or making a sale to the city shall render the contract or sale voidable by the city manager or the city council."*

**11. AWARDS:** As the best interest of the City may require, the right is reserved to make award(s) by individual item, group of items, all or none, or a combination thereof; to reject any and all bids or waive any minor irregularity or technicality in bids received.

**12. ADDITIONAL QUANTITIES:** For a period not exceeding ninety (90) days from the date of acceptance of this offer by the buyer, the right is reserved to acquire additional quantities up to but not exceeding those shown on bid at the prices bid in this invitation. If additional quantities are not acceptable, the bid sheets must be noted "BID IS FOR SPECIFIED QUANTITY ONLY." (THIS PARAGRAPH DOES NOT APPLY FOR A TERM CONTRACT.)

**13. SERVICE AND WARRANTY:** Unless otherwise specified, the bidder shall define any warranty service and replacements that will be provided during and subsequent to this contract. Bidders must explain on an attached sheet to what extent warranty and service facilities are provided.

**14. SAMPLES:** Samples of items, when called for, must be furnished free of expense, on or before bid opening time and date, and if not destroyed may, upon request, be returned at the bidder's expense. Each individual sample must be labeled with bidder's name, manufacturer's brand name and number, bid number and item reference. Request for return of samples shall be accompanied by instructions which include shipping authorization and name of carrier and must be received with your bid. If instructions are not received within this time, the commodities shall be disposed of by the City of Naples.

**15. BID PROTEST:** The city has formal bid protest procedures that are available on request.

**16. INSPECTION, ACCEPTANCE AND TITLE:** Inspection and acceptance will be at destination unless otherwise provided. Title and risk of loss or damage to all items shall be the responsibility of the contract supplier until accepted by the ordering agency, unless loss or damage results from negligence by the ordering

**17. DISPUTES:** In case of any doubt or difference of opinion as to the items to be furnished hereunder, the decision of the buyer shall be final and binding on both parties.

**18. GOVERNMENTAL RESTRICTIONS:** In the event any governmental restrictions may be imposed which would necessitate alteration of the material, quality, workmanship or performance of the items offered on this proposal prior to their delivery, it shall be the responsibility of the successful bidder to notify the buyer at once, indicating in his letter the specific regulation which required an alteration. The City reserves the right to accept any such alteration, including any price adjustments occasioned thereby, or to cancel the contract at no expense to the City.

**19. LEGAL REQUIREMENTS:** Applicable provision of all Federal, State, county and local laws, and of all ordinances, rules, and regulations shall govern development submittal and evaluation of all bids received in response hereto and shall govern any and all claims and disputes which may arise between person(s) submitting a bid response hereto and the City of Naples by and through its officers, employees and authorized representatives, or any other person, natural or otherwise; and lack of knowledge by any bidder shall not constitute a cognizable defense against the legal effect thereof.

**20. PATENTS AND ROYALTIES:** The bidder, without exception, shall indemnify and save harmless the City of Naples and its employees from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, patented, or unpatented invention, process, or article manufactured or used in the performance of the contract, including its use by the City of Naples. If the bidder uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or cost arising from the use of such design, device, or materials in any way involved in the work.

**21. ADVERTISING:** In submitting a bid, bidder agrees not to use the results there from as a part of any commercial advertising.

**22. ASSIGNMENT:** Any Purchase Order issued pursuant to this bid invitation and the monies which may become due hereunder are not assignable except with the prior written approval of the buyer.

**23. LIABILITY:** The supplier shall hold and save the City of Naples, its officers, agents, and employees harmless from liability of any kind in the performance of this contract.

**24. PUBLIC ENTITY CRIMES:** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

**25. DISCRIMINATION:** An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity.

**26. COUNTY TAXES:** No proposal shall be accepted from and no contract will be awarded to any person, firm or corporation that is in arrears to the government of Collier County, Florida.

**27. OFFER EXTENDED TO OTHER GOVERNMENTAL ENTITIES:** The City of Naples encourages and agrees to the successful bidder/proposer extending the pricing, terms and conditions of this solicitation or resultant contract to other governmental entities at the discretion of the successful bidder/proposer.

**IF THIS BID IS FOR A TERM CONTRACT, THE FOLLOWING CONDITIONS SHALL ALSO APPLY**

**28. ELIGIBLE USERS:** All departments of the City of Naples are eligible to use this term contract. Such purchases shall be exempt from the competitive bid requirements otherwise applying to their purchases.

**29. PRICE ADJUSTMENTS:** Any price decrease effectuated during the contract period by reason of market change shall be passed on to City of Naples. Price increases are not acceptable.

**30. CANCELLATION:** All contract obligations shall prevail for at least one hundred eighty (180) days after effective date of contract. After that period, for the protection of both parties, this contract may be cancelled in whole or in part by either party by giving thirty (30) days prior written notice to the other party.

**31. RENEWAL:** The City of Naples reserves the option to renew the period of this contract, or any portion thereof for up to two (2) additional periods. Renewal of the contract period shall be by mutual agreement in writing.

**32. ABNORMAL QUANTITIES:** While it is not anticipated, should any unusual or abnormal requirements arise, the City reserves the right to solicit separate bids thereon.

**33. FISCAL NON-FUNDING CLAUSE:** In the event sufficient funds are not budgeted for a new fiscal period, the City shall notify the contractor of such occurrence and the contract shall terminate on the last day of the current fiscal year without penalty or expense to the City.

**IF THIS BID IS FOR PERFORMING A SERVICE, THE FOLLOWING CONDITIONS SHALL ALSO APPLY**

**34. ALTERNATIVE BIDS:** Bidders offering service delivery methods other than those permitted by the scope of work may submit a separate envelope clearly marked "ALTERNATIVE BID". Alternative bids will be deemed non-responsive and will not be considered for award. All such responses will, however, be examined prior to award. Such examination may result in cancellation of all bids received to permit rewriting the scope of work to include the alternative method, or the alternative method may be considered for future requirements of the City of Naples.

**35. ANTITRUST:** By entering into a contract, the contractor conveys, sells, assigns and transfers to the City of Naples all rights, titles and interest it may now have or hereafter acquire under the antitrust laws of the United States and the State of Florida that relate to the particular goods or services purchased or acquired by the City of Naples under said contract.

**36. BIDDER INVESTIGATIONS:** Before submitting a bid, each bidder shall make all investigations and examinations necessary to ascertain all site conditions and requirements affecting the full performance of the contract and to verify any representations made by the City of Naples upon which the bidder will rely. If the bidder receives an award as a result of its bid submission, failure to have made such investigations and examinations will in no way relieve the bidder from its obligation to comply in every detail with all provisions and requirements of the contract documents, nor will a plea of ignorance of such conditions and requirements be accepted as a basis for any claim whatsoever by the contractor for additional compensation.

**37. CERTIFICATES AND LICENSES:** The Contractor, at time of proposal, shall possess the correct occupational licenses, all professional licenses or other authorizations necessary to carry out and perform the work required by the City of Naples and Collier County for this project pursuant to all applicable Federal, State and Local Laws, Statutes, Ordinances, and rules and regulations of any kind.

**38. CHANGE IN SCOPE OF WORK:** The City of Naples may order changes in the work consisting of additions, deletions or other revisions within the general scope of the contract. No claims may be made by the contractor that the scope of the project or of the contractor's services has been changed, requiring changes to the amount of compensation to the contractor or other adjustments to the contract unless such changes or adjustments have been made by written amendment to the contract signed by the City of Naples and the contractor. If the contractor believes that any particular work is not within the scope of the project, is a material change, or will otherwise require more compensation to the contractor, the contractor must immediately notify the City in writing of this belief. If the City believes that the particular work is within the scope of the contract as written, the contractor will be ordered to and shall continue with the work as changed and at the cost stated for the work within the scope.

**39. CONTRACTOR PERSONNEL:** The City of Naples shall, throughout the life of the contract, have the right of reasonable rejection and approval of staff or subcontractors assigned to the work by the contractor. If the City

reasonably rejects staff or subcontractors, the contractor must provide replacement staff or subcontractors satisfactory to the City in a timely manner and at no additional cost to the City. The day-to-day supervision and control of the contractor's employees and sub-contractors is the responsibility solely of the contractor.

**40. COST REIMBURSEMENT:** The contractor agrees that all incidental costs, including allowances for profit and tools of the trade, must be included in the bid proposal rates. If an arrangement is made between the contractor and the City to reimburse the contractor for the cost of materials provided in the performance of the work, the contractor shall be reimbursed in the following manner: The City shall reimburse the contractor on completion and acceptance of each assigned job, only for those materials actually used in the performance of the work that is supported by invoices issued by the suppliers of the contractor describing the quantity and cost of the materials purchased. No surcharge shall be added to the supplier's invoices or included in the contractor's invoice submitted to the City that would increase the dollar amount indicated on the supplier's invoice for the materials purchased for the assigned job.

**41. EXCEPTIONS:** Bidders taking exception to any part or section of the solicitation shall indicate such exceptions on the bid form. Failure to indicate any exception will be interpreted as the bidder's intent to comply fully with the requirements as written. Conditional or qualified bids, unless specifically allowed, shall be subject to rejection in whole or in part.

**42. FAILURE TO DELIVER:** In the event of the contractor to fail to deliver services in accordance with the contract terms and conditions, the City, after due oral or written notice, may procure the services from other sources and hold the contractor responsible for any resulting purchase and administrative costs. This remedy shall be in addition to any other remedies that the City may have.

**43. FAILURE TO ENFORCE:** Failure by the City at any time to enforce the provisions of the contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the contract or any part thereof or the right of the City to enforce any provision at any time in accordance with its terms.

**44. FORCE MAJEURE:** The contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by the contract due to legal strikes, fires, riots, rebellions and acts of God beyond the control of the contractor, unless otherwise specified in the contract.

**45. INDEPENDENT CONTRACTOR:** The contractor shall be legally considered an independent contractor and neither the contractor nor its employees shall, under any circumstances, be considered servants or agents of the City of Naples and the City of Naples shall be at no time legally responsible for any negligence or any wrongdoing by the contractor, its servants or agents. The City of Naples shall not withhold from the contract payments to the contractor any federal income taxes, Social Security tax, or any other amounts for benefits to the contractor. Further, the City shall not provide to the contractor any insurance coverage or other benefits, including Workers' Compensation normally provided by the City for its employees.

**46. ORAL STATEMENTS:** No oral statement of any person shall modify or otherwise affect the terms, conditions or specifications stated in this contract. All modifications to the contract must be made in writing by the City of Naples.

**47. QUALIFICATIONS OF BIDDERS:** The bidder may be required, before the award of any contract, to show to the complete satisfaction of the City of Naples that it has the necessary facilities, ability, and financial resources to provide the service specified therein in a satisfactory manner. The bidder may also be required to give a past history and references in order to satisfy the City in regard to the bidder's qualifications. The City may make reasonable investigations deemed necessary and proper to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all information for this purpose that may be requested. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, the bidder fails to satisfy the City that the bidder is properly qualified to carry out the obligations of the contract and to complete the work described therein. Evaluation of the bidder's qualifications shall include:

- > The ability, capacity, skill and financial resources to perform the work or service.
- > The ability to perform the work service promptly or within the time specified, without delay.
- > The character, integrity, reputation, judgment, experience, and efficiency of the bidder.

> The quality of performance of previous contracts or services.

**48. QUALITY CONTROL:** The contractor shall institute and maintain throughout the contract period a properly documented quality control program designed to ensure that the services are provided at all times and in all respects in accordance with the contract. The program shall include providing daily supervision and conducting frequent inspections of the contractor's staff and ensuring that accurate records are maintained describing the disposition of all complaints. The records so created shall be open to inspection by the City.

**49. RECOVERY OF MONEY:** Whenever, under the contract, any sum of money shall be recoverable from or payable by the contractor to the City, the same amount may be deducted from any sum due to the contractor under the contract or under any other contract between the contractor and the City. The rights of the City are in addition and without prejudice to any other right the City may have to claim the amount of any loss or damage suffered by the City on account of the acts or omissions of the contractor.

**50. REQUIREMENTS CONTRACT:** During the period of the contract, the contractor shall provide all the services described in the contract. The contractor understands and agrees that this is a requirements contract and that the City shall have no obligation to the contractor if no services are required. Any quantities that are included in the scope of work reflect the current expectations of the City for the period of the contract. The amount is only an estimate and the contractor understands and agrees that the City is under no obligation to the contractor to buy any amount of services as a result of having provided this estimate or of having any typical or measurable requirement in the past. The contractor further understands and agrees that the City may require services in excess of the estimated annual contract amount and that the quantity actually used whether in excess of, or less than, the estimated annual contract amount and that the quantity actually used shall not give rise to any claim for compensation other than the total of the unit prices in the contract for the quantity actually used.

**51. TERMINATION FOR CONVENIENCE:** The performance of work under the contract may be terminated by the City in whole or in part whenever the City determines that termination is in the City's best interest. Any such termination shall be effected by the delivery to the contractor of a written notice of termination of at least seven (7) days before the date of termination, specifying the extent to which performance of the work under the contract is terminated and the date upon which such termination becomes effective. After receipt of a notice of termination, except as otherwise directed, the contractor shall stop work on the date of the receipt of the notice or other date specified in the notice; place no further orders or subcontracts for materials, services or facilities except as necessary for completion of such portion of the work not terminated; terminate all vendors and subcontracts; and settle all outstanding liabilities and claims.

**52. TERMINATION FOR DEFAULT:** The City of Naples reserves the right to terminate the contract if the City determines that the contractor has failed to perform satisfactorily the work required, as determined by the City. In the event the City decides to terminate the contract for failure to perform satisfactorily, the City shall give to the contractor at least seven (7) days written notice before the termination takes effect. The seven-day period will begin upon the mailing of notice by the City. If the contractor fails to cure the default within the seven (7) days specified in the notice and the contract is terminated for failure to perform satisfactorily, the contractor shall be entitled to receive compensation for all reasonable, allocable and allowable contract services satisfactorily performed by the contractor up to the date of termination that were accepted by the City prior to the termination. In the event the City terminates the contract because of the default of the contractor, the contractor shall be liable for all excess costs that the City is required to expend to complete the work under contract.

**53. STATE AND FEDERAL EMPLOYMENT LAWS:** Contractors providing service to the City are required to comply with all state and federal employment laws. This includes, but is not limited to, laws resulting from the Immigration and Reform and Control Act of 1986, wherein all employers are required to verify the identity and employment eligibility of all employees. The Department of Homeland Security, U.S. Citizenship and Immigration Services require employees and employers to complete Form I-9 and the employer must examine evidence of identity and employment eligibility within three business days of the date employment begins. Non compliant contractors will be subject to contract sanctions, up to and including contract termination.

**54. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION:** The contractor agrees to comply with Executive Order 12549 "Debarment and

Suspension” and 2 CFR 180 “OMB Guidelines to Agencies on Government wide Debarment and Suspension.” These rules require all contractors using federal funds not be debarred or suspended from doing business with the Federal Government. This includes sub-recipients and lower tier participant for covered transactions. Signing and submitting this document certified the organization and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency, and further have not within the preceding three-year period been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction .

**THE CITY OF NAPLES IS AN EQUAL OPPORTUNITY EMPLOYER**



## GENERAL INSURANCE REQUIREMENTS

The Contractor shall not commence work until he has obtained all the insurance required under this heading, and until such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work until all similar insurance required of the subcontractor has also been obtained and approved by the Owner.

Certificates of insurance must be issued by an authorized representative of the insurance company at the request and direction of the policyholder and must include sufficient information so as to identify the coverage and the contract for Owner's improvements for which they are issued. Certificates of insurance must be issued by a nationally recognized insurance company with a Best's Rating of no less than B+VII, satisfactory to the Owner, and duly licensed to do business in the state of said Contract.

The Contractor shall procure and maintain, during the life of this Contract, Worker's Compensation Insurance for all of his employees to be engaged in work under this Contract, and he shall require any subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees to be engaged in such work, unless such employees are covered by the protection afforded by the Contractor's insurance. In case any employees are to be engaged in hazardous work under this Contract, and are not protected under this Worker's Compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide, adequate coverage for the protection of such employees. It is acceptable to use a State-approved Worker's Compensation Self-Insurance fund.

The Contractor shall take out and maintain during the life of this Contract, Public Liability and Property Damage and shall include Contractual Liability, Personal Injury, Libel, Slander, False Arrest, Malicious Prosecution, Wrongful Entry or Eviction, Broad Form Property Damage, Products, Completed Operations and XCU Coverage to be included on an occurrence basis, and to the full extent of the Contract to protect him, the Owner, and any subcontractor performing work covered by this Contract from damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from operations under this contract, whether such operations be by himself or by a subcontractor, or by anyone directly or indirectly employed by either of them. The Contractor shall also maintain automobile liability insurance including "non-owned and hired" coverage. The entire cost of this insurance shall be borne by the Contractor.

The amount of such insurance shall be no less than \$1,000,000 annual aggregate for bodily injury and property damage combined per occurrence.

The City of Naples must be named as Additional Insured on the insurance certificate and the following must also be stated on the certificate. "This coverage is primary to all other coverage the City possesses for this contract only." The City of Naples shall be named as the Certificate Holder. The Certificate Holder shall read as follows:

The City of Naples  
735 Eighth Street South  
Naples, Florida 34102

No City Division, Department, or individual name should appear on the Certificate.

No other format will be acceptable.

The Certificate must state the proposal number and title.

When using the "Accord"- 25 Certificate of Insurance only the most current version will be accepted.

The City of Naples requires a copy of a cancellation notice in the event the policy is cancelled. The City of Naples shall be expressly endorsed onto the policy as a cancellation notice recipient.

**STATEMENT OF NO BID**

If you will not be bidding on this product/service, please help us by completing and returning only this page to:

City of Naples, Purchasing Division  
City Hall, 735 8<sup>th</sup> Street South  
Naples, FL 34102  
Fax 239-213-7105

Bid # \_\_\_\_\_ and Description: \_\_\_\_\_

We, the undersigned, decline to proposal on the above project for the following reason(s):

- \_\_\_ We are not able to respond to the Invitation to Bid or Request for Proposals by the specified deadline.
- \_\_\_ Our Company does not offer this product or service.
- \_\_\_ Our current work schedule will not permit us to perform the required services.
- \_\_\_ Specifications are incomplete or information is unclear  
(Please explain below).

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_ Other (Please specify below)

\_\_\_\_\_

Company Name \_\_\_\_\_ PH \_\_\_\_\_

Email \_\_\_\_\_

Name and Title of individual completing this form:

\_\_\_\_\_  
(Printed Name) (Title)

\_\_\_\_\_  
(Signature) (Date)

**REFERENCES**

**THIS SHEET MUST BE COMPLETED AND RETURNED WITH BID**

**PROVIDE AT LEAST THREE REFERENCES FOR WHOM YOUR COMPANY HAS PROVIDED SAME OR SIMILAR SERVICES WITHIN THE LAST 2 YEARS.**

**COMPANY NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**CONTACT PERSON:** \_\_\_\_\_

**CONTACT E-MAIL ADDRESS:** \_\_\_\_\_

**COMPANY NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**CONTACT PERSON:** \_\_\_\_\_

**CONTACT E-MAIL ADDRESS:** \_\_\_\_\_

**COMPANY NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**CONTACT PERSON:** \_\_\_\_\_

**CONTACT E-MAIL ADDRESS:** \_\_\_\_\_

PROFESSIONAL SERVICES  
SPECIAL CONDITIONS

A. TERMS OF CONTRACT

The resulting contract will commence on award and be in effect until completion of the project.

B. PROHIBITION OF CONTACT

Under no circumstances should any prospective organization or individual, or anyone acting for or on behalf of a prospective organization or individual, seek to influence or gain the support of any member of the City Council, public official or City staff favorable to the interest of any prospective organization or individual. Likewise, contact with City Council, any public official or city staff against the interests of other prospective organization (s) and or individual(s) is prohibited. Any such activities will result in the exclusion of the prospective organization or individual from consideration by the City.

C. REFERENCES

Bidder must submit a minimum of three references on the form provided. Additionally, IRS W-9s will be required from vendors who are awarded contracts.

D. STATEMENT OF NO BID

If you will not be bidding on this producer/service, please help us by completing and returning the Statement of No Bid.

E. BID FORMAT

The Contract, if awarded, will be awarded on the basis of material and equipment illustrated and described on the Drawings or specified in the Specification. If a substitution or an "or equal" item is proposed, Proposer must submit this information to the City of Naples Purchasing Department ten (10) days prior to the Proposal Date for evaluation as an acceptable substitution or an "or equal" item. If the substitution or the "or equal" item is accepted, the City of Naples will issue an Addendum to all Proposers listing the allowable substitution or the "or equal" item. The cost of changes in related work, additional drawings which may be required to illustrate or define the substitute or "or equal" equipment and its relationship to the other parts or portions of the Work shall be paid by the Contractor. No change will be made in the amount of time in which to complete the Work or in the liquidated damages. Proof of insurance from the successful proposer is required at the time of issuance and award of a contract.

F. PROPOSAL PERFORMANCE & PAYMENT BONDS

A Performance Bond will be required of the Awarded Proposer for any contract that is in excess of \$125,000.00 dollars and will be in an amount equal to 100 (%) percent of the price specified in the Contract.

A Payment Bond will be required of the Awarded Proposer for any contract that is in excess of \$125,000.00 dollars if Awarded Proposer indicates the use of any suppliers or

the hiring of any subcontractor(s) within the proposal or at the time of issuance and award of a contract.

The bond(s) shall be executed by a surety company authorized to do business in the State of Florida, or otherwise secured in a manner satisfactory to the City for the protection of all persons supplying labor and material to the contractor or its subcontractors for the performance of the work provided for in the contract.

**G. QUESTIONS**

Questions regarding this proposer packet must be received in writing in the Purchasing Division, **NO LATER THAN TEN CALENDAR DAYS PRIOR TO THE PROPOSAL CLOSING DATE TO ENSURE AN ANSWER IS PROVIDED PRIOR TO CLOSING.**

Direct all questions to:  
Gerald "Jed" Secory, MBA / CPPO / CPM  
Purchasing Manager  
City of Naples, Purchasing Division  
735 8<sup>th</sup> Street South  
Naples, Florida 34102  
PH: (239) 213-7102 FX: (239) 213-7105  
[Jsecory@naplesgov.com](mailto:Jsecory@naplesgov.com)

## SUBMISSION CHECKLIST

Bidder should check off each of the following items as completed and submit with bid response:

CHECKLIST ELEMENTS	INCLUDED
<ul style="list-style-type: none"> <li>Submit one (1) original signature and one (1) copy of your original bid proposal / document <b>AND</b> a Windows© compatible PDF of the original document on a CD that is clearly labeled.</li> </ul>	
<ul style="list-style-type: none"> <li>Include any required drawings; descriptive literature; qualifications; schedules; product compliance / exceptions; alternatives; questionnaire; references, forms, tabs, pricing/cost; and any information required of the proposer identified in the text of the bid including information for bid evaluation.</li> </ul>	
<ul style="list-style-type: none"> <li>Include any delivery information.</li> </ul>	
<ul style="list-style-type: none"> <li>Mandatory <b>FORMS</b> from this document to be included are: <u>Cover Sheet</u>, <u>References Sheet</u>, <u>Submission Checklist Sheet</u>, and <u>Cost / Compensation Schedule</u>.</li> </ul>	
<ul style="list-style-type: none"> <li>Have an authorized individual sign the appropriate pages including the <u>Cover Sheet</u> with any bid addendums initialed. Also, examples of vendor contracts used by the City can be found on the Naples Purchasing web site and should be reviewed by the vendor.</li> </ul>	
<ul style="list-style-type: none"> <li>Bid proposal / document needs to be received by the <b>OPENING DATE &amp; TIME</b> indicated on the Cover Sheet. The mailing envelope must be addressed to:  <div style="text-align: center;">                     City of Naples                      Purchasing Division                      735 8<sup>th</sup> Street South                      Naples, Florida 34102                 </div> </li> </ul>	
<p style="text-align: center;">The mailing envelope should be sealed and marked with:                      BID Number:                      BID Title:                      BID Opening Date:</p>	

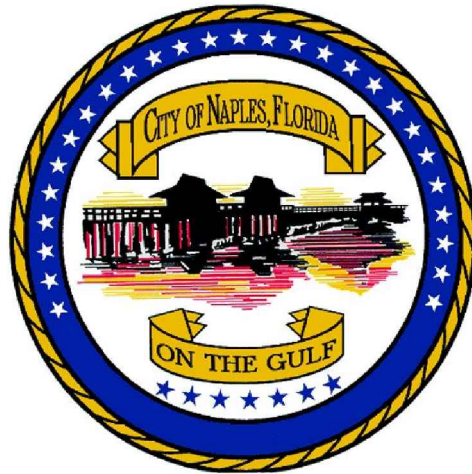
**ALL COURIER DELIVERED PROPOSALS MUST HAVE THE BID NUMBER AND TITLE ON THE OUTSIDE OF THE COURIER PACKET.**

*At the discretion of the Purchasing Manager, bids or proposals with minor irregularities may be accepted and allowed to be corrected when in the best interest of the City.*

# CONTRACT DOCUMENTS

For the construction of the

## NAPLES WATER TREATMENT PLANT THICKENER TANK REHABILITATION



Prepared for the

CITY OF NAPLES  
NAPLES, FLORIDA

BID DOCUMENTS

For information regarding  
this project, contact:

ANKITA PATEL, P.E.  
5801 Pelican Bay Blvd., Suite 505  
Naples, FL 34108  
(239) 596-1715

CH2M HILL Project No. 424535

**CH2MHILL**

**OCTOBER, 2013**

**TABLE OF CONTENTS**

**SPECIFICATIONS**

01010	Summary of Work
01026	Measurement and Payment
09900	Painting and Coating
11350	Sludge Thickener Mechanism
330501	High Density Polyethylene Pressure Pipe and Fittings

**EXISTING THICKENER TANK DRAWINGS**

**WIRING DIAGRAM**

**PHOTO ATTACHMENTS**

**END OF SECTION**



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# **SPECIFICATIONS**

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**SECTION 01010  
SUMMARY OF WORK**

**PART 1      GENERAL**

**1.01      WORK COVERED BY CONTRACT DOCUMENTS**

- A. The completed Work will provide Owner with a rehabilitated lime sludge thickener tank located at City's 30 mgd lime softening facility. The work to be performed includes the following major tasks:
1. Remove and replace the existing sludge thickener components as listed below and as shown on attached drawings and photographs:
    - W48P drive rated at 100,000 ft-lbs (45,000 ft-lbs AGMA Cont. @ 0.1 rpm)
    - 15 ton rake lifting device with minimum 1.0 hp motor (36-inch lift height)
    - Rake drive motor 5 hp, built-in inverter duty variable speed gearmotor
    - 12-inch diameter schedule 40 carbon steel torque shaft to rotate rake arms
    - Carbon steel center feedwell that is 4-foot diameter by 4-foot deep
    - Two carbon steel truss rake arms with blades, pickets and stainless steel squeegees
    - A stainless steel electrical control panel including motor starters and variable frequency drive (VFD)
    - All other accessories and appurtenances necessary to provide a new and operating sludge thickener tank mechanism.
  2. Sand blast, perform surface preparation and apply coating on the interior concrete surface as per the coating supplier's requirements and recommendations, including concrete repair and structural steel if required.
  3. Remove and dispose of all blasting materials or other waste without use of the thickener tank drain.
  4. Blast and re-coat thickener mechanisms which are to be reused except for aluminum items. The items that are being reused include the 3-foot wide carbon steel beam superstructure spanning the tank, the 3-foot wide by 11-

foot long (half tank diameter) walkway, the center platform, and the aluminum handrails with toe plates.

5. Perform finish painting on factory supplied parts.
6. Remove unused piping as shown on the attached photograph P-2.
7. Connect existing two influent lines into a new 6-inch DR-11 high density polyethylene (HDPE) line. Manifold existing 3-inch pipes into 6-inch HDPE with independent wyes and valves as shown on photograph P-1. Furnish and install all necessary Type 316 stainless steel supports and HDPE fittings rated for this application.
8. Provide and install a new 6-inch DR-11 HDPE influent pipe with Type 316 stainless steel traps along the wall of the tank and then to the feed well as shown in the attached photographs P-1 and P-2. Support the pipe as required and all fittings shall be rated for the application as specified herein.
9. Replace the two 4-inch ductile iron and one 2-inch ductile iron piping and fittings from above liquid level fitting down as shown on the attached photograph P-3.
10. Pressure clean the existing FRP weirs.
11. Repair and recoat the concrete slab underneath the stairs as shown in the attached photograph P-5.
12. Replace conduits for all wiring from the outside edge of the thickener tank to the equipment/component. Connect new conduit to existing conduit with like materials
13. Replace electrical wiring from main breaker to the thickener control panel with like materials and sizes. Contractor to field measure the length of the wiring required prior to submitting a bid.
14. Replace the existing power and control wiring from motors and drives to the control panel as shown on wiring diagram drawings with like materials and sizes. Contractor to field measure the length of the wiring required prior to submitting a bid.
15. Replace electrical wiring from main breaker to lighting panels with like materials and sizes. Contractor to field measure the length of the wiring required prior to submitting a bid.
16. Plug and seal the thickener tank bottom drain prior to the start of construction to ensure that no material - liquid or solid exits through the drain.

- B. All electrical installation to be installed in a workman like manor meeting or exceeding standard industry practices. Electrical contractor shall visit site and

become familiar with existing conditions and include the following upgrades as a minimum requirements:

1. Match all over current protection including circuit breakers, all power and control conductors to the new equipment manufacturer's requirements including updating complete electrical installation to all current national electrical and local codes.
2. Mount control panel to meet or exceed 150 mile per hour wind load.
3. All electrical hardware, strut, fasteners to be 316 stainless steel.
4. All raceway to be PVC coated rigid steel with matching fittings by single manufacturer.
5. All flexible metal raceway shall be liquid-tite with hot dipped galvanize fittings.
6. All junction and pull boxes shall be 316 stainless steel.
7. All panel and junction box penetrations to utilize Meyers hubs to maintain NEMA 4X integrity.
8. Power conductors minimum standard shall be THWN or XHHW suitable for wet locations.
9. All control conductors shall match manufacturer's recommendations.
10. All signal conductors shall be twisted shielded pairs.

## **PART 2 PRODUCTS**

- A. Valves
  - a. Type PVC ball valve rated for 150 psi at 73 degrees F, with ASTM D1784, Type I, Grade 1 polyvinyl chloride body, ball, and stem, end entry, double union design, solvent-weld socket ends, elastomer seat, Viton or Teflon O-ring stem seals, to block flow in both directions.
  - b. The valves shall be Type 21 by ASahi/America, Chemtrol Tru-Bloc by Nibco or approved equal.
- B. Piping
  - a. See Attached Specification Section 33 05 01.10.

## **PART 3 EXECUTION**

- C. Contractor to field verify all dimensions prior to shop drawing submittal. City will empty the tank to facilitate field measuring at the pre-bid meeting. Contractor to coordinate with the WTP operations for additional tank shut downs as required.
- D. All the work to be performed on a thickener that can interfere with the existing thickener operation or will require tank shut down has to be coordinated with the WTP operations. It is estimated that the thickener tank can be taken offline for a

maximum of one to two weeks based on conditions at the plant.

- E. It is recommended that recoating of the concrete should be done after the existing thickener components have been removed, but prior to the new components have been installed. Contractor is responsible for determining the sequence of the work and maintaining the integrity of the final work. Similarly, it is recommended that field coating of metal components to be coated shall be done prior to the components being installed to limit the time necessary for the tank to be out of service.
- F. Contractor to plan and conduct the work such that tank down time is minimized.
- G. Owner will provide staging area. Contractor to coordinate with the owner for details.
- H. Contractor to account for weather conditions while planning and performing the coating work.

**END OF SECTION**

**SECTION 01026  
MEASUREMENT AND PAYMENT**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Explanation and Definitions
- B. Measurement
- C. Payment
- D. Schedule of Values

**1.2 EXPLANATION AND DEFINITIONS**

- A. The following explanation of the Measurement and Payment for the Bid Schedule items is made for information and guidance. The omission of reference to any item in this description shall not, however, alter the intent of the Bid Schedule or relieve the CONTRACTOR of the necessity of furnishing such as a part of the Contract. Measurement and payment for all Contract Items shall be made in accordance with this section or as modified by the Supplemental Terms and Conditions.

**1.3 MEASUREMENT**

- A. The quantities set forth in the Bid Schedule are approximate and are given to establish a uniform basis for the comparison of bids. The CITY reserves the right to increase or decrease the quantity of any class or portion of the work during the progress of construction in accord with the terms of the Contract.

**1.4 PAYMENT**

- A. Make payment for the items listed on the Bid Schedule on the basis of the work actually performed and completed, such work including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, restoration of disturbed areas, and all other appurtenances to complete the construction and installation of the work as shown on the drawings and described in the specifications.
- B. Unit prices are used as a means of computing the final figures for bid and Contract purposes, for periodic payments for work performed, for determining value of additions or deletions and wherever else reasonable.

**1.5 SCHEDULE OF VALUES**

- A. Approval of Schedule: Submit for approval a preliminary schedule of values, in duplicate, for all of the Work. Prepare preliminary schedule in accordance with the Supplemental Terms and Conditions. Submit preliminary schedule of values within 10 calendar days after the Effective Date of the Agreement. Submit final schedule of values in accordance with the Supplemental Terms and Conditions.

- B. Format: Identify each line item with number and title of the major specification items. Identify site mobilization, bonds and insurance. Include within each line item, a direct proportional amount of CONTRACTOR's overhead profit.
- C. Revisions: With each Application for Payment, revise schedule to list approved Change Orders.

## PART 2 PRODUCTS

### Not Used

## PART 3 EXECUTION

### 3.1 MEASUREMENT AND PAYMENT

- A. Make payment on the basis of work actually performed completing each item in the Bid, such work including, but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, cleanup, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the drawings and described in the specifications. Payment for each item includes compensation for cleanup and restorations. Cost of cleanup and surface restorations (including pavement replacement) will be considered as the percentage retained in accordance with the Contract Documents, and complete payment will not be made until cleanup, restorations and as-builts are completed.
  - 1. Mobilization/Demobilization: Payment for Mobilization/Demobilization shall include all cost for preparatory work and operations in mobilizing and demobilizing for beginning/ending work, including movement of personnel, equipment, supplies and incidentals to/from the project site, and any other pre and/or post construction expense necessary for the work.
  - 2. General Requirements: Payment for General Requirements shall include all costs for insurance requirements, administrative costs, permitting (less City permitting fees), field engineering, construction schedules, construction photographs, shop drawings, temporary facilities, safety, and first aid supplies, sanitary and other facilities (as required by specifications), and all other related items as required to complete the proposed work, per the Drawings, Specifications, and City of Naples requirements.
  - 3. Thickener Tank Rehabilitation: Payment for Thickener Tank Rehabilitation shall include all costs for furnishing and installing a complete and operable system consisting of a new sludge thickener mechanism, electrical improvements, surface concrete improvements/preparation, coating preparation including washing and blasting; coating improvements and shall include demolish, removal, and disposal, of existing appurtenances as required per the Drawings, Specifications, and City of Naples requirements.
  - 4. Concrete Repair: : Payment for Concrete Repair shall include all costs for furnishing and installing all materials and equipment necessary to repair damage to concrete surfaces of the thickener tank, including steel repairs; shall include demolish, removal, and disposal as required per the Drawings, Specifications, and City of Naples requirements. This does not include the repair to the concrete slab underneath the stairs as shown in photograph 5, nor does this include surface repairs to the concrete.

Following the cleaning of the thickener tank, the Owner, Engineer and Contractor will review the concrete condition and determine which areas need to be repairs under this line item.

- B. Prior to submitting first monthly Application for Payment, Contractor shall submit to Engineer, for review and approval, a schedule of values based upon the Contract Price, listing the major elements of the Work and the dollar value for each element. After its approval by the Engineer, this schedule of values shall be used as the basis for the Contractor's monthly Applications for Payment.
- C. Prior to submitting first monthly Application for Payment, Contractor shall submit to The City a complete list of all its proposed subcontractors and materialmen, showing the work and materials involved and the dollar amount of each proposed subcontract and purchase order. The first Application for Payment shall be submitted no earlier than thirty (30) days after the Commencement Date.
- D. If payment is requested on the basis of materials and equipment not incorporated into the Project, but delivered and suitably stored at the site or at another location agreed to by the City in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that the City has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances, together with evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the City's interest therein, all of which shall be subject to the City's satisfaction.

Contractor shall submit six (6) copies of its monthly Application for Payment to the Engineer on or before the 25<sup>th</sup> day of each month for work performed during the previous month. Invoices received after the 25<sup>th</sup> day of each month shall be considered for payment as part of the next month's application. Within ten (10) calendar days after receipt of each Application for Payment, the Engineer shall either:

1. Indicate his approval of the requested payment;
2. Indicate his approval of only a portion of the requested payment, stating in writing his reasons therefore; or
3. Return the Application for Payment to the Contractor indicating, in writing, the reason for refusing to approve payment.

In the event of a total denial and return of the Application for Payment by the Engineer, the Contractor may make the necessary corrections and resubmit the Application for Payment. The City shall, within thirty (30) calendar days after the Engineer's approval of an Application for Payment, pay the Contractor the amounts so approved. Provided, however, in no event shall the City be obligated to pay any amount greater than that portion of the Application for Payment approved by the Engineer.

- F. The City shall retain ten (10%) of the gross amount of each monthly payment request or ten percent (10%) of the portion thereof approved by the Engineer for payment, whichever is less. Such sum shall be accumulated and not released to the Contractor until final payment is due.
- G. Monthly payments to Contractor shall in no way imply approval or acceptance of Contractor's work.



- H. Contractor agrees and understands that funding limitations exist and that the expenditure of funds must be spread over the duration of the Project at regular intervals based on the Contract Amount and Progress Schedule. Accordingly, prior to submitting its first monthly Application for Payment, Contractor shall prepare and submit for the Engineers review and approval, a detailed Project Funding Schedule, which shall be updated as necessary and approved by the City to reflect approved adjustments to the Contract Amount and Contract Time. No voluntary acceleration or early completion of the Work shall modify the time of payments to Contractor as set forth in the approved Project Funding Schedule.

### 3.2 PAYMENTS WITHHELD

- A. The Engineer may decline to approve any Application for Payment, or portions thereof, because of subsequently discovered evidence or subsequent inspections. The Engineer may nullify the whole or any part of any approval for payment previously issued and the City may withhold any agreement between the City and Contractor, to such an extent as may be necessary in the City's opinion to protect it from loss because of:
1. Defective Work not remedied;
  2. Third party claims filed or reasonable evidence indicating probable filing of such claims
  3. Failure of Contractor to make payment properly to subcontractors or for labor, materials or equipment;
  4. Reasonable doubt that the Work can be completed for the unpaid balance of the Contract Amount;
  5. Reasonable indication that the Work will not be completed within the Contract Time;
  6. Unsatisfactory prosecution of the Work by the Contractor; or
  7. Any other material breach of the Contract Documents.
- B. If these conditions in Subsection 5.1 are not remedied or removed, the City may, after three (3) days written notice, rectify the same at Contractor's expense. The City also may offset against any sums due Contractor the amount of any liquidated or unliquidated obligations of Contractor whether relating to or arising out of this Agreement or any other agreement between Contractor and the Engineer.

### 3.3 FINAL PAYMENT

- A. The City shall make final payment to Contractor within thirty (30) calendar days after the Work is finally inspected and accepted by both the City and the Engineer in accordance with Section 20.1 herein provided that Contractor first, and as an explicit condition precedent to the accrual of Contractor's right to final payment, shall have furnished the City with any and all documentation that may be required by the Contract Documents and the City.
- B. Contractor's acceptance of final payment shall constitute a full waiver of any and all claims by Contractor against the City arising out of this Agreement or otherwise relating to the Project,

**SECTION 09900  
PAINTING AND COATING**

**PART 1 CONCRETE TANK/POTABLE WATER LINER**

**Surface preparation:**

Concrete surfaces to be painted shall be prepared as per the following:

1. Remove all contaminants in accordance with SSPC- SP13. Prepare surface to meet an ICRI CSP 5.
2. Make necessary concrete and crack repairs using Tnemec Series #218 Mortarclad and or Tnemec Series #217 Mortarcrete, depending on the depth of the repair.
3. Apply a parge coat of Tnemec Series #218 Mortarclad to provide a uniform pin hole free surface.

**Painting:**

1. Prime coat – all surfaces to be painted with Tnemec Porta-Pox Plus Series #N140-11WH, apply at the rate of 4.0 mils DFT.
2. Install Keyway – to transition from the polyurethane liner material on the side walls to the epoxy on the fillet bottom. The Keyway shall be placed on the fillet bottom 12 inches from the junction of the sidewall. This shall be completed in accordance with the published Elasto-Shield Construction Detail Guide.
3. Finish coat – on the fillet bottom apply Tnemec Epoxoline Series FC22-WH08 at the rate of 35.0 mils DFT.
4. Finish coat- all sidewall and fillet surfaces into the installed Keyway will be painted with Tnemec Elasto-Shield Series #406 applied at the rate of 60.0 mils DFT.

**PART II POTABLE WATER TANK INTERIORS – FERROUS METALS**

**Surface Preparation:**

1. High pressure wash and fresh water rinse all surfaces to remove all slag and other contaminants.
2. All surfaces shall be abrasive blast cleaned in accordance with an SSPC SP-10 Near White Blast Clean Method.
3. All areas of exposed steel shall clean and free of blast aggregate residue prior to painting.
4. All exposed substrate must be prime coated within 7 hours of being exposed.

**Shop Painting:** (new or replacement steel)

1. Prime Coat – apply to exposed steel Tnemec Pota-Pox Series #20-1255 Beige, applied to a DFT of 4.0 to 6.0 mils.

**Field Painting:**

1. Prime Coat – apply to all exposed steel, Tnemec Pota-Pox Plus Series N140-1255 Beige, applied to a DFT of 6.0 to 8.0 mils.
2. Stripe Coat – apply to all weld seams and angles, by brush, one coat of Tnemec Pota-Pox Plus Series N140-00WH White, applied to a DFT of 4.0 to 6.0 mils.
3. Finish Coat\* – apply to all surfaces Tnemec Pota-Pox Plus Series N140-00WH White, applied to a DFT of 6.0 to 8.0 mils.

(\*) If metal surface is not immersion service coat with Tnemec Endura-Shield Series 1074U applied at 2.0-3.0 mils DFT.

**END OF SECTION**

## SECTION 11350

### SLUDGE THICKENER MECHANISM

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. There shall be furnished one (1) sludge thickener mechanism for installation in the basin shown on the Contract Drawings. The sludge thickener mechanism will be designed to receive waste solids, allow the solids to thicken, and rake them to the mechanism center for removal.
- B. The existing sludge thickener basin is a 34-foot 1-inch side length square tank with a side water depth of 10-foot 3-inch, a freeboard of thirty-three (33) inches, and a bottom slope of 2-3/4 inches in 12 inches.
- C. Dilute sludge will enter the sludge thickener basin through a top feed pipe as shown on the Contract Drawings and discharge into a feedwell for energy dissipation. Solids will be allowed to settle to the floor of the basin and encouraged to thicken with pickets rotating on the sludge thickening and collection arms. Settled solids will be positively raked to the center of the sludge thickener mechanism and discharged into a sludge thickening cone for withdrawal.
- D. The existing sludge thickener mechanism includes: bridge support structure, walkway supports, walkway surface, center platform, platform surface, handrail, top feed pipe, energy dissipating feedwell, sludge thickener drive assembly with lifting device, sludge thickening and collection arms, torque shaft, cone scraper, sludge thickener drive on/off pushbuttons and an alarm in a control panel, effluent weirs, and all necessary assembly and anchor bolts.
- E. The sludge thickener mechanism component shall be designed to withstand with a prudent safety factor for all stresses that may occur during fabrication, erection, intermittent, for continuous 24 hour per day operation.
- F. Except where specifically indicated otherwise, all structural members shall have a minimum thickness of 1/4 inch and all nonstructural members shall have a minimum thickness of 3/16 inch. Structural steel will conform to ASTM A-36 requirements, steel plate will conform to ASTM A283C requirements, and all steel pipe will conform to the ASTM A-53 Grade B designation. All anchor bolts and connection fasteners shall be manufactured from type 304 stainless steel.

1.02 RELATED WORK SPECIFIED ELSEWHERE

C. FINISHES

Division 9

1.03 PROCESS REQUIREMENTS

A. The sludge thickener mechanism shall have as its primary objectives the thickening of lime sludge and the production of a clarified overflow.

B. Design parameters are as follows:

Sludge thickening and collection arm speed..... Variable Speed

Mechanism design strength ..... 100,000 ft-lb

1.04 REFERENCES

- |    |                     |  |
|----|---------------------|--|
| A. | AFBMA               | Anti-friction Bearing Manufacturers' Association - Bearing Life Specifications       |
| B. | AGMA 2001-C95       | American Gear Manufacturers' Association - Gearing Ratings                           |
| C. | AISI 4140/42H       | American Iron and Steel Institute - Material Specifications                          |
| D. | ASTM A-36           | American Society for Testing and Materials - Structural Steel Specifications         |
| E. | ASTM A-48 Class 40A | American Society for Testing and Materials - Cast Iron Specifications                |
| F. | ASTM A-53 Grade B   | American Society for Testing and Materials - Pipe Specifications                     |
| G. | ASTM A283C          | American Society for Testing and Materials - Steel Plate Specifications              |
| H. | ASTM A325           | American Society for Testing and Materials - Fastener Specification                  |
| I. | ASTM 304            | American Society for Testing and Materials - Stainless Steel Material Specifications |
| J. | AWS                 | American Welding Society - Welding in Building Construction Specifications           |
| K. | AGMA 6034-B92       | American Gear Manufacturers Association - Governing Worm and Worm Gear Design        |

- L. NEMA National Electrical Manufacturers Association  
- Motor Design Standards and Standards for  
Control Enclosures
- M. NEC National Electrical Code

1.05 QUALITY ASSURANCE

- A. The manufacturer of the sludge thickener mechanism will modify his standard equipment to meet the values specified for dimensions, design, and the intent of this specification.
- B. The sludge thickener mechanism will be manufactured by Ovivo USA, LLC, of Salt Lake City, Utah or pre-approved equal (see special conditions in the invitation to bid for “or equal” requirements).

1.06 CONTRACTORS SUBMITTALS

- A. The Contractor shall submit complete shop drawings of all equipment furnished including cut sheets describing purchased sub-components with the specific sub-components used for this project properly highlighted. All submitted information must include a certification that the submittal describes exactly the equipment to be provided and substitutions subsequent to submittal approval will not be tolerated.
- B. The sludge thickener manufacturer shall furnish as a minimum the following design and description information to establish compliance with these specifications:
  - 1. Certified general arrangement and tank dimensional drawings.
  - 2. Sludge thickening and collection arm, torque shaft, and support bridge structural calculations.
  - 3. Drive mechanism design calculations verifying the compliance of the drive gears and bearings with the specified continuous life.
  - 4. Motor and electrical drawings.
- C. All submitted calculations must be stamped by a Registered Professional Engineer.

1.07 OPERATION AND MAINTENANCE MANUALS

- A. Operation and maintenance manuals will be provided by the sludge thickener manufacturer at least two weeks prior to shipment of all major equipment components. Each manual shall be a bound, indexed binder with drawings and parts lists prepared specifically for this project rather than general instructions that are not designed for this project.

- B. As a minimum the manual shall contain:
  - 1. General arrangement drawings.
  - 2. General arrangement detail drawings.
  - 3. Erection drawings.
  - 4. A complete bill of materials for the equipment including the weights of all structural steel components.
  - 5. Installation and maintenance instructions for the specific equipment including the erection sequence, maintenance and trouble-shooting check points, and complete lubrication procedures with recommended grades of lubricants.
  - 6. Cut sheets for all items of equipment purchased from other manufacturers.
  - 7. A list of the sludge thickener manufacturer's recommended spare parts specifically denoting wear items, long delivery items, and all items convenient for stocking as optional replacement items.

#### 1.08 DELIVERY

- A. Fabricated assemblies shall be shop assembled and properly match marked for ease of field erection and then shipped in the largest sections permitted by carrier regulations.
- B. All components shall be erected immediately upon receipt from the sludge thickener manufacturer or stored in strict conformance with storage recommendations provided by the sludge thickener manufacturer in the operation and maintenance manual.
- C. The units shall be lubricated in strict accordance with the instructions of the sludge thickener manufacturer's field service representative.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. The sludge thickener mechanism is of the bridge-supported type resting upon the basin walls.
- B. The replaced and completed sludge thickener mechanism shall be of sufficient strength to sweep in a 2 inch layer of grout over the tank bottom under its own power.

## 2.02 SLUDGE THICKENER DRIVE ASSEMBLY

- A. The sludge thickener drive mechanism shall consist of an integral motor and primary speed reducer coupled through a roller chain and sprockets to a main worm or spur gear and containing an overload protection system. The drive shall be designed to attach to the main bridge support beams with leveling bolts.
- B. The sludge thickener drive primary speed reducer shall be of in-line parallel helical construction, oil lubricated, with gears manufactured from case hardened steel. A primary gear reducer with cycloidal gearing shall not be allowed. The primary speed reducer will be directly coupled to the main gear reducer or will drive the main gear reducer through chain and sprockets enclosed in a steel guard. Power transmission devices will be designed with a minimum service factor of 1.5. Units will be supplied with high capacity, anti-friction bearings submerged in oil and splash lubricated. The reducer shall be rated for 24 hour continuous duty moderate shock load.
- C. The sludge thickener main gear shall consist of a worm and worm gear assembly or a spur gear and pinion assembly. If a worm gear is used, the gear shall be high strength, centrifugally cast manganese bronze with an AISI 4140/42H hardened alloy steel worm. The worm gear assembly shall rotate on a precision 4-point contact ball bearing assembly that is completely separate from the worm gear, thereby allowing independent removal of the gear and bearing. Any sludge collector drive that utilizes a combination one piece gear and bearing assembly shall include one (1) extra combination gear and bearing assembly per drive as a required spare part. The precision 4-point contact ball bearing assembly shall be made up of premium alloyed chrome/steel bearing balls and a raceway hardened to at least Rockwell C60 and precision ground.
- D. Where a spur gear is used the gear material shall be cast iron per ASTM A536 grade 80-55-06 or an equal in forged alloy steel. The gear shall have a minimum pitch diameter of 60 inches with a 6.0 inch face width or the equivalent spur gear surface area of 1130 square inches. Spur gear surface area is defined as the spur gear pitch diameter multiplied by the spur gear face width multiplied by 3.14. (diameter x depth x Pi). Drive manufacturers shall increase the main spur gear diameter until this minimum gear surface area requirement is met.
- E. The main gear shall be completely enclosed on all sides and the top with a rigid A-36 steel or ASTM A-48 Class 40A cast iron housing at least 1/2-inch thick on the vertical sides and provided with oil fill and oil drain plugs. The material from which the sludge thickener drive base is constructed shall be at least 1-1/2 inches thick to provide the rigidity necessary for proper bearing support. Drives without totally enclosed gearing, or with material thicknesses less than the dimensions specified shall not be allowed.
- F. The sludge thickener drive mechanism components shall be designed in accordance with referenced standards for 24 hour continuous duty, uniform shock load. The



torque value used in the sizing calculation shall be a minimum continuous torque based upon AGMA Standards of 45,200 foot pounds. In addition, the sludge thickener drive must be able to sustain a momentary peak torque of 168,000 foot pounds. The sludge thickener main gear support bearing shall be designed for a minimum  $B_{10}$  life of 100,000 hours at maximum load and speed.

- G. The sludge thickener drive shall be designed for the specified continuous torque rating. Continuous torque shall be defined as the minimum torque at which the sludge thickener drive mechanism may operate continuously 24 hours per day, 365 days per year, for 20 years, at the specified maximum sludge thickening and collection arm speed. Gearing shall be designed and rated to equal or exceed the specified continuous torque and life. The basis for rating shall be AGMA Standard 6034-B92, for worm gears, or AGMA 2001-C95 for spur gears. Rating standard shall include design values for materials used, pressure angle, addendum modifications, and allowable stresses with appropriate re-rate for life cycles required. The following design parameters must be included in the drive calculations:
- Gear materials, and physical properties
  - Gear pitch or effective diameter
  - Actual face width
  - Tooth pressure angle
  - Number of gear teeth
  - Worm material, heat treatment, and finish
- H. All bearings shall run in an oil bath. Grease lubrication shall not be allowed. Oil pumps for lubrication will likewise not be allowed. A minimum 2.0-inch deep condensate collection area must be provided below the main bearing to positively prevent the bearings and gears from running without proper oil lubrication. In lieu of the oil reservoir depth requirement a continuous oil conditioner unit installed at each drive assembly and as specified herein shall be considered equal. The conditioner shall consist of an electrical continuous pre-pump filter and 150 micron stainless steel oil filter. All conditioner mounting hardware, electrical wiring/controls and necessary piping shall be provided by the clarifier manufacturer. Sight glasses and condensate drains for each drive shall be easily accessible without removing plates or structures. Inspection of the completed drive unit shall be accomplished at the solids contact clarifier manufacturer's shop, with reports of all tests and certifications of material hardness being made available for review at the Engineer's request prior to shipment to the job site.
- I. In no case will units using lower bearings, feedwell bearings, chains, sprockets or any part of the drive unit below the top of walkway beams be allowed.
- J. Drive components will be located via a machined, registered fit or pilot to insure proper alignment. In order to preserve the alignment of key drive components, no welding on the drive will be permitted following final machining operations.

K. The sludge thickener drive unit shall be equipped with an electro-mechanical overload control device. This device shall be activated by thrust from the worm shaft. A calibrated spring will react to the worm thrust and allow axial movement of the worm shaft to activate a pointer. The overload control device shall provide a visual reading of the output torque on a 0 to 100 percent scale graduated in 10% increments. The device shall also activate an alarm switch and a motor cutout switch. The alarm and motor cutout switches in the control device shall be factory calibrated and set to the required torque. The settings shall be as follows:

- Mechanism Design Strength not less than 100,000 ft-lbs.
- Alarm torque set at 40% of mechanism design strength
- Motor cutout set at 85% of mechanism design strength
- Emergency motor cutout at 100% of mechanism design strength

The entire control device shall be mounted in a weatherproof cast aluminum enclosure with an integral conduit box and terminals. Amperage sensing devices are not acceptable for torque overload protection due to their inability to react quickly enough to prevent damage to the drive.

L. The main gears, main bearings, and drive control that comprise the drive assembly shall be a regularly manufactured in-house product of the sludge thickener manufacturer. Drive assemblies purchased from third party vendors are not acceptable because the drive assembly is a key element in a successful sludge thickener installation.

M. Drives without totally enclosed oil lubricated bearings and gearing will not be permitted.

N. Electric motors shall be totally enclosed, fan cooled, with a 1.15 service factor, and have bearings with a minimum B<sub>10</sub> rating of 40,000 hours. Operating electric current will be 460 volt, 3 phase, and 60 hertz. Each motor will be NEMA Design B employing Class F insulation designed for an ambient temperature of 40°C. Motors must conform to the standards of NEMA.

O. Electric motors shall be sealed for operation in a moisture-laden atmosphere and suitable for washdown and outdoor severe duty. Conduit boxes shall be gasketed with neoprene or an equivalent material to prevent moisture from entering the stator through the conduit box. Moisture drains will be placed in suitable positions to prevent accumulation of moisture in the motor housing. Sealed, grease lubricated ball or roller bearings shall be provided. Nameplates shall be stainless steel. All windings shall be copper with a grounding lug, the stator bores and rotor cores shall be coated with lacquer, and the entire enclosure shall be sealed with a corrosion-resistant paint to provide additional protection against moisture and contaminants.

P. The sludge thickener drive motor shall be minimum 5.0 horsepower.

- Q. Where a variable speed drive (VFD) is called for, the motor speed shall be infinitely adjustable through the use of an integral motor attached variable frequency inverter (VFD) with the following features integrated into a single unit:
- a. The inverter shall mount directly on the mixer motor in place of a terminal box, shall be installed without conduit, and shall be capable of remote speed control.
  - b. The inverter shall operate via vector technology in 4-quadrant operation with the ability to operate at 16 kHz carrier frequency to minimize audible noise. It shall use a vector type controller to monitor the current to the motor to control the output speed.
  - c. The motor shall operate at constant torque range from 2-80 Hz or wider and operate at 10 Hz and higher without the need for an additional cooling fan.
  - d. The motor shall meet CSA standards, be certified as inverter duty, and shall be approved as a motor overload device. It shall contain overload, over voltage, and phase failure protection. A fault relay and LED shall be provided on the inverter to advise the operator during a fault. Integral motor/VFD shall have a 1.0 service factor or higher.
  - e. The inverter shall be housed in an aluminum alloy enclosure, suited for outdoor service, and rated IP65 or higher.
  - f. The inverter shall be designed to match the motor specifications with no parameter setup required.
  - g. The inverter shall accept RS-485 protocol and be capable of interfacing with Profibus(r), DeviceNet(r), InterBus-S(r), or AsI(r) with at least 2 auxiliary inputs and shall accept analog speed set points from 0-10V, 0-20mA or 4-20mA signals.
  - h. The inverter shall have selectable acceleration and deceleration times with at least 2 adjustable preset speeds and shall have selectable addresses so that multiple drives can be individually controlled from a PLC or PC or simultaneously controlled from one master.
  - i. Line and load reactors as well as appropriate on-line filters shall be provided to assure clean uninterrupted power to the variable frequency drive.
- R. The thickener drive shall be furnished with a lifting device that allows the operator to raise and lower the rake arms while the machine is rotating. In addition, should the mechanism become overloaded due to process upsets or pump failures, the rakes shall automatically raise and allow the mechanism to continue to operate while the operator takes corrective action. Fully automatic and adjustable controls shall be provided for the motorized lift.

- S. The lift mechanism shall mounted on top of the torque tube and shall pull the adapter shaft up through the main gear by means of a lifting screw. The lift shall be designed to raise a minimum of 36-inches and shall have a lifting capacity of at least 30,000 pounds. The lifting device drive motor shall be minimum 1.0 horsepower.
- T. The main gears, main bearings, and torque overload control device that comprise the center drive assembly and lifting device shall be a regularly manufactured in-house product of the thickener manufacturer. Drive assemblies purchased from third party vendors shall not be allowed.

2.03 INFLUENT PIPE

- A. A 6-inch diameter DR 11 HDPE influent pipe shall be provided to extend from a point 18 inches inside the basin wall to the feedwell as shown on the attached thickener tank general arrangement drawing.
- B. At the termination of a wall spool 18 inches inside the basin wall supplied by the Contractor will be a flexible coupling supplied by the Contractor to connect the influent pipe to a pipe stub.

2.04 MECHANISM SUPPORT AND WALKWAY ACCESS BRIDGE

- A.  
Not replaced.

2.05 OPERATING PLATFORM

Not Replaced.

2.06 TORQUE SHAFT

- A. The torque shaft shall be constructed of a twelve (12) inch diameter schedule 40 steel pipe, and designed to withstand the mechanism design strength while maintaining structural steel design stresses within the AISC allowable stress.
- B. The torque shaft shall be attached to the output shaft of the drive and shall have provisions for connections to support two sludge thickening and collection arms and a cone scraper.

## 2.07 SLUDGE THICKENING AND COLLECTION ARMS

- A. The sludge thickener mechanism shall include two (2) sludge thickening and collection arms of steel truss construction with steel raking blades, steel sludge thickening pickets, and adjustable steel squeegees with spikes. Sludge thickening and collection arms will be attached to the sludge thickener drive mechanism by means of a steel torque shaft. Support tie rods in the sludge thickening and collection arm design will not be allowed. Rake blades shall be properly spaced to insure complete raking of the tank bottom twice per revolution.
- B. Each sludge thickening and collection arm shall be designed to withstand one-half the mechanism design strength while maintaining structural steel stresses within the AISC allowable stress.
- C. Rake blades 7<sup>1</sup>/<sub>2</sub> inches deep shall be provided on each sludge thickening and collection arm.
- D. Attached to the bottom of the rake blades shall be adjustable steel squeegees with spikes that extend 1-1/4 inches below the rake blade. Squeegees will be attached with stainless steel bolts.
- E. Sludge thickening pickets will be attached to the sludge thickening and collection arms on 2 foot centers to promote proper sludge thickening. Pickets will extend from an elevation even with the tops of the rake blades to an elevation even with the top of the sludge thickening and collection arm truss at its highest point.
- F. The minimum angle size used in construction of the sludge thickening and collection arms shall be 2 inch by 2 inch by 1/4 inch.

## 2.08 FEEDWELL

- A. The feedwell shall be four (4) feet in diameter with a 4-foot side depth.
- B. The steel plate from which the feedwell is fabricated will have a minimum 3/16-inch thickness. Support will be provided by brackets attached to the torque shaft. All necessary reinforcing rim angles, stiffeners, and supporting brackets shall have a minimum thickness of 1/4 inch.

## 2.09 WELDING

- A. All welding practices shall be in accordance with the requirements of the American Welding Society (AWS) "Welding in Building Construction". All welders shall be certified in accordance with this AWS specification for any welding work performed under this section.

## 2.10 SURFACE PREPARATION AND PAINTING

- A. Submerged fabricated steel surfaces shall be blast cleaned to an SP-10 near white blast finish and shop painted with one 3 to 5 mil dry film thickness protective primer coat of NSF Series 61 certified Tnemec 20-1211 Potapox Primer epoxy-polyamide coating.
- B. Non-submerged fabricated steel surfaces shall be blast cleaned to an SP-6 commercial blast finish and shop painted with one 3 to 5 mil dry film thickness protective primer coat of NSF Series 61 certified Tnemec 20-1211 Potapox Primer epoxy-polyamide coating.
- C. The Contractor must note the coating manufacturer's recommendations for durability of the primer coat prior to finish painting and expect to do field touch-up of the primer coat as a minimum before finish painting in accordance with Section 09900 (Painting and Coating) of these Specifications.
- D. All machined metal surfaces will be coated with a suitable, easily removable rust inhibitive compound prior to shipment. Upon receipt of any materials coated with a rust inhibitive compound, the Contractor shall insure that the coating is intact prior to storage and maintain the coating until installation of the sludge thickener equipment.

## 2.11 SPARE PARTS

- A. The intent of this Specification is to provide uninterrupted operation for a minimum period of two (2) years. To meet this objective, the sludge thickener manufacturer shall supply any spare parts that are required to meet this time frame. As a minimum, the following spare parts will be furnished:
  - One (1) set of seals for the sludge thickener drive
  - One (1) set of overload control device switches
  - One (1) spare combination gear/bearing per drive if so used
  - A quantity of fasteners equal to 10% of each type of fastener used
  - One (1) oil sight glass

## 2.13 CONTROL PANEL

- A. A control panel with the capacity to control all functions described in this specification section shall be provided for the sludge thickener mechanism.
- B. The control panel shall be of stainless steel construction conforming to NEMA 4X requirements and suitable for wall or stand mounting by the Contractor. The control panel shall include sun shields on sides and back. It shall also have sun shields on the top such that additional shading is provided to the front of the panel.

- C. A hinged front door shall be provided on the control panel adequately sized to contain all of the required controls with access for repairs.
- D. The control panel shall have a 120 volt, 60 hertz, single phase power supply.
- E. The control panel shall be factory wired and tested with clearly identified, industrial type terminal strips for all external field connections.
- F. An industrial type alarm horn shall be supplied to indicate a high torque situation.
- G. The following indicators and control devices shall be mounted on the front of the panel:
- Sludge thickener rake drive "HAND-OFF-AUTO" selector switch with RESET pushbutton.
  - Sludge collector rake lifting device "HAND-OFF-AUTO" selector switch with "RAISE" and "LOWER" pushbuttons.
  - An alarm "SILENCE" pushbutton
  - Rake drive speed control potentiometer.
  - Rake lift mechanism "RAKES UP" and "RAKES DOWN" red indicating lights
- H. The motor starter for the lifting device and the variable frequency drive required for the rake drive shall be **housed in the motor control center.**

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. The sludge thickener mechanism shall be installed in accordance with the manufacturer's recommendations as approved by the Engineer. Prior to start-up of the sludge thickener equipment, a field service engineer employed directly by the sludge thickener manufacturer shall inspect the assembled equipment, make necessary minor final adjustments and certify the equipment ready for operation.

### 3.02 SERVICE

- A. The sludge thickener manufacturer shall supply a factory trained field service representative to inspect the installation and operation of the sludge thickener equipment. In addition, the field service representative shall instruct the owner's personnel in the proper operation and maintenance of the sludge thickener equipment. As a minimum, the field service representative must be available for **two (2)** eight (8) hour days of service in **two (2)** trips.

- B. Inspection by a representative of the sludge thickener manufacturer who is not a direct, full time employee of the manufacturer is not acceptable.

3.03 MECHANICAL TESTING AND CERTIFICATION

- A. After start-up and prior to final acceptance, the Contractor shall conduct Engineer witnessed performance demonstration tests on the sludge thickener mechanism.
- B. The field service representative will cause the sludge thickener mechanism to perform all mechanical functions that the mechanism is designed to perform. Tests will be scheduled with the Engineer at least two (2) weeks prior to the planned test date.
- C. The field service representative shall submit to the Engineer a written report stating that the equipment has been checked and is suitable for operation.

END OF SECTION 11350



**SECTION 33 05 01.10**  
**HIGH-DENSITY POLYETHYLENE (HDPE) PRESSURE PIPE AND FITTINGS**

**PART 1 GENERAL**

1.01 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American Society of Mechanical Engineer's (ASME):
  - a. B16.1, Gray Iron Pipe Flanges and Flanged Fittings (Classes 25, 125, and 250).
  - b. B18.2.2, Square and Hex Nuts (Inch Series).
2. American Water Works Association (AWWA):
  - a. C906, Polyethylene (PE) Pressure Piping and Fittings, 4 in. through 63 in., for Water Distribution and Transmission.
  - b. Manual M55, PE Pipe - Design and Installation.
3. ASTM International (ASTM):
  - a. A193/A193M, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications.
  - b. A194/A194M, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
  - c. A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - d. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
  - e. A536, Standard Specification for Ductile Iron Castings.
  - f. A563, Standard Specification for Carbon and Alloy Steel Nuts.
  - g. D638, Standard Test Method for Tensile Properties of Plastics.
  - h. D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
  - i. F714, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.
  - j. F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.
  - k. F2620, Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings.
4. Code of Federal Regulations (CFR): Title 49 Part 192.285, Plastic Pipe: Qualifying Persons to Make Joints.
5. NSF International (NSF): 61, Drinking Water System Components - Health Effects.

6. Plastics Pipe Institute (PPI):
  - a. Handbook of Polyethylene Pipe.
  - b. Technical Note 38, Bolt Torque for Polyethylene Flanged Joints.
  - c. TR-33, Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipe.

## 1.02 SUBMITTALS

### A. Action Submittals:

1. Shop Drawings:
  - a. Catalog information confirming pipe, fittings, and other materials conform to requirements of this section.
  - b. Drawings of specific connection details.

### B. Informational Submittals:

1. Manufacturer's Certificate of Compliance, in accordance with Section 01 43 33, Manufacturers' Field Services.
2. Infrared temperature gun product data.
3. Certificates of qualification for persons to be fusing HDPE pipe. Experience and training record of persons to be fusing HDPE pipe.
4. Testing Plan: Submit at least 15 days prior to testing and include the following as a minimum:
  - a. Testing dates.
  - b. Piping systems and section(s) to be tested.
  - c. Method of isolation.
  - d. Method of conveying water from source to system being tested.
5. Certifications of Calibration: Approved testing laboratory certificate if pressure gauge for hydrostatic test has been previously used. If pressure gauge is new, no certificate is required.
6. Test report documentation.

## 1.03 QUALITY ASSURANCE

### A. Qualifications:

1. Pipe Manufacturer: Listed with Plastic Pipe Institute.
2. Persons fusing HDPE pipe shall be certified under 49 CFR§ 192.285 and have minimum of 1 year of experience with fusing HDPE pipe and shall have received a minimum of 20 hours of training for fusing HDPE pipe from pipe supplier or fusing equipment supplier.

## 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Shipping: Do not cut, kink, or otherwise damage pipe during transportation.
- B. Storage:
  - 1. Limit stacking of pipe to a height that will not cause excessive deformation of bottom layers of pipes under anticipated temperature conditions.
  - 2. Where necessary, because of ground conditions, store pipe on wooden sleepers, spaced suitably and of such widths as not to allow deformation of pipe at point of contact with sleeper or between supports.
  - 3. Keep pipe shaded from direct sunlight prior to installation in trench.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Pipe and Fittings:
  - 1. Conform to requirements of AWWA C906.
  - 2. In compliance with NSF 61.
  - 3. Resin:
    - a. Polyethylene resin shall meet or exceed requirements of ASTM D3350 for PE 3408 material. Pressure rating shall be based on hydrostatic design stress of 800 psi at 73.4 degrees F.
  - 4. Pressure Rating: 160 and nominal SDR of 11.
  - 5. Outside Diameter Basis: DIPS.
  - 6. Pipe lengths, fittings, and flanged connections to be joined by thermal butt-fusion shall be of a compatible resin mix for the fusion process.
  - 7. Fittings:
    - a. Sizes 6 Inches and Smaller: Molded and fabricated from polyethylene pipe.
    - b. Sizes 8 Inches and Larger: Use thermal butt-fusion.
    - c. Polyethylene fittings shall have same or higher pressure rating as pipe.
- B. Backup Rings:
  - 1. Convolute for Flanged Connections:
    - a. ASTM A240/A240M, Type 316 stainless steel.
    - b. Complete with one-piece, molded polyethylene flange adapters.
    - c. Flanged Connections: Same or greater pressure rating as pipe.
- C. Gaskets: Material, size, and thickness shall be as recommended by pipe or flange manufacturer, and in accordance with PPI Technical Note 38.

- D. Joints: Thermal butt-fusion or electrofusion, except where connecting to unions, valves, and equipment with flanged or threaded connections that may require future disassembly.
- E. Bolts, Nuts, Washers:
  - 1. Type 316 stainless steel, ASTM A193/A193M, Grade B8 hex head bolts; and ASTM A194/A194M, Grade 8 hex head nuts.
  - 2. Bolts: Fabricated in accordance with ASME B18.2.2 and provided with washers of same material as bolts.
- F. Wall Anchor:
  - 1. Material: Same as HDPE pipe.
  - 2. Internal Diameter: Equal to adjacent pipe.
  - 3. Shear Strength: Equal to or greater than tensile strength of adjacent pipe.
  - 4. Fabrication: Butt fusion. Extrusion bead welding is not allowed.
- G. Electrofusion Flex Restraint:
  - 1. Material: HDPE.
  - 2. Method of Attachment: Electrofusion.
  - 3. Designed for restraining movement of HDPE pipe.
  - 4. Manufacturers:
    - a. Central Plastics Company.
    - b. ISCO Industries.
- H. Products that restrain HDPE pipe with wedges, machined serrations, or clamps are not acceptable.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. General:
  - 1. Install polyethylene pipe in conformance with AWWA M55, PPI TR-33, ASTM F2620, and pipe manufacturer's recommendations.
  - 2. Joining: Butt-fuse pipes and fittings in accordance with pipe manufacturer's recommendations. Depending on Site conditions, perform butt-fusion joining in or outside of excavation.
  - 3. Connect HDPE pipe to auxiliary equipment such as valves, pumps, tanks, and other piping systems with flanged connections as follows:
    - a. Polyethylene flange adapter, thermally butt-fused to end of pipe. Flange "stub ends" are not allowed.
    - b. Convoluted backing flange, as specified.

- c. Bolt and nut of sufficient length to show a minimum of three complete threads when joint is made and tightened to manufacturer's standard.
  - d. Follow requirements of PPI Technical Note 38 including mandatory 4-hour bolt re-torquing.
4. Special Precautions at Flanges: Support polyethylene pipe connected to heavy fittings, manholes, and rigid structures in such a manner that no subsequent relative movement between polyethylene pipe at flanged joint and rigid structures is possible.
  5. Minimum Long-Term Field Bending Radius: Restricted to limits recommended by AWWA M55, Table 8-2.

B. Placement in Trench:

1. Handle joined pipeline in such a manner that pipe is not damaged by dragging it over sharp and cutting objects.
2. Position slings for handling pipeline away from butt-fused joints.
3. Remove sections of damaged pipe and replace it with undamaged pipe. Damaged pipe is defined as pipe with kinks or gouges exceeding 10 percent of pipe wall thickness.
4. Exercise care when lowering pipe into trench to prevent damage or twisting of pipe.
5. At flanges, valves, and connections, excavate out trench bottom sufficiently to ensure clearance between undisturbed trench bottom and flange, valve, or connection.

### 3.02 FIELD QUALITY CONTROL

A. Joint Fusion:

1. Measure and log each joint fusion by an electronic monitoring device (data logger) affixed to fusion machine, and shall be capable of being retrieved electronically. Data to be logged shall include the following:
  - a. Pipe size and dimensions.
  - b. Machine model and size.
  - c. Operator identification.
  - d. Job identification number.
  - e. Weld number.
  - f. Fusion, heating, and drag pressure settings.
  - g. Heater plate temperature.
  - h. Time stamp showing when weld was performed.
  - i. Heating and curing time of weld.
  - j. Curing temperature readings and time stamps of readings.
  - k. Error messages and warnings for out of range temperature or pressure settings.

2. In addition to logged items above, the following shall be logged or annotated on report:
  - a. Location of joint being fused by pipeline station or by reference to pipe Shop Drawing.
  - b. Ambient temperature and humidity.
  - c. If internal bead was removed.

B. Joint Weld Testing:

1. Test Procedure: ASTM D638.
2. Specimens: Cut pipe 12 inches on each side of field made joint. Rejoin ends and proceed with Work.
3. Test Frequency:
  - a. First 1,000 Linear Feet: Two joints selected at random by Engineer.
  - b. Each Additional 1,000 Linear Feet: One joint selected at random by Engineer.
  - c. Each Test Failure: Two additional joints selected at random by Engineer.

C. Pipeline Hydrostatic Test:

1. General:
  - a. Notify Engineer in writing 7 days in advance of testing. Perform testing in presence of Engineer.
  - b. Furnish testing equipment and perform tests in manner satisfactory to Engineer. Testing equipment shall provide observable and accurate measurements of initial service leak and allowable make-up water volume under specified conditions.
  - c. Test newly installed pipelines.
  - d. Isolate new pipelines that are connected to existing pipelines.
  - e. Using water as test medium, pipes shall successfully pass a hydrostatic test prior to acceptance.
  - f. Conduct field hydrostatic test on buried piping after trench has been completely backfilled. Testing may, as approved by Engineer, be done prior to placement of asphaltic concrete or roadway structural section.
  - g. Contractor may, if field conditions permit and as determined by Engineer, partially backfill trench and leave joints open for inspection and conduct initial service leak test. Final field hydrostatic test shall not be conducted until backfilling has been completed as specified above.
  - h. Supply of temporary water shall be as stated in Section 01 50 00, Temporary Facilities and Controls.
  - i. Dispose of water used in testing in accordance with federal, state, and local requirements.

2. Preparation:
  - a. Install temporary thrust blocking or other restraint as necessary to prevent movement of pipe and protect adjacent piping or equipment. Make necessary taps in piping prior to testing.
  - b. Prior to test, remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
  - c. New Piping Connected to Existing Piping: Isolate new piping with grooved-end pipe caps, blind flanges, or other means as acceptable to Engineer.
3. Procedure:
  - a. Test pressure shall be 150 percent of system operating pressure based on pressure as measured at lowest point in pipeline.
  - b. Maximum filling velocity shall not exceed 0.25 feet per second, calculated based on full area of the pipe.
  - c. Expel air from pipe system during filling.
  - d. Test procedure shall be in accordance with ASTM F2164.
    - 1) Initial Expansion Phase: Add water as required to maintain test pressure for 4 hours.
    - 2) Test Phase: Reduce pressure by 10 psi and start pressure test.
    - 3) Test is successful if pressure stays within 5 percent of initial value for 1 hour.
  - e. If test is not completed because of leakage, equipment failure, or other reasons, depressurize test section and allow it to relax for at least 8 hours before retesting.
  - f. If there is leakage, repair defective pipe section and repeat hydrostatic test.

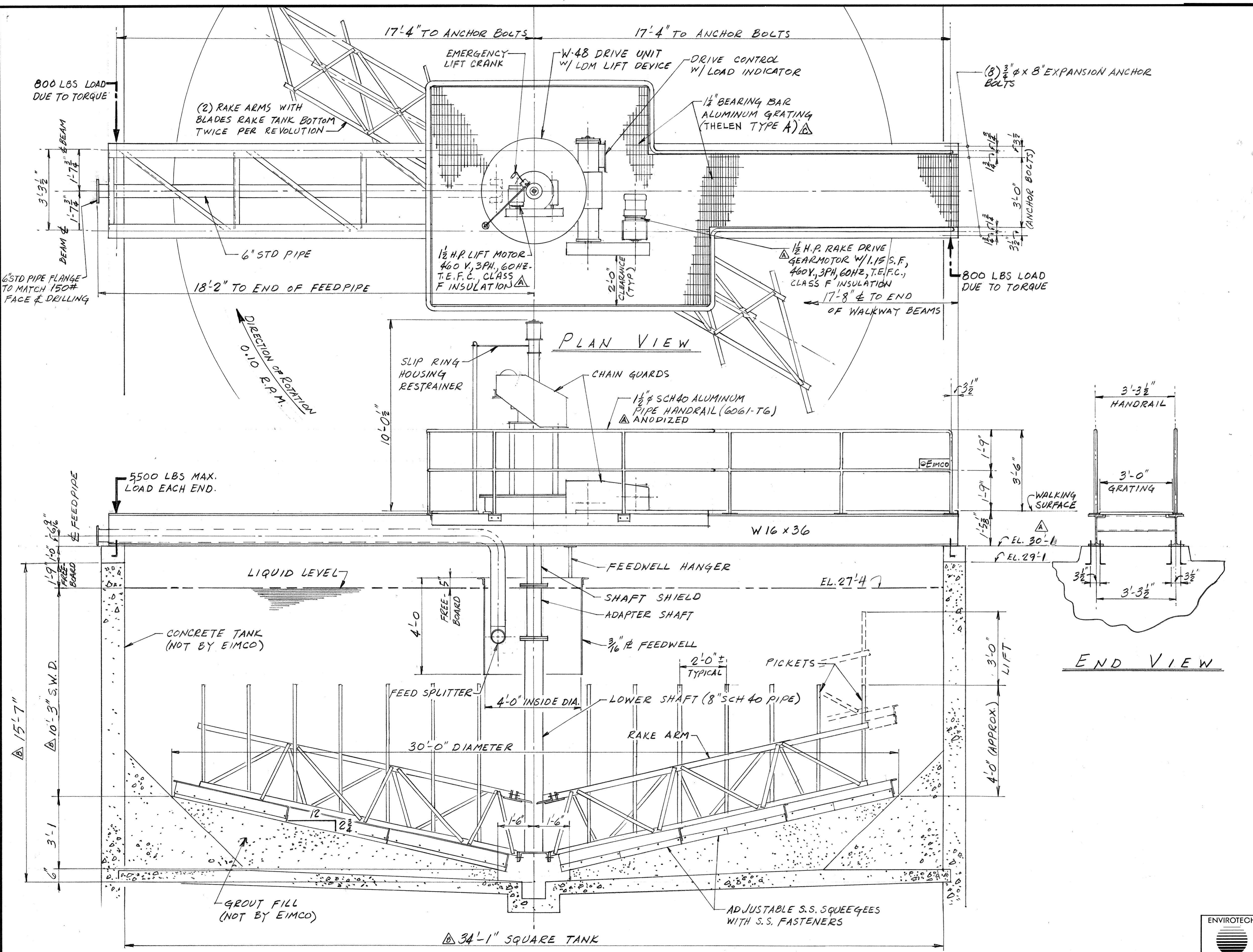
**END OF SECTION**

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**EXISTING THICKENER TANK  
DRAWINGS**

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PIECE MARK	NO. REQ'D	MATERIAL	DESCRIPTION/REMARKS	TOTAL WEIGHT
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- NOTES:
- ASTERISK (\*) DENOTES VARIANCE FROM CONTRACT DOCUMENTS AND SHOULD BE PARTICULARLY NOTED.
  - THE FOLLOWING DEFINES THE RESPONSIBILITY OF THE EIMCO PMD OF ENVIROTECH CORPORATION (EIMCO), WITH REGARD TO THE INFORMATION AND DIMENSIONS SHOWN ON THIS DRAWING. (A) DIMENSIONS, LOADS, AND OTHER INFORMATION ARE PROVIDED TO ACCOMMODATE THE EQUIPMENT TO THE STRUCTURE AS SHOWN. (B) THE CUSTOMER IS TO PROVIDE REINFORCING STEEL AND DESIGN FOR CONCRETE STRUCTURES AND IS TO DETERMINE SIZES TO SUIT LOCAL CONDITIONS. (C) THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR INSTALLATION PURPOSES UNLESS IT BEARS THE APPROVAL OF THE OWNER, THE ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE. (D) THE MECHANISM SHOWN IS DESIGNED FOR DIRECTION OF ROTATION AS INDICATED. EIMCO DOES NOT ASSUME RESPONSIBILITY FOR DAMAGE IF OPERATED IN THE OPPOSITE DIRECTION. (E) CHARGES FOR MODIFICATIONS, ADDITIONS OR CORRECTIONS TO THE EQUIPMENT WILL NOT BE ACCEPTED BY EIMCO UNLESS PRIOR APPROVAL IS OBTAINED IN WRITING FROM AN AUTHORIZED EIMCO REPRESENTATIVE.
  - EIMCO DOES NOT FURNISH ELECTRICAL WIRING, CONDUIT OR ELECTRICAL EQUIPMENT; PIPING, VALVES OR FITTINGS; LUBRICATING OIL OR GREASE; FIELD PAINTING; FIELD WELDING OR ERECTION. (EXCEPT AS SPECIFICALLY NOTED).
  - SHOP PRIMER PAINT IS INTENDED TO SERVE ONLY AS A BONDING COAT BETWEEN METAL SURFACE AND PROTECTIVE FINISH OR SEALING COATS. AS SUCH IT AFFORDS THE METAL ONLY MINIMAL PROTECTION AGAINST THE ELEMENTS. EIMCO CANNOT BE RESPONSIBLE FOR DETERIORATION OF SHOP-PRIMED EQUIPMENT DURING TRANSIT, JOB STORAGE OR OTHER EXPOSURE TO THE ELEMENTS PRIOR TO APPLICATION OF FINISH COAT(S).
  - SURFACE PREPARATION TO CONSIST OF: NONE ON FAB STEEL  
 (A) POWER TOOL CLEAN - SSPC-SP8 - DRIVE & LIFT.
  - SHOP PAINTING TO CONSIST OF: NONE ON STEEL  
 (B) DRIVE & LIFT - RUST-OLEUM ZINC SELE 933A - 3 MILS
  - MINIMUM SUBMERGED STEEL THICKNESS IS 1/4" UNLESS NOTED.
  - EIMCO WILL FURNISH ONE (1) MECHANISM AS SHOWN & NOTED WITH ONE (1) ALARM UNIT.
  - FOR ADDITIONAL DETAILS, REFER TO DRAWINGS 22655B21 DRIVE CONTROL WIRING, 22655D26 CONTROL PANEL WIRING, 22655D25 CONTROL PANEL ARRANGEMENT, 22655C22 LIFT DEVICE WIRING, 87064 ALARM UNIT.

**THIS DRAWING IS CERTIFIED FOR**

CUSTOMER: WIDELL & ASSOCIATES  
 CUSTOMER ORDER NUMBER: A 314-13  
 EIMCO ORDER NUMBER: 22655-01  
 PROJECT: NAPLES WATER TREATMENT PLANT  
 PROJECT LOCATION: NAPLES, FLORIDA  
 CONSULTING ENGINEER: CHAS H HILL  
 BY: Darryl W. Johnson DATE: 6/29/79  
 EIMCO PMD, ENVIROTECH CORPORATION

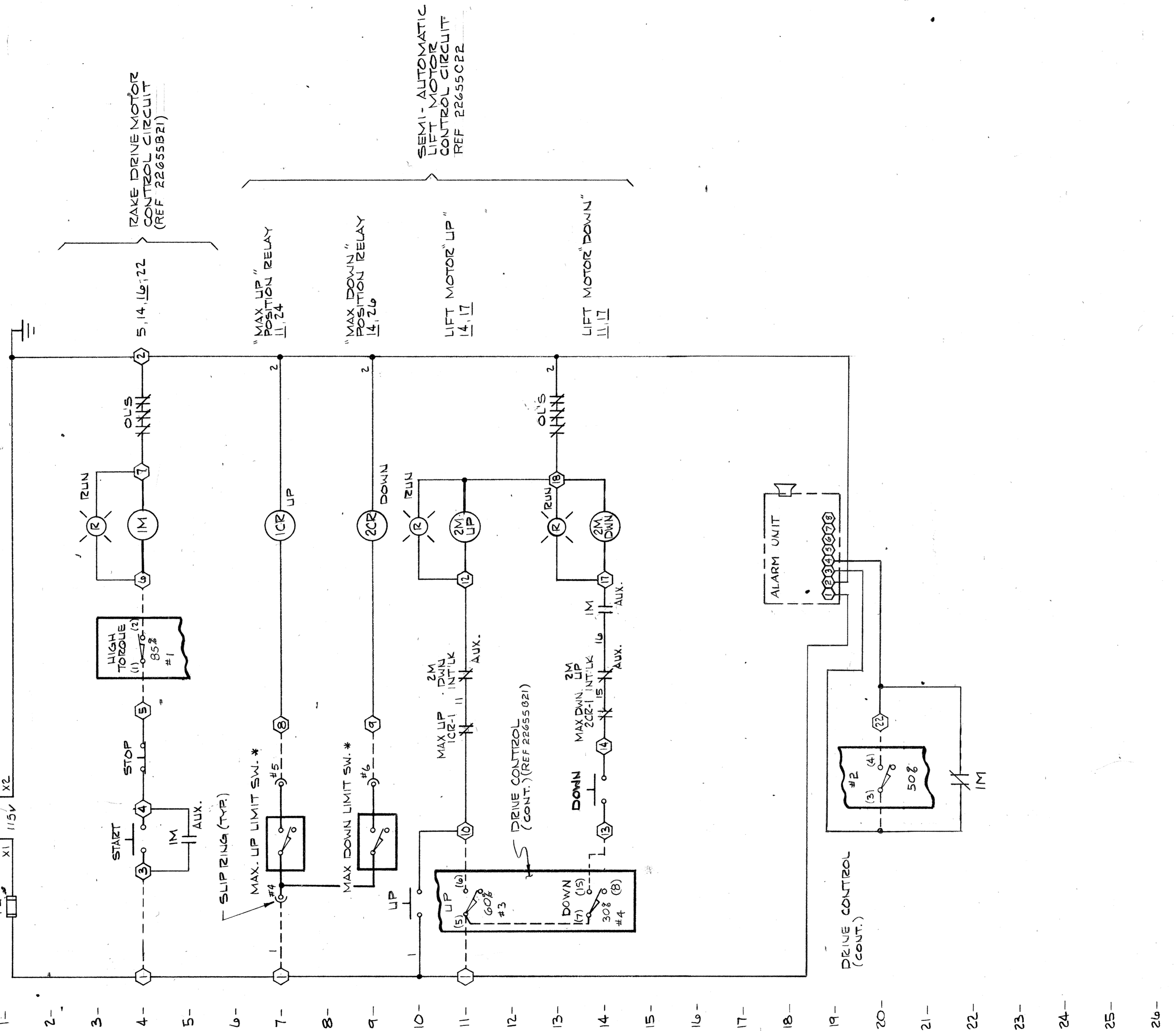
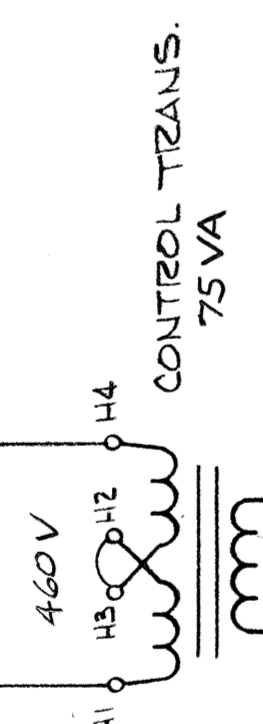
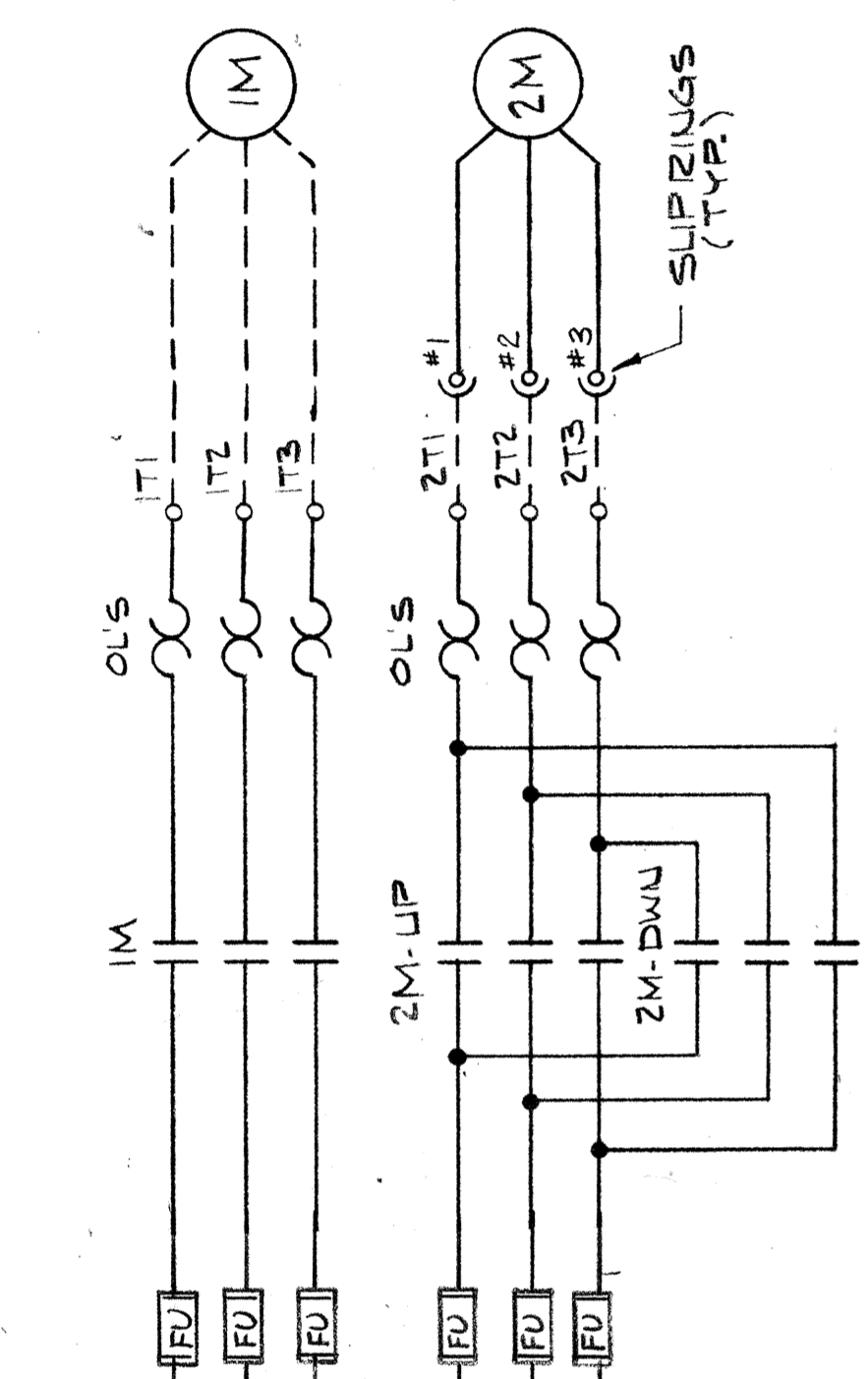
ENVIROTECH		EIMCO PMD - ENVIROTECH CORPORATION - Salt Lake City, Utah	
DO NOT SCALE PRINTS		HOLD FRACTIONAL MACHINED DIMENSIONS TO ± 1/64"	
DATE	5-30-79	This drawing and all information thereon is the property of Eimco PMD and is confidential and must not be made public or copied. This drawing is loaned subject to return upon demand and is not to be used directly or indirectly in any way detrimental to our interests.	
DRAWN	PIA	GENERAL ARRANGEMENT	
CHECK'D	BD	30'-0" TYPE BST THICKENER	
APPR.	WJP	DWG. NO.	22655D1
BY	PIA	REV.	C

THELEN TYPE A GRATING WAS TYPE B	PIA	WJP	1-10-80
REDUCED S.W.D. & SIDE WALL DEPTH 5", TANK WAS 34'-0" SQUARE	PIA	WJP	7-26-79
RAISED SUPERSTRENGTH, ADDED NOTE 9, REVISED MOTOR DESCRIPTION, ADDED ANODIZING	PIA	WJP	6-9-79
REVISION	BY	CHECKED	DATE

PIECE MARK	NO. REQ'D	MATERIAL	DESCRIPTION/REMARKS	TOTAL WEIGHT
------------	-----------	----------	---------------------	--------------

RAKE DRIVE MOTOR  
1/2 HP 1800 RPM

LIFT MOTOR  
1/2 HP 900 RPM



RAKE DRIVE MOTOR  
CONTROL CIRCUIT  
(REF 22655BRI)

SEMI-AUTOMATIC  
LIFT MOTOR  
CONTROL CIRCUIT  
REF 22655C22

"MAX UP" POSITION RELAY  
11, 24

"MAX DOWN" POSITION RELAY  
14, 26

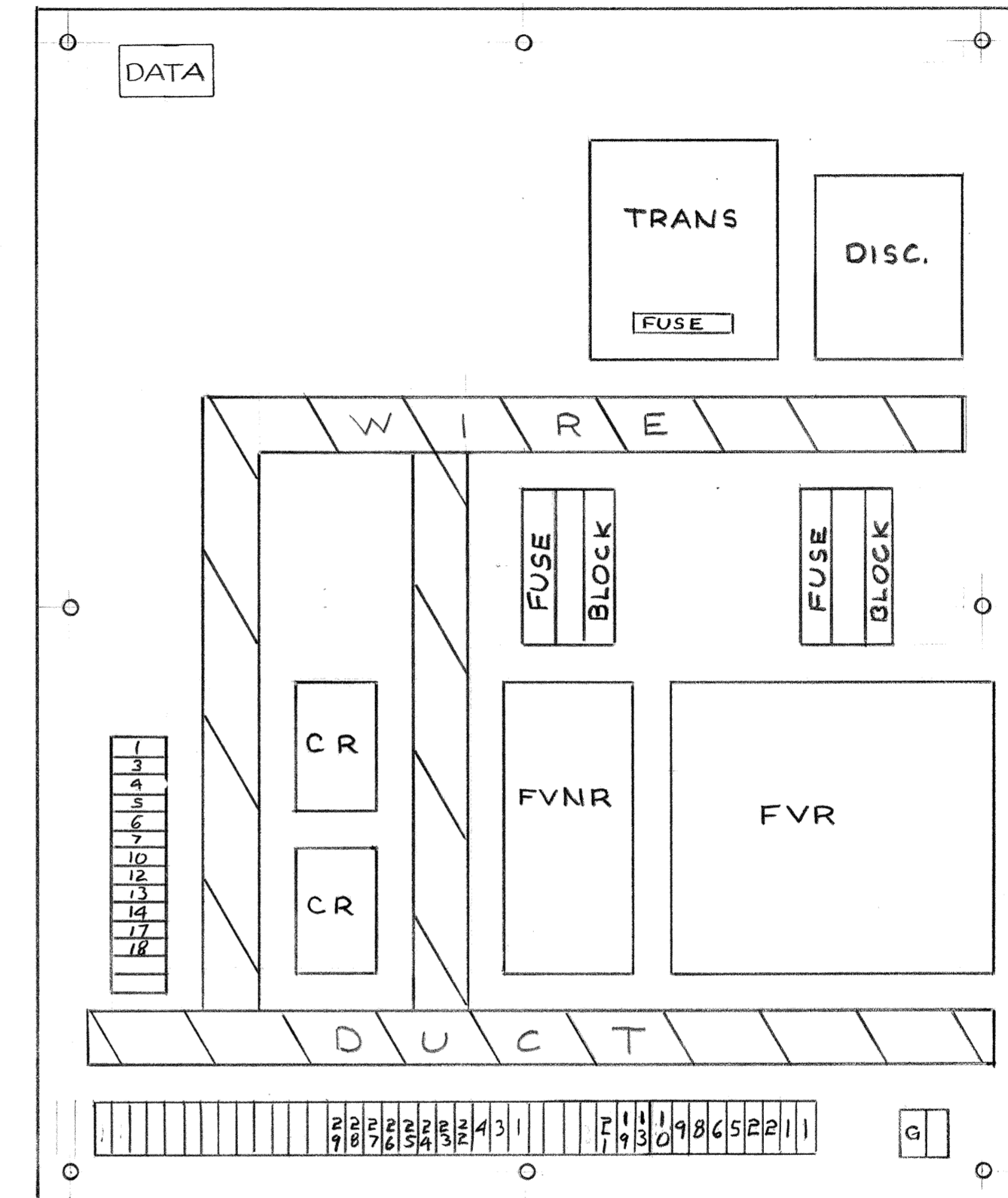
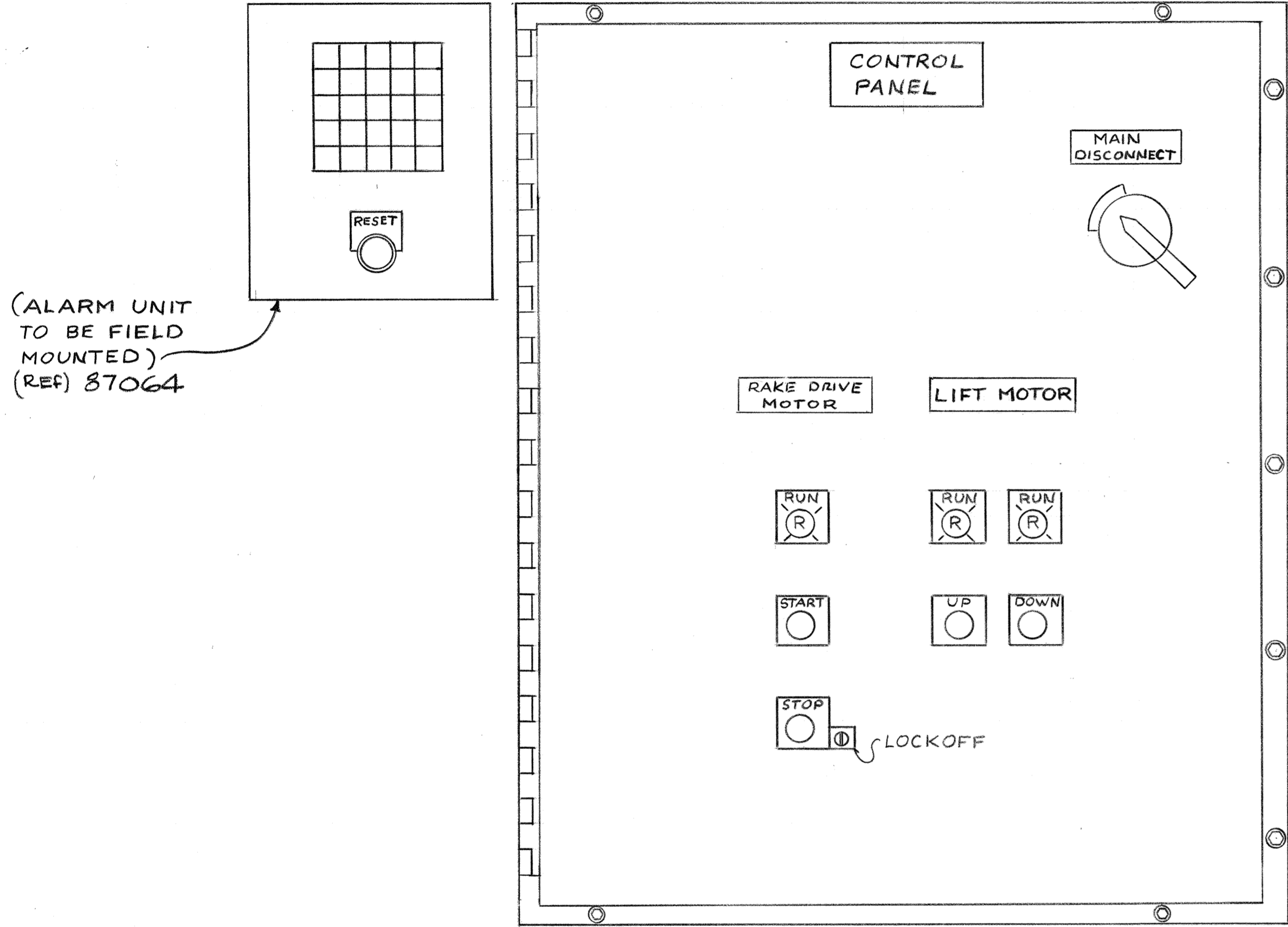
LIFT MOTOR "UP"  
14, 17

LIFT MOTOR "DOWN"  
11, 17

- NOTES**
- WORK WITH: PARTS LIST NO. L 22655D26 DRAWING(S) 22655D25
  - POWER WIRING TO BE SIZED FOR LOAD.
  - WIRING SHALL BE COLOR CODED IN ACCORDANCE WITH JIC ELECTRICAL STANDARDS.
    - (A) BLACK - LOAD AND CONTROL CIRCUIT AT LINE VOLTAGE
    - (B) RED - AC CONTROL CIRCUITS
    - (C) BLUE - DC CONTROL CIRCUITS
    - (D) YELLOW - INTERLOCK CONTROL CIRCUITS WIRING
    - (E) GREEN - EQUIPMENT GROUNDING CONDUCTOR(S)
    - (F) WHITE - NEUTRAL
  - USE #14 GAUGE (MINIMUM) STRANDED MACHINE TOOL WIRE FOR CONTROL WIRING.
  - WIRING SHOWN BROKEN "-----" IS EXTERNAL TO PANEL AND "NOT BY EIMCO."
  - ALL WIRES MUST BE TAGGED AT BOTH ENDS. TERMINAL NUMBERS AND WIRE NUMBERS TO BE THE SAME, I.E., TERMINAL 7, WIRE NO. 7.
  - CONTROL CIRCUIT VOLTAGE IS 115 VAC.
- \* SWITCHES ARE PHYSICALLY LOCATED INSIDE SQUARE TUBE IMMEDIATELY UNDER SLIP RING ASSEMBLY. DOUBLE CHECK SWITCH WIRING SO CONTACT CLOSURES ON MAX. POSITION.

	EIMCO PMD - ENVIROTECH CORPORATION - Salt Lake City, Utah	
	This drawing and all information thereon is the property of Eimco PMD and is confidential and must not be made public or copied. This drawing is loaned subject to return upon demand and is not to be used directly or indirectly in any way detrimental to our interests.	
DO NOT SCALE PRINTS DATE 6-18-79 RECDRAWN DRW CHECK'D APPR. SGW	WIRING DIAGRAM THICKENER CONTROL PANEL W/LIFT	HOLD FRACTIONAL MACHINED DIMENSIONS TO ± 1/64" DWG. NO. 22655D26 REV.

PIECE MARK	NO. REQ'D	MATERIAL	DESCRIPTION/REMARKS	TOTAL WEIGHT
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**NOTES**

1. WORK WITH: PARTS LIST NO. L 22655D25  
WIRING DIAGRAM NO. 22655D26
2. STAMP "CONTROL" NAMEPLATE AS SHOWN:  

DATA	
SALES ORDER NO.	INPUT CONTROL
22655-01	POWER CIRCUIT
WIRING DIAGRAM(S)	460 115 VOLTS
22655D26	60 60 HERTZ
	3 1 PHASE
EIMCO PMD	
3. PAINT WITH STANDARD GREY ENAMEL.
4. ENCLOSURE TO BE NEMA 4X.

ENCLOSURE 36 x 30 x 8  
 PANEL 33 x 27

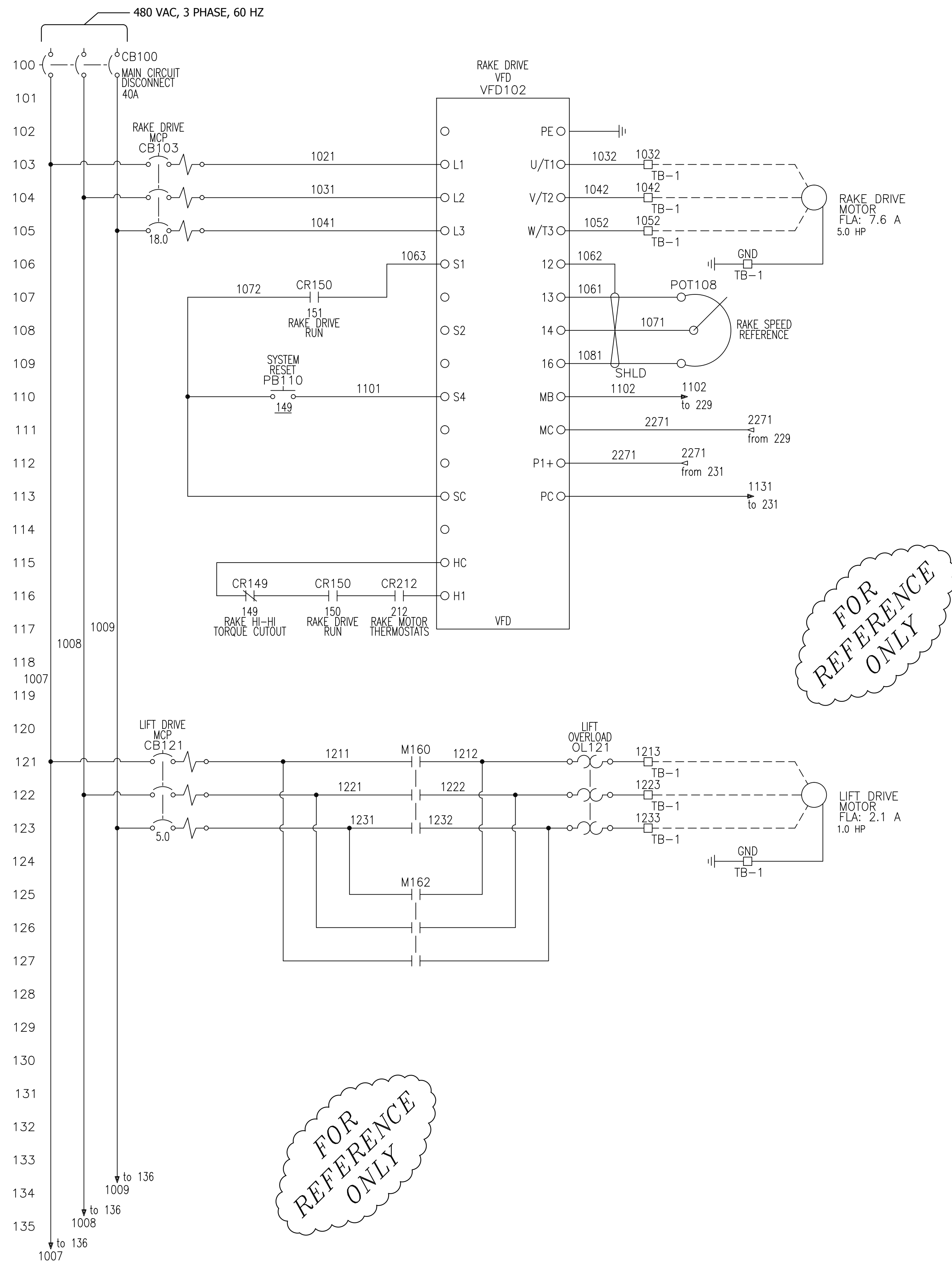
REFER TO DRAWING 22655D26 FOR WIRING SCHEMATIC.

	EIMCO PMD — ENVIROTECH CORPORATION — Salt Lake City, Utah	
	This drawing and all information thereon is the property of Eimco PMD and is confidential and must not be made public or copied. This drawing is loaned subject to return upon demand and is not to be used directly or indirectly in any way detrimental to our interests.	
DO NOT SCALE PRINTS DATE 6-13-79 DRAWN DRW CHECK'D J3 APPR.	PANEL ARRANGEMENT THICKENER CONTROL PANEL W/LIFT	HOLD FRACTIONAL MACHINED DIMENSIONS TO ± 1/64" REV. NO. 22655D25

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# WIRING DIAGRAM

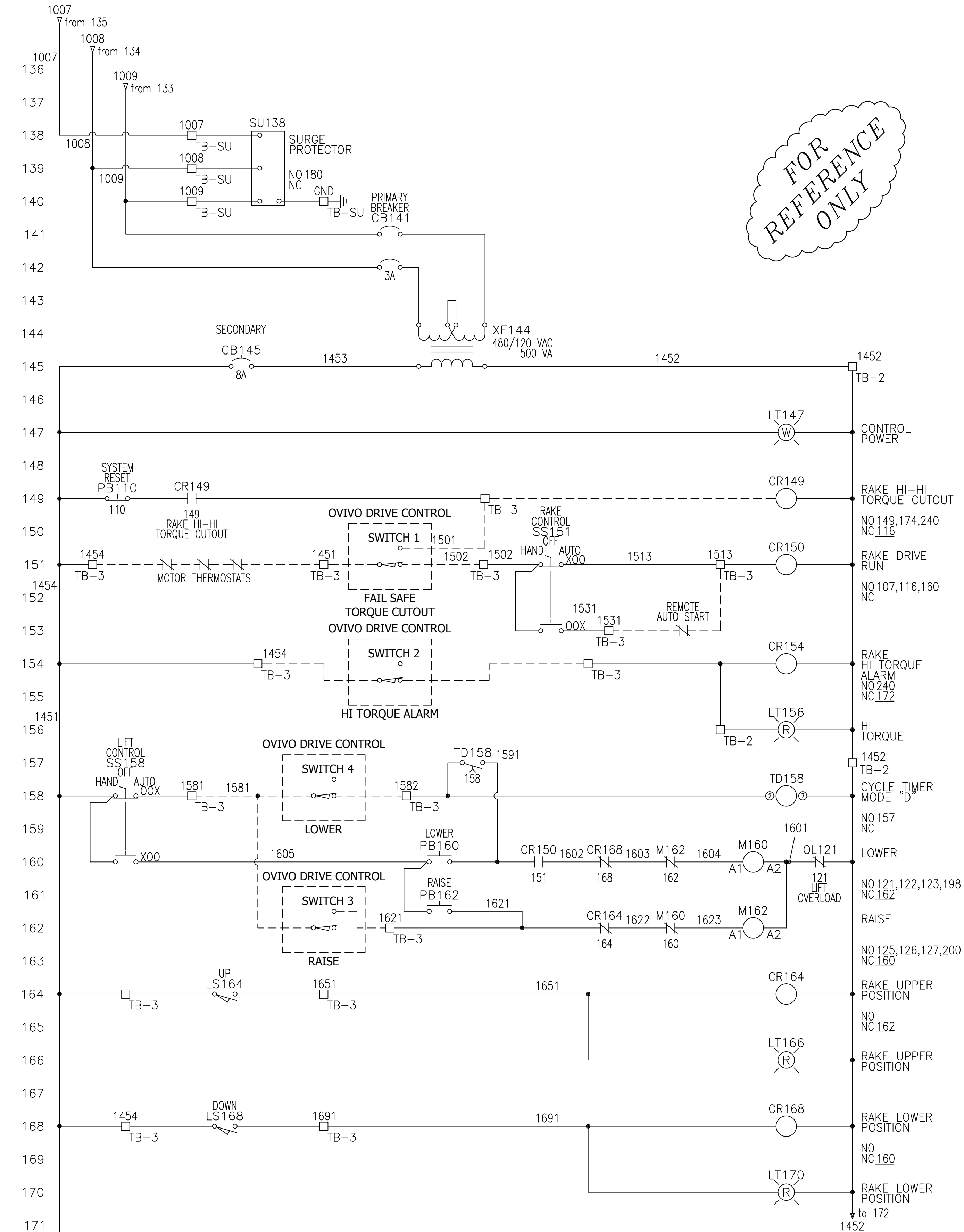
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FOR REFERENCE ONLY

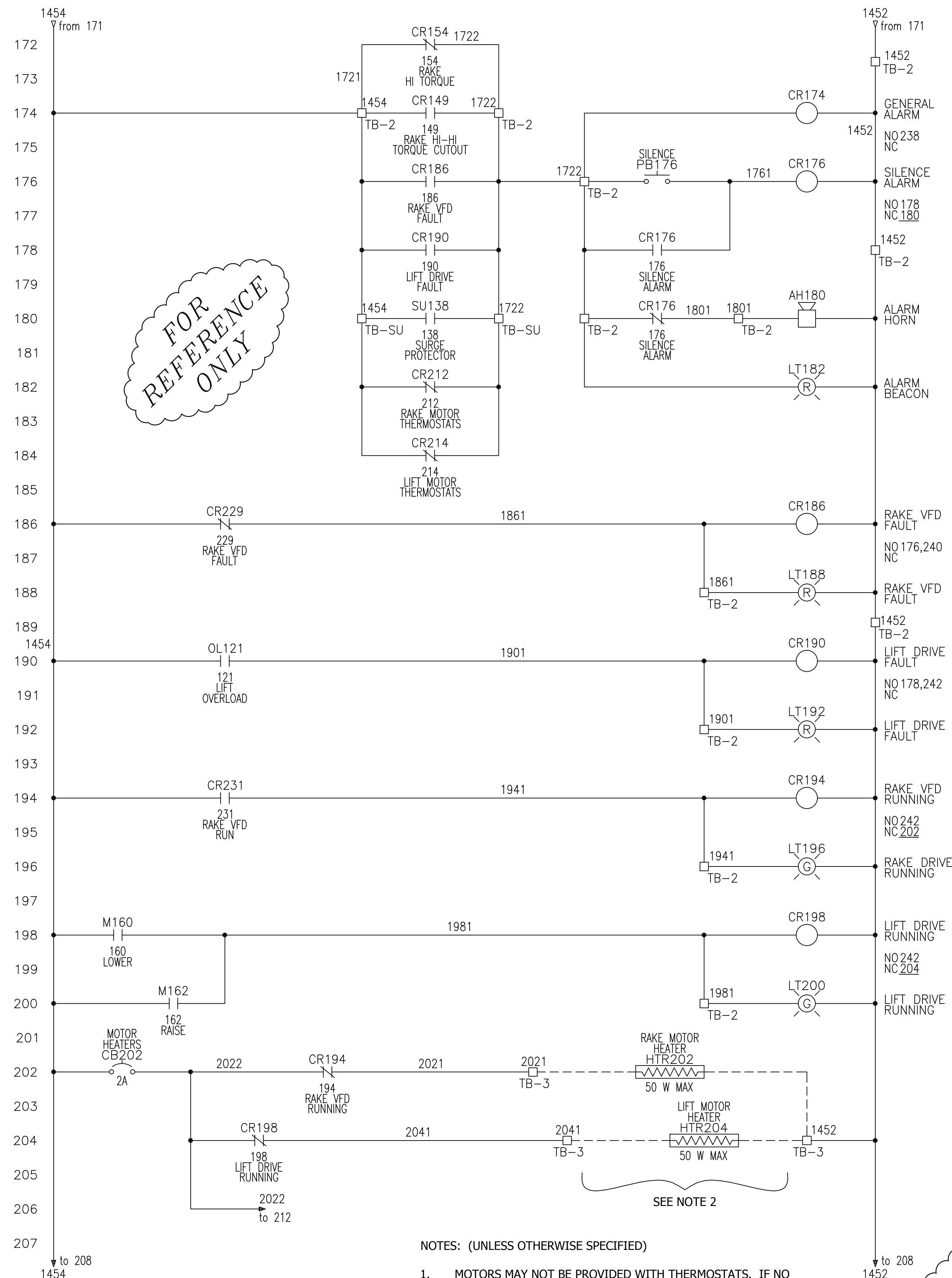
FOR REFERENCE ONLY

**WIRING LEGEND:**  
 - - - - - FIELD WIRING (NOT BY OVIVO)  
 \_\_\_\_\_ INTERNAL WIRING (BY OVIVO)



FOR REFERENCE ONLY

D COPYRIGHT 2010 OLV ALL RIGHTS RESERVED - REV E		THIRD ANGLE PROJECTION		 <b>OVIVO</b> Bringing water to life	
<small>THIS DRAWING CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION OF OVIVO, AND ITS AFFILIATES, AND IS NOT TO BE DISCLOSED NOR TO BE USED EXCEPT FOR EVALUATING PROPOSALS OF OVIVO OR INSTALLING, OPERATING OR MAINTAINING OVIVO EQUIPMENT, UNLESS OTHERWISE AUTHORIZED IN WRITING BY OVIVO.</small>					
REF. FROM:		DO NOT SCALE PRINTS		DWG. NO.	CSW423-225
DATE (mm/dd/yyyy)	05/21/13	WORKMANSHIP STANDARD ES0001 APPLIES		SHEET	1 OF 2
DRAWN	ELP	ORIGINAL S.O.		REV	-
CHECK'D	NBS	CSW0000423-02			



FOR REFERENCE ONLY

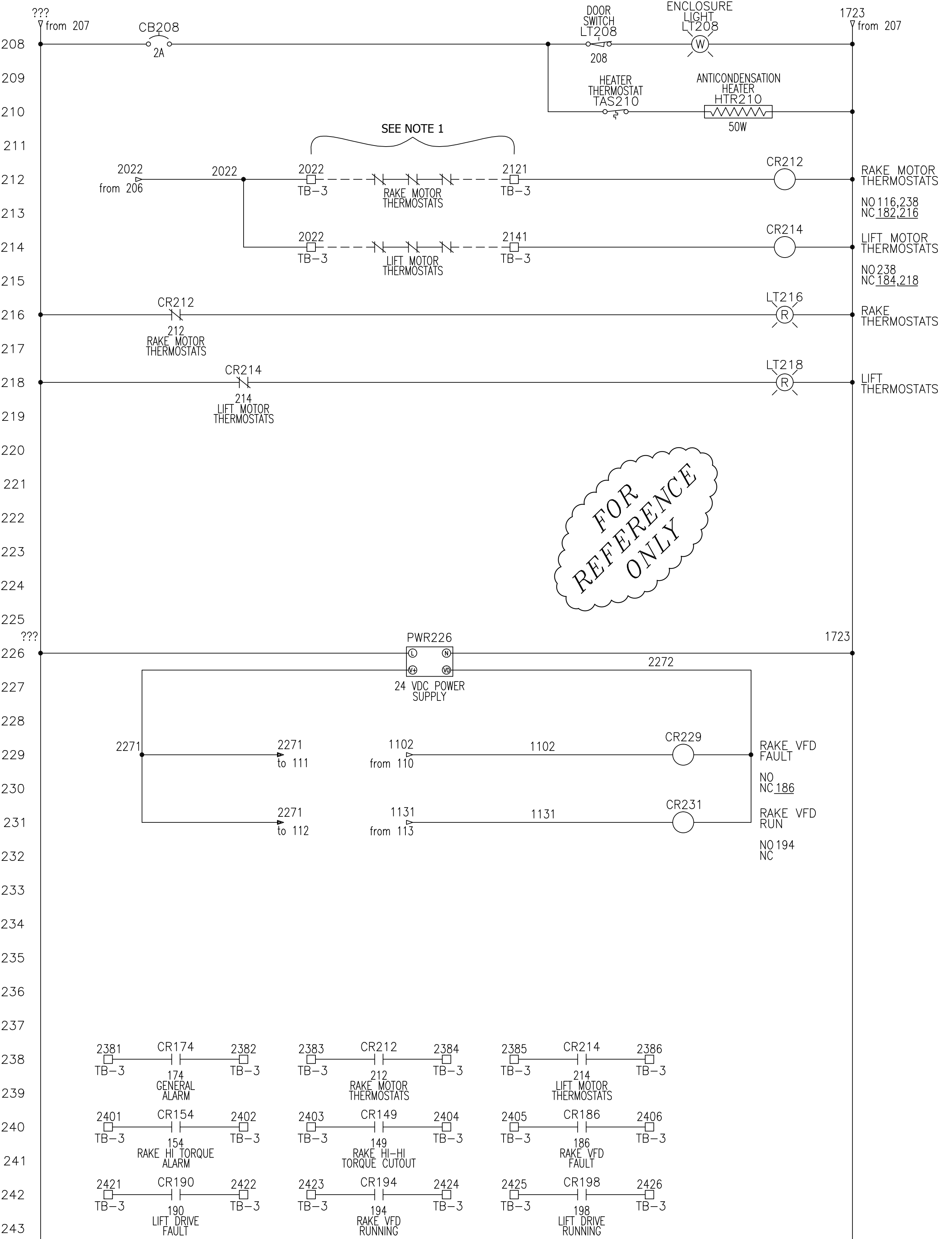
NOTES: (UNLESS OTHERWISE SPECIFIED)

- MOTORS MAY NOT BE PROVIDED WITH THERMOSTATS. IF NO THERMOSTATS ARE PROVIDED, PLACE JUMPERS BETWEEN RESPECTIVE TERMINAL BLOCKS TO ENSURE PROPER OPERATION OF MOTORS.
- MOTORS PROVIDED MAY NOT HAVE INTERNAL HEATERS. IF NO HEATER EXISTS, LEAVE THESE TERMINALS EMPTY. ANY CONNECTIONS, OTHER THAN MOTOR HEATERS, MADE TO THESE TERMINALS COULD COMPROMISE THE ELECTRICAL CIRCUITS CONTAINED IN THIS CONTROL PANEL.

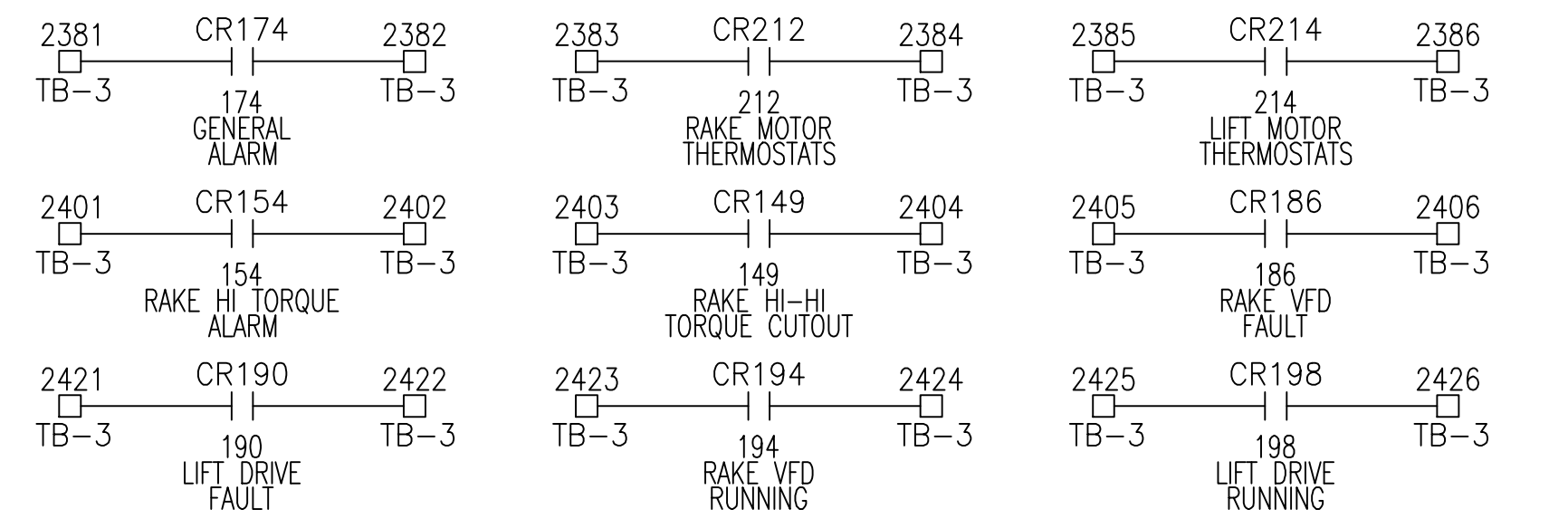
WIRING LEGEND:  
 - - - - - FIELD WIRING (NOT BY OVIVO)  
 \_\_\_\_\_ INTERNAL WIRING (BY OVIVO)

FOR REFERENCE ONLY

Naples 14-012



FOR REFERENCE ONLY



CONTROL SCHEMATIC & DRY CONTACT OUTPUTS

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<b>D</b> © COPYRIGHT 2010 GLV ALL RIGHTS RESERVED - REV E		DO NOT SCALE PRINTS WORKMANSHIP STANDARD ES0001 APPLIES	DWG. NO. CSW423-225
			SHEET 2 OF 2

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# **PHOTO ATTACHMENT**

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Combine existing two influent lines into one 6-inch DR-11 HDPE. Manifold existing 3-inch pipes into 6-inch HDPE with independent wyes and true union ball valves as specified.

New 6-inch DR11 HDPE influent line w/ SS straps (Continued on P-2)



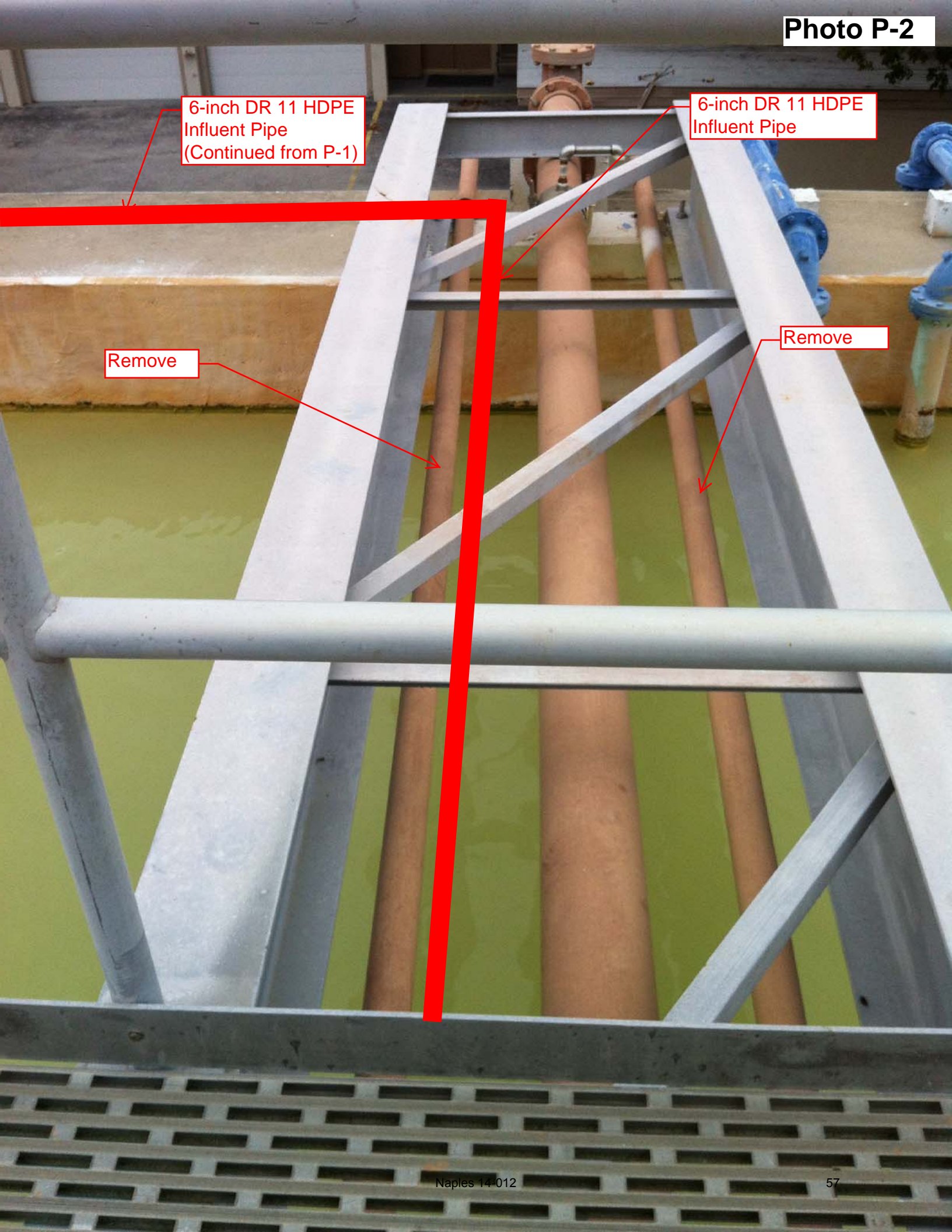


6-inch DR 11 HDPE  
Influent Pipe  
(Continued from P-1)

6-inch DR 11 HDPE  
Influent Pipe

Remove

Remove







Pressure clean the existing weirs.

Repair and re-coat  
this concrete slab.



**City of Naples  
Water Treatment Thickener Tank Rehabilitation  
Invitation to Bid 14-012**

**Cost Schedule**

**THIS SHEET MUST BE COMPLETED AND RETURNED WITH BID**

<u>No.</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total</u>
1	Mobilization/Demobilization	LS	1		
2	General Requirements	LS	1		
3	Thickener Tank Rehabilitation	LS	1		
4	Concrete Repair	SF	600		
	<b>BASE BID TOTAL</b>				

**CONTACT INFORMATION**

Company Representative Signatures:

\_\_\_\_\_

Printed Name and Title:

\_\_\_\_\_

Company Name:

\_\_\_\_\_

Address:

\_\_\_\_\_

Telephone:

\_\_\_\_\_

Email:

\_\_\_\_\_

EIN:

\_\_\_\_\_

# # #